

# Power control.

Eaton significantly speeds time to market for machine builders and reduces the footprint and operating costs of machines without compromising performance. We reduce the time and expense of machine wiring, testing and commissioning up to 85% with our unique Smartwire-DT panel-wiring solution.

Increase energy efficiency with Eaton solutions that enable advanced control of electric motors and hydraulic pumps. Eaton's safety solutions safeguard people, machines and systems, by reducing the risk of machine overload, damage and fire.



**EATON**

*Powering Business Worldwide*

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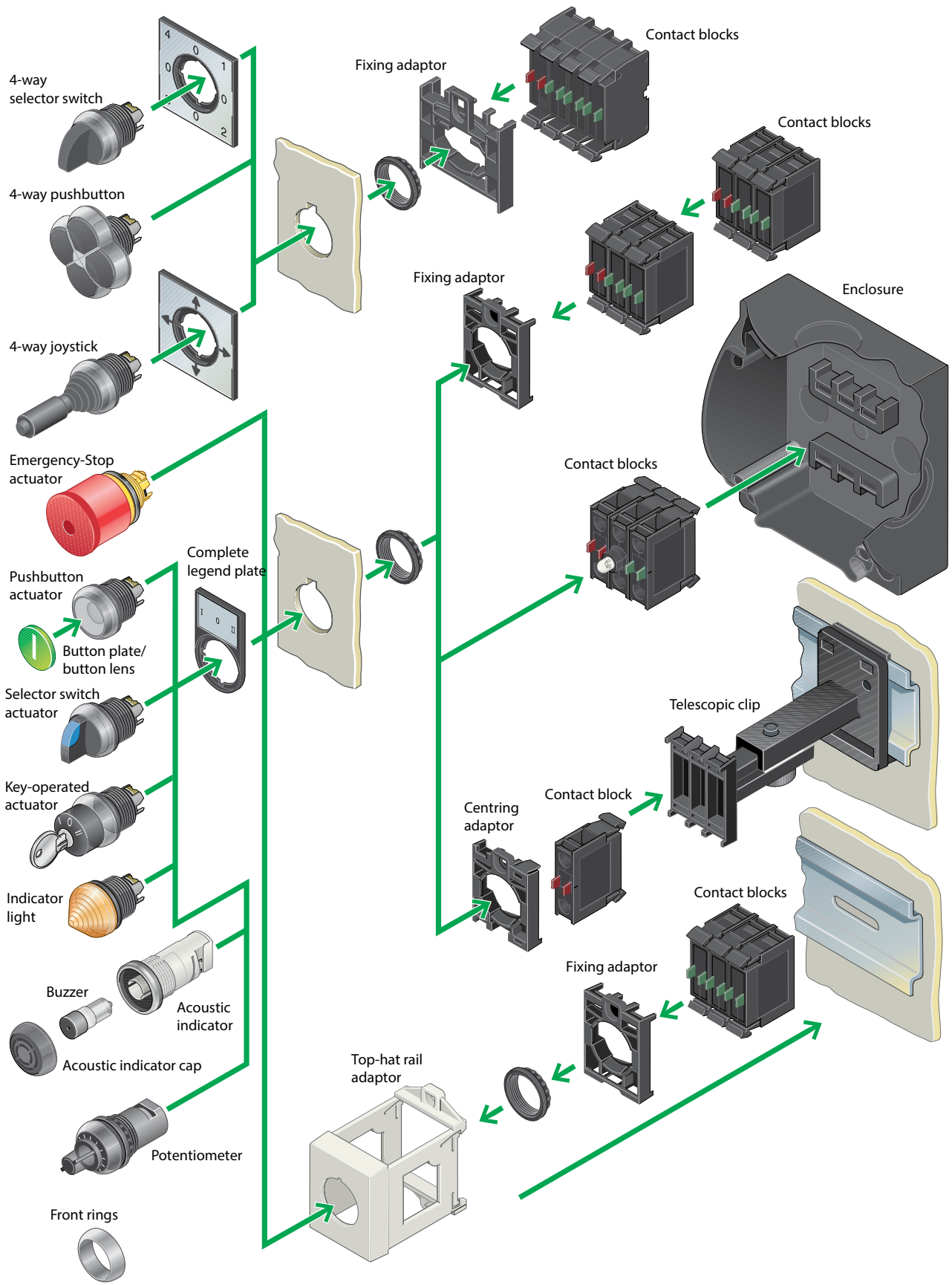
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# Power control

## Control and indication

### 22.5mm Pushbuttons

#### RMQ - Titan, system overview



(Titanium appearance standard, black and gold options)

## 22.5mm Pushbuttons

### RMQ - Titan

Competitively priced, Eaton's RMQ-Titan range comprises pushbuttons, selector switches, joysticks, Emergency-Stop & key-operated actuators. The system includes a variety of indicator lights & illuminated pushbuttons in white, red, yellow, blue & green. They are available in two voltage ranges 12 – 30 V AC/DC & 85 – 264 V AC covering all standard applications.

Meeting all relevant international standards, this attractive, co-ordinated product range will add significant value to any machine or system.



#### Features & benefits:

- Ergonomic design ensuring ease of operation & bright illumination
- IP66 degree of protection as standard (many devices IP67, IP69K) for use in the harshest of industrial environments
- Vibration resistant LEDs giving a minimum life of 100,000 hours for improved reliability & high integrity
- Fitting in the standard 22.5 mm hole, the snap fitting modular system saves both assembly & fitting time

Colour	Description	Contact blocks	LED light unit	Legend plate(s)	Item no.
Pushbutton					
●	Flush	1NO/1NC	-	Run, 1	<b>M22-D-S-K11-P</b>
●	Extended	1NO/1NC	-	Stop, off	<b>M22-DH-R-K11-P</b>
●	Flush	1NO/1NC	-	Start, on	<b>M22-D-G-K11-P</b>
Illuminated pushbutton					
●	Extended	1NO/1NC	12-30V AC/DC	Stop, off	<b>M22-DLH-R-K11-R-P</b>
●	Extended	1NO/1NC	85-264VAC	Stop, off	<b>M22-DLH-R-K11-230R-P</b>
○	Flush	1NO/1NC	12-30V AC/DC	Run, 1	<b>M22-DRL-W-K11-W-P</b>
○	Flush	1NO/1NC	85-264VAC	Run, 1	<b>M22-DRL-W-K11-230W-P</b>
Indicating light					
●	-	-	12-30V AC/DC	Stop, off, fault	<b>M22-L-R-R-P</b>
●	-	-	12-30V AC/DC	Start, on, run	<b>M22-L-G-G-P</b>
●	-	-	85-264VAC	Stop, off, fault	<b>M22-L-R-230R-P</b>
●	-	-	85-264VAC	Start, on, run	<b>M22-L-G-230G-P</b>
Emergency stop					
●	Non-illuminated twist-to-release	1NO/2NC	-	Emergency stop	<b>M22-PVT-K12-P</b>
●	Illuminated push-pull	1NO/2NC	12-30V AC/DC	Emergency stop	<b>M22-PVL-K12-R-P</b>
●	Illuminated push-pull	1NO/2NC	85-264VAC	Emergency stop	<b>M22-PVL-K12-230R-P</b>
Selector switch					
●	2 Position momentary	1NO/1NC	-	0 I, man auto	<b>M22-WKV-K11-P</b>
●	3 Position momentary	1NO/1NC	-	I 0 II, hand 0 auto	<b>M22-WK3-K22-P</b>



M22-DLH-R-K11-R-P



M22-L-G-G-P



M22-PVL-K12-R-P



### 22.5mm Pushbuttons

#### RMQ - Titan

Complete units

Description	Button plate	Contacts	Item no.
Complete units for front mounting			
Pushbutton actuators	Start	1NO	<b>M22-D-G-X1/K10</b>
	Stop	1NC	<b>M22-D-R-X0/K01</b>
Double actuators	With white LED element lens, 85 – 264 V AC	1NO/1NC	<b>M22-DDL-GR-X1/X0/K11/230-W</b>
	Key-release mushroom button with 1 key, MS1 individual lock mechanism	1NC	<b>M22-PVS/K01</b>
Emergency-stop actuators	Pull to release	1NC	<b>M22-PV/K01</b>
	Pull to release	1NO/1NC	<b>M22-PV/K11</b>
Selector switch actuators	Two positions, stay-put	1NO	<b>M22-WRK/K10</b>
	Three positions, stay-put	2NO	<b>M22-WRK3/K20</b>
Key-operated actuators	Two positions, stay-put, with 1 key	1NO/1NC	

Enclosed units

Description	Button plate	Contacts	Item no.
Enclosed units for surface mounting			
Pushbutton actuators	Start	1NO/1NC	<b>M22-D-G-X1/KC11/I</b>
	Stop	1NO/1NC	<b>M22-D-R-X0/KC11/I</b>
Emergency-stop actuator	Pull to release, yellow enclosure	1NO/1NC	<b>M22-PV/KC11/IY</b>
Emergency-stop key-release mushroom button	Red actuator with 1 key	1NO/1NC	<b>M22-PVS/KC11/IY</b>
Key-operated selector switch	2 positions, stay-put, with 1 key	1NO/1NC	<b>M22-WRS/KC11/I</b>
Two-way pushbutton stations	Without indicator light	-	<b>M22-I2-M1</b>
	With indicator light, white LED element, 85 – 264 V AC	-	<b>M22-I3-M2</b>
Three-way pushbutton station	Without indicator light	-	<b>M22-I3-M1</b>
Four-way pushbutton station	Without indicator light	-	<b>M22-I4-M1</b>



M22-D-G-X1/K10



M22-DDL-GR-X1/X0/K11/230-W



M22-PV/K01



M22-WRK/K10



M22-WRS/K11



M22-D-G-X1/KC11/I



M22-PV/KC11/IY



M22-WRS/KC11/I



M22-I2-M1



M22-I3-M1

22.5mm Pushbuttons

RMQ - Titan

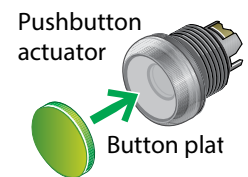
Pushbutton actuators, IP67

- Front ring titanium, also available in black
- Snap-fitting modular system
- Mounting diameter 22.3 mm
- Minimum grid dimensions 30 x 40 mm
- Up to six contacts per location
- Switching of different potentials
- Worldwide approval



Actuators

Description		Colour of button plate/mushroom head	Item no.
Flush design			
		●	M22-D-G
		●	M22-D-R
		ⓘ	M22-D-G-X1
Flush actuator	Spring-return	⊙	M22-D-R-X0
		●	M22-D-S
		●	M22-D-Y
		○	M22-D-W
		●	M22-D-B
Flush actuator	Spring-return	Without button plate	M22-D-X
		●	M22-XD-S
		○	M22-XD-W
button plate	for use with M22-D-X	●	M22-XD-R
		●	M22-XD-G
		●	M22-XD-Y
		●	M22-XD-B
Extended Design			
Extended actuator	Spring-return	●	M22-DH-S
		●	M22-DH-R
		●	M22-DH-G
	Spring-return, with guard ring	Without	M22-DG-X
Mushroom actuators, IP67			
	Spring-return	●	M22-DP-G
		●	M22-DP-R
		●	M22-DP-S
		●	M22-DP-Y
Stay-put		●	M22-DRP-S
		●	M22-DRP-R
		●	M22-DRP-G
Double actuator, IP66			
	Stop-start button plate. Optional indicator light M22-LED230-W	ⓘ □ 0	M22-DDL-GR-X1/X0



M22-XD-G



M22-DH-R



M22-DP-R



M22-DDL-GR-X1/X0

### 22.5mm Pushbuttons

#### RMQ - Titan

##### Actuators



M22-PV



M22-PVL



M22-PVS



M22-PL-PV



FAK-RV/KC01/IY



FAK-RV/KC11/IY



M22-A



M22K10



M22-AK11

Description	Colour of mushroom head	Item no.
Emergency-stop actuators, IP66. Snap-action & positive non-tease action, yellow base		
Pull to release. After actuation, plunger remains in the actuated position.	●	<b>M22-PV</b>
Twist to release. One or two contact blocks can be fitted.	●	<b>M22-PVT</b>
Illuminated. Pull to release. After actuation, plunger remains in the actuated position. One or two contact blocks can be fitted.	●	<b>M22-PVL</b>
Key-operated, with 1 key	●	<b>M22-PVS</b>
Sealable shroud. Transparent with collapse point, reusable after Emergency-stop operation. Suitable for M22-PV & M22-PVL Emergency-stop actuators & M22-PVS key-release mushroom actuator.	–	<b>M22-PL-PV</b>
Foot & palm switches, IP67		
Spring-return mushroom head	●	<b>FAK-R/KC11/I</b>
	●	<b>FAK-S/KC11/I</b>
Emergency-stop actuators, IP67		
Stay-put, pull to release	●	<b>FAK-R/V/KC01/IY</b>
Stay-put, pull to release	●	<b>FAK-R/V/KC11/IY</b>

##### Fixing adapters, contact blocks

Description	Contacts	Item no.
Fixing adapters		
Front fixing, for 3 M22-K... contact elements & M22-LED... LED elements.	–	<b>M22-A</b>
For 4 contact blocks	–	<b>M22-A4</b>
Contact blocks with screw terminals		
Front fixing	1 NO	<b>M22-K10</b>
	1 NC	<b>M22-K01</b>
Base fixing	1 NO	<b>M22-KC10</b>
	1 NC	<b>M22-KC01</b>
Complete modules. Combination of contact elements with screw terminals & fixing adapter		
	1 NO, 1 NC	<b>M22-AK11</b>
Front fixing	1 NO	<b>M22-AK10</b>
	1 NC	<b>M22-AK01</b>

## 22.5mm Pushbuttons

### RMQ - Titan

#### LED elements

Description	Rated operational voltage, U <sub>e</sub> , V	Colour	Item no.		
LED elements with screw terminals					
Front fixing	12 – 30 V AC/DC	○	M22-LED-W		
		●	M22-LED-R		
		●	M22-LED-G		
		●	M22-LED-B		
		○	M22-LED230-W		
	85 – 264 V AC, 50/60 Hz	●	M22-LED230-R		
		●	M22-LED230-G		
		●	M22-LED230-B		
		○	M22-LEDC-W		
		●	M22-LEDC-R		
Base fixing	12 – 30 V AC/DC	●	M22-LEDC-G		
		●	M22-LEDC-B		
		○	M22-LEDC230-W		
		●	M22-LEDC230-R		
		●	M22-LEDC230-G		
	85 – 264 V AC, 50/60 Hz	●	M22-LEDC230-B		
		LED test elements			
		For non-interacting function test (lamp test) for connection to:	12 – 240 V AC/DC	–	M22-XLED-T
			85 – 264 V AC	–	M22-XLED230-T



M22-A



M22-A

#### Illuminated pushbutton actuators, indicator lights

Description	Colour	Item No.	
Illuminated pushbutton actuators, IP67			
Flush design	Spring-return	○	M22-DL-W
		●	M22-DL-G
		●	M22-DL-R
		●	M22-DL-Y
		●	M22-DL-B
	Stay-put, press again to release.	○	M22-DRL-W
		●	M22-DRL-G
		●	M22-DRL-R
		●	M22-DRL-Y
		●	M22-DRL-B
Extended design	Spring-return	○	M22-DLH-W
		●	M22-DLH-G
		●	M22-DLH-R
		●	M22-DLH-Y
		●	M22-DLH-B
		Indicator lights, IP67	
Flush	-	○	M22-L-W
		●	M22-L-G
		●	M22-L-R
		●	M22-L-Y
		●	M22-L-B
		Extended, conical	-
●	M22-LH-G		
●	M22-LH-R		
●	M22-LH-Y		
●	M22-LH-B		



M22-DL-R



M22-DRL-G



M22-DLH-W



M22-L-R

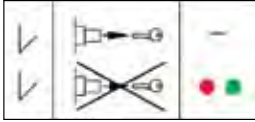


M22-LH-B

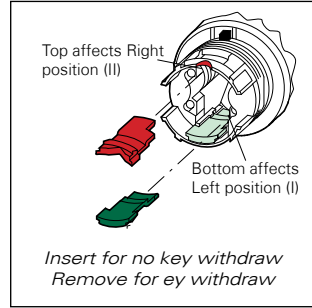


# Power control

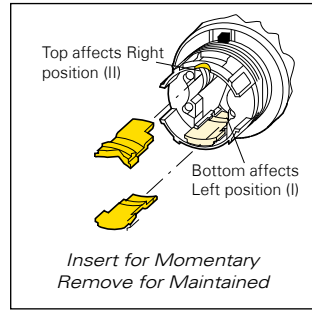
## Control and indication



M22-XC-R



M22-XC-Y



## 22.5mm Pushbuttons

### RMQ - Titan

#### Set of coding adapters for selector switches

Description	For use with	Colour	Item no.
Used to convert key withdraw position to non-key withdrawn position	M22(S)-WRS(3)	-	<b>M22-XC-R</b>
Supplied with standard switches	M22(S)-WR(L)(K)(3)	-	<b>M22-XC-Y</b>
Used to convert maintained operation to momentary operation	M22(S)-WRS(3)	-	

The same slots on keyed sector switches are shared between these two difference adapters.

All possible combinations and their effects are detailed in the tables below.

#### Two position adapter configurations

Two position adapter configurations	Switching positions		
	maintained	maintained	momentary
Key withdraw positions			
	O I	O I	O I
Two slot affects right position	-		

Bottom slot not implemented with two position switches

Shading indicates standard switch configuration

#### Three position adapter configurations

Three position adapter configurations	Switching positions									
	maintained	maintained	maintained	maintained	momentary	maintained	maintained	maintained	maintained	maintained
Key withdraw positions										
	I O II	I O II	I O II	I O II	I O II	I O II	I O II	I O II	I O II	I O II
Two slot affects right position	-			-				-		
Bottom slot affects left position	-		-			-				

Shading indicates standard switch configuration

## 22.5mm Pushbuttons

### RMQ - Titan

#### Selector switch actuators

Description	Function:		Button plate	Front ring: titanium Item no.
	↳ = Stay-put ✓ = V position	↳ = Spring-return		
Selector switch actuators, 2 positions, IP66				
Rotary button	-	↳	40°	● M22-W
	-	↳	60°	● M22-WR
Thumb-grip	-	↳	40°	- M22-WK
	-	↳	60°	- M22-WRK
Thumb-grip, V position	-	✓	60°	- M22-WKV
Selector switch actuators, 3 positions, IP66				
Rotary button	40°	↕	40°	● M22-W3
	60°	↕	60°	● M22-WR3
Thumb-grip	40°	↕	40°	- M22-WK3
	60°	↕	60°	- M22-WRK3
Selector switch actuators, 4 positions, IP66.				
Rotary button	45°	✳	-	● M22-WR4
Thumb-grip	45°	✳	-	● M22-WRK4
Key-operated actuators, IP66, with 1 key				
2 positions, 60° turn, stay-put	-	↳	60°	- M22-WRS
3 positions, 60° turn, stay-put	60°	↕	60°	- M22-WRS3
Key for MS1 individual lock mechanism	-	-	-	- M22-ES-MS1

#### Illuminated selector switch actuators, key-operated actuators

Description	Function:		Colour of thumb-grip	Item No.
	↳ = Stay-put ↳ = Spring-return			
Illuminated selector switch actuators, IP66. Thumb grip handle				
2 positions				
Spring-return	-	↳	40°	○ M22-WLK-W
	-	↳	40°	● M22-WLK-G
	-	↳	40°	● M22-WLK-R
	-	↳	40°	● M22-WLK-Y
	-	↳	40°	● M22-WLK-B
Stay-put	-	↳	60°	○ M22-WRLK-W
	-	↳	60°	● M22-WRLK-G
	-	↳	60°	● M22-WRLK-R
	-	↳	60°	● M22-WRLK-Y
	-	↳	60°	● M22-WRLK-B
	-	↳	60°	● M22-WRLK-B
3 positions				
Spring-return	40°	↕	40°	○ M22-WLK3-W
	40°	↕	40°	● M22-WLK3-G
	40°	↕	40°	● M22-WLK3-R
	40°	↕	40°	● M22-WLK3-Y
	40°	↕	40°	● M22-WLK3-B
Stay-put	60°	↕	60°	○ M22-WRLK3-W
	60°	↕	60°	● M22-WRLK3-G
	60°	↕	60°	● M22-WRLK3-R
	60°	↕	60°	● M22-WRLK3-Y
	60°	↕	60°	● M22-WRLK3-B
	60°	↕	60°	● M22-WRLK3-B



M22-W



M22-WR



M22-WK



M22-WRK



M22-W3



M22-WR3



M22-WR4



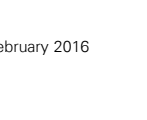
M22-WK3



M22-WRK3



M22-WRS



M22-WRK4



M22-WRK4



M22-WRK4



M22-WRK4



M22-WRK4



M22-WRK4



M22-WRK4



M22-WRK4



M22-WRK4



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M22-WRK4



M22-WRK4



### 22.5mm Pushbuttons

#### RMQ - Titan

#### Four-way operators



M22-WJ2H



M22-WRJ4



M22-D4-S



M22-XCK



M22-XCK2



M22-I2



M22-I4



M22-EY1



M22-E6

Description	Inscription	Function: ↳ = Stay-put ↷ = Spring-return	For use with	Front ring: titanium Item no.
Joysticks, IP66				
2 positions	-	↶	-	<b>M22-WJ2H</b>
	-	↷	-	<b>M22-WJ2V</b>
4 positions	-	+	-	<b>M22-WRJ4</b>
	-	↻	-	<b>M22-WJ4</b>
Pushbuttons, 4-way, IP66				
No inscription, actuator colour black		↻	-	<b>M22-D4-S</b>
Inscription with direction arrows, actuator colour: black		↻	-	<b>M22-D4-S-X7</b>
Inscription with direction arrows, actuator colour: black, opposing buttons mechanically interlocked		↻	-	<b>M22-DI4-S-X7</b>
Labels				
	Blank	-	Joystick 4-way selector switch actuators	<b>M22-XCK</b>
-	Direction arrows	-	Joystick 4 positions	<b>M22-XCK1</b>
			Joystick 2 positions	<b>M22-XCK3</b>
	0-1-0-2-0-3-0-4	-	4-way selector switch actuators	<b>M22-XCK2</b>

#### Surface mounting enclosures, flush mounting plates

Number of ways Qty.	Colour	Item no.
Surface mounting enclosures		
1		<b>M22-I1</b>
2		<b>M22-I2</b>
3	●	<b>M22-I3</b>
4		<b>M22-I4</b>
6		<b>M22-I6</b>

Description	Number of ways Qty.	Colour	Item no.
Flush mounting plates			
Legend plates cannot be used if pushbuttons are fitted in vertical column without apertures, if required.			
Aluminium with yellow paint finish for emergency-stop buttons	1	●	<b>M22-EY1</b>
Aluminium, light anodized	1		<b>M22-E1</b>
	2		<b>M22-E2</b>
	3		<b>M22-E3</b>
	4	●	<b>M22-E4</b>
	5		<b>M22-E5</b>
	6		<b>M22-E6</b>


22.5mm Pushbuttons

RMQ - Titan, Accessories

Description		Number of ways	Item no.
Shrouds, IP55	Plastic, light grey	1	<b>M22-H1</b>
	Plastic, light grey	2	<b>M22-H2</b>
Blanking plugs, IP66. Round style, for blanking off reserve locations	Grey	-	<b>M22-B</b>
	Black	-	<b>M22S-B</b>
Actuator diaphragms, IP67. Transparent diaphragms for severe environmental conditions & use in the food industry. Do not use with legend plates since degree of protection is not guaranteed			
For use with M22(S)-D(R)-... pushbutton actuators, M22(S)-DL-..., M22(S)-DRL-..., illuminated pushbutton actuators, M22-D(C)-... flush indicator lights			
For use with M22(S)-DD(L)-... double actuators			
Telescopic clips. For adjusting depth of rear mounting devices in Cl enclosures & panels with a mounting depth of 115 – 155 mm. Stepless adjustment, screw fixing & snap fitting (top hat rails to IEC/EN 60715). Maximum of 10 x M22-TC per enclosure, 5 of which can hold stay-put actuators. Do not use with Emergency-Stop actuators			
For 3 contacts/LED elements, base fixing, with centering adapter			
Extension for telescopic clip; for mounting depths up to 205 mm			
Adapter rings. Set of adapter rings 30/22.3 mm, black, consists of adapter ring & lock nut			
For fitting 22.3 mm diameter buttons into 30.5 mm diameter holes			
Threaded ring	M22 x 1.5 mm	-	<b>M22-GR</b>
Acoustic indicator housing IP40 ⌀ Black front, without buzzer			
Buzzer - for use with M22-AMC 18 - 30 V AC/DC, 83 dB / 10 cm, 100 % DF, Positive pole connected to X1	Continuous tone	-	<b>M22-XAM</b>
	Pulsed tone	-	<b>M22-XAMP</b>

⌀ NEMA/UL Type 1.

Description		Item no.
Combination box spanner	For threaded ring	<b>M22-MS</b>
Top-hat rail adapter	IEC/EN 60715 top-hat rail, for front fixing	<b>M22-IVS</b>
Plunger bridge. For actuating the middle contact element of the M22-W...3 non-illuminated 3-position selector switch actuator	Middle contact of 3-position selector switch, non-illuminated, (1 off) black	<b>M22-XW</b>
Guard ring, IP66. To protect against accidental operation	For pushbutton & selector switch actuators	<b>M22-XGWK</b>
Front ring: gold (24 carat). Front ring not supplied individually:		
<b>M22-FR-AU</b>		
IP65 external reset button		
<b>M22-DZ-B-GB14</b>		

Description	Circuit symbol	Resistance, R, kW	Item no.
Potentiometers, IP66		1	<b>M22-R1K</b>
		4.7	<b>M22-R4K7</b>
		10	<b>M22-R10K</b>
		47	<b>M22-R47K</b>
		100	<b>M22-R100K</b>
		470	<b>M22-R470K</b>

Description	Inscription	Colour	Item no.
Emergency-stop labels, IP66	Lettering black, 30 X 50 mm	Emergency-stop	<b>M22-XZK-GB99</b>
	Diameter = 90 mm	Blank	<b>M22-XZK</b>
		Emergency-stop in 4 languages	<b>M22-XAK1</b>
Legend holders without label, IP66. Round, black	For actuators, 30 x 50 mm	-	<b>M22S-ST-X</b>
	For double actuators, 30 x 75 mm	-	<b>M22S-STDD-X</b>
	Insert plate for legend holder	Blank	Aluminium <b>M22-XST</b>



M22-H1



M22-B



M22-T-D



M22-T-DD



M22-TC



M22-R30



M22-GR



M22-AMC



M22-MS



M22-IVS



M22-XW



M22-XGWK



M22-DZ-B-GB14



M22-R10K



M22-XAK1



# Power control

## Control and indication

### 30.5mm Pushbuttons

Eaton's 30.5mm pushbuttons are versatile, durable, rugged, & stand the test of time in even the most hostile environments.

The range includes momentary, illuminated & mushroom head pushbuttons, selector switches, indicating lights & push-pull units.

The T Series Chrome 30.5 mm pushbutton line features a zinc die cast construction with chrome-plated housing & mounting nut. The same durable construction is also available with the corrosive resistant E34 line of pushbuttons.

All operators are IP66 rated to protect against dirt & moisture. Additionally, most devices come complete with grounding hardware to prevent electrical shock. Rugged metal construction, handsome appearance, extra features, & competitive prices makes Eaton's 30.5mm range of pushbuttons the logical choice for OEM's & board builders looking for value, durability, & reliability.



#### Features

- Die-cast metal housings create robust & heavy-duty devices that can endure repetitive & heavy handed use in industrial environments.
- IP66 rated for protection against dirt & moisture.
- The corrosion resistant E34 range can withstand extremely harsh environments.
- Contact blocks are colour coded (green for N.O. & red for N.C.) to permit easy identification & troubleshooting.
- Up to 6 contact blocks can stack on each other, allowing for up to 12 circuits per operator.
- Heavy-duty zinc die cast construction
- Enclosed silver contacts with reliability nibs
- All normally closed contacts have positive opening operation, i.e., normally closed contacts are forced open in the event of contact weld or spring breakage.
- Diaphragm seals with drainage holes
- Grounding nibs on the operator casing.
- Logic level contact blocks have palladium tipped contacts to ensure circuit integrity down to 1mA @ 5V AC/DC.
- Bright, long-lasting & vibration-proof LED's are available for illuminated operators.

#### Standards

- CE EN60947-5-1
- UL 508 — File No. 131568
- CSA C22.2 No. 14 — File No. LR68551

#### Contact blocks

Eaton's contact blocks feature enclosed silver contacts with pointed "reliability nibs" for reliable performance from logic level up to 600V. To ensure reliable switching, nibs bite through oxide which can form on silver contacts, eliminating the need for expensive logic level blocks for most applications. Reliability nibs improve performance in dry circuit, corrosive, fine dust & other contaminated atmospheres. Under normal environmental conditions, the minimum operational voltage is 5V & the minimum operational current is 1 mA, AC/DC. For operation under a wider range of environmental conditions, logic level contact blocks with inert palladium tipped contacts are recommended. Diaphragm Seal with Drainage Holes Eaton's pushbutton operators offer front-of-panel drainage via holes in the operator bushing. Hidden from view by the mounting nut, these holes prevent buildup of liquid inside the operator, which can prevent operation in freezing environments. The holes also provide a route for escaping liquid in high pressure washdowns, effectively relieving pressure from the internal diaphragm seal, ensuring reliable sealing every time.

#### Grounding nibs

Most operators have green earthing screws to prevent electrical shock. Operators also have "grounding nibs" — four metal points on the operator casting designed to bite through most paints & other coatings on metal panels to enhance the ground connection when the operator is securely tightened.

### Standard Pushbuttons

#### Chrome, T Series pushbuttons

##### Chrome

The 30.5 mm pushbutton line features a zinc die cast construction with chrome-plated housing & mounting nut.



#### Applications for the chrome operators:

- Aggregate
- Automotive
- Construction Vehicles
- Industrial Equipment
- Material Handling
- Metal Forming
- Metal Stamping
- Mining
- Petrochemical
- Pulp & Paper

### Corrosion Resistant, E34 Pushbuttons

#### Corrosion resistant

Eaton's Corrosion Resistant E34 Range of 30.5 mm pushbuttons features the same rugged die cast construction of our T Series with an additional two-layer 100% solid thermosetting cathodic epoxy coating. This coating provides a smooth flat black smooth, flat back, corrosion resistant surface that has passed a demanding 600 hour salt spray test.



#### Applications for corrosion resistant operators:

- Automotive
- Chemical Plants
- Food & Beverage
- Food Service Equipment
- Industrial Equipment
- Mining
- Pulp & Paper
- Waste Water Treatment Plants

#### Ultraviolet light

E34 cathodic coating is not recommended for use in applications where exposure to ultraviolet light exists, use chrome operators.

### 30.5mm Pushbuttons

Standard Pushbuttons, flush, extended & half-shrouded buttons,



Flush button

Colour	Chrome	Corrosion resistant
● Black	<b>T101</b>	<b>E34PB1</b>
● Red	<b>T102</b>	<b>E34PB2</b>
● Green	<b>T103</b>	<b>E34PB3</b>
● Yellow	<b>T104</b>	<b>E34PB4</b>
● Grey	<b>T105</b>	-
○ White	<b>T106</b>	<b>E34PB5</b>
● Brown	<b>T107</b>	-
● Blue	<b>T108</b>	<b>E34PB6</b>



Extended button

Colour	Chrome	Corrosion resistant
● Black	<b>T111</b>	<b>E34EB1</b>
● Red	<b>T112</b>	<b>E34EB2</b>
● Green	<b>T113</b>	<b>E34EB3</b>
● Yellow	<b>T120</b>	<b>E34EB4</b>
○ White	<b>T116</b>	-
● Blue	<b>T118</b>	<b>E34EB6</b>



Half-shrouded

Colour	Chrome	Corrosion resistant
● Black	<b>T501</b>	<b>E34EVB1</b>
● Red	<b>T502</b>	<b>E34EVB2</b>
● Green	<b>T503</b>	<b>E34EVB3</b>
● Yellow	<b>T504</b>	<b>E34EVB4</b>
● Blue	<b>T508</b>	<b>E34EVB6</b>

#### Base mounted contact blocks

Description	Item no.
1NO 1NC	<b>T6</b>
2NO	<b>T7</b>
2NC	<b>T8</b>
1NC	<b>T52</b>
1NO	<b>T54</b>
1LONC 1ECNO	<b>T56</b>
1LONC 1ECNO	<b>T58</b>

#### Logic level contact blocks

Description	Item no.
1NO 1NC	<b>T1E</b>
2NO	<b>T2E</b>
2NC	<b>T3E</b>
1NC	<b>T51E</b>
1NO	<b>T53E</b>

#### Standard contact blocks

Description	Item no.
1NO 1NC	<b>T1P</b>
2NO	<b>T2P</b>
2NC	<b>T3P</b>
1NC	<b>T51P</b>
1NO	<b>T53P</b>
2NO 2NC	<b>T44</b>
1LONC 1ECNO	<b>T55</b>
1ECNO 1NO	<b>T57</b>
1LONC	<b>T71</b>
2LONC	<b>T45</b>



T1P



T44



T57

NO = Normally Open, NC = Normally Closed, LONC = Late Open Normally Closed, ECNO = Early Close Normally Open, Logic Level contact blocks have palladium contacts.

#### STEP 1



Select Pushbutton operator above.

#### STEP 2



Select contact block above

# Power control

## Control and indication

### 30.5mm Pushbuttons

#### Mushroom operators momentary



**Mushroom button 38.1mm**

Colour	Chrome	Corrosion resistant
● Black	<b>T121</b>	<b>E34LB1</b>
● Red	<b>T122</b>	<b>E34LB2</b>
● Green	<b>T123</b>	<b>E34LB3</b>
● Yellow	<b>T124</b>	<b>E34LB4</b>
● Blue	<b>T129</b>	<b>E34LB6</b>



**Palm head button 63.5mm zinc**

Colour	Chrome	Corrosion resistant
● Black	<b>T171</b>	<b>E34JB1</b>
● Red	<b>T172</b>	<b>E34JB2</b>
● Red (Emergency Stop)	<b>T17213</b>	<b>E34JB2N</b>
● Green	<b>T173</b>	<b>E34JB3</b>



**Accessories for complete push-pull operators\***

Description	Item no.
Padlock Assembly Kit	<b>6-A474</b>
Replacement Locking Tongue	<b>6-A475</b>
Padlock with Chain	<b>52-A1617</b>

#### Legend Plates

Engraving	Material	Item no.
STOP Pull to reset	Metal	<b>D2179-53CP</b>
STOP Pull to reset	Plastic	<b>E34LP179</b>

\* For use with push-pull mushroom operators maintained.

#### STEP 1



Select Pushbutton operator above.

#### STEP 2



Select contact block.  
(previous page)

#### Mushroom operators components



**Bare shaft operator for mushroom or palm pushbutton**

Description	Item no.
Momentary, Spring Return	<b>T100</b>
Auto-Latch - Twist Base to Release	<b>T140</b>



**38.1 Mushroom button for bare shaft operators**

Colour	Item no.
● Black	<b>T281</b>
● Red	<b>T282</b>
● Green	<b>T283</b>
● Yellow	<b>T284</b>
● Blue	<b>T288</b>



**63.5Mm palm button (anodized aluminium) for bare shaft operators**

Colour	Item no.
● Black	<b>T291</b>
● Red	<b>T292</b>
● Green	<b>T293</b>

#### STEP 1



Select bare shaft operator above.

#### STEP 2



Select mushroom button above

#### STEP 3



Select contact block.  
(previous page)

30.5mm Pushbuttons

Push-pull mushroom operators maintained



T129P



T176P



T129M



E34129S

Push-pull operators complete padlockable

Head diameter	Colour	Material	Chrome	Corrosion resistant
45mm	Red	Zinc	<b>T129P</b>	<b>E34129P</b>
63.5mm	Red	Zinc	<b>T176P</b>	<b>E34176P</b>

Push-pull operators complete non-padlockable

Head diameter	Colour	Material	Chrome	Corrosion resistant
38mm	Red	Plastic	<b>T129S</b>	<b>E34129S</b>
45mm	Red	Zinc	<b>T129M</b>	<b>E34129M</b>
63.5mm	Red	Zinc	<b>T176M</b>	<b>E34176M</b>

STEP 1



Select Pushbutton operator above.

STEP 2



Select contact block.

(previous page)

Push-Pull operators components



Push-pull operators

Description	Position	Chrome	Corrosion resistant
Maintained Push & Pull	2	<b>T5</b>	<b>E34GDB</b>
Momentary Push & Pull	3	<b>T4</b>	<b>E34GEB</b>
Maintained Push & Momentary Pull	3	<b>T9</b>	<b>E34GFB</b>

38.1Mm mushroom button for push-pull operators

Description	Colour	Item no.
Operator Head	● Black	<b>E34C1</b>
Operator Head	● Red	<b>E34C2</b>
Operator Head	● Red (Emergency Stop)	<b>10250TB63</b>
Operator Head	● Green	<b>E34C3</b>

63.5Mm palm button (anodized aluminium) for push-pull operators

description	Colour	Item no.
Operator Head	● Red	<b>E34J2</b>
Operator Head	● Red (Emergency Stop)	<b>E34J2N8</b>

STEP 1



Select push-pull operator above.

STEP 2



Select mushroom button above

STEP 3



Select contact block.

(previous page)

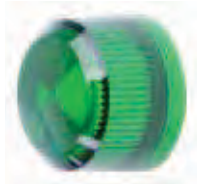


# Power control

## Control and indication

### 30.5mm Pushbuttons

Illuminated operators, indicating light lenses



#### Plastic lenses

Colour	Plastic
● Red	<b>E34H2</b>
● Green	<b>E34H3</b>
● Amber	<b>E34H9</b>
○ Clear	<b>E34H0</b>
● Yellow	<b>E34H4</b>
○ White	<b>E34H5</b>
● Blue	<b>E34H6</b>

#### Glass lenses (chrome)

colour	Glass (chrome)
● Red	<b>TC7N</b>
● Green	<b>TC8N</b>
● Amber	<b>TC9N</b>
○ Clear	<b>TC11N</b>
○ White	<b>TC12N</b>
● Blue	<b>TC10N</b>

#### Glass lenses (corrosion resistant)

Colour	Glass (corrosion resistant)
● Red	<b>E34G2</b>
● Green	<b>E34G3</b>
● Amber	<b>E34G9</b>
○ Clear	<b>E34G0</b>
● Yellow	<b>E34G4</b>
○ White	<b>E34G5</b>
● Blue	<b>E34G6</b>

### Indicating Light Units



#### Direct voltage indicating light unit

Description	Voltage	Chrome	Corrosion resistant
Direct voltage - order bulb separately	6 - 240V	<b>T197N</b>	<b>E34FB197L*</b>

See next page for bulbs.  
Can be used with LEDs.

\*LED only 6-240V

#### Resistor type indicating light units

Description	Voltage	Chrome	Corrosion resistant
Resistor Type 120V bulb supplied	110/120	<b>T201N</b>	<b>E34RB120</b>
	220/240	<b>T202N</b>	<b>E34RB240</b>

#### Incandescent bulb indicating light units

Description	Voltage	Chrome	Corrosion resistant
With incandescent bulb supplied	6	<b>T197N/2</b>	<b>E34FB06</b>
	12	<b>T197N/3</b>	<b>E34FB12</b>
	24	<b>T197N/4</b>	<b>E34FB24</b>
	48	<b>T197N/5</b>	<b>E34FB48</b>
	110	<b>T197N/7</b>	<b>E34FB110</b>
	240	<b>T197N/8</b>	<b>E34FB240</b>

#### Transformer type indicating light units

Description	Voltage	Chrome	Corrosion resistant
Transformer Type 6V Secondary bulb supplied	110/120	<b>T181N</b>	<b>E34TB120</b>
	220/240	<b>T182N</b>	<b>E34TB240</b>
	380/415	<b>T183N</b>	<b>E34TB380</b>
	440/480	<b>T184N</b>	<b>E34TB480</b>
	550/600	<b>T185N</b>	<b>E34TB600</b>
	415	-	<b>E34TB415</b>

#### STEP 1



Select a lens from above.

#### STEP 2



Select indicating light above

#### STEP 3



Select bulb (if not supplied)  
(next page)

#### STEP 4



Select contact block.  
(previous page)

### 30.5mm Pushbuttons

Illuminated operators, illuminated pushbutton lenses



#### Plastic illuminated lenses

Colour	Plastic
● Red	<b>E34V2</b>
● Green	<b>E34V3</b>
● Amber	<b>E34V9</b>
○ Clear	<b>E34V0</b>
● Yellow	<b>E34V4</b>
○ White	<b>E34V5</b>
● Blue	<b>E34V6</b>



#### Glass illuminated lenses (chrome)

Colour	Glass (chrome)
● Red	<b>TC13N</b>
● Green	<b>TC14N</b>
● Amber	<b>TC15N</b>
○ Clear	<b>TC17N</b>
○ White	<b>TC18N</b>
● Blue	<b>TC16N</b>



#### Glass illuminated lenses (chrome) (corrosion resistant)

Colour	Glass (chrome)
● Red	<b>E34P2</b>
● Green	<b>E34P3</b>
● Amber	<b>E34P9</b>
○ Clear	<b>E34P0</b>
● Yellow	<b>E34P4</b>
○ White	<b>E34P5</b>
● Blue	<b>E34P6</b>

#### Press-to-test light units



#### Press-To-Test Indicating Lights - Direct Voltage

Description	Supply voltage	Chrome	Corrosion resistant
Direct voltage order bulb separately	6-240V	<b>T230N</b>	<b>E34FPB</b>
	380/415	<b>T413</b>	<b>E34XB380</b>

See next page for bulbs.  
Can be used with LEDs.

#### Press-to-test indicating lights - transformer type

Description	Supply voltage	Chrome	Corrosion resistant
Transformer Type 6V, 1W secondary bulb supplied	110/120	<b>T221N</b>	<b>E34TPB120</b>
	220/240	<b>T222N</b>	<b>E34TPB240</b>
	380/415	<b>T223N</b>	<b>E34TPB380</b>

#### Press-to-test indicating lights - resistor type

Description	Supply voltage	Chrome	Corrosion resistant
Resistor Type 120V, bulb supplied	110/120	<b>T231N</b>	<b>E34RPB120</b>
	220/240	<b>T240N</b>	<b>E34RPB240</b>

#### Illuminated pushbutton light units



#### Illuminated pushbuttons - transformer type

Description	Supply voltage	Chrome	Corrosion resistant
Transformer type 6V secondary bulb supplied	110/120	<b>T411</b>	<b>E34XB120</b>
	220/240	<b>T412</b>	<b>E34XB1240</b>
	380/415	<b>T413</b>	<b>E34XB380</b>
	440/480	<b>T414</b>	<b>E34XB480</b>

#### Direct Voltage Indicating Light Unit

Description	Supply voltage	Chrome	Corrosion resistant
Direct voltage - order bulb separately	6 - 240V	<b>T441</b>	<b>E34CB 497L *</b>

See next page for bulbs.  
Can be used with LEDs.

\*LED only 6-240V



#### STEP 1



Select a lens from above.

#### STEP 2



Select light from above

#### STEP 3



Select bulb (if not supplied)  
(next page)

#### STEP 4



Select contact block.  
(previous page)

# Power control

## Control and indication

### 30.5Mm pushbuttons

Illuminated operators, push-pull mushroom lenses



#### Standard push-pull lenses

Colour	Item no.
● Red	<b>E34M2</b>
● Red (Emergency Stop)	<b>E34M2N8</b>
● Green	<b>E34M3</b>
● Amber	<b>E34M9</b>
○ Clear	<b>E34M0</b>
○ White	<b>E34M5</b>
● Blue	<b>E34M6</b>

#### Side lighted anodised aluminium lenses

Colour	Item no.
● Red	<b>10250TC57</b>
● Red (Emergency Stop)	<b>10250TC63</b>
● Green	<b>10250TC58</b>
● Amber	<b>10250TC64</b>
○ Clear	<b>10250TC62</b>
○ White	<b>10250TC61</b>
● Blue	<b>10250TC59</b>

Illuminated push-pull operators



#### Illuminated push-pull operators

Description	Supply voltage	Chrome	Corrosion resistant
Maintained Push & Pull	2	<b>T5</b>	<b>E34GDB</b>
Momentary Push & Pull	3	<b>T4</b>	<b>E34GEB</b>
Maintained Push & Momentary Pull	3	<b>T9</b>	<b>E34GFB</b>

Light units for illuminated push-pull operators



#### Direct voltage light modules for push-pull operators

Description	Voltage	Item no.
Direct Voltage	6-240V	<b>10250T70</b>

Order bulb separately - see next page for bulbs.  
Can be used with LEDs.



#### Transformer type light modules for push-pull operators

Description	Voltage	Item no.
Transformer Type 6V secondary bulb supplied	110/120	<b>10250T63</b>
	220/240	<b>10250T65</b>
	380/415	<b>10250T66</b>
	440/480	<b>10250T67</b>



#### Resistor type light modules for push-pull operators

Description	Voltage	Item no.
Resistor Type 120V bulb supplied	120	<b>10250T80</b>
	240	<b>10250T81</b>

STEP 1



Select a lens from above.

STEP 2



Select push-pull operator from above

STEP 3



Select light unit from above

STEP 4



Select bulb (if not supplied)

STEP 5



Select contact block. (previous page)

### 30.5Mm pushbuttons

#### Illuminated operators, bulbs



#### Incandescent bulbs

Supply voltage	Watts	Item no.
6.3V	0.9W	28-2225-33
24V	1.2W	28-2225-13
130V	2.2W	28-2225-24

#### Super bright LED bulbs

(recognisable in outdoor daylight applications - ac/dc)

Colour	6-12V	24V	120V
Red	E22LED612RN	E22LED024RN	E22LED120RN
Green	E22LED612GN	E22LED024GN	E22LED120GN
Yellow	E22LED612YN	E22LED024YN	E22LED120YN
White	E22LED612WN	E22LED024WN	E22LED120WN



#### Bright LED bulbs - single chip (ac/dc)

Colour	6V	12V	24V
Red	21BA9SL6R	21BA9SL12R	21BA9SL24R
Green	21BA9SL6V	21BA9SL12V	21BA9SL24V
Yellow	21BA9SL6G	21BA9SL12G	21BA9SL24G
White	21BA9SL6W	21BA9SL12W	21BA9SL24W

#### Neon bulbs

Supply voltage	Colour	Item no.
110V	Clear	BA9S110N
240V	Clear	BA9S240N
240V	Green	BA9S240NG
240V	Red	BA9S240NR

#### Bright LED bulbs - single chip (ac/dc)

Colour	110V	240V
Red	21BA9SL110R	21BA9SL240R
Green	21BA9SL110V	21BA9SL240V
Yellow	21BA9SL110Y	21BA9SL240A
White	21BA9SL110W	21BA9SL240W



30.5Mm pushbuttons

Selector switch operators,

2 Position selector switches



Description (M = Maintained, S = Spring Return)	Chrome	Corrosion resistant
	<b>T4011</b>	<b>E34VFB</b>
	<b>T4081</b>	<b>E34VEB</b>

4 Position selector switches

Description (M = Maintained, S = Spring Return)	Cam code*	Chrome	Corrosion resistant
Maintained	7	<b>T4067</b>	<b>E34VTB</b>

\* See cam selection chart to determine cam code.

3 Position selector switches

Description (M = Maintained, S = Spring Return)	Cam code*	Chrome	Corrosion resistant
	2	<b>T4022</b>	<b>E34VGB</b>
	3	<b>T4023</b>	<b>E34VHB</b>
	4	<b>T4024</b>	-
	6	<b>T4026</b>	-
	2	<b>T4032</b>	<b>E34VJB</b>
	3	<b>T4033</b>	<b>E34VKB</b>
	2	<b>T4042</b>	<b>E34VLB</b>
	3	<b>T4043</b>	<b>E34VMB</b>
	2	<b>T4052</b>	<b>E34VNB</b>
	3	<b>T4053</b>	<b>E34VPB</b>



Selector switch  
knobs & levers

Knobs & levers

Description	Material	Item no.
Knob	Plastic	<b>E34K1</b>
	Metal	<b>T341M</b>
Lever	Plastic	<b>E34L1</b>
	Plastic	<b>E34A1*</b>

\* For maintained operators only.

Selector switches & joystick operators, cam selection guide

Cam selection chart showing contact sequence

Item No. of contact block	Circuit ①	Position selector switch					
		2	3	3	3	3	4
		Cam code no. 1	Cam code no. 2	Cam code no. 3	Cam code no. 4	Cam code no.6	Cam code no.7
T1P	A.N.C.	XO	OXO	OXX	XOO	XOO	XOOO
	B.N.O.	OX	OOX	OOX	OXO	OXO	OXOO
T1P	A.N.O.	OX	XOX	XOO	OXX	OOX	OOXO
	B.N.C.	XO	XXO	XXO	XOX	OOX	OOOX
T2P	A.N.O.	OX	XOX	XOO	OXX	OOX	OOXO
	B.N.O.	OX	OOX	OOX	OXO	OXO	OXOO
T3P	A.N.C.	XO	OXO	OXX	XOO	XOO	XOOO
	B.N.C.	XO	XXO	XXO	XOX	OOX	OOOX

Switching angle 60° between each position. Rated for ac only. Refer to actual installation instructions given with each switch for additional switching combinations. To determine the number of the cam you require & the correct contact block, select the contact sequence desired from table above. O = contacts open, x = contacts closed. The cam number is shown at top of column. The item number of the appropriate contact block is shown in column 1. At extreme left of table.

① Each contact block contains two contact circuits. The top set of contacts is identified as 'circuit a' & the lower set as 'circuit b' is indicated in the table. The chart shows the contact arrangements with the three contact blocks available & in each operator position. Additional contacts are obtainable by stacking contact blocks up to a maximum of 6 blocks (12 circuits). A maximum of 2 can be used with cam 6.

STEP 1



Select bare shaft operator  
(previous page)

STEP 2

Choose cam based on contact sequence from cam selection guide table above (applies to 3 position selector switches only)

STEP 3



Select knob or lever

STEP 3





Select contact block.  
(previous page)

### 30.5mm Pushbuttons

#### Key operated selector switches

##### 2 Position key operated selector switches




2 Position	Cam	Key removal	Chrome	Corrosion resistant
	-	Right & Left	<b>T15113</b>	<b>E34KFB3</b>
	-	Left Only	<b>T15712</b>	<b>E34KEB2</b>

##### Spare key

Description	Item no.
Replacement Keys (2)	<b>TA152</b>

Other key codes are available contact eaton for more information.

##### 3 Position key operated selector switches

3 Position	Cam	Key removal	Chrome	Corrosion resistant
	2	Left Right & Centre	<b>T15227</b>	<b>E34KGB7</b>
	3	Left Right & Centre	<b>T15237</b>	<b>E34KHB7</b>
	4	Left Right & Centre	<b>T15247</b>	-
	6	Left Right & Centre	<b>T15267</b>	-
	2	Right & Centre	<b>T15325</b>	<b>E34KJB5</b>
	3	Right & Centre	<b>T15335</b>	<b>E34KKB5</b>
	2	Centre Only	<b>T15424</b>	<b>E34KLB4</b>
	3	Centre Only	<b>T15434</b>	<b>E34KMB4</b>



#### STEP 1



Select switch operator

#### STEP 2

Choose cam based on contact sequence from cam selection guide table above (applies to 3 position selector switches only)

#### STEP 3



Select contact block.  
(previous page)

# Power control

## Control and indication

### 30.5Mm pushbuttons

#### Selector switches & joystick operators, joystick operators



2 position Operator



Latched Operator



4 position without latch

**Two-Position Joystick Operators**  
The device mounts in the standard 30.5 mm mounting hole.

**Four-Position Joystick Operators**  
The joystick operated control unit is intended for AC application only. The panel area required for the 4-position operator is equivalent to two standard pushbutton operators.

**Latched Joystick Operators**  
The latch holds the lever in the centre position. The trigger latch must be released before lever can moved into any position.

#### 2 Position joystick operator

Description	Item no.
2 position operator - Momentary Up & Down	T452

#### 4 Position joystick operators (spring return only)

Description	Item no.
4 position - Without Latch	T450
4 position - With Latch	T460

#### 4 Position joystick operators (maintained)

Description	Item no.
4 position - Without Latch	10250 T451_*
4 position - With Latch	10250 T461_*

\*Maintained Position  
For maintained position (non-spring return), locate required maintained position or positions of operating lever in the Maintained table below & add appropriate Suffix Number to the Item Number selected from the table above.

#### Maintained positions

Up	Down	Left	Right	Suffix No.*
X	—	—	—	1
—	X	—	—	2
—	—	X	—	3
—	—	—	X	4
X	X	—	—	5
X	—	X	—	6
X	—	—	X	7
—	X	X	—	8
—	X	—	X	9
—	—	X	X	10
X	X	X	—	11
X	X	—	X	12
X	—	X	X	13
—	X	X	X	14
X	X	X	X	15

#### Contact block selection & mounting

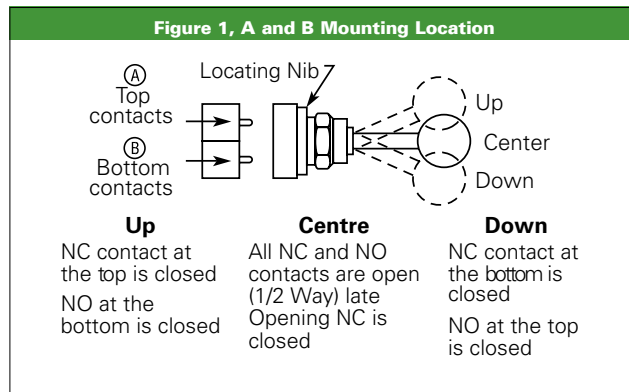
Handle position			Contact block	Type	Mounting location	
Up	Centre	Down			Top	Bottom
			T51P	1NC		
Left	Centre	Right			A	B
			T45	2LONC		
			T3P	1NC 1NC		
			T45	1LONC 1LONC		
			T44	1NC		
				1NO		
				1NC		
				1NO		

X = closed circuit, O = open circuit.

NO = Normally Open, NC = Normally Closed, LONC = Late Opening Normally Closed.

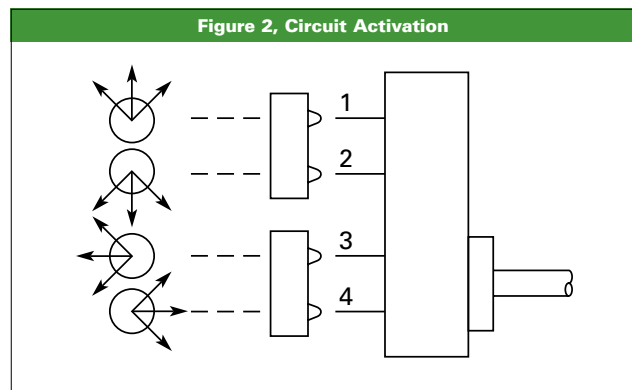
Four circuits in single block depth — rated 300V max.

#### Two-position joystick operators - contact block operation



#### Four-position joystick operators - contact block operation

Contact blocks mount directly on the back of the operator. For reliable operation, the maximum number of contact blocks that should be installed behind each operator lever is 2 (4 contacts total). Figure 2 identifies the circuits activated by each of the eight possible lever positions. Contact block plungers 1, 2, 3, 4 are depressed (change state) when handle is in the position indicated by arrows in Figure 2.



#### Application caution

Joystick operators are not recommended on certain DC applications above 24V DC which may involve lightly engaging the contacts (teasing) to achieve speed control, positioning, jogging, etc. Excessive arcing & deterioration of the contacts will occur.

### 30.5Mm pushbuttons control station and enclosures

Standard pushbuttons, flush, extended & half-shrouded buttons,

#### Diecast aluminium enclosures

##### Standard

No. Of holes	Single - depth T series	Corrosion resistant
1	TN1	E34N1
2	TN2	E34N2
3	TN3	E34N3
4	TN4	E34N4

#### Corrosion resistant

No. of holes	Double depth T series	Corrosion resistant
1	TN11	E34N11
2	TN12	E34N12
3	TN13	E34N13
4	TN14	E34N14
6	TN15	-

1-2 Hole: 3/4 inch conduit entry hole, 2-6 hole: 1 inch conduit bottom-entry hole, 1.5 Inch unf thread IP66.



TN4

TN2

TN11

#### Stainless steel enclosures

##### Stainless steel

No. of holes	316 Stainless
1	XBS130
2	XBS230
3	XBS330
4	XBS430
6	XBS630
8	XBS830
9	XBS930

#### Fibreglass enclosures

##### Fibreglass

No. of holes	Item no.
1	TFG11
2	TFG12
3	TFG13

20mm non-threaded conduit bottom-entry hole IP66, UV stabilised.



XBS330

TFG12

#### Assembled control stations

##### Push-pull stop stations (padlockable)

Operator head	Contacts	Item no.
Metal mushroom 45mm	1LONC	10250T700M
	1ECNO,1LONC	10250T701M
Metal palm 63.5mm	1LONC	10250T700P
	1ECNO,1LONC	10250T701P



10250T700P

##### "Staylock" push-pull stop stations (non-padlockable)

Operator head	Contacts	Padlock included	Item no.
	1LONC	NO	ESM9/5
Metal Mushroom 45mm	1LONC	YES	ESM9/5P
	1ECNO,1LONC	NO	ESM9/6
	1ECNO,1LONC	YES	ESM9/6P
	1LONC	NO	ESP6/5
Metal Palm 63.5mm	1LONC	YES	ESP6/5P
	1ECNO,1LONC	NO	ESP6/6
	1ECNO,1LONC	YES	ESP6/6P



ESM9/6

##### Stop start pushbutton station

Description	Item no.
Fibreglass Enclosure. Start: green pushbutton with boot Stop: red padlockable mushroom with boot	T3500



T3500

# Power control

## Control and indication



TA38



TA2



TA26



10250TA64



TA48



TA85



TA25



10250TA6  
E34TA6



10250TA12  
E34TA12



10250TA15  
E34TA15



TA56  
10250TA56Y



10250ED1241



TA8



TA22

### 30.5mm Pushbuttons accessories

Padlock attachments	Description	Item no.
With hinged transparent flap. For flush or extended pushbuttons, & knob-operated selector switches	Plastic Cover	<b>TA38</b>
For flush stop button. Permits locking NC contacts in open position with padlock. Prevents operation of button. Will not lock NO contact	Chrome Corrosion resistant	<b>TA2</b> <b>E34TA2</b>
For extended pushbutton. Permits locking NC contacts in open position with padlock	Chrome	<b>TA26</b>
For illuminated pushbuttons. Locks in down position only	Chrome	<b>10250TA64</b>

Boots	Colour	Item no.
Protective boot for flush pushbutton operators	Clear	<b>10250TA46</b>
	Blue	<b>91000TA46</b>
	Black	<b>TA47</b>
	Red	<b>TA48</b>
	Green	<b>TA49</b>
Protective boot for extended pushbutton operators	Yellow	<b>TA50</b>
	Black	<b>TA3</b>
	Red	<b>TA4</b>
Protective boot for illuminated pushbuttons.	Green	<b>TA10</b>
	Clear	<b>TA85</b>
Protective boot for momentary mushroom operators on page 295. Not suitable for use with T140 operator.	Black	<b>TA88</b>

Shrouds & guards	Description	Item no.
Shroud for Mushroom Head Operator	Prevents accidental operation. Not for push-pull operators. Momentary operators only	<b>10250TA6</b> <b>E34TA6</b>
Extended Retaining Nut	Replaces standard nut & provides guard for flush head pushbutton operators.	<b>10250TA12</b> <b>E34TA12</b>
Guard for Illuminated Pushbutton	Guard for Illuminated Pushbutton	<b>10250TA15</b> <b>E34TA15</b>
Shroud	For jumbo mushroom head operator. Available in Grey & Yellow (Not for push-pull operators, momentary operators only.)	<b>TA56</b> <b>10250TA56Y</b>
Half Shroud – Yellow	For jumbo mushroom head operator.	<b>10250ED1241</b>

Hardware & kits	Description	Item no.
Fingerproof Shroud	10 per Package Fits new style contact blocks & light units.	<b>10250TA101</b>
Spacer Ring	Used when legend plate is not required. Set of 5	<b>TA8</b>
Base Mounting Spacers	Equivalent to contact block in depth — Complete with screws, washers, etc. For use in pushbutton stations for base mounting contact blocks. 1 Block Deep 2 Blocks Deep	<b>TA22</b> <b>TA23</b>



30.5mm Pushbuttons accessories

Special operators & attachments	Description	Item no.
Wobble Stick	Complete with retaining nut — fits standard button.	TA5
Maintained Contact Attachment	Mechanically interlocks two buttons & provides position indication for one. Use with two pushbutton operators & one or more contact blocks.	TA1

Hole plugs	Description	Item no.
Plug	For unused holes — Steel, painted grey	10250TA7
Stainless Steel Plug	For unused holes — Stainless Steel - Square	E30KT5

Tools	Description	Item no.
Octagonal Tool	Octagonal notched to fit over selector switch lever	10250TA95
Tool for Tightening Boots	Used to install boot	TA96
Allen Key	Used for removal of jumbo mushroom head.	10250TA102

Special light modules	Description	Item no.
Flasher Module	Changes any AC illuminated device to a controlled flashing light. 24V s 120V	TFL2 TFL1



TA5



TA1



10250TA7



10250TA95



TA96



10250TA102



TFL2

Legend Plates

Description	Item no.
Aluminium T-Range, large size, black unless marked "red"	TJ_ _
Aluminium T-Range, medium size, black unless marked "red"	TM_ _
Stainless steel T-Range, medium size, black, blank	TM36S
Stainless steel T-Range, medium size, red, blank	TM37S
Plastic E34 range universal size, black unless marked "red"	E34SP_ _

TJ34

Legend	T-Range large Item no.	T-Range medium Item no.	E34 universal Item no.
Blank	TJ36	TM36	TSP76
Blank (red)	TJ37	TM37	TSP77
Off (red)	TJ24	TM24	E34SP24
On	TJ25	TM25	E34SP25
Run	TJ31	TM31	E34SP31
Start	TJ33	TM33	E34SP33
Stop (red)	TJ34	TM34	E34SP34

TM31

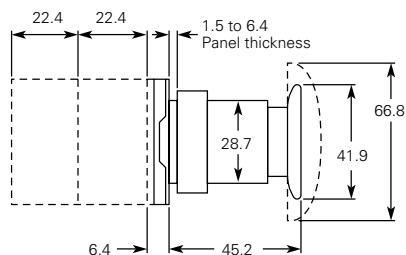
E34SP34

# Power control

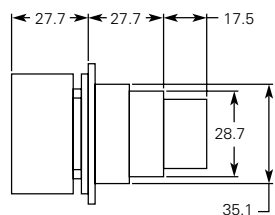
## Control and indication

### 30.5mm Pushbuttons

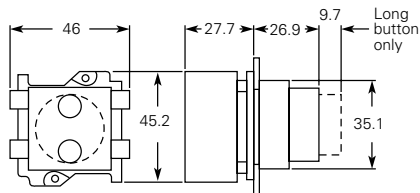
#### 30.5mm Pushbuttons, dimensions & technical data



**Push-Pull Switch**

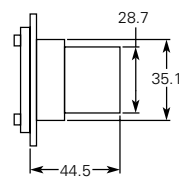
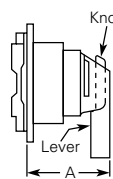


**Illuminated Pushbutton**

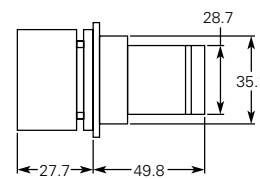


**Flush and long pushbutton half shroud is the same as the long pushbutton with lower half of guard ring cut back**

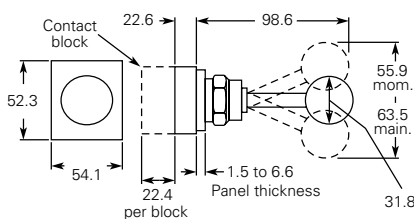
Operator	Dim. A
Knob	35.1
Lever	38.1



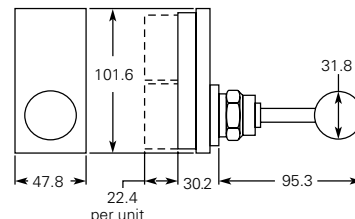
**Key operated selector switch**



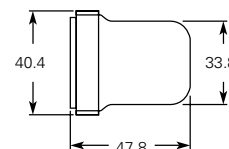
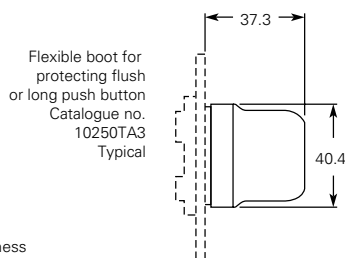
**Illuminated Selector Switch**



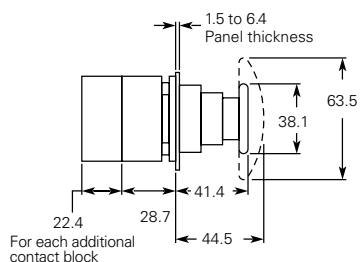
**2-position joystick operator**



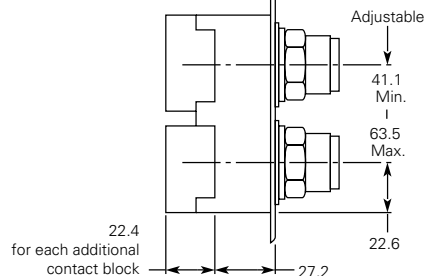
**4-position joystick operator**



Transparent flexible boot for illuminated pushbutton  
Catalogue no. 10250TA25



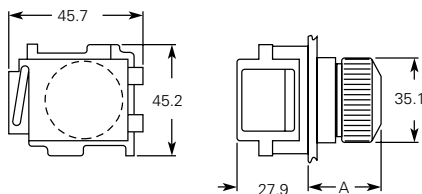
**Mushroom and jumbo head pushbutton**



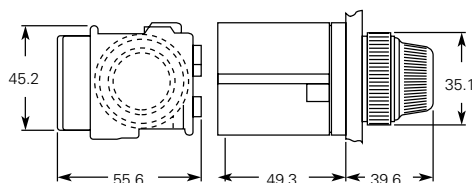
**Maintained Pushbutton  
Catalog No. 10250TA66  
Typical**

Lens	Dimension A
Plastic	35.1
Glass	39.6

Approximate Dimensions in mm



**Indicating Light - Transformer Type**



**Press-To-Test Indicating Light - Transformer Type**

#### Diecast aluminium enclosure dimensions

	Wide	High	Single depth	Double depth
1	98.6	101.6	57.2	76.3
2	98.6	149.4	57.2	76.3
3	98.6	196.9	57.2	76.3
4	98.6	244.6	57.2	76.3

#### Fibreglass enclosure dimensions

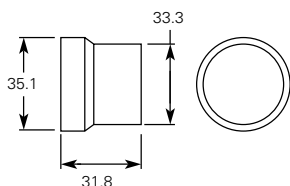
	Wide	High	Deep
1	97	100	75
2	97	150	75
3	97	200	75

#### 316 Stainless steel enclosure dimensions

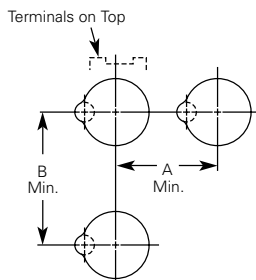
	Wide	High	Deep
1	120	120	84
2	120	160	84
3	120	220	84
4	120	280	84

### 30.5mm Pushbuttons

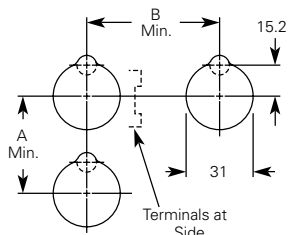
#### 30.5mm Pushbuttons, dimensions & technical data



Extended Retaining Nut  
Catalog No. 10250TA12



Horizontal Rows



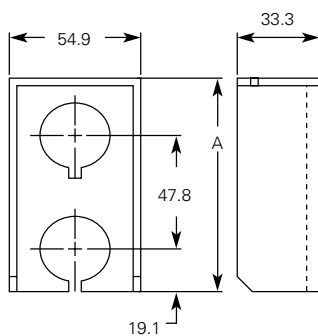
Vertical Rows

#### Panel drilling and minimum spacing

Legend plate	Dim. in mm	
	A Min	B Min.
<b>1 or 2 Circuit contact blocks</b>		
Small or None	41.4	57.2
Standard	44.5	57.2
Jumbo ①	57.2	57.2
Extra Large	63.5	66
<b>4 Circuit contact block 10250T44</b>		
Small or None	47.8	57.2
Standard	47.8	57.2
Jumbo ①	57.2	57.2
Extra Large	63.5	66

① If Jumbo plates are to be placed one above the other vertically, add 3.3 to minimum dimensions listed.

Note: Locating nib hole or notch is 3.45 - 3.56 mm #29 drill.



Multiple Button Guard

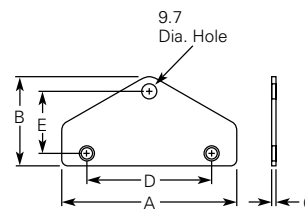
Number of elements	Dimension A
2	101.6
3	149.4
4	202.2
7	339.9

Legend plate	Dim. in mm	
	A	B
<b>1/2 Round Legend Plates</b>		
Small	39.6	23.1
Standard	40.4	27.2
Jumbo	52.3	38.9
<b>Square Legend Plates</b>		
Small	40.4 Sq.	22.9
Standard	44.5 Sq.	26.9 ②
Jumbo	55.6 Sq.	38.1
Extra Large	62.0 Sq.	41.4

② For plastic legend plate, Dimension B is 28.4

Enclosure size (No. of elements)	Dimensions in inches (mm)			Mounting	
	Wide A	High B	Deep C	D	E
2, 3, & 4	95.3	49.3	3.3	68.3	35.1
6 & 7	101.6	55.6	3.3	73.2	41.4

Approximate Dimensions in mm



Chain Hook Bracket

# Power control

## Control and indication

### 30.5mm Pushbuttons, dimensions & technical data

#### Features

- Heavy-duty zinc die cast construction
- Enclosed silver contacts with reliability nibs
- Diaphragm seals with drainage holes
- Grounding nibs on the operator casing

#### Benefits

- Reliability nibs improve contact reliability even under dry circuit & fine dust conditions
- Drainage holes prevent buildup of liquid inside the operator which can prevent operation in freezing environments
- Grounding nibs bite through paint & other coatings to provide secure ground

#### Contact operation

Slow make & break. All normally closed contacts have positive opening operation, i.e., normally closed contacts are forced open in the event of contact weld or spring breakage.

#### Standards & certifications

- CE EN60947-5-1
- UL 508 — File No. 131568
- CSA C22.2 No. 14 — File No. LR68551

Ingress protection (when mounted in similarly rated enclosure):

- Standard Indicating Lights: UL (NEMA) Type 1, 2, 3, 3R, 3S, 4, 4X, 12, 13, IEC IP65
- All Other Operators: UL (NEMA) Type 1, 2, 3, 3R, 4, 4X, 12, 13, IEC IP65

#### Technical data & specifications

Mechanical ratings:

- Frequency of operation: All pushbuttons 6000 operations/hr, Key & lever selector switches 3000 operations/hr, Auto-latch devices 1200 operations/hr.
- Life: Pushbuttons 10 x 106 operations, Contact blocks: 10 x 106 operations, PresTest units 10 x 106 operations, Lever & key selector switches 0.25 x 106 operations, Twist to release pushbuttons 0.3 x 106 operations,
- Shock resistance: Duration 20 mS 5g

Climate conditions:

- Operating Temperature (-17° to 66°C), Storage Temperature (-40° to 80°C), Altitude 2,000m (6,562 ft.), Humidity Max. 95% RH @ 60°C

Terminals:

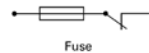
- Marking: NC-NO on the contact block to meet the NEMA requirements. Dual marking system 1 – 2 for normally closed, 3 – 4 for normally open to meet BS5472 (Cenelec EN50 005)
- Clamps: Terminals are saddle clamp type for 1 x 22 AWG (0.34 mm<sup>2</sup>) to 2 x 14 AWG (2.5 mm<sup>2</sup>) conductors
- Torque = 7 lb-in (0.8 Nm)
- Degree of protection against direct electrical contact: IP2X with fingerproof shroud

Light units:

- Transformers: will withstand short circuit for 1 hour per IEC 60997-5-1
- Bulbs — average life: Transformer type 20,000 hrs., Resistor/direct voltage type 2500 hrs. minimum @ rated V, LED 60,000 to 100,000 hrs.

Electrical ratings:

- Insulation: U<sub>i</sub> = 660V AC or DC
- Thermal: I<sub>th</sub> = 10A
- Short Circuit Coordination to IEC/EN 60947-5-1:
- Rated conditional short circuit current: 1 kA
- Fuse type: GE Power Controls TIA 10, Red Spot Type gG, 10A, 660V AC, 460V DC, BS88-2, IEC 60269-2-1



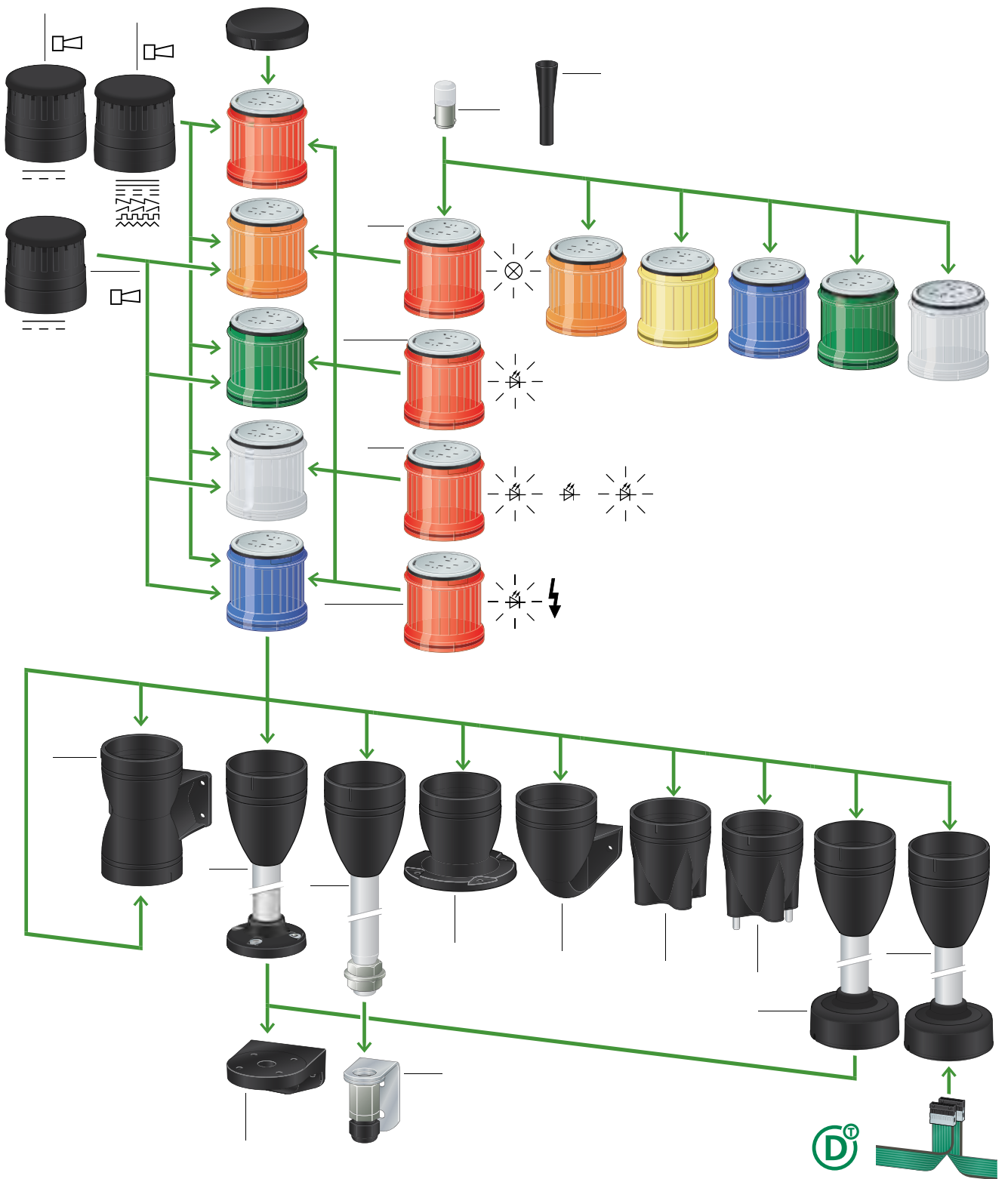
- UL rating: A600, P600: AC load life duty cycle 1200 operations/hour (– 10A: 110V pf 0.4 – 1 x 106 operations, – 5A: 250V pf 0.4 – 1 x 106 operations, – 2A: 660V pf 0.4 – 1 x 106 operations)
- Switching capacity: AC15 rated make/break (11 x I<sub>e</sub> at 1.1 x U<sub>e</sub>), (– 6A: 120V pf 0.3, – 4A: 240V pf 0.3, – 2A: 660V pf 0.3). DC13 rated make/break (1.1 x I<sub>e</sub> at 1.1 x U<sub>e</sub>), (– 1.0A: 125V L/R 0.95 at 300 mS, – .55A: 250V L/R 0.95 at 300 mS, – .1A: 660V L/R 0.95 at 300 mS, – 10A: 110V pure resistive)
- Maximum ratings for logic level & hostile atmosphere application: Maximum amperes: 0.5A  
Maximum volts: 120V AC/DC

#### Contact block

Meet or exceed NEMA rating designations **A600, A300 and B300 AC**  
**P600 DC**

Description	Volts SC 50 or 60 Hz				Volts DC		
	120	240	480	60	24	125	250
Make and Emerg. Interruptimng capacity (Amp)	60	30	15	12	5.7	1.1	0.55
Normal load break (Amp)	6	3	1.5	1.2	5.7	1.1	0.55
Thermal current (Amp)	10	10	10	10	5.0	5.0	5.0
<b>Voltampress(VA)</b>							
Make and Emerg. Interruptimng capacity	7200	7200	7200	7200	138	138	138
Normal load break	720	720	720	720	138	138	138

Stacklights - SL7 range





Stacklights - SL7 range

Complete devices

Continuous light, LED, UL type 4/4X/13, IP66



SL7-100-L-RG-24LED

Rated operational voltage (Ue V)	Number of modules	Color	Function	Standard pack	Item no.
Base Module with Foot and 100 mm Tube					
24 Vac/Vdc	2	Red/Green		1	SL7-100-L-RG-24LED
	3	Red/Amber/ Green			SL7-100-L-RAG-24LED

Light Module with LED

Continuous light, UL type 4/4X/13, IP66



White



Amber



Yellow



Green



Blue



Red

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	SL7-L24-B
	Green			SL7-L24-G
	Red			SL7-L24-R
	White			SL7-L24-W
	Yellow			SL7-L24-Y
	Amber			SL7-L24-A
110/120 Vac	Blue		1	SL7-L120-B
	Green			SL7-L120-G
	Red			SL7-L120-R
	White			SL7-L120-W
	Yellow			SL7-L120-Y
	Amber			SL7-L120-A
230/240 Vac	Blue		1	SL7-L230-B
	Green			SL7-L230-G
	Red			SL7-L230-R
	White			SL7-L230-W
	Yellow			SL7-L230-Y
	Amber			SL7-L230-A

Flashing light, UL type 4/4X/13, IP66, 2 Hz

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	SL7-BL24-B
	Green			SL7-BL24-G
	Red			SL7-BL24-R
	White			SL7-BL24-W
	Yellow			SL7-BL24-Y
	Amber			SL7-BL24-A
110/120 Vac	Blue		1	SL7-BL120-B
	Green			SL7-BL120-G
	Red			SL7-BL120-R
	White			SL7-BL120-W
	Yellow			SL7-BL120-Y
	Amber			SL7-BL120-A
230/240 Vac	Blue		1	SL7-BL230-B
	Green			SL7-BL230-G
	Red			SL7-BL230-R
	White			SL7-BL230-W
	Yellow			SL7-BL230-Y
	Amber			SL7-BL230-A

## Stacklights - SL7 range

### Light module with LED

Strobe light, UL type 4/4X/13, IP66, 1.4 Hz

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	SL7-FL24-B
	Green			SL7-FL24-G
	Red			SL7-FL24-R
	White			SL7-FL24-W
	Yellow			SL7-FL24-Y
	Amber			SL7-FL24-A
110/120 Vac	Blue		1	SL7-FL120-B
	Green			SL7-FL120-G
	Red			SL7-FL120-R
	White			SL7-FL120-W
	Yellow			SL7-FL120-Y
	Amber			SL7-FL120-A
230/240 Vac	Blue		1	SL7-FL230-B
	Green			SL7-FL230-G
	Red			SL7-FL230-R
	White			SL7-FL230-W
	Yellow			SL7-FL230-Y
	Amber			SL7-FL230-A



White



Amber



Yellow

### SL7 Light module with high-output LED

Continuous light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
High-performance LED for maximum signaling effect				
24 Vac/Vdc	Blue		1	SL7-L24-B-HP
	Green			SL7-L24-G-HP
	Red			SL7-L24-R-HP
	White			SL7-L24-W-HP
	Yellow			SL7-L24-Y-HP
	Amber			SL7-L24-A-HP



Green

Strobe light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
High-performance LED for maximum signaling effect, 1.4 Hz				
24 Vac/Vdc	Blue		1	SL7-FL24-B-HP
	Green			SL7-FL24-G-HP
	Red			SL7-FL24-R-HP
	White			SL7-FL24-W-HP
	Yellow			SL7-FL24-Y-HP
	Amber			SL7-FL24-A-HP



Blue



Red

Multi-Strobe light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
High-performance LED for maximum signaling effect, 1-2.6 Hz				
24 Vac/Vdc	Blue		1	SL7-FL24-B-HPM
	Green			SL7-FL24-G-HPM
	Red			SL7-FL24-R-HPM
	White			SL7-FL24-W-HPM
	Yellow			SL7-FL24-Y-HPM
	Amber			SL7-FL24-A-HPM

Stacklights - SL7 range

**SL7 Light module for incandescent bulb**

Continuous light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
Without Light Elements, Incandescent Bulb, Maximum 7W				
<250 Vac/Vdc	Blue		1	<b>SL7-L-B</b>
	Green			<b>SL7-L-G</b>
	Red			<b>SL7-L-R</b>
	White			<b>SL7-L-W</b>
	Yellow			<b>SL7-L-Y</b>
	Amber			<b>SL7-L-A</b>

**SL7 Acoustic modules**

Continuous tone or pulsed tone, UL type 4/4X/13, IP66 ①



SL7-AP24

Rated operational voltage (Ue V)	Rated operational current (Ie mA)	Color	Function	Sound type	Standard pack	Item no.
Adjustable with internal DIP switches. Sound pressure 100 dB, adjustable with internal potentiometer. f = 2800 Hz.						
24 Vac/Vdc	Maximum 92				1	<b>SL7-AP24</b>
110/120 Vac	Maximum 41	Black				<b>SL7-AP120</b>
230/240 Vac	Maximum 43					<b>SL7-AP230</b>

Continuous tone or pulsed tone, external actuation, UL type 4/4X/13, IP66 ①



SL7-AP120-E

Rated operational voltage (Ue V)	Rated operational current (Ie mA)	Color	Function	Sound type	Standard pack	Item no.
Assigned two inputs (two modules). Sound pressure 100 dB, adjustable with internal potentiometer. f = 2800 Hz.						
24 Vac/Vdc	Maximum 92				1	<b>SL7-AP24-E</b>
110/120 Vac	Maximum 41	Black				<b>SL7-AP120-E</b>
230/240 Vac	Maximum 43					<b>SL7-AP230-E</b>

Continuous tone or pulsed tone, external actuation, UL type 4/4X/13, IP66 ①



SL7-AP230-M

Rated operational voltage (Ue V)	Rated operational current (Ie mA)	Color	Function	Sound type	Standard pack	Item no.
Adjustable with internal DIP switch. Sound pressure 100 dB, adjustable with internal potentiometer. f = 500–2700 Hz.						
24 Vac/Vdc	Maximum 115				1	<b>SL7-AP24-M</b>
110/120 Vac	Maximum 45	Black				<b>SL7-AP120-M</b>
230/240 Vac	Maximum 43					<b>SL7-AP230-M</b>

① Place only at the highest position on a pole.

Stacklights - SL7 range

SL7 Base modules

For horizontal mounting—Includes cover, maximum 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
Base with aluminum tube and plastic foot Spring-loaded terminals	100 mm	Black	1	SL7-L...	<b>SL7-CB-100</b>
	250 mm	aluminum		SL7-BL...	<b>SL7-CB-250</b>
	400 mm	color tube		SL7-FL... SL7-AP...	<b>SL7-CB-400</b>
Base with aluminum tube and 3/4 in NPT threaded base Spring-loaded terminals	100 mm	Black	1	SL7-L...	<b>SL7-CB-T-100</b>
	250 mm	aluminum		SL7-BL...	<b>SL7-CB-T-250</b>
	400 mm	color tube		SL7-FL... SL7-AP...	<b>SL7-CB-T-400</b>
Base with internal (on the inside) fixing holes Spring-loaded terminals		Black	1	SL7-L... SL7-BL... SL7-FL... SL7-AP...	<b>SL7-CB-IMH</b>
Base with built-in (pre-assembled) fixing screws Spring-loaded terminals		Black	1	SL7-L... SL7-BL... SL7-FL... SL7-AP...	<b>SL7-CB-IMS</b>
Base with external fixing holes Spring-loaded terminals		Black	1	SL7-L... SL7-BL... SL7-FL... SL7-AP...	<b>SL7-CB-EMH</b>
Base with base adapter for slipping onto place (rapid mounting and wiring system) Screw terminals	100 mm	Black	1	SL7-L...	<b>SL7-FMS-100</b>
	250 mm	aluminum		SL7-BL...	<b>SL7-FMS-250</b>
	400 mm	color tube		SL7-FL... SL7-AP...	<b>SL7-FMS-400</b>
Base with base adapter for slipping onto place (rapid mounting and wiring system) Blade terminal SWD4-8MF2 Maximum 0.3A per module External power supply connectable (24 Vdc) Configurable with SWD-Assist (planning and ordering help)	100 mm		1	SL7-L... SL7-BL... SL7-FL... SL7-AP...	<b>SL7-SWD</b>

For vertical mounting—includes cover, maximum 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
Vertical base with bracket Spring-loaded terminals		Black	1	SL7-L... SL7-BL... SL7-FL... SL7-AP...	<b>SL7-CB-FW</b>

For mounting on both sides—includes cover, maximum 2 x 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
Base with external fixing holes Spring-loaded terminals		Black	1	SL7-L... SL7-BL... SL7-FL... SL7-AP...	<b>SL7-CB-D</b>



SL7-CB-250



SL7-CB-EMH



SL7-CB-100



SL7-CB-FW



SL7-CB-D



## Stacklights - SL4 range

### Complete devices

Continuous light, LED, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Number of modules	Color	Function	Standard pack	Item no.
Base Module with Foot and 100 mm Tube					
24 Vac/Vdc	2	Red/Green		1	<b>SL4-100-L-RG-24LED</b>
	3	Red/Amber/ Green			<b>SL4-100-L-RAG-24LED</b>

### Light module with LED

Continuous light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	<b>SL4-L24-B</b>
	Green			<b>SL4-L24-G</b>
	Red			<b>SL4-L24-R</b>
	White			<b>SL4-L24-W</b>
	Yellow			<b>SL4-L24-Y</b>
	Amber			<b>SL4-L24-A</b>
110/120 Vac	Blue		1	<b>SL4-L120-B</b>
	Green			<b>SL4-L120-G</b>
	Red			<b>SL4-L120-R</b>
	White			<b>SL4-L120-W</b>
	Yellow			<b>SL4-L120-Y</b>
	Amber			<b>SL4-L120-A</b>
230/240 Vac	Blue		1	<b>SL4-L230-B</b>
	Green			<b>SL4-L230-G</b>
	Red			<b>SL4-L230-R</b>
	White			<b>SL4-L230-W</b>
	Yellow			<b>SL4-L230-Y</b>
	Amber			<b>SL4-L230-A</b>

Flashing light, UL type 4/4X/13, IP66, 2 Hz

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	<b>SL4-BL24-B</b>
	Green			<b>SL4-BL24-G</b>
	Red			<b>SL4-BL24-R</b>
	White			<b>SL4-BL24-W</b>
	Yellow			<b>SL4-BL24-Y</b>
	Amber			<b>SL4-BL24-A</b>
110/120 Vac	Blue		1	<b>SL4-BL120-B</b>
	Green			<b>SL4-BL120-G</b>
	Red			<b>SL4-BL120-R</b>
	White			<b>SL4-BL120-W</b>
	Yellow			<b>SL4-BL120-Y</b>
	Amber			<b>SL4-BL120-A</b>
230/240 Vac	Blue		1	<b>SL4-BL230-B</b>
	Green			<b>SL4-BL230-G</b>
	Red			<b>SL4-BL230-R</b>
	White			<b>SL4-BL230-W</b>
	Yellow			<b>SL4-BL230-Y</b>
	Amber			<b>SL4-BL230-A</b>



SL7-100-L-RG-24LED



White



Amber



Yellow



Green



Blue



Red



Stacklights - SL4 range

Light module with LED

Strobe light, UL type 4/4X/13, IP66, 1.4 Hz



Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	SL4-FL24-B
	Green			SL4-FL24-G
	Red			SL4-FL24-R
	White			SL4-FL24-W
	Yellow			SL4-FL24-Y
	Amber			SL4-FL24-A
110/120 Vac	Blue		1	SL4-FL120-B
	Green			SL4-FL120-G
	Red			SL4-FL120-R
	White			SL4-FL120-W
	Yellow			SL4-FL120-Y
	Amber			SL4-FL120-A
230/240 Vac	Blue		1	SL4-FL230-B
	Green			SL4-FL230-G
	Red			SL4-FL230-R
	White			SL4-FL230-W
	Yellow			SL4-FL230-Y
	Amber			SL4-FL230-A

Multi-strobe light, UL type 4/4X/13, IP66



Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
LED for effective signaling effect with various strobe sequences, 1–2.6 Hz				
24 Vac/Vdc	Blue		1	SL4-FL24-B-M
	Green			SL4-FL24-G-M
	Red			SL4-FL24-R-M
	White			SL4-FL24-W-M
	Yellow			SL4-FL24-Y-M
	Amber			SL4-FL24-A-M

SL4 Light module for Incandescent bulb

Continuous light, UL type 4/4X/13, IP66

Blue

Red

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
Without light elements, incandescent bulb, maximum 4W				
<250 Vac/Vdc	Blue		1	SL4-L-B
	Green			SL4-L-G
	Red			SL4-L-R
	White			SL4-L-W
	Yellow			SL4-L-Y
	Amber			SL4-L-A

SL4 Acoustic modules

Continuous tone or pulsed tone, UL type 4/4X/13, IP66



Rated operational voltage (Ue V)	Rated operational current (Ie mA)	Color	Function	Sound type	Standard pack	Item no.
Adjustable with internal DIP switches. Sound pressure 80 dB, adjustable with internal potentiometer. f = 4000 Hz.						
24 Vac/Vdc	Maximum 39				1	SL4-AP24
110/120 Vac	Maximum 21	Black				SL4-AP120
230/240 Vac	Maximum 21					SL4-AP230

Stacklights - SL4 range

SL7 Base modules

For horizontal mounting—Includes cover, maximum 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
Base with aluminum tube and plastic foot Spring-loaded terminals	100 mm	Black	1	SL4-L...	<b>SL4-PIB-100</b>
	250 mm	aluminum		SL4-BL...	<b>SL4-PIB-250</b>
	400 mm	color tube		SL4-FL... SL4-AP...	<b>SL4-PIB-400</b>
Base with aluminum tube and 3/4 in NPT threaded base Spring-loaded terminals	100 mm	Black	1	SL4-L...	<b>SL4-PIB-T-100</b>
	250 mm	aluminum		SL4-BL...	<b>SL4-PIB-T-250</b>
	400 mm	color tube		SL4-FL... SL4-AP...	<b>SL4-PIB-T-400</b>
Base with internal (on the inside) fixing holes Spring-loaded terminals		Black	1	SL4-L... SL4-BL... SL4-FL... SL4-AP...	<b>SL4-PIB-IMH</b>
Base with built-in (pre-assembled) fixing screws Spring-loaded terminals		Black	1	SL4-L... SL4-BL... SL4-FL... SL4-AP...	<b>SL4-PIB-IMS</b>
Base with external fixing holes Spring-loaded terminals		Black	1	SL4-L... SL4-BL... SL4-FL... SL4-AP...	<b>SL4-PIB-EMH</b>
Base with base adapter for slipping onto place (rapid mounting and wiring system) Screw terminals	100 mm	Black	1	SL4-L...	<b>SL4-FMS-100</b>
	250 mm	aluminum		SL4-BL...	<b>SL4-FMS-250</b>
	400 mm	color tube		SL4-FL... SL4-AP...	<b>SL4-FMS-400</b>
Base with base adapter for slipping onto place (rapid mounting and wiring system) Blade terminal SWD4-8MF2 Maximum 0.3A per module External power supply connectable (24 Vdc) Configurable with SWD-Assist (planning and ordering help)	100 mm		1	SL4-L... SL4-BL... SL4-FL... SL4-AP...	<b>SL4-SWD</b>

For vertical mounting—includes cover, maximum 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
One-sided base with bracket Spring-loaded terminals		Black	1	SL4-L... SL4-BL... SL4-FL... SL4-AP...	<b>SL4-PIB-FW</b>

For mounting on both sides—includes cover, maximum 2 x 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
Base with external fixing holes Spring-loaded terminals		Black	1	SL4-L... SL4-BL... SL4-FL... SL4-AP...	<b>SL4-PIB-D</b>



SL4-PIB-



SL4-PIB-IMH



SL4-PB-EMH



SL4-FMS-



SL4-PIB-FW



SL4-PIB-D

Stacklights - SL range accessories

Mounting brackets



SL7/4-FW

Description	Standard pack	For use with..	Item no.
Mounting brackets for vertical Mounting, plastic	1	SL4-PIB.. SL7-CB..	<b>SL7/4-FW</b>
M20 cable gland for vertical mounting, Metal (includes mounting bracket)	1	SL4-PIB-T.. SL7-CB-T..	<b>SL7/4-FW-T</b>



SL7/4-FW-T

Incandescent bulb tool

Description	Standard pack	For use with..	Item no.
Tool for replacing incandescent bulb	1	SL7-L.. SL4-L...	<b>SL7/4-BET</b>

Incandescent bulbs

Mounting: Ba15d - SL7 series



SL7/4-BET

Lifespan (h)	Rated operational voltage (Ue V)	Power (Watts)	Standard pack	For use with..	Item no.
3000	12	5	1	SL7-L...	<b>SL7-L12</b>
	24	6.5			<b>SL7-L24</b>
	120	7			<b>SL7-L120</b>
	230	6.5			<b>SL7-L230</b>

Mounting: Ba15d - SL4 series

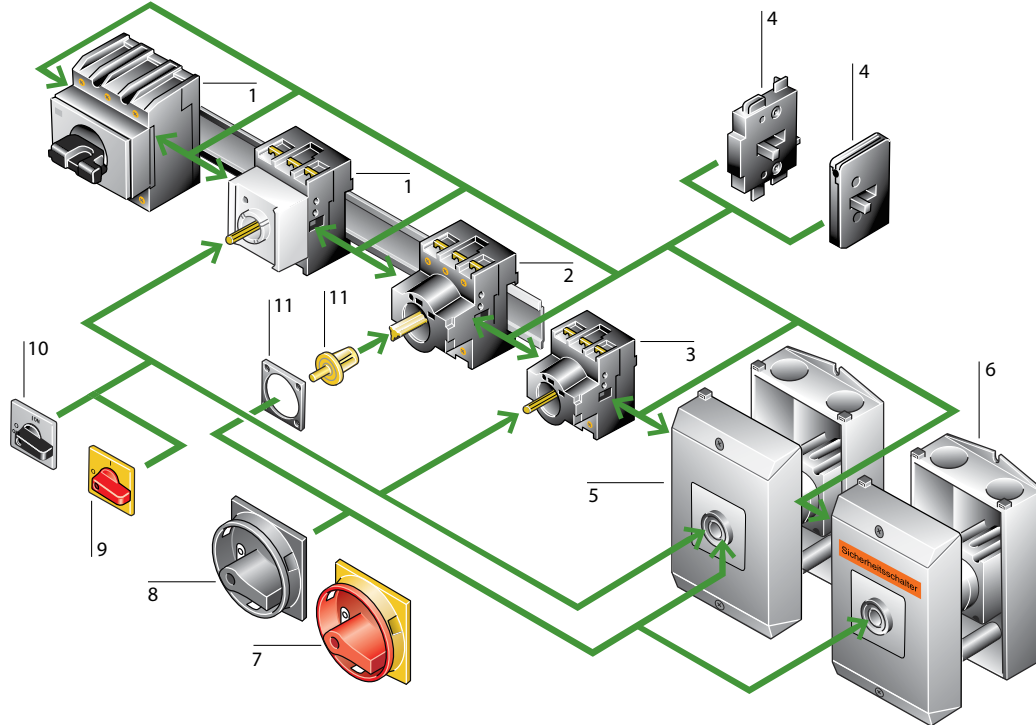


SL7-L12

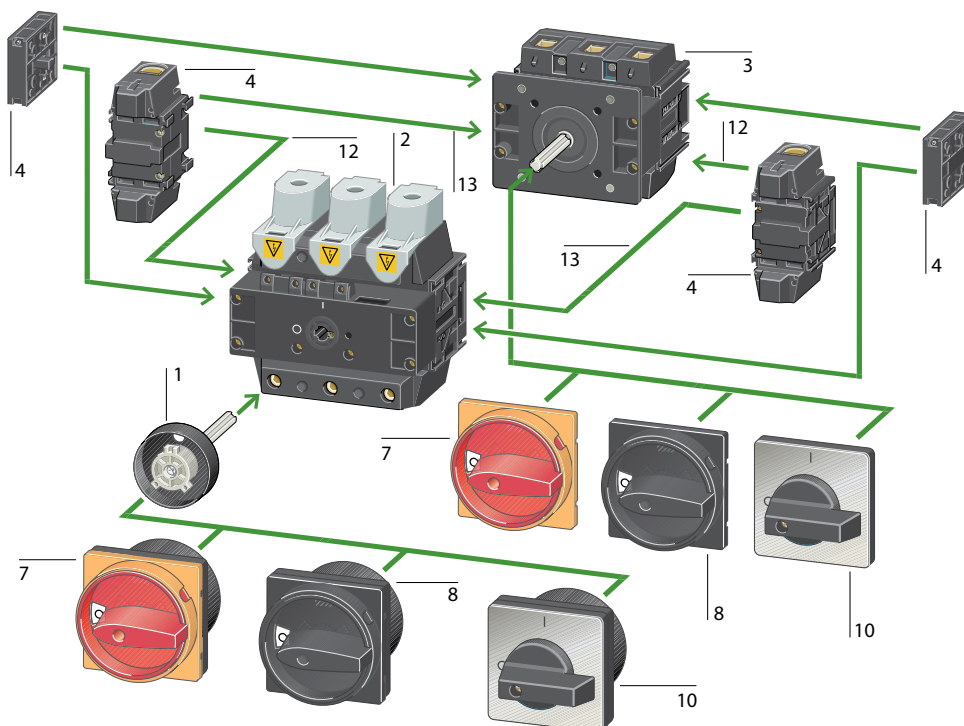
Lifespan (h)	Rated operational voltage (Ue V)	Power (Watts)	Standard pack	For use with..	Item no.
3000	12	4	1	SL4-L...	<b>SL4-L12</b>
	24				<b>SL4-L24</b>
	120				<b>SL4-L120</b>
	230				<b>SL4-L230</b>

Cam switches

ON-OFF switches - P1, P3



ON-OFF switches - P5



- 1 Service distribution board mounting
- 2 Rear mounting
- 3 Flush mounting
- 4 Neutral conductors, auxiliary contacts
- 5 Surface mounting

- 6 Safety switch
- 7 Main switch (kit) for use as emergency switching off device
- 8 Main switch (kit)
- 9 Thumb-grip, for use as emergency switching off device

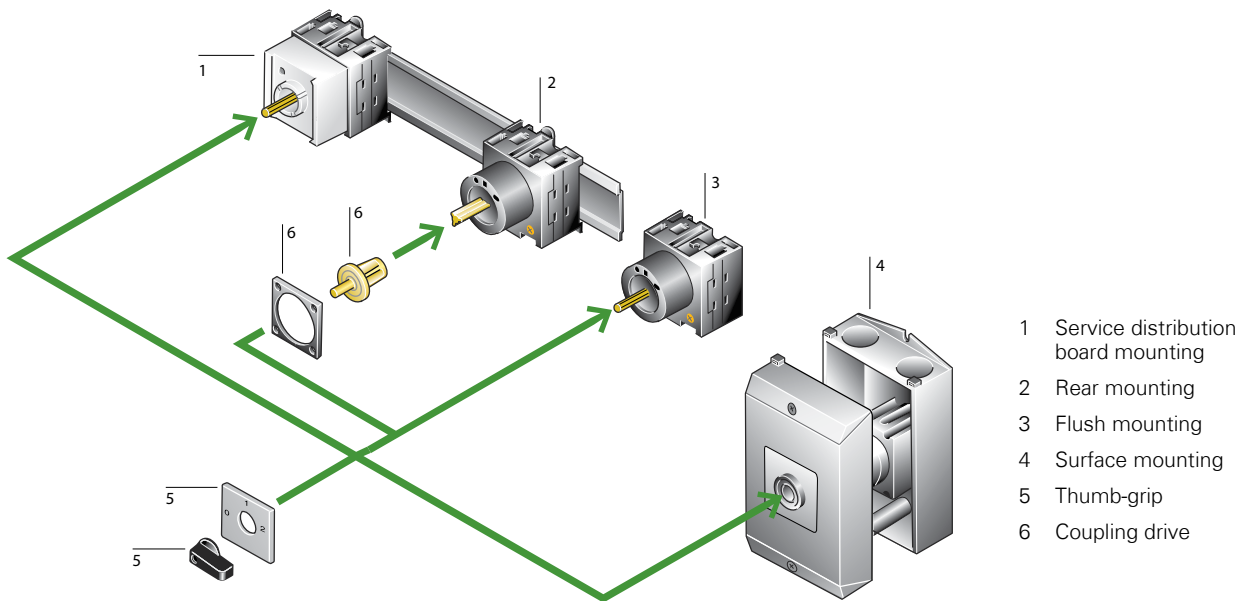
- 10 Thumb-grip
- 11 Coupling drive
- 12 Protective conductor terminal
- 13 Neutral terminal

# Power control

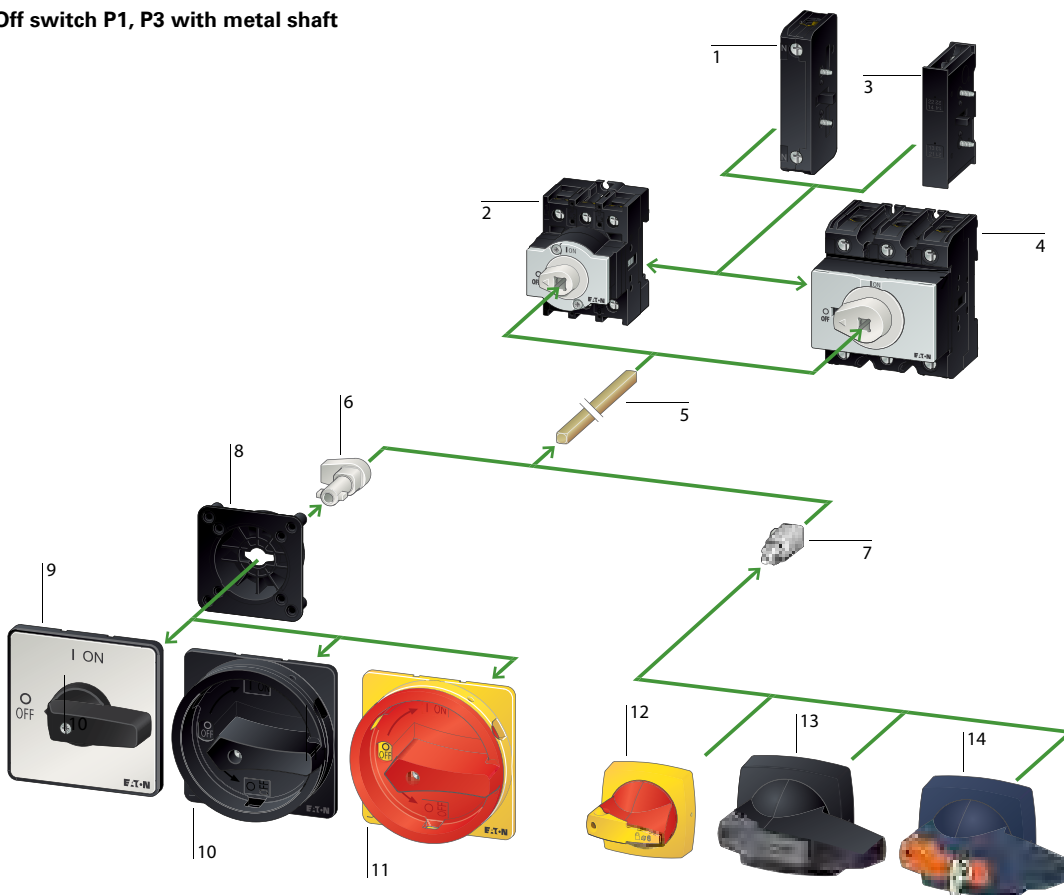
## Control and indication

### Cam switches

Control switches - T0, T3, T5B, T5



### On-Off switch P1, P3 with metal shaft



- |                           |  |  |
|---------------------------|--|--|
| 1 Neutral conductor       | 7 Centring tip   | 12 Thumb-grip kit, for use as emergency switching off device (red) |
| 2 P1 rear-mounting switch | 8 Centring adapter   | 13 Thumb-grip kit for padlock (grey)                               |
| 3 Auxiliary contact       | 9 Thumb-grip   | 14 Thumb-grip kit with cylinder lock (blue)                        |
| 4 P3 rear-mounting switch | 10 Main switch kit (black)   |  |
| 5 Metal shaft             | 11 Main switch kit for use as emergency switching off device (red) |  |
| 6 Centring tip            |  |  |

## Cam switches

The high-performance, robust and compact T rotary switches and P switch-disconnectors are used in industry, trade and building engineering applications. The degree of protection IP65 with the switch mounts and the switch front enables use in harsh environments. Ten basic switch types in four different construction types, in a whole range of standard switches and across a wide performance range are available. Customised circuits can also be implemented in addition to the standard configurations. The possibilities are almost unlimited. A comprehensive accessory range complements the switch range and rounds off the range of applications. All contacts feature double breaking contacts.

With the metal extension shafts our reliable P1 and P3 switches can be mounted in electrical cabinets of up to 600 mm deep and with several Handle and Shaft options a solution can be found for every application. Also the most common types are available as a complete switch/shaft/handle package.



T0-1-8200..



T0-1-8210..



T0-1-8240..



T0-3-8212..



T0-2-8400..



T0-3-8622...



T0-3-8048..

Main circuit poles		Flush mounting	Centre mounting	Surface mounting	Service distribution board mounting	Rear mounting	
		Front IP65	Front IP65	IP65	Front IP30	Front IP65	
N/O	B	Item no.	Item no.	Item no.	Item no.	Item no.	
On-Off switches 20A							
1	-	-	<b>T0-1-8200/E</b>	<b>T0-1-8200/EZ</b>	<b>T0-1-8200/I1</b>	<b>T0-1-8200/IVS</b>	<b>T0-1-8200/Z</b>
2	-	-	<b>T0-1-102/E</b>	<b>T0-1-102/EZ</b>	<b>T0-1-102/I1</b>	<b>T0-1-102/IVS</b>	<b>T0-1-102/Z</b>
3	-	-	<b>T0-2-1/E</b>	<b>T0-2-1/EZ</b>	<b>T0-2-1/I1</b>	<b>T0-2-1/IVS</b>	<b>T0-2-1/Z</b>
3	1	0	<b>T0-2-15679/E</b>	<b>T0-2-15679/EZ</b>	<b>T0-2-15679/I1</b>	<b>T0-2-15679/IVS</b>	<b>T0-2-15679/Z</b>
3 + N	-	-	<b>T0-2-8900/E</b>	<b>T0-2-8900/EZ</b>	<b>T0-2-8900/I1</b>	<b>T0-2-8900/IVS</b>	<b>T0-2-8900/Z</b>
Changeover switches 20A							
1	-	-	<b>T0-1-8210/E</b>	<b>T0-1-8210/EZ</b>	<b>T0-1-8210/I1</b>	<b>T0-1-8210/IVS</b>	<b>T0-1-8210/Z</b>
2	-	-	<b>T0-2-8211/E</b>	<b>T0-2-8211/EZ</b>	<b>T0-2-8211/I1</b>	<b>T0-2-8211/IVS</b>	<b>T0-2-8211/Z</b>
3	-	-	<b>T0-3-8212/E</b>	<b>T0-3-8212/EZ</b>	<b>T0-3-8212/I1</b>	<b>T0-3-8212/IVS</b>	<b>T0-3-8212/Z</b>
4	-	-	<b>T0-4-8213/E</b>	<b>T0-4-8213/EZ</b>	<b>T0-4-8213/I1</b>	<b>T0-4-8213/IVS</b>	<b>T0-4-8213/Z</b>
1	-	-	<b>T0-1-8220/E</b>	<b>T0-1-8220/EZ</b>	<b>T0-1-8220/I1</b>	<b>T0-1-8220/IVS</b>	<b>T0-1-8220/Z</b>
2	-	-	<b>T0-2-8221/E</b>	<b>T0-2-8221/EZ</b>	<b>T0-2-8221/I1</b>	<b>T0-2-8221/IVS</b>	<b>T0-2-8221/Z</b>
3	-	-	<b>T0-3-8222/E</b>	<b>T0-3-8222/EZ</b>	<b>T0-3-8222/I1</b>	<b>T0-3-8222/IVS</b>	<b>T0-3-8222/Z</b>
4	-	-	<b>T0-4-8223/E</b>	<b>T0-4-8223/EZ</b>	<b>T0-4-8223/I1</b>	<b>T0-4-8223/IVS</b>	<b>T0-4-8223/Z</b>
1	-	-	<b>T0-1-8214/E</b>	<b>T0-1-8214/EZ</b>	<b>T0-1-8214/I1</b>	<b>T0-1-8214/IVS</b>	<b>T0-1-8214/Z</b>
2	-	-	<b>T0-2-8215/E</b>	<b>T0-2-8215/EZ</b>	<b>T0-2-8215/I1</b>	<b>T0-2-8215/IVS</b>	<b>T0-2-8215/Z</b>
3	-	-	<b>T0-3-8216/E</b>	<b>T0-3-8216/EZ</b>	<b>T0-3-8216/I1</b>	<b>T0-3-8216/IVS</b>	<b>T0-3-8216/Z</b>
Reversing switches 20A							
3	-	-	<b>T0-3-8401/E</b>	<b>T0-3-8401/EZ</b>	<b>T0-3-8401/I1</b>	<b>T0-3-8401/IVS</b>	<b>T0-3-8401/Z</b>
ON-OFF switches 20A							
1	-	-	<b>T0-1-15401/E</b>	<b>T0-1-15401/EZ</b>	<b>T0-1-15401/I1</b>	<b>T0-1-15401/IVS</b>	<b>T0-1-15401/Z</b>
2	-	-	<b>T0-1-15402/E</b>	<b>T0-1-15402/EZ</b>	<b>T0-1-15402/I1</b>	<b>T0-1-15402/IVS</b>	<b>T0-1-15402/Z</b>
3	-	-	<b>T0-2-15403/E</b>	<b>T0-2-15403/EZ</b>	<b>T0-2-15403/I1</b>	<b>T0-2-15403/IVS</b>	<b>T0-2-15403/Z</b>
Voltmeter selector switches 20A							
3 + N	-	-	<b>T0-3-8007/E</b>	<b>T0-3-8007/EZ</b>	<b>T0-3-8007/I1</b>	<b>T0-3-8007/IVS</b>	<b>T0-3-8007/Z</b>
Ammeter selector switches 20A							
3	-	-	<b>T0-3-8048/E</b>	<b>T0-3-8048/EZ</b>		<b>T0-3-8048/IVS</b>	<b>T0-3-8048/Z</b>
Step switches 20A							
1	-	-	<b>T0-2-8231/E</b>	<b>T0-2-8231/EZ</b>	<b>T0-2-8231/I1</b>	<b>T0-2-8231/IVS</b>	<b>T0-2-8231/Z</b>
1	-	-	<b>T0-2-8241/E</b>	<b>T0-2-8241/EZ</b>	<b>T0-2-8241/I1</b>	<b>T0-2-8241/IVS</b>	<b>T0-2-8241/Z</b>
Changeoverswitches 20A							
1	-	-	<b>T0-1-15431/E</b>	<b>T0-1-15431/EZ</b>	<b>T0-1-15431/I1</b>	<b>T0-1-15431/IVS</b>	<b>T0-1-15431/Z</b>
2	-	-	<b>T0-2-15432/E</b>	<b>T0-2-15432/EZ</b>	<b>T0-2-15432/I1</b>	<b>T0-2-15432/IVS</b>	<b>T0-2-15432/Z</b>
3	-	-	<b>T0-3-15433/E</b>	<b>T0-3-15433/EZ</b>	<b>T0-3-15433/I1</b>	<b>T0-3-15433/IVS</b>	<b>T0-3-15433/Z</b>



# Power control

## Control and indication

### Cam switches



Main circuit poles	Auxiliary circuits		Rated uninterrupted current I A	Main switches surface mounting	Main switches flush mounting	Main switches rear mounting	Main switches rear mounting
	N/O	B		IP65 Item no.	front IP65 Item no.	front IP65 Item no.	front IP65 IP20 with terminal cover Item no.
Main switches, maintenance switches, repair switches With red rotary handle and yellow locking ring Note: All types are available with a black thumb-grip Lockable in the 0 (Off) position							
1	-	-	20	<b>T0-1-8200/I1/SVB</b>	<b>T0-1-8200/EA/SVB</b>	<b>T0-1-8200/V/SVB</b>	-
			32	<b>T3-1-8200/I2/SVB</b>	<b>T3-1-8200/EA/SVB</b>	<b>T3-1-8200/V/SVB</b>	-
			63	<b>T5B-1-8200/I4/SVB</b>	<b>T5B-1-8200/EA/SVB</b>	<b>T5B-1-8200/V/SVB</b>	-
			100	-	<b>T5-1-8200/EA/SVB</b>	<b>T5-1-8200/V/SVB</b>	-
2	-	-	20	<b>T0-1-102/I1/SVB</b>	<b>T0-1-102/EA/SVB</b>	<b>T0-1-102/V/SVB</b>	-
			32	<b>T3-1-102/I2/SVB</b>	<b>T3-1-102/EA/SVB</b>	<b>T3-1-102/V/SVB</b>	-
			63	<b>T5B-1-102/I4/SVB</b>	<b>T5B-1-102/EA/SVB</b>	<b>T5B-1-102/V/SVB</b>	-
			100	<b>T5-1-102/I5/SVB</b>	<b>T5-1-102/EA/SVB</b>	<b>T5-1-102/V/SVB</b>	-
3	-	-	20	<b>T0-2-1/I1/SVB</b>	<b>T0-2-1/EA/SVB</b>	<b>T0-2-1/V/SVB</b>	-
			25	<b>P1-25/I2/SVB</b>	<b>P1-25/EA/SVB</b>	<b>P1-25/V/SVB</b>	<b>P1-25/M4/SVB</b>
			32	<b>P1-32/I2/SVB</b>	<b>P1-32/EA/SVB</b>	<b>P1-32/V/SVB</b>	<b>P1-32/M4/SVB</b>
			63	<b>P3-63/I4/SVB</b>	<b>P3-63/EA/SVB</b>	<b>P3-63/V/SVB</b>	<b>P3-63/M4/SVB</b>
			100	<b>P3-100/I5/SVB</b>	<b>P3-100/EA/SVB</b>	<b>P3-100/V/SVB</b>	<b>P3-100/M4/SVB</b>
			125	-	<b>P5-125/EA/SVB</b>	<b>P5-125/V/SVB</b>	-
			160	-	<b>P5-160/EA/SVB</b>	<b>P5-160/V/SVB</b>	-
			250	-	<b>P5-250/EA/SVB</b>	<b>P5-250/V/SVB</b>	-
			315	-	<b>P5-315/EA/SVB</b>	<b>P5-315/V/SVB</b>	-
3 + N	-	-	20	<b>T0-2-8900/I1/SVB</b>	-	-	-
			25	<b>P1-25/I2/SVB/N</b>	<b>P1-25/EA/SVB/N</b>	<b>P1-25/V/SVB/N</b>	<b>P1-25/M4/SVB/N</b>
			32	<b>P1-32/I2/SVB/N</b>	<b>P1-32/EA/SVB/N</b>	<b>P1-32/V/SVB/N</b>	<b>P1-32/M4/SVB/N</b>
			63	<b>P3-63/I4/SVB/N</b>	<b>P3-63/EA/SVB/N</b>	<b>P3-63/V/SVB/N</b>	<b>P3-63/M4/SVB/N</b>
			100	<b>P3-100/I5/SVB/N</b>	<b>P3-100/EA/SVB/N</b>	<b>P3-100/V/SVB/N</b>	<b>P3-100/M4/SVB/N</b>
			125	-	<b>P5-125/EA/SVB/N</b>	<b>P5-125/V/SVB/N</b>	-
			160	-	<b>P5-160/EA/SVB/N</b>	<b>P5-160/V/SVB/N</b>	-
			250	-	<b>P5-250/EA/SVB/N</b>	<b>P5-250/V/SVB/N</b>	-
			315	-	<b>P5-315/EA/SVB/N</b>	<b>P5-315/V/SVB/N</b>	-
3	1	0	20	<b>T0-2-15679/I1/SVB</b>	<b>T0-2-15679/EA/SVB</b>	<b>T0-2-15679/V/SVB</b>	-
	1	1	25	<b>P1-25/I2/SVB/HI11</b>	<b>P1-25/EA/SVB/HI11</b>	<b>P1-25/V/SVB/HI11</b>	<b>P1-25/M4/SVB/HI11</b>
			32	<b>P1-32/I2/SVB/HI11</b>	<b>P1-32/EA/SVB/HI11</b>	<b>P1-32/V/SVB/HI11</b>	<b>P1-32/M4/SVB/HI11</b>
			63	<b>P3-63/I4/SVB/HI11</b>	<b>P3-63/EA/SVB/HI11</b>	<b>P3-63/V/SVB/HI11</b>	<b>P3-63/M4/SVB/HI11</b>
			100	<b>P3-100/I5/SVB/HI11</b>	<b>P3-100/EA/SVB/HI11</b>	<b>P3-100/V/SVB/HI11</b>	<b>P3-100/M4/SVB/HI11</b>
3 + N	1	1	20	<b>T0-3-15680/I1/SVB</b>	<b>T0-3-15680/EA/SVB</b>	<b>T0-3-15680/V/SVB</b>	-
			25	-	<b>P1-25/EA/SVB/N/HI11</b>	<b>P1-25/V/SVB/N/HI11</b>	<b>P1-25/M4/SVB/N/HI11</b>
			32	<b>T3-3-15680/I2/SVB</b>	<b>P1-32/EA/SVB/N/HI11</b>	<b>P1-32/V/SVB/N/HI11</b>	<b>P1-32/M4/SVB/N/HI11</b>
			63	<b>P3-63/I4/SVB/N/HI11</b>	<b>P3-63/EA/SVB/N/HI11</b>	<b>P3-63/V/SVB/N/HI11</b>	<b>P3-63/M4/SVB/N/HI11</b>
3			100	<b>P3-100/I5/SVB/N/HI11</b>	<b>P3-100/EA/SVB/N/HI11</b>	<b>P3-100/V/SVB/N/HI11</b>	<b>P3-100/M4/SVB/N/HI11</b>
	2	1	20	<b>T0-3-15683/I1/SVB</b>	<b>T0-3-15683/EA/SVB</b>	<b>T0-3-15683/V/SVB</b>	-
	-	-	20	<b>T0-3-8342/I1/SVB</b>	<b>T0-3-8342/EA/SVB</b>	<b>T0-3-8342/V/SVB</b>	-
			32	<b>T3-3-8342/I2/SVB</b>	<b>T3-3-8342/EA/SVB</b>	<b>T3-3-8342/V/SVB</b>	-
			63	<b>T5B-3-8342/I4/SVB</b>	<b>T5B-3-8342/EA/SVB</b>	<b>T5B-3-8342/V/SVB</b>	-
6			100	<b>T5-3-8342/I5/SVB</b>	<b>T5-3-8342/EA/SVB</b>	<b>T5-3-8342/V/SVB</b>	-

Cam switches

Description	Emergency switching off/emergency stop	For use with	Item no.
<b>Main switch assembly kits</b>			
With red rotary handle and yellow locking collar	As an emergency switching off/emergency stop device To IEC/EN 60204-1, VDE 0113 Part 1	T0-.../E, .../Z, .../I1 T3-.../E, .../Z, .../I2 P1-.../E, .../Z, .../I2	<b>SVB-T0</b>
		T5B-.../E, .../Z, .../I4 T5-.../E, .../Z, .../I5 P3-63/E, .../Z, .../I4 P3-100/E, .../Z, .../I5	<b>SVB-P3</b>
With black rotary handle and black locking collar	Without emergency switching off/emergency stop function	T0-.../E, .../Z, .../I1 T3-.../E, .../Z, .../I2 P1-.../E, .../Z, .../I2	<b>SVB-SW-T0</b>
		T5B-.../E, .../Z, .../I4 T5-.../E, .../Z, .../I5 P3-63/E, .../Z, .../I4 P3-100/E, .../Z, .../I5	<b>SVB-SW-P3</b>
<b>Main switch assembly kits with PE terminal and N terminal</b>			
With red rotary handle and yellow locking collar	As an emergency switching off/emergency stop device To IEC/EN 60204-1, VDE 0113 Part 1	T0-.../E, .../Z T3-.../E, .../Z	<b>V/EA/SVB-T0</b>
		T5(B)-.../E, .../Z	<b>V/EA/SVB-T5</b>
With black rotary handle and black locking collar	Without emergency switching off/emergency stop function	T0-.../E, .../Z T3-.../E, .../Z	<b>V/EA/SVB-SW-T0</b>
		T5(B)-.../E, .../Z	<b>V/EA/SVB-SW-T5</b>
<b>Thumb-grips</b>			
Black		T0-.../E, .../EZ, .../IVS, .../Z, .../I1 T3-.../E, .../EZ, .../IVS, .../Z, .../I2 P1-.../E, .../EZ, .../IVS, .../Z, .../I2	<b>KNB-T0</b>
Red	Only for emergency switching off/emergency stop switches To IEC/EN 60204-1, VDE 0113 Part 1	T0-.../E, .../IVS, .../Z, .../I1 T3-.../E, .../IVS, .../Z, .../I2 P1-.../E, .../IVS, .../Z, .../I2	<b>KNB-RT-T0</b>
Black		T5(B)-.../E, .../Z, .../I4 P3-63/E, .../Z, .../I4 P3-100/E, .../Z, .../I5	<b>KNB-P3</b>
Red	Only for emergency switching off/emergency stop switches To IEC/EN 60204-1, VDE 0113 Part 1	T5(B)-.../E, .../Z, .../I4 P3-63/E, .../Z, .../I4 P3-100/E, .../Z, .../I5	<b>KNB-RT-P3</b>
<b>Maintenance key for interlocked main switches</b>			
		T0...	<b>KNK-T0</b>
		P1...	<b>KNK-P3</b>
<b>ATEX type</b>			
With metric knock-outs M20		T0-.../I1	<b>+ATEX-I1</b>
		T3-.../I2 P1-.../I2	<b>+ATEX-I2</b>
With solid side walls		T5B-.../I4 P3-.../I4	<b>+ATEX-I4</b>
		T5-.../I5 P3-.../I5	<b>+ATEX-I5</b>



SVB-T0



SVB-SW-T0



V/EA/SVB-T0



V/EA/SVB-SW-T0



KNB-T0



KNB-RT-P3

# Power control

## Control and indication

### Cam switches

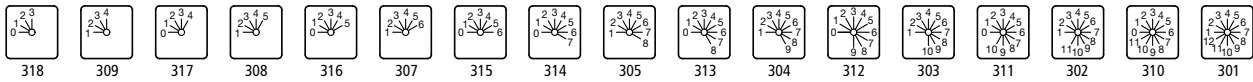
Switch size	Dimensions mm (w x h x d)	For use with	Item no.
<b>Standard front plate</b>			
T0, T3, P1	45 x 45	for frame 48 x 48)	<b>FS(*)-T0</b>
P3, T5, T5B	84 x 84	(for frame 88 x 88)	<b>FS(*)-P3</b>
<b>Emergency switching off/emergency stop front plates</b>			
T0, T3, P1	45 x 45	for frame 48 x 48)	<b>FS908GE-T0</b>
P3, T5, T5B	84 x 84	(for frame 88 x 88)	<b>FS908GE-P3</b>
<b>Blank plate</b>			
P3, T5, T5B	84 x 84	(for frame 88 x 88)	<b>FS-ALU980-P3</b>
T0, T3, P1	45 x 45	for frame 48 x 48)	<b>FS-ALU980-T0</b>

#### Notes

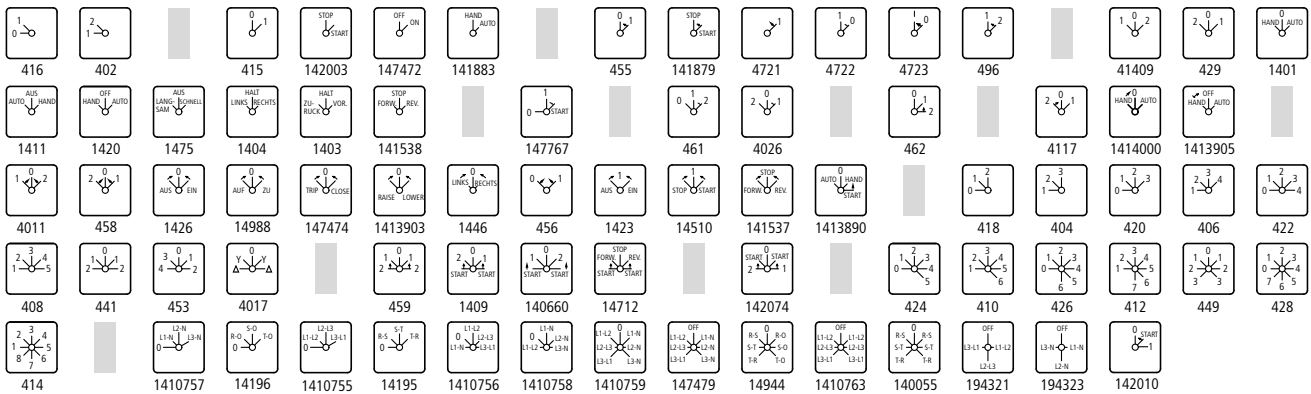
##### Standard front plate

For standard switches the normal front plate can be replaced if required with the front plate shown here (not with T6, T8 and TM). This is provided the switching angle, number of positions and the position of the 0 position are the same.

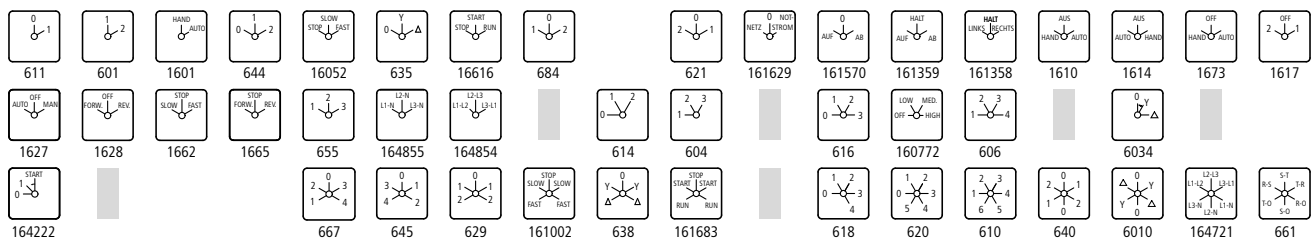
#### Switching angle 30°



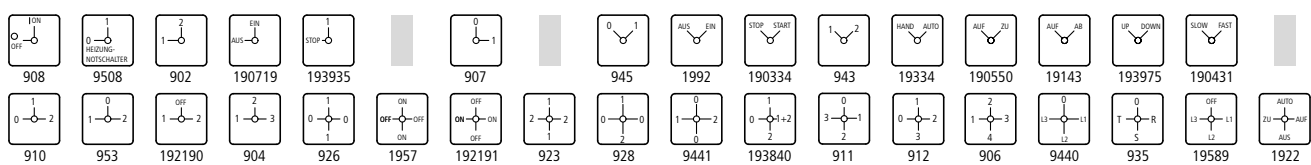
#### Switching angle 45°



#### Switching angle 60°



#### Switching angle 90°



Cam switches

Description	For use with	Withdrawability	Item no.
<b>S-T0 key operated lock mechanism, front IP53</b>			
KMS 1 lock mechanism: individual lock mechanism, not suitable for master key systems Key withdrawable in all positions		Withdrawable positions can be programmed by user	<b>S-T0</b>
KMS 2-10, KMS 201-400 lock mechanisms: individual lock mechanisms, not suitable for master key systems. Key withdrawable in all positions	T0-1.../I1 to T0-4.../I1 T0-1.../E to T0-6.../E T0-1.../Z to T0-6.../Z		<b>S-SOND-KMS(*)-T0</b>
Lock KMS1: Switches with FS908 are possible as main switch. Key can be withdrawn in positions as specified	T3-1.../E to T3-5.../E T3-1.../Z to T3-5.../Z T3-1.../I2 to T3-4.../I2		<b>S(*)-T0</b>
SA(...) = master key system (master-key facility) with security certificate. Ordering only with lock plan filled out with the full configuration of the envisaged lock system. When reordering state item number from the lock plan, e.g (A 6294-1.2). Key can be withdrawn in positions as specified	P1-.../E P1-.../I2 P1-.../Z	Withdrawable positions programmed at factory as ordered	<b>S(*)-SOND-SA(*)-T0</b>
<b>SVA-T3 cylinder lock, front IP65</b>			
KMS 1 lock mechanism: individual lock mechanism, not suitable for master key systems Key withdrawable in all positions	T0-.../E, T0-.../I1, T0-.../Z	Withdrawable positions can be programmed by user	<b>SVA-T3</b>
KMS 2-10, KMS 201-400 lock mechanisms: individual lock mechanisms, not suitable for master key systems. Key withdrawable in all positions	T3-.../E, T3-.../I2, T3-.../Z P1-.../E, P1-.../I2, P1-.../Z		<b>SVA-SOND-KMS(*)-T3</b>
Lock KMS1: Switches with FS908 are possible as main switch. Key can be withdrawn in positions as specified			<b>SVA(*)-T3</b>
SA(...) = master key system (master-key facility) with security certificate. Ordering only with lock plan filled out with the full configuration of the envisaged lock system. When reordering state item number from the lock plan, e.g (A 6294-1.2). Key can be withdrawn in positions as specified	T0-1-... to T0-4-.../I1 T0-1-.../E to T0-4-.../E T3-1-... to T3-5-.../I2 T3-1-... to T3-6-.../E P1-.../I2, P1-.../E	Withdrawable positions programmed at factory as ordered	<b>SVA(*)-SOND-SA(*)-T3</b>
<b>SVC-T3 padlocking feature, front IP65</b>			
ll positions can be locked	T0-.../E, T0-.../I1, T0-.../Z T3-.../E, T3-.../I2, T3-.../Z P1-.../E, P1-.../I2, P1-.../Z	The positions that can be locked can be programmed by the user	<b>SVC-T3</b>
Specific positions or ranges can be locked	Switches with FS908 can be used as main switches for: T0-1-... to T0-4-.../ I1, .../E T3-1-... to T3-5-.../I2 T3-1-... to T3-6-.../E P1-.../I2, P1-.../E	The positions that can be locked are programmable at the factory as ordered	<b>SVC(*)-T3</b>



S-T0



SVA-T3



SVC-T3

### Cam switches



N-P1E



PE-P5-125/160Z



HI21-P5-125/160Z



IVS-T0



UV-T0



ZVV-T0



SAV-T0

Description		For use with	Item no.
	For left or right side mounting	P1-.../E, .../EA, .../EZ	<b>N-P1E</b>
Neutral conductor	For P1-.../I2: optionally, N-P1Z or HI11-P1/P3Z, can only be fitted on the left	P1-.../Z, .../N, .../I2, .../IVS	<b>N-P1Z</b>
		P3-.../E, .../EA...	<b>N-P3E</b>
		P3-.../Z, .../N, .../IVS	<b>N-P3Z</b>
		P3-63.../Z, .../I4 P3-100.../Z, .../I5	
Neutral terminal		P5-125(160)/E(EA)	<b>N-P5-125/160E</b>
		P5-125(160)/Z(V)	<b>N-P5-125/160Z</b>
		P5-250(315)/E(EA)	<b>N-P5-250/315E</b>
		P5-250(315)/Z(V)	<b>N-P5-250/315Z</b>
Ground terminal		P5-125(160)/E(EA)	<b>PE-P5-125/160E</b>
		P5-125(160)/Z(V)	<b>PE-P5-125/160Z</b>
		P5-250(315)/E(EA)	<b>PE-P5-250/315E</b>
		P5-250(315)/Z(V)	<b>PE-P5-250/315Z</b>
Auxiliary contacts	1 normally open (N/O), 1 normally close contact (N/C) - For left and/or right side mounting	P1-.../E, .../EA..., .../EZ P3-.../E, .../EA	<b>HI11-P1/P3E</b>
		P1-.../Z, .../N, .../I2, .../IVS P3-63/Z, .../N, .../I4, .../IVS P3-100/Z, .../N, .../I5, .../IVS	<b>HI11-P1/P3Z</b>
	2 normally open (N/O), 1 normally close contact (N/C) - For left and/or right side mounting	P5-125(160)/E(EA)	<b>HI21-P5-125/160E</b>
		P5-125(160)/Z(V)	<b>HI21-P5-125/160Z</b>
		P5-250(315)/E(EA)	<b>HI21-P5-250/315E</b>
		P5-250(315)/Z(V)	<b>HI21-P5-250/315Z</b>
Center mounting accessories	For cam switches with existing front plate - quick installation with snap fitting system	T0-.../E T3-.../E	<b>EZ-T0</b>
	Mounting diameter 22.3 mm, one man mounting with screw fixing	T0-.../E T3-.../E P1-.../E	<b>EZ-P1</b>
Service distribution board mounting accessories	For retrofitting in service distribution board mounting T0-.../IVS design. Use the basic switch's front plate.	0-.../XZ	<b>IVS-T0</b>
Coupling drive	For the retrofitting of switch T0(T3)-.../XZ as rear mounting, spare part for T0(T3)/(P1)-.../Z		<b>DE-T0</b>
	For the conversion of T5(B)-.../E flush mounting switch to rear mounting, spare part for T5(B)/(P3)-.../Z		<b>DE-P3</b>
Interlock sections		T0-.../E, ...EZ, ...Z T3-.../E, ...EZ, ...Z P1-.../E, ...EZ, ...Z	<b>UV-T0</b>
		T5(B)-.../E, ...Z P3-.../E, ...Z	<b>UV-P3</b>
Interlock extensions	Use only with T0/T3-... and P3-.../Z designs	UV-T0	<b>ZVV-T0</b>
	Use only with T5(B)-.../Z and P3-.../Z designs	UV-P3	<b>ZVV-P3</b>
Shaft extensions		T0-.../Z, T0-.../N T3-.../Z, T3-.../N P1-.../Z, P1-.../N	<b>ZAV-T0</b>
		T5(B)-.../Z P3-.../Z P3-.../N	<b>ZAV-P3</b>
Shaft	Aluminum, length: 480 mm	P5-.../N... P5-.../Z	<b>ZAV-P5</b>
Interlock extensions und shaft extensions, complete	Extension to 25 mm When ordering with basic unit		<b>+ZAV(X1)+ZV-V(X1)-T0/P3</b>
Control cable terminal		P5-250/315	<b>ST-P5-250/315</b>

Cam switches

Description	For use with	Item no.	
Shrouds	For flush mounting switches with up to 4 contact units	T0-.../E T3-.../E	<b>H3-T0</b>
	For covering the connection terminals of up to 2 contact units	T5(B)-.../E, .../Z	<b>H1-T5</b>
	Extension for H1-T5 protective shroud on 3 - 8 contact units	H1-T5	<b>HZ-T5</b>
	For covering the connection terminals on 3 pole switch-disconnectors	P1-.../E, .../EZ, .../Z, .../EA, .../N	<b>H-P1</b>
	For covering the connection terminals on 4 pole switch-disconnectors	P1-...N, ...HI11, ...N...HI11	<b>H-P14</b>
	For covering the connection terminals on 3 pole open switch-disconnectors with N neutral conductor and/or HI11 auxiliary contact	P3-.../E, .../Z, .../EA, .../N P3-...N, ...HI11, ...N...HI11	<b>H-P3</b>
	For covering the terminals	P5	<b>H-P5-125/160</b> <b>H-P5-250/315</b>
Key	Set (6 units) for covering the connection terminals	T8-3-8342/...	<b>H-T8</b>
	For KMS 1 individual lock mechanism		<b>ES-KMS1-T0</b>
	For KMS 2 - 10 or KMS 201 - 400 individual lock mechanism		<b>ES-KMS(*)-T0</b>
Locking cams (2 cams per set)	Individual key, stainless, for master key system and stored individual lock mechanisms, state lock plan no. and key.		<b>HS-SA(*)-T0</b>
	For later change of key withdrawability in the engagement positions	S-T0 for all switching angles	<b>VR-T0</b>
Mounting plate shield	For changing the blocked positions/ranges	SVA-T3 SVC-T3	<b>VR-T3</b>
	To connect the shielding CI-K2		<b>MBS-I2</b>
	To connect the shielding CI-K4		<b>MBS-I4</b>



H1-t5



VR-T0



MBS-I2

Description	For use with	Item no.		
IP65 insulated enclosures	1 - 2 contact units	T0-.../Z	<b>CI-K1-T0-2</b>	
	3 - 4 contact units	With pushthrough cable entry diaphragm.	T0-.../Z	<b>CI-K1-T0-4</b>
	1 - 2 contact units		T3-.../Z	<b>CI-K2-T3-2</b>
	3 - 4 contact units	T3-.../Z	<b>CI-K2-T3-4</b>	
	5 contact units	T3-.../Z	<b>CI-K2-T3-5</b>	
	1 - 2 contact units	T0-.../Z	<b>CI-K1H-T0-2</b>	
	3 - 4 contact units	T0-.../Z	<b>CI-K1H-T0-4</b>	
	1 - 2 contact units	T3-.../Z	<b>CI-K2H-T3-2</b>	
	3 - 4 contact units	T3-.../Z	<b>CI-K2H-T3-4</b>	
	5 contact units	T3-.../Z	<b>CI-K2H-T3-5</b>	
	1 - 2 contact units	With metric knockouts	T5B-.../E	<b>CI-K4-T5B-2</b>
	3 - 4 contact units		T5B-.../E	<b>CI-K4-T5B-4</b>
	1 - 2 contact units	T5-.../Z	<b>CI-K5-T5-2</b>	
	3 - 4 contact units	T5-.../Z	<b>CI-K5-T5-4</b>	
	Only available together with basic unit	T0-.../I1	<b>+I1H</b>	
	Only available together with basic unit	T3-.../I2 P1-.../I2	<b>+I2H</b>	
Neutral terminals	CI-K2-PKZ0-...		<b>K-CI-K1/2</b>	
	T5B-.../I4, CI-K4-T5B-... P3-.../I4, CI-K4		<b>K-CI-K4</b>	
Set of external fixing brackets	T5-.../I5, CI-K5-T5-... P3-.../I5, CI-K5		<b>K-CI-K5</b>	
	T5B-.../I4, T5-.../I5, P3-63/I4, P3-100/I5		<b>AB-CI-K4/5</b>	
Set of extension terminals	For the bottom contact unit	T5B-.../I4 T5-.../I5	<b>AW-T5-1/2</b>	
	For the second contact unit from the bottom	T5-.../I5	<b>AW-T5-3/4</b>	



CI-K1-T0-2



K-CI-K5







# Reliable, accurate, intelligent motor protection.

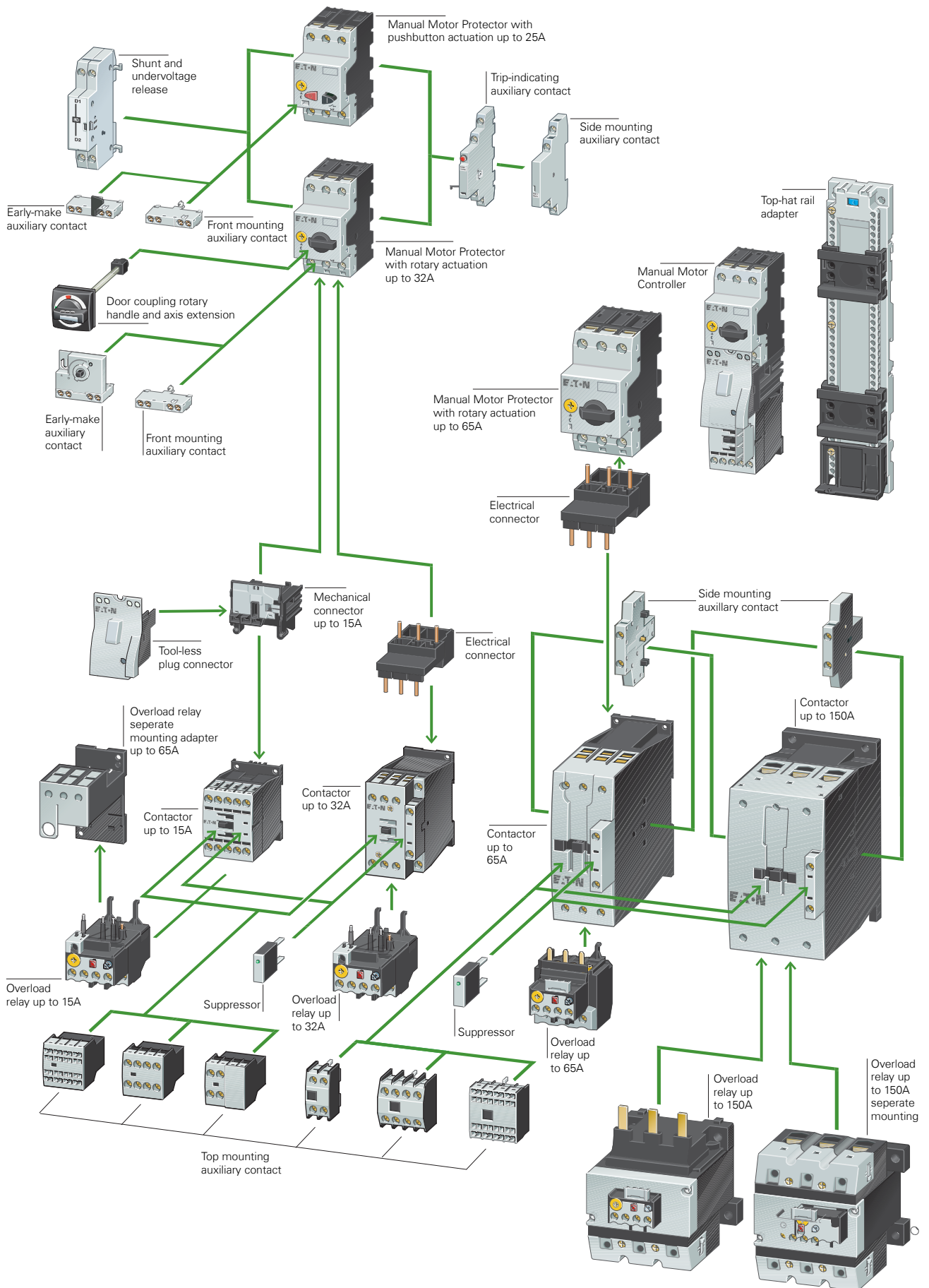


**EATON**  
*Powering Business Worldwide*

Motor failure has the potential to cause production downtime, costly repair bills and numerous safety concerns for plant personnel. For these reasons, motor protection should be a key element in protecting your

organization's most valuable assets. Selecting accurate and reliable motor overload protection is the best way to manage your costs and maintain system integrity.

Xstart IEC Motor control



# Power control

## Motor control



### Xstart IEC Motor control

The XStart range of contactors, overloads & manual motor protectors is a complete range of IEC Motor control. XStart is an efficient & effective solution for applications from 7-2600A.

Feature	Benefit
AC & DC devices with the same dimensions achieved with an electronically controlled coil system.	Space savings, reduced engineering design time.
Twin terminals with separate sockets in contactors up to 400A.	Offers installation & application flexibility when using different size wires. The improved integrity of the connections reduces cabling faults.
Reduced sealing power consumption for DC contactors due to an electronic coil controller that uses less power.	With sealing wattage as low as 0.5W, XStart contactors reduce power consumption & generate less heat. This results in lower cooling requirements, & the ability to mount more contactors per cabinet.
Integrated suppressors in DC controlled contactors from 7-1000A. Integrated surge suppressors in all contactors from 115A & above.	Offers reductions in total logistics & inventory costs by limiting the number of products ordered & stocked. Increased installation & maintenance efficiency, as wiring is not required.

### Xstart IEC Mini contactors

Due to its compact size, this line of mini controls is best suited to be applied in light duty loads such as hoisting, packaging, material handling, heating, lighting & automation systems. These mini contactors are a particularly compact, economic & environmentally friendly solution wherever control of small motors or loads is required.



DILER-40

#### Mini contactor relays

Rated operational current AC-15		Conventional free air thermal current		Aux. contact	Item no.
220 V, 230 V, 240 V	380 V, 400 V, 415 V	$I_e$	$I_{th}$		
A	A	A	A		
6	3	10		4 N/O -	DILER-40(...)
				3 N/O 1 NC	DILER-31(...)
				2 N/O 2 NC	DILER-22(...)



DILEEM-10

#### IEC Miniature controls

Operational current AC-3 Amp rating	Thermal current AC-1	Maximum kW ratings AC-3, 3-Phase Motors, 50 – 60 Hz		No. of power poles	Aux. contacts	Item no.
		240V	415V			
6.6	20	1.5	3	3	1NO	DILEEM-10(...)
6.6	20	1.5	3	3	1NC	DILEEM-01(...)
9	20	2.2	4	3	1NO	DILEM-10(...)
9	20	2.2	4	3	1NC	DILEM-01(...)
12	20	3.5	5.5	3	1NO	DILEM12-10(...)
12	20	3.5	5.5	3	1NC	DILEM12-01(...)
9	20	2.2	4	4	-	DILEM4(...)



ZE-0,16

#### IEC Miniature overload relays

- Trip Class 10A
- Ambient temperature compensated -5° to 50°C
- Selectable manual / automatic reset
- 1NO-1NC auxiliary contact as standard
- Direct mount with DILEM contactors

Motor full load current (FLC)	Trip class	Contact configuration	Item no.
0.1 – 0.16A	10A	1NO-1NC	ZE-0,16
0.16 – 0.24A			ZE-0,24
0.24 – 0.4A			ZE-0,4
0.4 – 0.6A			ZE-0,6
0.6 – 1A	10A	1NO-1NC	ZE-1,0
1 – 1.6A			ZE-1,6
1.6 – 2.4A			ZE-2,4
2.4 – 4A			ZE-4
4 – 6A	10A	1NO-1NC	ZE-6
6 – 9A			ZE-9
9 – 12A			ZE-12



### Xstart IEC Mini contactors

#### IEC Miniature controls accessories (auxiliary contacts for mini contactors, front (top) mounted)

Contact configuration	Poles	Item no.
1NO/1NC	2	<b>11DILE</b>
2NO	2	<b>20DILE</b>
2NC	2	<b>02DILE</b>
2NO2NC	4	<b>22DILE</b>
1NO/3NC	4	<b>13DILE</b>
3NO1NC	4	<b>31DILE</b>
4NO	4	<b>40DILE</b>
4NC	4	<b>04DILE</b>
1ECNO/1LONC	2	<b>11DDILE</b>
2ECNO/2LONC	2	<b>22DDILE</b>

Note: Auxiliary contacts are rated for 10A AC-1.



11DILE

#### Coil selection chart

Coil Voltage (50Hz)	Suffix code
415 AC	(415V50HZ, 480V60HZ)
230-240 AC	(240V50HZ)
110 AC	(110V50HZ/120V60HZ)
24 AC	(24V50HZ)
24 DC	(415V50HZ, 480V60HZ)

Note: Mini Contactor Coils are not interchangeable.  
For additional coil voltages contact Eaton.

#### RC-suppressor

Description	Item no.
Mini contactor relay. 110-250 AC. For use with DILE...	<b>RCDILE250</b>

Note: For AC operated contactors 50-60 Hz.  
DC operated contactor relays have an  
integrated suppressor.



RCDILE250



#### Mechanical interlock

Description	Item no.
Mechanical Interlock	<b>MVDILE</b>

Note: For two contactors with AC or DC operated coils that are horizontally or vertically mounted, the distance between contactors is 0 mm



#### Reversing link kit

Description	Item no.
Main current wiring for reversing contactors & starters.	<b>MVS-WB-EM</b>

Note: Reversing Link Kit does not include mechanical interlock. Order part No. MVDILE for Mechanical Interlock.



#### Star-delta link kit

Description	Item no.
Main current wiring for star-delta combinations. Includes the Star-Delta Bridge.	<b>MVS-SB-EM</b>



#### Other accessories

Description	Item no.
Connector for mechanically arranging contactors in combinations.	<b>VODILE</b>
Shroud IP40 Sealable Shroud, snap fit	<b>HDILE</b>

Note: 0 mm distance between contactors with connector.

### Xstart IEC control relays

#### Basic devices with positively driven contacts

Rated operational current AC-15		Conventional free air thermal current $I_{th}$ A	Aux. contact	Item no.
240 V $I_e$ A	415 V $I_e$ A			
4	4	16	4 N/O -	<b>DILA-40(...)</b>
			3 N/O 1 NC	<b>DILA-31(...)</b>
			2 N/O 2 NC	<b>DILA-22(...)</b>







### Xstart IEC Contactors

#### IEC Contactors

- AC-3 contactor ratings to 1600A & AC-1 contactor ratings to 2600A
- Panel or DIN-Rail mounting to 72A
- IP20 finger & back-of-hand proof
- Built-in NO or NC auxiliary contacts to 38A
- Built-in surge suppression on DC coils Frame B-G & AC or DC coils on Frame L-R
- Can be used with ZB or ZEB overload relays
- Can be used with PKZM or PKE for manual Motor controllers

#### Full voltage non-reversing 3-pole contactors

##### IEC ratings

AC-3 Ie (A)	AC-1 (60°C) Ie = Ith (A)	Maximum kW ratings AC-3 3-Phase Motors 50 – 60 Hz			Aux. contacts	Item no.
		400V	660/ 690V			
<b>Frame B</b>						
7	20	3	3.5	1NO	<b>DILM7-10(...)</b>	
7	20	3	3.5	1NC	<b>DILM7-01(...)</b>	
9	20	4	4.5	1NO	<b>DILM9-10(...)</b>	
9	20	4	4.5	1NC	<b>DILM9-01(...)</b>	
12	20	5.5	6.5	1NO	<b>DILM12-10(...)</b>	
12	20	5.5	6.5	1NC	<b>DILM12-01(...)</b>	
15.5	20	7.5	7	1NO	<b>DILM15-10(...)</b>	
15.5	20	7.5	7	1NC	<b>DILM15-01(...)</b>	
<b>Frame C</b>						
18	35	7.5	11	1NO	<b>DILM17-10(...)</b>	
18	35	7.5	11	1NC	<b>DILM17-01(...)</b>	
25	40	11	14	1NO	<b>DILM25-10(...)</b>	
25	40	11	14	1NC	<b>DILM25-01(...)</b>	
32	40	15	17	1NO	<b>DILM32-10(...)</b>	
32	40	15	17	1NC	<b>DILM32-10(...)</b>	
38	40	18.5	21	1NO	<b>DILM38-10(...)</b>	
38	40	18.5	21	1NC	<b>DILM38-01(...)</b>	
<b>Frame D</b>						
40	50	18.5	23	—	<b>DILM40(...)</b>	
50	65	22	30	—	<b>DILM50(...)</b>	
65	80	30	35	—	<b>DILM65(...)</b>	
72	80	37	35	—	<b>DILM72(...)</b>	
<b>Frame F</b>						
80	90	37	63	—	<b>DILM80(...)</b>	
95	110	45	75	—	<b>DILM95(...)</b>	
<b>Frame G</b>						
115	130	55	90	—	<b>DILM115(...)</b>	
150	160	75	96	—	<b>DILM150(...)</b>	
170	185	90	96	—	<b>DILM170(...)</b>	

Note: The 7 – 38A contactors have positively driven contacts between the integrated auxiliary contact & the auxiliary contact module as well as within the auxiliary contact modules.  
The 40 – 72A contactors have positively driven contacts within the auxiliary contact module. 6 auxiliary contacts are possible with a combination of side mounted & front mount auxiliary contacts.  
DC operated contactors (Frames B – G, 7 – 170A) have a built-in suppressor circuit. Frame B – C contactors with 1NC built-in auxiliary are mirror contacts.

##### IEC ratings

AC-3 Ie (A)	AC-1 (60°C) Ie = Ith (A)	Maximum kW ratings AC-3 3-Phase Motors 50 – 60 Hz			Aux. contacts	Item no.
		400V	660/ 690V	1000V		
<b>Frame L – Electronic Coil</b>						
185	275	90	140	108	2NO-2NC	<b>DILM185A/22(...)</b>
225	315	110	150	108	2NO-2NC	<b>DILM225A/22(...)</b>
250	330	132	195	108	2NO-2NC	<b>DILM250/22(...)</b>
<b>Frame M – Electronic Coil</b>						
300	350	160	195	132	2NO-2NC	<b>DILM300A/22(...)</b>
400	500	200	344	132	2NO-2NC	<b>DILM400/22(...)</b>
500	700	250	344	132	2NO-2NC	<b>DILM500/22(...)</b>

Contactors Frame L - R; Electronic Coil: Wide range of control voltages, Can be controlled by a PLC output, Can be controlled by a low power command device, like a limit switch or sensor.



Frame B



Frame C



Frame D



Frame F & G



Frame L

## Xstart IEC Contactors

### Full voltage non-reversing 3-pole contactors

IEC ratings						
AC-3 Ie (A)	AC-1 (60°C) Ie = Ith (A)	Maximum kW ratings AC-3 3-Phase Motors 50 – 60 Hz			Aux. contacts	Item no.
		400V	660/ 690V	1000V		
<b>Frame M – Standard coil (110/120V, 230/240V AC coil only)</b>						
300	430	160	195	-	2NO-2NC	<b>DILM300A-S/22(...)</b>
400	612	200	344	-	2NO-2NC	<b>DILM400-S/22(...)</b>
500	857	250	344	-	2NO-2NC	<b>DILM500-S/22(...)</b>
<b>Frame N – Electronic coil</b>						
580	800	315	560	600	2NO-2NC	<b>DILM580/22(...)</b>
650	850	355	630	600	2NO-2NC	<b>DILM650/22(...)</b>
750	900	400	720	800	2NO-2NC	<b>DILM750/22(...)</b>
820	1000	450	750	800	2NO-2NC	<b>DILM820/22(...)</b>
1000	1000	560	1000	1100	2NO-2NC	<b>DILM1000/22(...)</b>
<b>Frame R – Electronic coil</b>						
1600	1800	900	1600	1770	2NO-2NC	<b>DILM1600/22(...)</b>
-	1400	-	-	-	-	<b>DILH1400/22(...)</b>
-	2000	-	-	-	-	<b>DILH2000/22(...)</b>
-	2200	-	-	-	-	<b>DILH2200/22(...)</b>
-	2600	-	-	-	-	<b>DILH2600/22(...)</b>

Note: AC & DC operated contactors have a built-in suppressor circuit.  
(Frames L – R, 185 – 2600A).



Frame M



Frame N



Frame R

### Coil suffix tables

Coil voltage (suffix)	DILM7-15	DILM17-65, DILM80-95	DILM72	DILM115-225A
24V AC	<b>24V50HZ</b>	<b>24V50HZ</b>	<b>24V50/60HZ</b>	<b>RAC24</b>
110V AC	<b>110V50HZ,120V60HZ</b>	<b>110V50HZ,120V60HZ</b>	<b>110V50HZ,120V60HZ</b>	<b>RAC120</b>
240V AC	<b>240V50HZ</b>	<b>240V50HZ</b>	<b>240V50HZ</b>	<b>RAC240</b>
415VAC	<b>415V50HZ,480V60HZ</b>	<b>415V50HZ,480V60HZ</b>	<b>400V50HZ,440V60HZ</b>	<b>RAC440</b>
24V DC	<b>24VDC</b>	<b>RDC24</b>	<b>RDC24</b>	<b>RDC24</b>
48V DC	<b>48VDC</b>	<b>RDC60</b>	-	<b>RDC60</b>
110V DC	<b>110VDC</b>	<b>RDC130</b>	-	<b>RDC130</b>
230V DC	<b>220VDC</b>	<b>RDC240</b>	<b>RDC240</b>	<b>RDC240</b>

Coil voltage (suffix)	DILM250-500	DILM580-820	DILM1000	DILM1600
24V AC	-	-	-	-
110V AC	<b>RA110</b>	<b>RA110</b>	-	-
240V AC	<b>RA250</b>	<b>RA250</b>	<b>RA250</b>	<b>RAW250</b>
415VAC	<b>RAC500</b>	<b>RAC500</b>	-	-
24V DC	<b>RDC48</b>	-	-	-
48V DC	<b>RDC48</b>	-	-	-
110V DC	<b>RA110</b>	<b>RA110</b>	-	-
230V DC	<b>RA250</b>	<b>RA250</b>	<b>RA250</b>	<b>RAW250</b>

# Power control

## Motor control

### Xstart IEC Contactors

#### IEC 4-Pole Contactors, frame B – frame G

le (A) AC-3	le = lth (A) (40°C) AC-1	Maximum kW ratings AC-3 3 Ph Motors 50 – 60 Hz 400V, kW	Item no.
<b>Frame B</b>			
12	20	5.5	<b>DILMP20(...)</b>
<b>Frame C</b>			
18	32	7.5	<b>DILMP32-10(...)</b>
25	45	11	<b>DILMP45-10(...)</b>
<b>Frame D</b>			
40	63	18.5	<b>DILMP63(...)</b>
50	80	22	<b>DILMP80(...)</b>
<b>Frame G</b>			
80	125	37	<b>DILMP125(...)</b>
95	160	45	<b>DILMP160(...)</b>
115	200	55	<b>DILMP200(...)</b>

#### IEC Capacitor contactors, frame C – Frame D

Switching duty in kvar - Group compensation, without reactor				Item no.
230V	400V	525V	690V	
<b>Frame C</b>				
7.5	12.5	16.7	20	<b>DILK12-11(...)</b>
11	20	25	33.3	<b>DILK20-11(...)</b>
15	25	33.3	40	<b>DILK25-11(...)</b>
<b>Frame D</b>				
20	33.3	40	55	<b>DILK33-10(...)</b>
25	50	65	85	<b>DILK50-10(...)</b>

Note: Weld resistant contactors for capacitors, with inrush current peaks up to 180 I<sub>n</sub>

#### Accessories - Auxiliary contacts

Conventional thermal current, Open at 60°C lth = le, AC-1 in Amps	Poles	Contact configuration	Item no.
<b>Frame B – C – Front (Top) Mount</b>			
16	2	2NO	<b>DILA-XHI20</b>
16	2	2NC	<b>DILA-XHI02</b>
16	2	1NO-1NC	<b>DILA-XHI11</b>
16	2	1ECNO-1LONC	<b>DILA-XHIV11</b>
16	2	2NO	<b>DILA-XHIT20</b> <sup>®</sup>
16	2	1NO-1NC	<b>DILA-XHIT11</b> <sup>®</sup>
16	2	2NC	<b>DILA-XHIT02</b> <sup>®</sup>
16	4	2NO-2NC	<b>DILA-XHIT22</b> <sup>®</sup>
16	4	4NO	<b>DILA-XHI40</b>
16	4	4NC	<b>DILA-XHI04</b>
16	4	2NO-2NC	<b>DILA-XHI22</b>
16	4	3NO-1NO	<b>DILA-XHI31</b>
16	4	1NO-3NC	<b>DILA-XHI13</b>
16	4	1NO-1NC, 1ECNO-1LONC	<b>DILA-XHIV22</b>
<b>Frame B – Side mount</b>			
16	1	1NO	<b>DILA-XHI10-S</b>
16	1	1NC	<b>DILA-XHI01-S</b>
<b>Frame C – Side mount</b>			
10	2	1NO-1NC	<b>DILM32-XHI11-S</b>
<b>Frame D – G Front (top) mount</b>			
16	2	2NO	<b>DILM150-XHI20</b>
16	2	2NC	<b>DILM150-XHI02</b>
16	2	1NO-1NC	<b>DILM150-XHI11</b>
16	4	4NO	<b>DILM150-XHI40</b>
16	4	4 NC	<b>DILM150-XHI04</b>
16	4	2NO-2NC	<b>DILM150-XHI22</b>
16	4	3NO-1NC	<b>DILM150-XHI31</b>
16	4	1NO-3NC	<b>DILM150-XHI13</b>
16	4	1NO-1NC, 1ECNO-1LONC	<b>DILM150-XHIV22</b>



Frame B-C



Frame B



Frame C

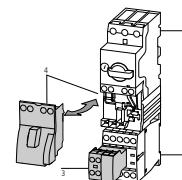


Frame D-G

Frame B - side mount: can be mounted to the left side of contactor only. Cannot be used in combination with front (top) mount auxiliary contacts or mechanical interlocks.

Note: Interlocked opposing contacts, to IEC/EN 60947-5-1 Annex L (positively driven), within the auxiliary contact modules (not NO (early make) & NC (late break) contacts) & for the built-in auxiliary contacts of the DILM7 - DILM38... Auxiliary break contact can be used as mirror contact to IEC/EN 60947-4-1 Annex F (not NC (late break) contact). No auxiliary contacts can be fitted between two contactors.

<sup>®</sup>Suitable for the combination with electrical wiringlinks in tool-less plug connection usable with: DILM12-XSL, DILM12-XRL, DILM12-XS1, PKZM0-XDM12, PKZM0-XRM12, PKZM0-XSM12



## Xstart IEC Contactors

### Accessories

#### Side mount auxiliary contacts for frame D – R, 40 – 2600A

Conventional free air thermal current, I <sub>th</sub> = I <sub>e</sub> , AC-1 in Amps	Poles	Contact configuration	Item no.
<b>Frame D – L (40 - 225A)</b>			
10	2	1NO-1NC	<b>DILM1000-XHI11-SI</b>
10	2	IECNO-ILONC	<b>DILM1000-XHIV11-SI</b>
<b>Frame L – R (250 - 2600A)</b>			
10	2	1NO-1NC	<b>DILM820-XHI11-SI</b>
10	2	IECNO-ILONC	<b>DILM820-XHI11V-SI</b>

Note: For Frames B – C, cannot use both a side & a top mount auxiliary contact at the same time. For Frame D, 6 auxiliary contacts maximum (can be a combination of side & top mount units). For Frames F – R, 8 auxiliary contacts maximum (can be a combination of side & top mount units).



DILM1000-XHI11-SI



DILM12-XMV



DILM32-XMV



DILM500-XMV

### Mechanical interlock<sup>Ⓞ</sup>

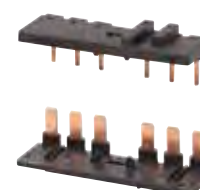
For use with...	Pkg. qty.	Item no.
DILM7 - 15 DILMP20 DILA	5	<b>DILM12-XMV</b>
DILM17 - 38	1	<b>DILM32-XMV</b>
DILM40 - 72	1	<b>DILM65-XMV</b>
DILM80 - 170	1	<b>DILM150-XMV<sup>Ⓜ</sup></b>
DILM185A - 500	1	<b>DILM500-XMV</b>
DILM580 - 1000	1	<b>DILM820-XMV<sup>Ⓜ</sup></b>

### Reversing link kits

For use with...	Pkg. qty.	Item no.
DILM7 - 12	1	<b>DILM12-XRL<sup>Ⓞ</sup></b>
DILM17 - 32	1	<b>DILM32-XRL</b>
DILM40 - 65	1	<b>DILM65-XRL</b>
DILM80 - 150	1	<b>DILM150-XRL</b>



DILM12-XRL



DILM32-XRL

<sup>Ⓞ</sup> For two contactors with AC or DC operated magnet system which are horizontally or vertically mounted. For B – G frames, mechanical lifespan is 2.5 x 10<sup>6</sup> operations & the distance between contactors is 0 mm. For L – N frames, mechanical lifespan is 5 x 10<sup>6</sup> operations & no auxiliary contact can be mounted between the mechanical interlock & the contactor — the distance between contactors is 15 mm.

<sup>Ⓜ</sup> DILM150-XMV and DILM820-XMV consist of an interlock element & mounting plate.

<sup>Ⓝ</sup> Also includes Interlocking Bridge (DILM12-XEV).

Accessories

Suppressor circuit

Voltage $U_s$ V	For use with	Item no.
<b>RC suppressors</b>		
24 - 48 AC	DILM7 - DILM15	<b>DILM12-XSPR48</b>
110 - 240 AC	DILMP20	<b>DILM12-XSPR240</b>
240 - 500 AC	DILA	<b>DILM12-XSPR500</b>
24 - 48 AC	DILM17 - DILM32	<b>DILM32-XSPR48</b>
110 - 240 AC	DILK12 - DILK25	<b>DILM32-XSPR240</b>
240 - 500 AC	DILL..	<b>DILM32-XSPR500</b>
24 - 48 AC	DILMP32 - DILMP45	<b>DILM32-XSPR500</b>
24 - 48 AC	DILM40 - DILM95	<b>DILM95-XSPR48</b>
110 - 240 AC	DILK33 - DILK50	<b>DILM95-XSPR240</b>
240 - 500 AC	DILMP63 - DILMP200	<b>DILM95-XSPR500</b>
<b>Varistor suppressors</b>		
24 - 48 AC		<b>DILM12-XSPV48</b>
48 - 130 AC	DILM7 - DILM15	<b>DILM12-XSPV130</b>
130 - 240 AC	DILMP20	<b>DILM12-XSPV240</b>
240 - 500 AC	DILA	<b>DILM12-XSPV500</b>
24 - 48 AC		<b>DILM32-XSPV48</b>
48 - 130 AC	DILM17 - DILM32	<b>DILM32-XSPV130</b>
130 - 240 AC	DILK12 - DILK25	<b>DILM32-XSPV240</b>
240 - 500 AC	DILL..	<b>DILM32-XSPV500</b>
24 - 48 AC	DILMP32 - DILMP45	<b>DILM32-XSPV500</b>
24 - 48 AC		<b>DILM95-XSPV48</b>
48 - 130 AC	DILM40 - DILM95	<b>DILM95-XSPV130</b>
130 - 240 AC	DILK33 - DILK50	<b>DILM95-XSPV240</b>
240 - 500 AC	DILMP63 - DILMP200	<b>DILM95-XSPV500</b>
<b>Varistor suppressors with integrated LED</b>		
24 - 48 AC	DILM7 - DILM15	<b>DILM12-XSPVL48</b>
130 - 240 AC	DILMP20	<b>DILM12-XSPVL240</b>
24 - 48 AC	DILA	<b>DILM12-XSPVL240</b>
24 - 48 AC	DILM17 - DILM32	<b>DILM32-XSPVL48</b>
130 - 240 AC	DILK12 - DILK25	<b>DILM32-XSPVL240</b>
240 - 500 AC	DILL..	<b>DILM32-XSPVL240</b>
24 - 48 AC	DILMP32 - DILMP45	<b>DILM32-XSPVL240</b>
24 - 48 AC	DILM40 - DILM95	<b>DILM95-XSPVL48</b>
130 - 240 AC	DILK33 - DILK50	<b>DILM95-XSPVL240</b>
240 - 500 AC	DILMP63 - DILMP200	<b>DILM95-XSPVL240</b>
<b>Diode suppressor</b>		
12 - 250 DC	DILM7 - DILM15	<b>DILM12-XSPD</b>
	DILMP20	
	DILA	



DILM12-XSPR48



DILM12-XSPV48



DILM12-XSPVL48



DILM12-XSPD

## Accessories

### Paralleling links for main contacts\*

For use with	Item no.
DILM7 - DILM15	<b>DILM12-XP1</b>
DILM17 - DILM32	<b>DILM32-XP1</b>
DILM40 - DILM72	<b>DILM65-XP1</b>
DILM80 - DILM72	<b>DILM150-XP1</b>
DILM185A	<b>DILM185-XP1</b>

\* Consisting of 2 paralleling links

### Star-point bridges

For use with	Item no.
DILM7 - DILM15	<b>DILM12-XS1</b>
DILM17 - DILM32	<b>DILM32-XS1</b>
DILM40 - DILM72	<b>DILM65-XS1</b>
DILM80 - DILM170	<b>DILM150-XS1</b>
DILM185A - DILM400	<b>DILM400-XS1</b>
DILM500	<b>DILM500-XS1</b>

### Star-delta wiring kit

For use with	Item no.
DILM7, DILM9, DILM12, DILM15	<b>DILM12-XSL</b>
DILM17, DILM25, DILM32	<b>DILM32-XSL</b>
DILM40, DILM50, DILM65	<b>DILM65-XSL</b>
DILM80, DILM95	<b>DILM95-XSL</b>
DILM115, DILM150	<b>DILM150-XSL</b>

### IP2X cover set

For use with	Item no.
DILM17, DILM25, DILM32, DILM38, DILMP32, DILMP45	<b>DILM32-XIP2X</b>
DILM40, DILM50, DILM65, DILM72, DILMP63, DILMP80	<b>DILM65-XIP2X</b>
DILM80, DILM95, DILM115, DILM150, DILM170, DILMP125, DILMP160, DILMP200, ZB150	<b>DILM150-XIP2X</b>



DILM12-XP1



DILM32-XP1



DILM150-XP1



DILM12-XS1



DILM400-XS1



DILM12-XSL



DILM32-XSL



DILM32-XIP2X



DILM65-XIP2X



### Accessories

#### Electronic timer modules

Description	For use with	Item no.
<b>On-delayed</b>		
<b>Cannot be combined with top mounting auxiliary contacts. Incl. suppressor circuits</b>		
24V AC/DC	DILM7 - DILM32	<b>DILM32-XTEE11(RA24)</b>
100 ... 130 V AC	DILMP20	<b>DILM32-XTEE11(RA130)</b>
200 ... 240 V AC	DILA	<b>DILM32-XTEE11(RAC240)</b>
<b>Off-delayed, auxiliary voltage-free</b>		
<b>Cannot be combined with top mounting auxiliary contacts. Incl. suppressor circuits</b>		
24V AC/DC		<b>DILM32-XTED11-1(RA24)</b>
		<b>DILM32-XTED11-10(RA24)</b>
		<b>DILM32-XTED11-100(RA24)</b>
100 ... 130 V AC	DILM7 - DILM32	<b>DILM32-XTED11-1(RAC130)</b>
	DILMP20	<b>DILM32-XTED11-10(RAC130)</b>
	DILMP32 - DILMP45	<b>DILM32-XTED11-100(RAC130)</b>
	DILA	<b>DILM32-XTED11-100(RAC130)</b>
200 ... 240 V AC		<b>DILM32-XTED11-1(RAC240)</b>
		<b>DILM32-XTED11-10(RAC240)</b>
		<b>DILM32-XTED11-100(RAC240)</b>
<b>For star-delta applications</b>		
<b>Cannot be combined with top mounting auxiliary contacts. Incl. suppressor circuits</b>		
24V AC/DC	DILM7 - DILM32	<b>DILM32-XTEY20(RA24)</b>
100 ... 130 V AC	DILMP20	<b>DILM32-XTEY20(RAC130)</b>
200 ... 240 V AC	DILMP32 - DILMP45	<b>DILM32-XTEY20(RAC240)</b>
	DILA	<b>DILM32-XTEY20(RAC240)</b>



DILM32-XTEE11(RA24)



DILM32-XTED11-1(RA24)



DILM32-XTEY20(RA24)

### Accessories

Description	For use with	Item no.
<b>SmartWire-Darwin module for installation on contactors. One module per contactor</b>		
Two digital inputs for potential-free contacts. 1 electrical interlock for the surface mounting of reversing starters. Messages: Contactor switch status, status of the digital inputs 1 and 2.	DILM7... - DILM32 DILM38 DILA	<b>DIL-SWD-32-001</b>
Two digital inputs for potential-free contacts. 1 electrical interlock for the surface mounting of reversing starters. 1-0-A switch for manual or automatic operation. Messages: contactor switching position, status of the digital inputs 1 and 2, 1-0-A switch position.	DILM7... - DILM32 DILM38 DILA	<b>DIL-SWD-32-002</b>
<b>Wiring set for motor feeder plug</b>		
PE module with contact plate	DILM7 DILM9 DILM12 DILM15	<b>DILM12-XMCE</b>
Motor plate with PE module and contact plate	DILM7 DILM9 DILM12 DILM15	<b>DILM12-XMCP/E</b>
	PKZM0/PKE + DILM7 PKZM0/PKE + DILM9 PKZM0/PKE + DILM12 PKZM0/PKE + DILM15	<b>DILM12-XMCP/T</b>



DIL-SWD-32-001



DILM12-XMCP/E

## Accessories

### Sealable shrouds - Transparent

For use with	Item no.
DILM32-XTE...	<b>DILM32-XTEPLH</b>

### Suppressor circuits for vacuum contactors (on load side)

For use with	Item no.
DILM580 DILM650 DILM750 DILM820 DILM1000	<b>DILM1000-XSM</b>
DILH2000 DILH2200 DILH2600	<b>DILH2600-XSM</b>

### Terminal Cover

For use with	Item no.
DILM185A DILM225A	<b>DILM225A-XHB</b>
DILM250 DILM300A DILM400	<b>DILM400-XHB</b>
DILM500	<b>DILM500-XHB</b>
DILM580 DILM650	<b>DILM650-XHB</b>
DILM750 DILM820 DILM1000	<b>DILM820-XHB</b>



DILM32-XTEPLH



DILM1000-XSM



DILM225A-XHB

### Amplifier module for separate mounting

Rated operational current AC-15			Actuating voltage $U_s$ A DC	For use with	Item no.
AC-15 230V $I_g$ A	400V $I_g$ A	DC 220V $I_g$ A			
2	2	0.03	24	...DILM DILMP... DILL... DILK...	<b>ETS4-VS3</b>

Notes: Contactor coils with rated operational current > 2 A must be actuated via the DILER-G mini contactor relay.  
Rated operational current DC: Making and breaking conditions DC-13, time L/R 300ms

### Replacement coils for DILM contactors

For use with	DC voltage Item no.	AC voltage Item no.	For use with	DC voltage Item no.	AC voltage Item no.
DILM17 DILM25 DILM32 DILM38	<b>DILM32-XSP (RDC24) *</b>	<b>DILM32-XSP (240V50HZ)</b>	DILM250 DILM300A	<b>DILM250-XSP/E (RA250)</b>	<b>DILM250-XSP/E (RA250)</b>
DILM40 DILM50 DILM65 DILM72	<b>DILM65-XSP (RDC24) *</b>	<b>DILM65-XSP (240V50HZ)</b>	DILM400 DILM500	<b>DILM500-XSP/E (RA250)</b>	<b>DILM500-XSP/E (RA250)</b>
DILM80 DILM95	<b>DILM95-XSP (RDC24) *</b>	<b>DILM95-XSP (240V50HZ)</b>	DILM580 DILM650 DILM750 DILM820 DILM1000	<b>DILM1000-XSP/E (RA250)</b>	<b>DILM1000-XSP/E (RA250)</b>
DILM115 DILM150 DILM170	<b>DILM150-XSP (RDC24) *</b>	<b>DILM150-XSP (RAC240)</b>	DILH1400	-	<b>DILH1400-XSP/E (RAW250)</b>
DILM185A DILM225A	<b>DILM225A-XSP (RDC24) *</b>	<b>DILM225A-XSP (RAC240)</b>	DILM250-S DILM300A-S	-	<b>DILM250-S-XSP/E (220-240V50/60HZ)</b>
			DILM400-S DILM500-S	-	<b>DILM500-S-XSP/E (220-240V50/60HZ)</b>

\* (Includes electronic module)



ETS4-VS3



DILM32-XSP(RDC24)

## Contactors monitoring device

### CMD

#### Application

The function of the CMD is to monitor the main contacts of a contactor against welding. For this the control voltage of the contactor is compared with the state of the main contacts which is reliably monitored using a mirror contact (IEC EN60947-4-1 Annex F). If the coil is deenergized and the contactor does not drop out the CMD trips the upstream circuit-breaker/motor protective circuit breaker/switch-disconnector via a shunt release.

#### Safety

The CMD has a safety-compliant design so that in safety combinations with a circuit-breaker/motor protective circuit breaker/switch disconnector the reliable switch off in the case of a "welded contactor" can be guaranteed. In this application it replaces the series connection of a second contactor. As a component it conforms to safety category 3 according to EN 954-1 and EN ISO 13849.



CMD(24VDC)

Description	Item no.
Contactors monitoring device	<b>CMD(24VDC)</b>
Contactors monitoring device	<b>CMD(220-240VAC)</b>



Thermal overload relays



Electronic overload relays



Motor insight overload and motor protection relays

### Overload relays

#### Product overview

Description	Thermal overload relays	Electronic overload relays	Motor insight overload and motor protection relays
Type	ZB	ZEB	C441
Relay type	Thermal Bi-Metallic	Electronic	Electronic
Direct connect to contactor	Yes, (DILM)	Yes, (DILM)	—
Separate mount	Yes, Adapter	Yes	Yes
FLC Range	0.1 – 630A	0.1 – 1500A	1 – 540A (with CTs)
FLC max.:min. ratio	Approx. 1.5:1	5:1	—
Motor overload protection	Yes	Yes	Yes
Underload protection	—	—	Yes
Supply protection	—	—	Yes
Enhanced phase loss protection	—	Yes	Yes
Enhanced phase imbalance protection	—	Yes	Yes
Trip class	10A	Selectable 10 / 20 / 30	5 – 30
Reset type	Selectable manual / automatic	Selectable manual / automatic	Selectable manual / automatic / programmable / remote
Communications with I/O	—	Yes	Yes (Modbus, ETHERNET/IP, DeviceNet, PROFIBUS)
Remote display	—	—	Yes
Ground fault	—	Yes	Yes
Alarm no trip	—	—	Yes (voltage & ground faults)
Jam	—	Yes	Yes
Programmable reset timers	—	—	Yes
Programmable reset attempts	—	—	Yes
Current monitoring	—	Yes	Yes
Voltage monitoring	—	—	Yes
Power monitoring	—	—	Yes
Thermal capacity monitoring	—	Yes	Yes
Motor run hours monitoring	—	—	Yes

## Overload relays

### ZB bi-metallic overload relays

- Direct mount to DILM contactors or separate mount
- Class 10A, up to 630A motors
- Ambient - compensated bi-metallic
- Test/off pushbutton
- Reset pushbutton manual/auto
- Tripfree release



Setting range overload release, I <sub>r</sub>	Aux contact configuration	For use with contactor Ampere range	Item no.
<b>Frame B – Direct mount to contactor (DILM7-15)</b>			
0.1 – 0.16	1NO-1NC	7 – 15A	<b>ZB12-0,16</b>
0.16 – 0.24	1NO-1NC	7 – 15A	<b>ZB12-0,24</b>
0.24 – 0.4	1NO-1NC	7 – 15A	<b>ZB12-0,4</b>
0.4 – 0.6	1NO-1NC	7 – 15A	<b>ZB12-0,6</b>
0.6 – 1	1NO-1NC	7 – 15A	<b>ZB12-1</b>
1 – 1.6	1NO-1NC	7 – 15A	<b>ZB12-1,6</b>
1.6 – 2.4	1NO-1NC	7 – 15A	<b>ZB12-2,4</b>
2.4 – 4	1NO-1NC	7 – 15A	<b>ZB12-4</b>
4 – 6	1NO-1NC	7 – 15A	<b>ZB12-6</b>
6 – 10	1NO-1NC	7 – 15A	<b>ZB12-10</b>
9 – 12	1NO-1NC	9 – 15A	<b>ZB12-12</b>
12 – 16	1NO-1NC	12 – 15A	<b>ZB12-16</b>
<b>Frame C – Direct mount to contactor (DILM17-38)</b>			
0.1 – 0.16	1NO-1NC	17 – 38A	<b>ZB32-0,16</b>
0.16 – 0.24	1NO-1NC	17 – 38A	<b>ZB32-0,24</b>
0.24 – 0.4	1NO-1NC	17 – 38A	<b>ZB32-0,4</b>
0.4 – 0.6	1NO-1NC	17 – 38A	<b>ZB32-0,6</b>
0.6 – 1	1NO-1NC	17 – 38A	<b>ZB32-1</b>
1 – 1.6	1NO-1NC	17 – 38A	<b>ZB32-1,6</b>
1.6 – 2.4	1NO-1NC	17 – 38A	<b>ZB32-2,4</b>
2.4 – 4	1NO-1NC	17 – 38A	<b>ZB32-4</b>
4 – 6	1NO-1NC	17 – 38A	<b>ZB32-6</b>
6 – 10	1NO-1NC	17 – 38A	<b>ZB32-10</b>
10 – 16	1NO-1NC	17 – 38A	<b>ZB32-16</b>
16 – 24	1NO-1NC	17 – 38A	<b>ZB32-24</b>
24 – 32	1NO-1NC	17 – 38A	<b>ZB32-32</b>
32 – 38	1NO-1NC	17 – 38A	<b>ZB32-38</b>
<b>Frame D – Direct mount to contactor (DILM40-72)</b>			
6 – 10	1NO-1NC	40 – 72A	<b>ZB65-10</b>
10 – 16	1NO-1NC	40 – 72A	<b>ZB65-16</b>
16 – 24	1NO-1NC	40 – 72A	<b>ZB65-24</b>
24 – 40	1NO-1NC	40 – 72A	<b>ZB65-40</b>
40 – 57	1NO-1NC	40 – 72 A	<b>ZB65-57</b>
50 – 65	1NO-1NC	40 – 72A	<b>ZB65-65</b>
65 – 75	1NO-1NC	40 - 72 A	<b>ZB65-75</b>
<b>Frame F – G – Direct mount to contactor (DILM80-170)</b>			
35 – 50	1NO-1NC	80 – 170A	<b>ZB150-50</b>
50 – 70	1NO-1NC	80 – 170A	<b>ZB150-70</b>
70 – 100	1NO-1NC	80 – 170A	<b>ZB150-100</b>
95 – 125	1NO-1NC	80 – 170A	<b>ZB150-125</b>
120 – 150	1NO-1NC	80 – 170A	<b>ZB150-150</b>
145 – 175	1NO-1NC	80 – 170A	<b>ZB150-175</b>
<b>Frame F – G – Separate mount to contactor (DILM80-170)</b>			
35 – 50	1NO-1NC	80 – 170A	<b>ZB150-50/KK</b>
50 – 70	1NO-1NC	80 – 170A	<b>ZB150-70/KK</b>
70 – 100	1NO-1NC	80 – 170A	<b>ZB150-100/KK</b>
95 – 125	1NO-1NC	80 – 170A	<b>ZB150-125/KK</b>
120 – 150	1NO-1NC	80 – 170A	<b>ZB150-150/KK</b>
145 – 175	1NO-1NC	80 – 170A	<b>ZB150-175/KK</b>

Overload Relays

ZB bi-metallic Overload Relays



Setting range Overload release, I <sub>r</sub>	Aux contact configuration	For use with contactor Ampere range	Item no.
<b>Frame L – Direct mount or separate mount (DILM185A-300A)</b>			
50 – 70	1NO-1NC	185 - 225A	<b>Z5-70/FF225A</b>
70 – 100	1NO-1NC	185 - 225A	<b>Z5-100/FF225A</b>
95 – 125	1NO-1NC	185 - 225A	<b>Z5-125/FF225A</b>
120 – 160	1NO-1NC	185 - 225A	<b>Z5-160/FF225A</b>
160 – 220	1NO-1NC	185 - 225A	<b>Z5-220/FF225A</b>
200 – 250	1NO-1NC	185 - 225A	<b>Z5-250/FF225A</b>
50 – 70	1NO-1NC	250A	<b>Z5-70/FF250</b>
70 – 100	1NO-1NC	250A	<b>Z5-100/FF250</b>
95 – 125	1NO-1NC	250A	<b>Z5-125/FF250</b>
120 – 160	1NO-1NC	250A	<b>Z5-160/FF250</b>
160 – 220	1NO-1NC	250A	<b>Z5-220/FF250</b>
200 – 250	1NO-1NC	250A	<b>Z5-250/FF250</b>
250 – 300	1NO-1NC	300A	<b>Z5-300/FF250</b>

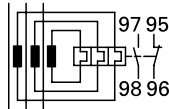
Note: Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting.  
Trip Class: 10A. Suitable for protection of EEx e-motors.

Current transformer operated overload relay

Setting range Overload release, I <sub>r</sub>	Contact Sequence	Aux contact configuration	For use with contactor Ampere range	Item no.
<b>Frame L – N – Separate Mount</b>				
42 - 63		1NO-1NC	185 - 650A	<b>ZW7-63</b>
60 - 90		1NO-1NC	185 - 650A	<b>ZW7-90</b>
85 - 125		1NO-1NC	185 - 650A	<b>ZW7-125</b>
110 - 160		1NO-1NC	185 - 650A	<b>ZW7-160</b>
160 - 240		1NO-1NC	185 - 650A	<b>ZW7-240</b>
190 - 290		1NO-1NC	185 - 650A	<b>ZW7-290</b>
270 - 400		1NO-1NC	185 - 650A	<b>ZW7-400</b>
360 - 540		1NO-1NC	185 - 650A	<b>ZW7-540</b>
420 - 630		1NO-1NC	185 - 650A	<b>ZW7-630</b>



ZB32-XEZ



DIN-Rail or panel-mount adapter, frame C – D

Accessories

For use with...	Item no.
ZB32	<b>ZB32-XEZ</b>
ZB65	<b>ZB65-XEZ</b>

Can be snap fitted on a top hat rail (DIN-Rail) or can be screw fitted.

External reset button, IP65

For use with...	Item no.
ZW7...	
ZE, Z5	<b>M22-DZ-B-GB14</b>
ZB12, ZB32	
ZB65, ZB150	



M22-DZ-B-GB14

ZEB12 electronic overload relay

- Phase-failure sensitivity
- Test/off pushbutton
- Reset button
- Manual/Auto reset selectable
- Protection with heavy starting duty (Class 5-30)

ZEB12 direct mounting

Ground fault detection	Setting range of overload releases I <sub>r</sub> , A	Auxiliary contact	For use with...	Item no.
Without	0.33 - 1.65	1NO - 1NC		<b>ZEB12-1,65</b>
Without	1 - 5	1NO - 1NC		<b>ZEB12-5</b>
Without	4 - 20	1NO - 1NC	DILM7 DILM9	<b>ZEB12-20</b>
With	0.33 - 1.65	1NO - 1NC	DILM12 DILM15	<b>ZEB12-1,65-GF</b>
With	1 - 5	1NO - 1NC		<b>ZEB12-5-GF</b>
With	4 - 20	1NO - 1NC		<b>ZEB12-20-GF</b>



## Overload relays

### ZEB32 electronic overload relay

- Phase-failure sensitivity
- Test/off pushbutton
- Reset button
- Manual/Auto reset selectable
- Protection with heavy starting duty (Class 5-30)



### ZEB32 direct mounting

Ground fault detection	Setting range of overload releases $I_r$ , A	Auxiliary contact	For use with...	Item no.
Without	0.33 - 1.65	1NO - 1NC		<b>ZEB32-1,65</b>
Without	1 - 5	1NO - 1NC		<b>ZEB32-5</b>
Without	4 - 20	1NO - 1NC		<b>ZEB32-20</b>
Without	9 - 45	1NO - 1NC	DILM17 DILM25	<b>ZEB32-45</b>
With	0.33 - 1.65	1NO - 1NC	DILM32 DILM38	<b>ZEB32-1,65-GF</b>
With	1 - 5	1NO - 1NC		<b>ZEB32-5-GF</b>
With	4 - 20	1NO - 1NC		<b>ZEB32-20-GF</b>
With	9 - 45	1NO - 1NC		<b>ZEB32-45-GF</b>

### ZEB32 separate mounting

Ground fault detection	Setting range of overload releases $I_r$ , A	Auxiliary contact	For use with...	Item no.
Without	0.33 - 1.65	1NO - 1NC		<b>ZEB32-1,65/KK</b>
Without	1 - 5	1NO - 1NC		<b>ZEB32-5/KK</b>
Without	4 - 20	1NO - 1NC		<b>ZEB32-20/KK</b>
Without	9 - 45	1NO - 1NC	DILM17 DILM25	<b>ZEB32-45/KK</b>
With	0.33 - 1.65	1NO - 1NC	DILM32 DILM38	<b>ZEB32-1,65-GF/KK</b>
With	1 - 5	1NO - 1NC		<b>ZEB32-5-GF/KK</b>
With	4 - 20	1NO - 1NC		<b>ZEB32-20-GF/KK</b>
With	9 - 45	1NO - 1NC		<b>ZEB32-45-GF/KK</b>

### ZEB65 and ZEB150 electronic overload relay

- Phase-failure sensitivity
- Test/off pushbutton
- Reset button
- Manual/Auto reset selectable
- Protection with heavy starting duty (Class 5-30)



### ZEB65 direct mounting

Ground fault detection	Setting range of overload releases $I_r$ , A	Auxiliary contact	For use with...	Item no.
Without	9 - 45	1NO - 1NC		<b>ZEB65-45</b>
With	9 - 45	1NO - 1NC	DILM40 DILM50	<b>ZEB65-45-GF</b>
Without	20 - 100	1NO - 1NC	DILM65 DILM72	<b>ZEB65-100</b>
With	20 - 100	1NO - 1NC		<b>ZEB65-100-GF</b>

### ZEB150 direct mounting

Ground fault detection	Setting range of overload releases $I_r$ , A	Auxiliary contact	For use with...	Item no.
Without	20 - 100	1NO - 1NC	DILM80 DILM95	<b>ZEB150-100</b>
With	20 - 100	1NO - 1NC	DILM115 DILM150	<b>ZEB150-100-GF</b>

### ZEB150 separate mounting

Ground fault detection	Setting range of overload releases $I_r$ , A	Auxiliary contact	For use with...	Item no.
Without	20 - 100	1NO - 1NC	DILM80 DILM95	<b>ZEB150-100/KK</b>
With	20 - 100	1NO - 1NC	DILM115 DILM150	<b>ZEB150-100-GF/KK</b>



### Overload relays

#### ZEB accessories

#### Current sensors

Setting range of overload releases $I_n$ , A	For use with...	Item no.
60 - 300		<b>ZEB-XCT300</b>
120 - 600	ZEB32-5-GF/KK	<b>ZEB-XCT600</b>
200 - 1000	ZEB32-5/KK	<b>ZEB-XCT1000</b>
300 - 1500		<b>ZEB-XCT1500</b>



EMT6



EMT6-DB



EMT6-DBK



CS-TE

#### Thermistor overload relays for machine protection

- 3 A rated operational current for AC-15, 240 V

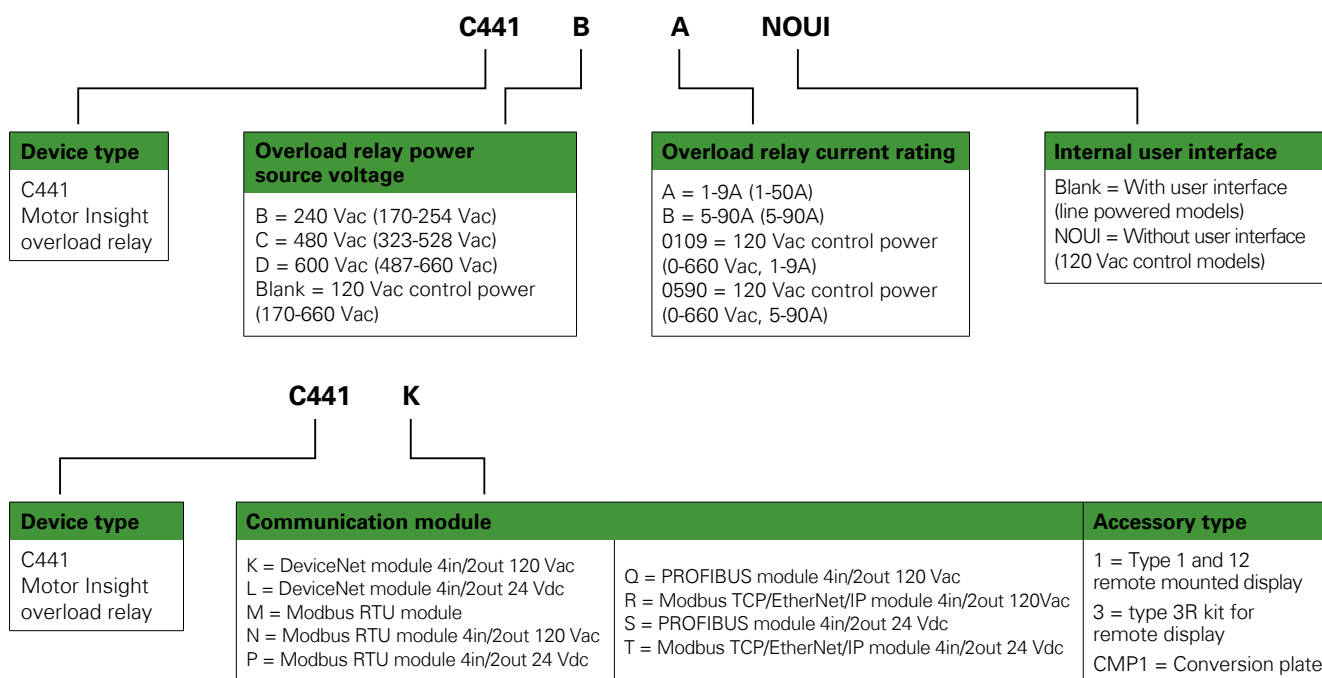
Description	Rated control voltage $U_s$ , V	Item no.
Without automatic reset Mains & fault LED display	24 – 240 V 50/60 Hz, 24 – 240 V DC	<b>EMT6</b> ①
Without automatic reset Mains & fault LED display With 2 sensor circuits		<b>EMT62</b>
Without automatic reset Mains & fault LED display Trip with short-circuit in the sensor cable	24 – 240 V 50/60 Hz, 24 – 240 V DC	<b>EMT6-K</b>
Without automatic reset Mains & fault LED display	230 V 50/60 Hz	<b>EMT6(230V)</b> ①
Selector switch with/without automatic reset For manual or remote resetting Test button Mains & fault LED display	24 – 240 V 50/60 Hz, 24 – 240 V DC	<b>EMT6-DB</b> ①
Selector switch with/without automatic reset For manual or remote resetting Test button Mains & fault LED display With 2 sensor circuits		<b>EMT62-DB</b>
Selector switch with/without automatic reset For manual or remote resetting Test button Mains & fault LED display Trip with short-circuit in the sensor cable	24 – 240 V 50/60 Hz, 24 – 240 V DC	<b>EMT6-KDB</b>
Selector switch with/without automatic reset For manual or remote resetting Test button Mains & fault LED display	230 V 50/60 Hz	<b>EMT6-DB(230V)</b> ①
Multifunction device Selector switch with/without automatic reset Trip with short-circuit in the sensor cable Zero-voltage safe For manual or remote resetting Test button Short-circuit detection and retention can be deactivated Mains & fault LED display	24 – 240 V 50/60 Hz, 24 – 240 V DC	<b>EMT6-DBK</b>
<b>Accessories - screw adapter</b>		
For screw fixing	–	<b>CS-TE</b>

① Provide additional short-circuit protection in the sensor circuit with a current monitoring relay.

## Overload relays

### Motor insight motor protection relays

- Power, voltage & current monitoring, ground fault, flexible communications, motor, load & line protection in a single package
- Enhanced surge / sag withstand capacity ensures reliable operation
- Finger proof IP20 rated terminals provide extra safety by reducing shock hazard
- Adjustments to overload settings can be made without disconnecting power
- User Interface
- Bright LED display
- Intuitive & highly customisable parameter configuration
- Remote display allows for configuration without opening the panel, providing additional operator safety



### Motor Insight relays

Voltage	Current range	Item no.
240V ac (170 – 264)	1 – 9 Amps	<b>C441BA</b>
240V ac (170 – 264)	5 – 90 Amps	<b>C441BB</b>
415V ac (323 – 528)	1 – 9 Amps	<b>C441CA</b>
415V ac (323 – 528)	5 – 90 Amps	<b>C441CB</b>
600V ac (489 – 660)	1 – 9 Amps	<b>C441DA</b>
600V ac (489 – 660)	5 – 90 Amps	<b>C441DB</b>
120V ac (170-660)	1 – 9 Amps	<b>C4410109NOUI</b>
120V ac (170-660)	5 – 90 Amps	<b>C4410590NOUI</b>

### Motor Insight CT multiplier and wire wrap schedule

Motor FLC	Number of loops	Number of conductors, through CT primary	CT multiplier, setting	External CT kit Catalogue no. ②	Item no. ①
Current Range: 5 – 90A					
5 – 22.5	3	4	4	-	<b>C441_B</b> and <b>C4410590NOUI</b>
6.67 – 30	2	3	3	-	
10 – 45	1	2	2	-	
20 – 90	0	1	1	-	
Current Range: 1 – 9A					
1 – 5	1	2	2	-	<b>C441_A</b> and <b>C4410190NOUI</b>
2 – 9	0	1	1	-	
60 – 135	0	1	150 – (150:5)	C441CTKIT150	
120 – 270	0	1	300 – (300:5)	C441CTKIT300	
240 – 540	0	1	600 – (600:5)	C441CTKIT600	

① Underscore indicates operating voltage code required.

② Any manufacturer's CT's may be used

#### Operating Voltage Codes:

Code	Voltage
B	240V ac
C	415V ac
D	600V ac

### Overload relays

#### Modbus RTU communication modules

Description	I/O	Item no.
Modbus communication module	None	<b>C441M</b>
Modbus communication module 4IN / 2OUT	120V ac	<b>C441N</b>
Modbus communication module 4IN / 2OUT	24Vdc	<b>C441P</b>

#### DeviceNet communication modules

Description	I/O	Item no.
DeviceNet communication module	120V ac	<b>C441K</b>
DeviceNet communication module	24V dc	<b>C441L</b>



C441S



C441R

#### PROFIBUS communication modules

Description	I/O	Item no.
PROFIBUS module 4in/2out	120V ac	<b>C441S</b>
PROFIBUS module 4in/2out	24V dc	<b>C441Q</b>

#### Ethernet communication modules

Description	I/O	Item no.
Modbus TCP/EtherNet/IP module 4in/2out	120V ac	<b>C441R</b>
Modbus TCP/EtherNet/IP module 4in/2out	24V dc	<b>C441T</b>

#### Communication cables

The remote display requires a communication cable to connect to the Motor Insight overload relay

#### Communication cable lengths

Length	Item no.
0.25 m	<b>D77E-QPIP25</b>
1 m	<b>D77E-QPIP100</b>
2 m	<b>D77E-QPIP200</b>
3 m	<b>D77E-QPIP300</b>

#### Current transformer kits

Description	Item no.
Three 150:5 CTs to be used with Motor Insight	<b>C441CTKIT150</b>
Three 300:5 CTs to be used with Motor Insight	<b>C441CTKIT300</b>
Three 600:5 CTs to be used with Motor Insight	<b>C441CTKIT600</b>



C4411

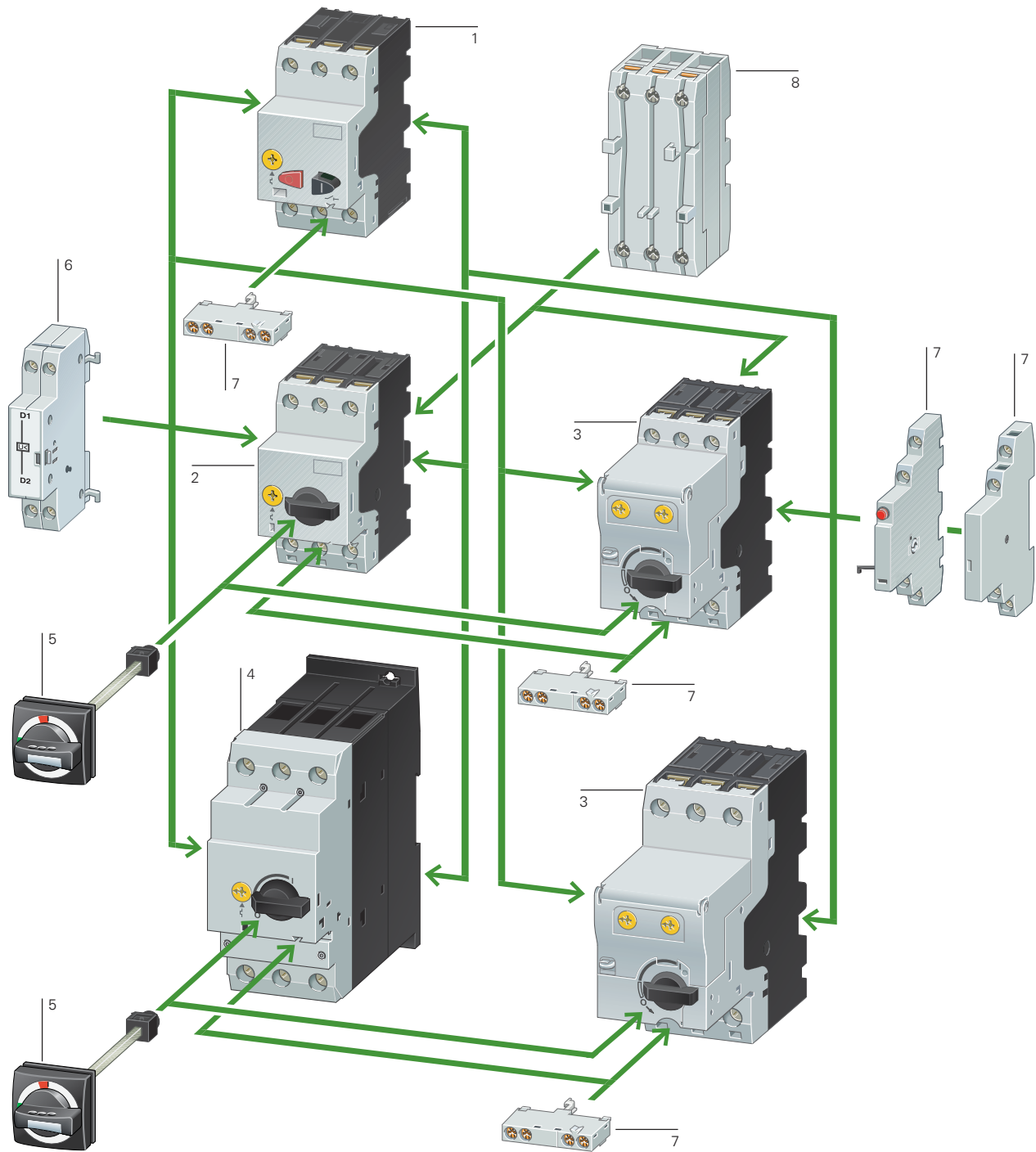


C4413

#### Motor insight – accessories

Description	Item no.
Remote display IP54	<b>C4411</b>
NEMA 3R Kit for remote display (remote display not included)	<b>C4413</b>
Conversion plate	<b>C441CMP1</b>

IEC Manual motor protectors



- |   |   |
|---|---|
| 1. Motor-protective circuit-breaker PKZM01                                  | 4. Motor-protective circuit-breaker PKZM4 |
| 2. Motor-protective circuit-breaker PKZM0                                   | 5. Door coupling handles IP65             |
| 3. Motor-protective circuit-breaker with wide-range overload protection PKE | 6. Shunt release                          |
|   | 7. Standard auxiliary contacts            |
|   | 8. Current limiters                       |



### IEC Manual motor protectors

- Class 10 overload protection
- Motor applications from 0.1A to 63A
- Built-in heater & magnetic trip elements to protect the motor
- Adjustment dial for setting motor FLC

### Pushbutton manual motor protectors

Rated Uninterrupted Current — $I_u = I_e$ (Amps)	FLC adjustment range/overload release — $I_r$ (Amps)	Short circuit release — $I_{rm}$ (Amps)	Maximum Motor Ratings ① Maximum kW Rating AC-3 — P (kW)			Item no.
			3-Phase			
			220 - 240V	380 - 415V	440V	
Frame B (Type 1 & Type 2 Coordination)						
0.16	0.1 – 0.16	2.2	—	—	—	PKZM01-0,16
0.25	0.16 – 0.25	3.5	—	0.06	0.06	PKZM01-0,25
0.4	0.25 – 0.4	5.6	0.06	0.09	0.12	PKZM01-0,4
0.63	0.4 – 0.63	8.8	0.09	0.12	0.18	PKZM01-0,63
1	0.63 – 1	14	0.12	0.25	0.25	PKZM01-1
1.6	1 – 1.6	22	0.25	0.55	0.55	PKZM01-1,6
2.5	1.6 – 2.5	35	0.37	0.75	1.1	PKZM01-2,5
4	2.5 – 4	56	0.75	1.5	1.5	PKZM01-4
6.3	4 – 6.3	88	1.1	2.2	3	PKZM01-6,3
10	6.3 – 10	140	2.2	4	4	PKZM01-10
12	8 – 12	168	3	5.5	5.5	PKZM01-12
16	10 – 16	224	4	7.5	9	PKZM01-16
20	16 – 20	280	5.5	9	11	PKZM01-20
25	20 – 25	350	5.5	12.5	12.5	PKZM01-25



PKZM01-1

### Rotary manual motor protectors

Rated Uninterrupted Current — $I_u = I_e$ (Amps)	FLC adjustment range/overload release — $I_r$ (Amps)	Short Circuit Release — $I_{rm}$ (Amps)	Maximum Motor Ratings ① Maximum kW Rating AC-3 — P (kW)					Item no. ②
			3-Phase					
			220 - 240V	380 - 415V	440V	500V	660 - 690V	
B (Type 1 & Type 2 Coordination)								
0.16	0.1 – 0.16	2.2	—	—	—	—	0.06	PKZM0-0,16
0.25	0.16 – 0.25	3.5	—	0.06	0.06	0.06	0.12	PKZM0-0,25
0.4	0.25 – 0.4	5.6	0.06	0.09	0.12	0.12	0.18	PKZM0-0,4
0.63	0.4 – 0.63	8.8	0.09	0.12	0.18	0.25	0.25	PKZM0-0,63
1	0.63 – 1	14	0.12	0.25	0.25	0.37	0.55	PKZM0-1
1.6	1 – 1.6	22	0.25	0.55	0.55	0.75	1.1	PKZM0-1,6
2.5	1.6 – 2.5	35	0.37	0.75	1.1	1.1	1.5	PKZM0-2,5
4	2.5 – 4	56	0.75	1.5	1.5	2.2	3	PKZM0-4
6.3	4 – 6.3	88	1.1	2.2	3	3	4	PKZM0-6,3
10	6.3 – 10	140	2.2	4	4	4	7.5	PKZM0-10
12	8 – 12	168	3	5.5	5.5	5.5	11	PKZM0-12
16	10 – 16	224	4	7.5	9	9	12.5	PKZM0-16
20	16 – 20	280	5.5	9	11	12.5	15	PKZM0-20
25	20 – 25	350	5.5	12.5	12.5	15	22	PKZM0-25
32	25 – 32	448	7.5	15	15	22	30	PKZM0-32
Frame D (Type 1 & Type 2 Coordination)								
16	10 – 16	224	4	7.5	9	9	12.5	PKZM4-16
25	16 – 25	350	5.5	12.5	12.5	15	22	PKZM4-25
32	25 – 32	448	7.5	15	17.5	22	22	PKZM4-32
40	32 – 40	560	11	20	22	24	30	PKZM4-40
50	40 – 50	700	14	25	30	30	45	PKZM4-50
58	50 – 58	812	17	30	37	37	55	PKZM4-58
65	55 – 65	882	18.5	34	37	45	55	PKZM4-63



PKZM0-1



PKZM4-16

① Select manual motor protectors by full load amperes. Maximum motor ratings (kW) are for reference only.

Note: Service Factor (SF) — Setting  $I_r$  of current scale in dependence of load factor:

SF = 1.15 ->  $I_r = 1 \times I_n \text{ mot}$

SF = 1 ->  $I_r = 0.9 \times I_n \text{ mot}$

② Eaton PKZM0 & PKZM4 handles are not padlockable. Order part no. AK-PKZ0 handle if a lockable handle is required.



AK-PKZ0

### Lockable rotary handle for MMPs

For use with	Item no.
PKZM0 & PKZM4	AK-PKZ0

### Electronic Motor-protective circuit-breaker PKE

Switch & protect motors up to 65 A with electronic wide-range overload protection. Modular design. Highest level of flexibility. Highest level of performance.

The selection of a suitable motor-protective circuit-breaker is decisive for the functional safety & service life of a motor. Motor-protective circuit-breakers PKE with electronic overload protection offer an interesting alternative to the bimetal solution here & complement the intelligent PKZ series from Eaton. The motor-protective circuit-breaker PKE provides the highest level of flexibility featuring a compact & modular design with plug-in control unit for motor currents up to 65 A.

The large current setting ranges decisively reduce the number of variants & minimise the engineering work & costs accordingly.

#### PKE features & benefits:

- Autonomous supply via current transformer
- Large electronically controlled setting range
- Exchangeable control units
- Tripping classes greater than CLASS 10
- Precise & extremely long-time stable tripping characteristic curves
- Minimum heat losses
- Protection suited to individual starting conditions
- Motor starter design with standard components
- Common range of accessories from system PKZO
- Parameter data read out options
- Very service friendly
- Reduction of engineering time & costs
- Advanced control unit includes a COM interface for SmartWire

Motor rating kW	Rated motor current AC-3			Overload release setting range	Base unit	Control unit Standard	Control unit Advanced (with COM interface)
	240V A	415V A	660 V 690 V A				
0.06	0.37	-	-	0.3 ... 1.2 A	PKE12	PKE-XTU-1,2	PKE-XTUA-1,2
0.09	0.54	0.31	-				
0.12	0.72	0.41	-				
0.18	1.04	0.6	0.35				
0.25	-	0.8	0.5				
0.37	-	1.1	0.7				
0.55	-	-	0.9				
0.75	-	-	1.1				
0.18	1.04	-	-	1 ... 4 A	PKE12	PKE-XTU-4	PKE-XTUA-4
0.25	1.4	-	-				
0.37	2	1.1	-				
0.55	2.7	1.5	-				
0.75	3.2	1.9	1.1				
1.1	-	2.6	1.5				
1.5	-	3.6	2.1				
2.2	-	-	2.9				
3	-	-	3.8				
0.75	3.2	-	-				
1.1	4.6	-	-				
1.5	6.3	3.6	-				
2.2	8.7	5	-				
3	11.5	6.6	3.8				
4	-	8.5	4.9				
5.5	-	11.3	6.5				
7.5	-	-	8.8				
2.2	8.7	-	-	8 ... 32 A	PKE32	PKE-XTU-32	PKE-XTUA-32
3	11.5	-	-				
4	14.8	8.5	-				
5.5	19.6	11.3	-				
7.5	26.4	15.2	8.8				
11	-	21.7	12.6				
15	-	29.3	17				
18.5	-	-	20.9				

PKE 12, 12A (45 mm)



0.3A → 12A  
0.09 - 5.5 kW (400 V)

PKE 32, 32A (45 mm)



3A → 32A  
1.5 - 15 kW (400 V)

PKE 65, 65A (55 mm)



8A → 65A  
4 - 34 kW (400 V)

5 plug-in control units up to 65 A in 2 versions.



Standard



Extended





# Power control

## Motor control



PKE-XTUA-32



PKE-XTUWA-32



PKE-SWD-SP



NHI21-PKZ0



VHI20-PKZ0

### Electronic motor-protective circuit-breaker PKE

Motor rating kW	Rated motor current AC-3			Overload release setting range	Base unit	Control unit Standard	Control unit Advanced (with COM interface)				
	240V A	415V A	660 V 690 V A								
22	-	-	23.8	8 ... 32 A	PKE32	PKE-XTU-32	PKE-XTUA-32				
30	-	-	32								
5.5	19.6	-	-								
7.5	26.4	-	-								
11	38	21.7	-	16...65 A	PKE65	PKE-XTU-65	PKE-XTUA-65				
15	51	29.3	17								
18.5	63	36	20.9								
22	-	41	23.8								
30	-	55	32								
37	-	-	39								
45	-	-	47								
55	-	-	58								
2.2	8.7	-	-					8...32 A	PKE65	PKE-XTUW-32	PKE-XTUWA-32
3	11.5	-	-								
4	14.8	8.5	-								
5.5	19.6	11.3	-								
7.5	26.4	15.2	8.8								
11	-	21.7	12.6								
15	-	29.3	17								
18.5	-	-	20.9								
22	-	-	23.8								
30	-	-	58								

### Smartwire-DT module for connecting PKE-XTUA trip block to Smartwire-DT

Description	Item no.
Messages	PKE-SWD-SP
Contactor state PKS	
Motor current and thermal motor image in %	
Trip indicators	
Set value overload releases	
Remote disconnection of motor-protective circuit breakers	

### IEC manual motor protectors accessories

#### Auxiliary contacts

Contact configuration	Item no.
Side-Mount	
1NO-1NC	NHI11-PKZ0
2NO-1NC	NHI21-PKZ0
1NO-2NC	NHI12-PKZ0
Front-Mount	
1NO-1NC	NHI-E-11-PKZ0
1NO	NHI-E-10-PKZ0
Trip indicating aux. contact	AGM2-10-PKZ0 AGM2-01-PKZ0

#### Early-make auxiliary contacts

Contact configuration	For use with..	Item no.
2N/O	PKZM0 PKZM0-T PKM0 PKZM4	VHI20-PKZ0
2N/O	PKZM01	VHI20-PKZ01

## Electronic motor-protective circuit-breaker PKE

### IP65 rotary handle mechanism - PKZM0 ①②③

Description	Item no.
Complete Kits — Includes Handle, Shaft & Required Hardware	
Rotary Handle Mechanism IP65 Black — For use on main switches to IEC / EN 60204.	<b>PKZ0-XH</b>
Rotary Handle Mechanism IP65 Red / Yellow — For use on main switch with Emergency-Stop function to IEC / EN 60204.	<b>PKZ0-XRH</b>
Rotary Handle Mechanism IP65 Black — For use on main switches to IEC / EN 60204 where PKZ0 is mounted 90° from vertical.	<b>PKZ0-XH-MCC</b>
Rotary Handle Mechanism IP65 Red / Yellow — For use on main switch with Emergency-Stop function to IEC / EN 60204 where PKZ0 is mounted 90° from vertical.	<b>PKZ0-XRH-MCC</b>

① With ON/OFF switch position & "+" (tripped), lockable with 3 padlocks, 4 – 8 mm hasp. Can be locked in the OFF position, if required.

② Rotary handle mechanisms ship with door interlock disabled. See instruction publication with product for how to enable door interlock.

③ Not for use with VHI20-PKZ0 early-make front-mount auxiliary contact.



PKZ0-XH



PKZ0-XRH-MCC

### IP65 rotary handle mechanism - PKE

Description	Item no.
For use as main switch to IEC/EN 60204 black	<b>PKE-XH</b>
For use as main switch with Emergency-Stop function to IEC/EN 60204 red-yellow	<b>PKE-XRH</b>
For use as a main switch to EN 60204 in MCC power distribution systems and with PKE installed when rotated by 90° black	<b>PKE-XH-MCC</b>
For use as a main switch to EN 60204 in MCC power distribution systems and with PKE installed when rotated by 90° red-yellow	<b>PKE-XRH-MCC</b>

### Shunt release

Voltage	Item no.
24 vac	<b>A-PKZ0(24V50HZ)</b>
110 vac	<b>A-PKZ0(110V50HZ)</b>
240 vac	<b>A-PKZ0(240V50HZ)</b>
415 vac	<b>A-PKZ0(415V50HZ)</b>
24 vdc	<b>A-PKZ0(24VDC)</b>



A-PKZ0(110V50HZ)

### Undervoltage release

Voltage	Item no.
24 vac	<b>U-PKZ0(24V50HZ)</b>
110 vac	<b>U-PKZ0(110V50HZ)</b>
240 vac	<b>U-PKZ0(240V50HZ)</b>
415 vac	<b>U-PKZ0(415V50HZ)</b>
24 vdc	<b>U-PKZ0(24VDC)</b>



U-PKZ0(24VDC)

### Sealing facility

Description	Item no.
To prevent tampering with the overload release & the test function (For use with PKZM0 & PKZM4)	<b>PL-PKZ0</b>



PL-PKZ0

### Current limiters

Description	Item no.
For increasing switching capacity of motor-protective circuit-breakers without auto-protection	<b>CL-PKZ0</b>



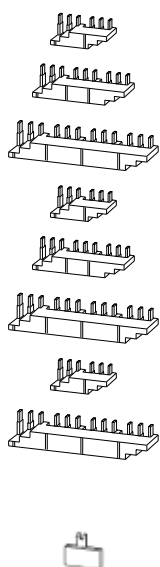
CL-PKZ0

### IEC Manual motor protectors accessories

#### Three-phase commoning links ①



For Use with...	Qty. MMP	Length of link (mm)	Unit width (mm)	Item no.
<b>Frame B</b>				
	2	90	45	<b>B3.0/2-PKZ0</b>
MMP With No Side-Mounted Auxiliaries or Voltage Releases	3	135	45	<b>B3.0/3-PKZ0</b>
	4	180	45	<b>B3.0/4-PKZ0</b>
	5	225	45	<b>B3.0/5-PKZ0</b>
For motor-protective circuit-breaker each with an auxiliary contact or trip-indicating auxiliary contact fitted on the right	2	99	45 + 9	<b>B3.1/2-PKZ0</b>
	3	153	45 + 9	<b>B3.1/3-PKZ0</b>
	4	207	45 + 9	<b>B3.1/4-PKZ0</b>
For PKZM0... with one auxiliary contact each & a trip-indicating auxiliary contact fitted on right or a voltage release fitted on left	5	261	45 + 9	<b>B3.1/5-PKZ0</b>
	2	108	45 + 18	<b>B3.2/2-PKZ0</b>
	4	234	45 + 18	<b>B3.2/4-PKZ0</b>
Shroud for unused terminals. Protection against direct contact. For closing off non-used connections on the three phase commoning link. B3...-PKZ0	-	-	-	<b>H-B3-PKZ0</b>



<b>Frame D</b>				
	2	110	55	<b>B3.0/2-PKZ4</b>
MMP With No Side-Mounted Auxiliaries or Voltage Releases	3	165	55	<b>B3.0/3-PKZ4</b>
	4	220	55	<b>B3.0/4-PKZ4</b>
For motor-protective circuit-breakers/starters each with an auxiliary contact or trip-indicating auxiliary contact fitted on the right & with a DIL1(A)M contactor	2	-	-	<b>B3.1/2-PKZ4</b>
	3	-	-	<b>B3.1/3-PKZ4</b>
	4	-	-	<b>B3.1/4-PKZ4</b>
For PKZM4 with one auxiliary contact each or trip-indicating auxiliary contact fitted on right or a voltage release fitted on left	2	-	-	<b>B3.2/2-PKZ4</b>
	4	-	-	<b>B3.2/4-PKZ4</b>
Shroud for unused terminals. Protection against direct contact. To cover unused terminals on three-phase commoning link	-	-	-	<b>H-B3-PKZ4</b>

① Protected against accidental contact. B-Frame short circuit proof  $U_e = 690V$ ,  $I_u = 63A$ ; D-Frame short circuit proof  $U_e = 690V$ ,  $I_u = 128A$ . Frame B links can be combined by rotating mounting. Frame D links cannot be combined. + MMP w/1 aux. (2, 3, 4, 5 module) + trip indicating etc. for frames B & D.

#### Incoming terminal for three-phase commoning link ②



For use with...	Item no.
B-Frame PKZM0/PKE	<b>BK25/3-PKZ0</b>
PKZM4	<b>BK50/3-PKZ4-E</b>

② For three-phase commoning link, protected against accidental contact,  $U_e = 690V$ ,  $I_u = 63A$ ; for conductor cross-sections: 2.5 – 25 mm<sup>2</sup> stranded; 2.5 – 16 mm<sup>2</sup> flexible with ferrules, AWG 14-6.

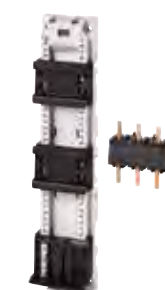
## IEC Manual motor protectors accessories

### Combination connection kits for connection of rotary MMP with IEC contactor

For use with...	Description	Item no.
<b>Non-Reversing Starters</b>		
PKE/PKZMO + DILM7-15 DS7 (4-12A)	Comprised of: Mechanical connection element for PKZMO & contactor Main current wiring between PKZMO & contactor in tool-less plug connection Cable guidance Use contactor auxiliary switch DILA-XHIT... Control cable guidance: max. 6 cables up to 2.5 mm <sup>2</sup> external diameter or 4 cables up to 3.5 mm <sup>2</sup> external diameter.	<b>PKZMO-XDM12</b>
PKZMO + DILM17-32	Comprised of: DIN-Rail adapter plate	<b>PKZMO-XDM32</b>
PKZM4 + DILM40-65	Main current wiring between PKZMO & contactor	<b>PKZM4-XDM65</b>
<b>Reversing starters</b>		
PKZMO, PKE + DILM7-01 DILM9-01 DILM12-01	Consists of: Mechanical connection element for PKZMO and contactor Reversing starters main supply wiring with tool-less plug connection	<b>PKZMO-XRM12</b>
PKZMO, PKE + DILM17 DILM25 DILM32	Consists of: Top-hat rail adapter plates Reversing starters supply wiring	<b>PKZMO-XRM32</b>
<b>Wiring kit</b>		
PKZMO, PKE + DILM17 DILM25 DILM32 DS7-34...SX016... DS7-34...SX024... SX032...	Main supply wiring between PKZMO and contactor Use only in combination with busbar adapter or mounting rail adapter plate	<b>PKZMO-XM32DE</b>
PKZM4 + DILM40 DILM50 DILM65	Main current supply between PKZM4 and contactor	<b>PKZM4-XM65DE</b>



PKZMO-XDM12



PKZM4-XDM65



PKZMO-XM32DE

### Insulated enclosures for surface mounting

Degree of protection	For use with...	Description	Item no.
<b>PKZM01 Pushbutton Manual Motor Protectors</b>			
IP65	PKZM01	With operating membrane	<b>CI-PKZ01-G</b>
IP65		With Emergency-Stop (E-Stop) pushbutton actuator, Red-Yellow	<b>CI-PKZ01-PVT</b>
<b>D-Frame (10 – 65A) PKZM0/PKZM4 Rotary Manual Motor Protectors ①②</b>			
IP65	PKZM4	With black/grey rotary handle	<b>CI-K4-PKZ4-G</b>
		With black/grey rotary handle	<b>CI-K2-PKZ0-G</b>
IP65	PKZM0	With red/yellow rotary handle for use as Emergency-Stop switches to IEC/ EN 60204	<b>CI-K2-PKZ0-GR</b>
IP65	PKZM4	With red/yellow rotary handle for use as Emergency-Stop switches to IEC / EN 60204	<b>CI-K4-PKZ4-GR</b>

① Integrated terminal for PE(N) connection.

② % Metric knockouts: Top ÷ bottom: M25/M32. In backplate: M25/M32. Control cable entry: M20.



CI-PKZ01-PVT



CI-K2-PKZ0-G

### MMP enclosure accessories (padlock attachment)

For use with...	Description	Item no.
CI-K2-PKZ0-GR & CI-K2-PKZ0-G	Padlocking feature. Up to 3 padlocks with 3 – 6 mm hasp thickness. For use as main switch to IEC/EN 60204.	<b>SVB-PKZ0-CI</b> ①
CI-K4-PKZ4-GR & CI-K4-PKZ4-G		<b>SVB-PKZ4-CI</b> ①



SVB-PKZ0-CI

More enclosures are available. Contact your local sales office for more information.

① Lockable in the 0-position of the XTPR manual motor protector.



BBA0-25



BBA4L-63



BBA0R-32



BBA-XSM

### IEC Motor control busbar adapters

#### Busbar adapter, 3 pole

Rated operational voltage  $U_e = 690$  V. For mounting on CU flat busbars with 60 mm interval between busbar centres, suitable for 5 mm & 10 mm busbar thickness.

Rated operational current, $I_e$ , A	Width (mm)	Length (mm)	For use with...	Item no.
For direct-on-line starters				
25	45	200	PKE/ PKZM0 + DILM7 PKE/ PKZM0 + DILM9 PKE/ PKZM0 + DILM12 PKE/ PKZM0 + DILM15	<b>BBA0-25</b>
32	45	200	PKE/ PKZM0 + DILM17 PKE/ PKZM0 + DILM25 PKE/ PKZM0 + DILM32	<b>BBA0-32</b>
63	55	260	PKZM4 + DILM17 PKZM4 + DILM25 PKZM4 + DILM32 PKZM4 + DILM40 PKZM4 + DILM50 PKZM4 + DILM65	<b>BBA4L-63</b>
For reversing starters				
25	90	200	PKE/ PKZM0 + 2 x DILM7-01 PKE/ PKZM0 + 2 x DILM9-01 PKE/ PKZM0 + 2 x DILM12-01	<b>BBA0R-25</b>
32	90	200	PKE/ PKZM0 + 2 x DILM17-01 PKE/ PKZM0 + 2 x DILM25-01 PKE/ PKZM0 + 2 x DILM32-01	<b>BBA0R-32</b>
Empty module, without electrical contacts				
–	45	200	–	<b>BBA0/2TS-L</b>
–	54	200	–	<b>BBA4/2TS-L</b>
Side mounted module, can be plugged into both sides				
–	9	200	–	<b>BBA-XSM</b>

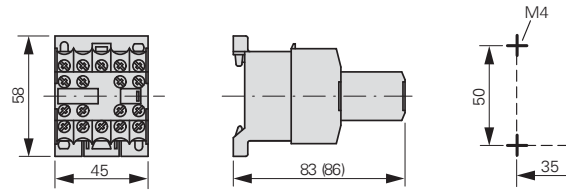
**Dimensions**

**Mini contactor relays**

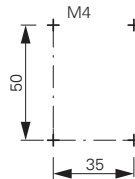
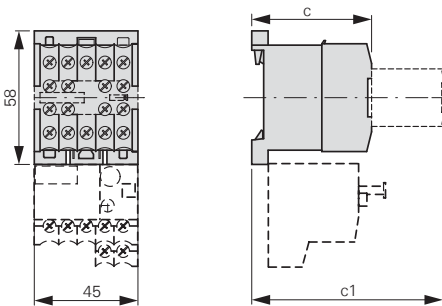
DILER...(-C)  
DILER...-G(-C)



DILER...(-C) + ...DILE(-C)  
DILER...-G(-C) + ...DILE(-C)



DILEEM-..., DILEM...(-C), DILEM-12-...  
DILEEM...-G, DILEM...-G(-C), DILEM-12...-G



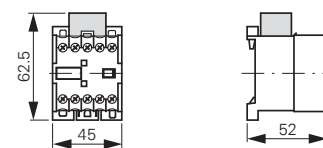
Part no.	c	c1
DILE(E)M...(-G)	52	83
DILE(E)M...-G(-C)	54	86

DILER... + HDILE  
DILER...-G + HDILE

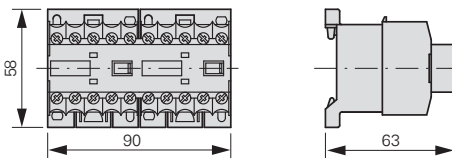


**Suppressor circuit**

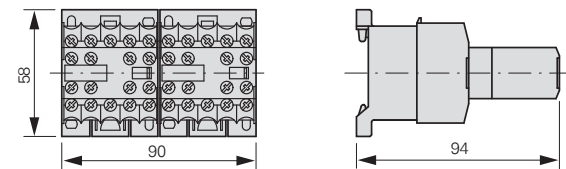
RCDILE...  
VGDILE



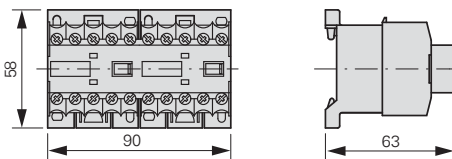
2DILE... + MVDILE  
2DILE...-G + MVDILE



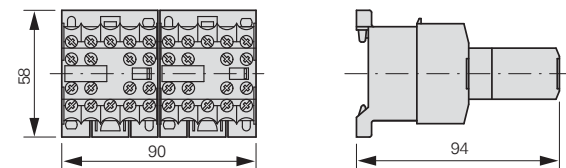
2DILE... + MVDILE + ...DILE  
2DILE...-G + MVDILE + ...DILE



2DILE... + MVDILE  
2DILE...-G + MVDILE

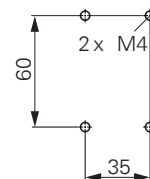
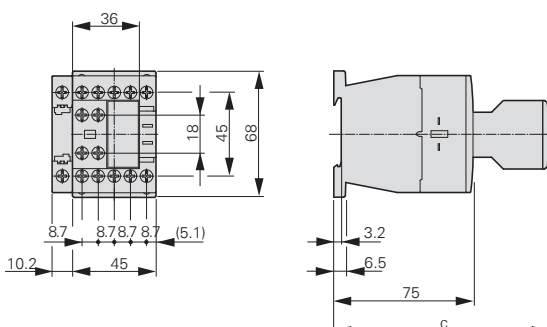


2DILE... + MVDILE + ...DILE  
2DILE...-G + MVDILE + ...DILE



**Contactor with auxiliary contact module**

DILM7...DILM15  
DILA...



Part no.	c
DILM32-XHI	117
DILA-XHI	117
DILA-XHI...T	125



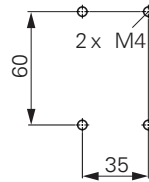
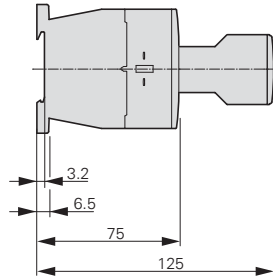
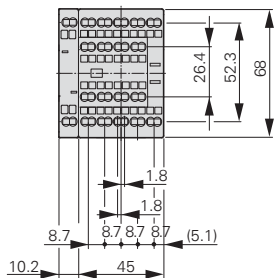
# Power control

## Motor control

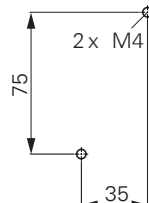
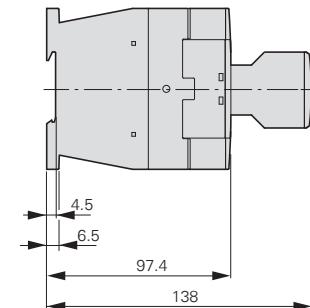
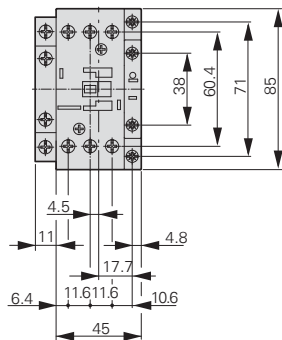
### Dimensions

#### Contactors

DILMC7...DILMC15  
DILAC...  
DILA-XHIC...

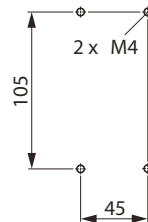
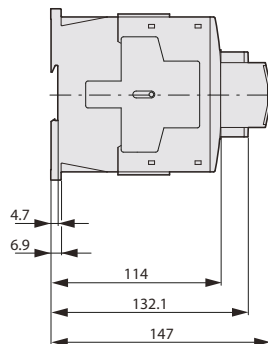
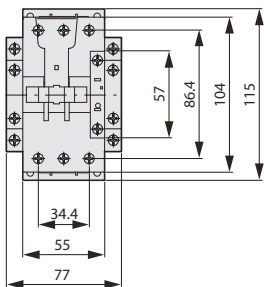


DILM17...DILM38  
DILMC17...DILMC32  
DILMF8...DILMF32



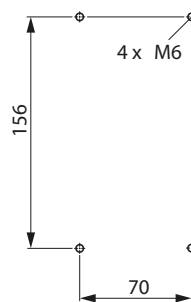
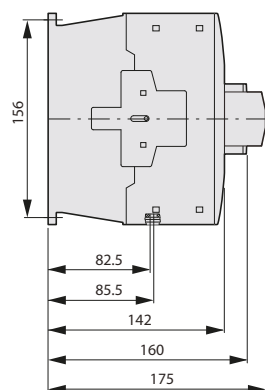
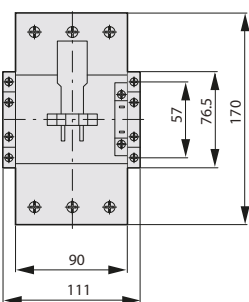
Clearance at side to grounded parts: 6 mm

DILM40...DILM72



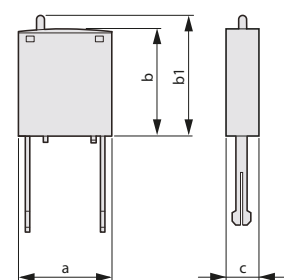
Clearance at side to grounded parts: 6 mm

DILM80...DILM170



Clearance at side to grounded parts: 10 mm

#### Suppressor circuit



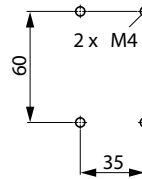
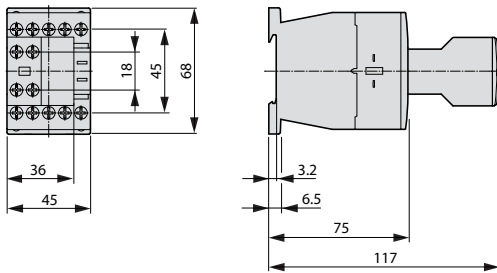
Part no.	a	b
DILM12-XSP...	25	28
DILM32-XSP...	25	28
DILM95-XSP...	25	28

Part no.	b1	c
DILM12-XSP...	≈32	9
DILM32-XSP...	≈32	9
DILM95-XSP...	≈32	9

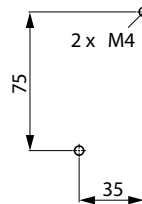
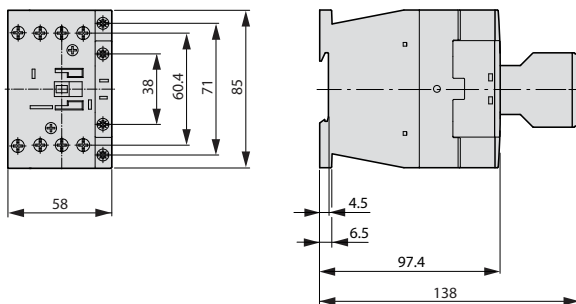
Dimensions

Contactor with auxiliary contact module

DILMP20



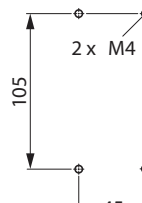
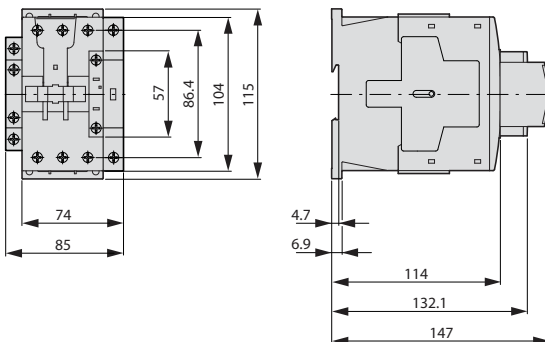
DILMP32 DILMP45



Distance at side to grounded parts: 6 mm

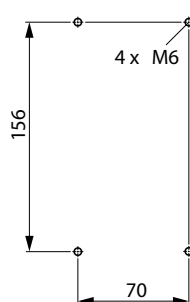
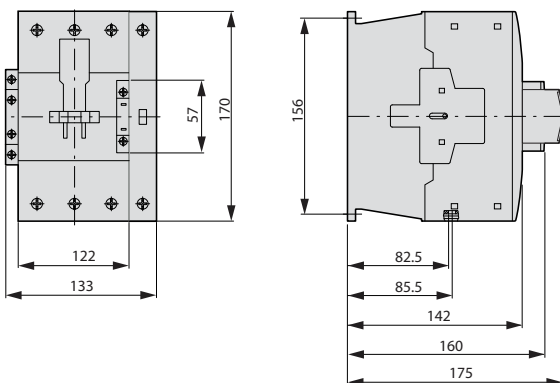
Contactors

DILMP63 DILMP80



Distance at side to grounded parts: 6 mm

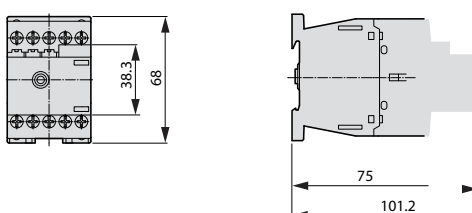
DILMP125 DILMP160 DILMP200



Clearance at side to earthed parts: 10 mm

Motor suppressor module

DILM12-XMSM



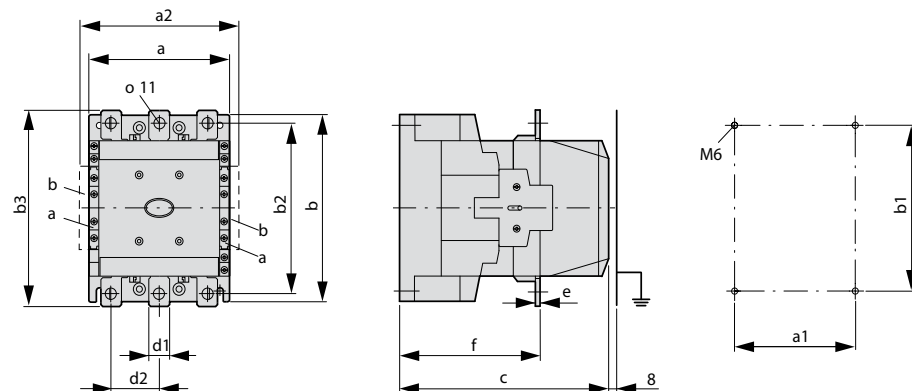
# Power control

## Motor control

### Dimensions

#### Complete units

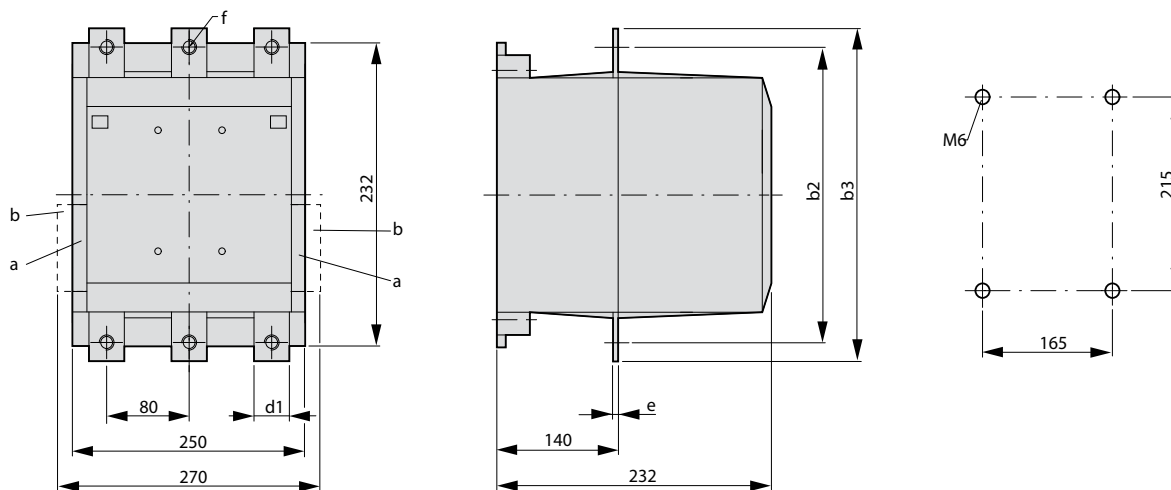
DILM185A...DILM500  
DILM250-S...DILM570-S



a DILM1000-XHI...-SI  
b DILM1000-XHI11-SA

Part no.	a	a1	a2	b	b1	b2	b3	d1	d2	e	c	f
DILM185A	140	120	160	180	160	165	190	20	41	5	158	83
DILM225A	140	120	160	180	160	165	190	20	41	5	158	83
DILM250	140	120	160	180	160	164	189	25	48	5	208	140
DILM300A	140	120	160	180	160	164	189	25	48	5	208	140
DILM400	160	130	180	200	180	184	209	25	48	6	216	140
DILM500	160	130	180	200	180	189	219	38	57	6	216	140
DILM570	160	130	180	200	180	189	219	38	57	6	216	140

#### DILM580...DILM1000



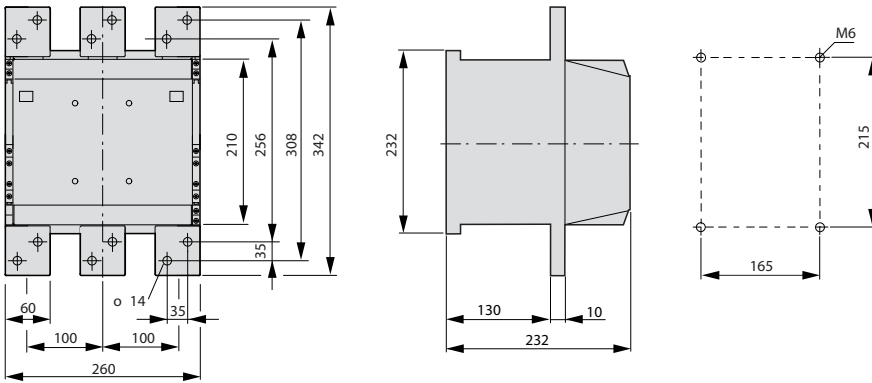
a DILM820-XHI...-SI  
b DILM820-XHI11-SA

Part no.	b2	b3	d1	e	f
DILM580	256	296	45	6	13.5
DILM650	256	296	45	6	13.5
DILM750	256	296	45	6	13.5
DILM820	256	296	45	6	13.5
DILM1000	256	296	45	10	13.5

Dimensions

AC-1 contactors greater than 1000A

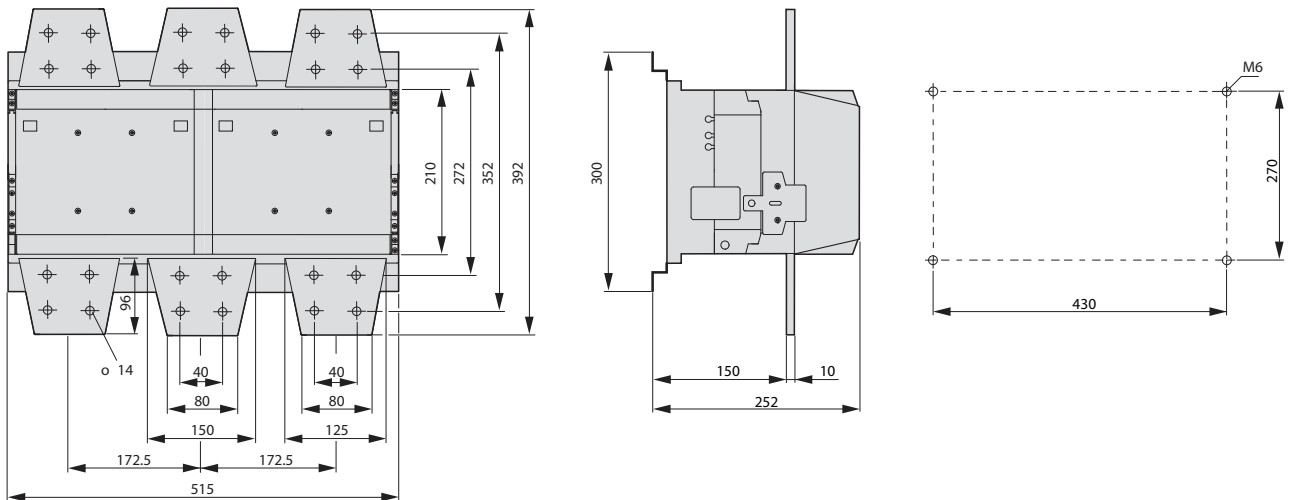
DILH1400



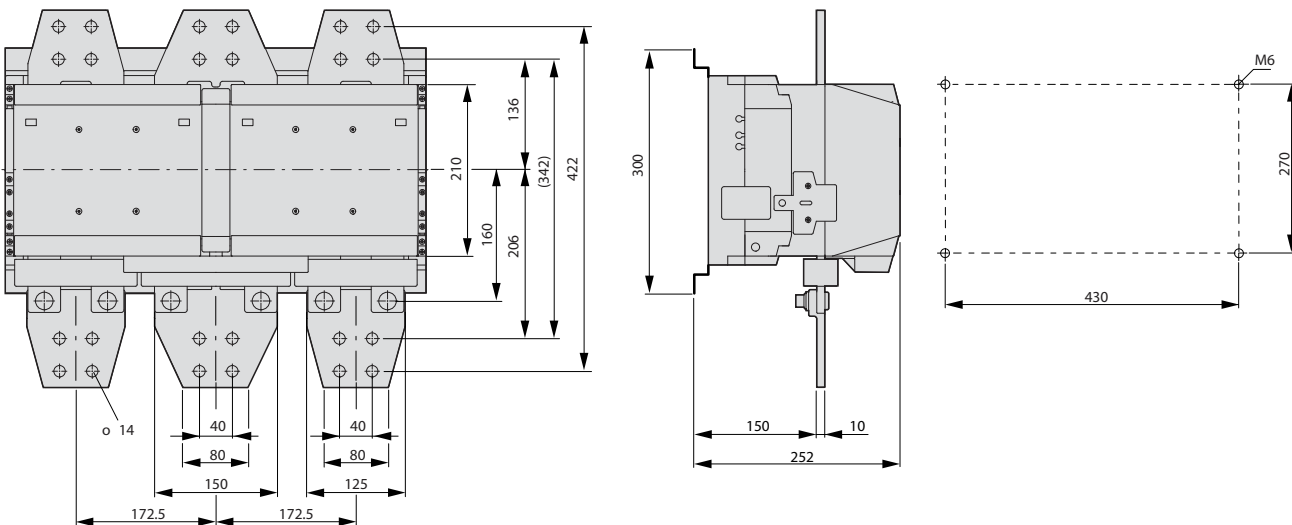
DILM1600

DILH2000

DILH2200



DILH2600



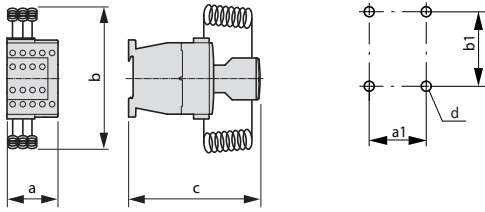
# Power control

## Motor control

### Dimensions

#### Contactor for capacitors

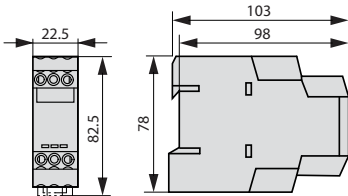
DILK...



Part no.	a	b	c	a1	b1	d
DILK12	45	135	138	35	75	2 x M4
DILK20	45	135	138	35	75	2 x M4
DILK25	45	135	138	35	75	2 x M4
DILK33	55	190	147	45	105	2 x M4
DILK50	55	190	147	45	105	2 x M4

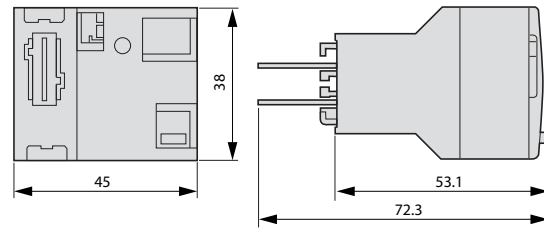
#### Contactor monitoring devices

CMD(...)



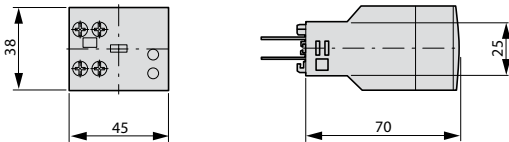
#### SWD contactor modules

DIL-SWD-32-...



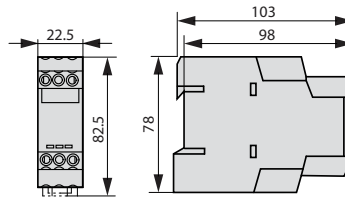
#### Electronic timer modules

DILM...XTE



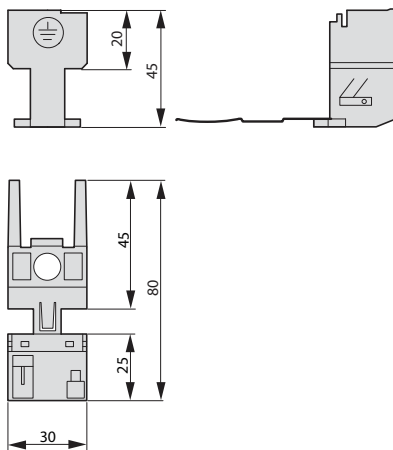
#### Amplifier module

ETS4-VS3

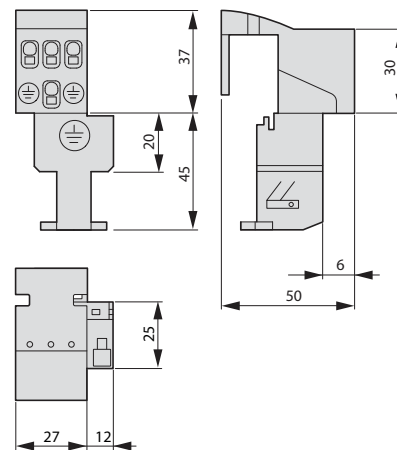


#### Wiring set for motor feeder plug

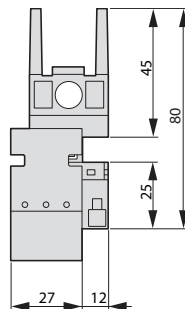
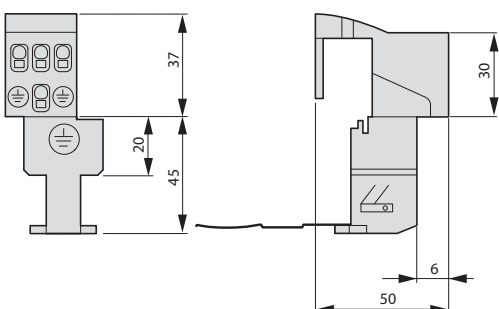
DILM12-XMCE



DILM12-XMCP/T

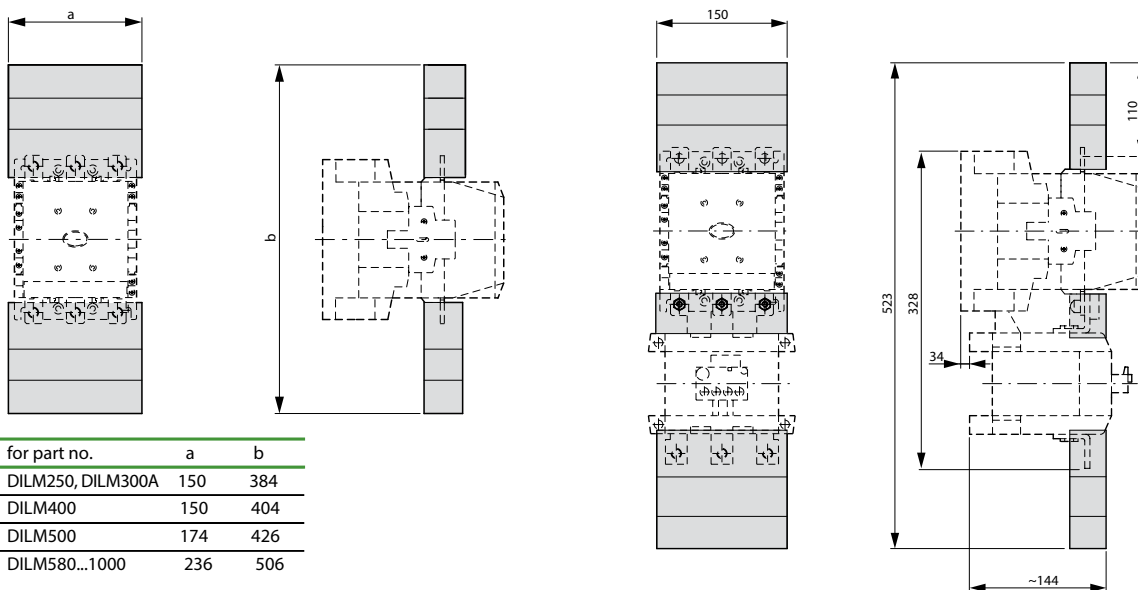


DILM12-XMCP/E



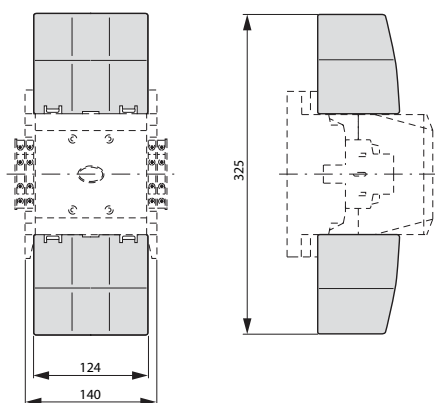
## Dimensions

### Contactors with terminal shrouds

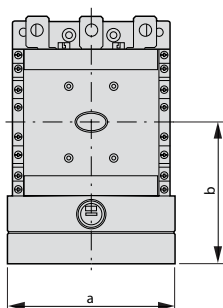


for part no.	a	b
DILM250, DILM300A	150	384
DILM400	150	404
DILM500	174	426
DILM580...1000	236	506

### DILM185A...DILM225A + DILM225A-XHB

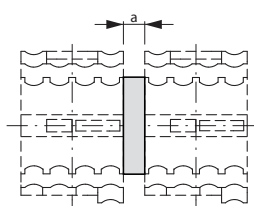


### Contactors with star-point bridge and terminal shrouds



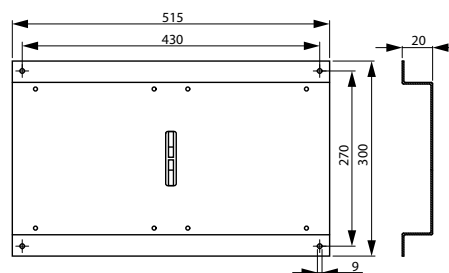
for part no.	a	b
DILM185...250	150	127
DILM300...400	150	137
DILM500	176	146

### Mechanical interlock DILM500-XMV



for part no.	a
DILM185...500	15

### DILM820-XMV





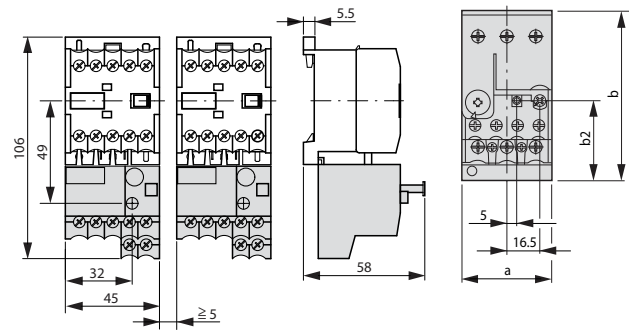
# Power control

## Motor control

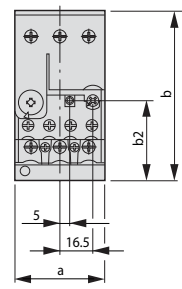
### Dimensions

#### Overload relays

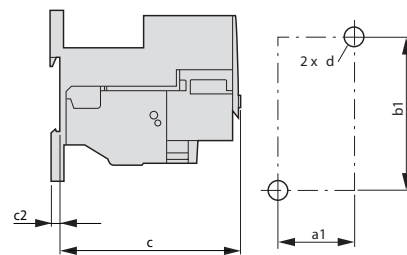
ZE...



ZB32-XEZ

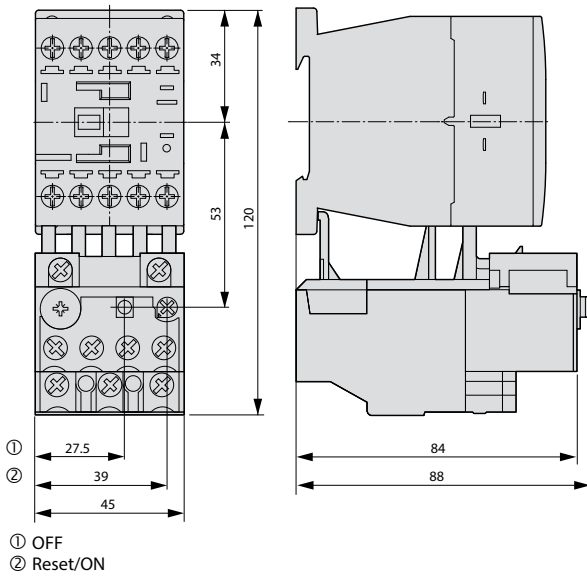


ZB65-XEZ

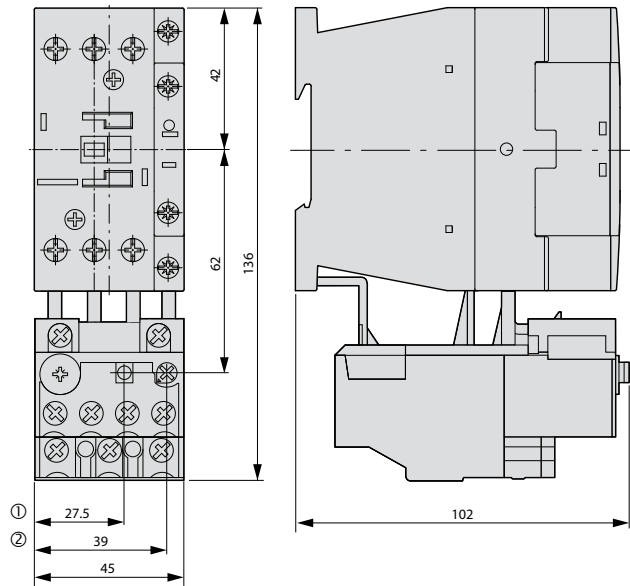


	ZB32	ZB65
a	45	60
b	85	86
c	90.5	112
c2	3.8	4.7
a1	35	50
b1	75	75
b2	40.5	47
d	M4	M5

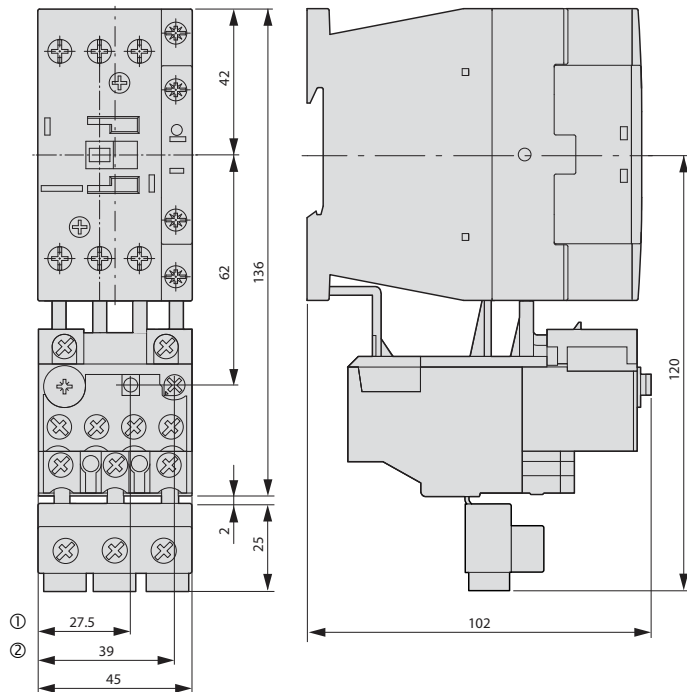
ZB12



ZB32



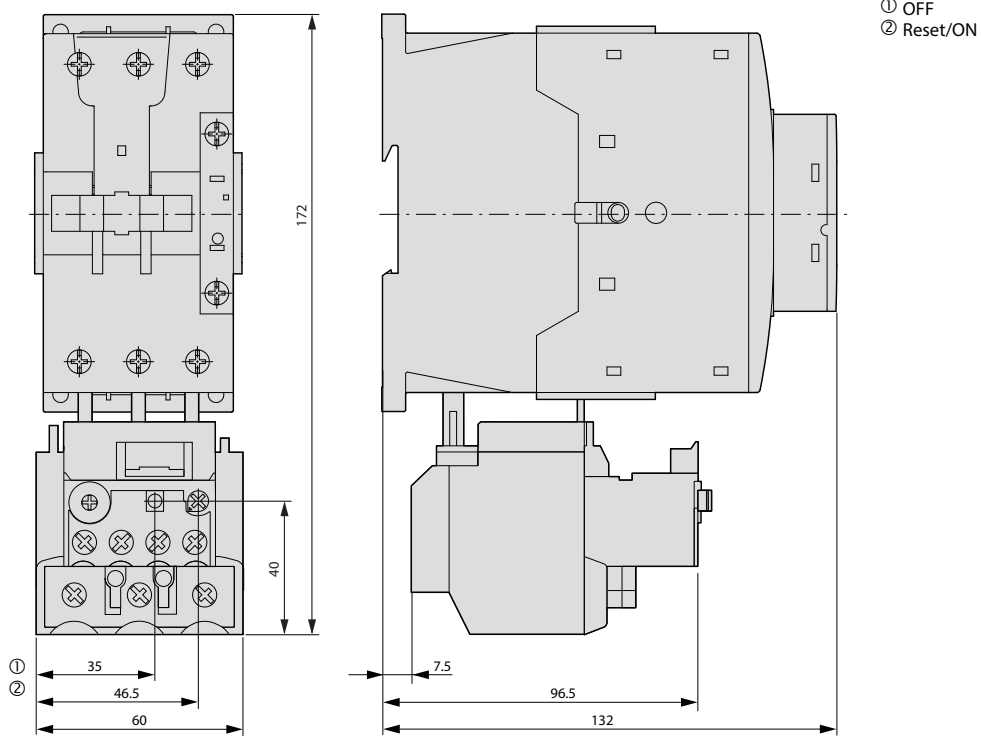
ZB32-38



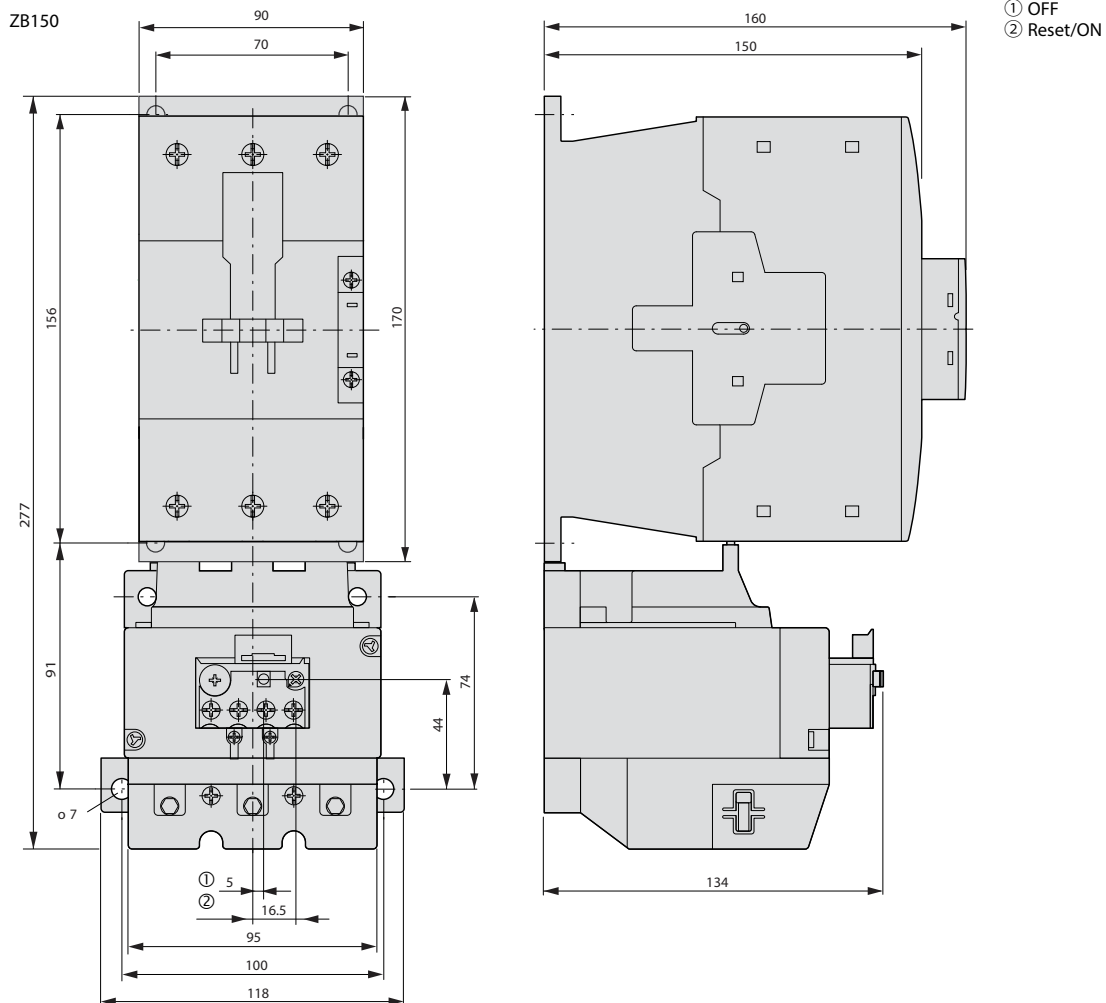
Dimensions

Overload relays

ZB65



ZB150

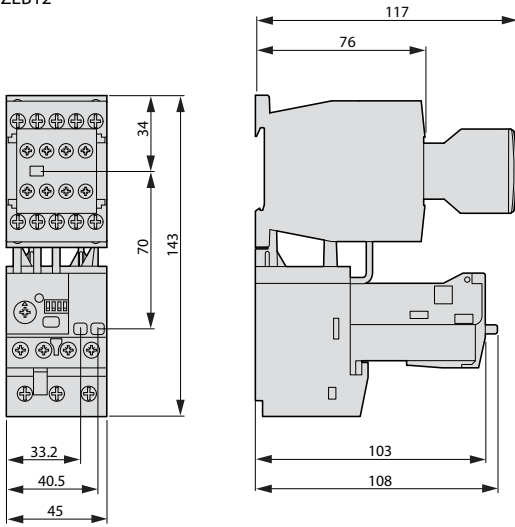




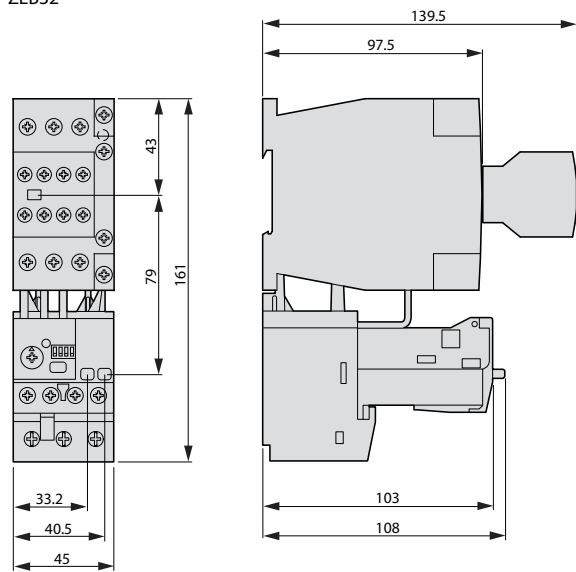
Dimensions

Electronic overload relays

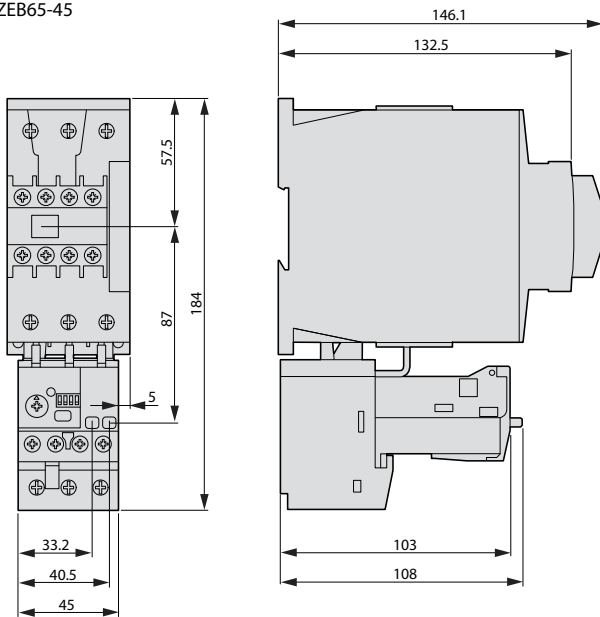
ZEB12



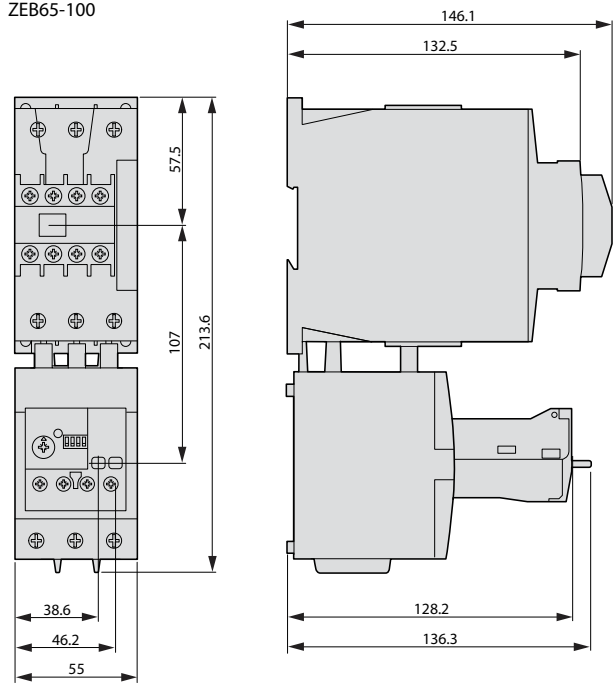
ZEB32



ZEB65-45



ZEB65-100



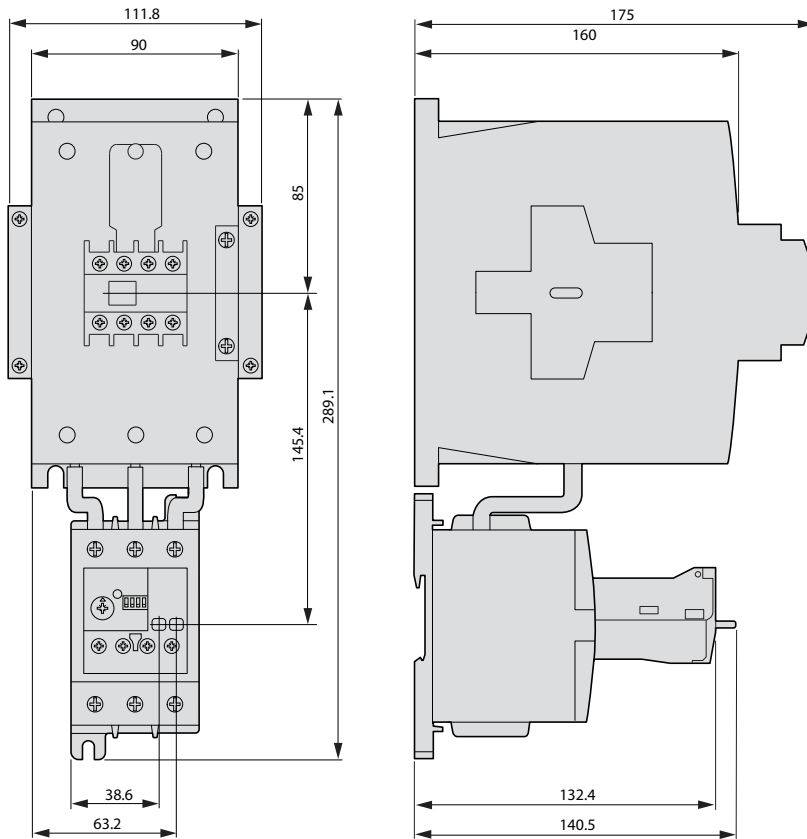
# Power control

## Motor control

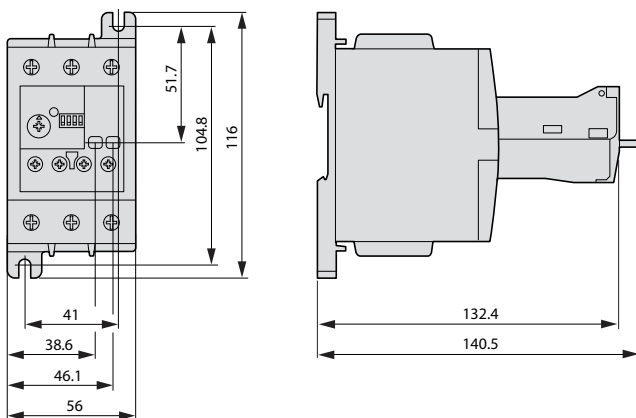
### Dimensions

#### Electronic overload relays

ZEB150-100



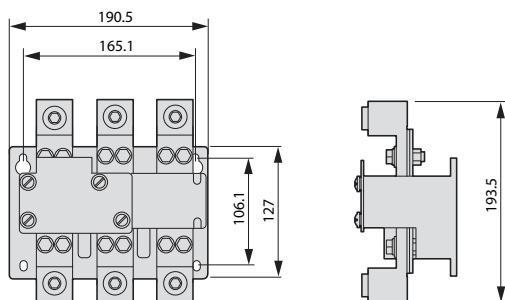
ZEB150-100/KK



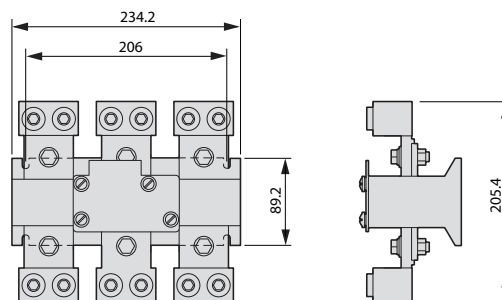
Dimensions

Current sensors

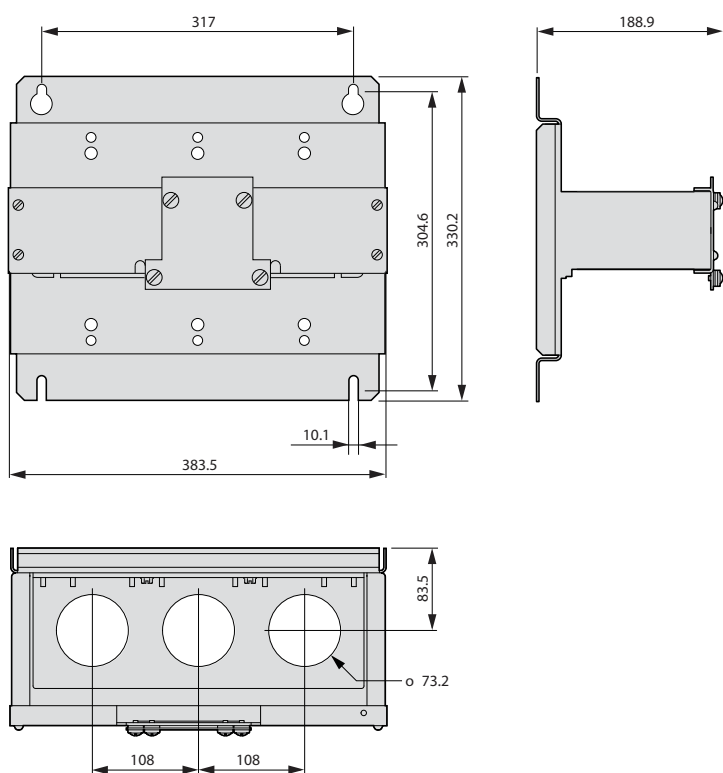
ZEB-XCT300



ZEB-XCT600

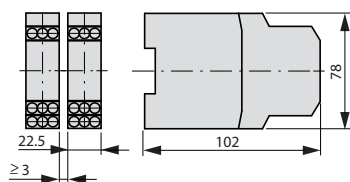


ZEB-XCT1000  
ZEB-XCT1500



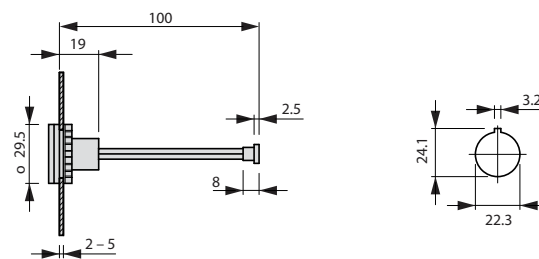
EMT6 thermistor overload relays for machine protection

EMT6...



External reset button

M22-DZ-B  
M22-DZ-X





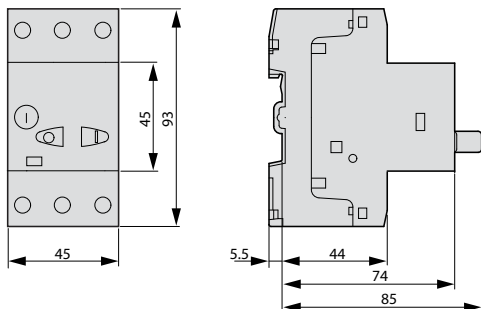
# Power control

## Motor control

### Dimensions

#### Motor-protective circuit breaker

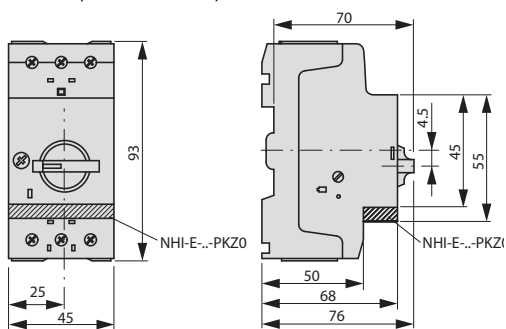
PKZM01...



#### Motor-protective circuit breaker Transformer-protective circuit breakers

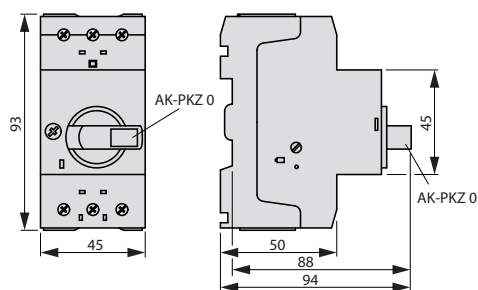
#### Motor-protective circuit breaker with auxiliary contacts

PKZM0-...(+NHI-E-...-PKZ0)  
PKZM0-...-T(+NHI-E-...-PKZ0)  
PKM0-...(+NHI-E-...-PKZ0)



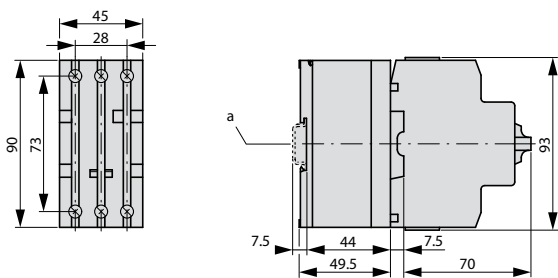
#### Motor-protective circuit breaker with lockable rotary handles

PKZM0-...+AK-PKZ0



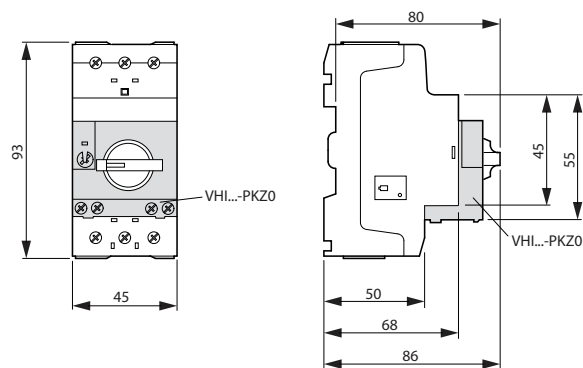
#### Current limiters

CL-PKZ...



#### Motor-protective circuit breaker with early-make auxiliary contacts

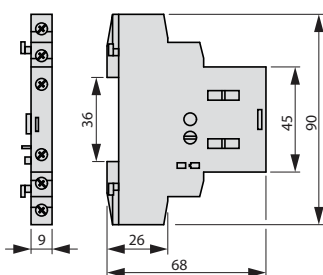
PKZM0-...+VHI-...-PKZ0



① Top-hat rail IEC/EN 60715

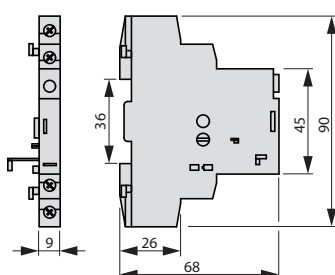
#### Standard auxiliary contacts

NHI-...-PKZ0



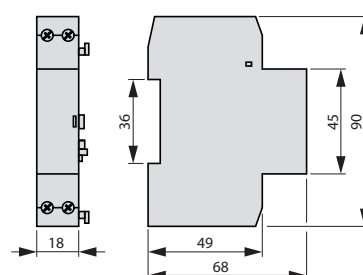
#### Trip indicators

AGM2-...-PKZ0



#### Shunt release - undervoltage release

A-PKZ0...  
U-PKZ0...

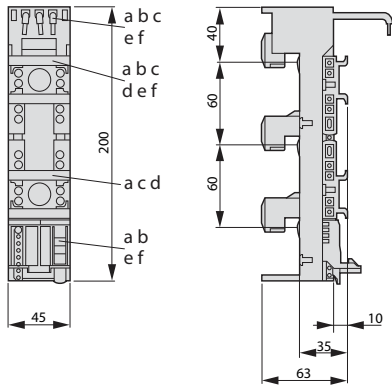


Dimensions

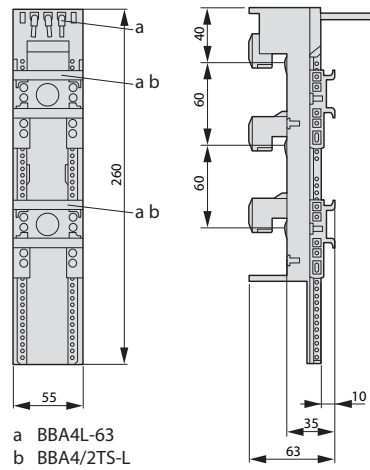
Busbar adaptors

BBA0-25  
BBA0-25/2TS  
BBA0/2TS-L  
BBA0-32  
BBA0-32/2TS-C  
BBA0C-16

BBA4/2TS-L  
BBA4L-63



a BBA0-32/2TS-C d BBA0/2TS-L  
b BBA0-25/2TS e BBA0-25  
c BBA0C-16 f BBA0-32



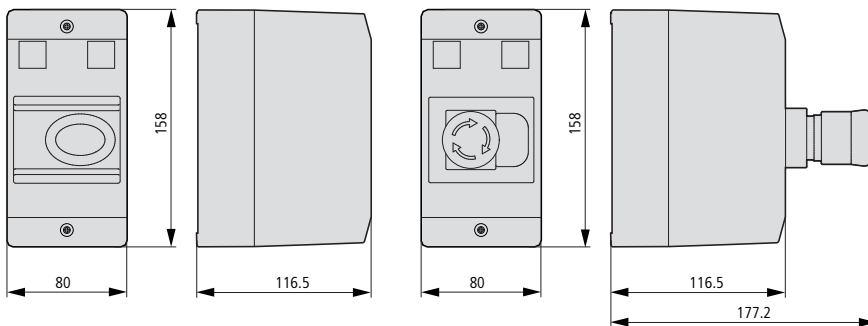
a BBA4L-63  
b BBA4/2TS-L

Insulated enclosures for surface mounting

CI-PKZ01  
CI-PKZ01-G

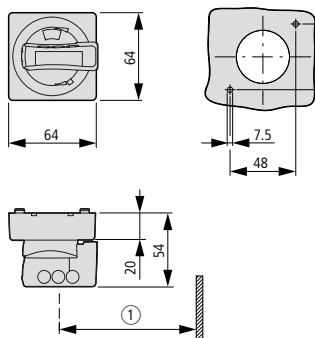
CI-PKZ01-PVT  
CI-PKZ01-PVS

CI-PKZ01-SVB  
CI-PKZ01-SVB-V



Door coupling handles

PKZ0-X(R)H...



Mounting depth: 100 to 240 mm  
from the top edge of the top-hat rail  
to the front edge of the cabinet  
door/cover  
Distance between switch axis and  
cover hinge: at least 100 mm

① At least 100 mm from cover hinge

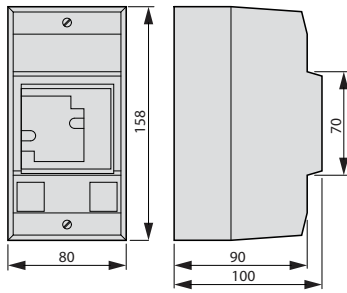
# Power control

## Motor control

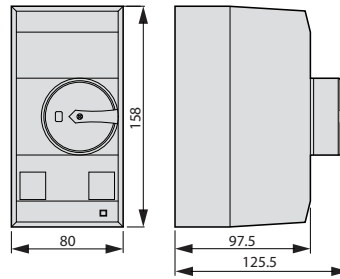
### Dimensions

#### Insulated enclosures for surface mounting

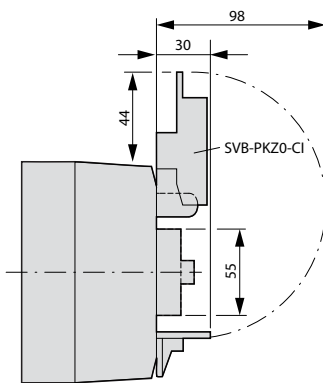
CI-PKZ0-M



CI-PKZ10G...M

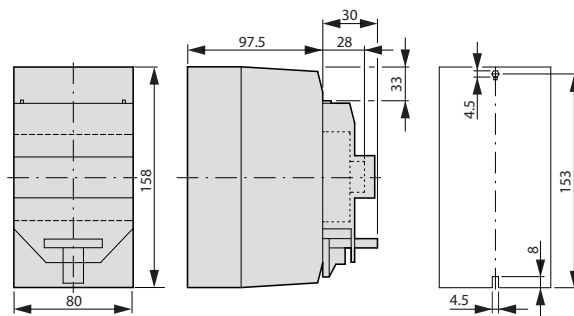


CI-PKZ0-...M  
+ SVB-PKZ0-CI

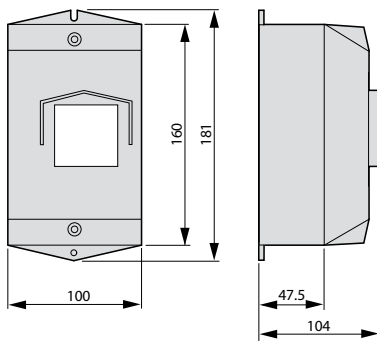


#### Drilling dimensions

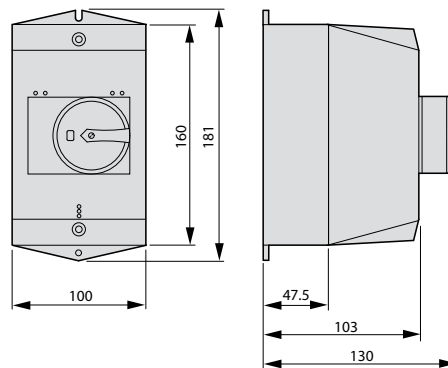
CI-PKZ0-...M



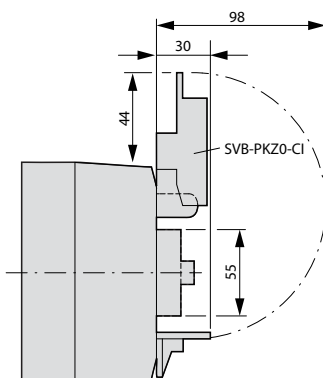
CI-K2-PKZ0



CI-K2-PKZ0G(R)(V)

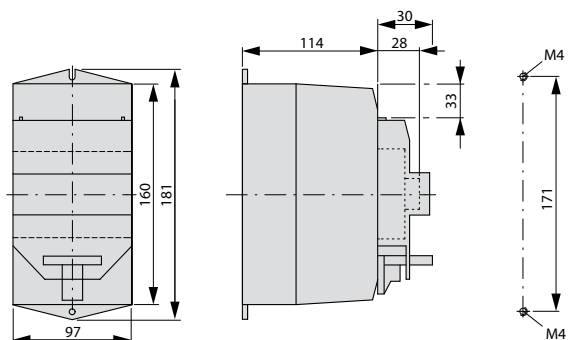


CI-K2-PKZ0-G(R)(V)  
+ SVB-PKZ0-CI



#### Drilling dimensions

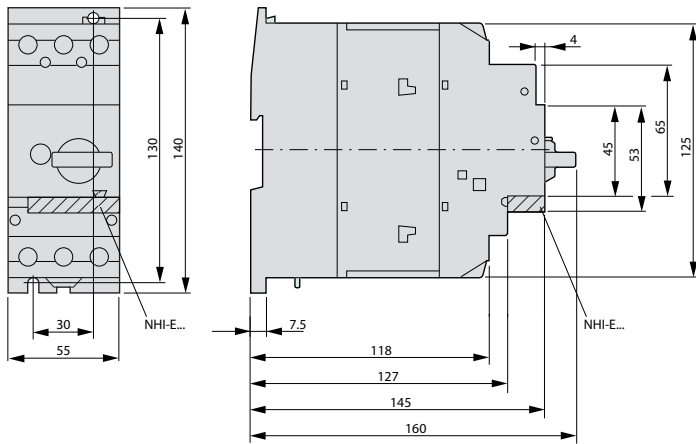
CI-K2-PKZ0...



Dimensions

Motor-protective circuit breakers

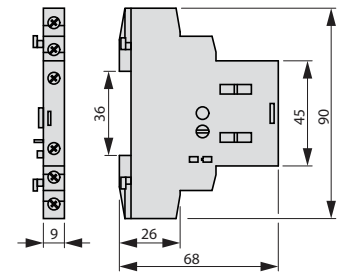
PKZM4-...



Standard auxiliary contacts

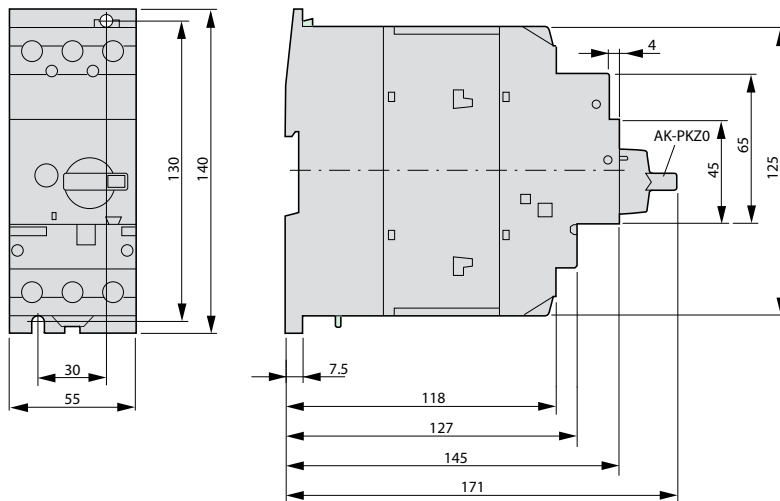
NHI...-PKZ...

NHI...-PKZ0



Motor-protective circuit breakers with lockable cover

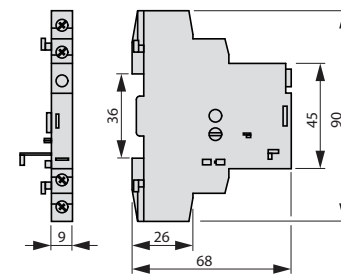
PKZM4-... +AK-PKZ0



Trup indicators

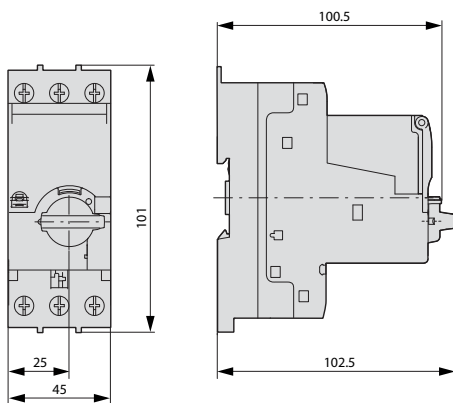
AGM2...-PKZ...

AGM2...-PKZ0

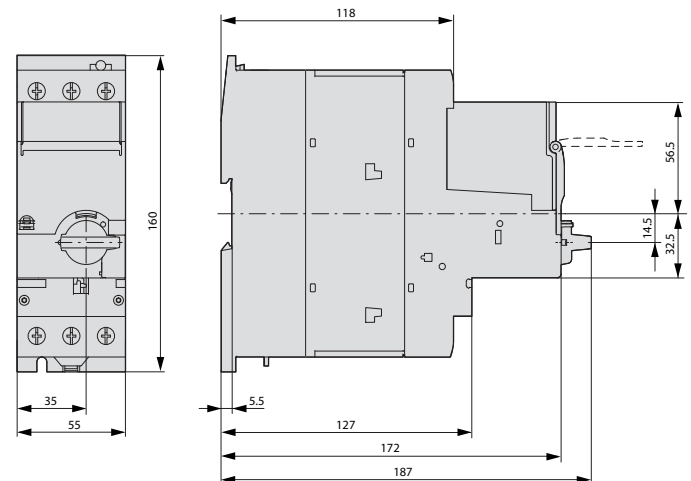


PKE Motor-protective circuit breakers

PKE12, PKE32



PKE65



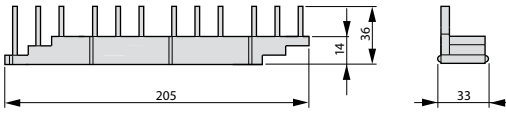
# Power control

## Motor control

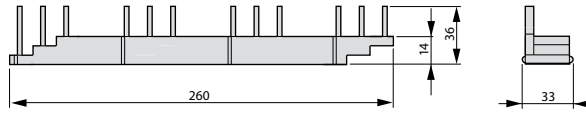
### Dimensions

#### Three-phase commoning links

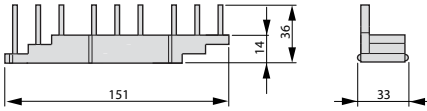
B3.0/4-PKZ4



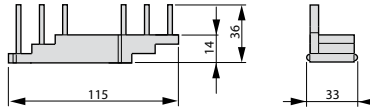
B3.2/4-PKZ4



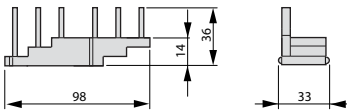
B3.0/3-PKZ4



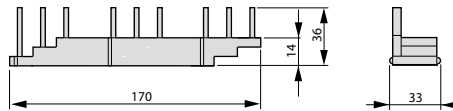
B3.2/2-PKZ4



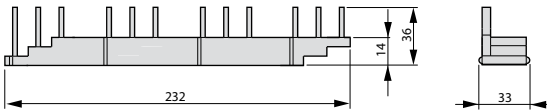
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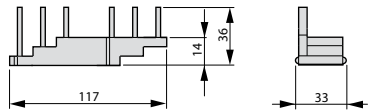
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B3.1/4-PKZ4

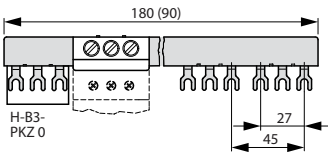


B3.1/2-PKZ4



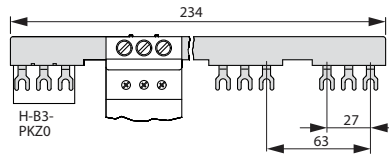
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B3.0/2-PKZ0



B3.2/4-PKZ0

B3.2/2-PKZ0

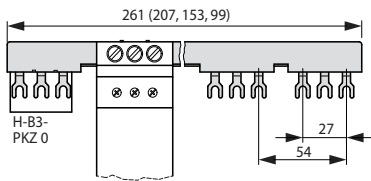


B3.1/5-PKZ0

B3.1/3-PKZ0

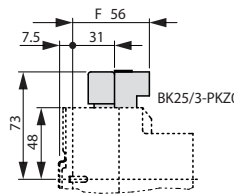
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B3.1/2-PKZ0

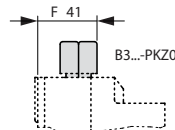


#### Incoming terminals

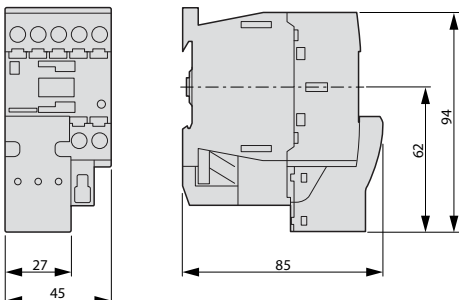
BK25/3-PKZ0



Overlapping mounting to extend the three-phase commoning link



#### Motor plug DILM12-XMCP/T

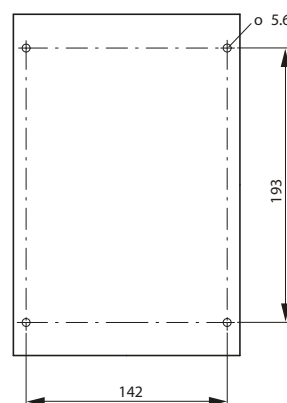
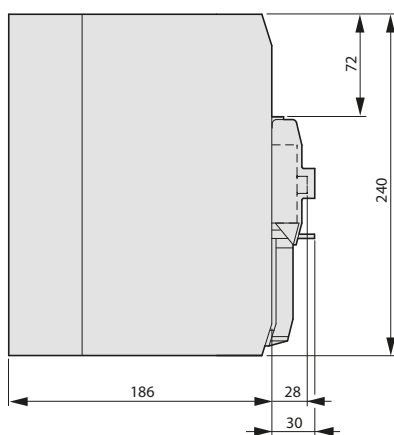
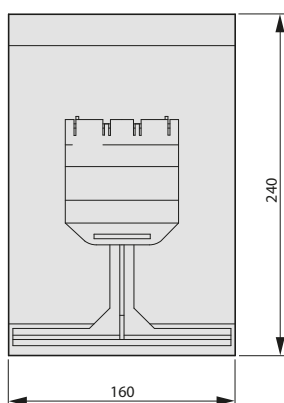
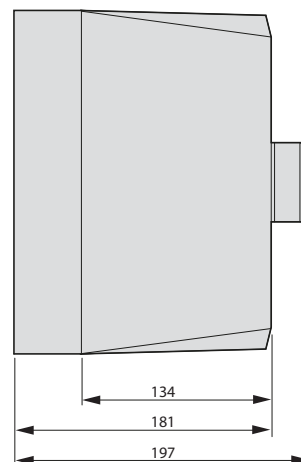
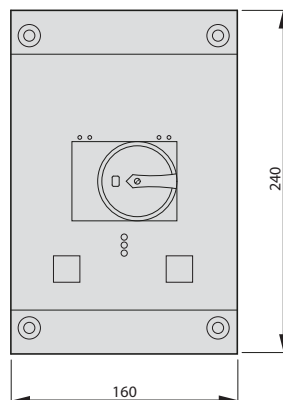
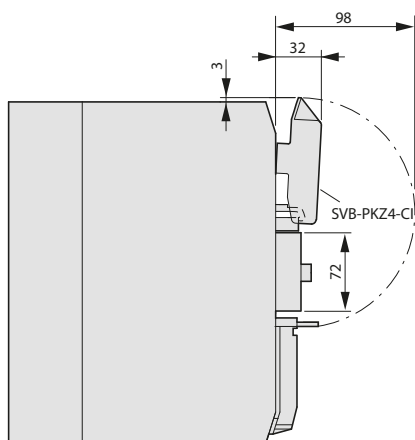


Dimensions

Insulated enclosures for surface mounting

CI-K4-PKZ4-G(R)  
+SVB-PKZ4-CI

CI-K4-PKZ4-G



Drilling dimensions  
CI-K4-PKZ4-G(R)



# SmartWire-DT™

## Changing the way panels are wired.



### **Reduce cost throughout the value chain.**

SmartWire-DT reduces wiring time and effort, which in turn reduces costs. From design through construction to commissioning and system expansion, SmartWire-DT creates value at every step.

SmartWire-DT works with third-party PLC controllers and industry standard networks to connect motor starters and pilot devices without conventional point-to-point wiring.



*Powering Business Worldwide*

## DOL Starters

### DOL starters

IP65 Surface mounting starter, fitted with start & stop/reset pushbuttons.

kW(400 - 415VAC)	AC-3 Amps	Coil voltage	Aux. contacts	Dimensions (W x H x D) mm	Item no.
4	11	240	1NO	90 x 184 x 113	<b>EDOL40NO240</b>
5.5	12	240	1NO	90 x 184 x 113	<b>EDOL55NO240</b>
7.5	16	240	1NO	90 x 184 x 113	<b>EDOL75NO240</b>
11	22	240	1NO	100 x 194 x 123	<b>EDOL11NO240</b>
4	11	415	1NO	90 x 184 x 113	<b>EDOL40NO415</b>
5.5	12	415	1NO	90 x 184 x 113	<b>EDOL55NO415</b>
7.5	16	415	1NO	90 x 184 x 113	<b>EDOL75NO415</b>
11	22	415	1NO	100 x 194 x 123	<b>EDOL11NO415</b>



EDOL40NO240

Order Overloads Separately.

### Overload relays

Full load current (A)	Item no.
0.35 - 0.5	<b>EDOL045TOL</b>
0.45 - 0.63	<b>EDOL063TOL</b>
0.55 - 0.8	<b>EDOL08TOL</b>
0.75 - 1.0	<b>EDOL10TOL</b>
0.9 - 1.3	<b>EDOL1P3TOL</b>
1.1 - 1.6	<b>EDOL1P6TOL</b>
1.4 - 2.0	<b>EDOL02TOL</b>
1.8 - 2.5	<b>EDOL25TOL</b>
2.3 - 3.2	<b>EDOL32TOL</b>
2.9 - 4.0	<b>EDOL04TOL</b>
3.5 - 4.8	<b>EDOL48TOL</b>
4.5 - 6.3	<b>EDOL63TOL</b>
5.5 - 7.5	<b>EDOL75TOL</b>
7.2 - 10	<b>EDOL100TOL</b>
9.0 - 12.5	<b>EDOL125TOL</b>
11.3 - 16	<b>EDOL16TOL</b>
15.0 - 20.0	<b>EDOL20TOL</b>
17.5 - 21.5	<b>EDOL215TOL</b>
21.0 - 25.0	<b>EDOL250TOL</b>
24.5 - 30.0	<b>EDOL30TOL</b>



EDOL25TOL

1NO/1NC Electrically Separated Auxiliary Contacts.  
Single - phase sensitivity for phase imbalance & phase loss protection.  
Temperature Compensated.

### Spare coils

Coil voltage (AC)	Item no.
24V	<b>EDOLCOIL24A</b>
32V	<b>EDOLCOIL32A</b>
110V	<b>EDOLCOIL110A</b>
240V	<b>EDOLCOIL240A</b>
415V	<b>EDOLCOIL415A</b>
480V	<b>EDOLCOIL480A</b>
12V	<b>EDOLCOIL12A</b>



EDOLCOIL240A

Coils suit all starter sizes.

DOL starters

Reversing DOL starters



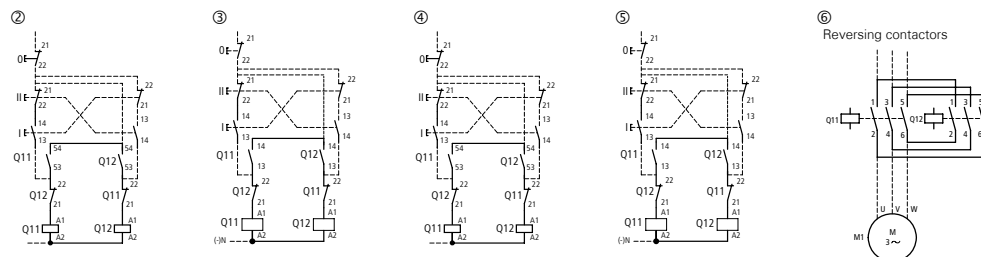
DOLRS4/u(...V50HZ)



DOLRS4/I(...V50HZ)

Rated operational current	Max. rating for three-phase motors, 50 – 60 Hz		Individual components of the combination		AC operation ① Item no.
	AC-3, 415 V I <sub>e</sub> , A	AC-3, 380/415 V P, kW	AC-4, 380/415 V P, kW	Contactor Q11 Item no.	
Open units					
9	4	2.5	DILM9-01 + DILA-XHI20	DILM9-01 + DILA-XHI20	DOLRS4/U(...V50HZ) ②⑥
12	5.5	3	DILM12-01 + DILA-XHI20	DILM12-01 + DILA-XHI20	DOLRS5.5/U(...V50HZ) ②⑥
18	7.5	4.5	DILM17-01 + DILA-XHI20	DILM17-01 + DILA-XHI20	DOLRS7.5/U(...V50HZ) ②⑥
25	11	6	DILM25-01 + DILA-XHI20	DILM25-01 + DILA-XHI20	DOLRS11/U(...V50HZ) ②⑥
32	15	7	DILM32-01 + DILA-XHI20	DILM32-01 + DILA-XHI20	DOLRS15/U(...V50HZ) ②⑥
40	18.5	9	DILM40 + DILM150-XHI11	DILM40 + DILM150-XHI11	DOLRS18.5/U(...V50HZ) ③⑥
50	22	10	-	-	DOLRS22/U(...V50HZ) ③⑥
65	30	12	DILM65 + DILM150-XHI11	DILM65 + DILM150-XHI11	DOLRS30/U(...V50HZ) ③⑥
Enclosed units					
9	4	2.5	DILM9-01 + DILA-XHI20	DILM9-01 + DILA-XHI20	DOLRS4/I(...V50HZ) ④⑥
12	5.5	3	DILM12-01 + DILA-XHI20	DILM12-01 + DILA-XHI20	DOLRS5.5/I(...V50HZ) ④⑥
18	7.5	4.5	DILM17-01 + DILA-XHI20	DILM17-01 + DILA-XHI20	DOLRS7.5/I(...V50HZ) ④⑥
25	11	6	DILM25-01 + DILA-XHI20	DILM25-01 + DILA-XHI20	DOLRS11/I(...V50HZ) ④⑥
32	15	7	DILM32-01 + DILA-XHI20	DILM32-01 + DILA-XHI20	DOLRS15/I(...V50HZ) ④⑥
40	18.5	9	DILM40 + DILM150-XHI11	DILM40 + DILM150-XHI11	DOLRS18.5/I(...V50HZ) ⑤⑥
50	22	10	-	-	DOLRS22/I(...V50HZ) ⑤⑥
65	30	12	DILM65 + DILM150-XHI11	DILM65 + DILM150-XHI11	DOLRS30/I(...V50HZ) ⑤⑥

① Specify voltage & frequency when ordering.  
Standard voltages: V AC: 24 V, 110 V, 240 V, 415 V at 50 Hz.  
Non-standard voltages: V AC: 12 – 600 V at 50 or 60 Hz. V DC: 12 – 250 V.  
For DC voltage add suffix “-G” to Item No.  
N.B. additional charge applies. Please enquire for non-standard configurations.



Star-delta starters

Rated operational current I <sub>e</sub> , A	Max. rating for three-phase motors, 50 – 60 Hz P, kW	Max. changeover time s	Individual components of the combination			Item no. ①
			Mains contactor Q11 Item No.	Delta contactor Q15 Item No.	Star contactor Q13 Item No.	
Star-delta starter combinations						
Open units						
Timing relay K1T: ETR4-51, Complete with overload						
12	5.5 ①	20	DILM7-10 + DILA-XHI20	DILM7-01 + DILA-XHI20	DILM7-01 + DILA-XHI20	SDES5.5/U(...) ②④
16	7.5	20	DILM9-10 + DILA-XHI20	DILM9-01 + DILA-XHI20	DILM7-01 + DILA-XHI20	SDES7.5/U(...) ②④
22	11	20	DILM12-10 + DILA-XHI20	DILM12-01 + DILA-XHI20	DILM7-01 + DILA-XHI20	SDES11/U(...) ②④
30	15	20	DILM17-10 + DILA-XHI20	DILM17-01 + DILA-XHI20	DILM17-01 + DILA-XHI20	SDES15/U(...) ②④
45	22	20	DILM25-10 + DILA-XHI20	DILM25-01 + DILA-XHI20	DILM17-01 + DILA-XHI20	SDES22/U(...) ②④
55	30	20	DILM32-10 + DILA-XHI20	DILM32-01 + DILA-XHI20	DILM25-01 + DILA-XHI20	SDES30/U(...) ②④
70	37	20	DILM40 + DILM150-XHI11	DILM40 + DILM150-XHI31	DILM40 + DILM150-XHI11	SDES37/U(...) ③④
90	45	20	DILM50 + DILM150-XHI11	DILM50 + DILM150-XHI31	DILM40 + DILM150-XHI11	SDES45/U(...) ③④
115	55	20	DILM65 + DILM150-XHI11	DILM65 + DILM150-XHI31	DILM40 + DILM150-XHI11	SDES55/U(...) ③④
140	75	20	DILM80 + DILM150-XHI11	DILM80 + DILM150-XHI31	DILM50 + DILM150-XHI11	SDES75/U(...) ③④
Enclosed units						
Complete with pushbutton & overload, According to IEC 60947						
12	5.5	20	DILM7-10 + DILA-XHI20	DILM7-01 + DILA-XHI20	DILM7-01 + DILA-XHI20	SDES5.5/I(...) ④
16	7.5	20	DILM9-10 + DILA-XHI20	DILM9-01 + DILA-XHI20	DILM7-01 + DILA-XHI20	SDES7.5/I(...) ④
22	11	20	DILM12-10 + DILA-XHI20	DILM12-01 + DILA-XHI20	DILM7-01 + DILA-XHI20	SDES11/I(...) ④
30	15	20	DILM17-10 + DILA-XHI20	DILM17-01 + DILA-XHI20	DILM17-01 + DILA-XHI20	SDES15/I(...) ④
45	22	20	DILM25-10 + DILA-XHI20	DILM25-01 + DILA-XHI20	DILM17-01 + DILA-XHI20	SDES22/I(...) ④
55	30	20	DILM32-10 + DILA-XHI20	DILM32-01 + DILA-XHI20	DILM25-01 + DILA-XHI20	SDES30/I(...) ④
70	37	20	DILM40 + DILM150-XHI11	DILM40 + DILM150-XHI31	DILM40 + DILM150-XHI11	SDES37/I(...) ④
90	45	20	DILM50 + DILM150-XHI11	DILM50 + DILM150-XHI31	DILM40 + DILM150-XHI11	SDES45/I(...) ④
115	55	20	DILM65 + DILM150-XHI11	DILM65 + DILM150-XHI31	DILM40 + DILM150-XHI11	SDES55/I(...) ④
140	75	20	DILM80 + DILM150-XHI11	DILM80 + DILM150-XHI31	DILM50 + DILM150-XHI11	SDES75/I(...) ④



SDES5.5-U



SDES15-U

① Specify voltage & frequency when ordering.  
Standard voltages: V AC: 24 V, 110 V, 240 V, 415 V at 50 Hz  
Non-standard voltages: V AC: 12 – 600 V at 50 or 60 Hz, V DC: 12 – 250 V  
For DC voltage add suffix “-G” to part no.  
N.B. additional charge applies, please enquire for non-standard configurations.

**Overload relay settings**

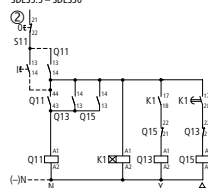
A: I<sub>N</sub> × 0.58  
B: I<sub>N</sub> × 1  
C: I<sub>N</sub> × 0.58

**Starting**

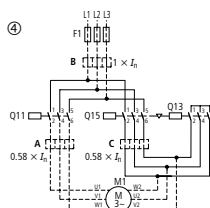
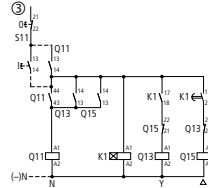
≤ 15 s  
15 – 40 s  
> 40 s

Protection of the motor in Y- and d configuration  
Only partial motor protection in star position  
Motor not protected in star position.  
Timing relay set to approx. 10 s.  
Main circuit:  
Depending on the coordination type required (i.e. Type “1” or Type “2”) it must be established whether the fuse protection and the input wiring for the mains contactor and delta contactor are to be common or separate.

SDES5.5 – SDES30



SDES37 – SDES75





### 1000V Mining contactors

#### Eaton V201 vacuum contactor

Eaton's V201 Vacuum Contactors are known for quality & proven performance. They are ideally suited for heavy-duty applications in harsh environments. These contactors are most commonly used for mining applications.

- Rated for up to 1500V
- Small physical size
- Long life
- Reduced maintenance
- No atmospheric contamination of the contacts
- No noise, no arc flash
- Derating is not required at higher voltages
- Mounting in any position

#### Vacuum contactors

Description	Item no.
160A	<b>V201KRCJZ1</b>
320A	<b>V201KTCJZ1</b>
540A	<b>V201KVCJZ1</b>

110V AC Coil as standard. Vacuum Contactor Amp Ratings are AC3. Vacuum switch tubes cannot be replaced.

#### Auxiliary contacts for V201 vacuum contactors & DPCK air break contactors

Description	Item no.
1NO/1NC	<b>J-11</b>
2NO	<b>J-20</b>
2NC	<b>J-02</b>
1NO/1NC delay – 160A only	<b>J-1CV</b>

#### Accessories

Description	Item no.
For mechanically interlocking two 160A Vacuum Contactors	<b>180C113G04</b>
For mechanically interlocking two 320A Vacuum Contactors	<b>180C113G16</b>
For mechanically interlocking two 540A Vacuum Contactors	<b>180C113G17</b>
Interphase barriers for 160A Vacuum contactor. Contains a set of two interphase barriers.	<b>IPB1</b> ①

① A set is suitable for line OR load side of the contactor. For line AND load side interphase barriers, order two sets.

#### Replacement parts

Description	Suffix	Item no.
Size 4	110/120 Vac, 50/60 Hz	J <b>9085A57G01</b>
	220/240 Vac, 50/60 Hz	K <b>9085A57G02</b>
	380/415 Vac, 50/60 Hz	H <b>ID89221G07</b>
	440/480 Vac, 50/60 Hz	U <b>9085A57G03</b>
Size 5	110/120Vac, 50/60H z	J <b>7874A09G01</b> ③
	220/240 Vac, 50/60 Hz	K <b>7874A09G04</b> ④
	380/415 Vac, 50/60 Hz	H <b>7874A09G10</b>
	440/480 Vac, 50/60 Hz	U <b>7874A09G05</b>
Size 6	110/120Vac, 50/60H z	J <b>7874A24G01</b> ③
	220/240 Vac, 50/60 Hz	K <b>7874A24G02</b> ④
	380/415 Vac, 50/60 Hz	H <b>7874A24G07</b>
	440/480 Vac, 50/60 Hz	U <b>7874A24G03</b>

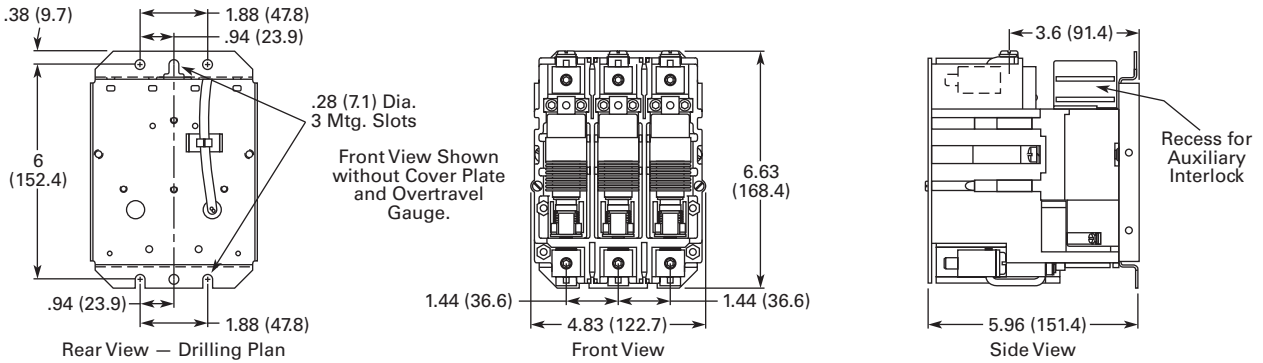
③ 125 Vdc can be directly applied to the Size 5 and 6 coil rated for 120 Vac/60 Hz (cannot be applied to Size 4).

④ 250 Vdc can be directly applied to the Size 5 and 6 coil rated for 240 Vac/60 Hz (cannot be applied to Size 4).

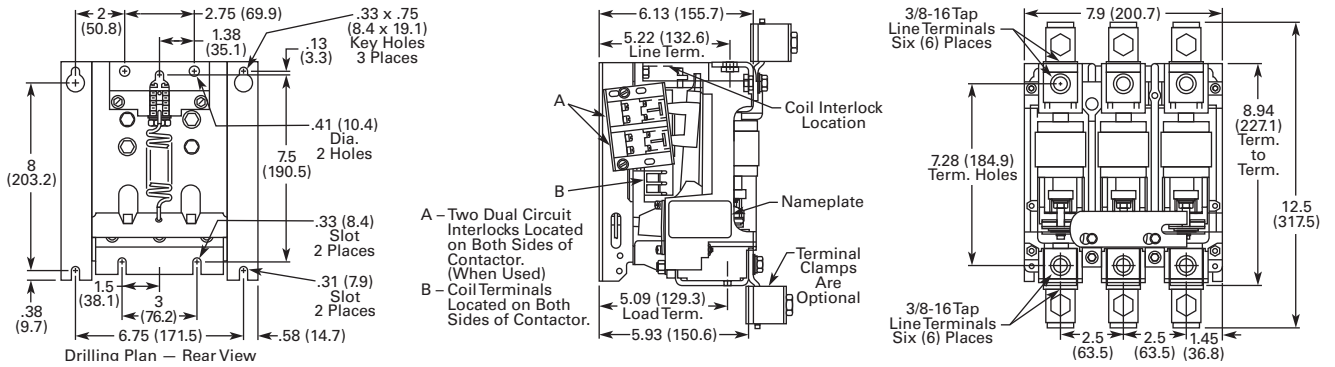


Dimensions

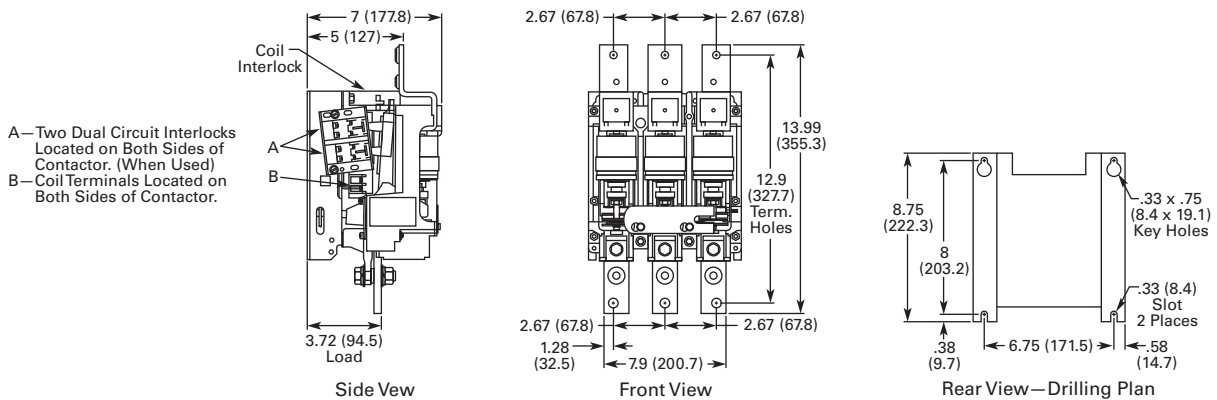
Open type contactors and starters - size 4 and 160A  
Size 4 and 160A non-revising contactor



Open type contactors and starters - size 5 and 320A  
Size 5 and 320A non-revising contactor



Open type contactors and starters - size 6, 540A and 610A  
Size 6, 540 and 610A non-revising contactor



# Solutions you can depend upon.



*Powering Business Worldwide*

Looking to run your process more efficiently and see a significant return on your investment? Whether your application calls for an ultra-compact solution, requires harmonic mitigation, or future configurability is needed, Eaton's high performance

adjustable frequency drives will allow you to realise dramatic energy savings, enabling you to show positive ROI within 18 months, all while maximising your process.

For further information about Eaton's drives please visit [www.eatoncorp.com.au](http://www.eatoncorp.com.au)



## Drives and soft starters

Eaton's variable speed drives are software driven solid-state devices that enable the OEM, contractor or end user to control the speed of motors used in industrial, mining & HVAC applications. Drives are an alternative to direct-on-line or star-delta starters as a method to control the motor & offer greatly enhanced control capability along with energy savings.

From advanced starting & stopping control to integrated motor protection & communications capabilities, Eaton's line of soft starters provide a unique combination of soft starting & flexible protective features. Communications capabilities enable integration into building management systems for easy monitoring & troubleshooting & the small size permits the use of smaller panels & enclosures, for significant cost savings.

## Soft starters

### DS7 Soft starters

- Tool-less plug connection, ensuring easy connection & wiring with other switching devices such as motor-protective circuit breakers
- Connection design, handling & the 45 mm device width match our motor-protective circuit-breakers & contactors of the device series exactly
- The DS7 ensures a jerk-free increase in torque and effective current reduction in the three-phase motor startup phase
- Furthermore, the DS7 is also available with a 110/230 Vac control voltage input
- Settings & status values can be remotely transferred via SmartWire-Darwin gateway regardless of whether Profibus DP or CANopen control commands are used



Rated operational current $I_e$ , A	Rated power for three-phase motors at 3 AC 400 V P, kW	Control supply	Item no.
4	1.5	24 V DC	<b>DS7-34DSX004N0-D</b>
7	3	24 V DC	<b>DS7-34DSX007N0-D</b>
9	4	24 V DC	<b>DS7-34DSX009N0-D</b>
12	5.5	24 V DC	<b>DS7-34DSX012N0-D</b>
16	7.5	24 V DC	<b>DS7-34DSX016N0-D</b>
24	11	24 V DC	<b>DS7-34DSX024N0-D</b>
32	15	24 V DC	<b>DS7-34DSX032N0-D</b>
41	22	24 V DC	<b>DS7-34DSX041N0-D</b>
55	30	24 V DC	<b>DS7-34DSX055N0-D</b>
70	37	24 V DC	<b>DS7-34DSX070N0-D</b>
81	45	24 V DC	<b>DS7-34DSX081N0-D</b>
100	55	24 V DC	<b>DS7-34DSX100N0-D</b>
135	75	24 V DC	<b>DS7-34DSX135N0-D</b>
160	90	24 V DC	<b>DS7-34DSX160N0-D</b>
200	110	24 V DC	<b>DS7-34DSX200N0-D</b>

### Soft starters

#### Accessories



ZB12-4



PKZM0-XM32DE



DS7-FAN-032



PKZM0-XDM12



BBA0L-25

#### Overload relays

For use with...	Item no.
DS7-34...SX004...	<b>ZB12-4</b>
DS7-34...SX007...	<b>ZB12-10</b>
DS7-34...SX009...	
DS7-34...SX012...	<b>ZB12-12</b>
DS7-34...SX016...	<b>ZB32-16</b>
DS7-34...SX024...	<b>ZB32-24</b>
DS7-34...SX032...	<b>ZB32-32</b>

#### Electric contact module

For use with...	Item no.
DS7-34...SX016...	<b>PKZM0-XM32DE</b>
DS7-34...SX024...	
DS7-34...SX032...	

#### Device fans

For use with...	Item no.
DS7-34...SX004...	<b>DS7-FAN-032</b>
DS7-34...SX007...	
DS7-34...SX009...	
DS7-34...SX012...	
DS7-34...SX016...	
DS7-34...SX024...	
DS7-34...SX032...	<b>DS7-FAN-100</b>
DS7-34...SX041...	
DS7-34...SX055...	
DS7-34...SX070...	<b>DS7-FAN-200</b>
DS7-34...SX081...	
DS7-34...SX100...	<b>DS7-FAN-200</b>
DS7-34...SX135...	
DS7-34...SX160...	
DS7-34...SX200...	

#### PKZ-DS7 wiring set

For use with...	Item no.
DS7-34...SX004...	<b>PKZM0-XDM12</b>
DS7-34...SX007...	
DS7-34...SX009...	
DS7-34...SX012...	

#### Busbar adapter

For use with...	Item no.
PKZM0, PKE + DS7...004N...	<b>BBA0L-25</b>
PKZM0, PKE + DS7...007N...	
PKZM0, PKE + DS7...009N...	
PKZM0, PKE + DS7...012N...	<b>BBA0L-32</b>
PKZM0, PKE + DS7...004N...	
PKZM0, PKE + DS7...007N...	
PKZM0, PKE + DS7...009N...	
PKZM0, PKE + DS7...012N...	
PKZM0, PKE + DS7...016N...	
PKZM0, PKE + DS7...024N...	<b>BBA0L-32</b>
PKZM0, PKE + DS7...032N...	

Soft starters

S811+ intelligent technologies (IT)

- Built-in overload protection
- Built-in run bypass contactor
- Adjustable ramp times
- Adjustable torque control
- Adjustable kick start control
- Programmable overload settings, 31-100% of rated current
- Digital Interface Module (DIM) to safely configure, commission, monitor and troubleshoot
- Soft start and Soft stop control
- Multiple trip class settings (5, 10, 20 and 30)
- Built-in comms. capability for Modbus (through the DIM or using CH Studio software)
- Six SCR control, 3 or 6 wire 415V
- Ideal for pump protection and control
- 24V DC power supply required with soft starter see below



Max current (amps)		kW rating at 415V AC		Item no.
Normal duty	Severe duty	Normal duty*	Severe duty**	
37	22	18.5	11	<b>S811+N37P3S</b>
66	42	30	22	<b>S811+N66P3S</b>
105	65	55	37	<b>S811+R10P3S</b>
135	80	75	45	<b>S811+R13P3S</b>
180	115	90	55	<b>S811+T18P3S</b>
240	150	132	75	<b>S811+T24P3S</b>
304	192	160	90	<b>S811+T30P3S</b>
360	240	185	132	<b>S811+U36P3S</b>
420	305	220	160	<b>S811+U42P3S</b>
500	365	260	200	<b>S811+V50P3S</b>
650	420	355	220	<b>S811+V65P3S</b>
720	480	400	260	<b>S811+V72P3S</b>
850	525	450	300	<b>S811+V85P3S</b>
1000	575	560	330	<b>S811+V10P3S</b>

Normal duty is 4 starts per hour at ramp current 300% of full load amps. Severe duty is 4 starts per hour at ramp current 450% of full load amps.

Accessories for S811+ soft starters

Description		Item no.
Lug kits, 3-phase	2 cable connection, up to 2 x 240mm dia (T/U)	<b>EML24</b>
Lug kits, 3-phase	2 cable connection, up to 2 x 240mm dia (V)	<b>EML28</b>
Control interface module panel mounting kits	Kit with 2m Cable, remote keypad mount	<b>EMA69C</b>
Control wire connectors	12-Pin Connector for Control Wiring	<b>EMA75</b>
DC power supply	240Vac in, 24 V DC out	<b>PSG240E</b>

For voltages rated 690V to 7.5kV open panel/enclosed type, we have the MV 811 Series medium voltage soft starters. Please contact your nearest Eaton branch to discuss your application for the medium voltage starters.



EML24



EMA69C



PSG240E

# Power control

## Drives and soft starters



### Variable speed drives

#### M-Max machinery drives

- Ease of use — plug & play, start-up wizard, advanced diagnostic capability, copy/paste parameters without powering drive
- Compact, space-saving design
- RS485/Modbus & PI-controller inbuilt as standard
- Rugged & reliable — 50°C rating, 150% overload for 1 min., 200% starting current for 2 secs. in every 20 sec. period, conformal coated boards
- Internal EMC filter complying with IEC61800-3
- RoHS compliance

#### 1-ph in, 3-ph out, 240V AC

Description	H x W x D (mm)	High overload		Low overload		Item no.
		P(kW)	I(H)	P(kW)	I(L)	
M-Max Drive 240V 0.25 kW CT IP20	157 x 66 x 102	0.25	1.7	0.25	1.7	<b>MMX12AA1D7F0-0</b>
M-Max Drive 240V 0.37 kW CT IP20	157 x 66 x 102	0.37	2.4	0.37	2.4	<b>MMX12AA2D4F0-0</b>
M-Max Drive 240V 0.55 kW CT IP20	157 x 66 x 102	0.55	2.8	0.55	2.8	<b>MMX12AA2D8F0-0</b>
M-Max Drive 240V 0.75 kW CT IP20	157 x 66 x 102	0.75	3.7	0.75	3.7	<b>MMX12AA3D7F0-0</b>
M-Max Drive 240V 1.1 kW CT IP20	195 x 90 x 105	1.1	4.8	1.1	4.8	<b>MMX12AA4D8F0-0</b>
M-Max Drive 240V 1.5 kW CT IP20	195 x 90 x 105	1.5	7	1.5	7	<b>MMX12AA7D0F0-0</b>
M-Max Drive 240V 2.2 kW CT IP20	263 x 100 x 112	2.2	9.6	2.2	9.6	<b>MMX12AA9D6F0-0</b>

#### 3-ph in, 3-ph out, 415V AC

Description	H x W x D (mm)	High overload		Low overload		Item no.
		P(kW)	I(H)	P(kW)	I(L)	
M-Max Drive 415V 0.37 kW CT IP20	160 x 66 x 102	0.37	1.3	0.37	1.3	<b>MMX34AA1D3F0-0</b>
M-Max Drive 415V 0.55 kW CT IP20	160 x 66 x 102	0.55	1.9	0.55	1.9	<b>MMX34AA1D9F0-0</b>
M-Max Drive 415V 0.75 kW CT IP20	160 x 66 x 102	0.75	2.4	0.75	2.4	<b>MMX34AA2D4F0-0</b>
M-Max Drive 415V 1.1 kW CT IP20	195 x 90 x 105	1.1	3.3	1.1	3.3	<b>MMX34AA3D3F0-0</b>
M-Max Drive 415V 1.5 kW CT IP20	195 x 90 x 105	1.5	4.3	1.5	4.3	<b>MMX34AA4D3F0-0</b>
M-Max Drive 415V 2.2 kW CT IP20	195 x 90 x 105	2.2	5.6	2.2	5.6	<b>MMX34AA5D6F0-0</b>
M-Max Drive 415V 3.0 kW CT IP20	253 x 100 x 112	3	7.6	3	7.6	<b>MMX34AA7D6F0-0</b>
M-Max Drive 415V 4.0 kW CT IP20	253 x 100 x 112	4	9	4	9	<b>MMX34AA9D0F0-0</b>
M-Max Drive 415V 5.5 kW CT IP20	253 x 100 x 112	5.5	12	5.5	12	<b>MMX34AA012F0-0</b>
M-Max Drive 415V 7.5 kW CT IP20	253 x 100 x 112	7.5	14	7.5	14	<b>MMX34AA014F0-0</b>
M-Max Drive 415V 7.5 kW CT IP20	370 x 165 x 168	7.5	16	7.5	16	<b>MMX34AA016F0-0</b>
M-Max Drive 415V 11 kW CT IP20	370 x 165 x 168	11	23	11	23	<b>MMX34AA023F0-0</b>
M-Max Drive 415V 15 kW CT IP20	414 x 165 x 205	15	31	15	31	<b>MMX34AA031F0-0</b>
M-Max Drive 415V 18.5 kW CT IP20	414 x 165 x 205	18.5	38	18.5	38	<b>MMX34AA038F0-0</b>

#### M-Max copy/paste module

Description	Item no.
Module is plugged onto the front of the drive to provide upload/download of all parameters, direct link to a PC via USB or via MaxConnect software.	<b>MMX-COM-PC</b>

#### PC cable

Description	Item no.
Remote download USB to RJ-45 cable with software driver	<b>REM-USB-DOWN</b>

#### Remote Keypad ③

Description	Item no.
Keypad, bezel and cable	<b>OPTRMT-BP-HMAX</b>
Remote copy/paste keypad	<b>MMX-REMKEY-TEXT</b>
VFD adaptor	<b>MMX-ADAPTER-RJ45</b>

#### NEMA type 1 kit ①

Description	Item no.
NEMA type 1 and IP21 kit for frame 1	<b>MMX-IP21-FS1</b>
NEMA type 1 and IP21 kit for frame 2	<b>MMX-IP21-FS2</b>
NEMA type 1 and IP21 kit for frame 3	<b>MMX-IP21-FS3</b>
NEMA type 1 for frame 4	<b>MMX-CKIT-FS4</b>
NEMA type 1 for frame 5	<b>MMX-CKIT-FS5</b>

#### Optional communication modules ②

Description	Item no.
Communication adaptor kit (FS1-FS3)	<b>MMX-NET-XA</b>
Communication adaptor kit (FS4-FS5)	<b>MMX-NET-XA-45</b>
PROFIBUS DP network card w. serial connection	<b>XXM-NET-PS-A</b>
PROFIBUS DP network card w. Sub-D connection	<b>XXM-NET-PD-A</b>
DevicerNet network card	<b>XXM-NET-DN-A</b>

① NEMA Type 1 kit provides conduit entry plate.

② Additional input and output reactors are available. Consult Eaton representative for a complete listing.

③ All three components are required for remote keypad operation.

## Drives

### DG1

The DG1 general purpose drives are part of Eaton's next generation PowerXL Series of adjustable frequency drives specifically engineered for today's more demanding commercial and industrial applications. The power unit makes use of the most sophisticated semiconductor technology and a highly modular construction that can be flexibly adapted to meet the customer's needs.

The control module was designed to include today's standard communication protocols and I/O while still having the modularity to add additional option cards. Eaton's patented Active Energy Control is also a standard feature on DG1 drives, offering customers increased efficiency, safety and reliability.

#### DG1 general purpose drives

- High spec sensorless vector open loop general purpose industrial drive, with inbuilt 5% dc choke
- Suitable for variable torque (fan/pump) and constant torque (conveyor/crusher) applications
- Internal RFI filter complying with emc category 2 & inbuilt brake chopper in frames 1-3
- Available off-the-shelf with IP21 & IP54 protection, suitable for direct wall mounting
- Comms inbuilt onboard - Ethernet/IP, Modbus/RTU, Modbus/TCP, BacNet MS/TP
- Conformal coated boards, suitable for tropical & coastal high humidity environments
- Complies with local C-Tick & RCM mark & product standards AS/IEC61800, 61000 series
- Real time clock & graphic copy/paste keypad with local/remote key & onscreen diagnostics
- Preset speeds, jump frequencies, sleep/wake modes, 2 PID feedback loops inbuilt
- Patented 'Active Energy Control' energy saving software, added savings over other drives



#### 380-500V IP21

Description	Frame size	High overload		Low overload		Item no.
		P [kW]	I(H)	P [kW]	I(L)	
DG1 drive 415V 1.1kW VT IP21 C/W brake chopper	1	0.75	2.2	1.1	3.3	<b>DG1-342D2FB-C21C</b>
DG1 drive 415V 1.5kW VT IP21 C/W brake chopper	1	1.1	3.3	1.5	4.3	<b>DG1-343D3FB-C21C</b>
DG1 drive 415V 2.2kW VT IP21 C/W brake chopper	1	1.5	4.3	2.2	5.6	<b>DG1-344D3FB-C21C</b>
DG1 drive 415V 3.0kW VT IP21 C/W brake chopper	1	2.2	5.6	3	7.6	<b>DG1-345D6FB-C21C</b>
DG1 drive 415V 4.0kW VT IP21 C/W brake chopper	1	3	7.6	4	9	<b>DG1-347D6FB-C21C</b>
DG1 drive 415V 5.5kW VT IP21 C/W brake chopper	1	4	9	5.5	12	<b>DG1-349D0FB-C21C</b>
DG1 drive 415V 7.5kW VT IP21 C/W brake chopper	2	5.5	12	7.5	16	<b>DG1-34012FB-C21C</b>
DG1 drive 415V 11kW VT IP21 C/W brake chopper	2	7.5	16	11	23	<b>DG1-34016FB-C21C</b>
DG1 drive 415V 15kW VT IP21 C/W brake chopper	2	11	23	15	31	<b>DG1-34023FB-C21C</b>
DG1 drive 415V 18.5kW VT IP21 C/W brake chopper	3	15	31	18.5	38	<b>DG1-34031FB-C21C</b>
DG1 drive 415V 22kW VT IP21 C/W brake chopper	3	18.5	38	22	46	<b>DG1-34038FB-C21C</b>
DG1 drive 415V 30kW VT IP21 C/W brake chopper	3	22	46	30	61	<b>DG1-34046FB-C21C</b>
DG1 drive 415V 37kW VT IP21	4	30	61	37	72	<b>DG1-34061FN-C21C</b>
DG1 drive 415V 45kW VT IP21	4	37	72	45	87	<b>DG1-34072FN-C21C</b>
DG1 drive 415V 55kW VT IP21	4	45	87	55	105	<b>DG1-34087FN-C21C</b>
DG1 drive 415V 75kW VT IP21	5	55	105	75	140	<b>DG1-34105FN-C21C</b>
DG1 drive 415V 90kW VT IP21	5	75	140	90	170	<b>DG1-34140FN-C21C</b>
DG1 drive 415V 110kW VT IP21	5	90	170	110	205	<b>DG1-34170FN-C21C</b>
DG1 drive 415V 132kW VT IP21	6	110	205	132	261	<b>DG1-34205FN-C21C</b>
DG1 drive 415V 160kW VT IP21	6	132	245	160	310	<b>DG1-34261FN-C21C</b>

# Power control

## Drives and soft starters

### 380-500V IP54

Description	Frame size	High overload		Low overload		Item no.
		P [kW]	I(H)	P [kW]	I(L)	
DG1 drive 415V 1.1kW VT IP54 C/W brake chopper	1	0.75	2.2	1.1	3.3	<b>DG1-342D2FB-C54C</b>
DG1 drive 415V 1.5kW VT IP54 C/W brake chopper	1	1.1	3.3	1.5	4.3	<b>DG1-343D3FB-C54C</b>
DG1 drive 415V 2.2kW VT IP54 C/W brake chopper	1	1.5	4.3	2.2	5.6	<b>DG1-344D3FB-C54C</b>
DG1 drive 415V 3.0kW VT IP54 C/W brake chopper	1	2.2	5.6	3	7.6	<b>DG1-345D6FB-C54C</b>
DG1 drive 415V 4.0kW VT IP54 C/W brake chopper	1	3	7.6	4	9	<b>DG1-347D6FB-C54C</b>
DG1 drive 415V 5.5kW VT IP54 C/W brake chopper	1	4	9	5.5	12	<b>DG1-349D0FB-C54C</b>
DG1 drive 415V 7.5kW VT IP54 C/W brake chopper	2	5.5	12	7.5	16	<b>DG1-34012FB-C54C</b>
DG1 drive 415V 11kW VT IP54 C/W brake chopper	2	7.5	16	11	23	<b>DG1-34016FB-C54C</b>
DG1 drive 415V 15kW VT IP54 C/W brake chopper	2	11	23	15	31	<b>DG1-34023FB-C54C</b>
DG1 drive 415V 18.5kW VT IP54 C/W brake chopper	3	15	31	18.5	38	<b>DG1-34031FB-C54C</b>
DG1 drive 415V 22kW VT IP54 C/W brake chopper	3	18.5	38	22	46	<b>DG1-34038FB-C54C</b>
DG1 drive 415V 30kW VT IP54 C/W brake chopper	3	22	46	30	61	<b>DG1-34046FB-C54C</b>
DG1 drive 415V 37kW VT IP54	4	30	61	37	72	<b>DG1-34061FN-C54C</b>
DG1 drive 415V 45kW VT IP54	4	37	72	45	87	<b>DG1-34072FN-C54C</b>
DG1 drive 415V 55kW VT IP54	4	45	87	55	105	<b>DG1-34087FN-C54C</b>
DG1 drive 415V 75kW VT IP54	5	55	105	75	140	<b>DG1-34105FN-C54C</b>
DG1 drive 415V 90kW VT IP54	5	75	140	90	170	<b>DG1-34140FN-C54C</b>
DG1 drive 415V 110kW VT IP54	5	90	170	110	205	<b>DG1-34170FN-C54C</b>
DG1 drive 415V 132kW VT IP54	6	110	205	132	261	<b>DG1-34205FN-C54C</b>
DG1 drive 415V 160kW VT IP54	6	132	245	160	310	<b>DG1-34261FN-C54C</b>

### Options & accessories



DXG-EXT-3DI3DO1T



DXG-KEY-LCD



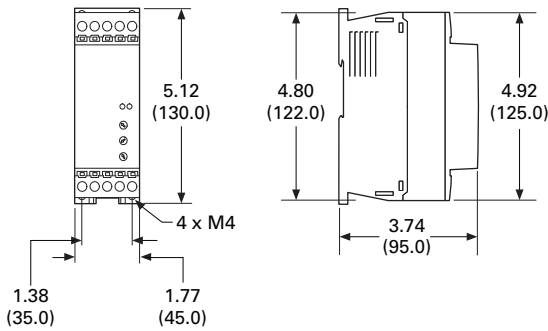
DXG-ACC-FR2N12KIT

Description	Item no.
DG1 Option card 3 DI 3 DO 1 THERMISTOR INPUT	<b>DXG-EXT-3DI3DO1T</b>
DG1 Option card 1 AI 2 AO ISOLATED ANALOG	<b>DXG-EXT-1AI2AO</b>
DG1 Option card 3 RO (2NO+1CO) OUTPUT	<b>DXG-EXT-3RO</b>
DG1 Option card 3 Pt100 RTD INPUT	<b>DXG-EXT-THERM1</b>
DG1 Option card 6 DI 240VAC INPUT	<b>DXG-EXT-6DI</b>
DG1 Comms card PROFIBUS DP	<b>DXG-NET-PROFIBUS</b>
DG1 Comms card CANOPEN	<b>DXG-NET-CANOPEN</b>
DG1 Comms card DEVICENET	<b>DXG-NET-DEVICENET</b>
DG1 Comms card PROFIBUS DP (DB9 CONN)	<b>DXG-MNT-PROFIBUS</b>
DG1 Comms card SMARTWIRE DT	<b>DXG-NET-SWD</b>
DG1 Comms card LONWORKS	<b>DXG-NET-LONWORKS</b>
DG1 replacement keypad	<b>DXG-KEY-LCD</b>
DG1 remote keypad mount kit (0.5M CABLE)	<b>DXG-KEY-RMTKIT</b>
DG1 remote keypad cable 1M	<b>DXG-CBL-1M0</b>
DG1 remote keypad cable 3M	<b>DXG-CBL-3M0</b>
DG1 remote keypad mounting holder	<b>DXG-KEY-HOLDER</b>
DG1 IP54 blank keypad hole plug	<b>DXG-KEY-N12PLUG</b>
DG1 FRAME 1 IP54 conversion kit	<b>DXG-ACC-4FR1N12KIT</b>
DG1 FRAME 2 IP54 conversion kit	<b>DXG-ACC-FR2N12KIT</b>
DG1 FRAME 3 IP54 conversion kit	<b>DXG-ACC-FR3N12KIT</b>
DG1 FRAME 1 IP54 flange kit	<b>DXG-ACC-FR1N12FK</b>
DG1 FRAME 2 IP54 flange kit	<b>DXG-ACC-FR2N12FK</b>
DG1 FRAME 3 IP54 flange kit	<b>DXG-ACC-FR3N12FK</b>
DG1 FRAME 4 IP54 flange kit	<b>DXG-ACC-FR4N12FK</b>
DG1 FRAME 5 IP54 flange kit	<b>DXG-ACC-FR5N12FK</b>
DG1 control module demo stand	<b>DG1-DEMO1</b>
DG1 full drive demo case	<b>DG1-DEMO2</b>
DG1 RS485 programming cable USB-TO-RJ45	<b>DXG-CBL-PCCABLE</b>
DG1 battery for real time clock	<b>DXG-ACC-RTBATT</b>
DG1 control module kit with keypad	<b>DXG-SPR-CTRLKIT</b>

### Soft starter controllers

**Dimensions** (approximate dimensions in inches (mm))

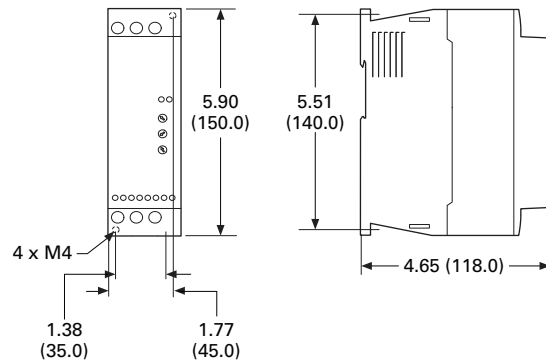
#### Frame 1



#### Item no.

DS7-340SX004N0-N	DS7-342SX004N0-N
DS7-340SX007N0-N	DS7-342SX007N0-N
DS7-340SX009N0-N	DS7-342SX009N0-N
DS7-340SX012N0-N	DS7-342SX012N0-N

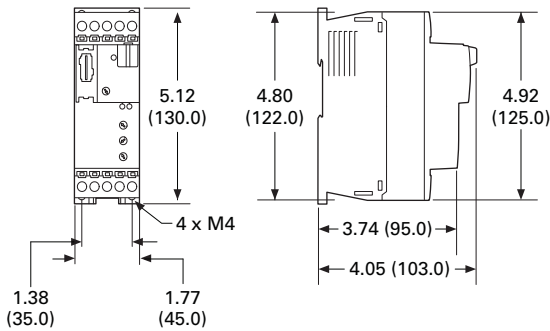
#### Frame 2



#### Item no.

DS7-340SX016N0-N	DS7-342SX016N0-N
DS7-340SX024N0-N	DS7-342SX024N0-N
DS7-340SX032N0-N	DS7-342SX032N0-N

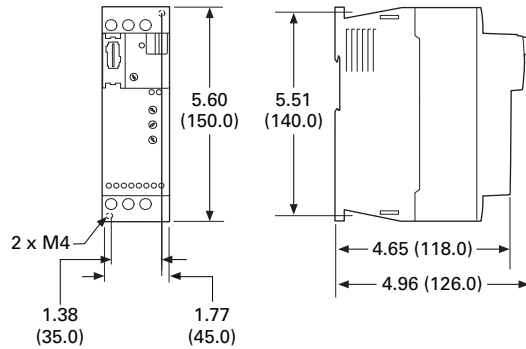
#### Frame 1—SmartWire-DT



#### Item no.

DS7-34DSX004N0-D	DS7-34DSX009N0-D
DS7-34DSX007N0-D	DS7-34DSX012N0-D

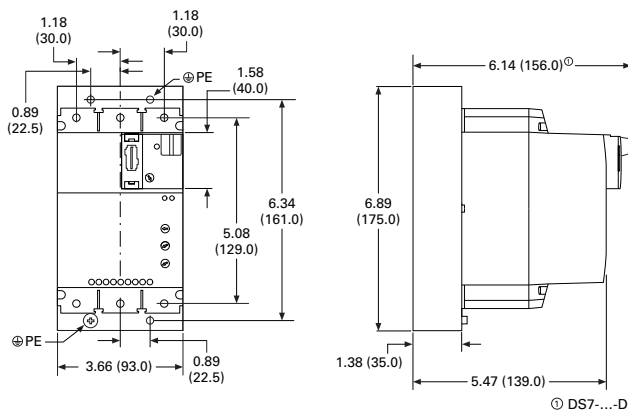
#### Frame 2—SmartWire-DT



#### Item no.

DS7-34DSX016N0-D
DS7-34DSX024N0-D
DS7-34DSX032N0-D

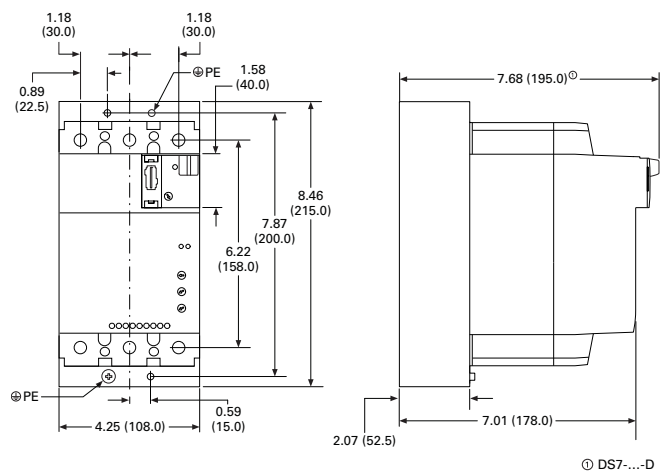
#### Frame 3—SmartWire-DT and Standard (Non SmartWire-DT)



#### Item no.

DS7-340SX041N0-N	DS7-342SX041N0-N	DS7-34DSX041N0-D
DS7-340SX055N0-N	DS7-342SX055N0-N	DS7-34DSX055N0-D
DS7-340SX070N0-N	DS7-34DSX070N0-D	DS7-342SX070N0-N
DS7-340SX081N0-N	DS7-342SX081N0-N	DS7-34DSX081N0-D
DS7-340SX100N0-N	DS7-342SX100N0-N	DS7-34DSX100N0-D

#### Frame 4—SmartWire-DT and Standard (Non SmartWire-DT)



#### Item no.

DS7-342SX135N0-N	DS7-340SX135N0-N	DS7-34DSX135N0-D
DS7-342SX160N0-N	DS7-340SX160N0-N	DS7-34DSX160N0-D
DS7-342SX200N0-N	DS7-340SX200N0-N	DS7-34DSX200N0-D



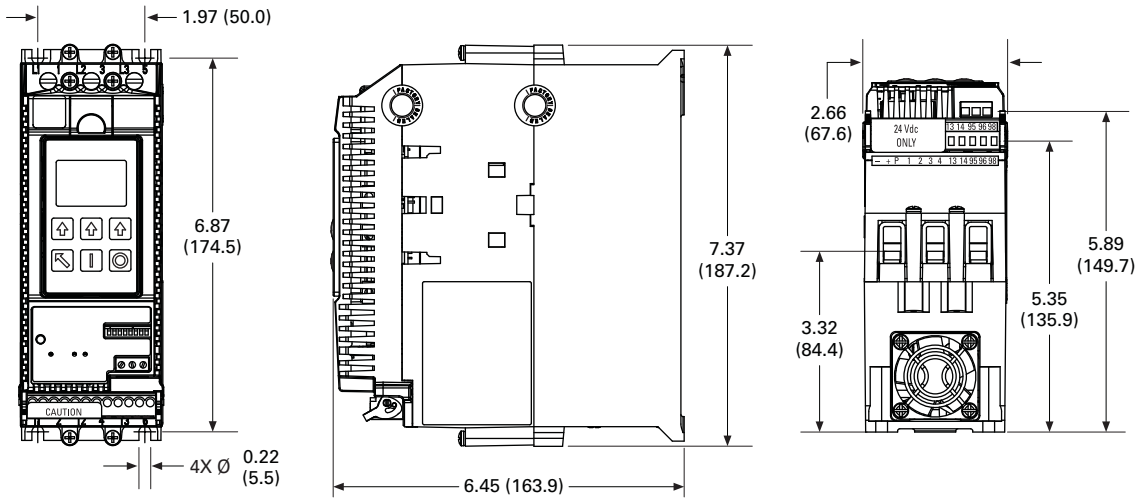
# Power control

## Drives and soft starters

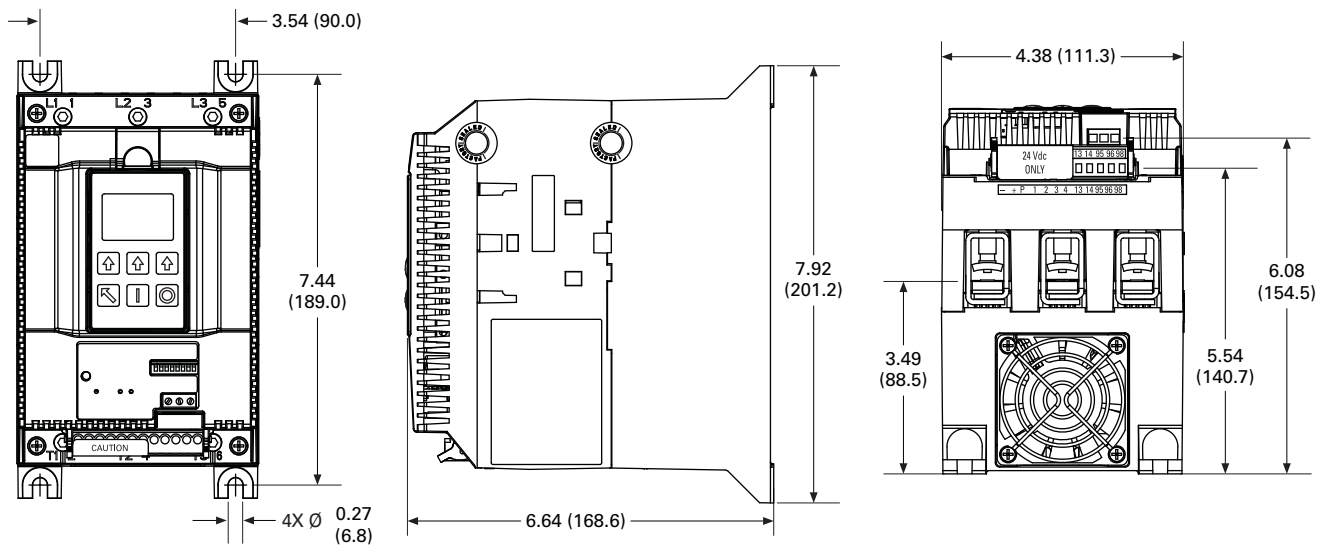
### Solid soft starter

**Dimensions** (approximate dimensions in inches (mm))

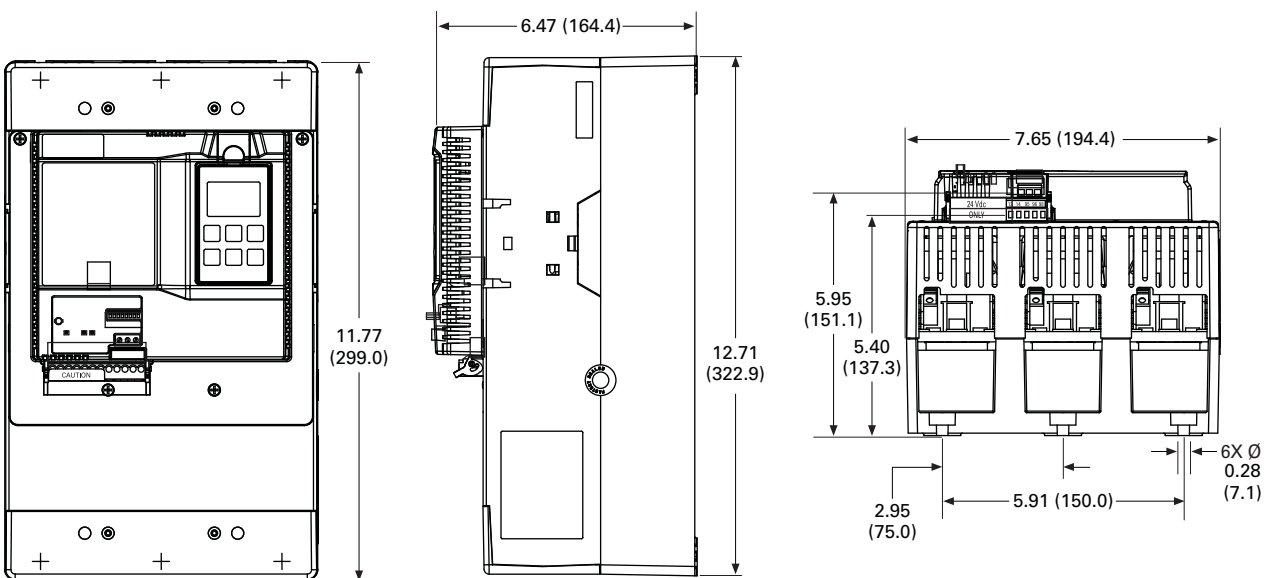
#### S811+N...



#### S811+R...



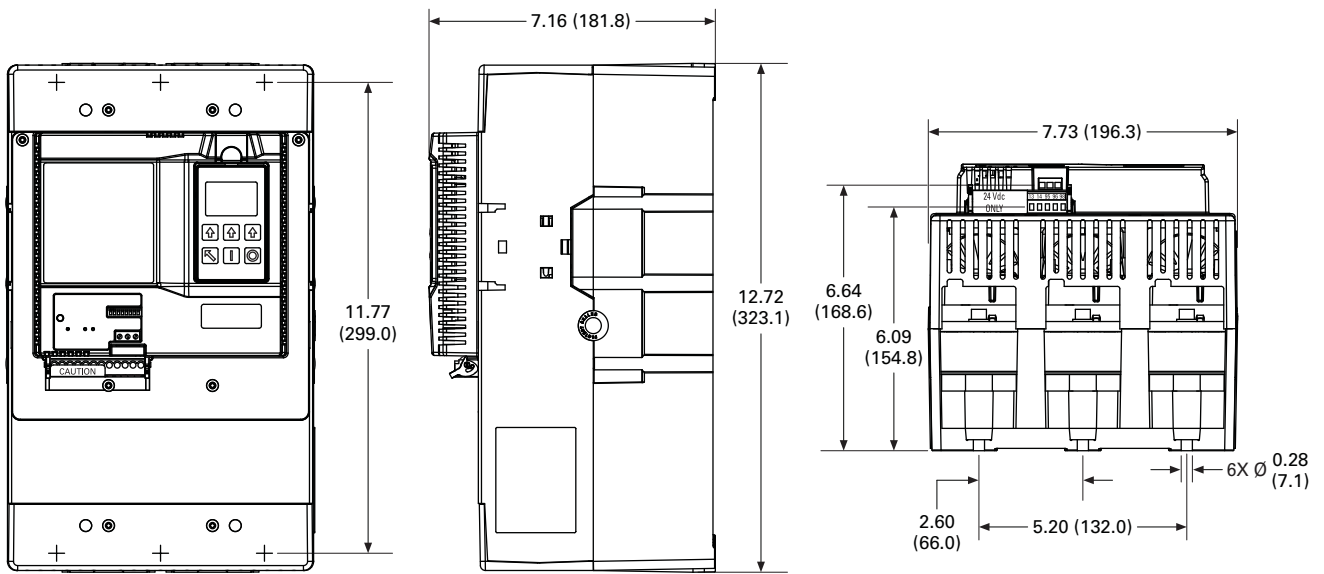
#### S811+T...



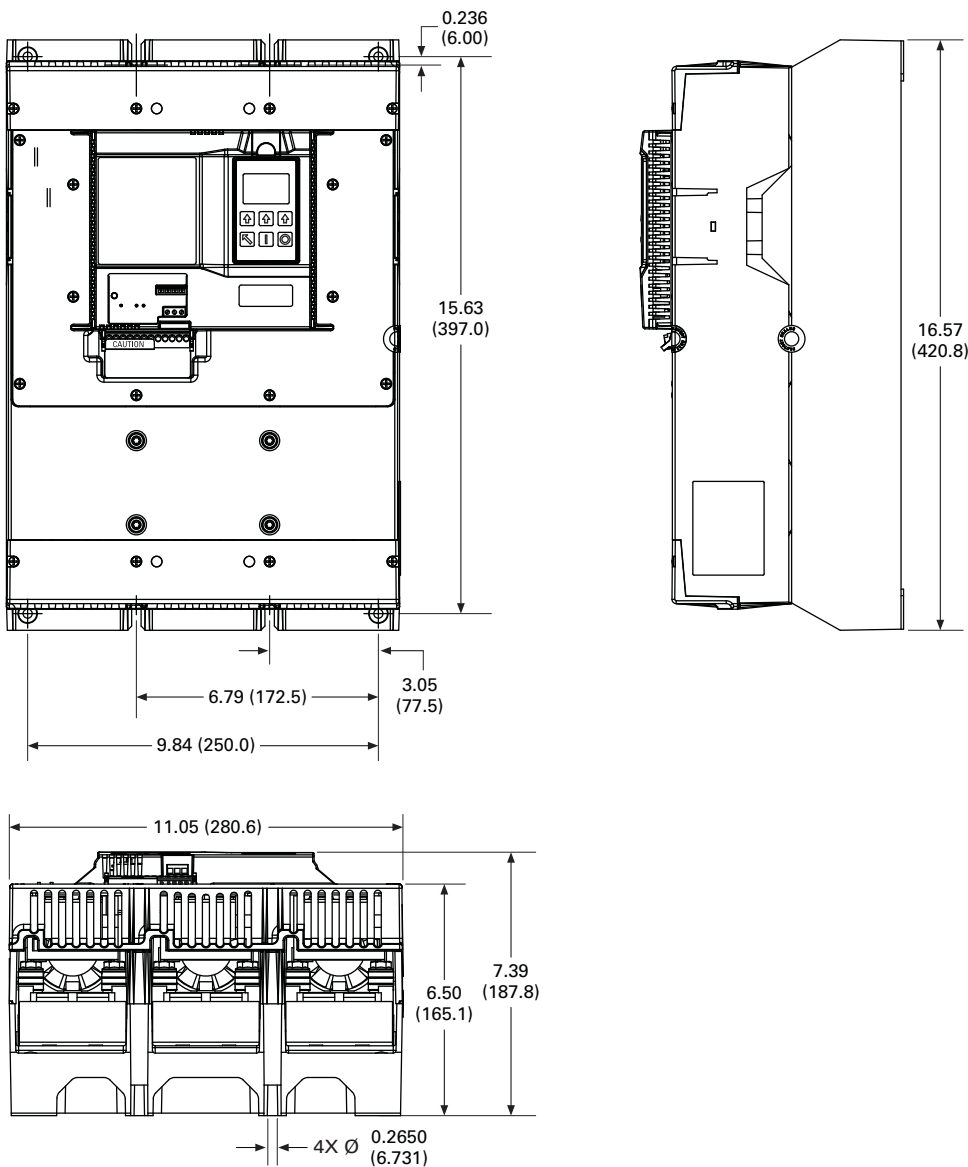
**Solid soft starter**

**Dimensions** (approximate dimensions in inches (mm))

**S811+U...**



**S811+V...**



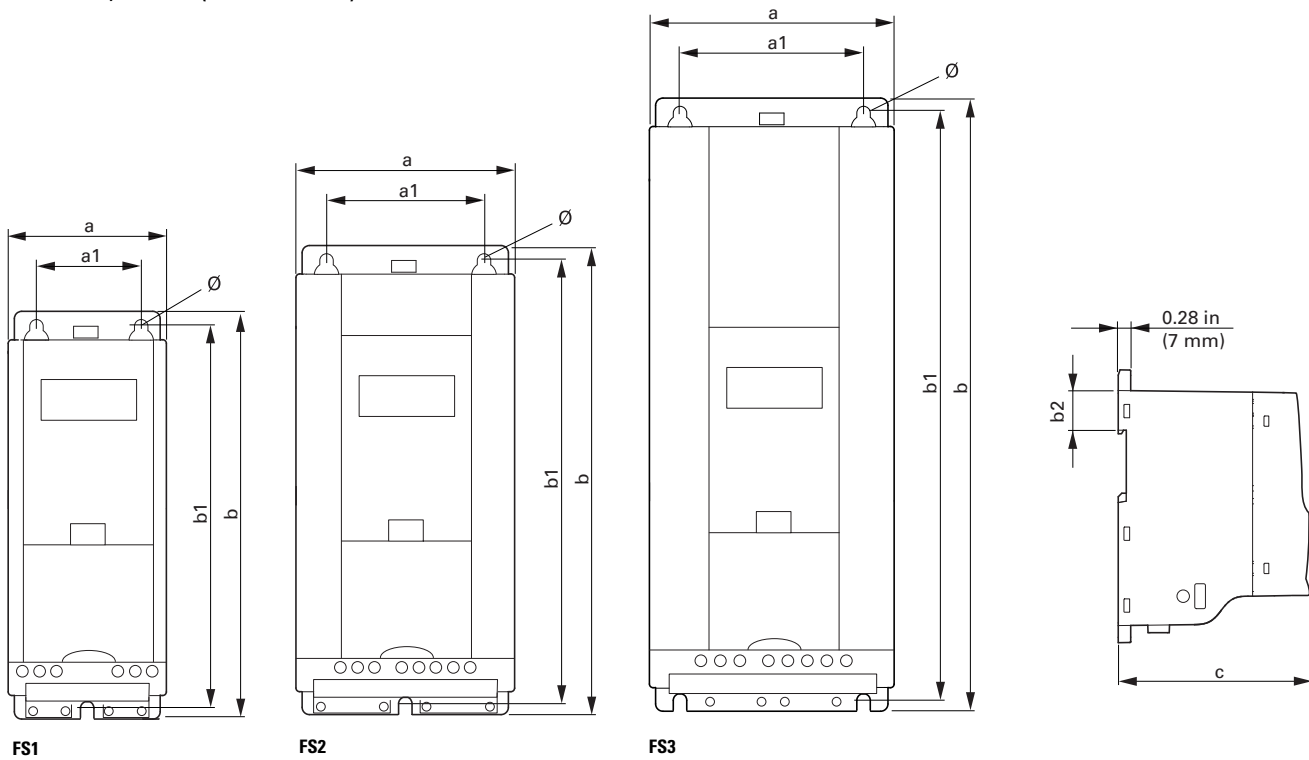
# Power control

## Drives and soft starters

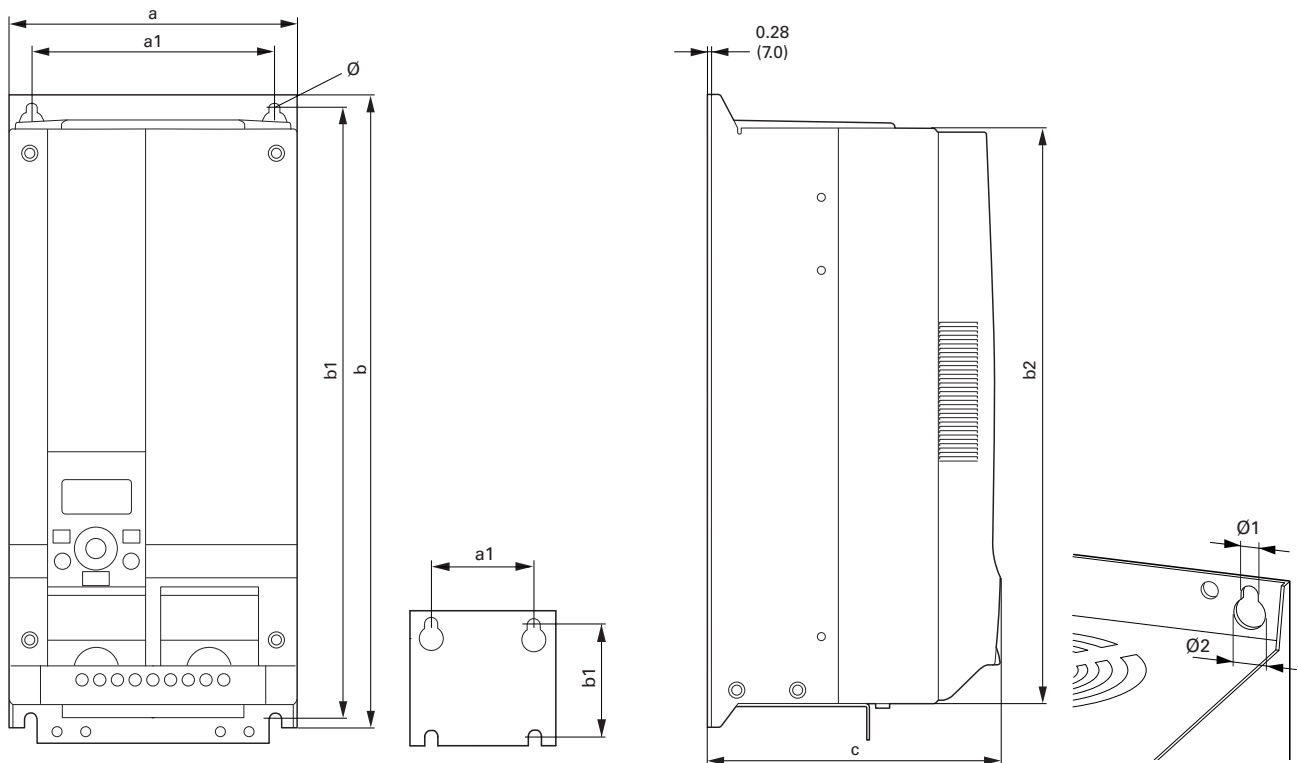
### M-Max series drives

**Dimensions** (approximate dimensions in inches (mm))

#### Frame Sizes, FS1-FS3 (FS = Frame Size)



#### Frame Sizes, FS4 and FS5 (FS = Frame Size)

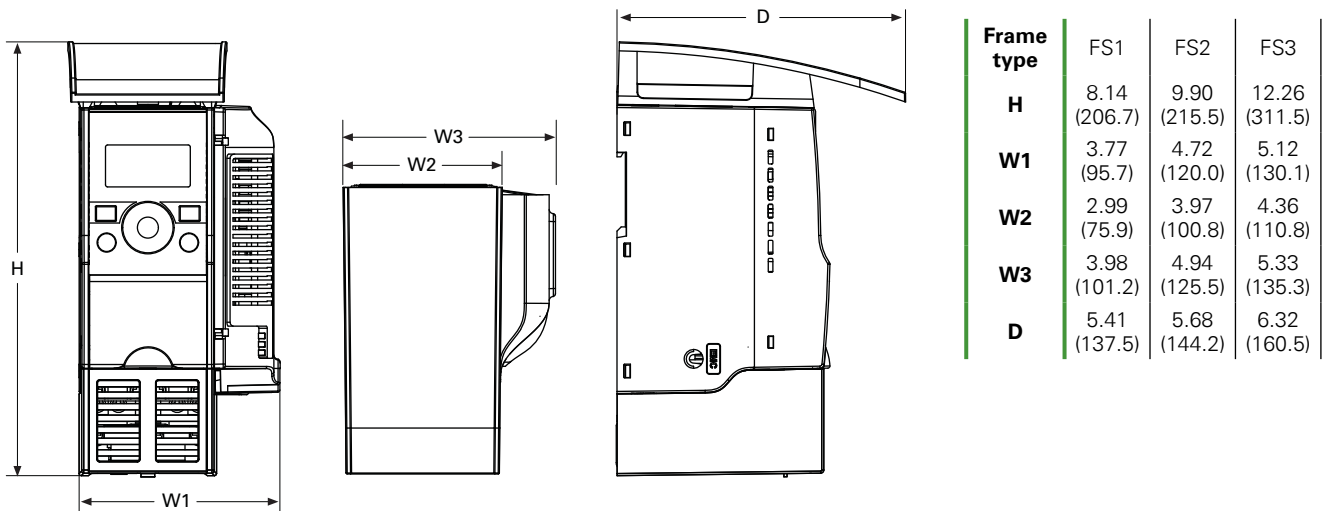


**M-Max series drives**

**Dimensions** (approximate dimensions in inches (mm))

Item no.	a	a1	b	b1	b2	c	Ø, Ø1	Ø2	Installation Size
MMX12AA1D7_ MMX12AA2D4_ MMX12AA2D8_	2.60 (66)	1.50 (38)	6.30 (160)	5.79 (147)	1.26 (32)	4.02 (102)	0.18 (4.5)	—	FS1
MMX34AA1D3_ MMX34AA1D9_ MMX34AA2D4_	3.54 (90)	2.46 (62.5)	7.68 (195)	7.17 (182)	1.26 (32)	4.14 (105)	2.17 (5.5)	—	FS2
MMX12AA3D7_ MMX12AA4D8_ MMX12AA7D0_	3.94 (100)	2.95 (75)	9.96 (253)	9.53 (242)	1.34 (34)	4.41 (112)	2.17 (5.5)	—	FS3
MMX34AA3D3_ MMX34AA4D3_ MMX34AA5D6_	6.50 (165.0)	5.51 (140.0)	14.57 (370.0)	13.82 (351.0)	13.27 (337.0)	6.61 (168.0)	0.28 (7.0)	0.55 (14.0)	FS4
MMX12AA9D6_ MMX34AA7D6_ MMX34AA9D0_ MMX34AA012_ MMX34AA014_	6.50 (165.0)	5.51 (140.0)	14.57 (414.0)	13.82 (398.0)	15.08 (383.0)	8.07 (205.0)	0.28 (7.0)	0.55 (14.0)	FS5

**NEMA 1/IP21 M-Max Drives and Communication Adapter Kit**



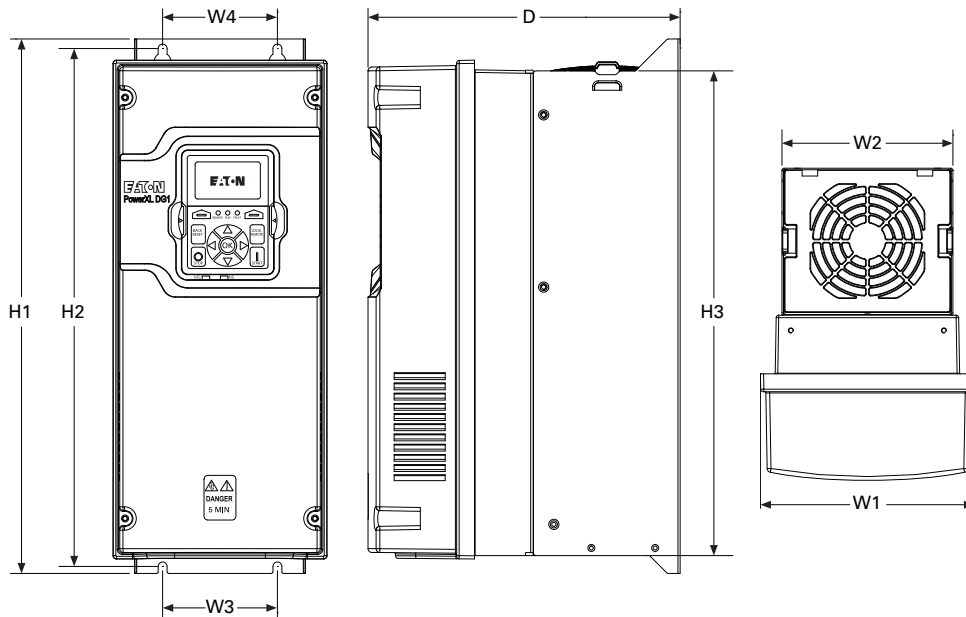
# Power control

## Drives and soft starters

### DG1 drive

**Dimensions** (approximate dimensions in inches (mm))

#### PowerXL Series



Frame Size	Voltage	hp (CT/I <sub>H</sub> )	kW	Amperes (CT/I <sub>H</sub> )	D	H1	H2	H3	W1	W2	W3	W4	Ø	Weight Lb (kg)
FR1	230 Vac	0.75–3	0.55–2.2	3.5–11	7.89 (200.4)	12.87 (326.9)	12.28 (311.9)	11.50 (292.1)	6.02 (153.0)	4.80 (121.9)	3.94 (100.1)	3.94 (100.1)	0.28 (7.0)	14.33 (6.5)
	480 Vac	1–5	0.75–3.7	2.3–7.6										
	575 Vac <sup>1</sup>	2–5	1.5–3.7	3.3–7.5										
FR2	230 Vac	5–7.5	3–5.5	12.5–25	9.63 (244.7)	16.50 (419.1)	15.98 (405.9)	14.96 (380.0)	6.61 (167.8)	5.28 (134.1)	3.54 (90.0)	3.54 (90.0)	0.28 (7.0)	23.37 (10.6)
	480 Vac	7.5–15	5.5–11	12–23										
	575 Vac <sup>1</sup>	7.5–15	5.5–11	10–18										
FR3	230 Vac	10–15	7.5–11	31–48	10.44 (265.1)	21.97 (558.0)	21.46 (545.0)	20.43 (518.9)	8.06 (204.6)	7.24 (183.9)	4.92 (125.0)	4.92 (125.0)	0.35 (9.0)	49.82 (22.6)
	480 Vac	20–30	15–22	31–46										
	575 Vac <sup>1</sup>	20–30	15–22	22–34										
FR4	230 Vac	20–30	15–22	61–88	11.57 (294.0)	24.80 (629.9)	34.31 (617.5)	23.27 (591.1)	9.36 (237.7)	9.13 (231.9)	8.07 (205.0)	8.07 (205.0)	0.35 (9.0)	77.60 (35.2)
	480 Vac	40–60	30–45	61–87										
	575 Vac <sup>1</sup>	40–60	30–45	41–62										
FR5	230 Vac	40–60	30–45	114–170	13.41 (340.7)	34.98 (888.5)	29.65 (753.1)	27.83 (706.9)	11.34 (288.0)	11.10 (281.9)	8.66 (220.0)	8.66 (220.0)	0.35 (9.0)	154.32 (70.0)
	480 Vac	75–125	55–90	105–170										
	575 Vac <sup>1</sup>	75–125	55–90	80–125										
FR6 <sup>1</sup>	230 Vac	75–100	55–75	211–261	1	1	1	1	1	1	1	1	1	1
	480 Vac	150–200	110–150	205–261										
	575 Vac <sup>1</sup>	150–200	110–160	144–208										

Note <sup>1</sup> FR6 and 575 Vac available in 2015.

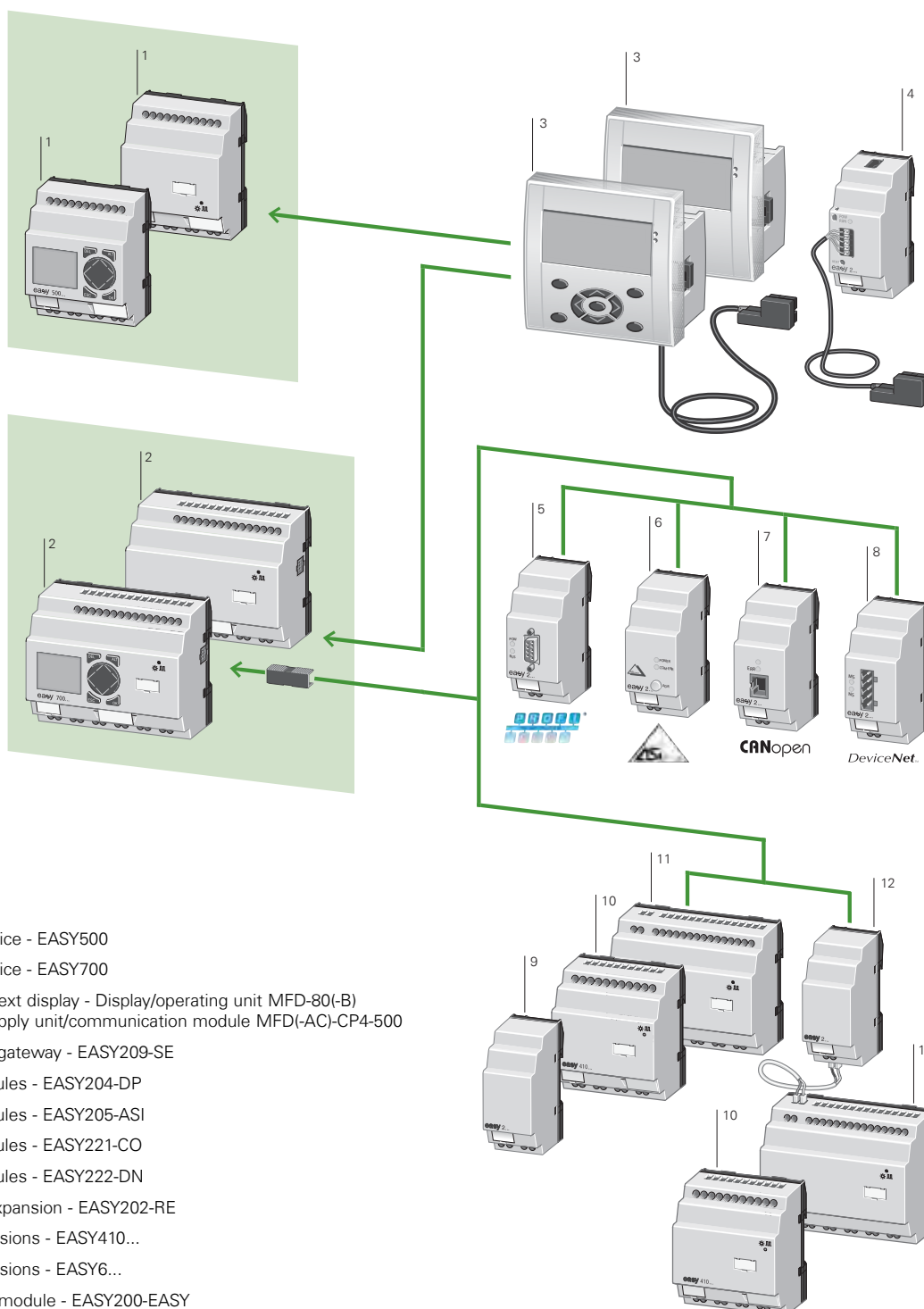
**Control, monitor, protect.**

Today's marketplace is all about how you interface with customers, suppliers & your machinery. Meeting customers' needs means creating products that interface seamlessly. That's why Eaton's complete line of automation & control products includes everything from sophisticated logic controllers & operator interfaces to monitoring relays, timers, limit switches & terminal blocks, all the latest in technology.

With the ever present need to be connected to your machinery & processes, communications are more important than ever. All our controllers, touchscreens & drives provide Ethernet connectivity to stay in control of your processes & machinery wherever you are. Our new & expanded range, now including Eaton's industrial automation products, provides a one-stop shop for all your automation & control requirements.

**easy relay controllers**

**System overview, easy relays, MFD-titan multi-function display**



1. Basic device - EASY500
2. Basic device - EASY700
3. Remote text display - Display/operating unit MFD-80(-B)  
Power supply unit/communication module MFD(-AC)-CP4-500
4. Ethernet gateway - EASY209-SE
5. Bus modules - EASY204-DP
6. Bus modules - EASY205-ASI
7. Bus modules - EASY221-CO
8. Bus modules - EASY222-DN
9. Output expansion - EASY202-RE
10. I/O expansions - EASY410...
11. I/O expansions - EASY6...
12. Coupling module - EASY200-EASY

### easy relay controllers

#### Base units easy500, easy700, easy800



easy500



easy700



easy800

Inputs Digital	of which can be used as analogue	Outputs			Additional features		Supply voltage	Item no.
		Relay 10 A (UL)	Transistor	Analog	Display & keypad	Real time clock		
8	2	4	-	-	✓	✓	24 V AC	<b>EASY512-AB-RC</b>
8	2	4	-	-	-	✓	24 V AC	<b>EASY512-AB-RCX</b>
8	-	4	-	-	✓	-	100 - 240 VAC	<b>EASY512-AC-R</b>
8	-	4	-	-	✓	✓	100 - 240 VAC	<b>EASY512-AC-RC</b>
8	-	4	-	-	-	✓	100 - 240 VAC	<b>EASY512-AC-RCX</b>
8	2	4	-	-	✓	✓	12 V DC	<b>EASY512-DA-RC</b>
8	2	4	-	-	-	✓	12 V DC	<b>EASY512-DA-RCX</b>
8	2	4	-	-	✓	-	24 V DC	<b>EASY512-DC-R</b>
8	2	4	-	-	✓	✓	24 V DC	<b>EASY512-DC-RC</b>
8	2	4	-	-	-	✓	24 V DC	<b>EASY512-DC-RCX</b>
8	2	-	4	-	✓	✓	24 V DC	<b>EASY512-DC-TC</b>
8	2	-	4	-	-	✓	24 V DC	<b>EASY512-DC-TCX</b>
12	4	6	-	-	✓	✓	24 V AC	<b>EASY719-AB-RC</b>
12	4	6	-	-	-	✓	24 V AC	<b>EASY719-AB-RCX</b>
12	-	6	-	-	✓	✓	100 - 240 VAC	<b>EASY719-AC-RC</b>
12	-	6	-	-	-	✓	100 - 240 VAC	<b>EASY719-AC-RCX</b>
12	4	6	-	-	✓	✓	12 V DC	<b>EASY719-DA-RC</b>
12	4	6	-	-	-	✓	12 V DC	<b>EASY719-DA-RCX</b>
12	4	6	-	-	✓	✓	24 V DC	<b>EASY719-DC-RC</b>
12	4	6	-	-	-	✓	24 V DC	<b>EASY719-DC-RCX</b>
12	4	-	8	-	✓	✓	24 V DC	<b>EASY721-DC-TC</b>
12	4	-	8	-	-	✓	24 V DC	<b>EASY721-DC-TCX</b>
12	-	6	-	-	✓	✓	100 - 240 VAC	<b>EASY819-AC-RC</b>
12	-	6	-	-	-	✓	100 - 240 VAC	<b>EASY819-AC-RCX</b>
12	4	6	-	-	✓	✓	24 V DC	<b>EASY819-DC-RC</b>
12	4	6	-	-	-	✓	24 V DC	<b>EASY819-DC-RCX</b>
12	4	6	-	1	✓	✓	24 V DC	<b>EASY820-DC-RC</b>
12	4	6	-	1	-	✓	24 V DC	<b>EASY820-DC-RCX</b>
12	4	-	8	-	✓	✓	24 V DC	<b>EASY821-DC-TC</b>
12	4	-	8	-	-	✓	24 V DC	<b>EASY821-DC-TCX</b>
12	4	-	8	1	✓	✓	24 V DC	<b>EASY822-DC-TC</b>
12	4	-	8	1	-	✓	24 V DC	<b>EASY822-DC-TCX</b>



easy relay controllers

MFD-Titan display/keypad, CPU, I/O modules

Voltage	Description	Item no.
<b>Display/operating unit</b>		
Graphics display: 132 x 64 pixels with switchable backlight, freely definable status LED, IP65, removable titanium front frame		
–	With keypad & Eaton logotype NEMA 4x in connection with MFD-XM-80 protective membrane, see accessories	<b>MFD-80-B</b>
–	With keypad, without Eaton logotype, NEMA 4x in connection with MFD-XM-80 protective membrane, see accessories	<b>MFD-80-B-X</b>
–	Without keypad, with Eaton logotype, NEMA 4x	<b>MFD-80</b>
–	Without keypad, without Eaton logotype, NEMA 4x	<b>MFD-80-X</b>
<b>Power supply unit/CPU module</b>		
Expandable with MFD-80-.. & I/O module, easy expansions can be connected, Serial interface, IP20, cage clamp terminals		
100/240 V AC	Without easy-NET	<b>MFD-AC-CP8-ME</b>
100/240 V AC	With easy-NET	<b>MFD-AC-CP8-NT</b>
24 V DC	Without easy-NET	<b>MFD-CP8-ME</b>
24 V DC	With easy-NET	<b>MFD-CP8-NT</b>



MFD-80-B



MFD-CP8-ME

MFD-Titan display/keypad, CPU, I/O modules

Inputs		Outputs				Range of temperature	Item no.
Digital	of which can be used as analog	Pt 100/ Ni 1000	Relay 10 A (UL)	Transistor	Analog		
<b>I/O modules</b>							
IP20, cage clamp terminals 24 V DC for MFD-CP8..							
12	4	–	4	–	–	–	<b>MFD-R16</b>
12	4	–	–	4	–	–	<b>MFD-T16</b>
12	4	–	4	–	1	–	<b>MFD-RA17</b>
12	4	–	–	4	1	–	<b>MFD-TA17</b>
100/240 V AC for MFD-AC-CP8..							
12	–	–	4	–	–	–	<b>MFD-AC-R16</b>
<b>I/O modules with temperature measuring</b>							
IP20, cage clamp terminals, 24 V DC for MFD-CP8..., (from device version 08), temperature range can be set							
6	2	2	–	4	–	-40...+90 °C 0...+250 °C 0...+400 °C	<b>MFD-TP12-PT-A</b>
6	2	2	–	4	–	-200...+200 °C 0...+850 °C	<b>MFD-TP12-PT-B</b>
6	2	2	–	4	–	-40...+90 °C 0...+250 °C	<b>MFD-TP12-NI-A</b>
6	2	2	–	4	1	-40...+90 °C 0...+250 °C 0...+400 °C	<b>MFD-TAP13-PT-A</b>
6	2	2	–	4	1	-200...+200 °C 0...+850 °C	<b>MFD-TAP13-PT-B</b>
6	2	2	–	4	1	-40...+90 °C 0...+250 °C	<b>MFD-TAP13-NI-A</b>



MFD-R16



MFD-TP12-PT-A

easy relay controllers

Expansions, bus modules, Ethernet gateway



EASY618-AC-RE



EASY200-EASY



EASY209-SE



MFD-CP4-500

Description	Inputs		Outputs		Supply voltage	For use with...	Item no.
	Digital/ Analogue	Relay 10 A (UL)	Transistor	Analogue			
<b>I/O expansions</b>							
–	12	6	–	–	100 - 240 VAC		<b>EASY618-AC-RE</b>
–	12	6	–	–	24 V DC	easy700 easy800 MFD-CP8..	<b>EASY618-DC-RE</b>
–	12	–	8	–	24 V DC		<b>EASY620-DC-TE</b>
Not usable in combination with base units EASY719-DA-...	–	2	–	–	–		<b>EASY202-RE</b>
	6	4	–	–	24 V DC		<b>EASY410-DC-RE</b>
Can be used through easyLink	6	–	4	–	24 V DC		<b>EASY410-DC-TE</b>
	1 / 2 ⊗	–	2	1	24 V DC		<b>EASY406-DC-ME</b>
	1 / 6 ⊗	–	2	2	24 V DC		<b>EASY411-DC-ME</b>
<b>Coupling unit</b>							
For the connection of remote I/O modules up to 30 m.	–	–	–	–	–	easy700 easy800 MFD-CP8..	<b>EASY200-EASY</b>
Expansion units for networking							
AS-Interface connection slave 4 inputs, 4 outputs, 4parameter bits Addresses available: 0 to 31	–	–	–	–	–		<b>EASY205-ASI</b>
Profibus DP slave addresses available: 1 to 126	–	–	–	–	–	easy700 easy800 MFD-CP8..	<b>EASY204-DP</b>
CANopen interface addresses available: 1 to 127	–	–	–	–	–		<b>EASY221-CO</b>
DeviceNet interface addresses available: 0 to 63	–	–	–	–	–		<b>EASY222-DN</b>
<b>Ethernet gateway</b>							
Serial interface easy to ethernet	–	–	–	–	–	easy500 easy700 easy800 MFD-CP8..	<b>EASY209-SE</b>
<b>Power supply unit/communication modules</b>							
24 V DC	–	–	–	–	–	easy500 easy700	<b>MFD-CP4-500</b>
24 V DC	–	–	–	–	–	easy800 MFD-CP8..	<b>MFD-CP4-800</b>
100/240 V AC	–	–	–	–	–	easy500 easy700	<b>MFD-AC-CP4-500</b>
100/240 V AC	–	–	–	–	–	easy800 MFD-CP8..	<b>MFD-AC-CP4-800</b>

⊗ 2 × 0 - 10 V, 2 × 0 - 20 mA, 2 × RTD (2/3-wire connection); any combination Voltage inputs (0–10 V) can optionally be used as digital inputs  
 ⊙ 2 × 0 - 10 V, 2 × 0 - 20mA, 2 × Pt100 (2/3 wire connection); Voltage inputs (0–10 V) can optionally be used as digital inputs

easy relay controllers

easy relays, MFD-Titan multi-function display, accessories

Description	For use with	Item no.
<b>Programming software</b>		
Menu selection in 13 languages. Operating systems: Windows 2000 SP4, Windows XP SP1	easy400/500/600/700	<b>EASY-SOFT-BASIC</b>
Menu selection in 13 languages. Operating systems: Windows 2000 SP4, Windows XP SP1	easy400/500/600/700 /800/MFD-...CP8	<b>EASY-SOFT-PRO</b>
<b>Programming cable</b>		
SUB-D 9-pole, serial, 2 m	easy500 easy700	<b>EASY-PC-CAB</b>
USB, 2 m		<b>EASY-USB-CAB</b>
SUB-D 9-pole, serial, 2 m	easy800 MFD-...CP8	<b>EASY800-PC-CAB</b>
USB, 2 m		<b>EASY800-USB-CAB</b>
<b>Modem cable</b>		
Configurable modem, printer and programming cable, possible transfer rate 56 kbaud, 9 pole Sub-D plug (plug + socket for assembly by user)		<b>EASY800-MO-CAB</b>
<b>Memory cards</b>		
32 kB module	easy500 easy700	<b>EASY-M-32K</b>
256 kB module	easy800 MFD-...CP8	<b>EASY-M-256K</b>
<b>Coupling piece</b>		
Spare link between base unit & expansion units	easy700/800/ MFD-...CP8	<b>EASY-LINK-DS</b>
<b>Network connection cable (remote coupling) Completely prepared for easy-NET</b>		
Length: 0.3 m	easy800 MFD-...CP8-NT	<b>EASY-NT-30</b>
Length: 0.8 m		<b>EASY-NT-80</b>
Length: 1.5 m		<b>EASY-NT-150</b>
<b>Bus termination resistor</b>		
8 pole, RJ45, 124 Ω Connection to PIN 1 and PIN 2	easyNet	<b>EASY-NT-R</b>
<b>Data cable</b>		
4 x 0.14 mm <sup>2</sup> , twisted pair, AWG 26 Length: 100 m	easyNet	<b>EASY-NT-CAB</b>
<b>Bus connector plug</b>		
8 pole, RJ45	easyNet	<b>EASY-NT-RJ45</b>
<b>Point-to-point connection cable</b>		
Serial interface for connecting MFD-...CP8 to easy800 or MFD-...CP8, can be configured as required with separate plug, 5m can be cut as required	easy800 MFD-...CP8	<b>MFD-800-CAB5</b>
Reserve power supply/communications module For MFD-80... separately mounted display (only ASCII characters) on easy500/700/800/MFD-...-CP8, without connection cable, serial interface.		
24 V DC, IP20	MFD-80..	<b>MFD-CP4</b>
100/240 V AC, IP20	MFD-80..	<b>MFD-AC-CP4</b>
<b>Spare connection cables</b>		
For the connection of MFD-CP4-500 to easy500/ easy700, 5m, can be cut to length	easy500 easy700	<b>MFD-CP4-500-CAB5</b>
For the connection of MFD-CP4-800 to easy800/ MFD-...CP8, 5m, can be cut to length	easy800 MFD-...CP8	<b>MFD-CP4-800-CAB5</b>



EASY-PC-CAB



EASY-LINK-DS



MFD-800-CAB5

easy relay controllers

easy relays, MFD-Titan multi-function display, accessories



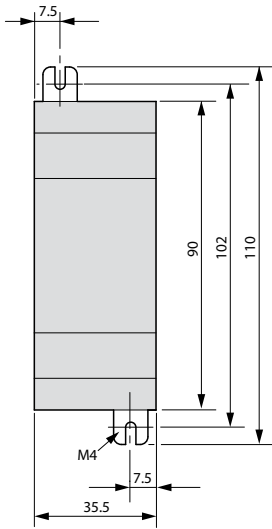
EASY400-POW

Description	For use with	Item no.
<b>Switched-mode power supply unit primary-switched mode Stabilized</b>		
Rated input voltage: 50/60 Hz: 100/240 V AC Rated output voltage (residual ripple): 24 V DC (g 3 %) Rated output current: 1.25 A	easy500 easy700 easy800 MFD-CP8	<b>EASY400-POW</b>
Rated input voltage: 50/60 Hz: 100/240 V Rated output voltage: 24 V/12 V DC Rated output current: 0.35 A/20 mA	easy500 easy700 easy800 MFD-CP8	<b>EASY200-POW</b>
Rated input voltage: 50/60 Hz: 100 - 240 V AC Rated output voltage (residual ripple): 24 V DC ( $\pm 3\%$ ) Rated output current: 2.5 A		<b>EASY500-POW</b>
<b>PROFIBUS-DP data cable</b>		
Twisted pair, without plug, 2-core, 2 x 0.64 mm <sup>2</sup> (only suitable for fixed wiring) 100 m		<b>ZB4-900-KB1</b>
<b>PROFIBUS-DP bus connector plug</b>		
Pins, 9 pole - Cable entry, angled 90°		<b>ZB4-209-DS2</b>
Metallised insulated housing Maximum transfer rate 12 MBit/s Integrated switch (accessible from the outside) for the bus terminating resistors Terminal block for two cable entries, with straight or 90° angled cable entry, as required		<b>ZB4-209-DS3</b>
<b>Upstream device to increase the AC input current</b>		
6 channels, cable length up to 100m	AC versions of easy/MFD	<b>EASY256-HCI</b>
<b>Mounting accessories</b>		
<b>Top-hat rail adapter for hinged inspection window</b>		
12 mm x 66 mm x 82 mm Installation on hinged inspection window, for front fitting of devices. Complete set, consisting of 2 brackets & 4 screws	easy200 easy500 easy700 easy800 MFD-CP8	<b>SKF-HA</b>
<b>Hinged inspection window</b>		
94 mm x 77 mm x 25 mm (4 space units)	easy500	<b>SKF-FF4</b>
130 mm x 77 mm x 25 mm (6 space units)	easy700 easy800	<b>SKF-FF6</b>
<b>Mounting rail to IEC/EN 60715</b>		
Mounting rail with cutout specifically for MFD-AC-CP8.../MFD CP8... for fixing easy expansion units (2 space units) Length: 142.5 mm	easy200	<b>MFD-TS-144</b>
<b>Protective cover</b>		
Transparent, protection against accidental actuation. Can be sealed. Application without front frame	MFD-80..	<b>MFD-XS-80</b>
<b>Protective membrane</b>		
Transparent version for harsh environmental conditions & application in the food industry. Increased protection rating to NEMA 4x for MFD-80-B	MFD-80..	<b>MFD-XM-80</b>
<b>Telescopic clip</b>		
With 35mm top-hat rail to IEC/EN 60715 for mounting depth compensation when rear mounting in CI-K... enclosures and cabinets. Stepless adjustment via scale from 75 – 115 mm. Screw and snap fastening		<b>M22-TA</b>

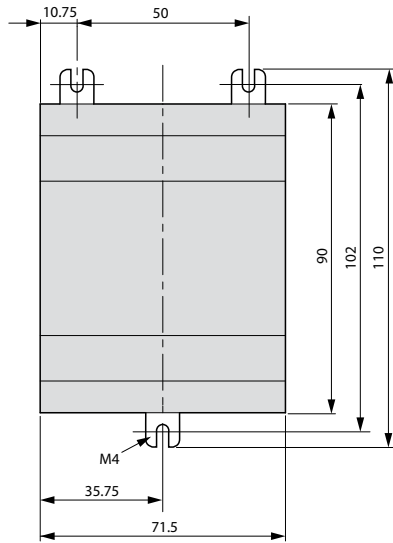
easy relay controllers

Dimension

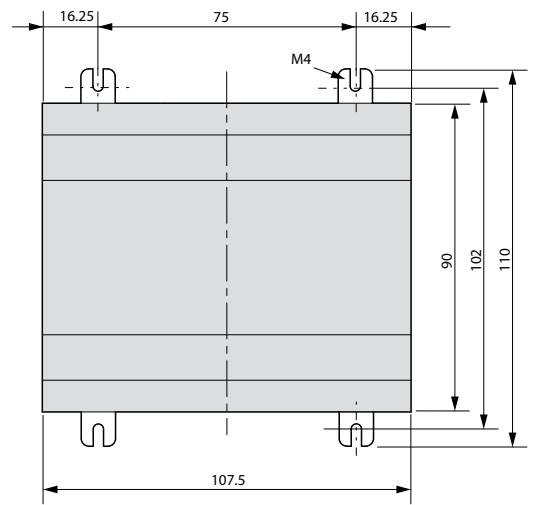
easy200



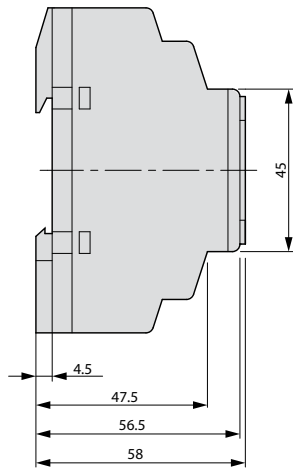
easy400  
easy500



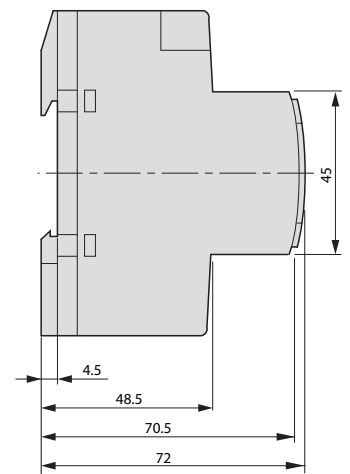
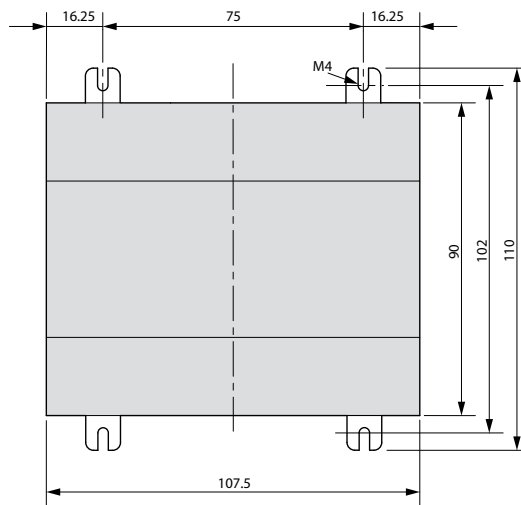
easy600  
easy700



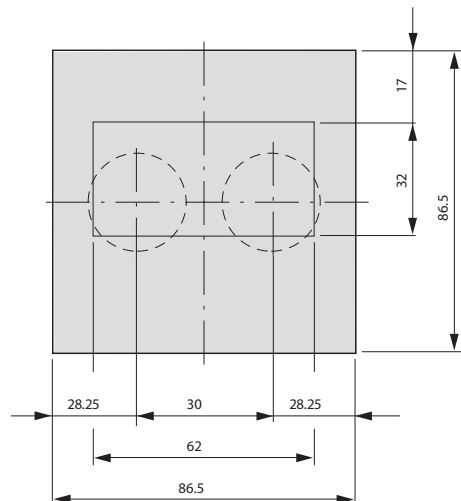
easy200  
easy400  
easy500  
easy600  
easy700



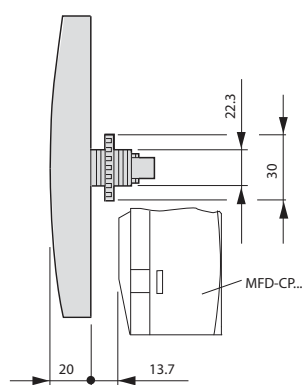
easy800



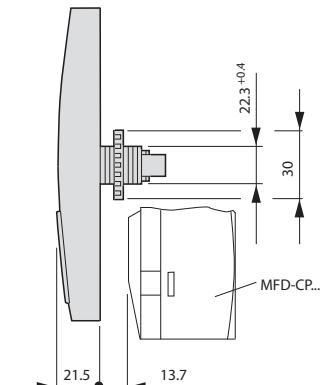
MFD-80...



MFD-80



MFD-80-B



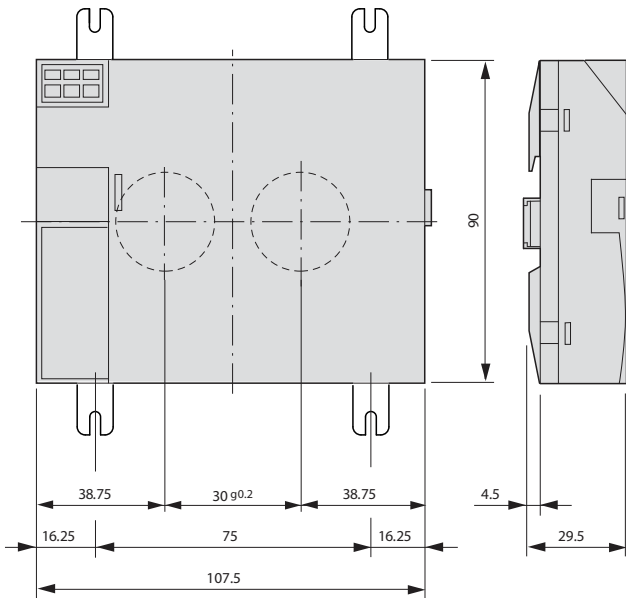
# Power control

## Automation

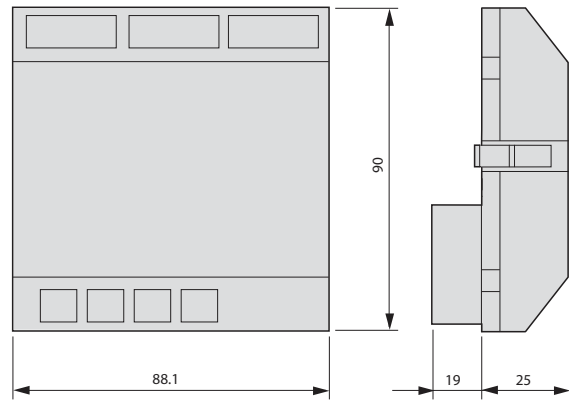
### easy relay controllers

#### Dimension

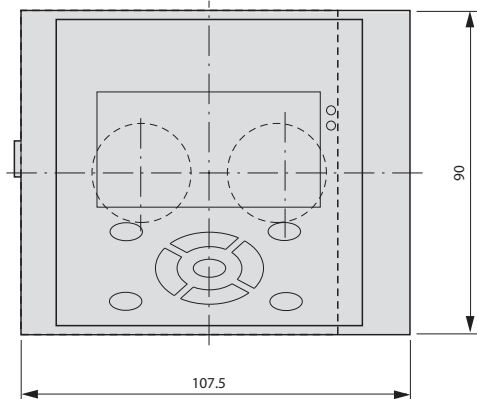
MFD-CP... , MFD-AC-CP...



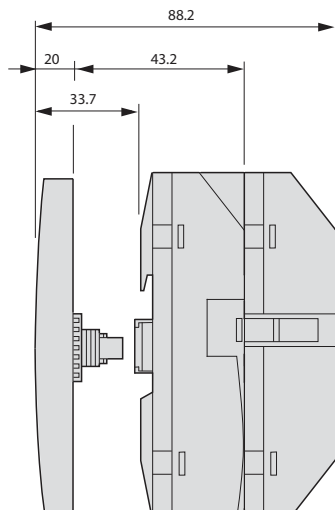
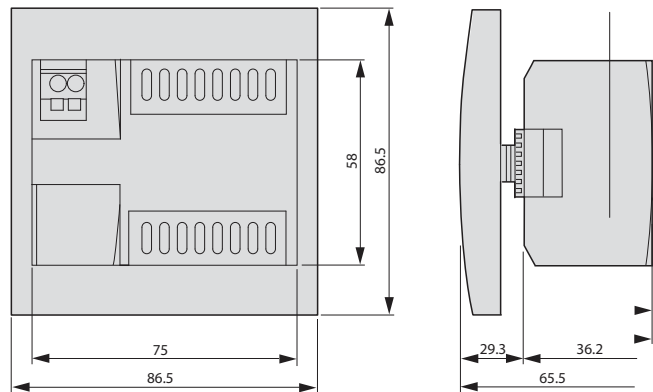
MFD-R... , MFD-T... , MFD-AC-R16



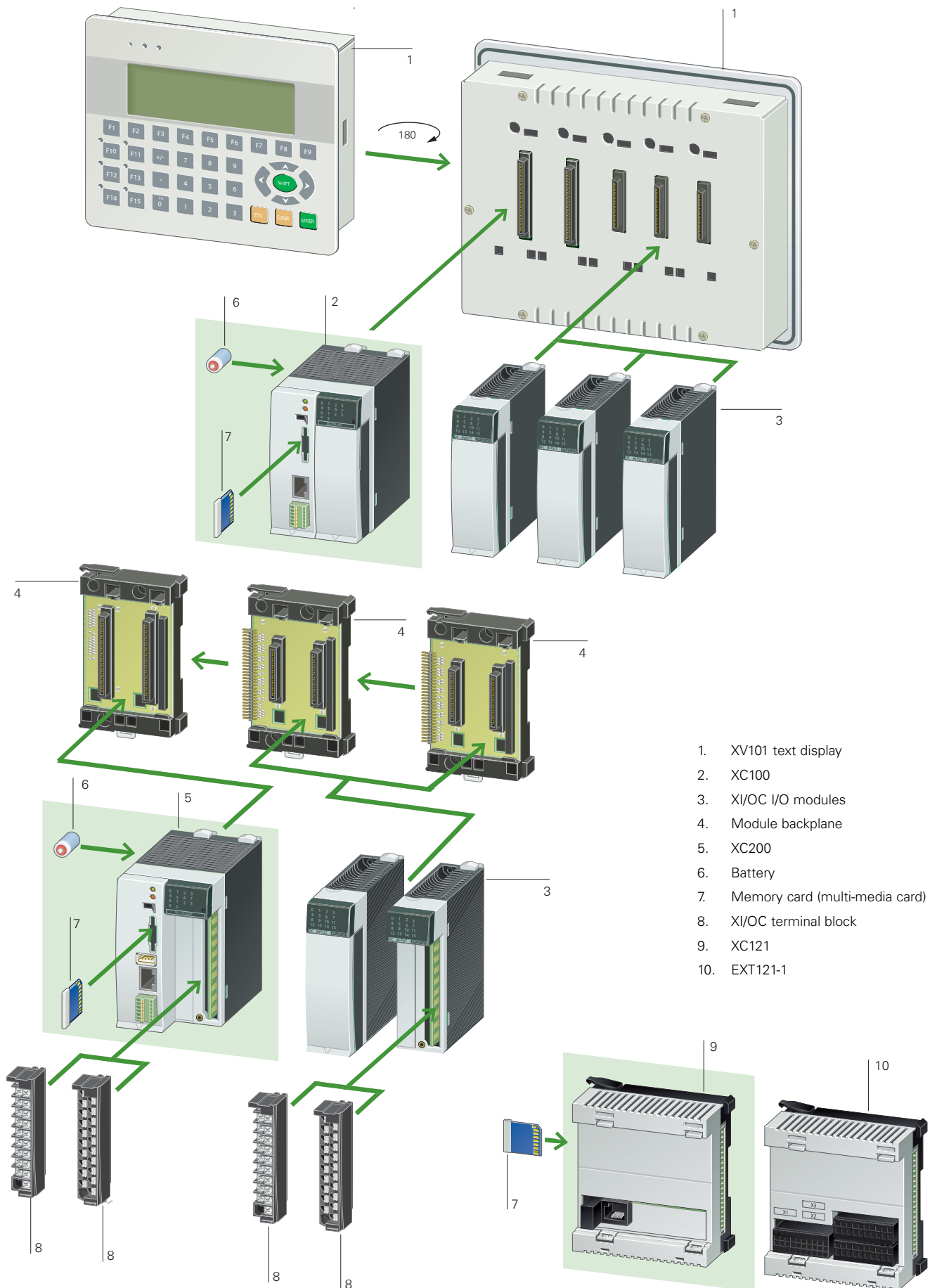
MFD-80... + MFD-CP... + MFD-R.../MFD-T...  
MFD-80... + MFD-AC-CP... + MFD-AC-R16



MFD-80... + MFD-CP4



Programmable logic controllers







XC-CPU101-C64K-8DI-6DO

## Programmable logic controllers

### XC100/XC200

- Controller with digital inputs/outputs, locally & remotely expandable
- CANopen interface, 24V power supply
- Locally expandable by up to 15 XI/OC modules
- The following accessory equipment is required: terminal clamps, module rack, battery

#### XC100

Controller with 8 digital inputs (4 interrupt inputs), 6 digital outputs, RS232 interface for programming & communication, CANopen interface; slot for memory card, optional expansion with text display, RUN/STOP switch & LED indicators.

#### XC200

Controller with 8 digital inputs (2 counters, 2 interrupt inputs, 1 incremental input) & 6 digital outputs, Ethernet & RS232 interface for programming & communication, CANopen interface, slot for memory card, USB interface, RUN/STOP switch & LED indicators.

#### XC-CPU...

Description	Std. pack	Item no.
64 kByte user memory		<b>XC-CPU101-C64K-8DI-6DO</b>
128 kByte user memory	1 off	<b>XC-CPU101-C128K-8DI-6DO</b>
256 kByte user memory		<b>XC-CPU101-C256K-8DI-6DO</b>
256 kByte user memory		<b>XC-CPU201-EC256K-8DI-6DO</b>
2 mByte user memory		<b>XC-CPU201-EC512K-8DI-6DO</b>
256 kByte user memory Integrated Web server	1 off	<b>XC-CPU201-EC256K-8DI-6DO-XV</b>
2 mByte user memory Web server		<b>XC-CPU201-EC512K-8DI-6DO-XV</b>
4 mByte user memory Integrated Web server		<b>XC-CPU202-EC4M-8DI-6DO-XV</b>

#### Text display for XC100

- Backlit LCD
- Membrane keypad
- 1 slot for XC100
- 3 spare slots for XI/OC modules
- Numerical keypad
- Arrow keys
- Contrast setting adjustable via software

Description	Item no.
Operation with XC-CPU101-...-XV 4 lines x 20 characters, resolution 122 x 32 pixels, 9 function keys	<b>XV-101-K42</b>
Operation with XC-CPU101-...-XV 8 lines x 40 characters, resolution 240 x 64 pixels, 15 function keys	<b>XV-101-K84</b>



XC-CPU121-2C256K

### XC121

- Compact PLC
- 24 V supply
- 2 CANopen interfaces
- RS232 interface for programming and communication
- Second RS232/RS485 interface
- Slot for MMC memory card
- Connection through spring-cage terminal blocks
- OPC server

Description	Item no.
Can be locally expanded with I/O module XIO-EXT-121-1 256 kByte program memory, 244 kByte data memory	<b>XC-CPU121-2C256K</b>

#### I/O expansion for XC121

- Expansion unit with digital and analog inputs/outputs
- expandable with XI/OC signal modules (except XIOC-NET-DP-M)
- pluggable spring-cage terminals

Description	Item no.
Local I/O expansions for PLC XC121 10 digital inputs 24 V DC, of which 6 interrupt 8 digital inputs/outputs 24 V DC, 0.5 A 2 analog inputs 0 - 10 V 2 analog inputs 0 - 20 mA 2 analog inputs Pt100 RTD 2 analog outputs 0 - 10 V	<b>XIO-EXT121-1</b>



XIO-EXT121-1

## Programmable logic controllers

### XIOC

- Compact I/O system for connection to XC100/200 Modular PLCs
- XC100/200 expandable with up to 15 XI/OC modules
- Optionally, screw terminals or spring-loaded terminals for digital/analogue modules

Description	Std. pack	Item no.
Digital modules	8 inputs, 24 V DC	<b>XIOC-8DI</b>
	16 inputs, 24 V DC	<b>XIOC-16DI</b>
	32 inputs, 24 V DC	<b>XIOC-32DI</b>
	8 outputs, 24 V DC, 0.3 A	<b>XIOC-8DO</b>
	12 relay outputs	<b>XIOC-12DO-R</b>
	16 outputs, 24 V DC, 0.3 A XIOC-16DO	<b>XIOC-16DO</b>
	16 outputs, 24 V DC, 0.8 A, short-circuit proof	<b>XIOC-16DO-S</b>
	32 outputs, 24 V DC, 0.2 A	<b>XIOC-32DO</b>
16 connections, 4 inputs, 12 freely parameterisable as inputs/outputs, 24 V DC Outputs 0.5 A		<b>XIOC-16DX</b>
Analogue modules		
Inputs	8 inputs, 4 – 20 mA	<b>XIOC-8AI-I2</b>
	8 voltage inputs, 0 – 10 V	<b>XIOC-8AI-U1</b>
	8 voltage inputs, g10 V	<b>XIOC-8AI-U2</b>
Outputs	4 inputs for temperature monitoring, Pt100/1000	<b>XIOC-4T-PT</b>
	4 inputs for thermocouples, Type K, J, L, B, N, E, R, S, T	<b>XIOC-4AI-T</b>
	2 outputs, g10 V	<b>XIOC-2AO-U2</b>
	2 outputs, 0 – 10 V, 2 outputs, 4 – 20 mA	<b>XIOC-2AO-U1-2AO-I2</b>
	4 outputs, 0 – 10 V	<b>XIOC-4AO-U1</b>
Combination modules	2 inputs & 1 output, 0 – 10 V 1 ms conversion time	<b>XIOC-2AI-1AO-U1</b>
	2 inputs & 1 output, 0 – 10 V, 0 – 20 mA 1 ms conversion time, individual changeover	<b>XIOC-2AI-1AO-U1-I1</b>
	4 inputs & 2 outputs, 0 – 10 V 1 ms conversion time	<b>XIOC-4AI-2AO-U1</b>
	4 inputs & 2 outputs 0 – 10 V, 0 – 20 mA 1 ms conversion time, individual changeover	<b>XIOC-4AI-2AO-U1-I1</b>
Counter modules	1 input up to 100 kHz, 24 V DC, 5 V DC, 2 digital transistor outputs, opto-isolated, 24 V DC 30-pole connector required for counter module	<b>XIOC-1CNT-100KHZ</b>
	2 inputs up to 100 kHz, (24 V DC or 5 V diff), 4 digital transistor outputs, opto-coupled, 24 V DC 30-pole connector required for counter module	<b>XIOC-2CNT-100KHZ</b>
	2 incremental encoders up to 400 kHz, 5 V DC, 2 analog, outputs, +10 V	<b>XIOC-2CNT-2AO-INC</b>
Communication modules	Profibus DP master module	<b>XIOC-NET-DP-M</b>
	Profibus DP slave module	<b>XIOC-NET-DP-S</b>
	Suconet K master module	<b>XIOC-NET-SK-M</b>
	Serial interface RS 232C, RS 485, RS 422. Operating modes: Transparent mode, Modbus master, slave, SUCOM A, Suconet-K slave	<b>XIOC-SER</b>
	Serial interfaces RS232C, RS485, RS422. Modes of operation; Transparent mode, Modbus master/slave SUCOM-A, DNP protocol	<b>XIOC-TC1</b>



XIOC-8DI



XIOC-8AI-U2



XIOC-1CNT-100KHZ



XIOC-NET-DP-M

Programmable logic controllers

Accessories XIOC-...



XIOC-TERM-18T



XIOC-BP-XC1



XT-MEM-MM512M



EASY-NT-30



XIOC-NOP



XT-RJ45-ETH-RS232

Description	Std. pack	Item no.
Terminals		
18-pole plug with spring-loaded terminal		<b>XIOC-TERM-18T</b>
One 18-pole terminal plug is required for each digital & analogue module.		<b>XIOC-TERM-18S</b>
30-pole connector for counter module, with 4 m cable XIOC-1CNT-100KHZ, XIOC-2CNT-100KHZ	10 off	<b>XIOC-TERM30-CNT4</b>
40-pole connector for digital module, with 4 m cable XIOC-32DI, XIOC-32DO		<b>XIOC-TERM32</b>
Basic rack for mounting XC100/200 on top-hat rail, expandable	Width: 2 slots for controller	<b>XIOC-BP-XC</b>
Basic rack for mounting XC100/200 on top-hat rail, expandable	Width: 3 slots for controller & one XI/OCmodule	<b>XIOC-BP-XC1</b>
Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 2 slots for XI/OC modules	1 off <b>XIOC-BP-2</b>
Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 3 slots for XI/OC modules	<b>XIOC-BP-3</b>
Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 3 slots for XI/OC modules Note: module carriers for expansion to maximum 15 modules must be plugged into the 5th slot	<b>XIOC-BP-EXT</b>

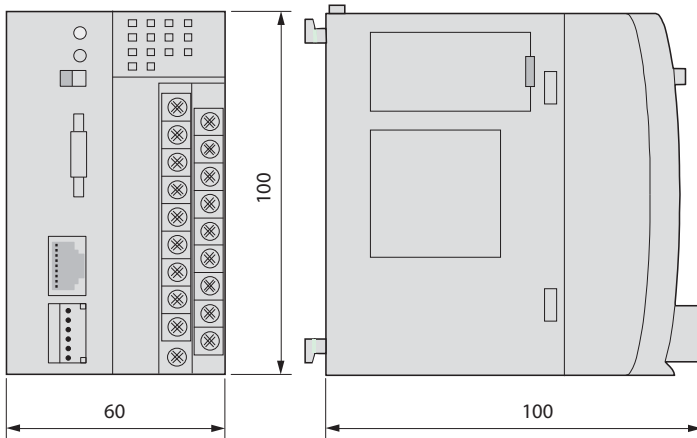
Other accessories

XIOC-..., XTT...

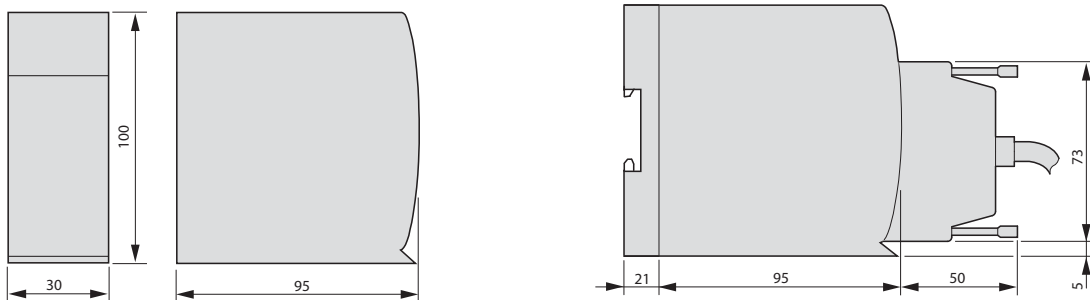
Description	Item no.
Multi-media card - for storage of programs, data, recipes	
- 512 MByte	<b>XT-MEM-MM512M</b>
- 32 MByte	<b>XT-MEM-MM32M</b>
Battery	For back-up of real-time clock & retentive data <b>XT-CPU-BAT1</b>
Programming cable	
2 m length D-sub, 9-pin, serial	<b>XT-SUB-D/RJ45</b>
2 m length Ethernet cross, 2 m	<b>XT-CAT5-X-2</b>
5 m length Ethernet cross, 5 m	<b>XT-CAT5-X-5</b>
Programming cable for XC, EC4P, EU5C through USB interface	<b>EU4A-RJ45-USB-CAB1</b>
Connection cable	
Connecting cable for interface switch XC200 Length: 0.3 m	<b>EASY-NT-30</b>
Connecting cable for interface switch XC200 Length: 0.8 m	<b>EASY-NT-80</b>
Connecting cable for interface switch XC200 Length: 1.5 m	<b>EASY-NT-150</b>
CAN cable to ISO 11898	Recommendation: UNITRONIC bus LD, Messrs. LAPPKABEL, 2 x 2 x 0.22 mm2 Surge impedance: 100 – 120 W Effective capacitance: 800 Hz, max. 60 nF/km -
Empty module	Empty module to cover free XI/OC slots <b>XIOC-NOP</b>
Interface switch	Interface adapter to split the combined RS232/Ethernet interface of the XC200 into RJ45 sockets. Connection cable EASY-NT-30/80/150 usable for connection to XC200. <b>XT-RJ45-ETH-RS232</b>
Filter	Interference suppression of the external 24 V DC, supply of the XC100/200, Max. current drawn: 2.2 A <b>XT-FIL-1</b>
Insert labels	Insert labels for free user inscription For 3 devices: XV-101-K42 For 3 devices: XV-101-K84 <b>XT-BS1</b>

Programmable logic controllers

XC-CPU101  
XC-CPU201  
XC-CPU202



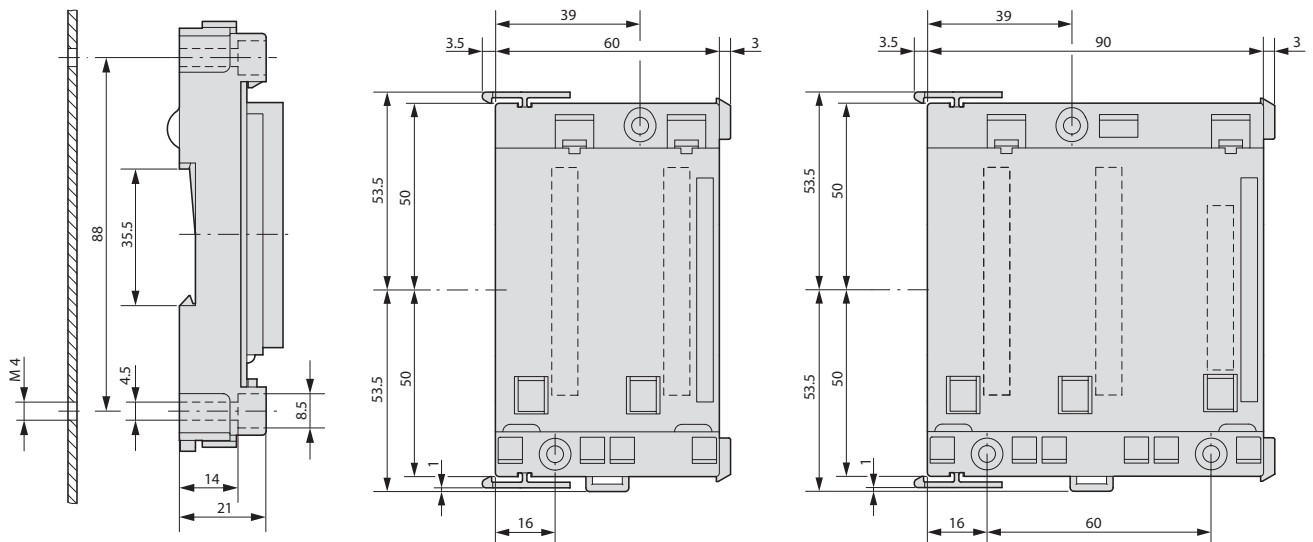
XIOC...



Backplanes

XIOC-BP-2  
XIOC-BP-XC

XIOC-BP-3  
XIOC-BP-EXT  
XIOC-BP-XC1

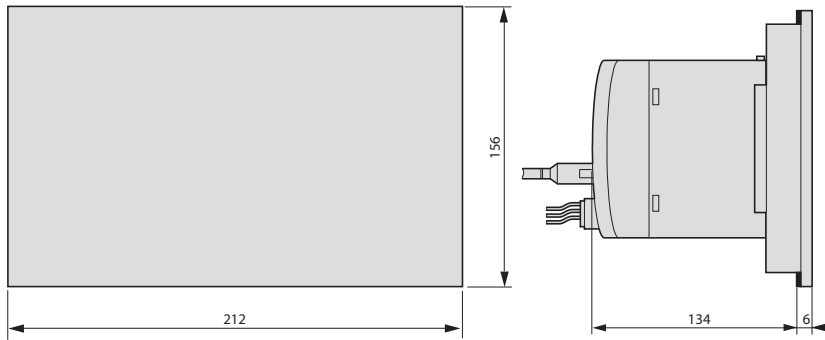


# Power control

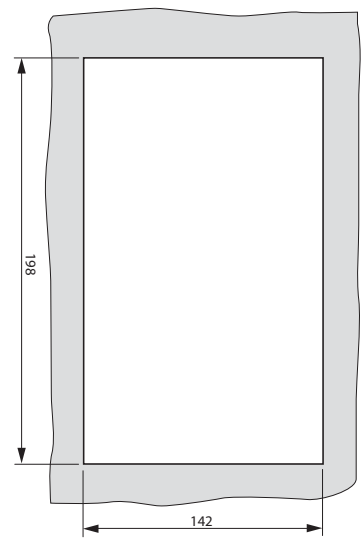
## Automation

### Programmable logic controllers

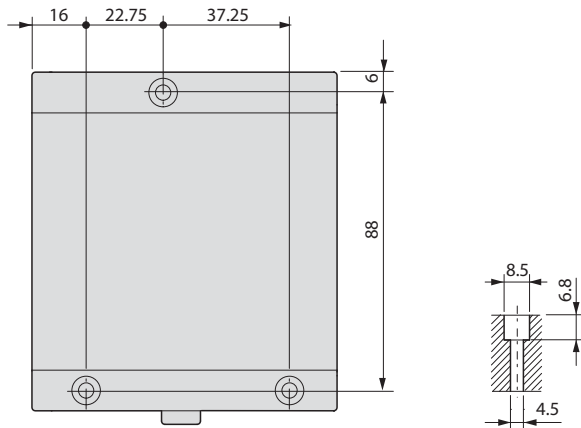
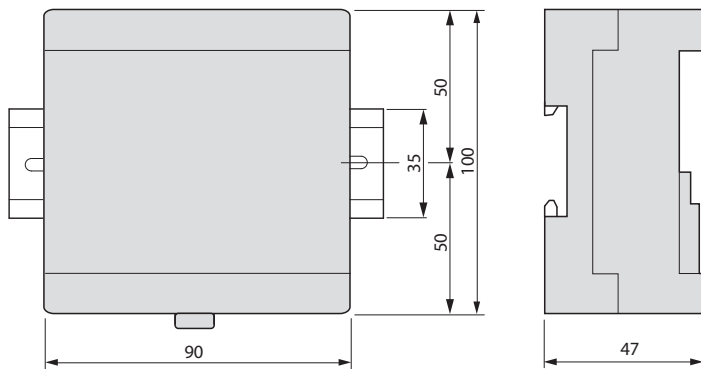
XV-101...



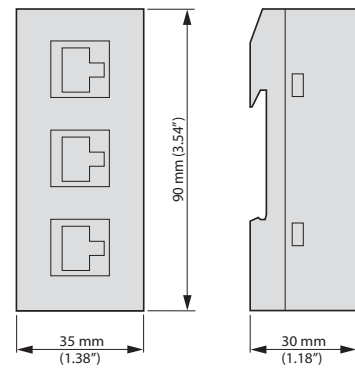
Mounting dimensions



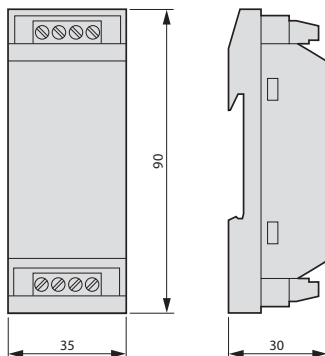
XC-CPU-121...  
XIO-EXT121-1



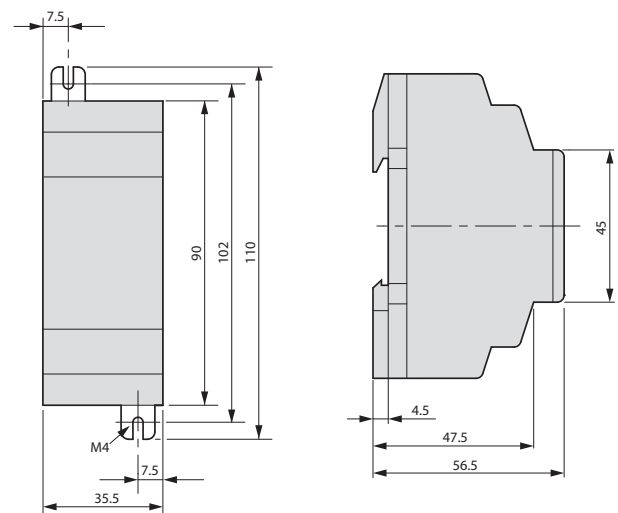
XT-RJ45-ETH-RS232



XT-FIL-1



XT-FIL-2



## Programmable logic controllers

### ELC modular PLCs

#### PB base model—

- 14 I/O (8i/6o)
- Over 130 instructions
- Two Modbus (ASCII/RTU) serial ports for master/slave communications
- RS-485 master port with the ability to communicate to 31 other devices
- The master port can also be configured to communicate to devices such as ASCII, bar code readers, and so on
- EEPROM program retention in the event of power loss

Note: This model does not provide a real-time clock

#### PH high-speed model

- 12 I/O (8i/4o)
- All the features of the PC model
- High speed pulse capture up to 100 kHz
- Single-axis motion control

#### PC clock/calendar model

- 12 I/O (8i/4o)
- Same features as the basic model plus clock/calendar
- Distributed I/O capability with up to 16 devices
- File area for data storage and retrieval
- RAM program memory with battery backup
- Replaceable battery has greater than a 5-year life
- Two digital potentiometers that vary the data in internal registers

#### PA analog model

- 10 I/O (6i/4o)
- Same features as PC model with a different I/O mix
- Four digital inputs, two digital outputs, two analog inputs, and two analog outputs
- Analog channels can be set up for either voltage or current
- Two 7-segment LEDs that can be used to display unit ID, error codes, process steps, and so on

#### PV advanced model

- 28 I/O (16i/12o)
- The PV model has the most extensive features
- Programs written for the other controllers can be migrated to a PV model controller where greater speed or more I/O is required
- 10 times increase in processing speed for about 0.24μ seconds/step
- RAM program storage and backed using a rechargeable lithium-ion battery that charges with normal use
- Includes 2-axis motion control
- Additional expansion bus to the left of the controller
- Add high-speed and specialty modules to the left
- Left side Ethernet master and DeviceNet master modules are available for use with the PV model controller



ELC-PC

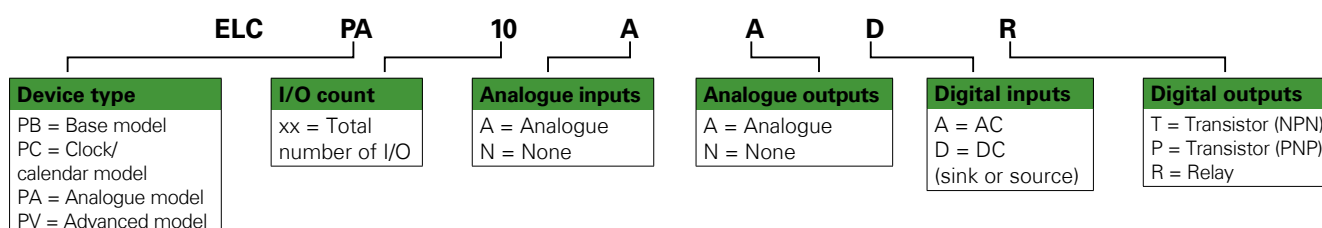


ELC-PA



ELC-PV

### Controllers and modules



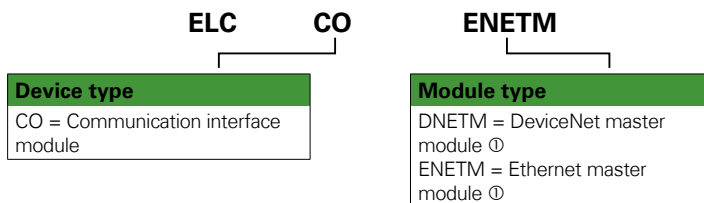
Description	Inputs	Outputs	Analogue	High speed I/O	Max. current	Item no.
ELC-PB module and 14 I/O built-in	(8) 24 Vdc	(6) Relay, 1.5A	-	(2) 20 kHz inputs	150 mA	<b>ELC-PB14NNDR</b>
	(8) 24 Vdc	6) Transistor, 100 mA	-			<b>ELC-PB14NNDT</b>
ELC-PC module and 12 I/O built-in	(8) 24 Vdc	4) Relay, 1.5A	-	(1) 30 kHz inputs	150 mA	<b>ELC-PC12NNDR</b>
	(8) 24 Vdc	(4) Transistor, 100 mA	-			<b>ELC-PC12NNDT</b>
ELC-PA module and 10 I/O built-in Analogue - 2 in, 2 out	(4) 24 Vdc	(2) Relay, 1.5A	-	(1) 30 kHz inputs	210 mA	<b>ELC-PA10AADR</b>
	(4) 24 Vdc	(2) Relay, 1.5A	-			<b>ELC-PA10AADT</b>
ELC-PV module and 28 I/O built-in	(16) 24 Vdc	(12) Relay, 1.5A	-	(2) 200 kHz inputs	220 mA	<b>ELC-PV28NNDR</b>
	(16) 24 Vdc	(12) Transistor, 100 mA	-			<b>ELC-PV28NNDT</b>



ELC-EX16NNDR

## Programmable logic controllers

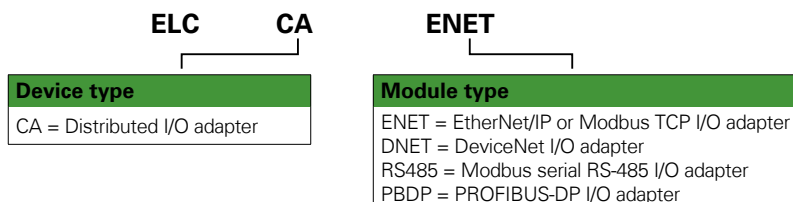
### Master communication modules



Description	Inputs points	Type	Outputs points	Item no.
Ethernet Modbus TCP (master/slave)		Modbus TCP		<b>ELC-COENETM</b>
DeviceNet Scanner (master/slave)	190 bytes	DeviceNet	190 bytes	<b>ELC-CODNETM</b>

⊙ Left side bus communications module—for use with ELC-PV controllers only.

### Distributed I/O adapters

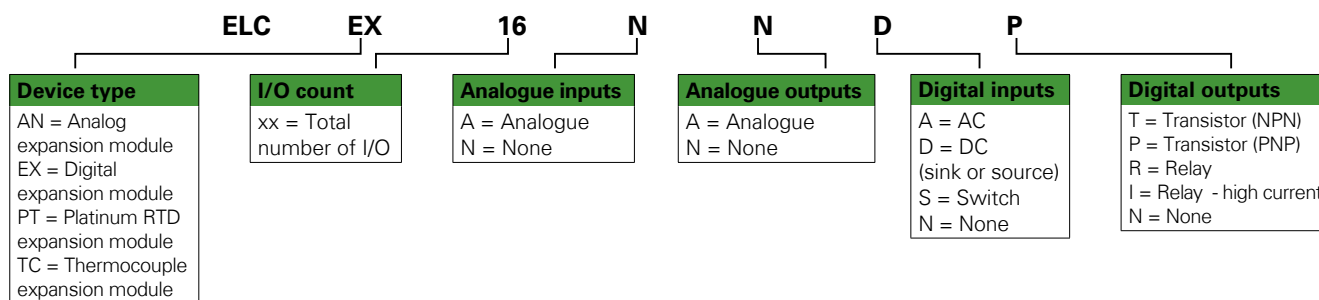


### Features

- Combine with ELC expansion modules to create distributed I/O racks for different PLC networks
- Use ELC-CAENET and ELC-COENETM to create distributed I/O racks to the ELC-PV controllers

Description	Item no.
EtherNet/IP or Modbus TCP I/O adapter	<b>ELC-CAENET</b>
Modbus serial RS-485 I/O adapter	<b>ELC-CARS485</b>
DeviceNet I/O adapter	<b>ELC-CADNET</b>
PROFIBUS-DP I/O adapter	<b>ELC-CAPBDP</b>

### Digital expansion modules (right side bus)



### Features

- Digital right side expansion modules can be used with any ELC controller
- They simply snap together to allow the ELC backplane to pass through each connected module
- Maximum of 14 modules per controller

Description	Inputs	Outputs	Max. current	Item no.
8 DC input module	(8) 24 Vdc		50 mA	<b>ELC-EX08NNDN</b>
8 AC input module	(8) 110 Vac		50 mA	<b>ELC-EX08NNAN</b>
8 Transistor output module		(8) Transistor (sink), 0.3A	70 mA	<b>ELC-EX08NNNT</b>
8 Relay output module		(8) Relay, 1.5A	70 mA	<b>ELC-EX08NNNR</b>
8 DC input/output module	(4) 24 Vdc	(4) Transistor (sink), 0.3A	70 mA	<b>ELC-EX08NNDT</b>
8 DC input/relay output module	(4) 24 Vdc	(4) Relay, 1.5A	70 mA	<b>ELC-EX08NNDR</b>
6 High current relay output module		(6) Relay, 6A	70 mA	<b>ELC-EX06NNNI</b>
16 DC input module	(16) 24 Vdc		100 mA	<b>ELC-EX16NNDN</b>
16 DC input/output module	(8) 24 Vdc	(8) Transistor (sink), 0.3A	90 mA	<b>ELC-EX16NNDT</b>
16 DC input/output module	(8) 24 Vdc	(8) Transistor (source), 0.3A	100 mA	<b>ELC-EX16NNDP</b>
16 DC input/relay output module	(8) 24 Vdc	(8) Relay, 1.5A	90 mA	<b>ELC-EX16NNDR</b>



## Programmable logic controllers

### Analogue input and out modules (right side bus)

Description	Input points	Resolution	Mode	Output points	Resolution	Mode	Max. current	Item no.
4 analogue input module	4	V = 12 bit I = 13 bit	±10V ±20 mA				90mA	ELC-AN04ANNN
2 analogue output module				2	12 bit	0–20 mA; 4–20 mA 0–10V; 2–10V	125mA	ELC-AN02NANN
4 analogue output module				2	12 bit	0–20 mA; 4–20 mA 0–10V; 2–10V	170mA	ELC-AN04NANN
6 analogue input/output module	4	V = 12 bit I = 11 bit	±10V ±20 mA	2	12 bit	0–20 mA 0–10V	170mA	ELC-AN06AANN

### Temperature input modules (right side bus)

Thermocouple and Platinum RTD temperature sensor input modules with 14 bit resolution

Description	Input points	Resolution	Sensor type	Max. current	Item no.
4 Thermocouple input module	4		J, K, R, S, T	90 mA	ELC-TC04ANNN
4 Platinum RTD input module	4	14 bit	PT100	90 mA	ELC-PT04ANNN

### RS-485 Adapter module (right side bus—end module)

Passive RS-485 connection device module.

RJ12 port for connecting to a drive.

2-pin screw terminal to connect to ELC controller.

Male and female DB9 connectors to connect to other RS-485 devices.

Description	Connector type	Item no.
RS-485 Connect adapter module	RJ12, DB9 (male and female) 2-pin screw terminals	ELC-485APTR

## Accessories

### Power supplies

All ELC controllers, analog and specialty expansion modules operate from 24 Vdc

Description	Input power	Output volts	Output current (A)	Watts	Item no.
24 watt, 1 amp power supply	100–240 Vac 50/60 Hz	24 Vdc	1A	24	ELC-PS01
48 watt, 2 amp power supply	100–240 Vac 50/60 Hz	24 Vdc	2A	48	ELC-PS02



ELC-PS01

### Cables

Description	Item no.
Cable to connect a PC or an ELC-GP unit to ELC, 3 meters (DB 9-pin female to 8-pin DIN)	ELC-CBPCELC3
Cable to connect a PC or an ELC-GP unit to ELC, 1 meter with right angle connector (DB 9-pin female to 8-pin DIN)	ELC-CBPCELC1

### Storage devices

The ELC-ACPGMXFR module is a multifunction device that provides the ability to back up an application already loaded onto one of the ELC controllers. It will store system settings, passwords and the application, including the data registers for pre-loaded recipes

Description	Item no.
Program transfer module for ELC controllers	ELC-ACPGMXFR

### Programming software

ELCSoft programming software configures all ELC controllers. Program in ladder, sequential function chart or instruction language.

Description	Item no.
Programming Software for ELC Controllers	ELCSOFT

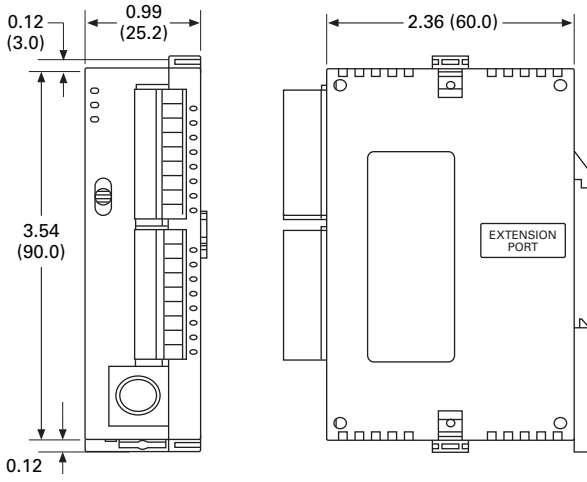
# Power control

## Automation

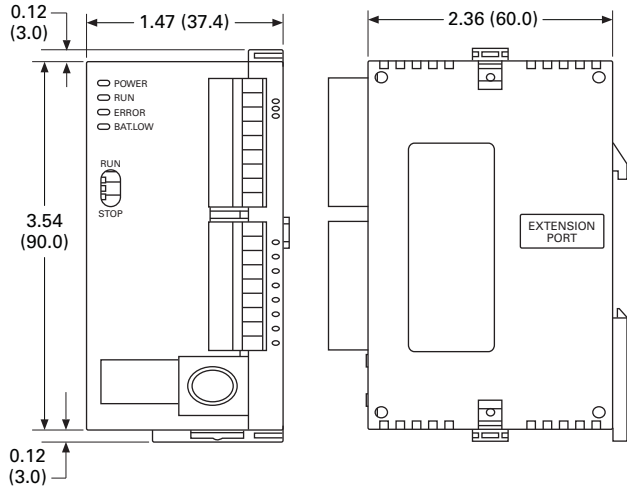
### Programmable logic controllers

Dimensions (approximate dimensions in inches (mm))

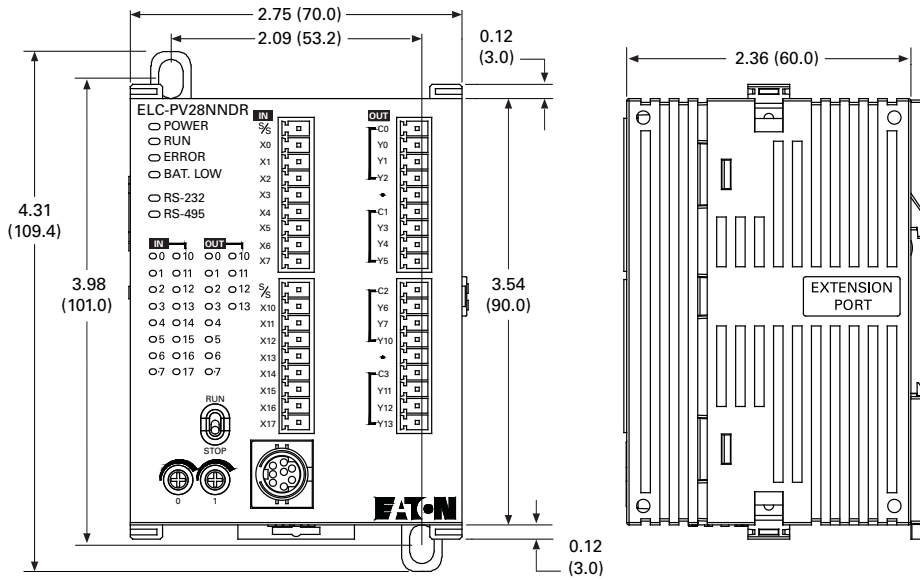
#### ELC-PB14 controllers



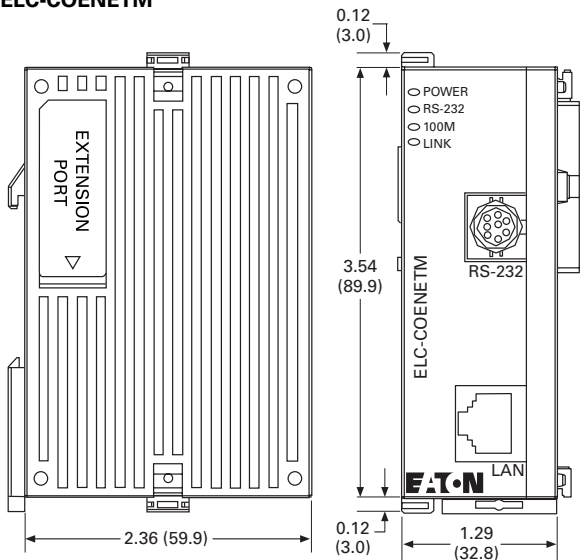
#### ELC-PC12, ELC-PH12 and ELC-PA10 controllers



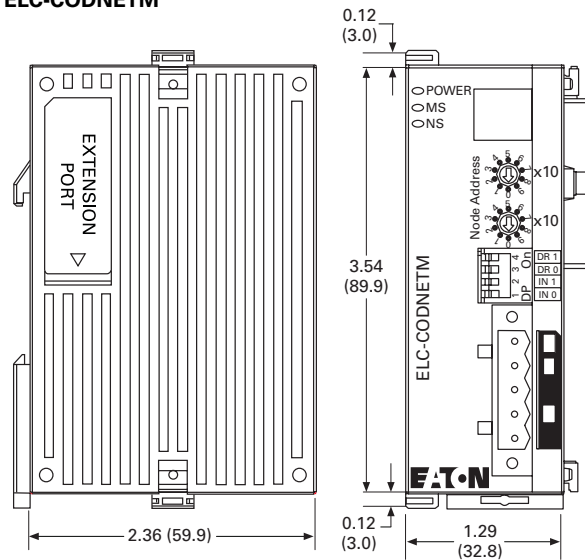
#### ELC-PV controller



#### ELC-COENETM



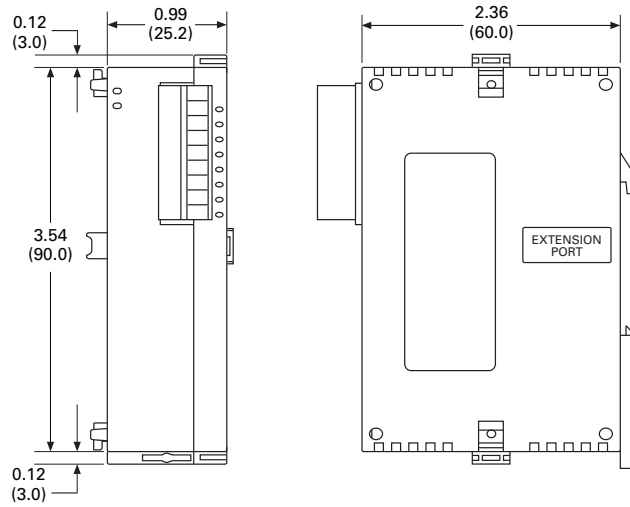
#### ELC-CODNETM



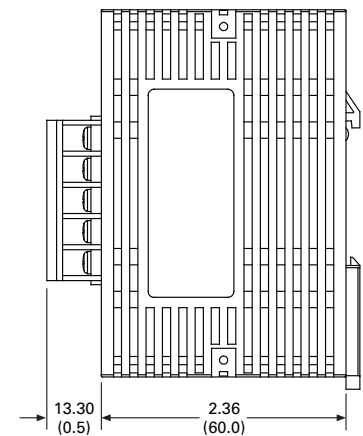
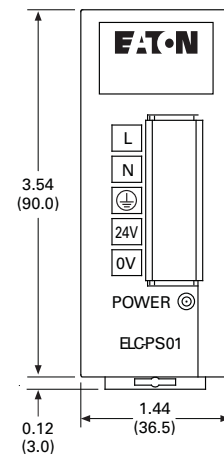
Programmable logic controllers

Dimensions (approximate dimensions in inches (mm))

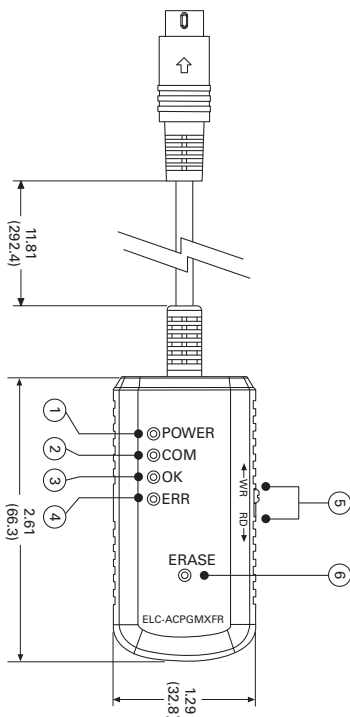
Right side specialty and expansion modules



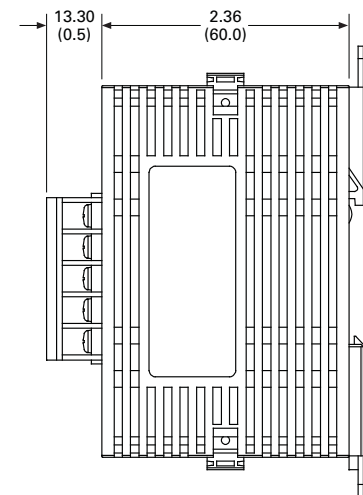
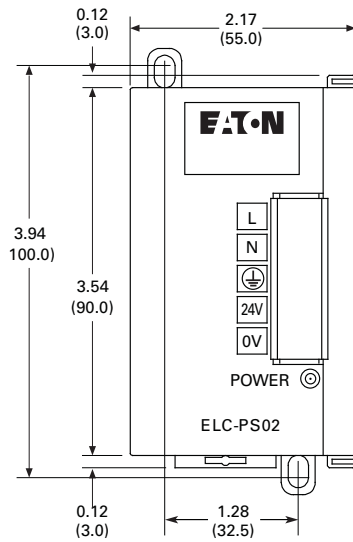
ELC-PS01



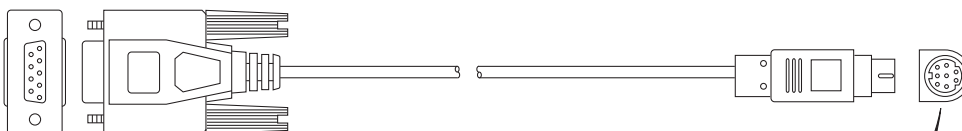
ELC-ACPGMXFR storage device



ELC-PS02



ELC-CBPCELC1 cable (right angle connector not shown) and ELC-CBPCELC3 cable (straight connector as shown)



PC/HMI COM Port 9 PIN D-SUB Female		PLC COM1 Port 8 PIN MINI DIN	
Rx	2	←→	5 Tx
Tx	3	←→	4 Rx
GND	5	←→	8 GND
1	7		1,2 5V
4	8		
6			

Pinout diagram for the 8-pin mini DIN connector showing pins 1 through 8.

### ELC Graphic touch panels

#### Eaton ELC Graphic touch panels

- High-end features in a low-cost operator interface
- Communication through 2 ports simultaneously: RS232 & RS485/422
- Connection to all major PLCs with drivers
- Process indication by graphs, alarms, etc
- 10 levels of password protection

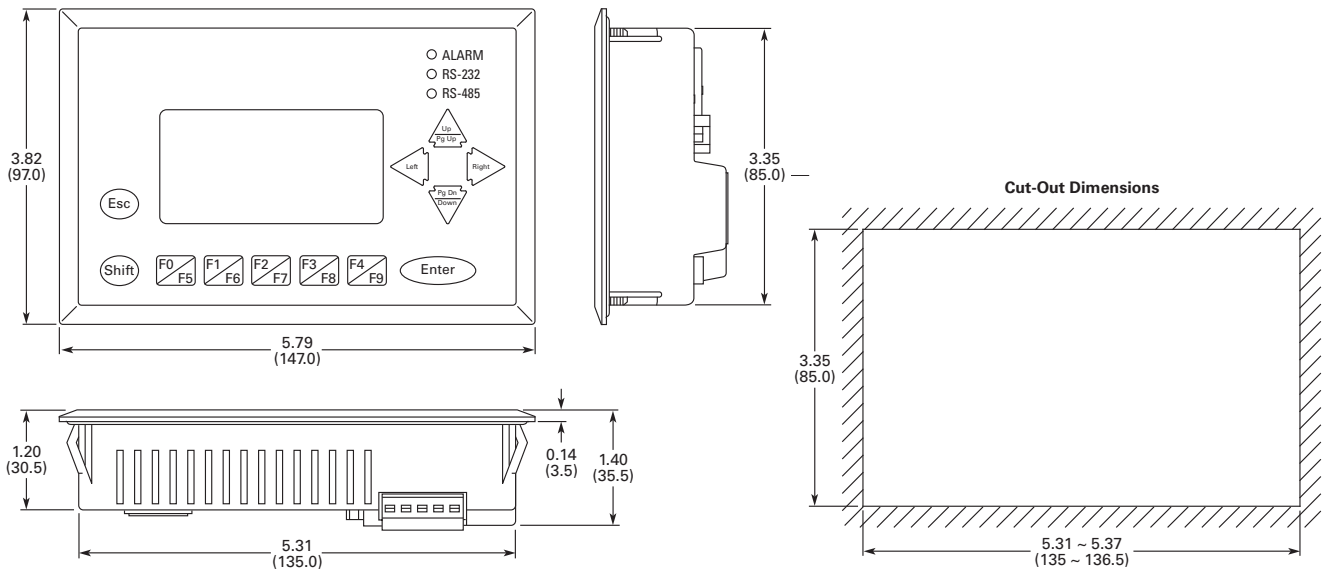


Description	Item no.
<b>Graphic touch panels</b>	
Touch panel, 160 x 32 pixels, 10 function keys, monochrome	<b>ELC-GP02</b>
Touch panel, 128 x 64 pixels, 10 function keys, monochrome	<b>ELC-GP04</b>
<b>Programming software</b>	
Programming software for ELC graphic touch panels	<b>ELCSOFTGP</b>
<b>Power supplies</b>	
Power supply, 110-240V AC IN, 24V DC OUT, 24 watts, 1 A	<b>ELC-PS01</b>
Power supply, 110-240V AC IN, 24V DC OUT, 48 watts, 2 A	<b>ELC-PS02</b>
<b>Programming cable</b>	
Cable PC to ELC-GP, 3m (DB9 female to DB9 female)	<b>ELC-CBP CGP3</b>
Cable PC or touch panel to PLC, 3 m (DB9 female to 8-pin DIN)	<b>ELC-CBPCELC3</b>
<b>Program transfer module</b>	
Program transfer module for ELC graphic touch panels	<b>ELC-GPXFERMOD</b>

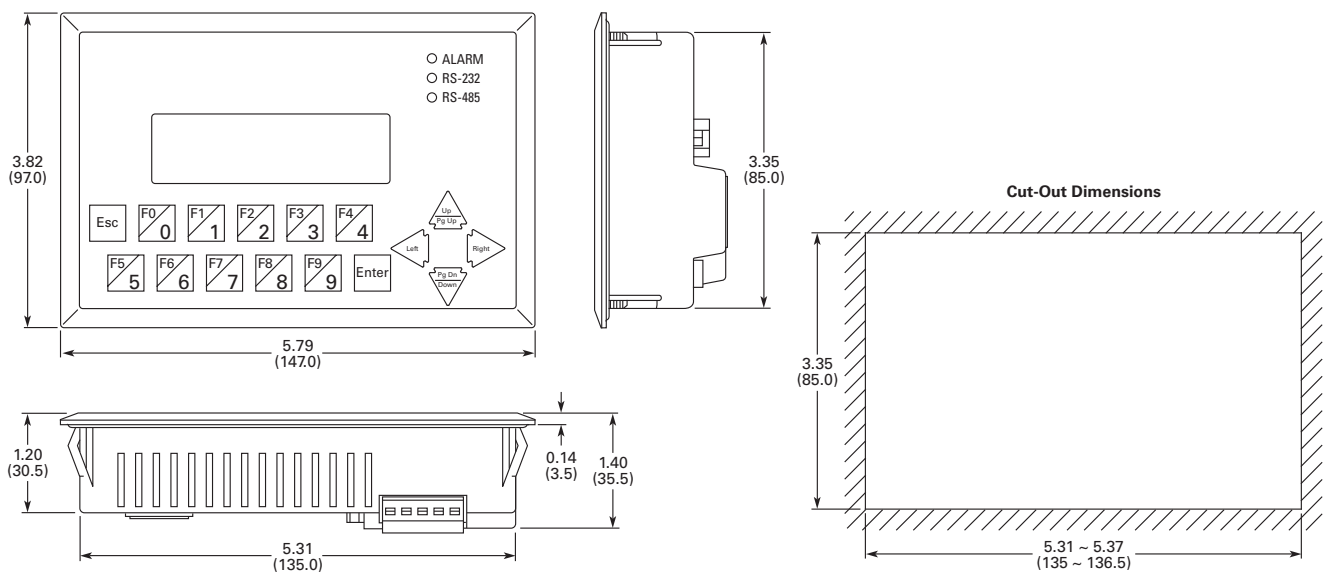
ELC Graphic touch panels

Dimensions (approximate dimensions in inches (mm))

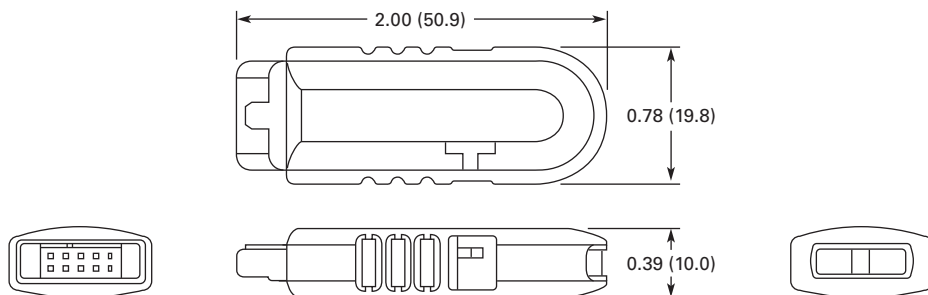
ELC-GP04



ELC-GP02



ELC-GPXFERMOD



## Operator interface

### HMI operator interface

Positioned between the ELC graphics panels and the XV series of operator interfaces, HMI is the workhorse of the industry. Ideal for machinery OEMs, the HMI series provides the most value with the latest technology and advanced feature set in an economical hardware and software package. All units offer RS-232, RS-485 and RS-422 communications. The 7-, 8- and 10-inch units also offer Ethernet communication options.

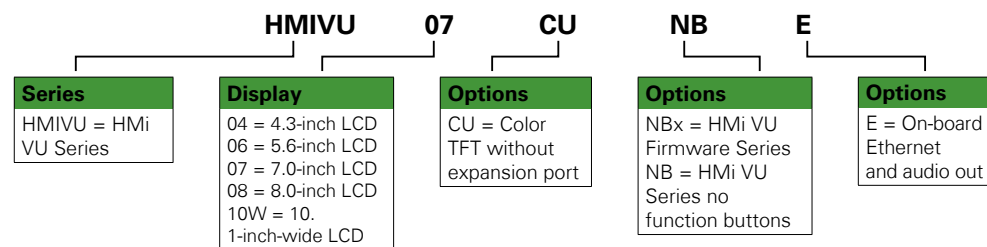


#### Features

- Auto-scale application from 10 to 4 inches
- Screen and backlight saver
- Pop-up screens
- Animated graphics
- Conditional visibility
- Application lock for IP protection
- Data archiving
- Multi-language
- Eight levels of security
- Ethernet communication drivers
- Ethernet, COMM port and USB upload/download
- USB ports for data storage
- Three serial ports
- Up to four simultaneous protocols
- Math and logic functions
- CSV import/export tags and recipes
- Macro capability
- Alarm/event recording and viewing
- Real-time and historical trending
- Online and offline simulation

#### HMI VU exclusive features

- VU server
- VU remote
- Multi-link
- Onboard Ethernet on some models
- Audio and SD on some models
- Supports USB mouse and other industrial pointing devices



Description	Item no.
4-inch color TFT, no function buttons, on-board Ethernet	<b>HMIVU04CUNBE</b>
6-inch color TFT, no function buttons, no Ethernet	<b>HMIVU06CUNB1</b>
7-inch color TFT, no function buttons, on-board Ethernet	<b>HMIVU07CUNBE</b>
8-inch color TFT, no function buttons, on-board Ethernet	<b>HMIVU08CUNBE</b>
10-inch color TFT, no function buttons, on-board Ethernet	<b>HMIVU10WCUNBE</b>

### HMiSoft programming software

For use with the of HMI and HMI VU series touchscreens. This easy to use Windows based software can run on Windows XP and Windows 7 32-bit and 64-bit systems.

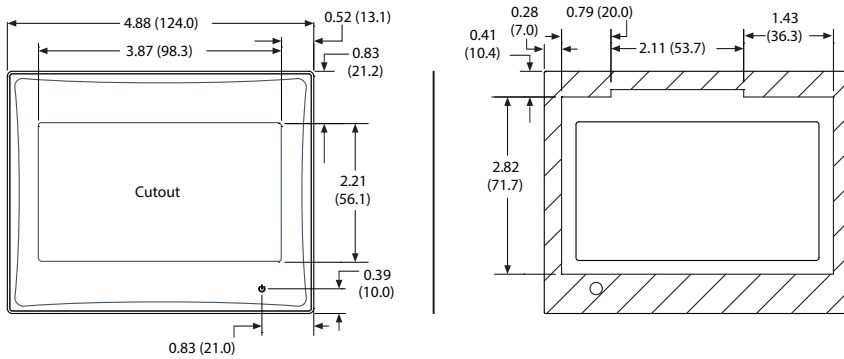
- Ethernet and serial communication drivers
- Up to four simultaneous protocols
- Screen manager
- Over 70 on-screen objects
- Pop-up screens
- Animated graphics
- Conditional visibility
- Built-in picture library
- Create your own picture library
- Multi-language
- Eight levels of security
- Macro editing with math and logic functions
- CSV import/export tags and recipes
- Alarm/event recording and viewing
- Store archived data, alarms and events to USB
- Real-time and historical trending
- Auto-scale application from 10 to 4 inches
- On and offline simulation
- Upload/download applications over USB, serial or Ethernet
- Application lock for IP protection
- Screen and backlight saver
- Multi-link allows sharing of PLC data over Ethernet
- VU Server optional download
- VU Remote optional download

Description	Item no.
Programming software for HMI and HMI VU models	<b>HMISOFT</b>

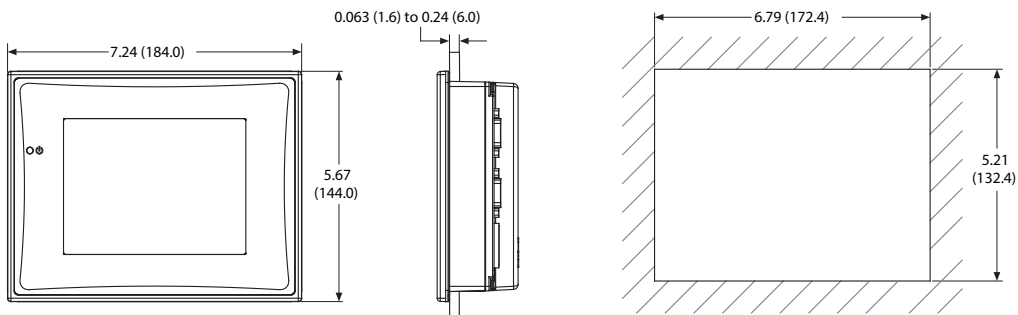
Operator interface

Dimensions (approximate dimensions in inches (mm))

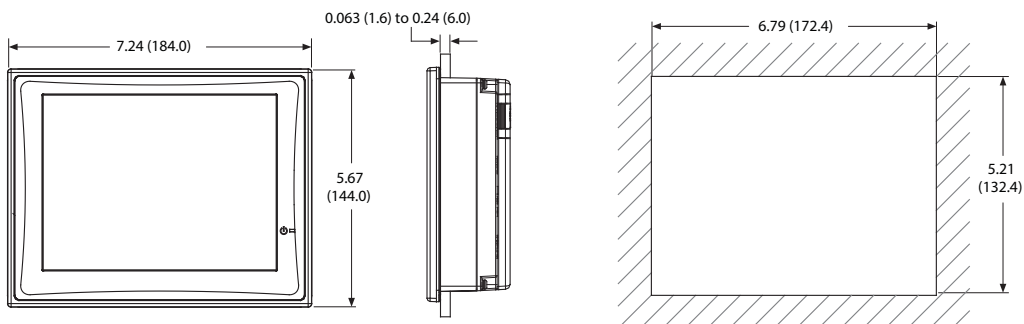
HMIVU04



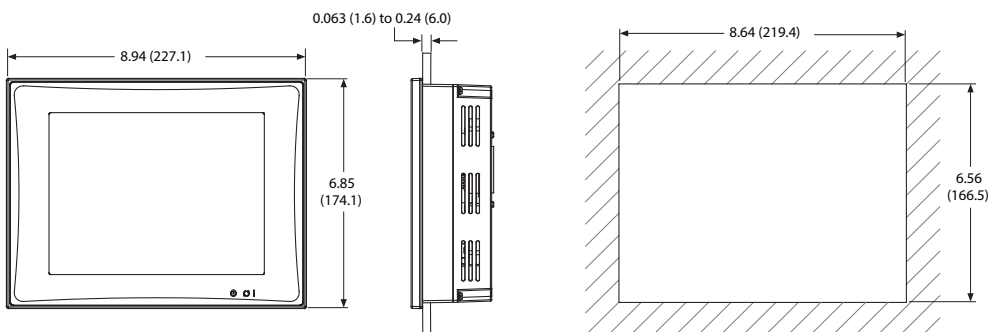
HMIVU06



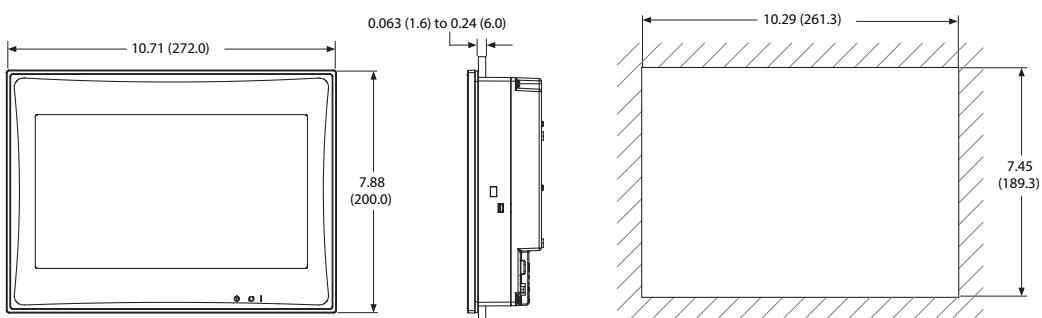
HMIVU07



HMIVU08



HMIVU10





### LS-Titan position switches

#### Basic units

LS-Titan position switches are quick & easy to install, highly flexible & safe. Rated to IP66, the LS-Titan range is available in two versions: For normal operating conditions in corrosive environments, or in the food industry, the LS versions have a totally insulated housing, whereas the LSM versions in their robust metal enclosures are suited to mechanically harsher environments.

All devices are actuated mechanically & with their positively opening & interlocked opposing contacts, are suitable for use in safety circuits. A unique feature is the ability to combine LS-Titan with pushbutton actuators, selector switches or Emergency-Stop buttons from the RMO-Titan range. These can simply be snapped on to act as the operating head of the position switch.

The LSE (limit switch electronic) has a freely programmable operating point that can be easily set. Just move the plunger from the original position to the new switching position & press the 'teach-in' button with a screwdriver for 1 second. Once the LED flashes at a higher rate, the new position is accepted & is usable. The switching point is freely adjustable within a range of 0.5 to 5.5 mm.

#### Features & benefits:

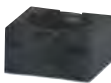
- Conform to EN 50047, so ensuring interchangeability
- Modular range of basic units & operating heads are quickly & easily installed with a bayonet catch, offering flexibility of application
- Maintenance free & vibration resistant cage clamp terminals



LS-11



LSM-11



M22-LS

Description	Contacts	Item no.
Insulated, enclosed units, IP66, rounded plunger		
Basic units	Standard action contacts	1 N/O, 1 N/C <b>LS-11</b>
	Make-before-break contacts	1 N/O, 1 N/C <b>LS-11D</b>
	Snap-action contacts	1 N/O, 1 N/C <b>LS-11S</b>
	Standard action contacts	2 N/O <b>LS-20</b>
	Standard action contacts	2 N/C <b>LS-02</b>
Basic units with electronically adjustable operating point	Indicator light $\odot$	1 N/O, 1 N/C <b>LSE-11</b>
		2 N/C <b>LSE-02</b>
Metal, enclosed units, IP66, rounded plunger		
Basic units	Standard action contacts	1 N/O, 1 N/C <b>LSM-11</b>
	Make-before-break contacts	1 N/O, 1 N/C <b>LSM-11D</b>
	Snap-action contacts	1 N/O, 1 N/C <b>LSM-11S</b>
	Standard action contacts	2 N/O <b>LSM-20</b>
	Standard action contacts	2 N/C <b>LSM-02</b>
Accessories		
Fixing adapter	For operation by RMO-Titan actuators -	<b>M22-LS</b>

$\odot$  To show status (optical status display safety category 3, EN 954-1)

## LS-Titan position switches

### Operating heads

Description	Std. pack	Plastic Item no.	Std. pack	Metal Item no.
Rounded plunger, center fixing				
For installation in M18 × 1 enclosure wall or mounting plate drilling	1 off	<b>LS-XZS</b>		
Roller plunger, center fixing				
For installation in M18 × 1 enclosure wall or mounting plate drilling	1 off	<b>LS-XZRS</b>		
Roller plunger	10 off	<b>LS-XP</b>	10 off	<b>LSM-XP</b>
Roller lever				
Large	5 off	<b>LS-XLB</b>		
Short	1 off	<b>LS-XLS</b>		
Long	10 off	<b>LS-XL</b>	10 off	<b>LSM-XL</b>
Angled roller lever	10 off	<b>LS-XLA</b>	10 off	<b>LSM-XLA</b>
Rotary lever	5 off	<b>LS-XRL</b>	5 off	<b>LSM-XRL</b>
Adjustable roller lever				
D = 18 mm	4 off	<b>LS-XRLA</b>	4 off	<b>LSM-XRLA</b>
D = 30 mm	5 off	<b>LS-XRLA30</b>		
D = 40 mm (rubber)	5 off	<b>LS-XRLA40R</b>		
D = 40 mm	5 off	<b>LS-XRLA40</b>		
Actuating rod				
Rod from insulated material	4 off	<b>LS-XRR</b>	4 off	<b>LSM-XRR</b>
Metal rod	4 off	<b>LS-XRRM</b>	4 off	<b>LSM-XRRM</b>
Spring rod				
Not to be used as a safety position switch Use only in conjunction with snap-action contact.	5 off	<b>LS-XS</b>	5 off	<b>LSM-XS</b>
Actuating rod	1 off	<b>LS-XOR</b>		
Fixing adapters				
Actuation through front element RMQ-Titan®	10/1 off	<b>M22-LS</b>		

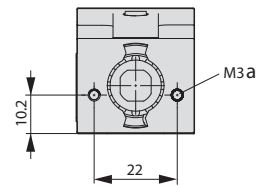
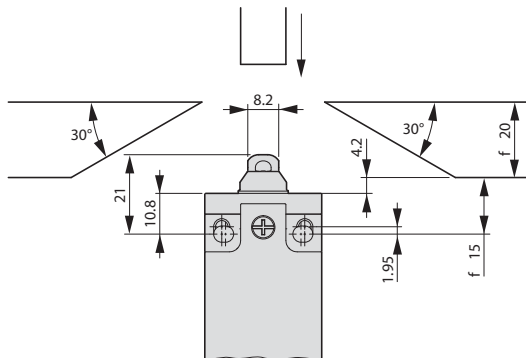


## LS-Titan position switches

### Dimensions

#### Basic units, non expandable (front fixing)

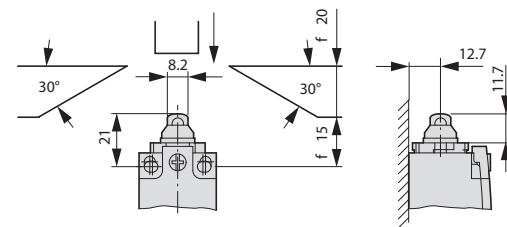
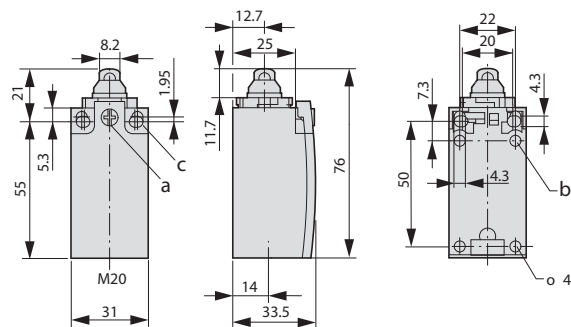
LS(M)-.../F



① Screw-in depth max. 12 mm

#### Basic units, expandable,

LS-..., LSM-..., LSE-...



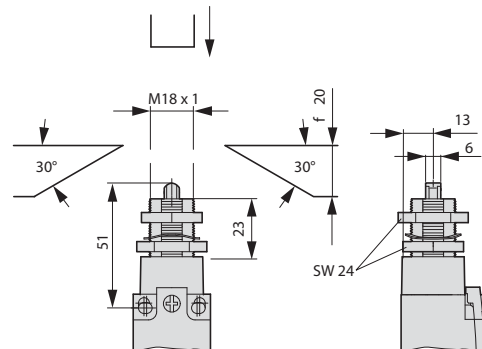
① Tightening torque of cover screw: 0.8 Nm  $\pm$  0.2 Nm

② Only with LS (insulated version)

③ Fixing screw 2 x M4  $\geq$  30  
 $M_A = 1.5$  Nm

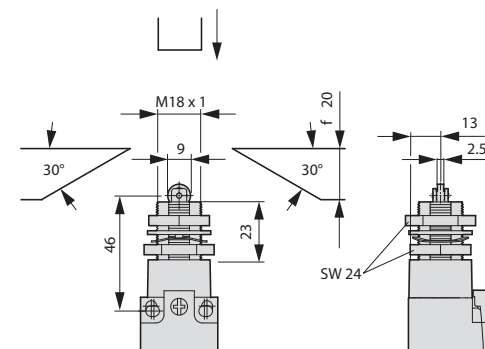
#### Rounded plunger, center fixing

LS-XZS



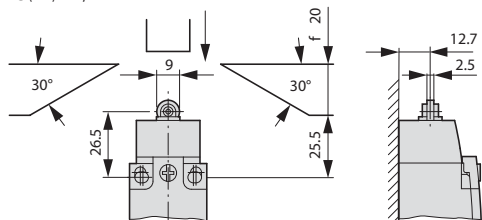
#### Roller plunger, center fixing

LS-XZRS



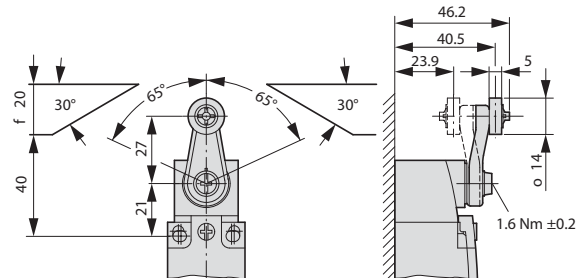
#### Roller plunger

LS(M)-.../P



#### Rotary lever

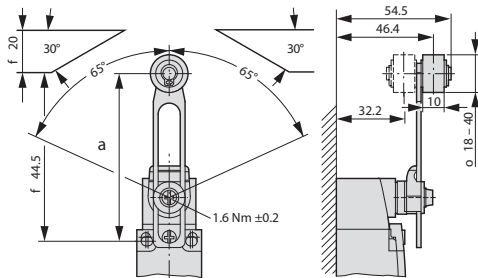
LS(M)-.../RL



LS-Titan position switches

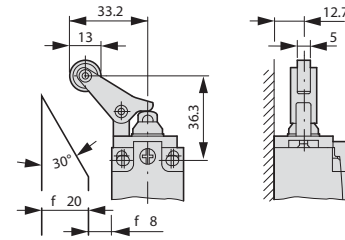
Dimensions

Adjustable roller lever  
LS(M)-.../RLA

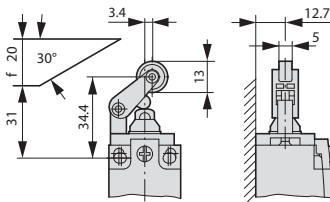


① Setting range from 54.5 to 97

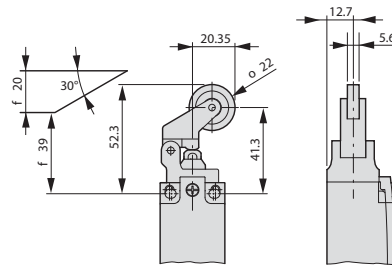
Angled roller lever  
LS(M)-XLA



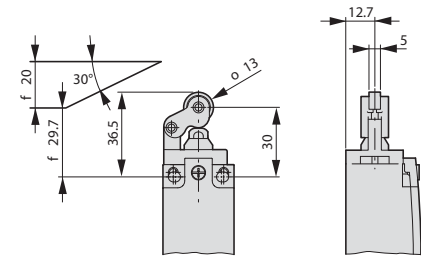
Roller lever  
LS(M)-.../L



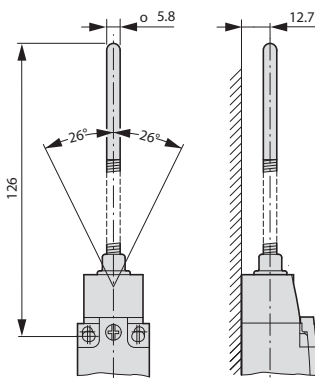
LS(M)-.../LB



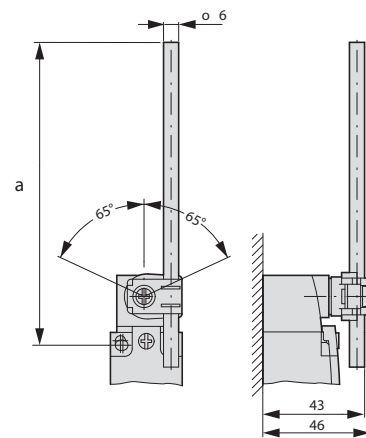
LS(M)-.../LS



Spring rod  
LS(M)-.../S

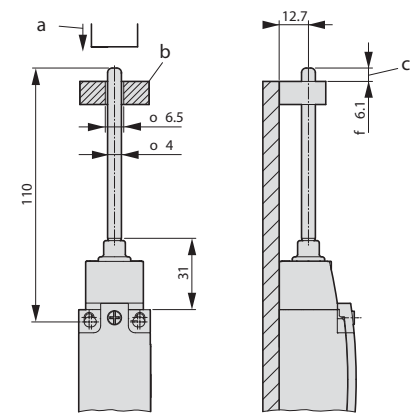


Actuating rod  
LS(M)-.../RR



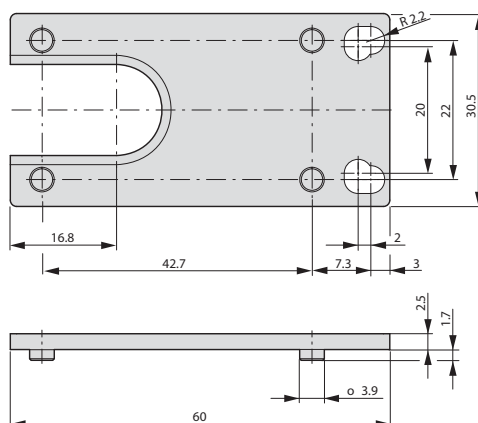
① LS.../RR ≤ 150  
LS.../RRM ≤ 210

Actuating rod  
LS(M)-.../OR

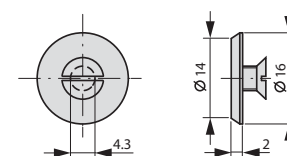


① Approach direction, vertical  
② Guide is done by customer, not included  
③ Max. push-through

Adapter plate  
LS-XAP



Locating plate  
FS-AT



# Power control Automation



Assembled switch



Switch body



Single pole



Double pole



## E50 Heavy duty modular limit switches

Eaton E50 Limit Switches are available with or without indicating LED, in single- or 2-pole versions. Optional manifold mount & submersible versions available.

Complete switch = body + receptacle + Head

Indicating light	Switch body Item no.		Receptacle Item no.
None	<b>E50SA, 1N.O.-1N.C.</b>	<b>Single Pole (5 Terminal)</b>	<b>E50RA</b>
LED (24 - 120V AC/DC)	<b>E50SAL, 1N.O.-1N.C.</b>		-
None	<b>E50SB, 2N.O.-2N.C.</b>	<b>Double pole (9 Terminal)</b>	<b>E50RB</b>
LED (24 - 120V AC/DC)	<b>E50SBL, 2N.O.-2N.C.</b>		-

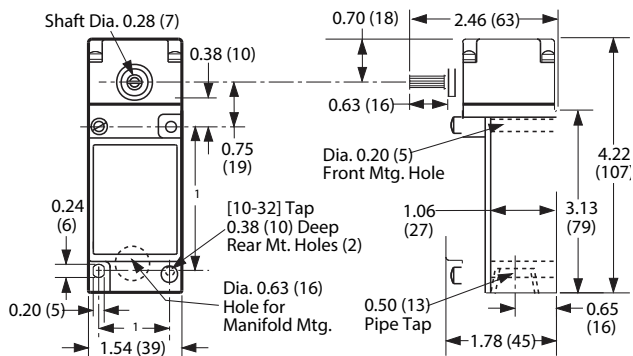
Operating head type	Item no.
Side Rotary	
Standard Spring Return	<b>E50DR1</b>
Low Force Spring Return	<b>E50DL1</b>
Maintained Two position	<b>E50DM1</b>
Side Pushbutton, Spring Return - E50DS1	<b>E50DS1</b>
Side Pushbutton, Spring Return - E50DS2	<b>E50DS2</b>
Side Push Roller, Spring Return - E50DS3	<b>E50DS3</b>

Operating head type	Item no.
Side Pushbutton, Maintained - E50DH1	<b>E50DH1</b>
Top Pushbutton, Spring Return - E50DT1	<b>E50DT1</b>
Top Pushbutton, Adjustable Spring Return - E50DT2	<b>E50DT2</b>
Top Push Roller, Spring Return - E50DT3	<b>E50DT3</b>
Wobble Head Spring Return	
Standard Duty	<b>E50DW1</b>
Heavy-Duty High Strength Steel	<b>E50DW2</b>

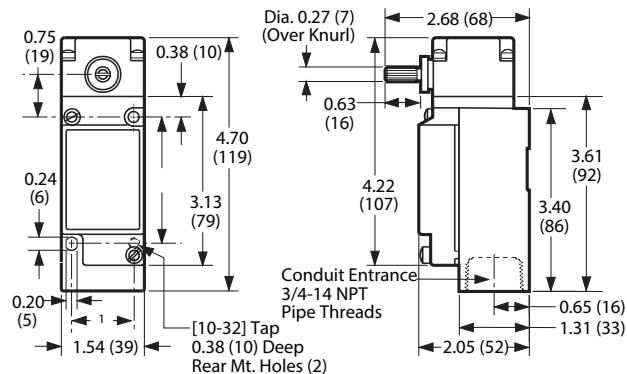
Plug-in switches

Dimensions (approximate dimensions in inches (mm))

Standard



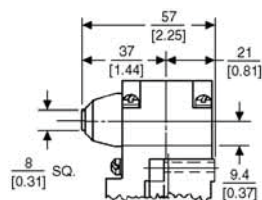
E50SB34



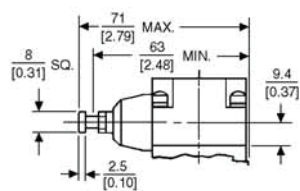
Side push operators

(approximate dimensions in mm (inches))

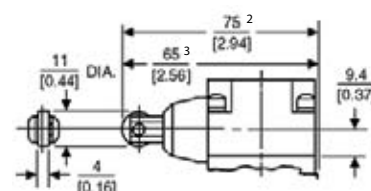
Pushbutton



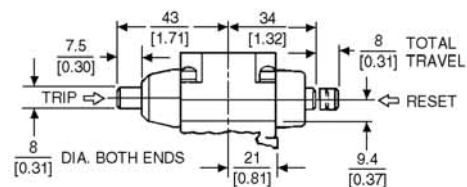
Adjustable pushbutton



Roller

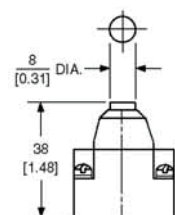


Maintained pushbutton

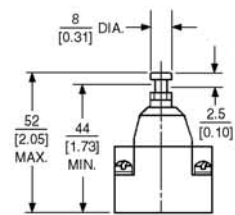


Top push operators

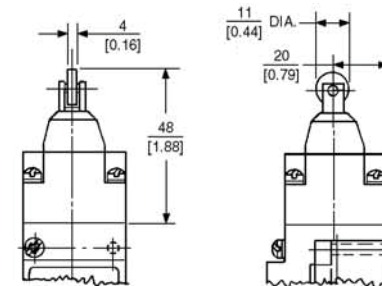
Pushbutton



Adjustable pushbutton



Roller



Notes

- 1 Can accommodate both U.S., 1.16 (29.4) x 2.34 (59.5) and DIN, 1.18 (30) x 3.26 (60), mounting dimensions.
- 2 For E50DS4.
- 3 For E50DS3.

Limit switches

Roller type operators

For rotary head switches: E50 Plug-In, E50 6P+, and 10316.



E50KL200



E50KL355



E50KL377



E50KL554



E50KL580



E50KL24



E50KL27

Roller type	Minimum Required Return torque ①	Approximate Dimensions in Inches (mm)						Item no.
		A Lever length ②	B Roller diameter	C Roller width	D	E	F	
<b>Standard roller (stainless steel)</b>								
Metal	0.62 in-oz	0.88 (22.2)	0.75 (19.0)	0.32 (8.1)	0.31 (7.9)	0.20 (5.1)	0.24 (6.1)	<b>E50KL39</b>
Metal	0.95 in-oz	1.38 (34.9)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	<b>E50KL40</b>
Ball bearing	0.77 in-oz	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)	<b>E50KL531</b>
Nylatron	0.53 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	<b>E50KL200</b>
Metal	1.10 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	<b>E50KL355</b>
Nylatron	0.96 in-oz	1.50 (38.1)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)	<b>E50KL377</b>
Without roller	0.32 in-oz	1.50 (38.1)	—	—	0.34 (8.6)	—	—	<b>E50KL32</b>
Ball bearing	1.10 in-oz	2.00 (50.8)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)	<b>E50KL552</b>
Nylatron	0.71 in-oz	2.00 (50.8)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	<b>E50KL546</b>
Metal	1.50 in-oz	2.00 (50.8)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	<b>E50KL549</b>
Nylatron	1.45 in-oz	2.00 (50.8)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)	<b>E50KL572</b>
Ball bearing	1.50 in-oz	2.50 (63.5)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)	<b>E50KL553</b>
Nylatron	1.00 in-oz	2.50 (63.5)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	<b>E50KL547</b>
Metal	2.00 in-oz	2.50 (63.5)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	<b>E50KL550</b>
Nylatron	1.80 in-oz	2.50 (63.5)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)	<b>E50KL573</b>
Nylatron	1.40 in-oz	2.50 (63.5)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.11 (2.8)	0.17 (4.3)	<b>E50KL575</b>
Ball bearing	1.80 in-oz	3.00 (76.2)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)	<b>E50KL554</b>
Nylatron	1.30 in-oz	3.00 (76.2)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	<b>E50KL548</b>
Metal	2.50 in-oz	3.00 (76.2)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	<b>E50KL551</b>
Nylatron	2.30 in-oz	3.00 (76.2)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)	<b>E50KL574</b>
Nylatron	1.80 in-oz	3.00 (76.2)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.11 (2.8)	0.17 (4.3)	<b>E50KL576</b>
<b>Roller on reverse side (stainless steel)</b>								
Ball bearing	0.77 in-oz	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.18 (4.6)	0.24 (6.1)	<b>E50KL580</b>
Nylatron	0.53 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)	<b>E50KL310</b>
Metal	1.10 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)	<b>E50KL579</b>
Nylatron	0.96 in-oz	1.50 (38.1)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.23 (5.8)	0.31 (7.9)	<b>E50KL536</b>
<b>Offset inboard roller (stainless steel)</b>								
Nylatron	0.65 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.03 (0.8)	—	—	<b>E50KL24</b>
Metal	1.20 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.03 (0.8)	—	—	<b>E50KL25</b>
Ball bearing	0.90 in-oz	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.04 (1.0)	—	—	<b>E50KL26</b>
<b>Offset outboard (stainless steel)</b>								
Nylatron	0.65 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.03 (0.8)	—	—	<b>E50KL27</b>
Metal	1.20 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.03 (0.8)	—	—	<b>E50KL28</b>
Ball bearing	0.90 in-oz	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.04 (1.0)	—	—	<b>E50KL29</b>
Nylatron	1.10 in-oz	1.50 (38.1)	0.75 (19.0)	1.00 (25.4)	—	—	—	<b>E50KL30</b>



Limit switches

Roller type operators

Roller type	Minimum Required Return torque ①	Approximate dimensions in Inches (mm)						Item no.
		A Lever length ②	B Roller diameter	C Roller width	D	E	F	
<b>Bantam lever</b>								
Metal	0.45 in-oz	0.69 (17.5)	0.85 (22.0)	0.18 (4.6)	—	—	—	<b>E50KL532</b>
<b>Precision adjustment</b>								
Nylatron	0.65 in-oz	0.69 (17.5) Roller length: 1.50 (38.1) ③	0.75 (19.0)	0.32 (8.1)	0.48 (12.2)	0.24 (6.1)	0.28 (7.1)	<b>E50KL340</b>
Metal	1.20 in-oz		0.75 (19.0)	0.32 (8.1)	0.48 (12.2)	0.24 (6.1)	0.28 (7.1)	<b>E50KL465</b>
Ball bearing	0.90 in-oz		0.69 (17.5)	0.25 (6.4)	0.48 (12.2)	0.16 (4.1)	0.22 (5.6)	<b>E50KL535</b>
<b>Adjustable roller (Stainless steel)</b>								
Ball bearing	2.50 in-oz ④		0.69 (17.5)	0.25 (6.4)	0.23 (5.8)	0.30 (7.6)	—	<b>E50KL539</b>
Nylatron	1.90 in-oz ④	1.0 (25.4) to 3.75 (95.2) ⑤	0.75 (19.0)	0.32 (8.1)	0.29 (7.4)	0.33 (8.4)	—	<b>E50KL201</b>
			0.75 (19.0)	0.32 (8.1)	0.29 (7.4)	0.33 (8.4)	—	<b>E50KL201SPL</b> ⑥
Metal	3.40 in-oz ④		0.75 (19.0)	0.32 (8.1)	0.29 (7.4)	0.33 (8.4)	—	<b>E50KL538</b>
Nylatron	1.90 in-oz ④		0.75 (19.0)	0.50 (12.7)	0.46 (11.6)	0.48 (12.2)	—	<b>E50KL599</b>
Nylatron	3.10 in-oz ④		0.75 (19.0)	1.00 (25.4)	0.90 (22.9)	0.95 (24.1)	—	<b>E50KL537</b>
Large Nylatron	4.50 in-oz ④	0.5 (12.7) to 3.25 (82.6)	4.00 (102.0)	0.11 (2.8)	0.11 (2.8)	0.19 (4.8)	—	<b>E50KL598</b>
Without roller	1.20 in-oz ④	0.5 (12.7) to 3.75 (95.2)	—	—	—	—	—	<b>E50KL31</b>
Nylatron	2.50 in-oz ④	1.63 (41.3) to 3.75 (95.2) ⑤	1.50 (38.1)	0.29 (7.4)	0.26 (6.6)	0.32 (8.1)	—	<b>E50KL443</b>



E50KL532



E50KL340



E50KL201



E50KL599

Roller type	Approximate dimensions in Inches (mm)							Item no.
	A Lever length ②	B Roller diameter	C Roller width	D	E	F	G	
<b>Fork lever—both rollers on one side</b>								
Ball bearing		0.69 (17.5)	0.25 (6.4)	0.08 (2.0)	0.14 (3.6)	—	—	<b>E50KL545</b>
Nylatron	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.16 (4.1)	0.20 (5.1)	—	—	<b>E50KL204</b>
Metal		0.75 (19.0)	0.32 (8.1)	0.16 (4.1)	0.20 (5.1)	—	—	<b>E50KL544</b>
Nylatron		0.75 (19.0)	1.00 (25.4)	0.84 (21.3)	0.88 (22.4)	—	—	<b>E50KL543</b>
<b>Fork lever—one roller outside, one inside</b>								
Ball bearing	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.08 (2.0)	0.14 (3.6)	0.64 (16.3)	0.70 (17.8)	<b>E50KL542</b>
Nylatron		0.75 (19.0)	0.32 (8.1)	0.16 (4.1)	0.20 (5.1)	0.73 (18.5)	0.77 (19.6)	<b>E50KL203</b>
Metal		0.75 (19.0)	0.32 (8.1)	0.16 (4.1)	0.20 (5.1)	0.73 (18.5)	0.77 (19.6)	<b>E50KL541</b>



E50KL545



E50KL542

① Caution: When selecting lever, the minimum required return torque of lever should not exceed minimum return force available in operating head as given in operating head specifications.

② Length from the operating shaft axis to the roller axis (or to the tip for non-roller operators).

③ Maximum length dimension between operating shaft axis to roller axis for comparison.

Precision adjustable to lesser dimensions.

④ Applies when lever is extended to the maximum dimension.

⑤ By reassembling lever, minimum length can be reduced another 0.5 in (12.7 mm).

⑥ High-grade stainless steel.

Limit switches

Rod type operators

For rotary head switches: E50 Plug-In, E50 6P+, and 10316.



Nylon/metal



Metal/steel



Nylon/steel



Nylon covered wire



Nylatron



Nylatron loop



Zinc-plated steel



E50KW2



E50KW3



E50KW4

Rod type	Minimum required return torque ①	Approximate dimensions in Inches (mm)		Item no.
		A Rod length ②	B Rod diameter	
<b>Adjustable rod</b>				
Nylon	0.40 in-oz 3	5.50 (140.0)	0.19 (4.8)	<b>E50KL399</b>
Metal	0.92 in-oz 3		0.12 (3.2)	<b>E50KL202</b>
Metal	2.20 in-oz 3	8.75 (222.0)	Rod size (square): 0.12 (3.2) x 0.12 (3.2)	<b>E50KL581</b>
Stainless steel	7.00 in-oz 3	9.00 (229.0)	0.19 (4.8)	<b>E50KL220</b>
Bendable steel	5.00 in-oz 3	12.00 (305.0)	0.12 (3.2)	<b>E50KL226</b>

Clamps for adjustable rods (rod not included)

clamp for..			
0.19 (4.8) diameter rods			<b>E50KL35</b>
0.12 (3.2) diameter rods			<b>E50KL36</b>
0.25 (6.4) diameter rods			<b>E50KL41</b>

Rod type	Minimum required return torque ①	Approximate dimensions in Inches (mm)				Item no.
		A Rod length ②	B Rod diameter	C	D	
<b>Spring rod</b>						
Nylon	3.50 in-oz	—	—	—	—	<b>E50KL556</b>
Stainless steel	2.80 in-oz	—	—	—	—	<b>E50KL421</b>
<b>Adjustable wire</b>						
Nylon covered wire	1.50 in-oz ③	—	—	—	—	<b>E50KL533</b>
<b>Adjustable wide roller lever</b>						
Nylatron	4.50 in-oz ③	—	—	—	—	<b>E50KL37</b>
<b>Nylatron loop</b>						
Nylatron	0.40 in-oz	6.00 (152.0)	0.158 (4.0)	—	—	<b>E50KL142</b>
<b>Eye bolt</b>						
Zinc-plated steel	0.53 in-oz	150.00 (38.1)	∅ 0.1875 (4.8) Loop ID: 0.375 (9.5)	0.52 (13.1)	0.24 (8.6)	<b>E50KL33</b>

① Caution: When selecting lever, the minimum required return torque of lever should not exceed minimum return force available in operating head as given in operating head specifications.

② Length from the operating shaft axis to tip.

③ Applies when lever is extended to the maximum dimension.

Wobble type operators

For E50DW1 and E50DW2 Operator Heads on E50 Plug-In and E50 6P+ Switches.

Wobble type	Item no.
Nylon rod	<b>E50KW2</b>
Stainless steel rod	<b>E50KW3</b>
Coil spring	<b>E50KW4</b>

## Limit switches

### Dimensions

#### Standard roller

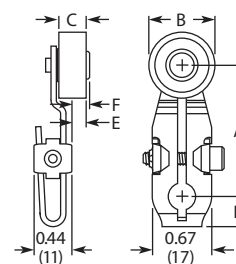
Approximate dimensions in inches (mm)

Item no.	A Lever Length <sup>1</sup>	B Roller Diameter	C Roller Width	D	E	F
E50KL39	0.88 (22.2)	0.75 (19.0)	0.32 (8.1)	0.31 (7.9)	0.20 (5.1)	0.24 (6.1)
E50KL40	1.38 (34.9)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL531	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)
E50KL200	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL355	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL377	1.50 (38.1)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)
E50KL32	1.50 (38.1)	—	—	0.34 (8.6)	—	—
E50KL552	2.00 (50.8)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)
E50KL546	2.00 (50.8)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL549	2.00 (50.8)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL572	2.00 (50.8)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)
E50KL553	2.50 (63.5)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)
E50KL547	2.50 (63.5)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL550	2.50 (63.5)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL573	2.50 (63.5)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)
E50KL575	2.50 (63.5)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.11 (2.8)	0.17 (4.3)
E50KL554	3.00 (76.2)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)
E50KL548	3.00 (76.2)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL551	3.00 (76.2)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL574	3.00 (76.2)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)
E50KL576	3.00 (76.2)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.11 (2.8)	0.17 (4.3)

Note

<sup>1</sup> Length from the operating shaft axis to the roller axis (or to the tip for non-roller operators).

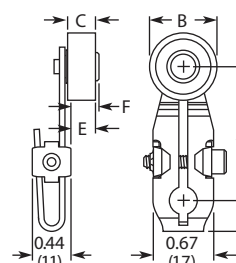
#### Roller Type Operators



#### Roller on reverse side

Approximate dimensions in Inches (mm)

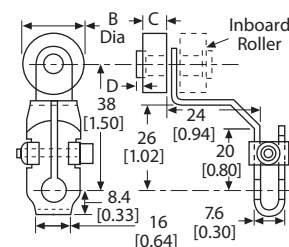
Item no.	A Lever Length <sup>1</sup>	B Roller Diameter	C Roller Width	D	E	F
E50KL580	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.18 (4.6)	0.24 (6.1)
E50KL310	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)
E50KL579	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)
E50KL536	1.50 (38.1)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.23 (5.8)	0.31 (7.9)



#### Offset roller

Approximate dimensions in mm [in]

Item no.	A Lever Length <sup>1</sup>	B Roller Diameter	C Roller Width	D
<b>Inboard</b>				
E50KL24	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	0.8 [0.03]
E50KL25	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	0.8 [0.03]
E50KL26	38.1 [1.50]	17.5 [0.69]	6.4 [0.25]	1.0 [0.04]
<b>Outboard</b>				
E50KL27	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	0.8 [0.03]
E50KL28	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	0.8 [0.03]
E50KL29	38.1 [1.50]	17.5 [0.69]	6.4 [0.25]	1.0 [0.04]
E50KL30	38.1 [1.50]	19.0 [0.75]	25.4 [1.00]	—



Notes

<sup>1</sup> Length from the operating shaft axis to the roller axis (or to the tip for non-roller operators).

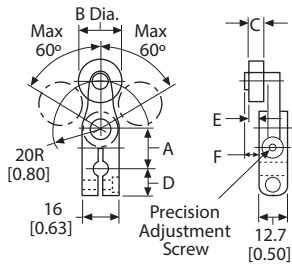
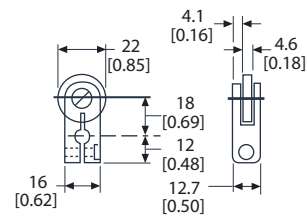
<sup>2</sup> Maximum length dimension between operating shaft axis to the roller axis for comparison. Precision adjustable to lesser dimensions.

## Limit Switches

### Dimensions

#### Bantam lever

Approximate dimensions  
in mm [in]



#### Precision Adjustment

Approximate Dimensions in mm [in]

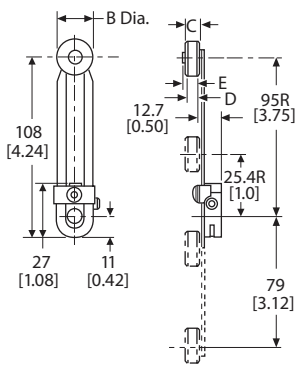
Item no.	A Lever Length <sup>1</sup>	B Roller Diameter	C Roller Width	D	E	F
E50KL340	17.5 [0.69]	19.0 [0.75]	8.1 [0.32]	12.2 [0.48]	6.1 [0.24]	7.1 [0.28]
E50KL465	Roller length: 38.1 [1.50] <sup>2</sup>	19.0 [0.75]	8.1 [0.32]	12.2 [0.48]	6.1 [0.24]	7.1 [0.28]
E50KL535	17.5 [0.69]	6.4 [0.25]	12.2 [0.48]	4.1 [0.16]	5.6 [0.22]	

#### Notes

- <sup>1</sup> Length from the operating shaft axis to the roller axis (or to the tip for non-roller operators).
- <sup>2</sup> Maximum length dimension between operating shaft axis to the roller axis for comparison. Precision adjustable to lesser dimensions.

#### Adjustable roller

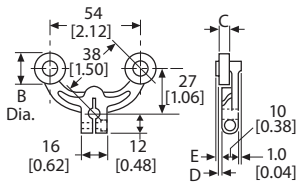
Approximate dimensions in mm [in]



Item no.	A Lever Length <sup>1</sup>	B Roller Diameter	C Roller Width	D	E
E50KL539	25.4 [1.0] to 95.2 [3.75] <sup>2</sup>	17.5 [0.69]	6.4 [0.25]	5.8 [0.23]	7.6 [0.30]
E50KL201		19.0 [0.75]	8.1 [0.32]	7.4 [0.29]	8.4 [0.33]
E50KL201SPL <sup>3</sup>		19.0 [0.75]	8.1 [0.32]	7.4 [0.29]	8.4 [0.33]
E50KL538		19.0 [0.75]	8.1 [0.32]	7.4 [0.29]	8.4 [0.33]
E50KL599		19.0 [0.75]	12.7 [0.50]	11.6 [0.46]	12.2 [0.48]
E50KL537		19.0 [0.75]	25.4 [1.00]	22.9 [0.90]	24.1 [0.95]
E50KL598	12.7 [0.50] to 82.6 [3.25]	102.0 [4.00]	2.8 [0.11]	4.8 [0.19]	24.1 [0.95]
E50KL31	12.7 [0.50] to 95.2 [3.75]	—	—	—	—
E50KL443	41.3 [1.63] to 95.2 [3.75] <sup>2</sup>	38.1 [1.50]	7.4 [0.29]	6.6 [0.26]	8.1 [0.32]

#### Fork lever—Both rollers on one side

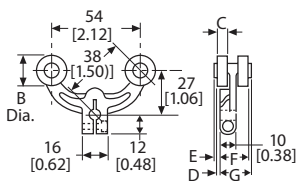
Approximate Dimensions in mm [in]



Item no.	A Lever Length <sup>1</sup>	B Roller Diameter	C Roller Width	D	E
E50KL545	38.1 [1.50]	17.5 [0.69]	6.4 [0.25]	2.0 [0.08]	3.6 [0.14]
E50KL204	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	4.1 [0.16]	5.1 [0.20]
E50KL544	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	4.1 [0.16]	5.1 [0.20]
E50KL543	38.1 [1.50]	19.0 [0.75]	25.4 [1.00]	21.3 [0.84]	22.4 [0.88]

#### Fork lever— one roller outside, one inside

Approximate dimensions in mm [in]



Item no.	A Lever Length <sup>1</sup>	B Roller Diameter	C Roller Width	D	E	F	G
E50KL542	38.1 [1.50]	17.5 [0.69]	6.4 [0.25]	2.0 [0.08]	3.6 [0.14]	16.3 [0.64]	17.8 [0.70]
E50KL203	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	4.1 [0.16]	5.1 [0.20]	18.5 [0.73]	19.6 [0.77]
E50KL541	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	4.1 [0.16]	5.1 [0.20]	18.5 [0.73]	19.6 [0.77]

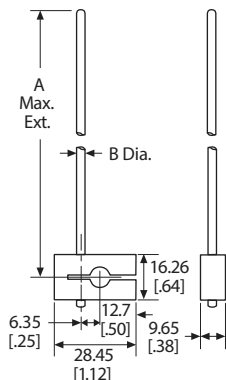
#### Notes

- <sup>1</sup> Length from the operating shaft axis to the roller axis (or to the tip for non-roller operators).
- <sup>2</sup> By reassembling lever, minimum length can be reduced another 12.7 mm [0.5 in].
- <sup>3</sup> High-grade stainless steel.

Limit Switches

Dimensions

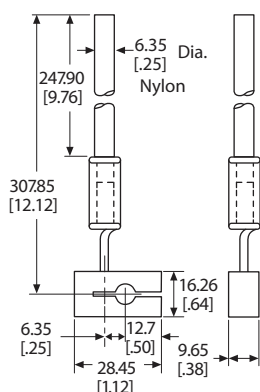
Rod type operators



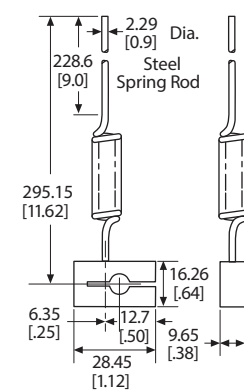
Adjustable rod

Item no.	A Rod Length <sup>1</sup>	B Rod Diameter
E50KL399	140.0 [5.50]	4.8 [0.19]
E50KL202		3.2 [0.12]
E50KL581	222.0 [8.75]	Rod size (square): 3.2 [0.12] x 3.2 [0.12]
E50KL220	229.0 [9.00]	4.8 [0.19]
E50KL226	305.0 [12.00]	3.2 [0.12]

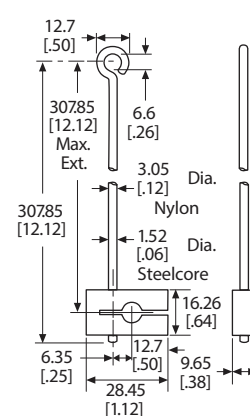
Spring rod—E50KL556



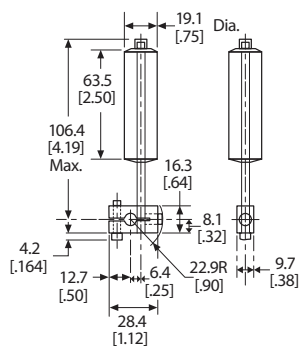
Spring rod—E50KL421



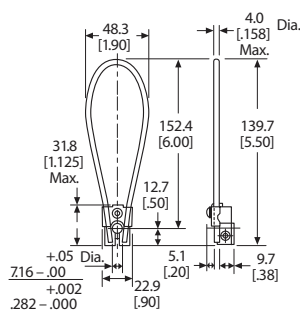
Adjustable wire



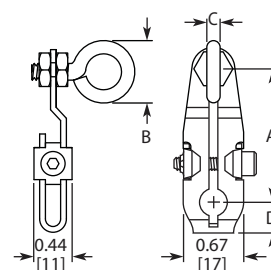
Adjustable wide roller lever



Nylatron loop—E50KL142



Eye bolt



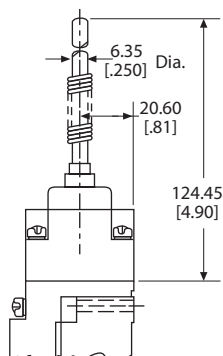
Notes

- Applies when lever is extended to the maximum dimension.
- Length from the operating shaft axis to tip.

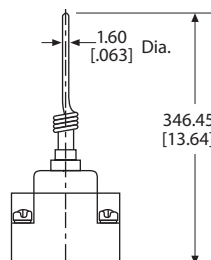
Catalog Number	A Rod Length <sup>2</sup>	B Rod Diameter	C Rod Width	D
E50KL33	38.1 [1.50]	4.8 [0.1875] Loop ID: 9.5 [0.375]	13.1 [0.52]	8.6 [0.34]

Wobble Type Operators

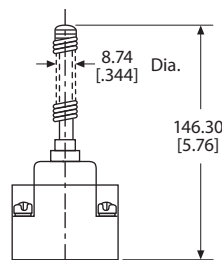
Nylon Rod



Stainless Steel Rod



Coil Spring



**E49 metal body compact limit switches**

**Eaton E49 compact metal limit switches**

- Rigid die cast switch housing
- Oil-tight, waterproof & dustproof construction
- High mechanical strength
- Snap action 1NO/1NC contact provides flexibility in design



Roller Lever



Top Push



Top Push Roller  
- E49M11CP1



Rod Lever



Adjustable  
Roller Lever



Wobble



Cat Whisker

Operating head type	Specifications			Force to operate contacts (maximum) (lb)	Minimum return force (lb)	Item no. Assembled units (Switch Body & Head), 1N.O./1N.C. Contacts
	Travel to operate contacts	Travel to reset contacts	Total travel			
Roller lever	20°	12°	50°	2.99	0.50	<b>E49M11AP1</b>
Top push	0.067 in (1.7mm)	0.04 in (1.0mm)	-	6.02	2.01	<b>E49M11BP1</b>
Top push roller - E49M11CP1	0.067 in (1.7 mm)	0.04 in (1.0 mm)	0.25 in (6.5 mm)	6.02	2.01	<b>E49M11CP1</b> <b>E49M11CP2*</b>
Rod lever	20°	12°	50°	0.31	0.06	<b>E49M11DP1</b>
Adjustable roller lever	20°	12°	50°	2.99	0.50	<b>E49M11UP1</b>
Wobble	1.10 in (28mm)	N/A	N/A	0.33	N/A	<b>E49M11VP1</b>
Cat whisker	1.10 in (28mm)	N/A	N/A	0.064	N/A	<b>E49M11XM1</b>

\* Includes 90° Roller.

## E49 metal body compact limit switches

### Eaton E49 mini metal limit switches

- Long life - rated for 10 million operations
- Pre-wired units with custom cable lengths available for high volume customers
- Fingerproof terminals protect against accidental contact
- Double-spring mechanism for contact reliability
- Grounding terminal included
- Captive screws on enclosure cover make wiring hassle-free
- SPDT double break

Operating head type	Specifications					Item no.
	Travel to operate contacts	Travel to reset contacts	Total travel	Force to operate contacts (g)	Minimum return force (g)	
Side rotary lever	20°	12°	70°	750	100	<b>E49G31AP3</b>
Adjustable side rotary lever	20°	12°	70°	750	100	<b>E49G31UP3</b>
Top pushbutton	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900	150	<b>E49G31BP3</b>
Top push roller	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900	150	<b>E49G31CP3</b>
Top push roller	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900	150	<b>E49G31C1P3*</b>
Adjustable rod lever	20°	12°	70°	750	100	<b>E49G31DP3</b>
Wobble stick (Nylon coil)	1.18 in (30 mm)	-	-	150	-	<b>E49G31NP3</b>
Wobble stick (metal coil)	1.18 in (30 mm)	-	-	150	-	<b>E49G31VP3</b>
Wobble stick (metal rod)	1.18 in (30 mm)	-	-	150	-	<b>E49G31MP3</b>
Wobble stick (whisker)	1.18 in (30 mm)	-	-	150	-	<b>E49G31XM3</b>

\* Includes 90° Roller.



Side Rotary Lever



Adjustable Side Rotary Lever



Top Pushbutton



Top Push Roller



Top Push Roller



Adjustable Rod Lever



Wobble Stick (Nylon Coil)



Wobble Stick (Metal Coil)



Wobble Stick (Metal Rod)



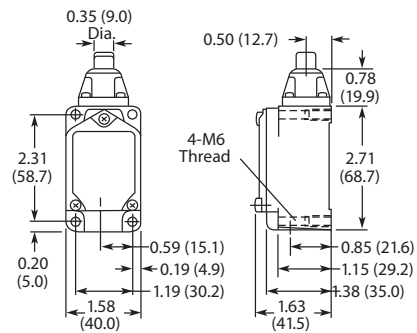
Wobble Stick (Whisker)



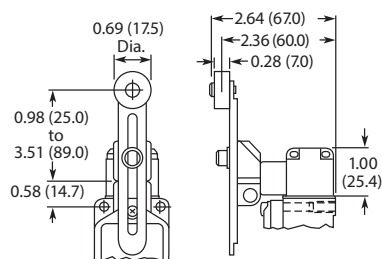
### Limit switches

#### Dimensions

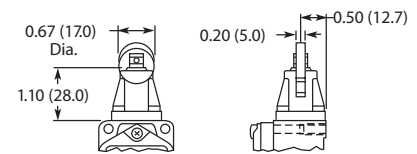
**Switch Body with E49M11BP1**



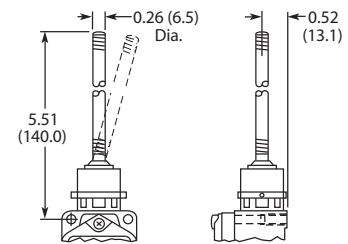
**E49M11UP1**



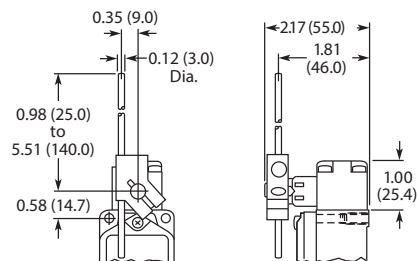
**E49M11CP1/E49M11CP2**



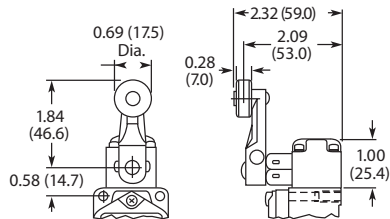
**E49M11VP1**



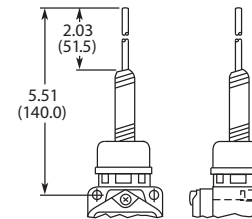
**E49M11DP1**



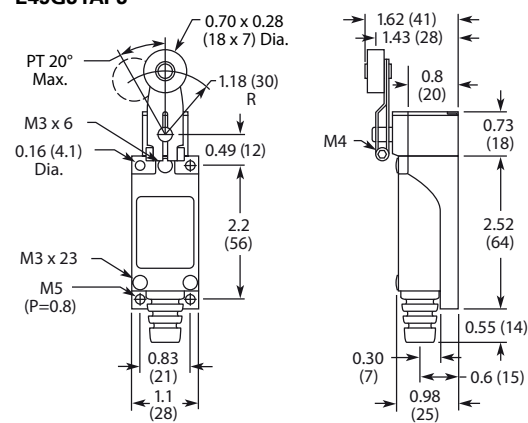
**E49M11AP1**



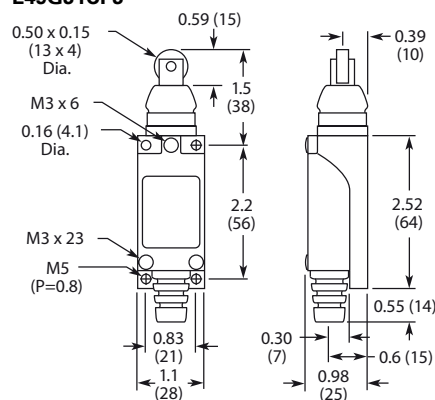
**E49M11XM1**



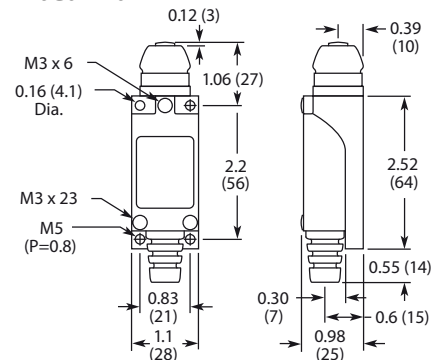
**E49G31AP3**



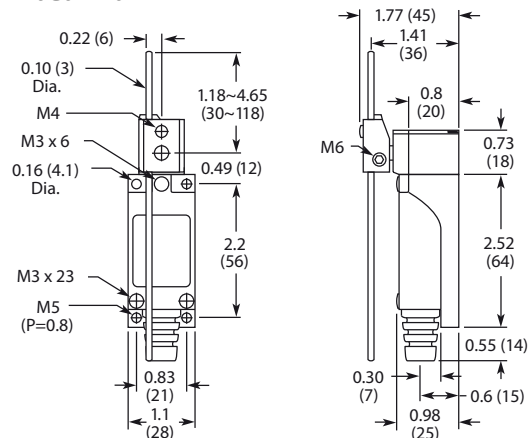
**E49G31CP3**



**E49G31BP3**



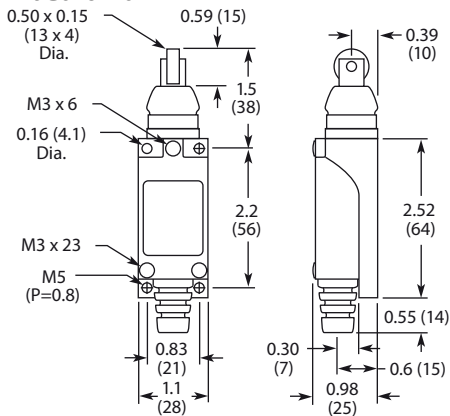
**E49G31DP3**



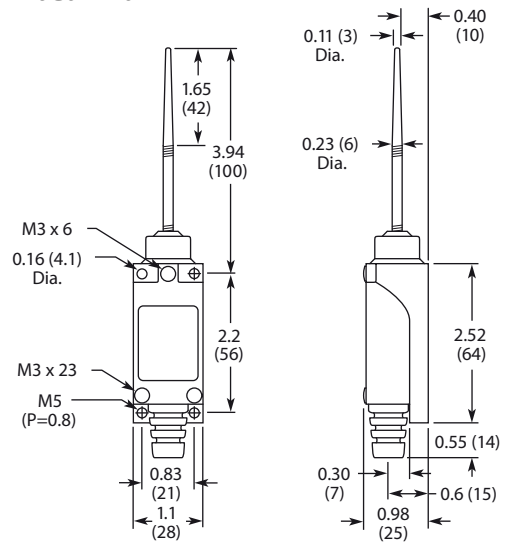
Limit switches

Dimensions

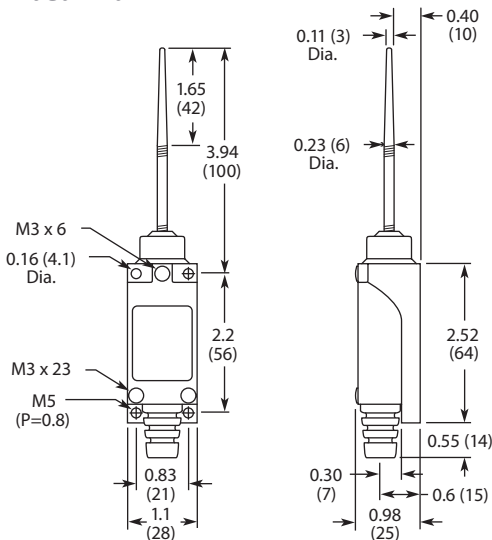
**E49G31C1P3**



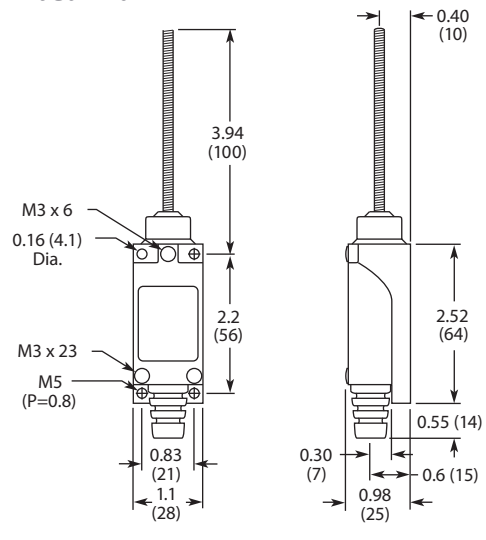
**E49G31MP3**



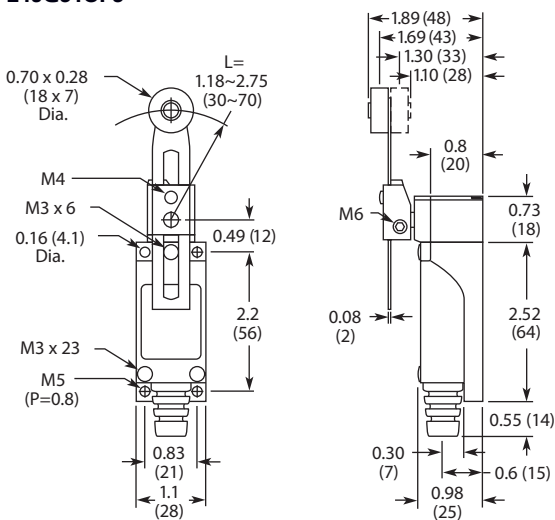
**E49G31NP3**



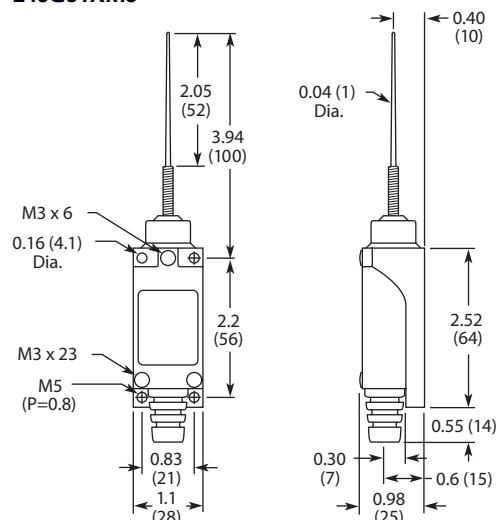
**E49G31VP3**



**E49G31UP3**



**E49G31XM3**



Global proximity sensors

Features

- The Global Proximity Line features solid performance and a basic feature set for reliable, cost-effective sensing
- Available in a variety of sizes to fit in all of your applications: 8 mm, 12 mm, 18 mm and 30 mm diameters
- DC sensors operate on 10–30 Vdc in two-wire and three-wire (NPN or PNP) configurations
- AC sensors operate on 20–250 Vac in two-wire configuration
- Switching frequency of 2 kHz for DC models
- Shielded and unshielded versions available
- Terminations include:  
2-meter cable  
Micro-connector  
Nano-connector
- DC units include short circuit protection

Two-wire sensors

Operating voltage	Sensing range	Shielding	Output type	Connection type	NO Output Item no.	NC Output Item no.
<b>12 mm Diameter</b>						
20–250 Vac	2 mm	Shielded		2-meter cable	<b>E57-12GS02-A</b>	<b>E57-12GS02-A1</b>
				3-pin micro AC connector	<b>E57-12GS02-AAB</b> ☉	<b>E57-12GS02-A1AB</b> ☉
	4 mm	Unshielded		2-meter cable	<b>E57-12GU04-A</b>	<b>E57-12GU04-A1</b>
				3-pin micro AC connector	<b>E57-12GU04-AAB</b> ☉	<b>E57-12GU04-A1AB</b> ☉
10–30 Vdc	2 mm	Shielded	NPN/PNP	2-meter cable	<b>E57-12GS02-D</b>	<b>E57-12GS02-D1</b>
				4-pin micro DC connector	<b>E57-12GS02-DDB</b> ☉	<b>E57-12GS02-D1DB</b> ☉
	4 mm	Unshielded	NPN/PNP	2-meter cable	<b>E57-12GU04-D</b>	<b>E57-12GU04-D1</b>
				4-pin micro DC connector	<b>E57-12GU04-DDB</b> ☉	<b>E57-12GU04-D1DB</b> ☉
	8 mm (extended range)		NPN/PNP	2-meter cable	<b>E57-12GE08-D</b>	<b>E57-12GE08-D1</b>
				4-pin micro DC connector	<b>E57-12GE08-DDB</b> ☉	<b>E57-12GE08-D1DB</b> ☉
<b>18 mm Diameter</b>						
20–250 Vac	5 mm	Shielded		2-meter cable	<b>E57-18GS05-A</b>	<b>E57-18GS05-A1</b>
				3-pin micro AC connector	<b>E57-18GS05-AAB</b> ☉	<b>E57-18GS05-A1AB</b> ☉
	8 mm	Unshielded		2-meter cable	<b>E57-18GU08-A</b>	<b>E57-18GU08-A1</b>
				3-pin micro AC connector	<b>E57-18GU08-AAB</b> ☉	<b>E57-18GU08-A1AB</b> ☉
10–30 Vdc	16 mm			3-pin micro AC connector	<b>E57-18GE16-AAB</b> ☉	<b>E57-18GE16-A1AB</b> ☉
				2-meter cable	<b>E57-18GS05-D</b>	<b>E57-18GS05-D1</b>
	5 mm	Shielded	NPN/PNP	4-pin micro DC connector	<b>E57-18GS05-DDB</b> ☉	<b>E57-18GS05-D1DB</b> ☉
				2-meter cable	<b>E57-18GU08-D</b>	<b>E57-18GU08-D1</b>
	8 mm	Unshielded	NPN/PNP	4-pin micro DC connector	<b>E57-18GU08-DDB</b> ☉	<b>E57-18GU08-D1DB</b> ☉
				2-meter cable	<b>E57-18GE16-D</b>	<b>E57-18GE16-D1</b>
16 mm (extended range)		NPN/PNP	4-pin micro DC connector	<b>E57-18GE16-DDB</b> ☉	<b>E57-18GE16-D1DB</b> ☉	
			<b>30 mm Diameter</b>			
20–250 Vac	10 mm	Shielded		2-meter cable	<b>E57-30GS10-A</b>	<b>E57-30GS10-A1</b>
				3-pin micro AC connector	<b>E57-30GS10-AAB</b> ☉	<b>E57-30GS10-A1AB</b> ☉
	15 mm	Unshielded		2-meter cable	<b>E57-30GU15-A</b>	<b>E57-30GU15-A1</b>
				3-pin micro AC connector	<b>E57-30GU15-AAB</b> ☉	<b>E57-30GU15-A1AB</b> ☉
10–30 Vdc	10 mm	Shielded	NPN/PNP	2-meter cable	<b>E57-30GS10-D</b>	<b>E57-30GS10-D1</b>
				4-pin micro DC connector	<b>E57-30GS10-DDB</b> ☉	<b>E57-30GS10-D1DB</b> ☉
	15 mm	Unshielded	NPN/PNP	2-meter cable	<b>E57-30GU15-D</b>	<b>E57-30GU15-D1</b>
				4-pin micro DC connector	<b>E57-30GU15-DDB</b> ☉	<b>E57-30GU15-D1DB</b> ☉
	25 mm (extended range)		NPN/PNP	2-meter cable	<b>E57-30GE25-D</b>	<b>E57-30GE25-D1</b>
				4-pin micro DC connector	<b>E57-30GE25-DDB</b> ☉	<b>E57-30GE25-D1DB</b> ☉



12mm diameter



18mm diameter



30mm diameter

☉☉ See listing of compatible connector cables

Global proximity sensors

Three-wire sensors

Operating voltage	Sensing range	Shielding	Output type	Connection type	NO Output Item no.	NC Output Item no.
<b>8 mm Diameter</b>						
10–30 Vdc	1 mm	Shielded	NPN	2-meter cable	<b>E57-08GS01-C</b>	<b>E57-08GS01-C1</b>
				3-pin nano-connector	<b>E57-08GS01-CNB</b> ☉	<b>E57-08GS01-C1NB</b> ☉
				4-pin micro DC connector	<b>E57-08GS01-CDB</b> ☉	<b>E57-08GS01-C1DB</b> ☉
			PNP	2-meter cable	<b>E57-08GS01-G</b>	<b>E57-08GS01-G1</b>
				3-pin nano-connector	<b>E57-08GS01-GNB</b> ☉	<b>E57-08GS01-G1NB</b> ☉
				4-pin micro DC connector	<b>E57-08GS01-GDB</b> ☉	<b>E57-08GS01-G1DB</b> ☉
	3 mm (extended range)	Shielded	NPN	2-meter cable	<b>E57-08GE03-C</b>	<b>E57-08GE03-C1</b>
				3-pin nano-connector	<b>E57-08GE03-CNB</b> ☉	<b>E57-08GE03-C1NB</b> ☉
				4-pin micro DC connector	<b>E57-08GE03-CDB</b> ☉	<b>E57-08GE03-C1DB</b> ☉
			PNP	2-meter cable	<b>E57-08GE03-G</b>	<b>E57-08GE03-G1</b>
				3-pin nano-connector	<b>E57-08GE03-GNB</b> ☉	<b>E57-08GE03-G1NB</b> ☉
				4-pin micro DC connector	<b>E57-08GE03-GDB</b> ☉	<b>E57-08GE03-G1DB</b> ☉
	2 mm	Unshielded	NPN	2-meter cable	<b>E57-08GU02-C</b>	<b>E57-08GU02-C1</b>
				3-pin nano-connector	<b>E57-08GU02-CNB</b> ☉	<b>E57-08GU02-C1NB</b> ☉
				4-pin micro DC connector	<b>E57-08GU02-CDB</b> ☉	<b>E57-08GU02-C1DB</b> ☉
			PNP	2-meter cable	<b>E57-08GU02-G</b>	<b>E57-08GU02-G1</b>
				3-pin nano-connector	<b>E57-08GU02-GNB</b> ☉	<b>E57-08GU02-G1NB</b> ☉
				4-pin micro DC connector	<b>E57-08GU02-GDB</b> ☉	<b>E57-08GU02-G1DB</b> ☉
6 mm (extended range)	Unshielded	NPN	2-meter cable	<b>E57-08GE06-C</b>	<b>E57-08GE06-C1</b>	
			4-pin micro DC connector	<b>E57-08GE06-CDB</b> ☉	<b>E57-08GE06-C1DB</b> ☉	
		PNP	2-meter cable	<b>E57-08GE06-G</b>	<b>E57-08GE06-G1</b>	
			4-pin micro DC connector	<b>E57-08GE06-GDB</b> ☉	<b>E57-08GE06-G1DB</b> ☉	
<b>12 mm Diameter</b>						
10–30 Vdc	2 mm	Shielded	NPN	2-meter cable	<b>E57-12GS02-C</b>	<b>E57-12GS02-C1</b>
				4-pin micro DC connector	<b>E57-12GS02-CDB</b> ☉	<b>E57-12GS02-C1DB</b> ☉
				2-meter cable	<b>E57-12GS02-G</b>	<b>E57-12GS02-G1</b>
			PNP	4-pin micro DC connector	<b>E57-12GS02-GDB</b> ☉	<b>E57-12GS02-G1DB</b> ☉
				2-meter cable	<b>E57-12GE05-C</b>	<b>E57-12GE05-C1</b>
				4-pin micro DC connector	<b>E57-12GE05-CDB</b> ☉	<b>E57-12GE05-C1DB</b> ☉
	5 mm (extended range)	Shielded	NPN	2-meter cable	<b>E57-12GE05-G</b>	<b>E57-12GE05-G1</b>
				4-pin micro DC connector	<b>E57-12GE05-GDB</b> ☉	<b>E57-12GE05-G1DB</b> ☉
				2-meter cable	<b>E57-12GU04-C</b>	<b>E57-12GU04-C1</b>
			PNP	4-pin micro DC connector	<b>E57-12GU04-CDB</b> ☉	<b>E57-12GU04-C1DB</b> ☉
				2-meter cable	<b>E57-12GU04-G</b>	<b>E57-12GU04-G1</b>
				4-pin micro DC connector	<b>E57-12GU04-GDB</b> ☉	<b>E57-12GU04-G1DB</b> ☉
	4 mm	Unshielded	NPN	2-meter cable	<b>E57-12GE10-C</b>	<b>E57-12GE10-C1</b>
				4-pin micro DC connector	<b>E57-12GE10-CDB</b> ☉	<b>E57-12GE10-C1DB</b> ☉
				2-meter cable	<b>E57-12GE10-G</b>	<b>E57-12GE10-G1</b>
			PNP	4-pin micro DC connector	<b>E57-12GE10-GDB</b> ☉	<b>E57-12GE10-G1DB</b> ☉
				2-meter cable	<b>E57-12GS02-C</b>	<b>E57-12GS02-C1</b>
				4-pin micro DC connector	<b>E57-12GS02-CDB</b> ☉	<b>E57-12GS02-C1DB</b> ☉



8mm diameter



12mm diameter

☉☉ See listing of compatible connector cables

Global proximity sensors

Three-wire sensors



18mm diameter

Operating voltage	Sensing range	Shielding	Output type	Connection type	NO Output Item no.	NC Output Item no.	
<b>18 mm Diameter</b>							
10–30 Vdc	5 mm	Shielded	NPN	2-meter cable	<b>E57-18GS05-C</b>	<b>E57-18GS05-C1</b>	
				4-pin micro DC connector	<b>E57-18GS05-CDB</b> ☉	<b>E57-18GS05-C1DB</b> ☉	
	PNP		2-meter cable	<b>E57-18GS05-G</b>	<b>E57-18GS05-G1</b>		
			4-pin micro DC connector	<b>E57-18GS05-GDB</b> ☉	<b>E57-18GS05-G1DB</b> ☉		
	8 mm (extended range)		Shielded	NPN	2-meter cable	<b>E57-18GE08-C</b>	<b>E57-18GE08-C1</b>
					4-pin micro DC connector	<b>E57-18GE08-CDB</b> ☉	<b>E57-18GE08-C1DB</b> ☉
	PNP	2-meter cable		<b>E57-18GE08-G</b>	<b>E57-18GE08-G1</b>		
		4-pin micro DC connector		<b>E57-18GE08-GDB</b> ☉	<b>E57-18GE08-G1DB</b> ☉		
	8 mm	Unshielded		NPN	2-meter cable	<b>E57-18GU08-C</b>	<b>E57-18GU08-C1</b>
					4-pin micro DC connector	<b>E57-18GU08-CDB</b> ☉	<b>E57-18GU08-C1DB</b> ☉
	PNP		2-meter cable	<b>E57-18GU08-G</b>	<b>E57-18GU08-G1</b>		
			4-pin micro DC connector	<b>E57-18GU08-GDB</b> ☉	<b>E57-18GU08-G1DB</b> ☉		
18 mm (extended range)	Unshielded		NPN	2-meter cable	<b>E57-18GE18-C</b>	<b>E57-18GE18-C1</b>	
				4-pin micro DC connector	<b>E57-18GE18-CDB</b> ☉	<b>E57-18GE18-C1DB</b> ☉	
PNP		2-meter cable	<b>E57-18GE18-G</b>	<b>E57-18GE18-G1</b>			
		4-pin micro DC connector	<b>E57-18GE18-GDB</b> ☉	<b>E57-18GE18-G1DB</b> ☉			






30mm diameter

<b>30 mm Diameter</b>						
10–30 Vdc	10 mm	Shielded	NPN	2-meter cable	<b>E57-30GS10-C</b>	<b>E57-30GS10-C1</b>
				4-pin micro DC connector	<b>E57-30GS10-CDB</b> ☉	<b>E57-30GS10-C1DB</b> ☉
	PNP		2-meter cable	<b>E57-30GS10-G</b>	<b>E57-30GS10-G1</b>	
			5-meter Cable	<b>E57-30GS10-G5</b>	–	
			Shielded	4-pin micro DC connector	<b>E57-30GS10-GDB</b> ☉	<b>E57-30GS10-G1DB</b> ☉
				NPN	2-meter cable	<b>E57-30GE15-C</b>
		4-pin micro DC connector		<b>E57-30GE15-CDB</b> ☉	<b>E57-30GE15-C1DB</b> ☉	
	PNP	2-meter cable		<b>E57-30GE15-G</b>	<b>E57-30GE15-G1</b>	
		4-pin micro DC connector		<b>E57-30GE15-GDB</b> ☉	<b>E57-30GE15-G1DB</b> ☉	
	15 mm	Unshielded		NPN	2-meter cable	<b>E57-30GU15-C</b>
				4-pin micro DC connector	<b>E57-30GU15-CDB</b> ☉	<b>E57-30GU15-C1DB</b> ☉
	PNP		2-meter cable	<b>E57-30GU15-G</b>	<b>E57-30GU15-G1</b>	
4-pin micro DC connector			<b>E57-30GU15-GDB</b> ☉	<b>E57-30GU15-G1DB</b> ☉		
29 mm (extended range)	Unshielded		NPN	2-meter cable	<b>E57-30GE29-C</b>	<b>E57-30GE29-C1</b>
				4-pin micro DC connector	<b>E57-30GE29-CDB</b> ☉	<b>E57-30GE29-C1DB</b> ☉
PNP		2-meter cable	<b>E57-30GE29-G</b>	<b>E57-30GE29-G1</b>		
		4-pin micro DC connector	<b>E57-30GE29-GDB</b> ☉	<b>E57-30GE29-G1DB</b> ☉		

☉ See listing of compatible connector cables

## Global proximity sensors

### Compatible connector cables

Voltage style	Number of pins	Gauge	Length	Pin configuration/ Wire colors (Face view female shown)	PVC jacket Item no.	PUR jacket Item no.
<b>Micro-style, straight female</b>						
AC	3-pin, 3-wire	22 AWG	6.0 ft (2m)	 1-Green 2-Red/Black 3-Red/White	<b>CSAS3F3CY2202</b>	<b>CSAS3F3RY2202</b>
DC	4-pin, 3-wire	22 AWG	6.0 ft (2m)	 1-Brown 2-No Wire 3-Blue 4-Black	<b>CSDS4A3CY2202</b>	<b>CSDS4A3RY2202</b>
<b>Nano-style, straight female</b>						
DC	3-pin	24 AWG	6.0 ft (2m)	 1-Brown 3-Blue 4-Black	<b>CSNS3A3CY2402</b>	<b>CSNS3A3RY2402</b>



Micro-style

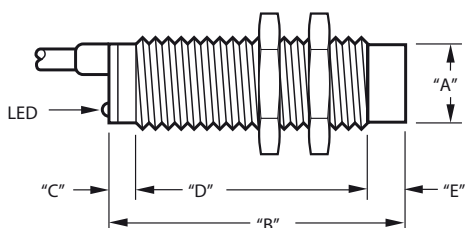


Nano-style

## Dimensions

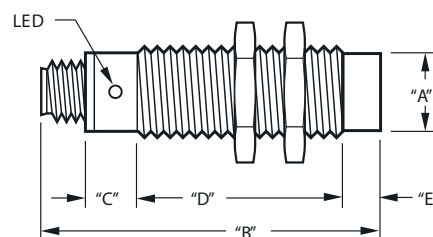
### Two-wire sensors

#### Cable models



Catalog Number	Operating Voltage	A	B	C	D	E
E57-12GS02-A	20-250 Vac	M12x1	65	15	50	—
E57-12GU04-A		M12x1	60	15	42	8
E57-18GS05-A		M18x1	80	20	60	—
E57-18GU08-A		M18x1	80	20	48	12
E57-30GS10-A		M30x1.5	80	20	60	—
E57-30GU15-A		M30x1.5	80	20	45	15
E57-12GS02-D	10-30 Vdc	M12x1	50	—	50	—
E57-12GU04-D		M12x1	50	—	42	8
E57-12GE08-D		M12x1	50	—	42	8
E57-12GE08-D1		M12x1	50	—	42	8
E57-18GS05-D		M18x1	55	5	50	—
E57-18GU08-D		M18x1	55	5	38	12
E57-18GE16-D		M18x1	55	5	38	12
E57-18GE16-D1		M18x1	55	5	38	12
E57-30GS10-D		M30x1.5	55	5	50	—
E57-30GU15-D		M30x1.5	55	5	35	15
E57-30GE25-D		M30x1.5	55	5	35	15
E57-30GE25-D1		M30x1.5	55	5	35	15

#### Connector modules



Catalog Number <sup>1</sup>	Operating Voltage	A	B	C	D	E
E57-12GS02-AAB	20-250 Vac	M12x1	68	16	42	—
E57-12GU04-AAB		M12x1	68	16	34	8
E57-18GS05-AAB		M18x1	91	20	60	—
E57-18GU08-AAB		M18x1	91	20	48	12
E57-18GE16-AAB		M18x1	79.2	15	37	11.5
E57-30GS10-AAB		M30x1.5	80	20	60	—
E57-30GU15-AAB		M30x1.5	91	20	45	15
E57-12GS02-DDB	10-30 Vdc	M12x1	69	16	42	—
E57-12GU04-DDB		M12x1	68	16	34	8
E57-12GE08-DDB		M12x1	68	10	50	8
E57-12GE08-D1DB		M12x1	68	10	50	8
E57-18GS05-DDB		M18x1	76	15	61	—
E57-18GU08-DDB		M18x1	80	15	49	12
E57-18GE16-DDB		M18x1	79	15	52	12
E57-30GS10-DDB		M30x1.5	75	15	60	—
E57-30GU15-DDB		M30x1.5	79	15	45	15
E57-30GE25-DDB		M30x1.5	78	15	48	15

Note: Normally closed models are dimensionally identical to equivalent normally open models

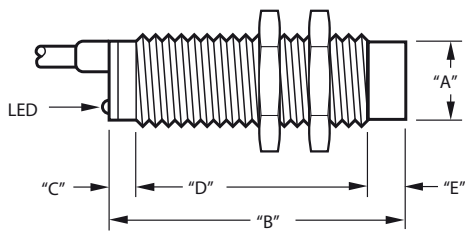
# Power control Automation

## Global proximity sensors

### Dimensions

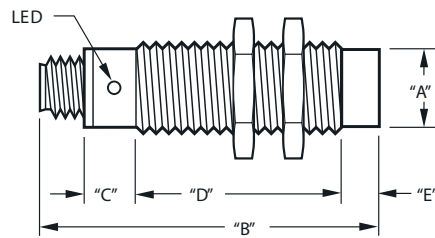
#### Three-wire sensors

#### Cable modules



Catalog Number	Operating Voltage	A	B	C	D	E
E57-08GE03-C	10–30 Vdc	M8x1	46	6	40	—
E57-08GE03-G		M8x1	46	6	40	—
E57-08GE06-C		M8x1	45	—	41	4
E57-08GE06-G		M8x1	45	—	41	4
E57-08GS01-C		M8x1	45	—	45	—
E57-08GS01-G		M8x1	45	—	45	—
E57-08GU02-C		M8x1	45	—	41	4
E57-08GU02-G		M8x1	45	—	41	4
E57-12GE05-C		M12x1	51	2	49	—
E57-12GE05-G		M12x1	51	2	49	—
E57-12GE10-C		M12x1	50.5	1.7	41	7.8
E57-12GE10-G		M12x1	50.5	1.7	41	7.8
E57-12GS02-C		M12x1	50	—	50	—
E57-12GS02-G		M12x1	50	—	50	—
E57-12GU04-C		M12x1	50	—	42	8
E57-12GU04-G		M12x1	50	—	42	8
E57-18GE08-C		M18x1	67.5	2.5	65	—
E57-18GE08-G		M18x1	65.5	2.5	65	—
E57-18GE18-C		M18x1	66	2.5	52	11.5
E57-18GE18-G		M18x1	66	2.5	52	11.5
E57-18GS05-C		M18x1	55	5	50	—
E57-18GS05-G		M18x1	55	5	50	—
E57-18GU08-C		M18x1	55	5	38	12
E57-18GU08-G		M18x1	55	5	38	12
E57-30GE15-C		M30x1.5	69	5	64	—
E57-30GE15-G		M30x1.5	69	5	64	—
E57-30GE29-C		M30x1.5	83	5	64	15
E57-30GE29-G		M30x1.5	83	5	64	15
E57-30GS10-C		M30x1.5	55	5	50	—
E57-30GS10-G		M30x1.5	55	5	50	—
E57-30GU15-C		M30x1.5	55	5	35	15
E57-30GU15-G		M30x1.5	55	5	35	15

#### Connector modules



Catalog Number <sup>1</sup>	Operating Voltage	A	B	C	D	E
E57-08GE03-CDB	10–30 Vdc	M8x1	71	26	36	—
E57-08GE03-CNB		M8x1	61	19	42	—
E57-08GE03-GDB		M8x1	71	26	36	—
E57-08GE03-GNB		M8x1	61	19	42	—
E57-08GE06-CDB		M8x1	70	31	35	4
E57-08GE06-GDB		M8x1	70	31	35	4
E57-08GS01-CDB		M8x1	70	21	49	—
E57-08GS01-CNB		M8x1	60	20	40	—
E57-08GS01-GDB		M8x1	70	21	49	—
E57-08GS01-GNB		M8x1	60	20	40	—
E57-08GU02-CDB		M8x1	70	21	45	4
E57-08GU02-CNB		M8x1	60	20	36	4
E57-08GU02-GDB		M8x1	70	21	45	4
E57-08GU02-GNB		M8x1	60	20	36	4
E57-12GE05-CDB		M12x1	69	24	45	—
E57-12GE05-GDB		M12x1	69	24	45	—
E57-12GE10-CDB		M12x1	68.5	10.3	36	7.8
E57-12GE10-GDB		M12x1	68.5	10.3	36	7.8
E57-12GS02-CDB		M12x1	68	16	52	—
E57-12GS02-GDB		M12x1	68	16	52	—
E57-12GU04-CDB		M12x1	68	20	31	8
E57-12GU04-GDB		M12x1	68	20	31	8
E57-18GE08-CDB		M18x1	79	30	49	—
E57-18GE08-GDB		M18x1	79	30	49	—
E57-18GE18-CDB		M18x1	79.2	15	37	11.5
E57-18GE18-GDB		M18x1	79.2	15	37	11.5
E57-18GS05-CDB		M18x1	76	15	61	—
E57-18GS05-GDB		M18x1	76	15	61	—
E57-18GU08-CDB		M18x1	76	15	49	12
E57-18GU08-GDB		M18x1	80	15	49	12
E57-30GE29-CDB		M30x1.5	79	30	34	15
E57-30GE29-GDB		M30x1.5	79	30	34	15
E57-30GS10-CDB		M30x1.5	79	15	60	—
E57-30GS10-GDB		M30x1.5	75	15	60	—
E57-30GU15-CDB		M30x1.5	75	15	45	15
E57-30GU15-GDB		M30x1.5	75	15	45	15

Note: Normally closed models are dimensionally identical to equivalent normally open models



## Photoelectric sensors

### Eaton E58 harsh duty series photoelectric sensors

- E58 Sensors are available in 18 mm & 30 mm diameters
- Highly refined optics for long sensing ranges & to see through high levels of contamination — unmatched optical performance
- Perfect Prox® technology provides exceptional background rejection & extremely high excess gain
- Resistant to the wide range of chemicals used in the automotive, food processing & forest products industries
- Suitable for high temperature, high pressure washdown (1200 psi)
- Mechanical Viton seals hold up to extreme temperature variations
- Visible sensing beam on all models lets you see where the beam is aimed for quick setup & alignment
- Output status indicator is the brightest available & is visible from any angle & in any lighting condition
- The industry's only background rejection sensors with a 2-wire circuit design
- Models available with both AC & DC operation in a single unit
- 4-wire DC sensors offer dual NPN & PNP outputs



### 3-Wire & 4-Wire sensors

Model selection	Operating voltage	Sensing range	Field of view	Through beam part	Item no. Light Operate	Item no. Dark Operate
30 mm Diameter	20 – 132V AC	250 m	830 mm diameter	Source	<b>E58-30TS250-GA</b>	<b>E58-30TS250-GA</b>
Through-Beam	or 15 – 30V DC	-	at 7.6 metres	Detector	<b>E58-30TD250-GL</b>	<b>E58-30TD250-GD</b>
30 mm Diameter Reflex	20 – 132V AC or 15 – 30V DC	18 m	150 mm diameter at 6 metres	-	<b>E58-30RS18-GL*</b>	<b>E58-30RS18-GD*</b>
30 mm Diameter Polarized Reflex	20 – 132V AC or 15 – 30V DC	10 m	150 mm diameter at 6 metres	-	<b>E58-30RP10-GL*</b>	<b>E58-30RP10-GD*</b>

\* Retroreflector not included.  
Connection type: 2 metre Cable

### 2-Wire sensors

Model selection	Operating voltage	Sensing range	Field of view	Through beam part	Item no. Light Operate	Item no. Dark Operate
18 mm Diameter Perfect Prox®	90 – 132V AC or 18 – 50V DC	50 mm	6 mm diameter at 50 mm	-	<b>E58-18DP50-EL</b>	<b>E58-18DP50-ED</b>
	90 – 132V AC or 18 – 50V DC	100 mm	10 mm diameter at 100 mm	-	<b>E58-18DP100-EL</b>	<b>E58-18DP100-ED</b>
30 mm Diameter Perfect Prox®	90 – 132V AC or 18 – 50V DC	150 mm	19 mm diameter at 150 mm	-	<b>E58-30DP150-EL</b>	<b>E58-30DP150-ED</b>
	90 – 132V AC or 18 – 50V DC	280 mm	26 mm diameter at 280 mm	-	<b>E58-30DPS280-EL</b>	<b>E58-30DPS280-ED</b>

Connection type: 2 metre Cable

### 3-Wire & 4-Wire sensors

Model selection	Operating voltage	Sensing range	Field of view	Through beam part	Item no. Light Operate	Item no. Dark Operate
18 mm Diameter Perfect Prox®	10 – 30V DC	50 mm	6 mm diameter at 50 mm	-	<b>E58-18DP50-HL</b>	<b>E58-18DP50-HD</b>
	10 – 30V DC	100 mm	10 mm diameter at 100 mm	-	<b>E58-18DP100-HL</b>	<b>E58-18DP100-HD</b>
30 mm Diameter Perfect Prox®	20 – 132V AC or 15 – 30V DC	150 mm	19 mm diameter at 150 mm	-	<b>E58-30DP150-GL</b>	<b>E58-30DP150-GD</b>
	20 – 132V AC or 15 – 30V DC	280 mm	26 mm diameter at 280 mm	-	<b>E58-30DPS280-GL</b>	<b>E58-30DPS280-GD</b>

Connection type: 2 metre Cable

## Photoelectric sensors

### Nano view series sensors

- A Complete Family of Solutions—Models include an 8.2 ft (2.5m) polarized reflex, a 13 in (35 cm) diffuse reflective, a 4 in (10 cm) fixed-focus diffuse, a 20 ft (6m) thru-beam; and a 2.6 ft (80 cm) clear object detector for sensing plastic bottles, molds, cartons and films
- Small Size—At less than 1.5 in long and half an in deep, NanoView can fit into the smallest of spaces
- Fixed Focus Diffuse Models—Perfect for sensing very small targets at a 4-in focal point. A visible red LED beam makes it easy to set up
- Clear Object Detection Models—Ideal for sensing plastic bottles, molds, cartons, films and glass objects



Thru-Beam



Polarized Reflex



Diffuse Reflective



Fixed Focus Diffuse Reflective



Clear Object Detector

Voltage range	Sensing mode	Sensing range	Output type	Connection type	Item no.
<b>Thru-beam</b>					
10–30Vdc	Thru-beam detector	19 ft (6m)	NPN, light operate or dark operate (selectable)	6 ft cable	<b>E71-TBRN-CA</b>
				4-pin nano-connector ①	<b>E71-TBRN-M8</b>
	Thru-beam source	19 ft (6m)	PNP, light operate or dark operate (selectable)	6ftcable	<b>E71-TBRP-CA</b>
				4-pin nano-connector ①	<b>E71-TBRP-M8</b>
Narrow beam Thru-beam source	4.9ft(1.5m )		6ftcable	<b>E71-TBS-CA</b>	
			4-pin nano-connector ①	<b>E71-TBS-M8</b>	
10–30Vdc	Polarized reflex	8.2 ft (2.5m)	NPN, light operate or dark operate (selectable)	6 ft cable	<b>E71-PRN-CA</b>
				4-pin nano-connector ①	<b>E71-PRN-M8</b>
			PNP, light operate or dark operate (selectable)	6 ft cable	<b>E71-PRP-CA</b>
				4-pin nano-connector ①	<b>E71-PRP-M8</b>
<b>Diffuse reflective</b>					
10–30Vdc	Diffuse reflective	13.8 in (35 cm)	NPN, light operate or dark operate (selectable)	6 ft cable	<b>E71-SDN-CA</b>
				4-pin nano-connector ①	<b>E71-SDN-M8</b>
			PNP, light operate or dark operate (selectable)	6 ft cable	<b>E71-SDP-CA</b>
				4-pin nano-connector ①	<b>E71-SDP-M8</b>
<b>Fixed focus diffuse reflective</b>					
10–30Vdc	Fixed-focus Diffuse reflective	3.9 in (10 cm) focal point	NPN, light operate or dark operate (selectable)	6 ft cable	<b>E71-FFDN-CA</b>
				4-pin nano-connector ①	<b>E71-FFDN-M8</b>
			PNP, light operate or dark operate (selectable)	6 ft cable	<b>E71-FFDP-CA</b>
				4-pin nano-connector ①	<b>E71-FFDP-M8</b>
<b>Clear object detector</b>					
10–30Vdc	Clear object detector	31.5 in (80 cm)	NPN, light operate or dark operate (selectable)	6 ft cable	<b>E71-CON-CA</b>
				4-pin nano-connector ①	<b>E71-CON-M8</b>
			PNP, light operate or dark operate (selectable)	6 ft cable	<b>E71-COP-CA</b>
				4-pin nano-connector ①	<b>E71-COP-M8</b>

① for compatible connector cables, refer to the following page

Photoelectric sensors

Standard cables—Nano

Voltage style	Number of pins	Gauge	Length	Pin configuration/ Wire colors (Face view female shown)	PVC yellow jacket Item no.
<b>Nano-connector cable, straight female</b>					
DC	4-pin, 4-wire	24 AWG	6.0 ft (2m)	1-Brown	<b>CSNS4A4CY2402</b>
			16.4 ft (5m)	2-White	<b>CSNS4A4CY2405</b>
			32.8 ft (10m)	3-Blue 4-Black	<b>CSNS4A4CY2410</b>
<b>Nano-connector cable, right angle female</b>					
DC	4-pin, 4-wire	24 AWG	6.0 ft (2m)	1-Brown	<b>CSNR4A4CY2402</b>
			16.4 ft (5m)	2-White	<b>CSNR4A4CY2405</b>
			32.8 ft (10m)	3-Blue 4-Black	<b>CSNR4A4CY2410</b>

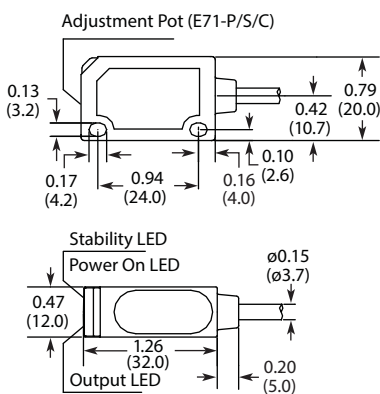


Accessories

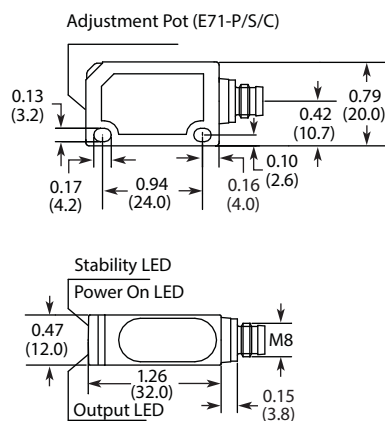
Description	Item no.
<b>Mounting bracket</b>	
L-shaped mounting bracket for NanoView sensors	<b>E71-MTB1</b>

Dimensions

Cable Models

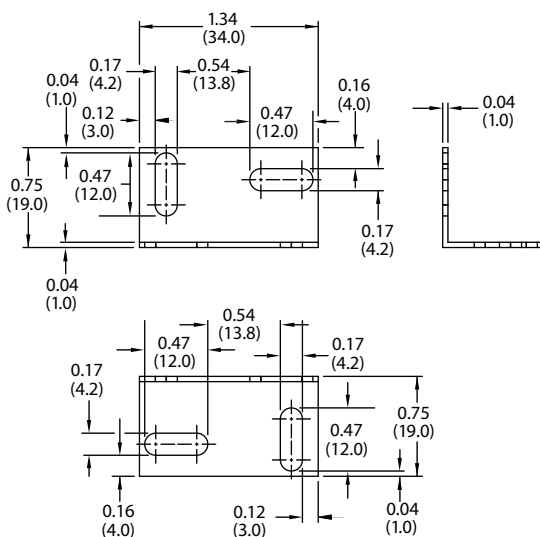


Nano-Connector Models



Accessories

E71-MTB1—Mounting Bracket





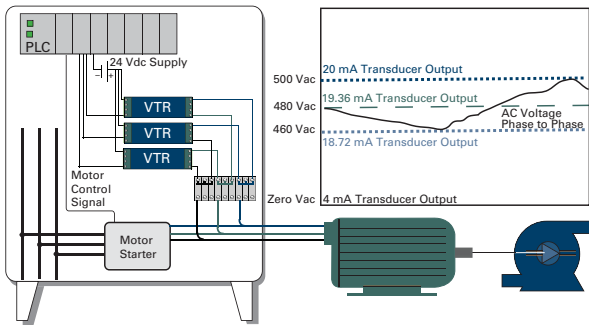
**VoltageWatch EVT range**

Eaton’s VoltageWatch™ sensor is a high-performance, true RMS sensor for sensing voltage in single- and threephase installations. Applicable on nominal circuits of 120V, 240V and 480V, this voltage sensor provides a fully isolated analog output proportional to rated nominal voltage in both sinusoidal and non-sinusoidal (variable frequency) situations. It is housed in a slim, compact, easy-to-install DIN rail mount enclosure.

Ideal for situations where power quality is of interest or concern, the VoltageWatch sensor facilitates monitoring of supply voltage levels, identifying undervoltage or overvoltage conditions, and helping to protect critical motors and electronics.

Designed with an industry standard 4–20 mA output, VoltageWatch is easily coupled to a data logger, panel meter or PLC to enable basic trending of operational status of low voltage circuits up to real-time monitoring and reporting of supply voltage levels.

**Example application - Phase loop**

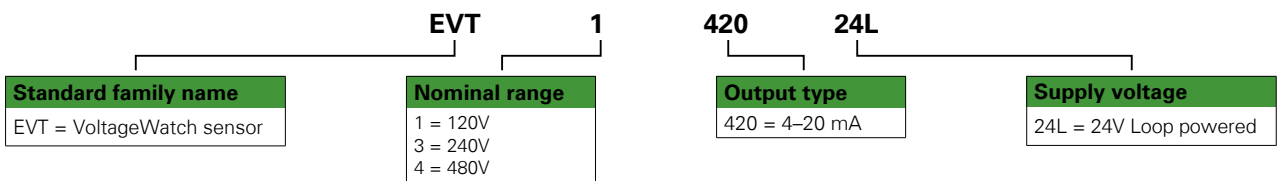


**Application description  
true RMS voltage monitoring**

- Detect below normal or “brown out” voltage conditions; protect against possible motor overheating
- Identify phase-loss conditions by detecting voltage reduction in one or more phases of a threephase motor
- Monitor overvoltage conditions associated with regenerative voltage to help in diagnosing/avoiding motor drive issues
- Detect voltage conditions that may cause stress in or damage to soft starter components (SCRs)

**Features**

- True RMS Output - Allows for use in situations where power supplied is non-sinusoidal, such as VFD applications, poor power quality installations or other electrically harsh/ challenging environments
- Input/Output Isolation - Input and output circuitry is electrically isolated for improved safety
- Standard 4–20 mA Loop Powered Output - Industry standard output works easily and reliably with existing controllers, data loggers and SCADA equipment
- Compact DIN Rail Mount Enclosure—Space-saving 35 mm wide enclosure mounts quickly for an attractive installation



**VoltageWatch EVT—top terminal current sensors**

Power supply	Output signal	Nominal voltage	Item no.
24 Vdc loop powered	4–20 mA	120	<b>EVT1-420-24L</b>
		240	<b>EVT3-420-24L</b>
		480	<b>EVT4-420-24L</b>

### ECS range CurrentWatch current switches

The CurrentWatch™ ECS Series from Eaton's Electrical Sector is a family of solidstate adjustable current switches, ideal for providing status information on electrical equipment. The ECS is excellent for new installations, where the conductors run through the housing, requiring no cutting. These switches are also ideal for retrofits, since split-core models can be opened to fit around existing conductors. The current switch is accurate, reliable and easy to install.

The ECS can sense continuous currents from 1 to 150A and does not require any supply voltage, as the power required is induced from the monitored conductor. The output is a non-polarity-sensitive solidstate contact for switching AC and DC circuits up to 240 Vac/dc. This switch also includes an LED indicating two states: on and below trip point, and above trip point with contacts energized.

Any change in current can be sensed with the ECS Series. A change in current may indicate motor failure, belt loss/slippage or mechanical failure. Any of these events can cause the current to drop significantly, tripping the switch and notifying the controller.



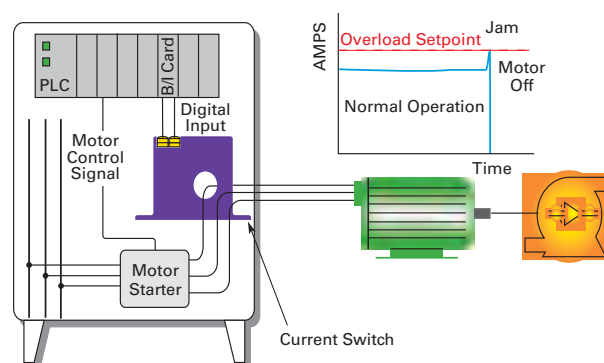
#### Features

- Universal Outputs - NO or NC solid-state switch for control circuits up to 240 Vac/dc, compatible with most automation systems
- Self-Powered - Cuts installation and operating costs
- Easily Adjustable Setpoint - Increases application flexibility and speeds start-up
- Solid- or Split-Core Housings - Versions tailored for each type of installation
- LED Indication - Provides quick visual indication of contact status
- Built-In Mounting Feet - Simple, two-screw panel mount or attach with optional DIN-rail mounting kit accessory

#### Application description typical applications

- Electronic Proof of Flow - Current operated switches eliminate the need for multiple pipe or duct penetrations and are more reliable than electromechanical pressure or flow switches
- Conveyors - Detect jams and overloads
- Lighting Circuits - Easier to install and more accurate than photocells
- Fans, Pumps and Heating Elements - Faster response than temperature sensors
- Critical Motors
- Ancillary Equipment

#### Example application - Pump jam and suction loss protection



### ECS range CurrentWatch current switches

Power supply	Aperture Size	Output Signal	Setpoint and LED Configuration	Item no.
<b>Solid-Core Housing</b>				
Self powered (no external power needed)	0.74 in (19 mm)	Normally open	Adjustable 1–150A setpoint with LED	<b>ECSNOASC</b>
			Fixed 1.0A setpoint no LED	<b>ECSNOFSC</b>
		Normally closed	Adjustable 1–150A setpoint with LED	<b>ECSNCASC</b>
			Fixed 1.0A setpoint no LED	<b>ECSNCFSC</b>
<b>Split-Core Housing</b>				
Self powered (no external power needed)	0.85 in (21.6 mm)	Normally open	Adjustable 1.75–150A setpoint with LED	<b>ECSNOASP</b>
			Fixed 1.5A setpoint no LED	<b>ECSNOFSP</b>
		Normally closed	Adjustable 1.75–150A setpoint with LED	<b>ECSNCASP</b>
			Fixed 1.5A setpoint no LED	<b>ECSNCFSP</b>

#### Accessories

Description	Item no.
DIN rail mounting kit	<b>EDINKIT</b>



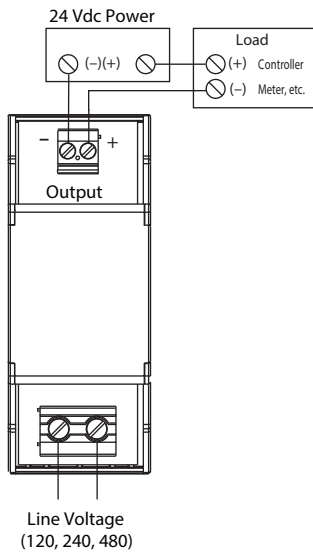
# Power control

## Automation

### VoltageWatch EVT range

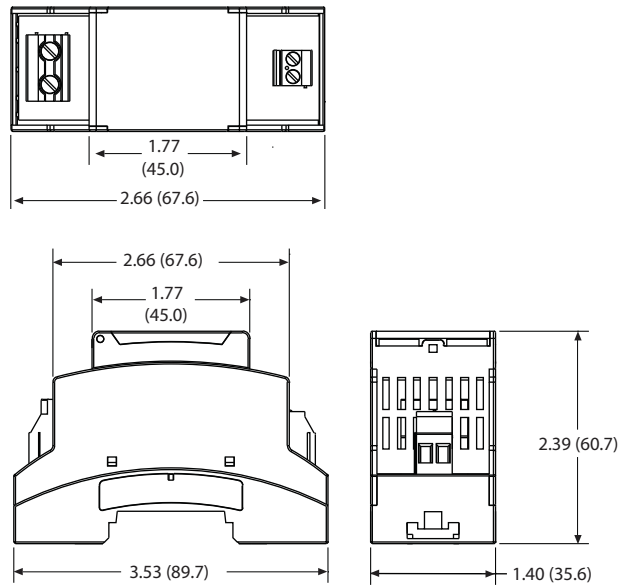
#### Wiring diagram

##### VoltageWatch EVT



#### Dimensions (approximate dimensions in inches (mm))

##### Complete unit

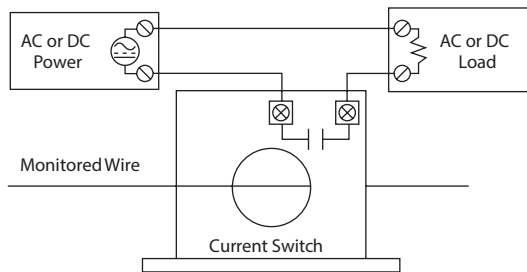


### ECS range CurrentWatch current switches

#### Wiring diagram

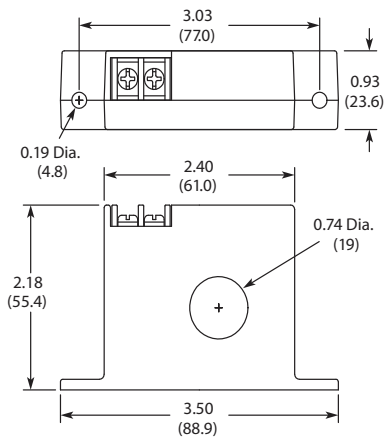
##### ECS CurrentWatch current switches

Normally open (NO) models shown

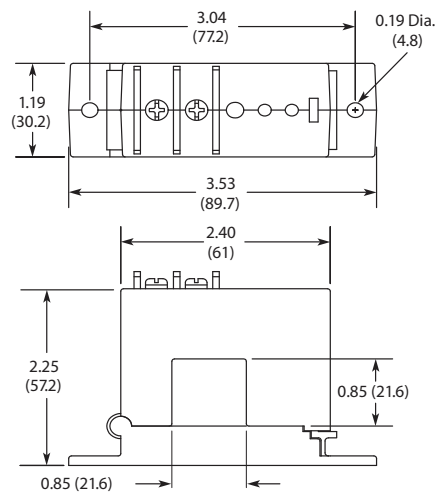


#### Dimensions (approximate dimensions in inches (mm))

##### Solid-core housing



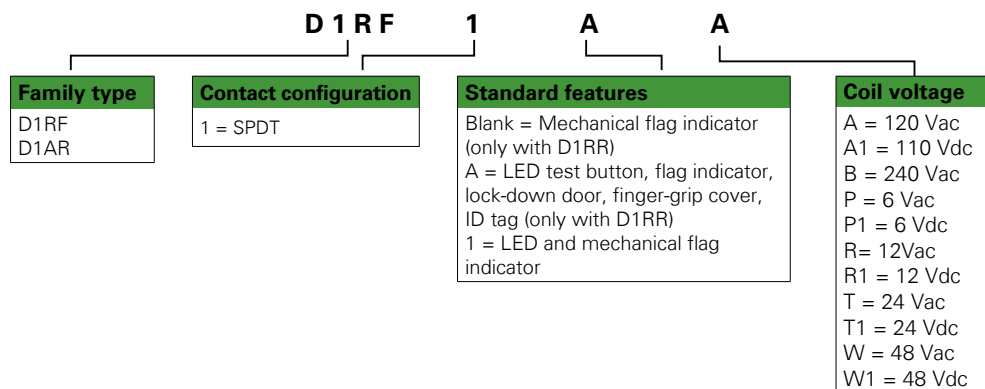
##### Split core housing



Plug-in relays – D1 range

Eaton D1RF 1-pole relays

- The contact operation can be easily checked by Push-to-Test button
- Flag indicator shows relay status in manual or powered condition
- LED status lamp shows coil ON or OFF status— ideal for use in low light applications
- Push-to-Test button allows for manual operation of relay without the need for coil power
- Lock-down door holds pushbutton and contacts in the operate position when activated
- Finger-grip cover allows operator to remove relays from sockets easily
- ID tag/write label to identify relays in multiple relay circuits
- Bipolar LED allows for reverse polarity applications

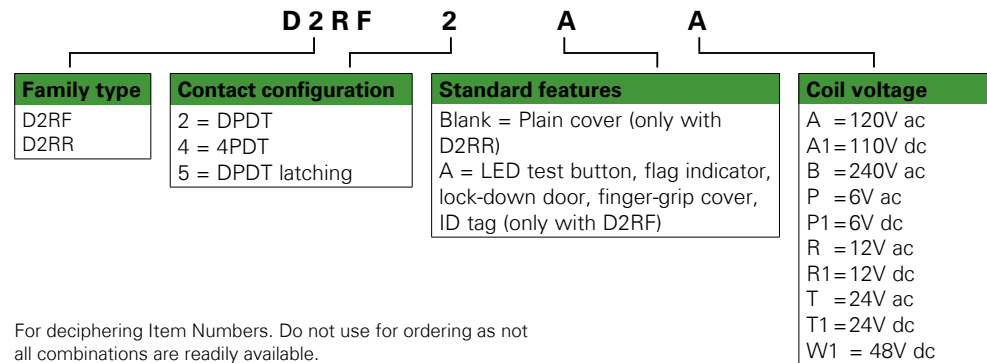


Eaton D1RF1 1-pole relays

Description	Voltage	Item no.
Relay 20A 24V DC 1 Pole	24V DC	<b>D1RF1T1</b>
Relay 20A 24V AC 1 Pole	24V AC	<b>D1RF1T</b>
Relay 20A 240V AC 1 Pole	240V AC	<b>D1RF1B</b>
Relay 20A 110V AC 1 Pole	110V AC	<b>D1RF1A</b>
Relay 20A 110V DC 1 Pole	110V DC	<b>D1RF1A1</b>
1-pole base D1 relay DIN mount		<b>D1RAA</b>
Hold down clip		<b>PMC-1781</b>



Plug-in relays – D2 range



For deciphering Item Numbers. Do not use for ordering as not all combinations are readily available.

**Eaton D2RF2 2 pole relays**

- Flag indicator shows relay status in manual or powered condition
- Bi-polar LED status lamp allows for reverse polarity applications
- LED status lamp shows coil “ON” or “OFF” status — ideal for use in low light applications
- Shows coil ON or OFF status
- Colour coded pushbutton identifies AC coils with red or DC coils with blue pushbuttons
- Allows for manual operation of relay without the need for coil power
- Ideal for field service personnel to test control circuits
- Lock down door, when activated, holds pushbutton & contacts in the operate position
- Excellent for analysing circuit problems
- Finger-grip cover allows operator to remove relays from sockets more easily than conventional relays
- White plastic I.D. tag/write label used for identification of relays in multi-relay circuits

Description	Voltage	Item no.
Relay 10A 24V DC 2 Pole	24V DC	<b>D2RF2T1</b>
Relay 10A 24V AC 2 Pole	24V AC	<b>D2RF2T</b>
Relay 10A 240V AC 2 Pole	240V AC	<b>D2RF2B</b>
Relay 10A 110V AC 2 Pole	110V AC	<b>D2RF2A</b>
Relay 10A 110V DC 2 Pole	110V DC	<b>D2RF2A1</b>
2-pole base D2 relay DIN mount		<b>D2PAL</b>
Hold down clip		<b>PQC-1782</b>

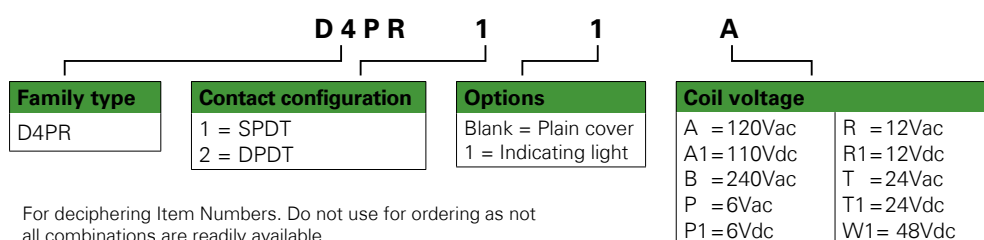
**Eaton D2RF4 4 pole relays**



- Flag indicator shows relay status in manual or powered condition
- LED status lamp shows coil “ON” or “OFF” status — ideal for use in low light applications
- Push-to-test button allows for manual operation of relay without the need for coil power
- Lock-down door holds pushbutton & contacts in the operate position when activated
- Finger-grip cover allows operator to remove relays from sockets easily
- I.D. tag/write label to identify relays in multiple-relay circuits
- Bi-polar LED allows for reverse polarity applications

Description	Voltage	Item no.
Relay 10A 24V DC 4 Pole	24V DC	<b>D2RF4T1</b>
Relay 10A 24V AC 4 Pole	24V AC	<b>D2RF4T</b>
Relay 10A 240V AC 4 Pole	240V AC	<b>D2RF4B</b>
Relay 10A 110V AC 4 Pole	110V AC	<b>D2RF4A</b>
Relay 10A 110V DC 4 Pole	110V DC	<b>D2RF4A1</b>
4-pole base D2 relay DIN mount		<b>D2PA7</b>
Hold down clip		<b>PQC-1782</b>

### Plug-in relays – D4 range



For deciphering Item Numbers. Do not use for ordering as not all combinations are readily available.

#### D4PR1, D4PR2 single & double pole slimline flat pin relay

- Slim-styled power relay
- Socket has built-in hold-down clip
- Panel or DIN rail mounting

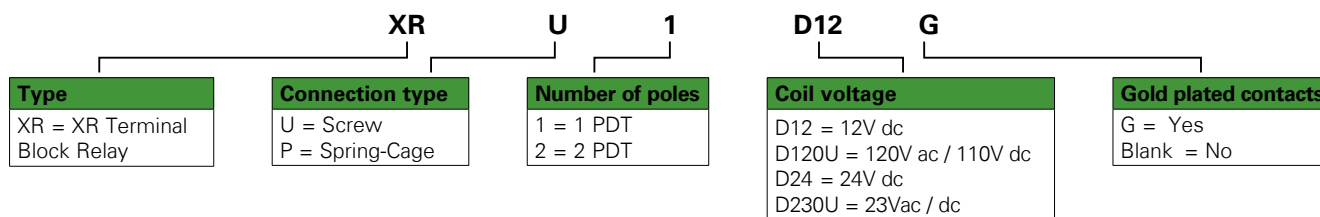
##### Eaton D4PR1 single pole slimline flat pin relay

Description	Voltage	Item no.
Relay 10 Amps 24V DC 1 Pole	24V DC	<b>D4PR11T1</b>
Relay 10 Amps 24V AC 1 Pole	24V AC	<b>D4PR11T</b>
Relay 10 Amps 240V AC 1 Pole	240V AC	<b>D4PR11B</b>
Relay 10 Amps 120V AC 1 Pole	120V AC	<b>D4PR11A</b>
Single Pole Base	-	<b>D4PA1</b>

##### D4PR2 double pole slimline flat pin relay

Description	Voltage	Item no.
Relay 5 Amps 24V DC 2 Pole	24V DC	<b>D4PR21T1</b>
Relay 5 Amps 24V AC 2 Pole	24V AC	<b>D4PR21T</b>
Relay 5 Amps 120V AC 2 Pole	120V AC	<b>D4PR21A</b>
Relay 5 Amps 240V AC 2 Pole	240V AC	<b>D4PR21B</b>
Double Pole Base	-	<b>D4PA2</b>

### Interface relays – XR range



#### XR Terminal block interface relays

- 6mm wide (1P), 14mm wide (2P) relay screw connection or spring-cage
- Plug-in jumpers or bridges available
- SPDT or DPDT contacts rated 6A
- DIN rail mount, LED indication
- Field-replaceable pluggable miniature relay
- 12VDC to 110VDC/120VAC available
- 10A High current series in SPDT



Description	Item no.
XR Relay, 1P, 6A, 12VDC, screw conn	<b>XRU1D12</b>
XR Relay, 1P, 6A, 120VAC/110VDC, screw conn	<b>XRU1D120U</b>
XR Relay, 1P, 6A, 230VAC/220VDC, screw conn	<b>XRU1D230U</b>
XR Relay, 1P, 6A, 24VDC, screw conn	<b>XRU1D24</b>
XR Relay, 1P, 6A, 24VAC/DC, screw conn	<b>XRU1D24U</b>
XR Relay, 2P, 6A, 12VDC, screw conn	<b>XRU2D12</b>
XR Relay, 2P, 6A, 120VAC/110VDC, screw conn	<b>XRU2D120U</b>
XR Relay, 2P, 6A, 230VAC/220VDC, screw conn	<b>XRU2D230U</b>
XR Relay, 2P, 6A, 24VDC, screw conn	<b>XRU2D24</b>
XR Relay, 2P, 6A, 24VAC/DC, screw conn	<b>XRU2D24U</b>

Description	Item no.
XR Relay, 1P, 6A, 12VDC, spring-cage	<b>XRP1D12</b>
XR Relay, 1P, 6A, 120VAC/110VDC, spring-cage	<b>XRP1D120U</b>
XR Relay, 1P, 6A, 230VAC/220VDC, spring-cage	<b>XRP1D230U</b>
XR Relay, 1P, 6A, 24VDC, spring-cage	<b>XRP1D24</b>
XR Relay, 1P, 6A, 24VAC/DC, spring-cage	<b>XRP1D24U</b>
XR Relay, 2P, 6A, 230VAC/220VDC, spring-cage	<b>XRP2D230U</b>
XR Relay, 1P, 10A, 12VDC, screw conn	<b>XRU1H12</b>
XR Relay, 1P, 10A, 120VAC/110VDC, screw conn	<b>XRU1H120U</b>
XR Relay, 1P, 10A, 230VAC/220VDC, screw conn	<b>XRU1H230U</b>
XR Relay, 1P, 10A, 24VDC, screw conn	<b>XRU1H24</b>

#### Accessories

Description	Item no.
2-position snap-in Jumper, grey	<b>XRAFBST2GY</b>
80-position snap-in Jumper, grey	<b>XRAFBST500GY</b>
Power Terminal Block	<b>XRAPLCEK</b>
End Cover	<b>XRAATPBK</b>

EMR measuring & monitoring relays

Current, phase, sequence relays, phase imbalance monitoring



EMR4-F500-2



EMR5-A300-1-C



EMR4-N500-2-A



EMR5-N80-1-B

Description	Current measuring range, I ~ /I = A	Circuit symbol	Supply voltage	Item no.
Current monitoring relays EMR4-I..., single-phase				
<ul style="list-style-type: none"> <li>Switching hysteresis adjustable from 3 - 30 %</li> <li>Response delay 0.1 - 30 s</li> <li>Monitoring of one upper or lower limit</li> <li>Extension of the measurement range possible with current transformers</li> </ul>	3 - 30 mA		24 - 240 V AC, 50/60 Hz	<b>EMR4-I1-2-A</b>
	10 - 100 mA		24 - 240 V DC	
	0.1 - 1 A			
	0.3 - 1.5 A		24 - 240 V AC, 50/60 Hz	<b>EMR4-I15-2-A</b>
	1 - 5 A		24 - 240 V DC	
	3 - 15 A			
	0.3 - 1.5 A		24 - 240 V AC, 50/60 Hz	<b>EMR4-I15-2-B</b>
	1 - 5 A		24 - 240 V DC	
	3 - 15 A			

Description	Monitoring voltage per phase, UN V AC	Circuit symbol	Supply voltage	Item no.
EMR4-F... phase sequence relay				
<ul style="list-style-type: none"> <li>Monitors three-phase systems for phase sequence and phase failure (&lt; 0.6 x Ue)</li> <li>Supply voltage connection = monitored voltage</li> </ul>	200 - 500 V AC, 50/60 Hz		200 - 500 V AC, 50/60 Hz	<b>EMR4-F500-2</b>

Description	Threshold value	Circuit symbol	Supply voltage	Item no.
EMR5-A... phase imbalance monitoring relays				
Power supply from measuring circuit				
Three-phase monitoring				
<ul style="list-style-type: none"> <li>Phase sequence</li> <li>Phase failure</li> <li>Asymmetry</li> <li>Imbalance threshold values adjustable 2 - 25 % of mean value of phase voltages</li> <li>On-delay: None = 0 or adjustable from 0.1 to 30 s</li> </ul>	Imbalance = 2 - 25 % of phase voltage mean value		160 - 300 V AC, 50/60 Hz	<b>EMR5-A300-1-C</b>

Description	Threshold value	Circuit symbol	Supply voltage	Item no.
Power supply from measuring circuit				
Three-phase monitoring				
<ul style="list-style-type: none"> <li>Phase sequence</li> <li>Phase failure</li> <li>Asymmetry</li> <li>Imbalance threshold values adjustable</li> <li>On-delay: None = 0 or adjustable from 0.1 to 30 s</li> </ul>	Imbalance = 2 - 25 % of phase voltage mean value		300 - 500 V AC, 50/60 Hz	<b>EMR5-A400-1</b>

Description	Response sensitivity	Circuit symbol	Supply voltage	Item no.
Liquid level monitoring relays EMR4-N...				
<ul style="list-style-type: none"> <li>Fill level monitoring of conductive liquids</li> <li>Mixture ratio monitoring of conductive liquids</li> <li>Selectable dry-running or overflow protection</li> </ul>	5 kΩ - 100 kΩ		220 - 240 V AC, 50/60 Hz	<b>EMR4-N100-1-B</b>
<ul style="list-style-type: none"> <li>Fill level monitoring of conductive liquids</li> <li>Mixture ratio monitoring of conductive liquids</li> <li>Selectable on-delay or off-delay between 0.5 - 10 s</li> </ul>	250 Ω - 500 kΩ		24 - 240 V AC, 50/60 Hz	<b>EMR4-N500-2-A</b>
				220 - 240 V AC, 50/60 Hz

Description	Response sensitivity	Circuit symbol	Supply voltage	Item no.
Liquid level monitoring relays EMR5N...				
<ul style="list-style-type: none"> <li>Fill level monitoring of conductive liquids</li> <li>Conductivity (mixture ratio) monitoring of conductive liquids</li> </ul>	5 kΩ - 100 kΩ		220 - 240 V AC, 50/60 Hz	<b>EMR5-N80-1-B</b>

EMR measuring & monitoring relays

Description	Monitoring voltage per phase	Threshold value ①	Circuit symbol	Supply voltage	Width mm	Item no.
Phase monitoring relay EMR5-(A)W...						
Power supply from measuring circuit	160 - 300 V AC, 50/60 Hz	U <sub>max</sub> 220 - 300 V AC U <sub>min</sub> 160 - 230 V AC		160 - 300 V AC, 50/60 Hz	22.5	<b>EMR5-AW300-1-C</b>
Three-phase monitoring	300 - 500 V AC, 50/60 Hz	U <sub>max</sub> 420 - 500 V AC U <sub>min</sub> 300 - 380 V AC		300 - 500 V AC, 50/60 Hz	22.5	<b>EMR5-AW500-1-D</b>
Overvoltage	350 - 580 V AC, 50/60 Hz	U <sub>max</sub> 480 - 580 V AC U <sub>min</sub> 350 - 460 V AC		350 - 580 V AC, 50/60 Hz	45	<b>EMR5-AWM580-2</b>
Undervoltage	450 - 720 V AC; 50/60 Hz	U <sub>max</sub> 600 - 720 V AC U <sub>min</sub> 450 - 570 V AC		350 - 720 V AC, 50/60 Hz	45	<b>EMR5-AWM720-2</b>
Asymmetry	530 - 820 V AC; 50/60 Hz	U <sub>max</sub> 690 - 820 V AC U <sub>min</sub> 530 - 660 V AC		530 - 820 V AC, 50/60 Hz	45	<b>EMR5-AWM820-2</b>
Adjustable threshold values for overvoltage/undervoltage and imbalance	90 - 170 V AC, 50/60 Hz	U <sub>max</sub> 120 - 170 V AC U <sub>min</sub> 90 - 130 V AC		90 - 170 V AC, 50/60/400 Hz	22.5	<b>EMR5-AWN170-1-E</b>
Phase failure	180 - 280 V AC, 50/60 Hz	U <sub>max</sub> 240 - 280 V AC U <sub>min</sub> 180 - 220 V AC		180 - 280 V AC, 50/60/400 Hz	22.5	<b>EMR5-AWN280-1</b>
Overvoltage	180 - 280 V AC, 50/60 Hz	U <sub>max</sub> 240 - 280 V AC U <sub>min</sub> 180 - 220 V AC		180 - 280 V AC, 50/60 Hz	22.5	<b>EMR5-AWN280-1-F</b>
Undervoltage	300 - 500 V AC, 50/60 Hz	U <sub>max</sub> 420 - 500 V AC U <sub>min</sub> 300 - 380 V AC		300 - 500 V AC, 50/60 Hz	22.5	<b>EMR5-AWN500-1</b>
Asymmetry						
Neutral cable break (not EMR5-AWN500-1)						
Adjustable threshold values for overvoltage/undervoltage and imbalance						
On-/Off-delay: None = 0 or adjustable between 0.1 - 30 s						

① Imbalance = 2 - 25% of phase voltage mean value



EMR5-AWM720-2



EMR5-AWN500-1

Description	Insulation resistance range Ω	Circuit symbol	Supply voltage	Item no.
Insulation monitoring relays EMR4-R...				
Monitors the insulation resistance between non-grounded AC supply systems and the protective ground conductor. Insulation monitoring in 1- and 3-phase. AC voltage networks Test via local test button or remote test operation. Status display via LED (according to VDE 0413/Part 2) Tripping function memory	1 - 110 kΩ		0-400V AC 45-65 Hz	<b>EMR5-R400-1-A</b>
Monitors the insulation resistance in non-grounded DC supply systems. Selector switch for open- or closed-circuit principle. Test and reset via local test button or remote test operation. Status indication via LEDs	10 - 110 kΩ		0-300V DC or 0-250V AC 15-400Hz	<b>EMR5-R250-1-A</b>
The EMR5-R400-2-A serves to monitor insulation resistance in accordance with IEC 61557-8 in unearthed IT AC systems, IT AC systems with galvanically connected DC circuits, or unearthed IT DC systems.			0-600 V DC or 0-400 V AC, 15-400 Hz	<b>EMR5-R400-2-A</b>
The coupling module EMR5-RC690 is a passive device not needing any control supply voltage. It serves to connect the insulation monitoring relay EMR5-R400-2-A to systems up to 690 V AC and 1000 V DC. Hence the EMR5-RC690 is connected between the system to be monitored and the EMR5-R400-2-A			1000V DC or 690V AC	<b>EMR5-RC690</b>



EMR5-R400-1-A

Description	Width mm	Item no.
Sealable shroud EMR4-PH...	22.5	<b>EMR4-PH22</b>
	45	<b>EMR4-PH45</b>



ETR2-12



ETR2-44



ETR2-11-D



ETR4-11-A



ETR4-70-A

### Timing relays - Electronic ETR2

Description	Rated operational current AC-11		Conventional thermal current I <sub>th</sub> A	Time range	Voltage range	Item no.
	230 V I <sub>e</sub> A	400 V I <sub>e</sub> A				
<b>One changeover contact</b>						
On-delayed timing functions	3	-	6			<b>ETR2-11</b>
Off-delayed timing functions	3	-	6			<b>ETR2-12</b>
Fleeting contact on energization timing functions	3	-	6	0.05 - 1 s 0.5 - 10 s 5 - 100 s	24 - 240 V AC,	<b>ETR2-21</b>
Flashing, pulse initiating timing functions	3	-	6	0.5 - 10 min 5 - 100 min	50/60 Hz 24 - 48 V DC	<b>ETR2-42</b>
Flashing, 2 speeds (ON/OFF times variable) timing functions	3	-	6	0.5 - 10 h 5 - 100		<b>ETR2-44</b>
Multifunction relay timing functions	3	-	6			<b>ETR2-69</b>
<b>Two changeover contacts</b>						
On-delayed timing functions	3	-	6	0.05 - 1 s 0.5 - 10 s 5 - 100 s	24 - 240 V AC, 50/60 Hz	<b>ETR2-11-D</b>
Off-delayed timing functions	3	-	6	0.5 - 10 min 5 - 100 min	24 - 48 V DC	<b>ETR2-12-D</b>
Multifunction relay timing functions	3	0.75	6	0.5 - 10 h 5 - 100 h	12 - 240 V AC, 50/60 Hz	<b>ETR2-69-D</b>

### Timing relays - Electronic ETR4

Description	Rated operational current AC-11		Conventional thermal current I <sub>th</sub> A	Time range	Item no. 24 - 240 V AC, 50/60 Hz 24 - 240 V DC	Item no. 400 V AC, 50/60 Hz
	230 V I <sub>e</sub> A	400 V I <sub>e</sub> A				
Star-delta switching timing functions	3	3	6	3 - 60 s	<b>ETR4-51-A</b>	<b>ETR4-51-W</b>
On-delayed timing functions	3	3	6		<b>ETR4-11-A</b>	<b>ETR4-11-W</b>
Multifunctional timing functions	3	3	6	0.05 - 1 s 0.15 - 3 s 0.5 - 10 s 1.5 - 30 s 5 - 100 s 15 - 300 s	<b>ETR4-69-A</b>	<b>ETR4-69-W</b>
Multifunctional with connection for potentiometer, and two changeover contacts that can be converted to two timed contacts or one non-delayed contact and one timed contact. Timing functions	3	-	6	1.5 - 30 min 15 - 300 min 1.5 - 30 h 5 - 100 h	<b>ETR4-70-A</b>	-

## Timers

### Eaton TRL 18mm DIN timers

- Slim 18mm DIN rail mount timers
- Timing range 50 msec to 100 hours
- Changeover output contact rated 8A, 240VAC
- Universal supply voltage  
12V-240V AC/DC for TRL07 & TRLPG  
24V-240V AC/DC for TRL04



Description	Item no.
18mm DIN Multifunction Timer - 4 modes	TRL04
18mm DIN Multifunction Timer - 7 modes	TRL07
Compact DIN rail mount, DPDT	TRL27
Asymmetrical pulse generator, DPDT	TRW27

## Timeswitches

Timeswitches are applied in any residential or commercial buildings wherever automatic control is required on predefined times. The Eaton range comprises of a wide variety of different products which include analogue and digital timeswitches.

### Benefits

- Easily programmable on front of device.
- Computer aided programming software available.
- Compact 18 mm design for restricted space opportunities.
- High level of accuracy.
- Automatic summer and winter time adjustment.
- Holiday & Random program settings.
- High power reserve up to 10 years.

### Analogue timeswitches

- Daily or weekly programming
- Power reserve in case of loss of supply
- Compact 18mm design for restricted spaces
- Permanent on/off
- Manual override function
- 1 changeover (or normally open) rated 16A resistive, 240Vac
- Convenient DIN rail mounting type.

#### Analogue range

Description	Item no.
Analogue time switch, dial type, 24 hr, 1 channel, no power reserve	<b>TSSD1CO</b>
Analogue time switch, 18 mm wide, 24 hr, 1 channel, no power reserve	<b>TSSD1NO</b>
Analogue time switch, dial type, 24 hr, 1 channel, 200 hr power reserve	<b>TSQD1CO</b>
Analogue time switch, 18 mm wide, 24 hr, 1 channel, 3 yr power reserve	<b>TSQD1NO</b>
Analogue time switch, dial type, 7 day, 1 channel, 200 hr power reserve	<b>TSQW1CO</b>



Analogue timeswitches

### Digital timeswitches

- Simplified set-up  
Pre-settings only need confirmation (fewer manually settings needed)
- TSA MEMKIT software kit  
Programming can be copied from one clock to another  
Pre-programming on PC
- Pulse output
- Memory card for storing time settings
- Weekly programming, 1 or 2 channels
- Automatic summer/winter time switching

#### Digital range

Description	Item no.
Digital time switch, 36 mm wide, 7 day, 1 channel, 10 yr power reserve	<b>TSDW1CO</b>
Digital time switch, 18 mm wide, 7 day, 1 channel, 3 yr power reserve	<b>TSDW1COMIN</b>
Digital time switch, 36 mm wide, 7 day, 1 channel, 10 yr power reserve, pulse output	<b>TSDW1CODG</b>
Digital time switch, 36 mm wide, 7 day, 2 channel, 10 yr power reserve	<b>TSDW2CO</b>



Digital timeswitches

#### Software & memory card

Description	Item no.
Programming software, cable & memory card	<b>TSAMEMKIT</b>
Memory card	<b>TSAMEM</b>



## DC power supplies

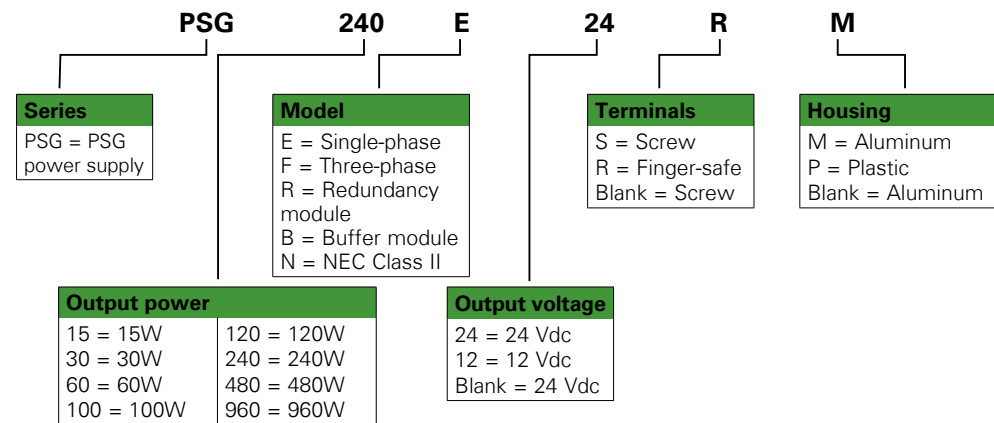
Eaton's PSG Series of power supplies is designed to be a high-performance, high-quality line of products covering a majority of 12 Vdc and 24 Vdc control applications.

### Features, benefits and functions

- Universal input voltages: 100–240 Vac for single-phase units, 400–500 Vac for three-phase units
- General-purpose 12 Vdc and 24 Vdc adjustable output
- 150% power surge output
- Wide operating temperature range: –25°C to +80°C
- MTBF up to 1,000,000 hours ensures uptime and reliability
- Protection from overvoltage, overcurrent and overtemperature conditions
- Rugged aluminum and plastic housings provide the durability required to stand up to harsh environments
- All-metal DIN rail mounting hardware
- Heavy-duty screw and finger-safe terminals
- LED indicating light for DC OK simplifies troubleshooting
- Conformal coated electronics
- Hazardous Location Class I, Division 2 rated models
- NEC® Class II rated model
- Redundancy modules keep loads up and running in the event of a device failure
- Buffer module has the stored power needed to keep loads running through a short duration power failure



PSG240F24RM



PSG120F24RM



PSG120E24RM

Description	Item no.
Single phase input	
Power supply 85-264VAC input 12VDC output 15W plastic housing	<b>PSG15E12SP</b>
Power supply 85-264VAC input 12VDC output 30W plastic housing	<b>PSG30E12SP</b>
Power supply 85-264VAC input 12VDC output 30W aluminium housing	<b>PSG60E12SM</b>
Power supply 85-264VAC input 24VDC output 60W plastic housing	<b>PSG60E24SP</b>
Power supply 85-264VAC input 24VDC output 60W aluminium housing	<b>PSG60E24RM</b>
Power supply 85-264VAC input 24VDC output 100W aluminium housing	<b>PSG100E12SM</b>
Power supply 85-264VAC input 24VDC output 120W aluminium housing	<b>PSG120E24RM</b>
Power supply 85-264VAC input 24VDC output 240W aluminium housing	<b>PSG240E24RM</b>
Power supply 85-264VAC input 24VDC output 480W aluminium housing	<b>PSG480E24RM</b>
Three phase input	
Power supply 320-600VAC input 24VDC output 60W aluminium housing	<b>PSG60F24RM</b>
Power supply 320-600VAC input 24VDC output 120W aluminium housing	<b>PSG120F24RM</b>
Power supply 320-600VAC input 24VDC output 240W aluminium housing	<b>PSG240F24RM</b>
Power supply 320-600VAC input 24VDC output 480W aluminium housing	<b>PSG480F24RM</b>
Power supply 320-600VAC input 24VDC output 960W aluminium housing	<b>PSG960F24RM</b>
Buffer & Redundancy modules	
Buffer module 24VDC 20A aluminium housing	<b>PSG480B24RM</b>
Power supply redundant module 24VDC 20A aluminium housing	<b>PSG480R24RM</b>
Power supply redundant module 24VDC 40A aluminium housing	<b>PSG960R24RM</b>



Pressure switches



Description		Max. operating pressure	Item no.
Pressure switches with main contacts IP65, 3 pole			
Preferred setting range from bar	Preferred setting range to bar		
0.9	4	7	<b>MCSN4</b>
		7	<b>MCSN4-V</b>
2	10	15	<b>MCSN11</b>
		15	<b>MCSN11-V</b>
5	15	25	<b>MCSN16</b>
		25	<b>MCSN16-V</b>
8	22	25	<b>MCSN22</b>
		25	<b>MCSN22-V</b>
Pressure switch with auxiliary contacts, IP65			
1 changeover contact		7	<b>MCS4</b>
1 changeover contact with gold-plated		7	<b>MCS4-G</b>
2 changeover contact with gold-plated contacts		7	<b>MCS4-SOND910-G</b>
1 changeover contact		15	<b>MCS11</b>
1 changeover contact with gold-plated		15	<b>MCS11-G</b>
2 changeover contact with gold-plated contacts		15	<b>MCS11-SOND910-G</b>
1 changeover contact		25	<b>MCS22</b>
1 changeover contact with gold-plated		25	<b>MCS22-G</b>
2 changeover contact with gold-plated contacts		25	<b>MCS22-SOND910-G</b>

## Pressure switches



R1/2-MCS



E8-MCS



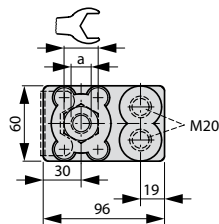
W-MCS


### Accessories

Description	For use with	Item no.
Pressure pipe flange	MCS with R 1/2"	<b>+R1/2"-MCS</b>
	MCS with R 1/2"	<b>R1/2"-MCS</b>
	MCSN(-V) with R 1/4"	<b>+R1/4"-MCSN</b>
	MCSN(-V) with R 1/4"	<b>R1/4"-MCSN</b>
Pressure pipe flange with pressure gauge connection	MCS, MCSN(-V)	<b>+M-MCS</b>
	MCS, MCSN(-V)	<b>M-MCS</b>
Compression fitting	MCS, MCSN	<b>+E8-MCS</b>
	MCS, MCSN	<b>E8-MCS</b>
Wall fixing bracket	MCS, MCSN	<b>+W-MCS</b>
	MCS, MCSN	<b>W-MCS</b>
External unit plug, IP65 3 poles plus earth for socket adapters to DIN 43650-A/ISO 4400	MCS	<b>+S3-MCS</b>
	MCS...-G Not for use with MCS...SOND910-G	
Pressure setting Standard setting of the cut-in and cut-out pressures	MCS, MCSN	<b>+PMIN(*)/PMAx(*)</b>

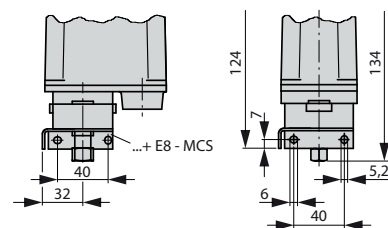
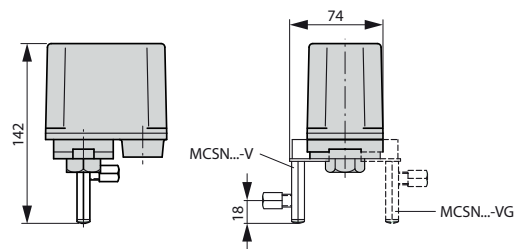
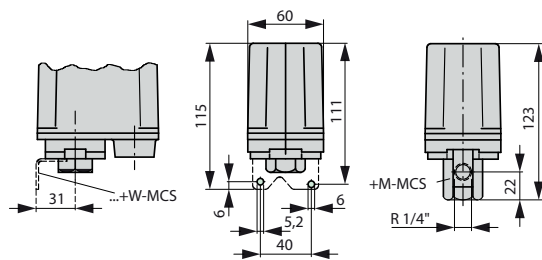
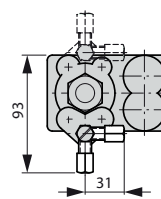
### Dimensions

MCS..., MCSN...



Item no.	Pipe in-lead	a	
MSC...	2 x M20	R 1/4"	27
MCSN...	2 x M20	R 1/2"	36

MCSN...V  
With relief valve



# Simple, intelligent, pluggable, versatile.



Motor-protective circuit-breakers PKZ have been manufactured by Eaton since 1932. Our ideas and developments have decisively influenced the trends in the protection of motors since then. The results are progressive concepts and marketable product innovations that again and again assume the role of international trendsetting, pioneering products, e.g. such as the motor-protective circuit-breaker PKE.

Standstill times of machines and installation should be as short as possible. The fuseless motor-protective circuit-breakers PKZ combine short-circuit protection and overload protection in a single device. This enables a short recovery time. PKZM0, PKZM01, PKZM4 and PKE feature the same range of accessories. They can be easily combined with contactors DILM and soft starters DS7. Switching technology can be this easy.

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