

# Reliable starting solutions

## Efficor\*





## Efficor\* - Reliable starting solutions

### Advantages and Benefits

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- A.6 Time saving
- A.8 Secure connection
- A.9 Stock saving
- A.10 Energy efficiency
- A.12 Motor protection devices
- A.13 IE3 ready

Advantages and Benefits

A

- A.16 Direct online starter
- A.17 Star delta starter
- A.18 Reversing starter

Order codes

B

Technical data

C

Numerical index

X

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1 L1

3 L2

5 L3

21 NC



efficol

00	690
	680
155	12
10	10
13	13

# efficor\*

Provides Starter and Power Switching Solutions for OEMs and Panel Builders  
working in the toughest markets such as:

Oil & Gas | Marine | Mining | Power Generation / Grid | Transportation  
Industrial appliances | Telecom / Data centers | General industry



## Time saving

### Quick assembly of DOL Starter

- User friendly design to combine Surion motor starter and contactor
- Smart busbar systems and wiring kits
- Design of intelligent base plate
- Easy maintenance: Complete combination can be removed in one go

### No tools needed

- Mounting and dismounting the contactors without tools
- No tools required for accessories and auxiliaries

### Double box terminals as standard

- Secure connection: No overheat on small wires when 2 sizes in same terminal
- Identical torque (2.2Nm) for 9A up to 40A contactors



## Space saving

### Compact starter providing significant space reduction in cabinet:

- Manual motor starter
- OL relay



## Stock saving

Significant reduction of 60% in stock keeping units



## Energy efficient design

- Low energy consumption
- Long life span
- Reduced flammability risk and lower toxicity



## Complete range up to 105A

### Contactors

- 3 pole contactors
- 4 pole contactors
- 2NO-2NC contactors
- Auxiliary contactors

### Accessories

- Auxiliary contact blocks
- Pneumatic timer
- Mechanical latch
- Surge suppressor

### Motor starter solutions

- Thermal and electronic OL relays
- Fuseless starter kits
- Wiring kits for reversing and start-delta
- Parallel busbars



## Reliable technology

Designed and manufactured in Europe by GE to perform in the toughest environmental conditions

- Best in class B10d values according to ISO13849-1 safety requirements
- High electrical performance > 1.7 mil. operations
- Safe auxiliary contacts
- Temperature operation without derating: -40°C to +55°C
- AC/DC Super Wide voltage application above 50A: Cover all AC and DC range up to 500V with 4 coils
- Coordination type II for motor starter applications

### Approvals/Marking



EN50155, EN45545-2  
IEC60335



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# Reliable technology

## Best electrical endurance

Long life span; increased uptime resulting in lower maintenance cost.

Higher B10d reliability data: number of safe starting operations as per standard EN ISO 138949-1

ISO 13849 provides safety requirements and guidance principles for the design and integration of safety-related parts of control systems. It specifies characteristics that include the performance level required for carrying out safety functions. B10d is the number of cycles until 10% of the components fails dangerously.

EC09-12	2x10 <sup>6</sup> ops
EC18-25	1.7x10 <sup>6</sup> ops
EC32-40	1.37x10 <sup>6</sup> ops
EF50-105	1.5x10 <sup>6</sup> ops

## Safe control circuit

- High fidelity auxiliary with four points of contact ensuring conductivity
- Mirror contact according to IEC 60947-4-1
- Positive guided, mechanically linked contacts according to IEC 60947-5-1

## Widest temperature operation

From -40°C to +55°C without derating  
Suitable for extreme temperatures

## Lowest noise production: 32dBA

No humming noise, perfect fit in applications demanding limited noise.

## Safer plastics

NF 16-101 & NF 16-102  
DIN 5510.2, EN 60355 & EN 45545-2

**Only two frames covering 9 up to 105A series.**

**Five different depths:**

- Depth 1: 9A up to 18A
- Depth 2: 25A
- Depth 3: 32A up to 40A
- Depth 4: 50A up to 80A
- Depth 5: 95A up to 105A

RoHS

## Closed design

### Offering full protection against pollution

- Transparent front cover for dust protection
- No holes in the base
  - Avoids dust and external particles
  - Enhances the life of the device

- ✓ Ceramic applications
- ✓ Heavy duty environments
- ✓ Environments with high pollution degrees



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# Space saving

## Compact starter

Significant space reduction in the cabinet: Compact starter either with thermal overload relay or manual motor starter. Starter mounting plates for user-friendly maintenance (easy removal of MMS Surion and/or contactor). Busbar systems and wiring kits allow safe cabling avoiding mistakes, guaranteeing finger safe protection up to 6kV.

### Link module for compact starter up to 65A

Link module for compact starter  
Full coil access at the bottom

### Contactors with thermal overload relay

Uniformity in compact design  
Thermal and electronic overload relay mounted directly to the contactor  
All connections available

## Reduced panel dimensions

- Efficor contactor reduced width design allows designer to reduce panel dimensions or replace old contactors.
- Efficor contactors can be mounted side by side without derating.
- Significant depth reduction in DC contactors.
- Smaller control transformers due to the reduced consumption in DC application due to permanent magnet technology on the EC range and in AC/DC application thanks to state of the art electronic coils technology on the EF range.
- Efficor starting solutions features, dimensions and drawings are available on-line in the most popular panel design software.



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# Time saving

## Double box terminals

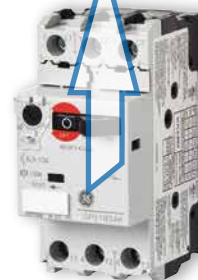
Identical torque (2.2 Nm) from 9 up to 40A.  
Only one calibrated screwdriver needed for the runners.  
Higher torque from 50 up to 105A.  
Efficor contactors have main terminals in the front for easy access.

## Easy to use, no tools needed

Mounting or dismounting the contactors on/from the DIN-rail can be done without tools.  
Even for mounting accessories and auxiliaries to the contactor, no tools are required.

## Quick assembly of direct online starter

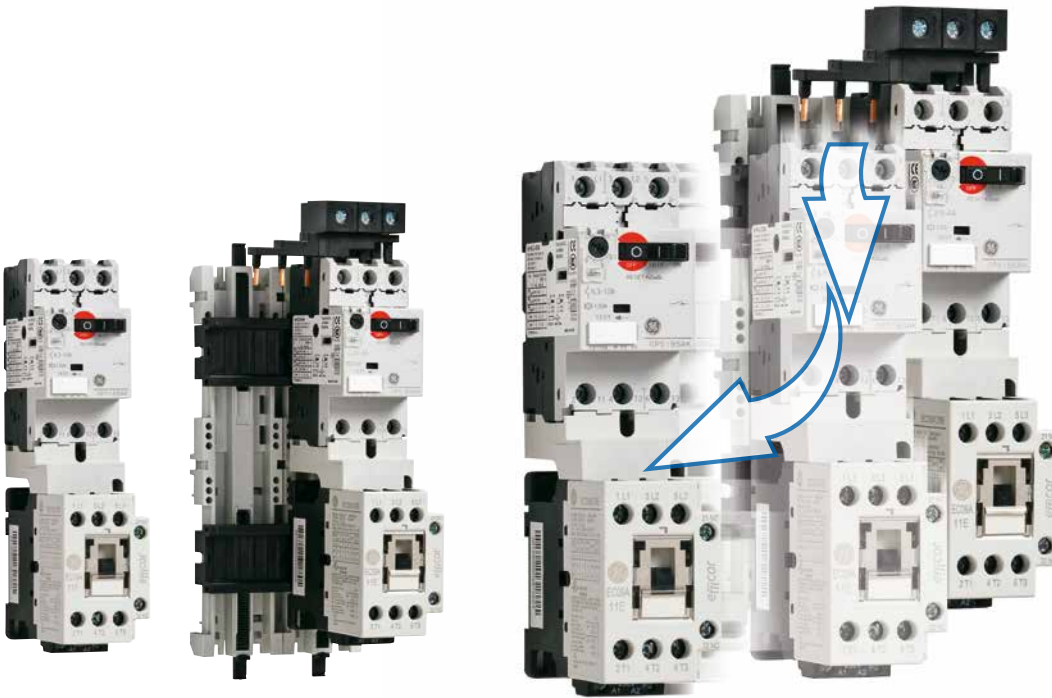
- User friendly design of link modules and base plates to combine manual motor starter and contactor.
- Smart busbar systems and wiring kits.
- Smart plate for DOL starters up to 40A.
- 4 coil terminal points for easy design and replacement of old contactors.



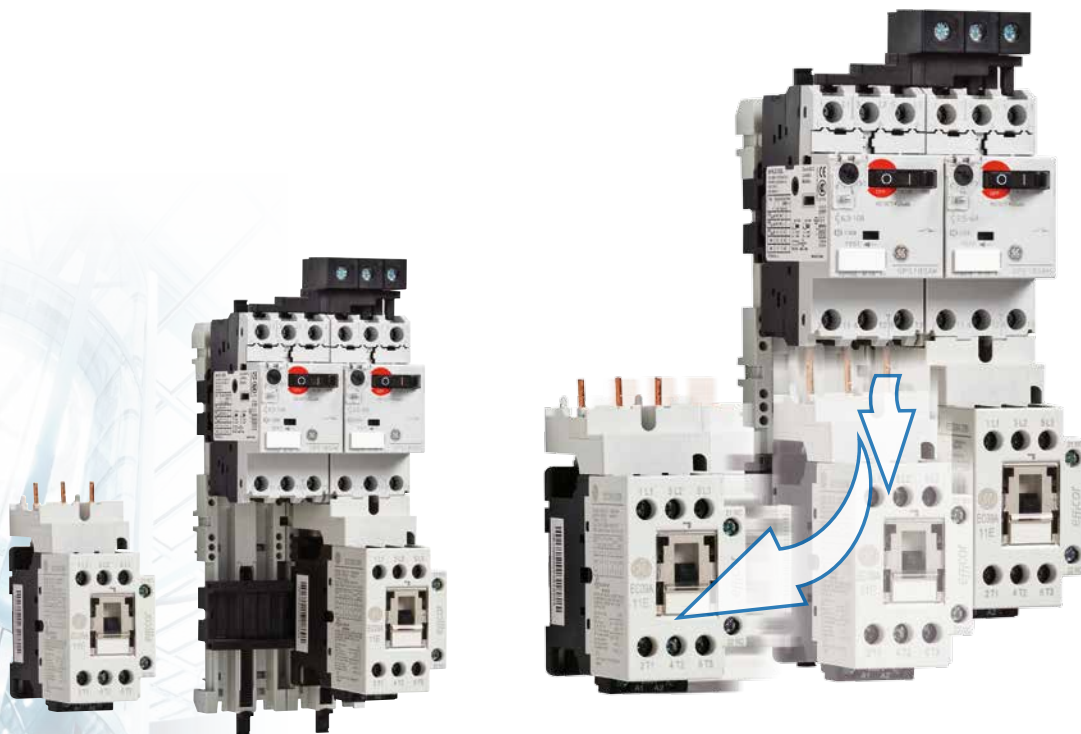


## Easy maintenance of direct online starter

- The complete starter combination can be removed from the base plate in one go.



- The manual motor starter and the contactor can be removed separately from the base plate.



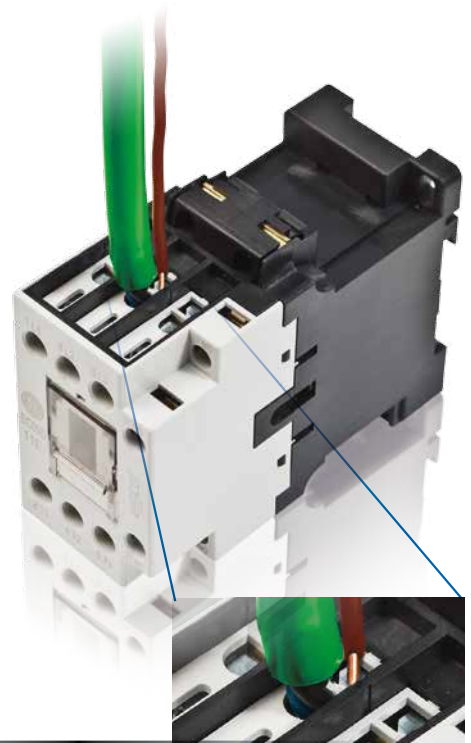
# Secure connection

## Double box terminals

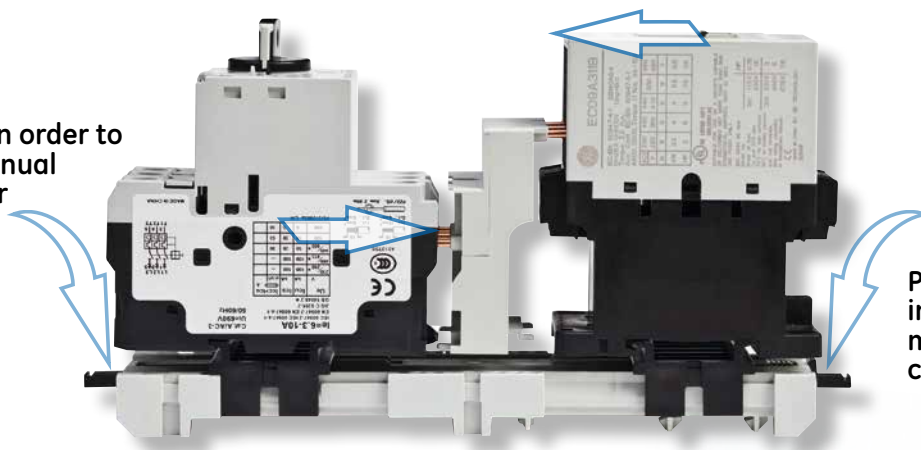
- Double box clamps for the whole range
  - Cables from 0.75mm<sup>2</sup> up to 16mm<sup>2</sup> in the same box clamps terminal for 4kW up to 18.5kW
  - Cables from 1mm<sup>2</sup> up to 35mm<sup>2</sup> in the same box clamps terminal for 22kW up to 37kW
  - Cables from 1.5mm<sup>2</sup> up to 50mm<sup>2</sup> in the same box clamps terminal for 45kW and 55kW
- No risk of losing cables
- Avoid temperature rising on the small cable

## Smart connectivity

- Design of intelligent base plate
- Combination of a wide variety of link modules and wiring kits with the double box clamp terminals secures a safe connection



Push the lid in order to move the manual motor starter



Push the lid in order to move the contactor



# Stock saving

## 60% reduction in codes

When compared with the current range, the Efficor range means a significant reduction of 60% in stock keeping units. This improves customer financials, simplifying logistics, reducing inventory value and cutting administration costs.

60% reduction in space and volume in warehouses

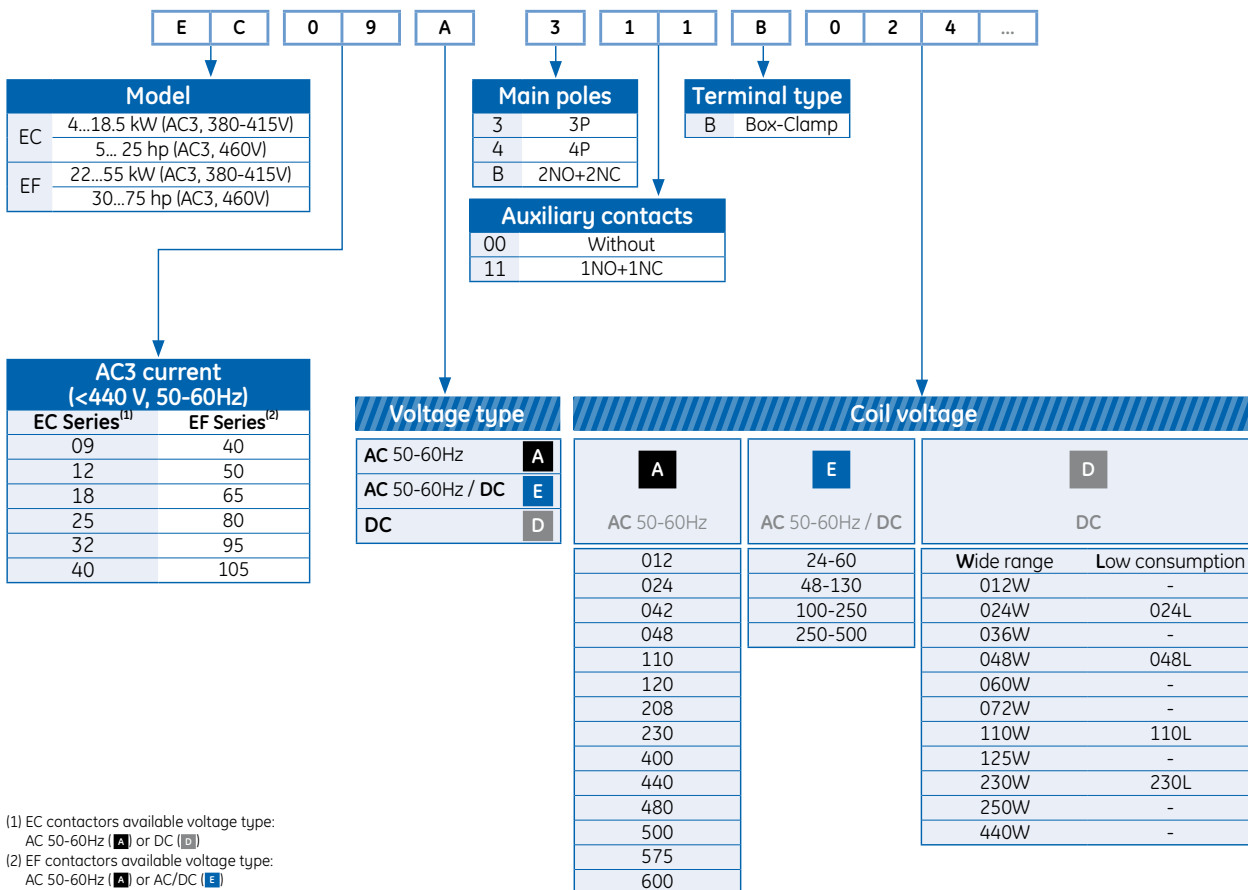
- 2 built-in auxiliary 3 pole contactors (up to 25A) - reduces customer choices by half - all in 45mm standard width.
- No auxiliary built-in from 32A or 4 poles, customer can choose frontal or lateral without penalizing overall dimensions.
- No need to stock special versions for plastic high performance demanding application because this is included as standard.
- Super wide voltage range electronic module available in EF range covering entire AC and DC coil ranges from 24V up to 500V with only 4 coils with voltage suppressor built-in.

Benefits

## Easy identification

Self explanatory description of the catalog number is an important advantage

### Example: EC 09 A 3 11 B 024 ...



(1) EC contactors available voltage type:

AC 50-60Hz (A) or DC (D)

(2) EF contactors available voltage type:

AC 50-60Hz (A) or AC/DC (E)



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# Energy efficiency

**Optimized operating with the combination of permanent magnet and electromagnet, spring and coil ensures low energy consumption.**

Permanent magnet technology advantages:

- Reduces the energy necessary to keep contactor on hold vs. standard DC coils
- Increases contactor life reducing contact bounce
- There is no peak consumption when contactor is closing
- The contactor is fully open or closed; avoiding intermediate contactor state reduces risk of coil burn and welding contacts

eco-design 

**Super wide voltage range electronic coils from 50 up to 105A.**

Provides the lowest energy consumption in combination with the widest operation range.

Reduces production shortage and maintenance downtimes with self-protecting software built-in.

- Optimizing logistics with four coils covering 24V up to 500V AC and DC.
- Secure holding operation, super wide voltage range avoids downtimes in weak networks.
- Universal service coil 100-250V AC/DC is suitable for use worldwide replacing more than 10 coils with standard technology (AC: 110, 120, 208, 220, 230, 240V and DC: 110, 125, 220 and 250V)
- Surge suppression always built-in; no need to use additional expensive external surge suppressor... less cost, less worries, simplified design
- Noise free. No humming noise as electronic module always operates coil in optimized condition
- Self protecting voltage operates contactor in safe condition avoiding chattering and coil burn. This secures uptime.

Reliable technology  
Space saving  
Time saving  
Secure connection  
Stock saving  
Energy efficiency



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Main advantages

A

B

C

X



# Motor protection devices

Efficor provides fully tested coordination Type II solutions for motor starting applications. A full range of optimized accessories are available for motor compact starting solutions in kit form.

## Manual motor starter: Surion

- Complete motor protection in one device
  - Thermal and magnetic protection
  - Phase failure protection
  - Temperature compensation
- Only magnetic protection available
- Up to 63A in two frames
- Frame 1: up to 32A in 45mm
  - Two operator handle versions: Rocker or Rotary
- Frame 2: up to 63A in 54mm
- High breaking capacity: Icu from 50kA up to 100kA at 400V
- Clear frontal monitoring status in the whole range:
  - OFF, Trip, ON
  - Alarm contact block
  - Short-circuit trip indication
- One common range of accessories:
  - Shunt or undervoltage trip device
  - External handle operator
  - Busbar system and link modules for contactor

## Thermal overload relays: RT series

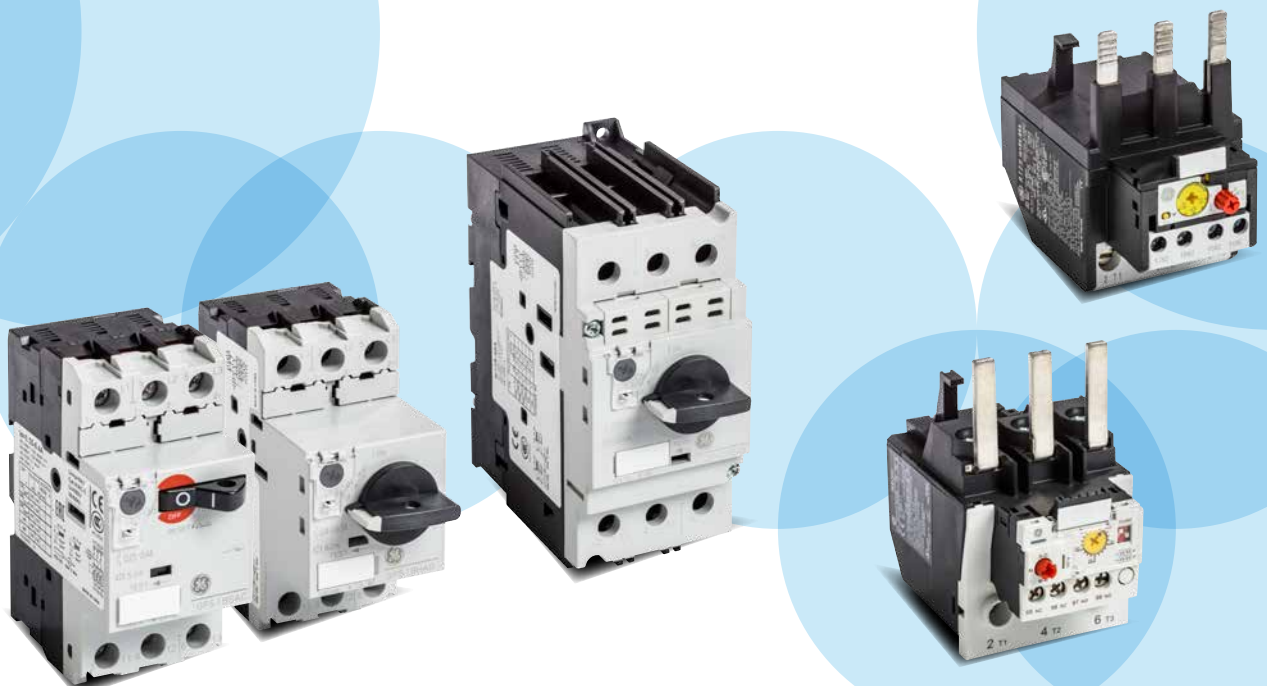
RT series offers fully adjustable motor current setting overload protection with automatic temperature compensation from -25 to 60°C.

- Differential protection for unbalanced load
- Protection against long starting time
- Manual or automatic reset
- Stop function
- Front mounted test button
- 2 auxiliaries built-in and accessories available
- Remote electrical reset
- Base for separate mounting

## Electronic overload relays: RE series

As well as thermal overload relay features, the RE series offers additional advantages such as:

- Lower power consumption: energy efficiency and space saving in cabinet
- Greater accuracy for better motor protection
- Multiple class selection, 5, 10, 20 and 30 trip class, in the same device for different starting time needs
- Wider range of current settings, for stock optimization and spare part reduction



# IE3 Ready

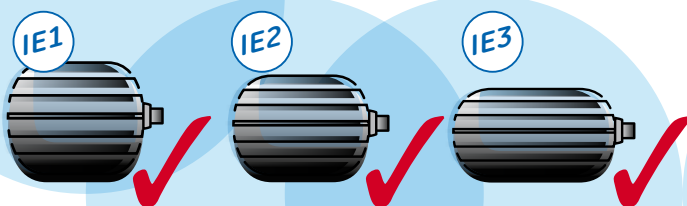
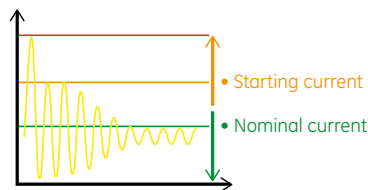
One of the earths biggest challenges is to reduce CO<sub>2</sub> emissions. Consequently there are new regulatory standards to reduce energy consumption. IEC60034-30-1 defines the efficiency classes for induction motors. From January 1st 2017 efficiency classes IE3 (premium efficiency) for motors from 0.75 up to 375kW or IE2 (high efficiency) motor with a drive, will become mandatory.

Although IE3 compliant motors consume less energy than IE2 motors, IE3 motors draw higher inrush and starting currents. IE3 motors have been in the market for several years and the starting behavior varies between designers and manufacturers. On average the inrush peak starting current will increase by 20% and the locked motor current by 15% versus a standard IE2 motor.

When selecting a starter to protect and control an IE3 motor, special care has to be taken in order to avoid unwanted tripping of the short circuit protection. The median ratio between the Inrush peak and the motor rated current increases from 10.2 (IE2 motors) to 12.6 (IE3 motors). GE recommends a ratio of 14 in order to account for the spread on motor data. For a ratio below 14 the motor datasheet has to be checked.

Efficor starting solutions provides a complete portfolio to Switch and Protect Premium Efficiency IE3 motors

- Efficor contactors have been specifically designed to switch higher starting currents and can be used without constraint in DOL, star-delta and reversing starting applications.
- ECRT, RT2 and RE relays protect the motor against overloads. IE3 motor rated operating current need to be within the OL relay setting range.
- Surion MMS are designed to protect motors and provide line protection against overload and short-circuit. They need to be selected to allow a higher inrush current to avoid nuisance tripping during start.



Solutions/IE3 ready

A
B
C
X



## Selection Table for Direct-On-Line starters

Values given are a harmonized IEC guideline between rated operational currents and rated operational powers determined on the basis of a four-pole squirrel-cage induction motor

Selection Table

Power		Guide values of rated operational current (A) at						Contactor	Overload Protection <sup>(4)</sup>		Breaker <sup>(5)</sup>		
kW <sup>(1)</sup>	hp <sup>(2)</sup>	110-120V	220-240V <sup>(1)</sup>	380-415V <sup>(1)</sup>	440-480V	500V	690V	Effcor	TOR	RE	Surion		
0.55	1/2			1.3	1.1			EC09	ECRT1B10G	RE1H	GPS1_F		
			2.2					EC09	ECRT1B10G	RE1H	GPS1_F		
		4.4						EC09	ECRT1B10J	RE1K	GPS1_G		
							0.87	EC09	ECRT1B10L	RE1M	GPS1_J		
		3/4			1.5 <sup>(3)</sup>		1.2		EC09	ECRT1B10F	RE1H	GPS1_E	
								EC09	ECRT1B10G	RE1H	GPS1_F		
			2.6		1.6 <sup>(3)</sup>			EC09	ECRT1B10G	RE1H	GPS1_F		
								EC09	ECRT1B10K	RE1K	GPS1_H		
		0.75		3.2	1.8				EC09	ECRT1B10H	RE1H	GPS1_F	
									EC09	ECRT1B10J	RE1H	GPS1_G	
	6.4								EC09	ECRT1B10K	RE1K	GPS1_H	
								1.1	EC09	ECRT1B10M	RE1S	GPS1_K	
1.1	1-1/2			1.9		1.5 <sup>(3)</sup>		EC09	ECRT1B10G	RE1H	GPS1_F		
				3.3				EC09	ECRT1B10J	RE1H	GPS1_G		
								1.6 <sup>(3)</sup>	EC09	ECRT1B10K	RE1K	GPS1_H	
							2.2		EC09	ECRT1B10H	RE1H	GPS1_F	
									EC09	ECRT1B10J	RE1K	GPS1_G	
						2.7	3		EC09	ECRT1B10K	RE1K	GPS1_H	
1.5	2		4.7	3.3				EC09	ECRT1B10K	RE1K	GPS1_H		
				6 <sup>(3)</sup>		3.4			EC09	ECRT1B10L	RE1M	GPS1_J	
		12						EC12	ECRT1B10N	RE1S	GPS1_L		
					4.3				EC09	ECRT1B10K	RE1K	GPS1_H	
	1.5	3			6.3				EC09	ECRT1B10L	RE1M	GPS1_J	
									EC09	ECRT1B10M	RE1S	GPS1_K	
			13.6						EC18	ECRT1B10P	RE1S	GPS1_M	
						3.6 <sup>(3)</sup>		2.9		EC09	ECRT1B10J	RE1K	GPS1_G
	2.2	4							EC09	ECRT1B10K	RE1K	GPS1_H	
					6.3					EC09	ECRT1B10L	RE1M	GPS1_J
									2.8	EC09	ECRT1B10K	RE1K	GPS1_H
										EC09	ECRT1B10L	RE1M	GPS1_J
									EC09	ECRT1B10K	RE1K	GPS1_H	
						4.9		3.9 <sup>(3)</sup>	EC09	ECRT1B10L	RE1M	GPS1_J	
3	5		8.5	6.1 <sup>(3)</sup>	4.8			EC09	ECRT1B10M	RE1S	GPS1_K		
									EC09	ECRT1B10L	RE1M	GPS1_J	
									EC09	ECRT1B10L	RE1M	GPS1_J	
									EC12	ECRT1B10N	RE1S	GPS1_L	
	3	7-1/2	19.2		9.6				EC25	ECRT2B10T	RE1S	GPS1_P	
										EC09	ECRT1B10K	RE1K	GPS1_H
								5.2		EC09	ECRT1B10L	RE1M	GPS1_J
						6.5				EC09	ECRT1B10M	RE1S	GPS1_K
	4	5.5							EC12	ECRT1B10N	RE1S	GPS1_L	
										EC09	ECRT1B10L	RE1M	GPS1_J
									4.9	EC09	ECRT1B10M	RE1S	GPS1_K
										EC18	ECRT1B10P	RE1S	GPS1_M
									EC09	ECRT1B10M	RE1S	GPS1_K	
						8.5	7.6		EC12	ECRT1B10N	RE1S	GPS1_L	
5.5	7-1/2							EC18	ECRT1B10P	RE1S	GPS1_M		
									EC09	ECRT1B10M	RE1S	GPS1_K	
									EC12	ECRT1B10N	RE1S	GPS1_L	
									EC18	ECRT1B10P	RE1S	GPS1_M	
									EC32	ECRT2B10V	RE1W	GPS1_R	
								6.7	EC09	ECRT1B10M	RE1S	GPS1_K	
7-1/2	7-1/2							EC12	ECRT1B10N	RE1S	GPS1_L		
									EC12	ECRT1B10N	RE1S	GPS1_L	
									EC25	ECRT2B10T	RE1S	GPS1_P	
									EC12	ECRT1B10N	RE1S	GPS1_L	
									EC25	ECRT2B10T	RE1S	GPS1_P	
		44	22	14	11				EF50	RT2G	RE2M	GPS2_U	

(1) Preferred rated values according to IEC 60072-1 (primary series). 230V and 400V are the rated voltage for IEC.

(2) Horsepower and currents values according to UL 508 (60Hz).

(3) Inrush peak versus the motor rated current median is 12.6 for IE3 motors. The ratio on these breakers is in the range from 13 to 14 times. Motor datasheet has to be checked. In case of higher inrush current than the average select next range of available breaker.

(4) Overload protection: Choose thermal (TOR) or electronic (RE) overload protection device.

(5) Choose thermo-magnetic or only magnetic breaker characteristic:

Optimized DOL starter: Breaker (thermomagnetic) + Contactor.

Conventional DOL starter: Breaker (only magnetic) + Contactor + Overload.





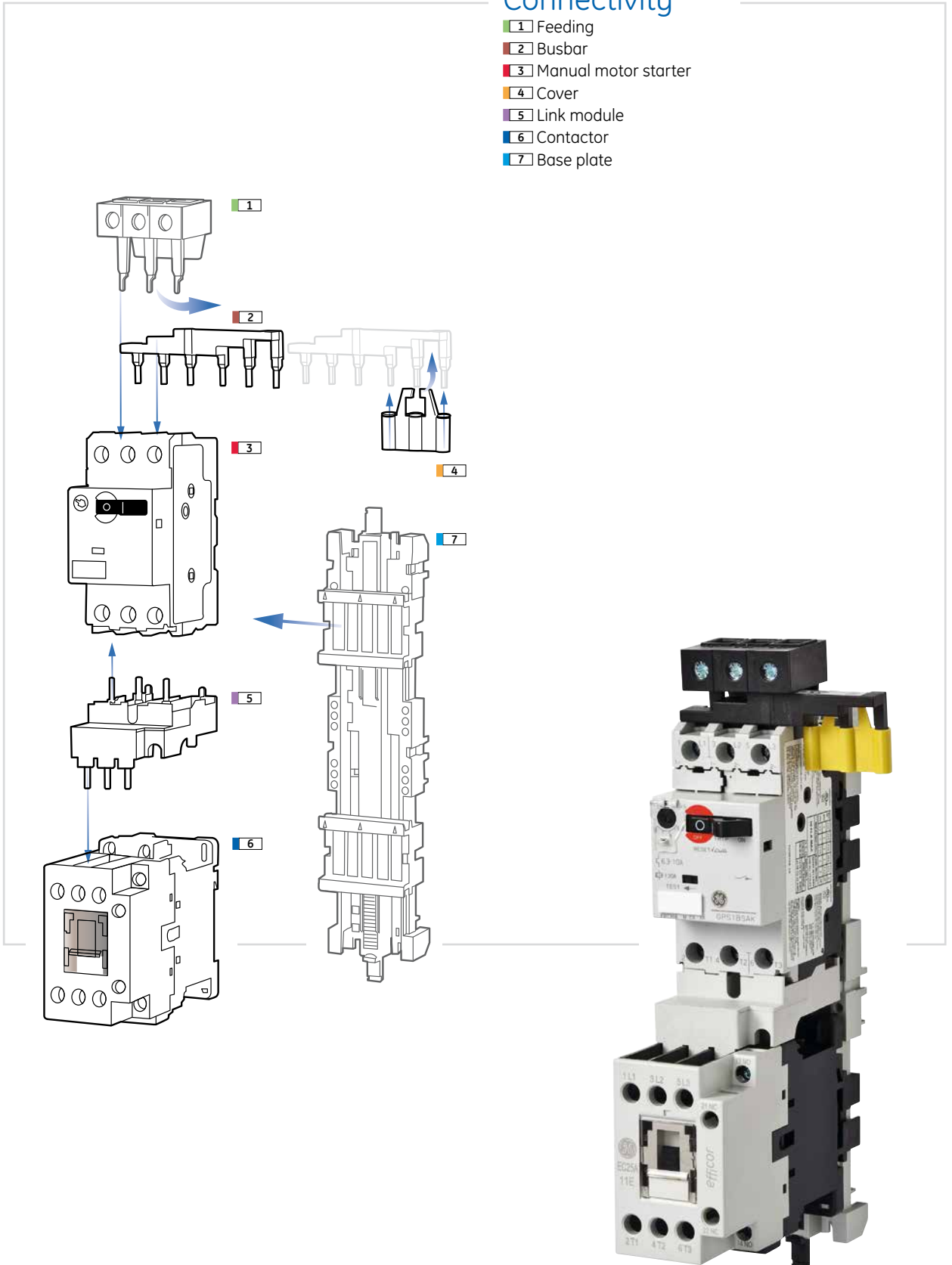
Power		Guide values of rated operational current (A) at						Contactor	Overload Protection <sup>(4)</sup>		Breaker <sup>(5)</sup>
kW <sup>(1)</sup>	hp <sup>(2)</sup>	110-120V	220-240V <sup>(3)</sup>	380-415V <sup>(1)</sup>	440-480V	500V	690V	Efficor	TOR	RE	Surion
10	10			18	14			EC18	ECRT1B10P	RE1S	GPS1_M
			28					EC18	ECRT1B10S	RE1S	GPS1_N
		56						EC32	ECRT2B10V	RE1W	GPS1_R
7.5	7.5			15.5 <sup>(3)</sup>		12.4	8.9	EF65	RT2H	RE2M	GPS2_U
			27					EC12	ECRT1B10N	RE1S	GPS1_K
								EC18	ECRT1B10P	RE1S	GPS1_M
11	11			22		17.6	12.8	EC18	ECRT1B10P	RE1S	GPS1_M
			38 <sup>(3)</sup>					EC32	ECRT2B10V	RE1W	GPS1_R
								EC25	ECRT2B10P	RE1S	GPS1_M
15	15			27		21		EC18	ECRT1B10S	RE1S	GPS1_N
			42					EC25	ECRT2B10T	RE1S	GPS1_P
		84						EC32	ECRT2B10V	RE1W	GPS1_R
20	20			34		27		EF50	RT2G	RE2M	GPS2_T
			54					EF95	RT2L	RE2M <sup>(6)</sup>	FD-36MC100GD
								EC32	ECRT2B10V	RE1W	GPS1_R
15	15			29		23	17	EC40	ECRT2B10W	RE1W	GPS2_S
			51					EF65	RT2H	RE2M	GPS2_U
								EC25	ECRT2B10S	RE1S	GPS1_N
18.5	18.5			35		28	21	EC25	ECRT2B10U	RE1S	GPS1_P
			61 <sup>(3)</sup>					EC32	ECRT2B10V	RE1W	GPS1_R
								EF65	RT2G	RE2M	GPS2_U
25	25			44		34		EC40	ECRT2B10W	RE1W	GPS2_S
			68					EF50	RT2G	RE2M	GPS2_U
								EF80	RT2J	RE2M <sup>(6)</sup>	FD-36MC080GD
22	22			41		33	24	EC40	ECRT2B10U	RE1W	GPS1_R
			72					EC40	ECRT2B10W	RE1W	GPS2_S
								EF50	RT2E	RE2M	GPS2_T
30	30			51		40 <sup>(3)</sup>		EF80	RT2J	RE2M	FD-36MC080GD
			80					EC40	ECRT2B10W	RE1W	GPS2_S
								EF65	RT2G	RE2M	GPS2_U
40	40			66		52		EF80	RT2J	RE2M	FD-36MC080GD
			104					EF65	RT2G	RE2M	GPS2_U
								EF105	RT2M	RE2M	FE-36MC125JF
30	30			55		44	32	EF50	RT2E	RE2M	GPS2_S
			96					EF65	RT2G	RE2M	GPS2_U
								EF65	RT2H	RE2M	GPS2_U
37	37			66		53	39	EF105	RT2M	RE2M <sup>(6)</sup>	FE-36MC125JF
								EF50	RT2E	RE2M	GPS2_T
								EF65	RT2G	RE2M	GPS2_U
50	50			83		65		EF80	RT2J	RE2M	FD-36MC080GD
								EF80	RT2J	RE2M	FD-36MC080GD
								EF105	RT2M	RE2M	FE-36MC125JF
45	45			103		77		EF50	RT2G	RE2M	GPS2_U
								EF65	RT2J	RE2M	FD-36MC080GD
								EF80	RT2L	RE2M	FD-36MC100GD
55	55			80		64	47	EF80	RT2J	RE2M	FD-36MC080GD
								EF80	RT2J	RE2M	FD-36MC080GD
								EF105	RT2M	RE2M	FE-36MC125JF
75	75			97		78	57	EF50	RT2G	RE2M	GPS2_U
								EF65	RT2H	RE2M	GPS2_U
								EF80	RT2L	RE2M <sup>(6)</sup>	FD-36MC080GD
90	90			96		77	77	EF105	RT2M	RE2M <sup>(6)</sup>	FE-36MC125JF
								EF80	RT2J	RE2M	FD-36MC080GD
								EF95	RT2M	RE2M	FD-36MC100GD

(1) Preferred rated values according to IEC 60072-1 (primary series). 230V and 400V are the rated voltage for IEC.  
 (2) Horsepower and currents values according to UL 508 (60Hz).  
 (3) Inrush peak versus the motor rated current median is 12.6 for IE3 motors. The ratio on these breakers is in the range from 13 to 14 times. Motor datasheet has to be checked. In case of higher inrush current than the average select next range of available breaker.  
 (4) Overload protection: Choose thermal (TOR) or electronic (RE) overload protection device.  
 (5) Choose thermo-magnetic or only magnetic breaker characteristic:  
 Optimized DOL starter: Breaker (thermomagnetic) + Contactor.  
 Conventional DOL starter: Breaker (only magnetic) + Contactor + Overload.  
 (6) When used together with FE breaker, replace by RE3E separate mounting from contactor.



### Connectivity

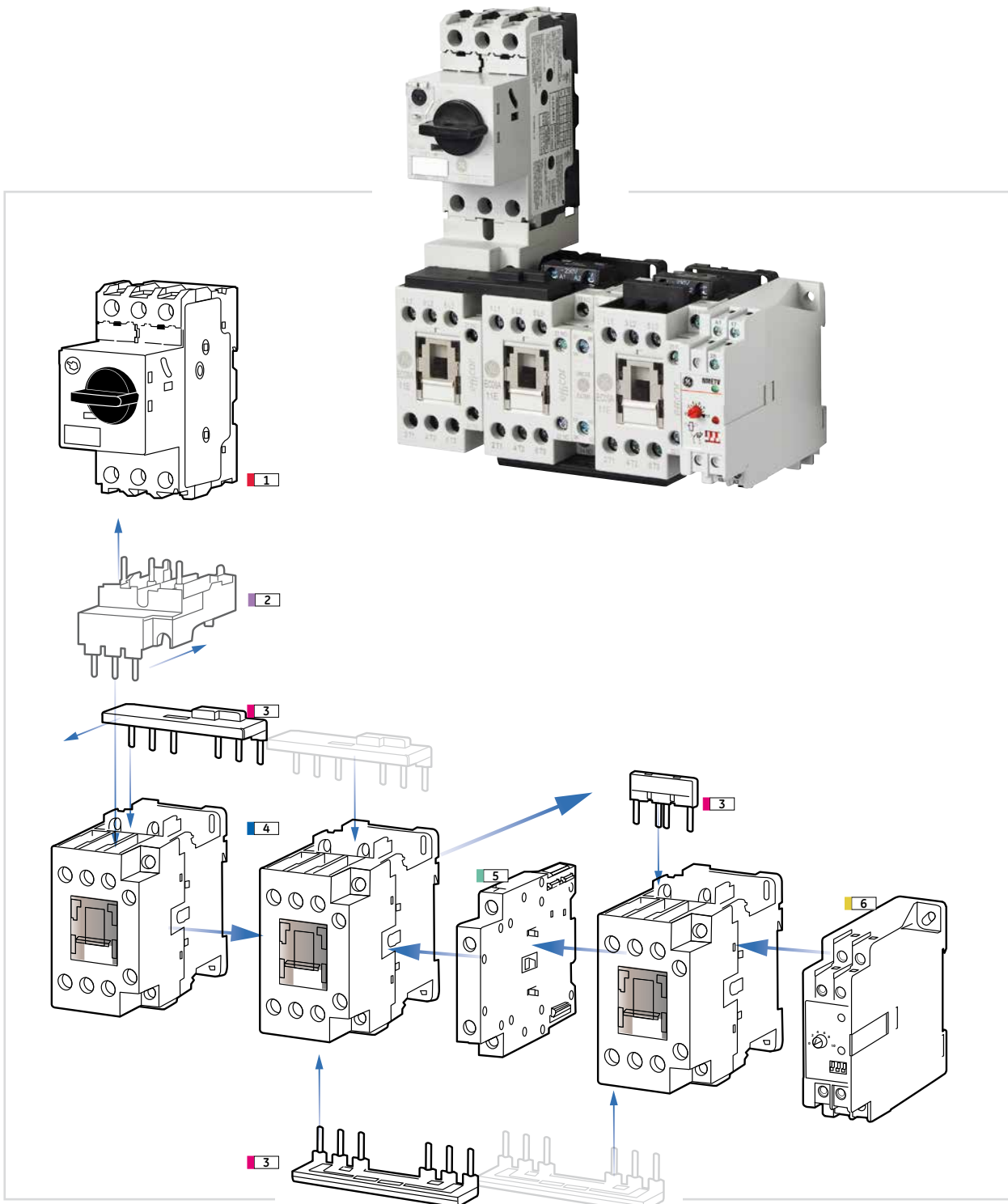
- 1 Feeding
- 2 Busbar
- 3 Manual motor starter
- 4 Cover
- 5 Link module
- 6 Contactor
- 7 Base plate



# Star delta starter

## Connectivity

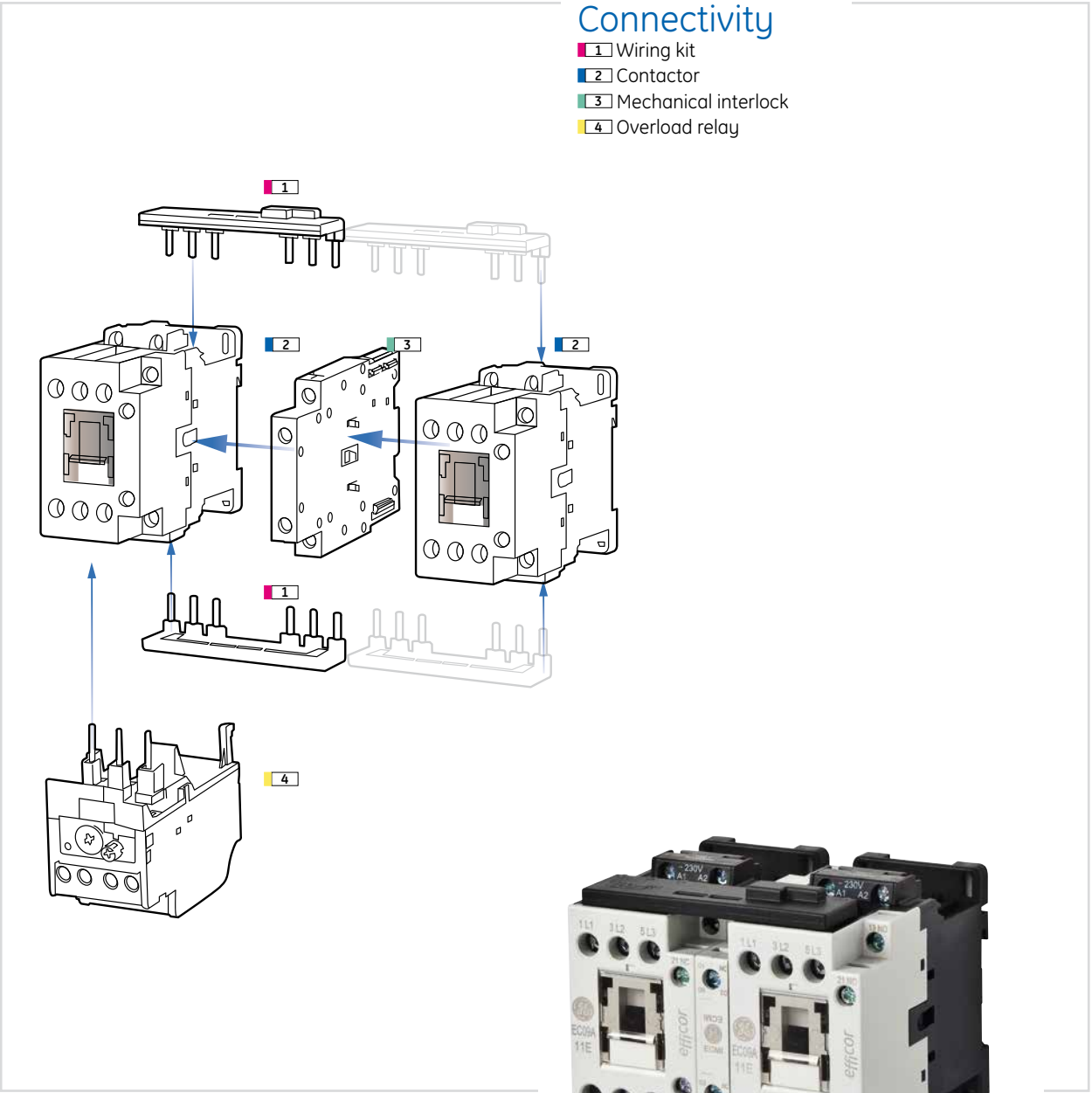
- 1 Manual motor starter
- 2 Link module
- 3 Wiring kit
- 4 Contactor(s)
- 5 Mechanical interlock
- 6 Timer



Reversing starter (with thermal overload relay)

Connectivity

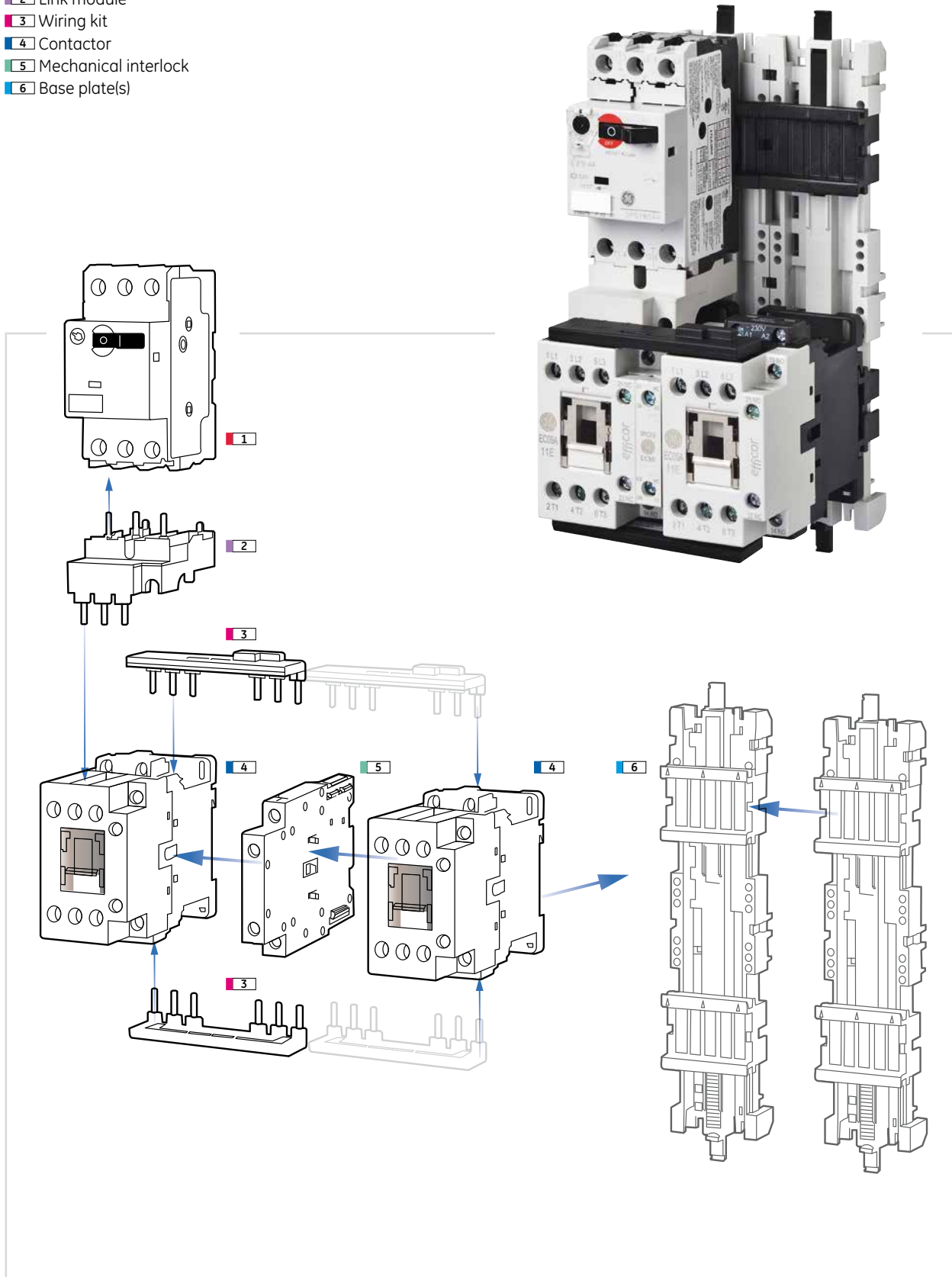
- 1 Wiring kit
- 2 Contactor
- 3 Mechanical interlock
- 4 Overload relay



## Reversing starter (without thermal overload relay)

### Connectivity

- 1 Manual motor starter
- 2 Link module
- 3 Wiring kit
- 4 Contactor
- 5 Mechanical interlock
- 6 Base plate(s)



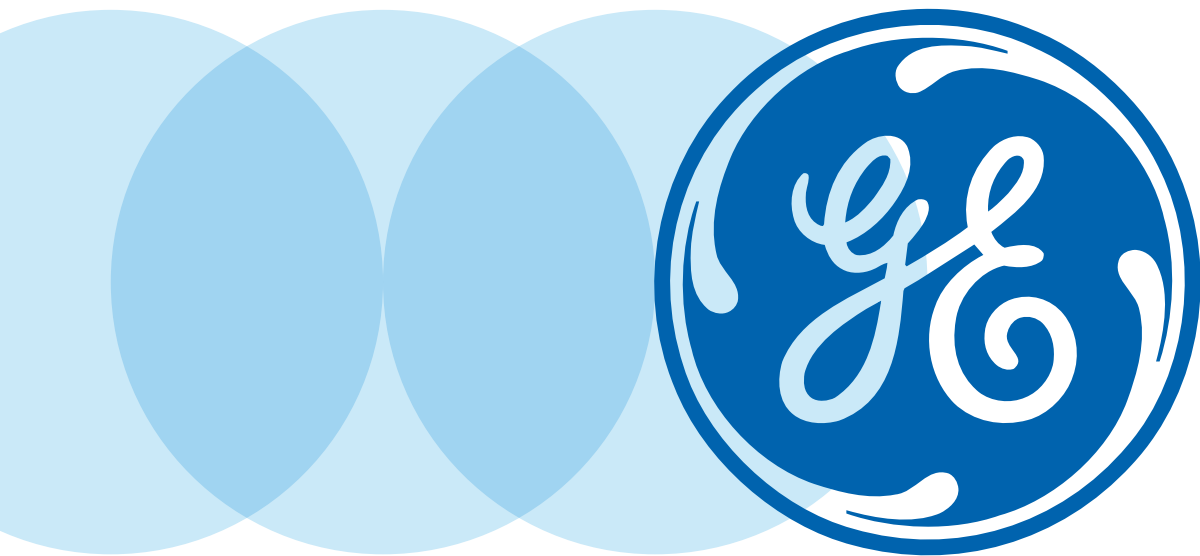
Reversing starter

A

B

C

X



**Contactors**

- B.2 3 pole contactors - Double box terminals
- B.4 4 pole contactors - Double box terminals
- B.6 2NO - 2NC contactors - Double box terminals
- B.8 Auxiliary contactors - Double box terminals - Ith 20A
- B.9 Catalog number configurator
- B.9 Spare coils for contactors and auxiliary contactors - Box clamp terminals

Advantages and Benefits

A

Order codes

B

**Accessories**

- B.10 For contactors
- B.12 For starters
- B.13 **Thermal overload relays**

Technical data

C

Numerical index

X

efficor



3 pole contactors - Double box terminals

Max. operating current		Admissible power AC3				Electrical endurance	Aux. cont.	Control circuit							
Not inductive load AC1 A	Motors <440V 3Ph 50-60Hz AC3 A	220-240V kW hp	380-415V kW hp	440-480V kW hp	690V kW	Cat. AC3 Operations	NO NC	AC			DC			Pack	
								Voltage	Cat. no.	Ref. no.	Voltage	Cat. no. <sup>(1)</sup>	Ref. no.		
25	9	2.2 3	4 5.5	4 5.5	7.5	1.7x10 <sup>6</sup>	1	1	12	EC09A311B012	267001	12	EC09D311B012W	267085	5
								1	24	EC09A311B024	267002	24	EC09D311B024W	267086	5
								1	42	EC09A311B042	267003	36	EC09D311B036W	267087	5
								1	48	EC09A311B048	267004	48	EC09D311B048W	267088	5
								1	110	EC09A311B110	267005	60	EC09D311B060W	267089	5
								1	120	EC09A311B120	267006	72	EC09D311B072W	267090	5
								1	208	EC09A311B208	267007	110	EC09D311B110W	267091	5
								1	230	EC09A311B230	267008	125	EC09D311B125W	267092	5
								1	240	EC09A311B240	267009	230	EC09D311B230W	267093	5
								1	400	EC09A311B400	267010	250	EC09D311B250W	267094	5
								1	440	EC09A311B440	267011	440	EC09D311B440W	267095	5
								1	480	EC09A311B480	267012	24	EC09D311B024L	267096	5
								1	500	EC09A311B500	267013	48	EC09D311B048L	267097	5
								1	575	EC09A311B575	269075	110	EC09D311B110L	267098	5
								1	600	EC09A311B600	267014	230	EC09D311B230L	267099	5
								25	12	3 4	5.5 7.5	5.5 7.5	11	1.7x10 <sup>6</sup>	1
1	24	EC12A311B024	267016	24	EC12D311B024W	267101	5								
1	42	EC12A311B042	267017	36	EC12D311B036W	267102	5								
1	48	EC12A311B048	267018	48	EC12D311B048W	267103	5								
1	110	EC12A311B110	267019	60	EC12D311B060W	267104	5								
1	120	EC12A311B120	267020	72	EC12D311B072W	267105	5								
1	208	EC12A311B208	267021	110	EC12D311B110W	267106	5								
1	230	EC12A311B230	267022	125	EC12D311B125W	267107	5								
1	240	EC12A311B240	267023	230	EC12D311B230W	267108	5								
1	400	EC12A311B400	267024	250	EC12D311B250W	267109	5								
1	440	EC12A311B440	267025	440	EC12D311B440W	267110	5								
1	480	EC12A311B480	267026	24	EC12D311B024L	267111	5								
1	500	EC12A311B500	267027	48	EC12D311B048L	267112	5								
1	575	EC12A311B575	269076	110	EC12D311B110L	267113	5								
1	600	EC12A311B600	267028	230	EC12D311B230L	267114	5								
32	18	4 5.5	7.5 10	7.5 10	15	1.7x10 <sup>6</sup>	1								
								1	24	EC18A311B024	267030	24	EC18D311B024W	267116	5
								1	42	EC18A311B042	267031	36	EC18D311B036W	267117	5
								1	48	EC18A311B048	267032	48	EC18D311B048W	267118	5
								1	110	EC18A311B110	267033	60	EC18D311B060W	267119	5
								1	120	EC18A311B120	267034	72	EC18D311B072W	267120	5
								1	208	EC18A311B208	267035	110	EC18D311B110W	267121	5
								1	230	EC18A311B230	267036	125	EC18D311B125W	267122	5
								1	240	EC18A311B240	267037	230	EC18D311B230W	267123	5
								1	400	EC18A311B400	267038	250	EC18D311B250W	267124	5
								1	440	EC18A311B440	267039	440	EC18D311B440W	267125	5
								1	480	EC18A311B480	267040	24	EC18D311B024L	267126	5
								1	500	EC18A311B500	267041	48	EC18D311B048L	267127	5
								1	575	EC18A311B575	269077	110	EC18D311B110L	267128	5
								1	600	EC18A311B600	267042	230	EC18D311B230L	267129	5
								45	25	7.5 10	11 15	12 16	22	1.5x10 <sup>6</sup>	1
1	24	EC25A311B024	267044	24	EC25D311B024W	267131	1								
1	42	EC25A311B042	267045	36	EC25D311B036W	267132	1								
1	48	EC25A311B048	267046	48	EC25D311B048W	267133	1								
1	110	EC25A311B110	267047	60	EC25D311B060W	267134	1								
1	120	EC25A311B120	267048	72	EC25D311B072W	267135	1								
1	208	EC25A311B208	267049	110	EC25D311B110W	267136	1								
1	230	EC25A311B230	267050	125	EC25D311B125W	267137	1								
1	240	EC25A311B240	267051	230	EC25D311B230W	267138	1								
1	400	EC25A311B400	267052	250	EC25D311B250W	267139	1								
1	440	EC25A311B440	267053	440	EC25D311B440W	267140	1								
1	480	EC25A311B480	267054	24	EC25D311B024L	267141	1								
1	500	EC25A311B500	267055	48	EC25D311B048L	267142	1								
1	575	EC25A311B575	269078	110	EC25D311B110L	267143	1								
1	600	EC25A311B600	267056	230	EC25D311B230L	267144	1								
60	32	9 12	15 22	15 22	30	1.5x10 <sup>6</sup>	0								
								0	24	EC32A300B024	267058	24	EC32D300B024W	267146	1
								0	42	EC32A300B042	267059	36	EC32D300B036W	267147	1
								0	48	EC32A300B048	267060	48	EC32D300B048W	267148	1
								0	110	EC32A300B110	267061	60	EC32D300B060W	267149	1
								0	120	EC32A300B120	267062	72	EC32D300B072W	267150	1
								0	208	EC32A300B208	267063	110	EC32D300B110W	267151	1
								0	230	EC32A300B230	267064	125	EC32D300B125W	267152	1
								0	240	EC32A300B240	267065	230	EC32D300B230W	267153	1
								0	400	EC32A300B400	267066	250	EC32D300B250W	267154	1
								0	440	EC32A300B440	267067	440	EC32D300B440W	267155	1
								0	480	EC32A300B480	267068	24	EC32D300B024L	267156	1
								0	500	EC32A300B500	267069	48	EC32D300B048L	267157	1
								0	575	EC32A300B575	269079	110	EC32D300B110L	267158	1
								0	600	EC32A300B600	267070	230	EC32D300B230L	267159	1
								60	40	11 15	18.5 25	22 30	37	1.5x10 <sup>6</sup>	0
0	24	EC40A300B024	267072	24	EC40D300B024W	267161	1								
0	42	EC40A300B042	267073	36	EC40D300B036W	267162	1								
0	48	EC40A300B048	267074	48	EC40D300B048W	267163	1								
0	110	EC40A300B110	267075	60	EC40D300B060W	267164	1								
0	120	EC40A300B120	267076	72	EC40D300B072W	267165	1								
0	208	EC40A300B208	267077	110	EC40D300B110W	267166	1								
0	230	EC40A300B230	267078	125	EC40D300B125W	267167	1								
0	240	EC40A300B240	267079	230	EC40D300B230W	267168	1								
0	400	EC40A300B400	267080	250	EC40D300B250W	267169	1								
0	440	EC40A300B440	267081	440	EC40D300B440W	267170	1								
0	480	EC40A300B480	267082	24	EC40D300B024L	267171	1								
0	500	EC40A300B500	267083	48	EC40D300B048L	267172	1								
0	575	EC40A300B575	269080	110	EC40D300B110L	267173	1								
0	600	EC40A300B600	267084	230	EC40D300B230L	267174	1								

(1) End character: **W** = Wide voltage (0.7-1.25xUn) and built-in diode.  
**L** = Low consumption.







4 pole contactors - Double box terminals

Global contactors

A

B

C

X

Max. operating current		Admissible power AC1				Electrical endurance	Power cont.	Control circuit						
Not inductive load AC1 A	Motors <440V 3Ph 50-60Hz AC3 A	220-240V kW	380-415V kW	440-480V kW	690V kW	Cat. AC1 Operations	NO NC	AC			DC			Pack
								Voltage	Cat. no.	Ref. no.	Voltage	Cat. no. <sup>(1)</sup>	Ref. no.	
25	12	9.5	16.5	19	30	4x10 <sup>5</sup>	4 0	12	EC12A400B012	267175	12	EC12D400B012W	267231	5
								24	EC12A400B024	267176	24	EC12D400B024W	267232	5
								42	EC12A400B042	267177	36	EC12D400B036W	267233	5
								48	EC12A400B048	267178	48	EC12D400B048W	267234	5
								110	EC12A400B110	267179	60	EC12D400B060W	267235	5
								120	EC12A400B120	267180	72	EC12D400B072W	267236	5
								208	EC12A400B208	267181	110	EC12D400B110W	267237	5
								230	EC12A400B230	267182	125	EC12D400B125W	267238	5
								240	EC12A400B240	267183	230	EC12D400B230W	267239	5
								400	EC12A400B400	267184	250	EC12D400B250W	267240	5
								440	EC12A400B440	267185	440	EC12D400B440W	267241	5
								480	EC12A400B480	267186				5
								500	EC12A400B500	267187	24	EC12D400B024L	267242	5
								575	EC12A400B575	269081	48	EC12D400B048L	267243	5
								600	EC12A400B600	267188	110	EC12D400B110L	267244	5
											230	EC12D400B230L	267245	5
32	18	12	22	24	38	6x10 <sup>5</sup>	4 0	12	EC18A400B012	267189	12	EC18D400B012W	267246	5
								24	EC18A400B024	267190	24	EC18D400B024W	267247	5
								42	EC18A400B042	267191	36	EC18D400B036W	267248	5
								48	EC18A400B048	267192	48	EC18D400B048W	267249	5
								110	EC18A400B110	267193	60	EC18D400B060W	267250	5
								120	EC18A400B120	267194	72	EC18D400B072W	267251	5
								208	EC18A400B208	267195	110	EC18D400B110W	267252	5
								230	EC18A400B230	267196	125	EC18D400B125W	267253	5
								240	EC18A400B240	267197	230	EC18D400B230W	267254	5
								400	EC18A400B400	267198	250	EC18D400B250W	267255	5
								440	EC18A400B440	267199	440	EC18D400B440W	267256	5
								480	EC18A400B480	267200				5
								500	EC18A400B500	267201	24	EC18D400B024L	267257	5
								575	EC18A400B575	269082	48	EC18D400B048L	267258	5
								600	EC18A400B600	267202	110	EC18D400B110L	267259	5
											230	EC18D400B230L	267260	5
45	25	17	29	34	54	6.5x10 <sup>5</sup>	4 0	12	EC25A400B012	267203	12	EC25D400B012W	267261	5
								24	EC25A400B024	267204	24	EC25D400B024W	267262	5
								42	EC25A400B042	267205	36	EC25D400B036W	267263	5
								48	EC25A400B048	267206	48	EC25D400B048W	267264	5
								110	EC25A400B110	267207	60	EC25D400B060W	267265	5
								120	EC25A400B120	267208	72	EC25D400B072W	267266	5
								208	EC25A400B208	267209	110	EC25D400B110W	267267	5
								230	EC25A400B230	267210	125	EC25D400B125W	267268	5
								240	EC25A400B240	267211	230	EC25D400B230W	267269	5
								400	EC25A400B400	267212	250	EC25D400B250W	267270	5
								440	EC25A400B440	267213	440	EC25D400B440W	267271	5
								480	EC25A400B480	267214				5
								500	EC25A400B500	267215	24	EC25D400B024L	267272	5
								575	EC25A400B575	269083	48	EC25D400B048L	267273	5
								600	EC25A400B600	267216	110	EC25D400B110L	267274	5
											230	EC25D400B230L	267275	5
60	32	22.5	39.5	46	72	8x10 <sup>5</sup>	4 0	12	EC32A400B012	267217	12	EC32D400B012W	267276	1
								24	EC32A400B024	267218	24	EC32D400B024W	267277	1
								42	EC32A400B042	267219	36	EC32D400B036W	267278	1
								48	EC32A400B048	267220	48	EC32D400B048W	267279	1
								110	EC32A400B110	267221	60	EC32D400B060W	267280	1
								120	EC32A400B120	267222	72	EC32D400B072W	267281	1
								208	EC32A400B208	267223	110	EC32D400B110W	267282	1
								230	EC32A400B230	267224	125	EC32D400B125W	267283	1
								240	EC32A400B240	267225	230	EC32D400B230W	267284	1
								400	EC32A400B400	267226	250	EC32D400B250W	267285	1
								440	EC32A400B440	267227	440	EC32D400B440W	267286	1
								480	EC32A400B480	267228				1
								500	EC32A400B500	267229	24	EC32D400B024L	267287	1
								575	EC32A400B575	269084	48	EC32D400B048L	267288	1
								600	EC32A400B600	267230	110	EC32D400B110L	267289	1
											230	EC32D400B230L	267290	1

(1) End character: W = Wide voltage (0.7-1.25xUn) and built-in diode.  
L = Low consumption.



### 4 pole contactors - Double box terminals

Max. operating current		Admissible power AC1				Electrical endurance	Power cont.	Control circuit								
Not inductive load AC1 A	Motors <440V 3Ph 50-60Hz AC3 A	220-240V kW	380-415V kW	440-480V kW	690V kW	Cat. AC1 Operations	NO	NC	AC			AC/DC			Pack	
									Voltage <sup>(1)</sup>	Cat. no.	Ref. no.	Voltage	Cat. no.	Ref. no.		
90	50	34	55	60	95	1.5x10 <sup>6</sup>	4	0	12	EF50A400B012	270095					5
									24	EF50A400B024	270096	24-60	EF50E400B24-60	270137	5	
									48	EF50A400B048	270098				5	
									110	EF50A400B110	270100	48-130	EF50E400B48-130	270138	5	
									208	EF50A400B208	270101				5	
									230	EF50A400B230	270102	100-250	EF50E400B100-250	270139	5	
									400	EF50A400B400	270103	250-500	EF50E400B250-500	270140	5	
									480	EF50A400B480	270105				5	
									575	EF50A400B575	270107				5	
									600	EF50A400B600	270108				5	
110	80	42	72.5	85	125	1.5x10 <sup>6</sup>	4	0	12	EF80A400B012	270109					5
									24	EF80A400B024	270110	24-60	EF80E400B24-60	270141	5	
									48	EF80A400B048	270112				5	
									110	EF80A400B110	270114	48-130	EF80E400B48-130	270142	5	
									208	EF80A400B208	270115				5	
									230	EF80A400B230	270116	100-250	EF80E400B100-250	270143	5	
									400	EF80A400B400	270117	250-500	EF80E400B250-500	270144	5	
									480	EF80A400B480	270119				5	
									575	EF80A400B575	270121				5	
									600	EF80A400B600	270122				5	
140	95	53	92	105	160	1.5x10 <sup>6</sup>	4	0	12	EF95A400B012	270123					5
									24	EF95A400B024	270124	24-60	EF95E400B24-60	270145	5	
									48	EF95A400B048	270126				5	
									110	EF95A400B110	270128	48-130	EF95E400B48-130	270146	5	
									208	EF95A400B208	270129				5	
									230	EF95A400B230	270130	100-250	EF95E400B100-250	270147	5	
									400	EF95A400B400	270131	250-500	EF95E400B250-500	270148	5	
									480	EF95A400B480	270133				5	
									575	EF95A400B575	270135				5	
									600	EF95A400B600	270136				5	



(1) Voltage 110V covers 110V 50-60Hz and 120V 60Hz.

Order codes

A

B

C

X



2NO - 2NC contactors - Double box terminals

Global contactors

A

B

C

X

Max. operating current		Admissible power AC3				Electrical endurance	Power cont.	Control circuit							
Not inductive load AC1 A	Motors <440V 3Ph 50-60Hz AC3 A	220-240V kW hp	380-415V kW hp	440-480V kW hp	690V kW	Cat. AC3 Operations	NO	NC	AC			DC			Pack
									Voltage	Cat. no.	Ref. no.	Voltage	Cat. no. <sup>(1)</sup>	Ref. no.	
25	12	3 4	5.5 7.5	5.5 7.5	7.5	1.7x10 <sup>6</sup>	2	2	12	EC12AB00B012	267291	12	EC12DB00B012W	267347	5
									24	EC12AB00B024	267292	24	EC12DB00B024W	267348	5
									42	EC12AB00B042	267293	36	EC12DB00B036W	267349	5
									48	EC12AB00B048	267294	48	EC12DB00B048W	267350	5
									110	EC12AB00B110	267295	60	EC12DB00B060W	267351	5
									120	EC12AB00B120	267296	72	EC12DB00B072W	267352	5
									208	EC12AB00B208	267297	110	EC12DB00B110W	267353	5
									230	EC12AB00B230	267298	125	EC12DB00B125W	267354	5
									240	EC12AB00B240	267299	230	EC12DB00B230W	267355	5
									400	EC12AB00B400	267300	250	EC12DB00B250W	267356	5
									440	EC12AB00B440	267301	440	EC12DB00B440W	267357	5
									480	EC12AB00B480	267302				5
									500	EC12AB00B500	267303	24	EC12DB00B024L	267358	5
									575	EC12AB00B575	269115	48	EC12DB00B048L	267359	5
									600	EC12AB00B600	267304	110	EC12DB00B110L	267360	5
												230	EC12DB00B230L	267361	5
32	18	4 5.5	7.5 10	7.5 10	15	1.5x10 <sup>6</sup>	2	2	12	EC18AB00B012	267305	12	EC18DB00B012W	267362	5
									24	EC18AB00B024	267306	24	EC18DB00B024W	267363	5
									42	EC18AB00B042	267307	36	EC18DB00B036W	267364	5
									48	EC18AB00B048	267308	48	EC18DB00B048W	267365	5
									110	EC18AB00B110	267309	60	EC18DB00B060W	267366	5
									120	EC18AB00B120	267310	72	EC18DB00B072W	267367	5
									208	EC18AB00B208	267311	110	EC18DB00B110W	267368	5
									230	EC18AB00B230	267312	125	EC18DB00B125W	267369	5
									240	EC18AB00B240	267313	230	EC18DB00B230W	267370	5
									400	EC18AB00B400	267314	250	EC18DB00B250W	267371	5
									440	EC18AB00B440	267315	440	EC18DB00B440W	267372	5
									480	EC18AB00B480	267316				5
									500	EC18AB00B500	267317	24	EC18DB00B024L	267373	5
									575	EC18AB00B575	269116	48	EC18DB00B048L	267374	5
									600	EC18AB00B600	267318	110	EC18DB00B110L	267375	5
												230	EC18DB00B230L	267376	5
45	25	7.5 10	11 15	12 16	22	1.5x10 <sup>6</sup>	2	2	12	EC25AB00B012	267319	12	EC25DB00B012W	267377	5
									24	EC25AB00B024	267320	24	EC25DB00B024W	267378	5
									42	EC25AB00B042	267321	36	EC25DB00B036W	267379	5
									48	EC25AB00B048	267322	48	EC25DB00B048W	267380	5
									110	EC25AB00B110	267323	60	EC25DB00B060W	267381	5
									120	EC25AB00B120	267324	72	EC25DB00B072W	267382	5
									208	EC25AB00B208	267325	110	EC25DB00B110W	267383	5
									230	EC25AB00B230	267326	125	EC25DB00B125W	267384	5
									240	EC25AB00B240	267327	230	EC25DB00B230W	267385	5
									400	EC25AB00B400	267328	250	EC25DB00B250W	267386	5
									440	EC25AB00B440	267329	440	EC25DB00B440W	267387	5
									480	EC25AB00B480	267330				5
									500	EC25AB00B500	267331				5
									575	EC25AB00B575	269117				5
									600	EC25AB00B600	267332				5
									60	32	9 12	15 22	15 22	30	1.5x10 <sup>6</sup>
24	EC32AB00B024	267334	24	EC32DB00B024W	267393	1									
42	EC32AB00B042	267335	36	EC32DB00B036W	267394	1									
48	EC32AB00B048	267336	48	EC32DB00B048W	267395	1									
110	EC32AB00B110	267337	60	EC32DB00B060W	267396	1									
120	EC32AB00B120	267338	72	EC32DB00B072W	267397	1									
208	EC32AB00B208	267339	110	EC32DB00B110W	267398	1									
230	EC32AB00B230	267340	125	EC32DB00B125W	267399	1									
240	EC32AB00B240	267341	230	EC32DB00B230W	267400	1									
400	EC32AB00B400	267342	250	EC32DB00B250W	267401	1									
440	EC32AB00B440	267343	440	EC32DB00B440W	267402	1									
480	EC32AB00B480	267344				1									
500	EC32AB00B500	267345				1									
575	EC32AB00B575	269118				1									
600	EC32AB00B600	267346				1									

(1) End character: **W** = Wide voltage (0.7-1.25xUn) and built-in diode.  
**L** = Low consumption.



2NO - 2NC contactors - Double box terminals

Max. operating current		Admissible power AC3				Electrical endurance	Power cont.	Control circuit								
Not inductive load AC1 A	Motors <440V 3Ph 50-60Hz AC3 A	220-240V	380-415V	440-480V	690V	Cat. AC3 Operations	NO	NC	AC			AC/DC			Pack	
		kW hp	kW hp	kW hp	kW				Voltage <sup>(1)</sup>	Cat. no.	Ref. no.	Voltage	Cat. no.	Ref. no.		
90	40	11 15	18.5 20	22 30	37 50	37	1.78x10 <sup>6</sup>	2	2	12	EF40AB00B012	270149				5
								2	2	24	EF40AB00B024	270150	24-60	EF40EB00B24-60	270191	5
								2	2	48	EF40AB00B048	270152				5
								2	2	110	EF40AB00B110	270154	48-130	EF40EB00B48-130	270192	5
								2	2	208	EF40AB00B208	270155				5
								2	2	230	EF40AB00B230	270156	100-250	EF40EB00B100-250	270193	5
								2	2	400	EF40AB00B400	270157	250-500	EF40EB00B250-500	270194	5
								2	2	480	EF40AB00B480	270159				5
								2	2	575	EF40AB00B575	270161				5
								2	2	600	EF40AB00B600	270162				5
110	65	18.5 20	22 30	37 50	55	1.8x10 <sup>6</sup>	2	2	12	EF65AB00B012	270163				5	
							2	2	24	EF65AB00B024	270164	24-60	EF65EB00B24-60	270195	5	
							2	2	48	EF65AB00B048	270166				5	
							2	2	110	EF65AB00B110	270168	48-130	EF65EB00B48-130	270196	5	
							2	2	208	EF65AB00B208	270169				5	
							2	2	230	EF65AB00B230	270170	100-250	EF65EB00B100-250	270197	5	
							2	2	400	EF65AB00B400	270171	250-500	EF65EB00B250-500	270198	5	
							2	2	480	EF65AB00B480	270173				5	
							2	2	575	EF65AB00B575	270175				5	
							2	2	600	EF65AB00B600	270176				5	
110	80	22 30	37 40	37 60	75	1.8x10 <sup>6</sup>	2	2	12	EF80AB00B012	270177				5	
							2	2	24	EF80AB00B024	270178	24-60	EF80EB00B24-60	270200	5	
							2	2	48	EF80AB00B048	270180				5	
							2	2	110	EF80AB00B110	270182	48-130	EF80EB00B48-130	270201	5	
							2	2	208	EF80AB00B208	270183				5	
							2	2	230	EF80AB00B230	270184	100-250	EF80EB00B100-250	270202	5	
							2	2	400	EF80AB00B400	270185	250-500	EF80EB00B250-500	270203	5	
							2	2	480	EF80AB00B480	270187				5	
							2	2	575	EF80AB00B575	270189				5	
							2	2	600	EF80AB00B600	270190				5	

(1) Voltage 110V covers 110V 50-60Hz and 120V 60Hz.

Order codes

A

B

C

X



Auxiliary contactors - Double box terminals - Ith 20A

Global contactors

A

B

C

X

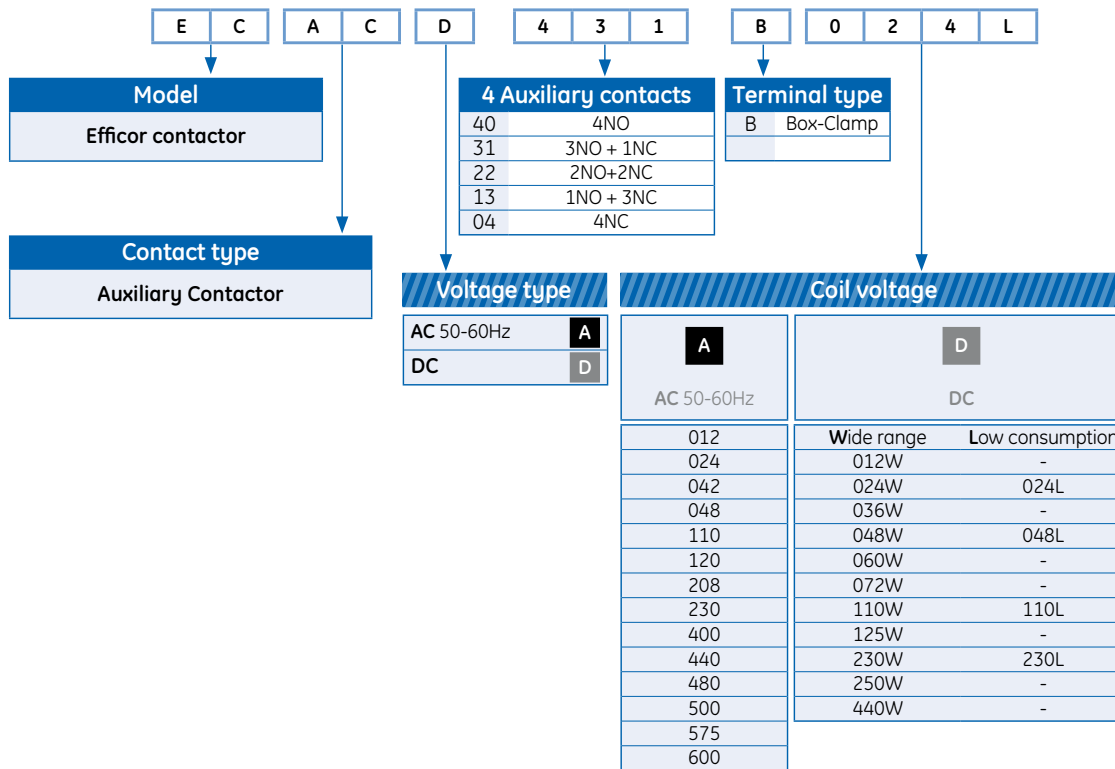


Contacts		Control circuit						
NO •3  •4	NC  •1  •2	AC			DC			Pack
		Voltage	Cat. no.	Ref. no.	Voltage	Cat. no. <sup>(1)</sup>	Ref. no.	
4	0	12	ECACA440B012	268140	12	ECACD440B012W	268210	5
4	0	24	ECACA440B024	268141	24	ECACD440B024W	268211	5
4	0	42	ECACA440B042	268142	36	ECACD440B036W	268212	5
4	0	48	ECACA440B048	268143	48	ECACD440B048W	268213	5
4	0	110	ECACA440B110	268144	60	ECACD440B060W	268214	5
4	0	120	ECACA440B120	268145	72	ECACD440B072W	268215	5
4	0	208	ECACA440B208	268146	110	ECACD440B110W	268216	5
4	0	230	ECACA440B230	268147	125	ECACD440B125W	268217	5
4	0	240	ECACA440B240	268148	230	ECACD440B230W	268218	5
4	0	400	ECACA440B400	268149	250	ECACD440B250W	268219	5
4	0	440	ECACA440B440	268150	400	ECACD440B440W	268220	5
4	0	480	ECACA440B480	268151				
4	0	500	ECACA440B500	268152	24	ECACD440B024L	268221	5
4	0	575	ECACA440B575	268673	48	ECACD440B048L	268222	5
4	0	600	ECACA440B600	268153	110	ECACD440B110L	268223	5
4	0				230	ECACD440B230L	268224	5
3	1	12	ECACA431B012	268154	12	ECACD431B012W	268225	5
3	1	24	ECACA431B024	268155	24	ECACD431B024W	268226	5
3	1	42	ECACA431B042	268156	36	ECACD431B036W	268227	5
3	1	48	ECACA431B048	268157	48	ECACD431B048W	268228	5
3	1	110	ECACA431B110	268158	60	ECACD431B060W	268229	5
3	1	120	ECACA431B120	268159	72	ECACD431B072W	268230	5
3	1	208	ECACA431B208	268160	110	ECACD431B110W	268231	5
3	1	230	ECACA431B230	268161	125	ECACD431B125W	268232	5
3	1	240	ECACA431B240	268162	230	ECACD431B230W	268233	5
3	1	400	ECACA431B400	268163	250	ECACD431B250W	268234	5
3	1	440	ECACA431B440	268164	400	ECACD431B440W	268235	5
3	1	480	ECACA431B480	268165				
3	1	500	ECACA431B500	268166	24	ECACD431B024L	268236	5
3	1	575	ECACA431B575	268674	48	ECACD431B048L	268237	5
3	1	600	ECACA431B600	268167	110	ECACD431B110L	268238	5
3	1				230	ECACD431B230L	268239	5
2	2	12	ECACA422B012	268168	12	ECACD422B012W	268240	5
2	2	24	ECACA422B024	268169	24	ECACD422B024W	268241	5
2	2	42	ECACA422B042	268170	36	ECACD422B036W	268242	5
2	2	48	ECACA422B048	268171	48	ECACD422B048W	268243	5
2	2	110	ECACA422B110	268172	60	ECACD422B060W	268244	5
2	2	120	ECACA422B120	268173	72	ECACD422B072W	268245	5
2	2	208	ECACA422B208	268174	110	ECACD422B110W	268246	5
2	2	230	ECACA422B230	268175	125	ECACD422B125W	268247	5
2	2	240	ECACA422B240	268176	230	ECACD422B230W	268248	5
2	2	400	ECACA422B400	268177	250	ECACD422B250W	268249	5
2	2	440	ECACA422B440	268178	400	ECACD422B440W	268250	5
2	2	480	ECACA422B480	268179				
2	2	500	ECACA422B500	268180	24	ECACD422B024L	268251	5
2	2	575	ECACA422B575	268675	48	ECACD422B048L	268252	5
2	2	600	ECACA422B600	268181	110	ECACD422B110L	268253	5
2	2				230	ECACD422B230L	268254	5
1	3	12	ECACA413B012	268182	12	ECACD413B012W	268400	5
1	3	24	ECACA413B024	268183	24	ECACD413B024W	268401	5
1	3	42	ECACA413B042	268184	36	ECACD413B036W	268402	5
1	3	48	ECACA413B048	268185	48	ECACD413B048W	268403	5
1	3	110	ECACA413B110	268186	60	ECACD413B060W	268404	5
1	3	120	ECACA413B120	268187	72	ECACD413B072W	268405	5
1	3	208	ECACA413B208	268188	110	ECACD413B110W	268406	5
1	3	230	ECACA413B230	268189	125	ECACD413B125W	268407	5
1	3	240	ECACA413B240	268190	230	ECACD413B230W	268408	5
1	3	400	ECACA413B400	268191	250	ECACD413B250W	268409	5
1	3	440	ECACA413B440	268192	400	ECACD413B440W	268410	5
1	3	480	ECACA413B480	268193				
1	3	500	ECACA413B500	268194	24	ECACD413B024L	268411	5
1	3	575	ECACA413B575	268676	48	ECACD413B048L	268412	5
1	3	600	ECACA413B600	268195	110	ECACD413B110L	268413	5
1	3				230	ECACD413B230L	268414	5
0	4	12	ECACA404B012	268196	12	ECACD404B012W	268270	5
0	4	24	ECACA404B024	268197	24	ECACD404B024W	268271	5
0	4	42	ECACA404B042	268198	36	ECACD404B036W	268272	5
0	4	48	ECACA404B048	268199	48	ECACD404B048W	268273	5
0	4	110	ECACA404B110	268200	60	ECACD404B060W	268274	5
0	4	120	ECACA404B120	268201	72	ECACD404B072W	268275	5
0	4	208	ECACA404B208	268202	110	ECACD404B110W	268276	5
0	4	230	ECACA404B230	268203	125	ECACD404B125W	268277	5
0	4	240	ECACA404B240	268204	230	ECACD404B230W	268278	5
0	4	400	ECACA404B400	268205	250	ECACD404B250W	268279	5
0	4	440	ECACA404B440	268206	400	ECACD404B440W	268280	5
0	4	480	ECACA404B480	268207				
0	4	500	ECACA404B500	268208				
0	4	575	ECACA404B575	268677				
0	4	600	ECACA404B600	268209				

(1) End character: W = Wide voltage (0.7-1.25xUn) and built-in diode.  
L = Low consumption.



Catalog number configurator - example: EC AC A 431 B 024 L



Order codes


A

B

C

X

Spare coils for contactors and auxiliary contactors - Box clamp terminals

	Voltage	Use for	Cat. no.	Ref. no.	Pack
	12V AC	EC09A...EC18A, ECACA...B	ECCS1A012S	268687	5
	24V AC	EC09A...EC18A, ECACA...B	ECCS1A024S	268688	5
	42V AC	EC09A...EC18A, ECACA...B	ECCS1A042S	268689	5
	48V AC	EC09A...EC18A, ECACA...B	ECCS1A048S	268690	5
	110V AC	EC09A...EC18A, ECACA...B	ECCS1A110S	268691	5
	120V AC	EC09A...EC18A, ECACA...B	ECCS1A120S	268692	5
	208V AC	EC09A...EC18A, ECACA...B	ECCS1A208S	268693	5
	230V AC	EC09A...EC18A, ECACA...B	ECCS1A230S	268694	5
	240V AC	EC09A...EC18A, ECACA...B	ECCS1A240S	268695	5
	400V AC	EC09A...EC18A, ECACA...B	ECCS1A400S	268696	5
	440V AC	EC09A...EC18A, ECACA...B	ECCS1A440S	268697	5
	480V AC	EC09A...EC18A, ECACA...B	ECCS1A480S	268698	5
	500V AC	EC09A...EC18A, ECACA...B	ECCS1A500S	268699	5
	575V AC	EC09A...EC18A, ECACA...B	ECCS1A575S	268984	5
	600V AC	EC09A...EC18A, ECACA...B	ECCS1A600S	268700	5
	12V AC	EC25A...EC40A...B	ECCS2A012S	268716	5
	24V AC	EC25A...EC40A...B	ECCS2A024S	268717	5
	42V AC	EC25A...EC40A...B	ECCS2A042S	268718	5
	48V AC	EC25A...EC40A...B	ECCS2A048S	268719	5
	110V AC	EC25A...EC40A...B	ECCS2A110S	268720	5
	120V AC	EC25A...EC40A...B	ECCS2A120S	268721	5
	208V AC	EC25A...EC40A...B	ECCS2A208S	268722	5
	230V AC	EC25A...EC40A...B	ECCS2A230S	268723	5
	240V AC	EC25A...EC40A...B	ECCS2A240S	268724	5
	400V AC	EC25A...EC40A...B	ECCS2A400S	268725	5
	440V AC	EC25A...EC40A...B	ECCS2A440S	268726	5
	480V AC	EC25A...EC40A...B	ECCS2A480S	268727	5
	500V AC	EC25A...EC40A...B	ECCS2A500S	268728	5
	575V AC	EC25A...EC40A...B	ECCS2A575S	268985	5
	600V AC	EC25A...EC40A...B	ECCS2A600S	268729	5
	12V AC	EF40A...EF105A	EFCSA012S	255020	1
	24V AC	EF40A...EF105A	EFCSA024S	255021	1
	48V AC	EF40A...EF105A	EFCSA048S	255022	1
	110V AC <sup>(1)</sup>	EF40A...EF105A	EFCSA110S	255023	1
	208V AC	EF40A...EF105A	EFCSA208S	255025	1
	230V AC	EF40A...EF105A	EFCSA230S	255026	1
	400V AC	EF40A...EF105A	EFCSA400S	255027	1
	480V AC	EF40A...EF105A	EFCSA480S	255028	1
	575V AC	EF40A...EF105A	EFCSA575S	255029	1
	600V AC	EF40A...EF105A	EFCSA600S	255030	1
	24-60V AC/DC <sup>(2)</sup>	EF40E...EF105E	EFCSA24-60S	255031	1
	48-130V AC/DC <sup>(2)</sup>	EF40E...EF105E	EFCSA48-130S	255032	1
	100-250V AC/DC <sup>(2)</sup>	EF40E...EF105E	EFCSA100-250S	255033	1
	250-500V AC/DC <sup>(2)</sup>	EF40E...EF105E	EFCSA250-500S	255034	1

(1) Voltage 110V AC covers 110V 50-60Hz and 120V 60Hz.  
 (2) Electronic module + coil included in full kit.



**Auxiliary contact blocks**

	Contacts				Cat. no.	Box clamp terminals		Pack
	NO	NC	NO EM	NC EM		Ref. no.		
	•3 •4	•1 •2	•7 •8	•5 •6				
<b>Frontal auxiliary blocks<sup>(1)</sup></b>								
	<b>2 contacts</b>							
	1	1	-	-	ECFA211S	268872	5	
	2	0	-	-	ECFA220S	268873	5	
	0	2	-	-	ECFA202S	268874	5	
	<b>4 contacts</b>							
	4	0	-	-	ECFA440S	268881	5	
	3	1	-	-	ECFA431S	268882	5	
	2	2	-	-	ECFA422S	268883	5	
	1	3	-	-	ECFA413S	268884	5	
	0	4	-	-	ECFA404S	268885	5	
1	1	1	1	ECFA422SE	268886	5		
<b>Lateral auxiliary blocks</b>								
	<b>Lateral auxiliary block for EC contactors</b>							
	2	0	-	-	ECLA220S	268899	10	
	1	1	-	-	ECLA211S	268900	10	
	0	2	-	-	ECLA202S	268901	10	
	<b>Lateral auxiliary block for EF contactors</b>							
	2	0	-	-	BCLL20	104706	10	
	1	1	-	-	BCLL11	104707	10	
	<b>Mechanical interlock for EC contactors</b>							
	0	0	-	-	ECMI	268908	10	
	0	2	-	-	ECMI02S	268910	10	
<b>Mechanical interlock for EF contactors</b>								
0	0	-	-	BELA	104723	10		
0	2	-	-	BELA02	104724	10		

**Pneumatic timer<sup>(2)</sup>**

	NO	NC	Time	Type	Box clamp terminals		Pack
					Cat. no.	Ref. no.	
	•7 •8	•5 •6					
	1	1	0.1-30 s	delay ON	ECPT30SC	268913	5
	1	1	1-60 s	delay ON	ECPT60SC	268914	5
	1	1	0.1-30 s	delay OFF	ECPT30SD	268916	5
	1	1	1-60 s	delay OFF	ECPT60SD	268917	5

(1) All frontal auxiliary blocks can be used with all contactor types.  
 (2) The pneumatic timer can be used with all contactor types.

**Surge suppressor**


	Description	Cat. no.	Ref. no.	Pack	Description	Cat. no.	Ref. no.	Pack
	<b>Surge suppressor for EC contactors (plug-in) <sup>(A)</sup></b>				<b>Surge suppressor for AC version EF contactors <sup>(B)</sup></b>			
	Diode type, DC 12-440V	ECSUDI440	268931	10	R-C type, AC 12-48V	BSLR3G	104716	-
	R-C type, AC 24-48V	ECSURC048	268932	10	R-C type, AC 50-127V	BSLR3K	104717	-
	R-C type, AC 50-127V	ECSURC127	268933	10	R-C type, AC 130-250V	BSLR3R	104718	-
	R-C type, AC 130-250V	ECSURC250	268934	10	Varistor type, 24-48V	BSLV3G	104720	-
	R-C type, AC 230-440V	ECSURC440	268935	10	Varistor type, 50-127V	BSLV3K	104721	-
	R-C type, AC 400-600V	ECSURC600	268936	10	Varistor type, 130-250V	BSLV3R	104722	-
	Varistor type, AC/DC 24-48V	ECSUVA048	268937	10	Varistor type, 277-500V	BSLV3U	110836	-
	Varistor type, AC/DC 50-127V	ECSUVA127	268938	-				
	Varistor type, AC/DC 130-250V	ECSUVA250	268939	-				
Varistor type, AC/DC 230-440V	ECSUVA440	268940	-					

(1) EF contactors with electronic coil version have always surge suppressor built-in. There is no need to buy surge suppressor protection separately.



## Accessories for contactors

### Mechanical latch <sup>(1)</sup>

NC	Use with	Coil range	Coil voltage		Box clamp terminals		Pack	
			50-60Hz	DC	Cat. no.	Ref. no.		
	1	EC09A up to EC18A, ECACA	EC09 -EC18 24-32V	24-32V	-	ECML1AS032	268919	5
	1	EC09A up to EC18A, ECACA	EC09 -EC18 42 -60V	42-60V	-	ECML1AS060	268920	5
	1	EC09A up to EC18A, ECACA	EC09 -EC18 110-127V	110-127V	-	ECML1AS127	268921	5
	1	EC09A up to EC18A, ECACA	EC09 -EC18 220-240V	220-240V	-	ECML1AS277	268922	5
	1	EC09A up to EC18A, ECACA	EC09 -EC18 380 -480V	380-480V	-	ECML1AS480	268923	5
	1	EC09A up to EC18A, ECACA	EC09 -EC18 500-690V	500-690V	-	ECML1AS660	268924	5
	1	EC25A up to EC40A	EC25 -EC40 24-32V	24-32V	-	ECML2AS032	268925	5
	1	EC25A up to EC40A	EC25 -EC40 42 -60V	42-60V	-	ECML2AS060	268926	5
	1	EC25A up to EC40A	EC25 -EC40 110-127V	110-127V	-	ECML2AS127	268927	5
	1	EC25A up to EC40A	EC09 -EC18 220-240V	220-240V	-	ECML2AS277	268928	5
	1	EC25A up to EC40A	EC25 -EC40 380 -480V	380-480V	-	ECML2AS480	268929	5
	1	EC25A up to EC40A	EC25 -EC40 500-690V	500-690V	-	ECML2AS660	268930	5
	1	EC09D up to EC18D, ECACD	-	-	24-36V	ECML1DS036	269325	5
	1	EC09D up to EC18D, ECACD	-	-	42-48V	ECML1DS048	269326	5
	1	EC09D up to EC18D, ECACD	-	-	60-72V	ECML1DS072	269327	5
1	EC09D up to EC18D, ECACD	-	-	110-125V	ECML1DS125	269328	5	
1	EC09D up to EC18D, ECACD	-	-	220-250V	ECML1DS250	269329	5	
1	EC09D up to EC18D, ECACD	-	-	440V	ECML1DS440	269330	5	
1	EC25D up to EC40D	-	-	24-36V	ECML2DS036	269331	5	
1	EC25D up to EC40D	-	-	42-48V	ECML2DS048	269332	5	
1	EC25D up to EC40D	-	-	60-72V	ECML2DS072	269333	5	
1	EC25D up to EC40D	-	-	110-125V	ECML2DS125	269334	5	
1	EC25D up to EC40D	-	-	220-250V	ECML2DS250	269335	5	
1	EC25D up to EC40D	-	-	440V	ECML2DS440	269336	5	
1	EF50A up to EF105A	-	24-32V	-	ECML3A3032	255005	5	
1	EF50A up to EF105A	-	42-60V	-	ECML3A3060	255006	5	
1	EF50A up to EF105A	-	110-127V	-	ECML3A3127	255007	5	
1	EF50A up to EF105A	-	220-277V	-	ECML3A3227	255008	5	
1	EF50A up to EF105A	-	380-480V	-	ECML3A3480	255009	5	
1	EF50A up to EF105A	-	500-660V	-	ECML3A3660	255010	5	
1	EF50E up to EF105E	-	-	24-36V	ECML3D3036	255011	5	
1	EF50E up to EF105E	-	-	42-48V	ECML3D3048	255012	5	
1	EF50E up to EF105E	-	-	60-72V	ECML3D3072	255013	5	
1	EF50E up to EF105E	-	-	110-125V	ECML3D3125	255014	5	
1	EF50E up to EF105E	-	-	220-250V	ECML3D3250	255015	5	
1	EF50E up to EF105E	-	-	440V	ECML3D3440	255017	5	

(1) Not for use with DC low consumption version.



Order codes

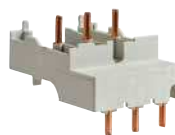

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### Fuseless starter kits

	Use with	Description	Cat. no.	Ref. no.	Pack
	GPS1 - EC09A up to EC25A	Link module	ECM1AL25	268954	5
	GPS1 - EC32A	Link module	ECM1AL32	268955	5
	GPS2 - EC32A and EC40A	Link module	ECM2AL40	268956	5
	GPS2 - EF50E up to EF80E	Link module	EFM2EL80	255000	1
	GPS2 - EF50A up to EF80A	Link module	EFM2AL80	255035	1
	GPS1 - EC09 up to EC32	Base plate 45mm	ECBP45	268962	5
	GPS2 - EC32 and EC40	Base plate 55mm	ECBP55	268953	5

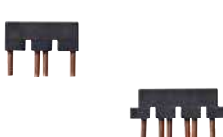
### Wiring kits for reversing starters

	Use with	Description	Cat. no.	Ref. no.	Pack
	Suitable for upper and lower connections with and without overload relay <b>with</b> mechanical interlock				
	EC09A up to EC25A		ECKS1RV	268948	1
	EC32A and EC40A		ECKS2RV	268950	1
	EF50 up to EF80		CLXC41	101426	1
	EF95 up to EF105		CLXC51	255001	1

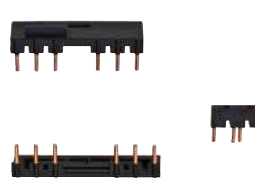
### Parallel busbar

	Use with	Description	Cat. no.	Ref. no.	Pack
	EC09 up to EC25	Parallel busbar for 2 contactors	ECBB1B2	268942	5
	EC32 and EC40	Parallel busbar for 2 contactors	ECBB2B2	268945	5

### Parallel poles

	Use with	Description	Cat. no.	Ref. no.	Pack
	EC09 up to EC25	3 poles in parallel	EC3PP1B	268943	6
	EC09 up to EC25	4 poles in parallel	EC4PP1B	268944	6
	EC32 and EC40	3 poles in parallel	EC3PP2B	268946	6
	EC32 and EC40	4 poles in parallel	EC4PP2B	268947	6

### Wiring kits for star delta starters

	Use with	Description	Cat. no.	Ref. no.	Pack
	Suitable for upper and lower connections <b>with</b> or <b>without</b> overload relay				
	EC09 up to EC25		ECKS1YD	268951	1
	EC32 and EC40		ECKS2YD	268952	1
	EF50		CLXC42	255002	1
	EF65 and EF80		CLXC43	255003	1
	EF95 and EF105		CLXC52	255004	1

## Thermal overload relays

### Thermal overload relays for EC contactors

Trip class 10



Setting range	Fuses		Use with	Box clamp terminals				
	Min. A	Max. A		AM A	gL-gG A	Cat. no.	Ref. no.	Pack
0.16	0.26	2	2	EC09 EC12 EC18	ECRT1B10B	268996	5	
0.25	0.41	2	2		ECRT1B10C	268997	5	
0.40	0.65	2	2		ECRT1B10D	268998	5	
0.65	1.10	2	4		ECRT1B10F	268999	5	
1.00	1.50	4	6		ECRT1B10G	269000	5	
1.30	1.90	4	6		ECRT1B10H	269001	5	
1.80	2.70	6	10		ECRT1B10J	269002	5	
2.50	4.00	8	16		ECRT1B10K	269003	5	
4.00	6.30	12	20		ECRT1B10L	269004	5	
5.50	8.50	16	20		ECRT1B10M	269005	5	
8.00	12.00	20	25		ECRT1B10N	269006	5	
10.00	16.00	25	35		ECRT1B10P	269007	5	
14.50	18.00	32	50		ECRT1B10S	269008	5	
17.50	22.00	40	63		ECRT1B10T	269009	5	
8.00	12.00	20	25		EC25 EC32 EC40	ECRT2B10N	268103	5
10.00	16.00	25	35			ECRT2B10P	268104	5
14.50	18.00	32	50	ECRT2B10S		268105	5	
17.50	22.00	40	63	ECRT2B10T		268106	5	
21.00	26.00	40	63	ECRT2B10U		268107	5	
25.00	32.00	50	80	ECRT2B10V		268108	5	
30.00	40.00	63	100	ECRT2B10W	268109	5		

#### Accessories

Use with	Description	Cat. no.	Ref. no.	Pack
<b>Base for separate mounting</b>				
ECRT1	DIN EN500022-35	ECRT1BS	268963	1
ECRT2	DIN EN500022-35	ECRT2BS	268964	1

### Thermal overload relays for EF contactors



Setting range (Class 10)		Fuses		Use with	Box clamp terminals		
Min. A	Max. A	AM A	gL-gG A		Cat. no.	Ref. no.	Pack
11.50	15.00	32	35	EF	RT2A	113717	1
14.50	19.00	40	50		RT2B	113718	1
18.50	25.00	50	63		RT2C	113719	1
24.00	32.00	63	100		RT2D	113720	1
30.00	43.00	80	125		RT2E	113721	1
42.00	55.00	100	160		RT2G	113722	1
54.00	65.00	125	160		RT2H	113723	1
64.00	82.00	125	200		RT2J	113724	1
78.00	97.00	125	200		RT2L	113725	1
90.00	110.00	160	250		RT2M	113726	1

#### Accessories

Use with	Description	Cat. no.	Ref. no.	Pack
<b>Base for separate mounting</b>				
RT2	DIN EN500022-35	RT2XP	113764	1

Order codes

A

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X

### Electronic Overload Relays



Setting Range (Class 10)		Fuses		Use with	Box clamp terminals		
Min. A	Max. A	AM A	gL-gG <sup>(1)</sup> A		Cat. no.	Ref. no.	Pack
0,1	0,5	-	2	EC09..	RE1D	101866	5
0,4	2	-	4		RE1H	101867	5
1	5	-	10		RE1K	101868	5
1,6	8	-	20	EC40	RE1M	101869	5
6,4	32	-	63		RE1S	101870	5
9	45	-	80	EF40..	RE1W	101871	5
15	75	-	125		RE2H	101872	1
22	110	-	125	EF105	RE2M	101873	1

### Accessories



	Cat. no.	Ref. no.	Pack.
<b>Transparent cover for push-button reset</b> RE1 and RE2	RETC	247795	10
<b>Base for separate mounting</b> RE1	RE1XP	247302	1
RE2	RE2XP	247303	1

(1) Most suitable fuse in accordance with IEC 60947-4-1, see coordination tables.

### Accessories



Use with	Description	Cat. no.	Ref. no.	Pack
<b>Push-button with flexible cable</b> ECRT1, ECRT2, RT and RE OL Relays	0,5 m	RTXS	113855	1
	1 m	RTXSL	113856	1
	backside reset	RTXBS	108864	1
<b>Setting range cover protection</b> ECRT1, ECRT2 and RT		RTX3	113762	1
<b>Remote electrical reset</b> ECRT1, ECRT2 and RT2	12V AC/DC	RTXRRB	113661	1
	24V AC/DC	RTXRRD	113662	1
	48V AC/DC	RTXRRG	113663	1
	110-240V AC/DC	RTXRRJ	113664	1
	220/415V AC/DC	RTXRRN	113665	1
	380/480V AC/DC	RTXRRU	113666	1

- C.2 Conformity to standards
- C.3 Electrical endurance
- C.4 Power circuit for EC contactors
- C.5 Power circuit for EF contactors
- C.6 Control circuit
  - Alternating current for EC contactors
  - Direct current for EC contactors
- C.7 Control circuit
  - Alternating current for EF contactors
  - Alternating current / Direct current for EF contactors
- C.8 Built-in auxiliary contacts
  - Auxiliary contact blocks
- C.9 Mechanical latch blocks
  - Terminal capacity

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- C.10 Thermal mechanical overload relays
- C.12 Coordination tables
- C.14 Terminal numbering
- C.22 Dimensions and weights

Advantages and Benefits

Order codes

Technical data

Numerical index

A

B

C

X

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## Conformity to standards

IEC/EN 60947-1	GB14048.4
IEC/EN 60947-4-1	UL508
IEC/EN 60947-5-1	UL486E
IEC/EN 60947-5-4	CSA2.22-14
EN50011	NF F16 101/102
EN50012	
EN50005	

## Approvals/Marking



## Ambient conditions

Storage temperature	-55°C to +80°C
Operation temperature	-40°C to +55°C
Without TOR	-40°C to +60°C
	-40°C to +70°C <sup>(1)</sup>
Altitude	<2000m

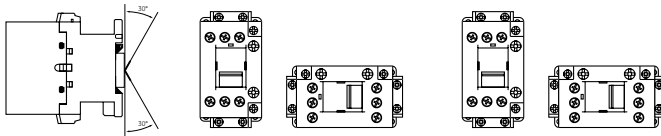
(1) From 100% to 110% of rated control voltage, no auxiliary blocks

## Climatic resistance (IEC 68-2)

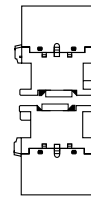
Continuous tests 40 / 125 / 56	
Cold (72h)	Temperature -40°C
Dry heat (96h)	Temperature +125°C Relative humidity < 50%
Humid heat (56h)	Temperature +40°C Relative humidity 95%
Cyclic test (6 cycles)	Humid heat
First half-cycle	Low temperature +25°C Relative humidity 93%
Second half-cycle	Low temperature +55°C Relative humidity 95%

## Mounting positions

### Installation capabilities



### With derating values



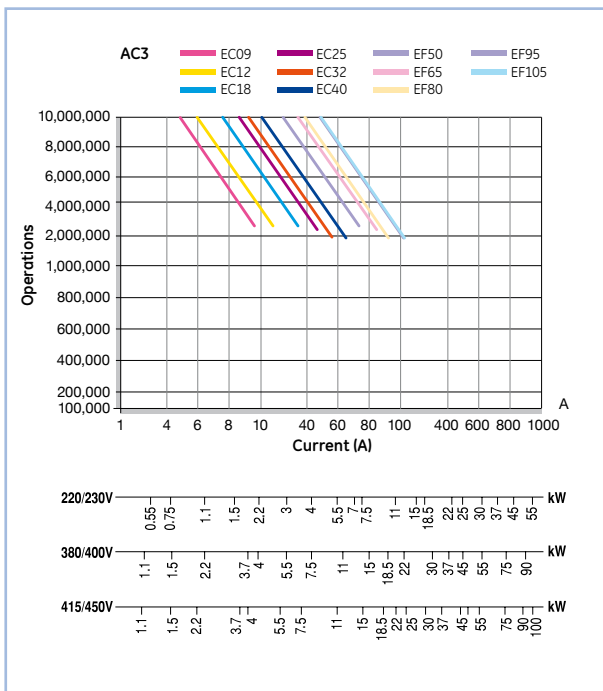
-10% connection voltage  
+10% disconnection  
voltage with same rated  
power, data compared to  
vertical mounting

## Terminal capacity and tightening torque

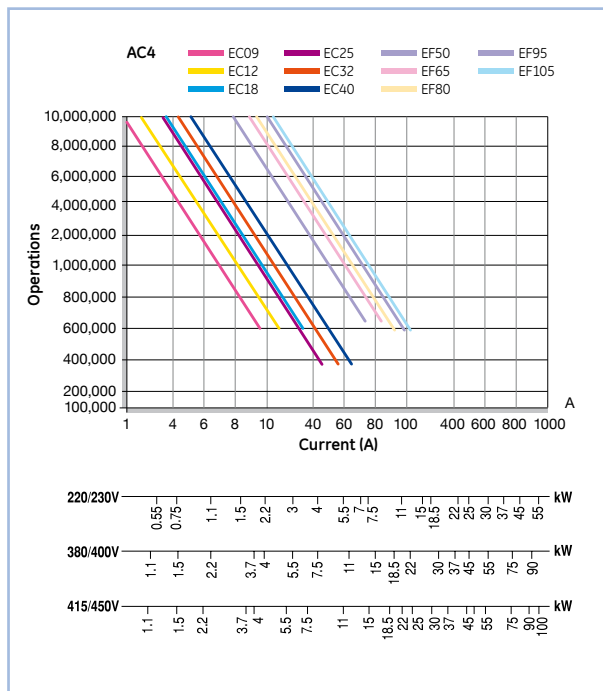
Conventional thermal current (Ith)		EC contactors					EF contactors	
		Head type	EC09...EC18	EC25	EC32...EC40	EF50...EF80	EF95...EF105	
	<b>Box terminals</b>							
	Solid, stranded and finely stranded without ferrule	(mm <sup>2</sup> )	Slot & PZ2	0.75 ... 6	0.75 ... 10	0.75 ... 16	2.5 ... 35	4 ... 50
	Finely stranded with ferrule	(mm <sup>2</sup> )	Slot & PZ2	0.75 ... 6	0.75 ... 10	0.75 ... 16	2.5 ... 35	4 ... 50
	Finely stranded without ferrule	(mm <sup>2</sup> )	Slot & PZ2	0.75 ... 6	0.75 ... 10	0.75 ... 16	2.5 ... 35	4 ... 50
	AWG			18 ... 10	18 ... 8	18 ... 6	13 ... 2	11 ... 1/0
	Tightening torque	(Nm)		2.2	2.2	2.2	4-4.5	5.6-6.5
		(Lb x in.)		20	20	20	35-40	50-60
	Solid	(mm <sup>2</sup> )					2.5 ... 35	4 ... 50
	Stranded	(mm <sup>2</sup> )					2.5 ... 35	4 ... 50
	Finely stranded without ferrule	(mm <sup>2</sup> )	Slot & PZ2	0.75 ... 6	0.75 ... 10	0.75 ... 16	2.5 ... 35	4 ... 50
	Finely stranded with ferrule	(mm <sup>2</sup> )					2.5 ... 35	4 ... 50
	AWG			18 ... 10	18 ... 8	18 ... 6	13 ... 2	11 ... 1/0
	Tightening torque	(Nm)		2.2	2.2	2.2	4 - 4.5	5.6 - 6.5
		(Lb x in.)		20	20	20	35 - 40	50 - 60
	Solid, stranded and finely stranded without ferrule	(mm <sup>2</sup> )					Max. 1x16 + 1x10	Max. 1x25 + 1x25
	Finely stranded without ferrule	(mm <sup>2</sup> )					Max. 1x16 + 1x10	-
	Finely stranded with ferrule	(mm <sup>2</sup> )	Slot & PZ2	0.75 ... 6	0.75 ... 10	0.75 ... 16	Max. 1x16 + 1x10	-
	AWG			18 ... 10	18 ... 8	18 ... 6	Max. 1x5 + 1x7	Max. 1x3 + 1x3
	Tightening torque	(Nm)		2.2	2.2	2.2	4 - 4.5	5.6 - 6.5
		(Lb x in.)		20	20	20	35 - 40	50 - 60

## Electrical endurance

### Category AC3 (3P contactors)



### Category AC4 (3P contactors)



Power circuit for EC contactors

		EC 09	EC 12	EC18	EC 25	EC 32	EC 40
<b>Three pole version</b>							
Rated thermal current I <sub>th</sub> at θ ≤ 55°C	(A)	25	25	32	45	60	60
Rated operational current I <sub>e</sub> AC-3	(A)	9	12	18	25	32	40
Rated operational voltage U <sub>e</sub>	(V)	690V acc. IEC 60947-4-1 / 600V acc. UL-CSA					
<b>Four pole version</b>							
Rated thermal current I <sub>th</sub> at θ ≤ 55°C	(A)	-	25	32	45	60	-
Rated operational voltage U <sub>e</sub>	(V)	690V acc. IEC 60947-4-1 / 600V acc. UL-CSA					
<b>Three and four pole version</b>							
Rated insulation voltage U <sub>i</sub>	(V)	1000V acc. IEC 60947-4-1 / 600V acc. UL-CSA					
Maximum continuous current AC-1	(A)	25	25	32	45	60	60
Frequency limits	(Hz)	25..400	25..400	25..400	25..400	25..400	25..400
Making capacity (RMS) (IEC- 60947) U = 500V	(A)	220	220	220	315	520	520
<b>Breaking capacity (RMS) (acc. IEC-60947)</b>							
U <sub>e</sub> = 500V	(A)	220	220	220	315	520	520
U <sub>e</sub> = 690V	(A)	120	120	120	144	232	232
<b>Short-time current from cold state</b>							
1s	(A)	570	570	570	790	1265	1265
5s	(A)	254	254	254	355	565	565
10s	(A)	180	180	180	250	400	400
30s	(A)	104	104	104	145	231	231
1min	(A)	74	74	74	102	164	164
3min	(A)	42	42	42	60	95	95
Recovery time	(min)	10	10	10	10	10	10
<b>Protection against short-circuit with fuses without thermal overload relay (TOR)</b>							
<b>Coordination type 1</b>							
gL-gG (U = 500V, 50kA or U = 415V, 80kA)	(A)	40	40	50	63	80	80
<b>Coordination type 2</b>							
gL-gG (U = 500V, 50kA or U = 415V, 80kA)	(A)	25	35	40	50	63	80
Average impedance per pole	(mΩ)	2.25	2.25	2.25	1.6	1.2	1.2
<b>Power dissipation per pole</b>							
AC-1	(W)	1.41	1.41	2.30	3.24	4.32	4.32
AC-3	(W)	0.18	0.32	0.73	1.00	1.23	1.92
<b>Insulation resistance</b>							
Between adjacent poles	(MΩ)	>10	>10	>10	>10	>10	>10
Between poles and earth	(MΩ)	>10	>10	>10	>10	>10	>10
Between input and output	(MΩ)	>10	>10	>10	>10	>10	>10





## Power circuit for EF contactors

		EF40	EF50	EF65	EF80	EF95	EF105
<b>Three pole version</b>							
Rated thermal current I <sub>th</sub> at θ ≤ 55°C	(A)	-	90	110	110	140	140
Rated operational current I <sub>e</sub> AC-3	(A)	-	50	65	80	95	105
Rated operational voltage U <sub>e</sub>	(V)	690V acc. IEC 60947-4-1 / 600V acc. UL-CSA					
<b>Four pole version</b>							
Rated thermal current I <sub>th</sub> at θ ≤ 55°C	(A)	90	-	110	110	140	-
Rated operational voltage U <sub>e</sub>	(V)	690	-	690V acc. IEC 60947-4-1 / 600V acc. UL-CSA			
<b>Three and four pole version</b>							
Rated insulation voltage U <sub>i</sub>	(V)	1000V acc. IEC 60947-4-1 / 600V acc. UL-CSA					
Maximum continuous current AC-1	(A)	90	90	110	110	140	140
Frequency limits	(Hz)	25..400	25..400	25..400	25..400	25..400	25..400
Making capacity (RMS) (IEC- 60947)	(A)	1000	1000	1000	1000	1280	1280
<b>Breaking capacity (RMS) (acc. IEC-60947)</b>							
U <sub>e</sub> = 400V	(A)	920	920	920	920	1050	1050
U <sub>e</sub> = 500V	(A)	920	920	920	920	1050	1050
U <sub>e</sub> = 690V	(A)	780	780	780	780	950	950
<b>Short-time current from cold state</b>							
1s	(A)	1580	1580	2530	2530	3300	3300
5s	(A)	565	565	1130	1130	1485	1485
10s	(A)	500	500	800	800	1050	1050
30s	(A)	290	290	460	460	600	600
1min	(A)	205	205	325	325	430	430
3min	(A)	120	120	185	185	250	250
Recovery time	(min)	10	10	10	10	10	10
<b>Protection against short-circuit with fuses without thermal overload relay (TOR)</b>							
<b>Coordination type 1</b>							
gL-gG	(A)	200	200	200	200	250	250
<b>Coordination type 2</b>							
gL-gG	(A)	100	100	125	125	160	200
<b>Without welding</b>							
gL-gG	(A)	80	80	100	100	140	160
Average impedance per pole	(mΩ)	0.85	0.85	0.86	0.86	0.76	0.76
<b>Power dissipation per pole</b>							
AC-1	(W)	6.89	6.86	10.40	10.40	14.89	14.89
AC-3	(W)	1.36	2.12	3.63	5.50	6.86	8.37
<b>Insulation resistance</b>							
Between adjacent poles	(MΩ)	>10	>10	>10	>10	>10	>10
Between poles and earth	(MΩ)	>10	>10	>10	>10	>10	>10
Between input and output	(MΩ)	>10	>10	>10	>10	>10	>10

## Control circuit - Alternating current for EC contactors

		EC09 up to EC18	EC25 up to EC40
Rated insulation voltage Ui	(V)	1000	1000
Standard voltages Us 50Hz	(V)	12-600	12-600
Standard voltages Us 60Hz	(V)	12-600	12-600
<b>Voltage operating limits 50-60Hz coils</b>			
Operating 50Hz xUs		0.8 - 1.1	0.8 - 1.1
Operating 60Hz xUs		0.85 - 1.1	0.85 - 1.1
Pick-up 50Hz xUs		0.5...0.8	0.6...0.8
Pick-up 60Hz xUs		0.55...0.85	0.65...0.85
Drop-out 50Hz xUs		0.35...0.55	0.30...0.55
Drop-out 60Hz xUs		0.35...0.55	0.30...0.55
<b>Coil Consumption at Us (cold state)</b>			
Magnetic circuit closed (50Hz/60Hz)	(VA)	9 / 6	11.3 / 8.5
Magnetic circuit opened (50Hz/60Hz)	(VA)	70.1 / 68.2	144 / 138
<b>Power factor</b>			
Magnetic circuit closed cos φ		0.24	0.20
Magnetic circuit opened cos φ		0.85	0.70
<b>Opening and closing times</b>			
Values between +10% Us and -20% Us			
Making time on energisation (NO)	(ms)	10 - 25	10 - 25
Breaking time on de-energisation (NO)	(ms)	5 - 15	5 - 15
Values at Us			
Making time on energisation (NO)	(ms)	10 - 25	10 - 25
Breaking time on de-energisation (NO)	(ms)	5 - 15	5 - 15
<b>Mechanical endurance</b>			
Bifrequency coils (at 50Hz)	10 <sup>6</sup> ops.	10	10
Maximum rate			
AC-1 at rated power	ops./h	1200	1200
AC-2 at rated power	ops./h	1200	1000
AC-3 at rated power	ops./h	1200	1000
AC-4 at rated power	ops./h	360	240
No load	ops./h	7200	7200

## Direct current for EC contactors

		Coils with wide voltage range		Coils with low consumption	
		EC09 up to EC18	EC25 up to EC40	EC09 up to EC18	EC25 up to EC40
Rated insulation voltage Ui	(V)	1000	1000	1000	1000
Standard voltages Us DC	(V)	12 - 400	12 - 400	12 - 400	12 - 400
<b>Operating Limits</b>					
Operating xUs	(V DC)	0.70 - 1.25	0.70 - 1.25	0.80 - 1.1	0.80 - 1.1
Pick-up xUs	(V DC)	0.45 - 0.65	0.45 - 0.65	0.48 - 0.68	0.48 - 0.68
Drop-out xUs	(V DC)	0.12 - 0.30	0.12 - 0.30	0.12 - 0.30	0.12 - 0.30
<b>Coil Consumption at Us (cold state)</b>					
Magnetic circuit open and closed	(W)	7.5	9	3.6	5.3
<b>Opening and closing times</b>					
Values between +10% Us and -20% Us					
Making time on energisation (NO)	(ms)	33 - 78	35 - 154	47 - 173	48 - 96
Breaking time on de-energisation (NO)	(ms)	14 - 18	15 - 26	12 - 15	8 - 26
Values at Us					
Making time on energisation (NO)	(ms)	33 - 78	35 - 66	44 - 83	33 - 75
Breaking time on de-energisation (NO)	(ms)	14 - 18	15 - 24	13 - 20	12 - 24
<b>Mechanical endurance</b>					
	10 <sup>6</sup> ops.	10	10	10	10
Maximum rate					
AC-1 at rated power	ops./h	1200	1200	1200	1200
AC-2 at rated power	ops./h	1200	1000	1200	1000
AC-3 at rated power	ops./h	1200	1000	1200	1000
AC-4 at rated power	ops./h	360	240	360	240
No load	ops./h	7200	7200	7200	7200

## Control circuit - Alternating current for EF contactors

		EF50A up to EF80A	EF95A up to EF105A
Rated insulation voltage U <sub>i</sub>	(V)	1000	1000
Standard voltages U <sub>s</sub> 50-60Hz	(V)	12-600	12-600
<b>Voltage operating limits 50-60Hz coils</b>			
Operating 50Hz xUs		0.8 - 1.1	0.8 - 1.1
Operating 60Hz xUs		0.85-1.1	0.85-1.1
Pick-up 50Hz xUs (at an ambient temperature of 25°C)		0.5..0.8	0.5..0.8
Pick-up 60Hz xUs (at an ambient temperature of 25°C)		0.6..0.8	0.6..0.8
Drop-out 50Hz xUs (at an ambient temperature of 25°C)		0.30...0.55	0.30...0.55
Drop-out 60Hz xUs (at an ambient temperature of 25°C)		0.30...0.55	0.30...0.55
<b>Coil consumption at U<sub>s</sub> (cold state)</b>			
Magnetic circuit closed (50Hz/60Hz)	(VA)	25 / 16	25 / 16
Magnetic circuit opened (50Hz/60Hz)	(VA)	245 / 204	245 / 204
Thermal power dissipation (50Hz/60Hz)	(W)	5.2 / 4.3	5.2 / 4.3
<b>Power factor (50Hz)</b>			
Magnetic circuit closed cos φ		0.26	0.26
Magnetic circuit opened cos φ		0.54	0.54
<b>Opening and closing times</b>			
Values between +10% U <sub>s</sub> and -20% U <sub>s</sub>			
Making time on energisation (NO)	(ms)	9...35	9...35
Breaking time on de-energisation (NO)	(ms)	9...15	9...15
Values at U <sub>s</sub>			
Making time on energisation (NO)	(ms)	15...35	15...35
Breaking time on de-energisation (NO)	(ms)	9...15	9...15
<b>Mechanical endurance</b>			
Bifrequency coils (at 50Hz)	10 <sup>6</sup> ops.	5	5
Maximum rate			
AC-1 at rated power	ops./h	1200	1200
AC-2 at rated power	ops./h	1000	750
AC-3 at rated power	ops./h	1200	600
AC-4 at rated power	ops./h	200	200
No load	ops./h	3600	3600

## Alternating current / Direct current for EF contactors

		Coils with wide voltage range	
		EF50E up to EF80E	EF95E up to EF105E
Rated insulation voltage U <sub>i</sub>	(V)	1000	10000
Standard voltages U <sub>s</sub> DC	(V)	24 - 500	24 - 500
<b>Operating Limits</b>			
Operating xUs	(V DC)	0.85-1.1	0.85-1.1
Pick-up xUs	(V DC)	0.75	0.75
Drop-out xUs	(V DC)	0.5	0.5
<b>Coil consumption at U<sub>s</sub> (cold state)</b>			
Magnetic circuit closed AC	(VA)	2.6	2.6
Magnetic circuit open AC	(VA)	174	174
Magnetic circuit closed DC	(VA)	1.7	1.7
Magnetic circuit open DC	(VA)	171	171
<b>Opening and closing times</b>			
Values at U <sub>s</sub>			
Making time on energisation (NO)	(ms)	40-75	40 - 75
Breaking time on de-energisation (NO)	(ms)	5-25	5 - 25
<b>Mechanical endurance</b>			
	10 <sup>6</sup> ops.	5	5
Maximum rate			
AC-1 at rated power	ops./h	1200	1200
AC-2 at rated power	ops./h	1200	1200
AC-3 at rated power	ops./h	1200	1200
AC-4 at rated power	ops./h	200	200
No load	ops./h	2500	2500

**Built-in auxiliary contacts**

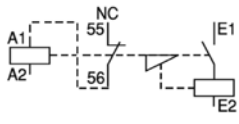
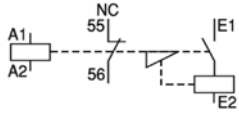
		EC09 up to EC25
Rated insulation voltage $U_i$ according to IEC 60947	(V)	1000
Rated thermal current $I_{th}$ at $\theta \leq 55^\circ\text{C}$	(A)	10
<b>Making capacity (RMS) acc. to IEC 60947</b>		
AC-15 $U_e \leq 400\text{V}$ , 50-60Hz	(A)	105
DC-13 $U_e \leq 220\text{V DC}$	(A)	105
<b>Breaking capacity (RMS) acc. to IEC 60947</b>		
AC-15 $U_e \leq 400\text{V}$ , 50-60Hz	(A)	105
DC-13 $U_e \leq 220\text{V DC}$	(A)	2
<b>AC-15</b> rated voltage and current $U_e$ - $I_e$ according to IEC	(V-A)	110/120-10 220/230-10 380/400-6 415/450-5 500-4 690/660-2
according to UL, CSA		A600
<b>DC-13</b> rated voltage and current $U_e$ - $I_e$ according to IEC	(V-A)	24-6 48-4 110-2 220-0.7 440-0.35
according to UL, CSA		Q600
Electrical endurance	$10^6$ ops.	0.2
Minimum operational power (operational safety)		17 V - 5mA
Short-circuit protection max. fuse class gl-gG without welding	(A)	10
Insulation resistance Between contacts	(M $\Omega$ )	>10
Between contacts and earth	(M $\Omega$ )	
<b>Guaranteed no overlap between NO and NC contacts</b>		
Space		1.3mm
Impedance of the contacts	(M $\Omega$ )	2.7

**Auxiliary contact blocks**

		ECFA/ECLA/BCLL
Rated insulation voltage $U_i$ according to IEC 60947	(V)	1000
Rated thermal current $I_{th}$ at $\theta \leq 55^\circ\text{C}$	(A)	10
<b>Making capacity (I<sub>eff</sub>) according to IEC 60947</b>		
AC-15 $U_e \leq 400\text{V}$ , 50-60Hz	(A)	60
DC-13 $U_e \leq 220\text{V DC}$	(A)	60
<b>Breaking capacity (I<sub>eff</sub>) according to IEC 60947</b>		
AC-15 $U_e \leq 400\text{V}$ , 50-60Hz	(A)	60
DC-13 $U_e \leq 220\text{V DC}$	(A)	0.95
<b>AC-15</b> rated voltage and current $U_e$ - $I_e$ according to IEC	(V-A)	110/120-6 220/230- 6 380/400-4 415/440-3.5 500-2.5 660/660-1.5
according to UL, CSA		A600
<b>DC-13</b> rated voltage and current $U_e$ - $I_e$ according to IEC	(V-A)	24-4 48-2 110-0.7 220-0.3 440-0.15
according to UL, CSA		Q600
Electrical endurance	$10^6$ ops.	0.2
Mechanical endurance	$10^6$ ops.	10
Minimum operational current (operational safety)		17-5 V-mA
Short-circuit protection max. fuse class gl-gG without welding	(A)	10
Insulation resistance Between contacts	(M $\Omega$ )	>10
Between contacts and earth	(M $\Omega$ )	
<b>Guaranteed no overlap between NO and NC contacts</b>		
Space		1.6mm for ECFA / 2.2mm for ECLA/ 1.3mm for BCLL
Impedance of the contacts	(milli)	2.7



## Mechanical latch blocks

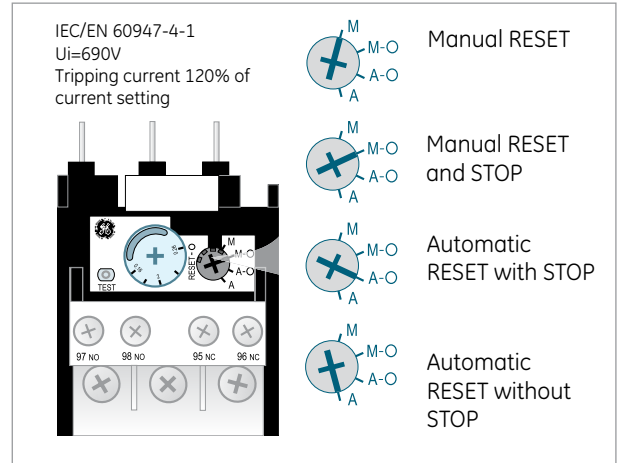
Rated insulation voltage $U_i$	(V)	1000
Standard voltages $U_s$ : 50 to 60Hz and DC	(V)	24-660 & 24-440
Operating limits		85% to 110%
Consumption for unlatching (auto cut-out)	AC/DC	
24 to 72V		30W / 25VA
110 to 440V		15W / 12VA
<b>Electrical unlatching control</b>		18
Minimum impulse	(ms)	25
Maintained		Auto cut by internal contact
Manual unlatching control		By manual push-button
<b>Electrical making control</b>		
Minimum pulse	(ms)	40 (auto cut)
Manual making control		By manual push-button
Auxiliary contact NC		
<b>AC-15 utilisation</b>	(V-A)	
according to IEC		110/120-6 220/230-6 380/400-4 415/450-3.5 500-2.5 690/660-1.5
according to UL/CSA		A600
<b>DC-13 utilisation</b>	(V-A)	
according to IEC		24-4 48-2 110-0.7 220-0.3 440-0.15
according to UL/CSA		Q600
Mechanical endurance	$10^6$ ops.	0.2
<b>Wiring diagrams</b>		
Alternating current		
Alternating current / Direct current		

## Terminal capacity

Terminal capacity		Screw plate ECMLSA, ECMLSD
Flexible wire	(mm <sup>2</sup> )	2x0.5...2.5
AWG wire		2x20...14
Standard gauge		A3
Tightening torque	(Nm/Lb·in)	1.1 / 10

## Overload relays

- Control and Power Circuit up to 690V AC
- Thermal protection against balanced overload
- Three-pole differential (phase unbalance protection)
- Automatic ambient temperature compensation
- Front mounted selector for choosing utilization current
- Manual trip lever (tripping test)
- Tripping indicator (0-1)
- IP20 protection
- Reset button, 4 positions:
  - Manual RESET
  - Manual RESET and STOP
  - Automatic RESET with STOP
  - Automatic RESET without STOP



## Technical characteristics

		ECRT	RT2	RE
Class		10A	10	5, 10, 20 and 30
Setting range	(A)	0.16...40	11.5...110	0.1...110
<b>Main circuit</b>				
Rated insulation voltage	(V)	690	690	690
Frequency limits	(Hz)	0-400	0-400	0-400
<b>Control circuit</b>				
Rated insulation voltage (IEC60947-4) U <sub>i</sub>	(V)	690	690	690
Rated thermal current I <sub>th</sub>	(A)	10	10	10
Operating current				
AC-15 - rated voltage and current U <sub>e</sub> -I <sub>e</sub>	(V-A)	110/120-3	220/230-2 380/400-1 480/500-0.8	690/660-0.3
DC-13 - rated voltage and current U <sub>e</sub> -I <sub>e</sub>	(V-A)	24-2	48-1.4 110-0.6 220-0.3	440-0.1
Utilization according UL and CSA			B600-Q600	
Protective fuse type gL	(A)		10	
Terminal capacity	AWG		2.5	
Tightening capacity	(Nm)		0.8	

### Ambient conditions for ECRT

Storage temperature	-55°C to +80°C
Operation temperature (compensated)	-25°C to +60°C
Altitude <2000 m	without any changes in characteristics
Relative humidity	40°C, 95% no cond.
Protection treatment	Lloyd's Register Environmental category ENV1 & ENV2 10:33 Germanischer Lloyd Environmental category C

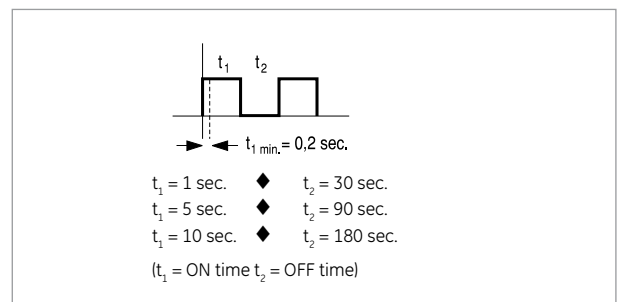
### Ambient conditions for RT2 and RE

Storage temperature	-40°C to +70°C
Operation temperature (compensated)	-25°C to +60°C
Altitude up to 3000m	without any changes in characteristics
Relative humidity	98%
Protection treatment	Lloyd's Register Environmental category ENV1 & ENV2 10:33 Germanischer Lloyd Environmental category C

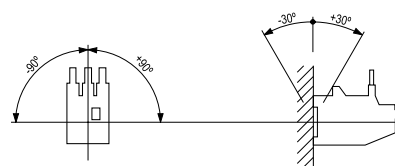
### Remote electrical reset

Power consumption	
AC	100VA
DC	100W

Coils not suitable for continuous operating duty



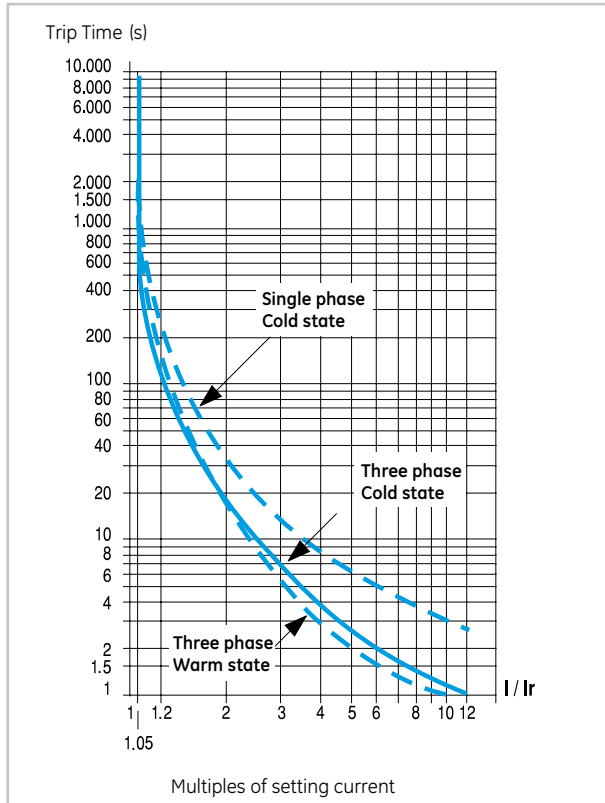
### Mounting positions



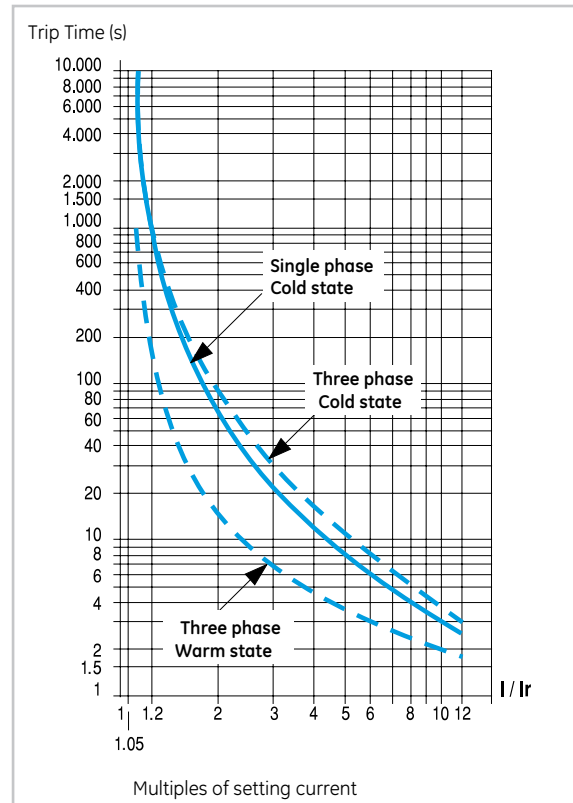
Inclination angle axis Y and Z: ±30°

## Tripping curves

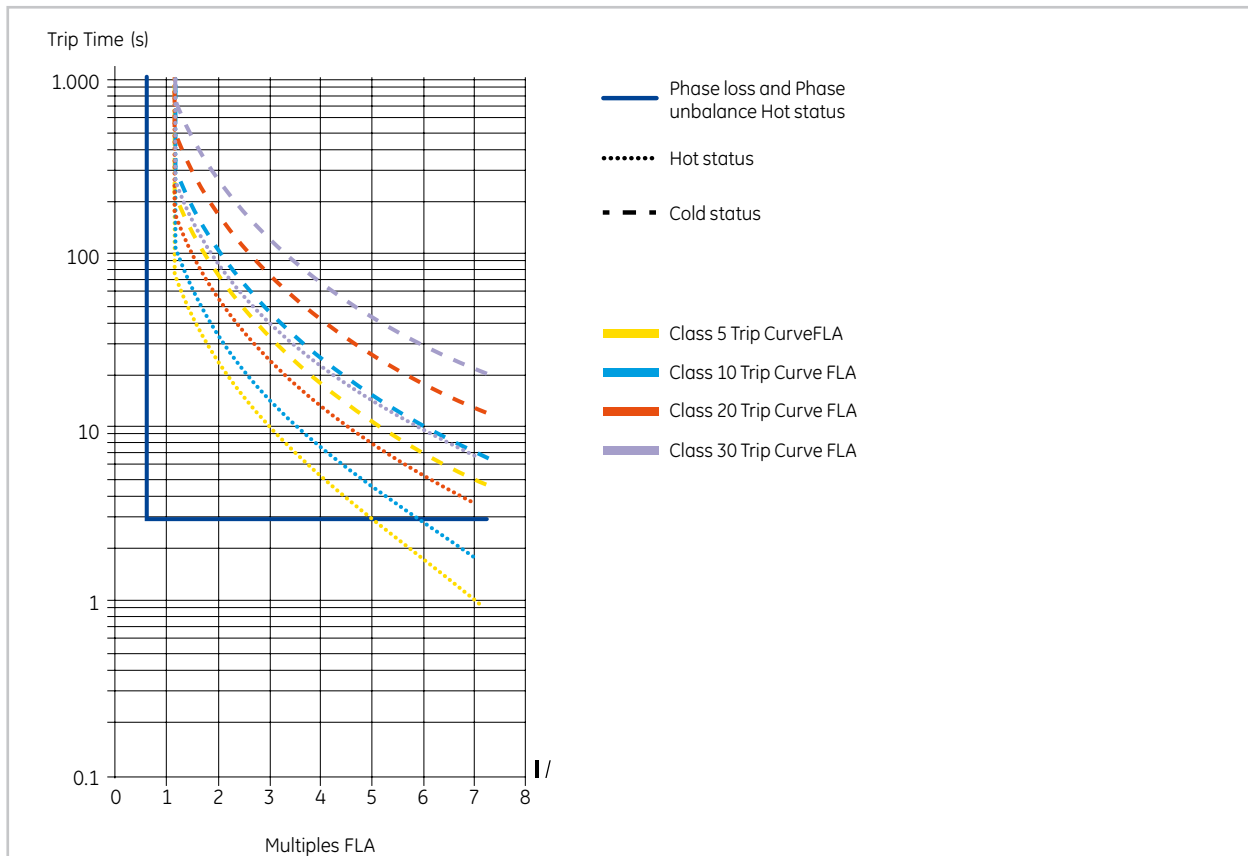
### ECRT Class 10A



### RT2 Class 10



### RE Class 5, 10, 20 and 30



Technical data

A

B

C

X



**Record Plus Coordination Type 2 at 80kA at 380/400 and 415V**

Motor <sup>(1)</sup>			MCCB					Contactor			Overload relay	Box clamp	Clearance	
Rated power	Rated current (A)		Cat.No.	Rated current (In)	Thermal current	Magnetic setting Im pick-up band ±20% Im	Magnetic current setpoint	Operating current	Admissible power	Setting range	Smallest wire Cu (pvc) <sup>(2)</sup>	Min. frontal electrical safety clearance		
kW	380/400V	415V		(A)	Setting range (A)	(A)	(A)	Series	A	P(kW)	Series	380/415V (mm <sup>2</sup> )	mm	
4	9	8	FD63	12.5	12.5	-	169	EC25A..	25	11	ECRT2	8-12	1.5	20
5.5	12	11	FD63	20	20	-	210	EC32A..	32	15	ECRT3	10-16	4	
7.5	16	14.8	FD63	30	30	-	300					14.5-18		
11	22.5	21	FD63	30	30	-	450	EC40A..	40	18.5		21-26	6	
15	30	28	FD63	50	50	-	500					25-35		
18.5	37	35	FD63	-	-	-	-					30-40		
22	-	40	FDN36MC050ED	50	-	500-750	580	EF50	50	22	RT2E	30-43	10	25
	44	-									RT2G	42-55		
30	60	55	FDN36MC080ED	80	-	800-1200	800	EF65	65	30	RT2H	54-65	16	30
37	72	68					950	EF80	80	37	RT2J	64-82	25	
45	85	80	FDN36MC0100ED	100	-	1000-1500	1140	EF95	95	45	RT2L	78-97	35	
55	105	100					1400	EF105	105	55	RT2M	90-110		

**Record Plus Coordination Type 2 at 80kA at 500/525V**

Motor <sup>(1)</sup>			MCCB					Contactor			Overload relay	Box clamp	Clearance	
Rated power	Rated current (A)		Cat.No.	Rated current (In)	Thermal current	Magnetic setting Im pick-up band ±20% Im	Magnetic current setpoint	Operating current	Admissible power	Setting range	Smallest wire Cu (pvc) <sup>(2)</sup>	Min. frontal electrical safety clearance		
kW	500/525V			(A)	Setting range (A)	(A)	(A)	Series	A	P(kW)	Series	380/415V (mm <sup>2</sup> )	mm	
7.5	12	-	FD63	12.5	12.5	-	-	EC32A..	32	15	ECRT2	10-19	4	20
11	18.4	-		20	20	-	-					17.5-25		
15	23	-		30	30	-	-	EC40A..	40	18.5	ECRT3	21-29	6	
18.5	29	-		-	-	-	-					25-35	10	
5.5	9	-	FEL36M012JF	-	-	49-105	117	EF65	65	30	RT4LD	7,5-11	1,5	20
7.5	12	-				87,5-187,5	156				RT4LE	10-16		
11	17	-	FEL36M020JF	-	-	140-300	221	EF95	95	45	RT4LF	12,5-20		30
15	23	-				299	RT4LG				17-27			
18.5	28,5	-	FEL36M030JF	-	-	240-450	370				RT4LH	26-40	4	
22	33	-				210-450	429							

(1) Current values are relevant to four pole motors not having special characteristics of torque. Inrush currents: ≤ 8 time rated current for ≤ 1s.

(2) The minimum cycle cross-sections are referred to an ambient temperature of 30°C max. in free air and are selected to withstand the maximum let-through energy and the motor rated current. The user also has to consider the drop voltage, the type of laying and ambient temperature.





**Surion GPS high breaking capacity (Thermal Magnetic). Coordination Type 2 - 65kA at 380/400 & 415V**

Motor <sup>(1)</sup>			Manual motor starter				Contactor	Box clamp		Links
Rated power	Rated current (A)		Cat.No.	Rated current (In)	Thermal current	Magnetic current	Series	Smallest wire Cu (pvc) <sup>(2)</sup>	Minimum frontal electrical safety clearance	Cat.No.
	380/400V	415V								
0.06	0.23	0.21	GPS1BHAB	0.25	0.16-0.25	3.2	EC9A..	0.75	20	ECM1AL25
0.09	0.34	0.31	GPS1BHAC	0.4	0.25-0.4	5.2	EC9A..	0.75	20	ECM1AL25
0.12	0.44	0.4	GPS1BHAD	0.63	0.4-0.63	8.2	EC9A..	0.75	20	ECM1AL25
0.18	0.65	0.63	GPS1BHAE	1	0.63-1	13	EC9A..	0.75	20	ECM1AL25
0.25	0.9	0.8	GPS1BHAE	1	0.63-1	13	EC9A..	0.75	20	ECM1AL25
0.37	1.25	1.1	GPS1BHAF	1.6	1-1.6	20.5	EC9A..	0.75	20	ECM1AL25
0.55	1.6	1.5	GPS1BHAF	1.6	1-1.6	20.5	EC9A..	0.75	20	ECM1AL25
0.75	2	1.9	GPS1BHAG	2.5	1.6-2.5	32.5	EC9A..	0.75	20	ECM1AL25
1.1	2.6	2.5	GPS1BHAH	4	2.5-4	52	EC9A..	0.75	20	ECM1AL25
1.5	3.5	3.4	GPS1BHAH	4	2.5-4	52	EC9A..	0.75	20	ECM1AL25
2.2	5	4.5	GPS1BHAJ	6.3	4-6.3	82	EC9A..	0.75	20	ECM1AL25
3	7	6.5	GPS1BHAK	10	6.3-10	130	EC9A..	1.5	20	ECM1AL25
4	9	8	GPS1BHAK	10	6.3-10	130	EC9A..	1.5	20	ECM1AL25
5.5	12	11	GPS1BHAL	13	9-13	169	EC12A..	2.3	20	ECM1AL25
7.5	16	14	GPS1BHAM	16	11.0-16	208	EC18A..	4	20	ECM1AL25
11	22.5	21	GPS1BHAP	25	19-25	325	EC25A..	6	20	ECM1AL25
15	30	28	GPS1BHAR	32	24-32	416	EC32A..	6	20	ECM1AL32
18.5	37	35	GPS2BHAS	40	28-40	520	EC40A..	10	20	ECM1AL32

Motor <sup>(1)</sup>			Manual motor starter			Contactor	Overload relay	Box clamp		
Rated power	Rated current (A)		Cat.No.	Rated current (In)	Magnetic current	Series	Series	Setting range	Smallest wire Cu (pvc) <sup>(2)</sup>	Minimum frontal electrical safety clearance
	380/400V	415V								
22	-	40	GPS2MHAT	50	650	EF50	RT2E	30-43	10	25
	44	-					RT2G	42-55		
30	60	55	GPS2MHAU	63	819	EF65	RT2H	54-65	16	

(1) Current values are relevant to four pole motors not having special characteristics of torque. Inrush currents: ≤ 8 time rated current for ≤ 1s.  
 (2) The minimum cycle cross-sections are referred to an ambient temperature of 30°C max. in free air and are selected to withstand the maximum let-through energy and the motor rated current. The user also has to consider the drop voltage, the type of laying and ambient temperature.

Technical data

A

B

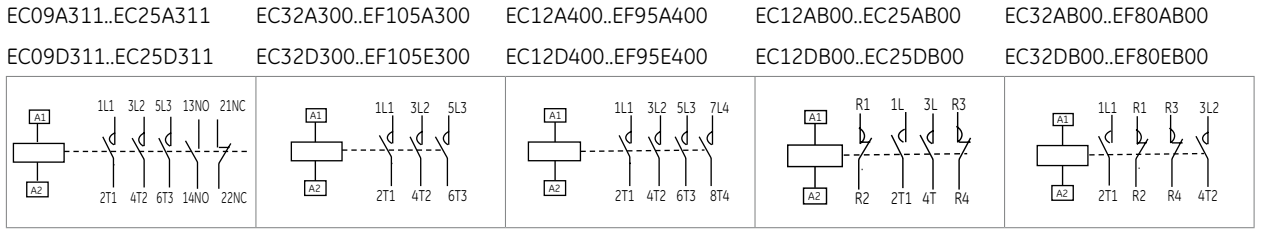
C

X

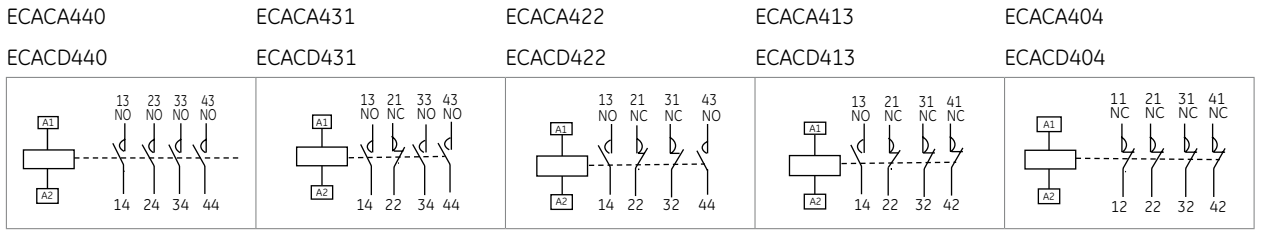


## Terminal numbering

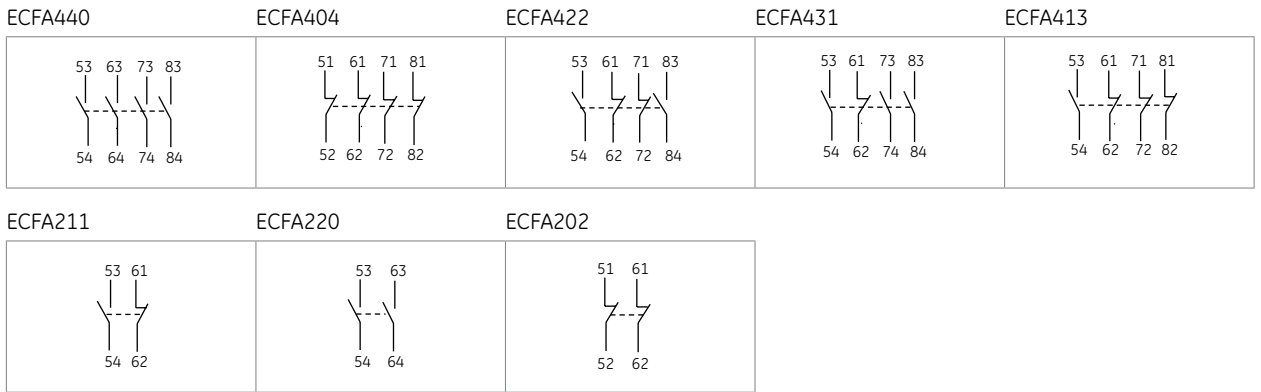
### 3P and 4P contactors



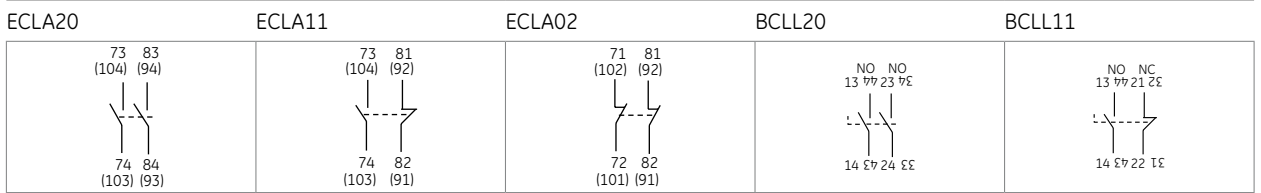
### Auxiliary contactors



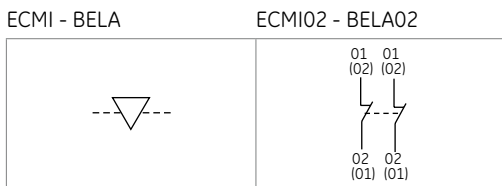
### Auxiliary contact blocks - Front mounting



### Auxiliary contact blocks - Lateral mounting

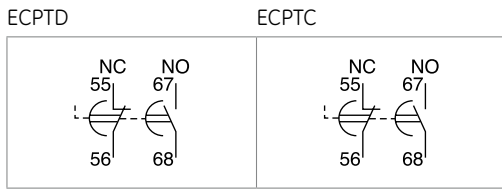


### Mechanical and mechanical/electrical interlock

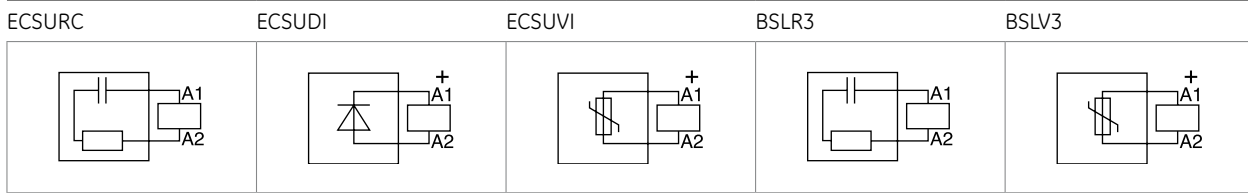


## Terminal numbering (continued)

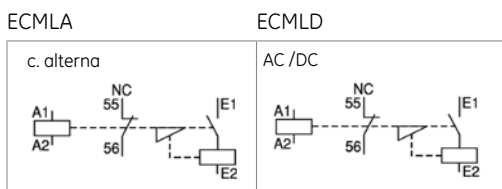
### Pneumatic timer blocks



### Voltage suppressor blocks



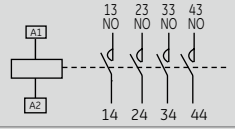

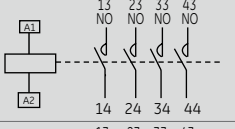

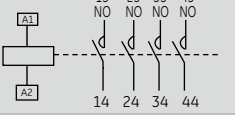

### Mechanical latch block



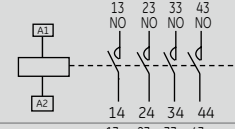

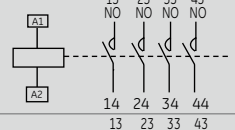

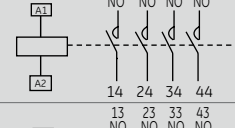

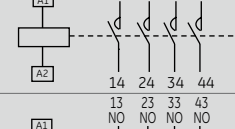

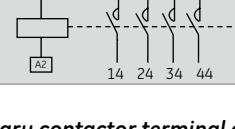

Terminal numbering according to EN 50011

Auxiliary contacts	Description			Possible basic auxiliary contactors + Auxiliary contacts blocks to be added
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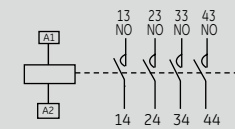

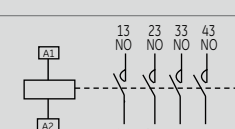

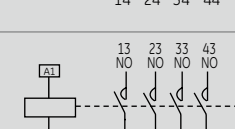

4NO auxiliary contactor terminal combination with 2P FRONTAL block

	42E	4	2	ECACA440 ECACD440 +ECFA202	
	60E	6	0	ECACA440 ECACD440 +ECFA220	
	51E	5	1	ECACA440 ECACD440 +ECFA211	



4NO auxiliary contactor terminal combination with 4P FRONTAL block

	80E	8	0	ECACA440 ECACD440 +ECFA440	
	44E	4	4	ECACA440 ECACD440 +ECFA440	
	62E	6	2	ECACA440 ECACD440 +ECFA422	
	71E	7	1	ECACA440 ECACD440 +ECFA431	
	53E	5	3	ECACA440 ECACD440 +ECLFA413	

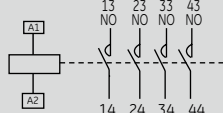

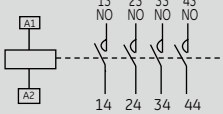

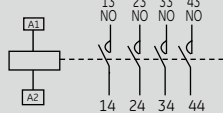

4NO auxiliary contactor terminal combination with LATERAL block mounted on the RIGHT side of the contactor

	42	4	2	ECACA440 ECACD440 +ECLA202	
	51	5	1	ECACA440 ECACD440 +ECLA211	
	60	6	0	ECACA440 ECACD440 +ECLA220	

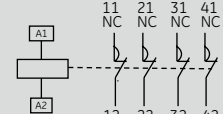

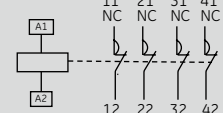

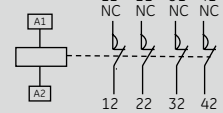

**Terminal numbering according to EN 50011 (continued 1)**

Auxiliary contacts	Description			Possible basic auxiliary contactors + Auxiliary contacts blocks to be added
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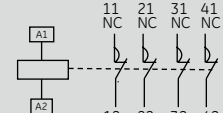

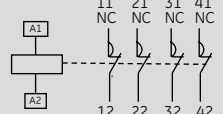

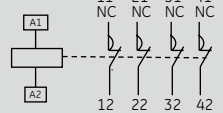

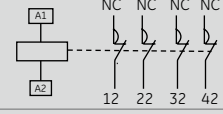

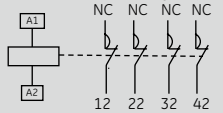

**4NO auxiliary contactor terminal combination with LATERAL block mounted on the LEFT side of the contactor**

	42	4	2	ECACA440 ECACD440 +ECLA202	
	51	5	1	ECACA440 ECACD440 +ECLA211	
	6	6	0	ECACA440 ECACD440 +ECLA220	

**4NC auxiliary contactor terminal combination with 2P FRONTAL block**

	06E	6	0	ECACA404 ECACD404 +ECFA202	
	24E	2	4	ECACA404 ECACD404 +ECFA220	
	15E	5	1	ECACD404 ECACA404 +ECFA211	

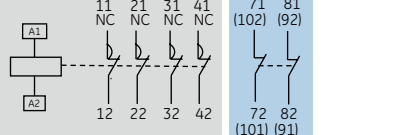

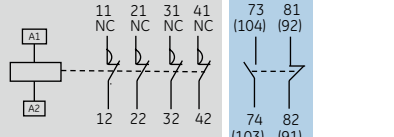

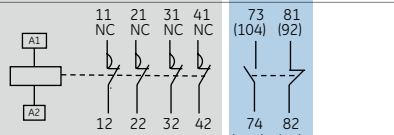

**4NC auxiliary contactor terminal combination with 4P FRONTAL block**

	44E	4	4	ECACA404 ECACD404 +ECFA440	
	08E	0	8	ECACA404 ECACD404 +ECFA404	
	26E	2	6	ECACA404 ECACD404 +ECFA422	
	35E	3	5	ECACA404 ECACD404 +ECFA431	
	17E	1	7	ECACA404 ECACD404 +ECLFA413	

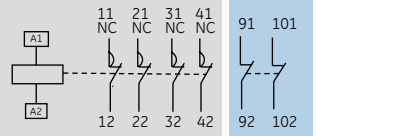

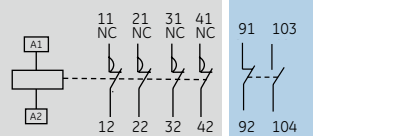

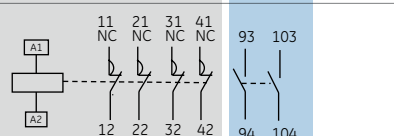

Terminal numbering according to EN 50011 (continued 2)

Auxiliary contacts	Description			Possible basic auxiliary contactors + Auxiliary contacts blocks to be added
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
4NC auxiliary contactor terminal combination with LATERAL block mounted on the RIGHT side of the contactor

	42	0	6	ECACA404 ECACD404 +ECLA202	
	15	1	5	ECACA404 ECACD404 +ECLA211	
	24	2	4	ECACA404 ECACD404 +ECLA220	

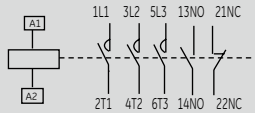

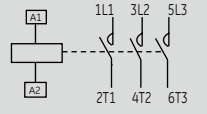

4NC auxiliary contactor terminal combination with LATERAL block mounted on the LEFT side of the contactor

	42	4	2	ECACA440 ECACD440 +ECLA202	
	51	5	1	ECACA440 ECACD440 +ECLA211	
	6	6	0	ECACA440 ECACD440 +ECLA220	

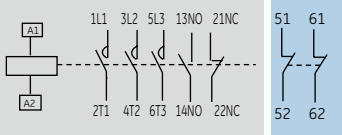

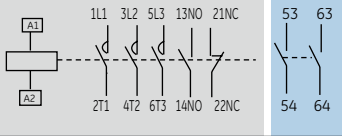



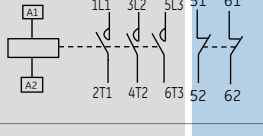

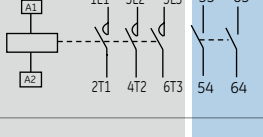

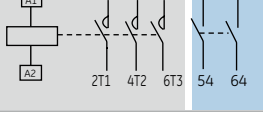

## Terminal numbering according to EN 50012

Auxiliary contacts	Description			Possible basic auxiliary contactors + Auxiliary contacts blocks to be added
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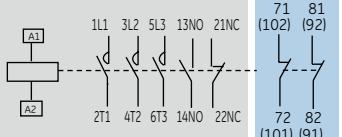



### Terminal numbering according to EN 50012

	11E	1	1	EC09A311..EC25A311 EC09D311..EC25D311	
	-	0	0	EC32A300..EF105A300 EC32D300..EF105E300	



### FRONT mounted auxiliary contact blocks with 2 contacts each

	13	1	3	EC09A311..EC25A311 EC09D311..EC25D311 +ECFA202	
	31	3	1	EC09A311..EC25A311 EC09D311..EC25D311 +ECFA220	
	22	2	2	EC09A311..EC25A311 EC09D311..EC25D311 +ECFA211	
	02	0	2	EC32A300..EF105A300 EC32D300..EF105E300 +ECFA202	
	20	2	0	EC32A300..EF105A300 EC32D300..EF105E300 +ECFA220	
	11	1	1	EC32A300..EF105A300 EC32D300..EF105E300 +ECFA211	

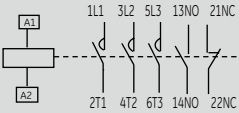

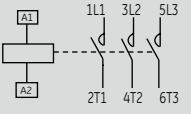

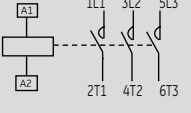

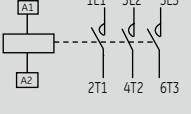

### LATERAL mounted auxiliary contact blocks with 2 contacts each - RIGHT side mounted

	13	1	3	EC09A311..EC25A311 EC09D311..EC25D311 +ECLA220	
	22	2	2	EC09A311..EC25A311 EC09D311..EC25D311 +ECLA211	



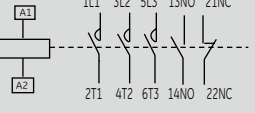

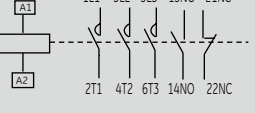

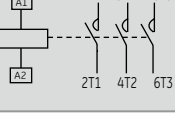

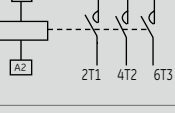

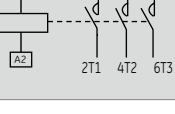

Terminal numbering according to EN 50012 (continued 1)

Auxiliary contacts	Description			Possible basic auxiliary contactors + Auxiliary contacts blocks to be added
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LATERAL mounted auxiliary contact blocks with 2 contacts each - RIGHT side mounted (continued)



		73 (104) 83 (94)		31	3	1	EC09A311..EC25A311 EC09D311..EC25D311 +ECLA220	
		71 (102) 81 (92)		02	0	2	EC32A300..EC40A300 EC32D300..EC40D300 +ECLA202	
		73 (104) 81 (92)		11	1	1	EC32A300..EC40A300 EC32D300..EC40D300 +ECLA211 EF50A300....EF105A300 EF50E300....EF105E300 +BCLL11	
		73 (104) 83 (94)		20	2	0	EC32A300..EC40A300 EC32D300..EC40D300 +ECLA220 EF50A300....EF105A300 EF50E300....EF105E300 +BCLL20	

LATERAL mounted auxiliary contact blocks with 2 contacts each - LEFT side mounted

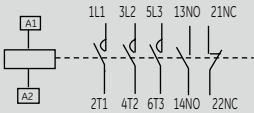

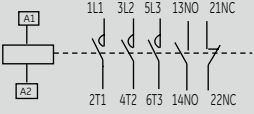

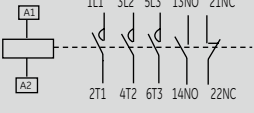

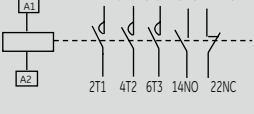

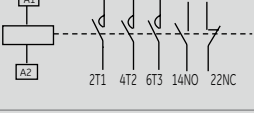

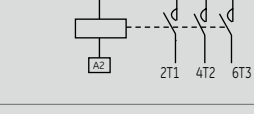

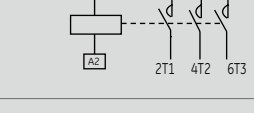

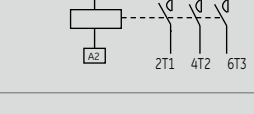

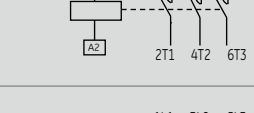

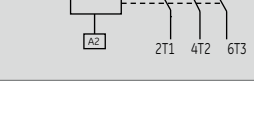

		91 92	101 102	13	1	3	EC09A311..EC25A311 EC09D311..EC25D311 +ECLA202	
		91 92	103 104	22	2	2	EC09D311..EC25D311 EC09A311..EC25A311 +ECLA211	
		93 94	103 104	31	3	1	EC09A311..EC25A311 EC09D311..EC25D311 +ECLA220	
		91 92	101 102	02	0	2	EC32A300..EC40A300 EC32D300..EC40D300 +ECLA202	
		91 92	103 104	11	1	1	EC32A300..EC40A300 EC32D300..EC40D300 +ECLA211 EF50A300....EF105A300 EF50E300....EF105E300 +BCLL11	
		93 94	103 104	20	2	0	EC32A300..EC40A300 EC32D300..EC40D300 +ECLA220 EF50A300....EF105A300 EF50E300....EF105E300 +BCLL20	



Terminal numbering according to EN 50012 (continued 2)

Auxiliary contacts	Description			Possible basic auxiliary contactors + Auxiliary contacts blocks to be added
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FRONT mounted auxiliary contact blocks with 4 contacts each

	51	5	1	EC09A311..EC25A311 EC09D311..EC25D311 +ECFA440	
	15	1	5	EC09A311..EC25A311 EC09D311..EC25D311 +ECFA404	
	33	3	3	EC09A311..EC25A311 EC09D311..EC25D311 +ECFA422	
	42	4	2	EC09A311..EC25A311 EC09D311..EC25D311 +ECFA431	
	24	2	4	EC09A311..EC25A311 EC09D311..EC25D311 +ECFA413	
	40	4	0	EC09A311..EC25A311 EC09D311..EC25D311 +ECFA440	
	04	0	4	EC09A311..EC25A311 EC09D311..EC25D311 +ECFA404	
	22	2	2	EC32A300..EF105A300 EC32D300..EF105E300 +ECFA422	
	31	3	1	EC32A300..EF105A300 EC32D300..EF105E300 +ECFA431	
	13	1	3	EC32A300..EF105A300 EC32D300..EF105E300 +ECFA413	

Technical data

A

B

C

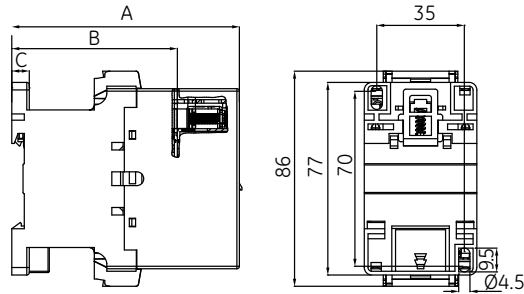
X



Dimensions and weights

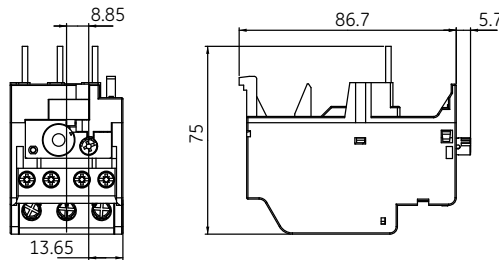
EC contactors

Contactors

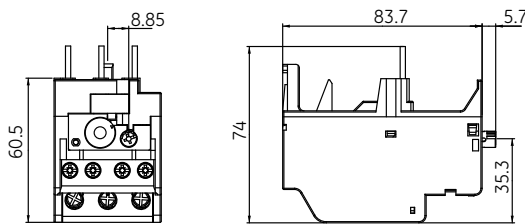


Dimensions in mm	EC09A3 - EC18A3	EC25A3	EC32A3 - EC40A3	EC09D3 - EC18D3	EC25D3	EC32D3 - EC40D3
A	92	97	102	102	110	115
B	66.2	66.2	67.2	76.2	80.2	81.2
C	7	7	7	7	7	7
Weight in g	350	490	530	620	700	740

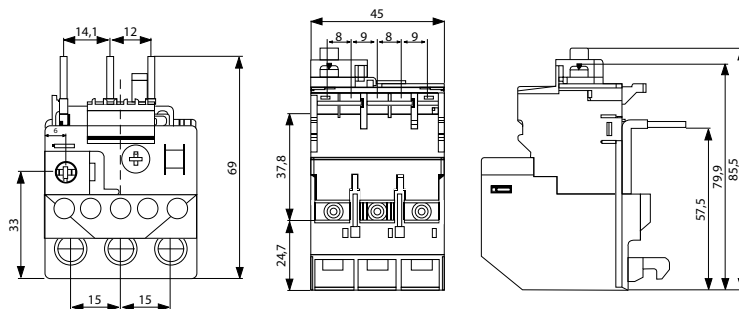
Thermal overload relay ECRT1  
186 g



Thermal overload relay ECRT2  
194 g

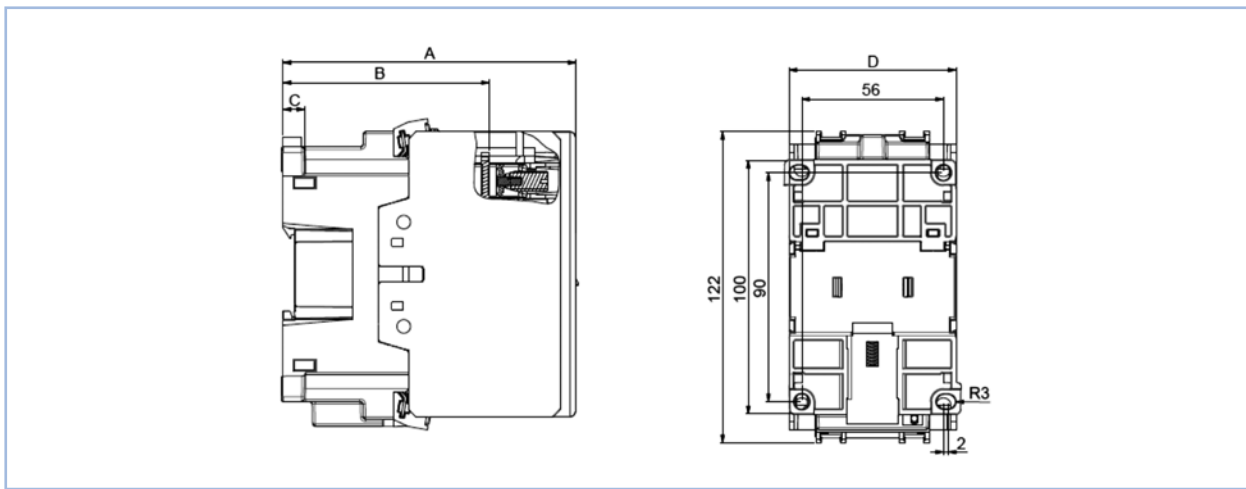


Electronic overload relay RE1  
200 g



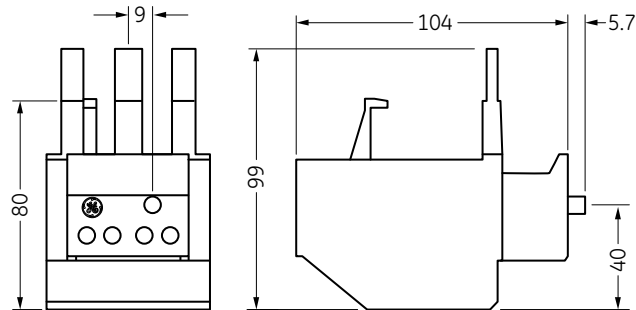
## Dimensions and weights

### EF contactors

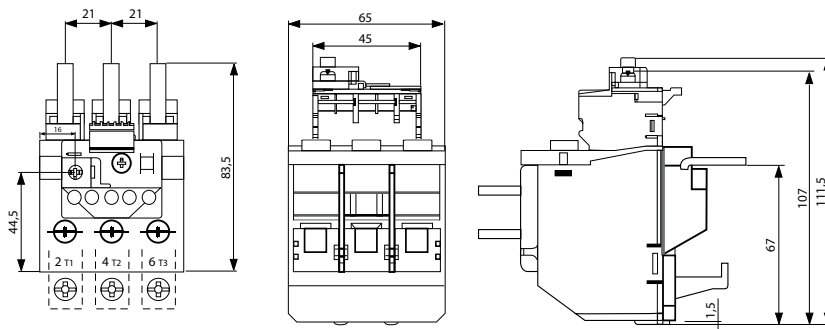


Dimensions in mm	EF50A3 - EF80A3	EF95A3-EF105A3	EF50E3 - EF80E3	EF95E3 - EF105E3
A	115	126	143	153
B	80	85	109	119
C	9	9	9	9
D	65	75	65	75
Weight in g	1125	1468	1270	1613

Thermal overload relay RT2  
400 g



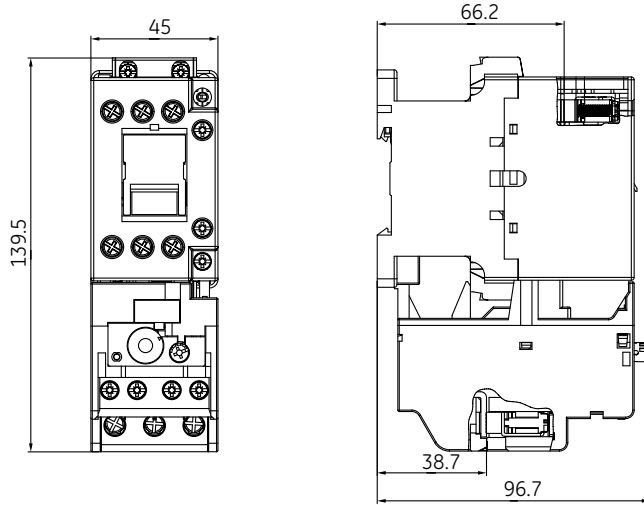
Electronic overload relay RE2  
320 g



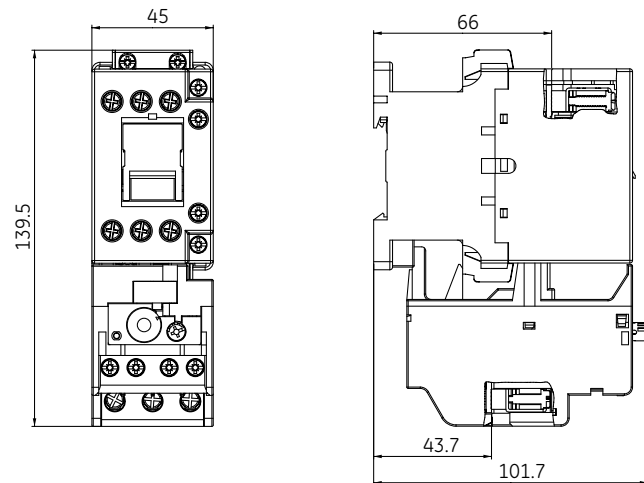
Dimensions and weights

EC contactors

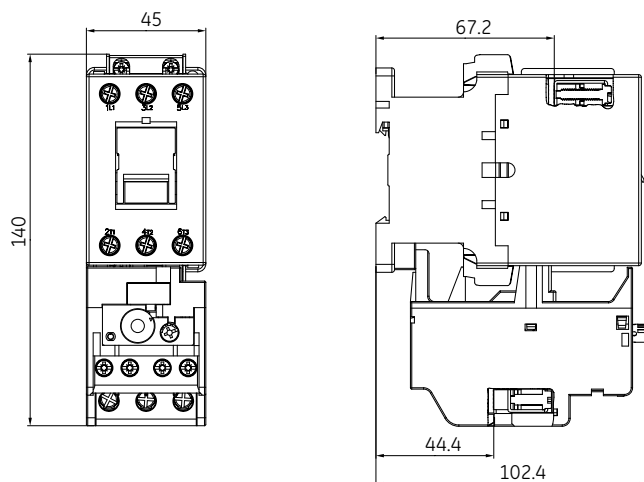
Combination of contactor EC09A-12A-18A and thermal overload relay ECRT1



Combination of contactor EC25A and thermal overload relay ECRT2



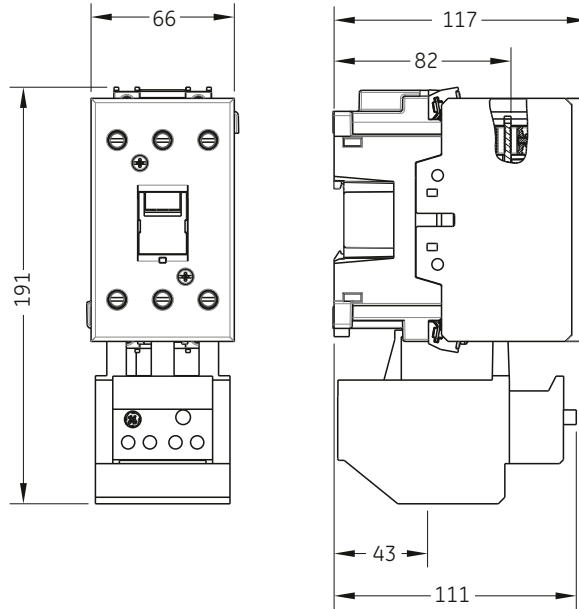
Combination of contactor EC32A-40A and thermal overload relay ECRT2



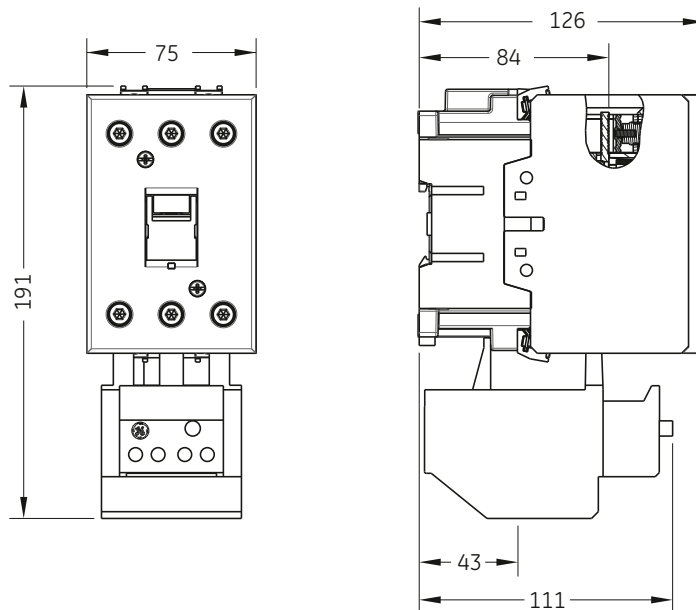
## Dimensions and weights

### EF contactors

Combination of contactor EF50A3-65A3-80A3 and thermal overload relay RT2



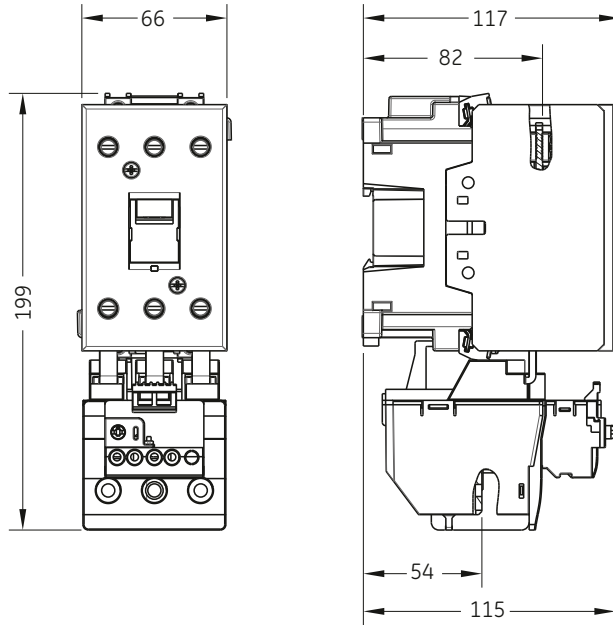
Combination of contactor EF95A3-105A3 and thermal overload relay RT2



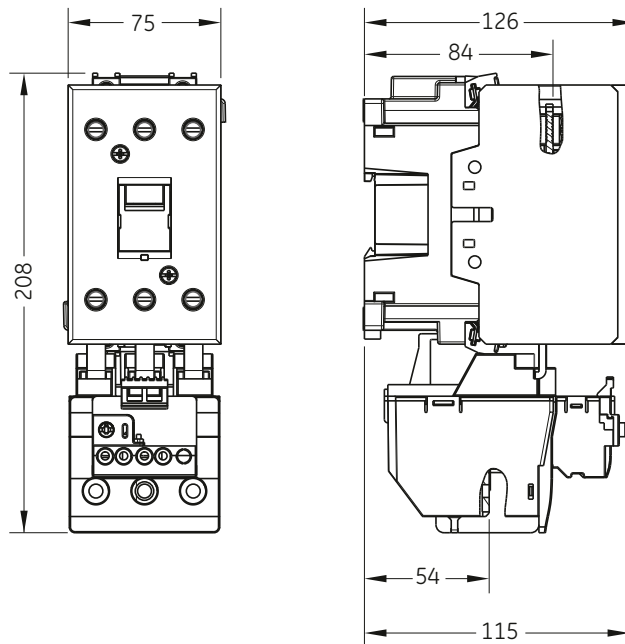
Dimensions and weights

EF contactors

Combination of contactor EF50E3-65E3-80E3 and thermal overload relay RT2



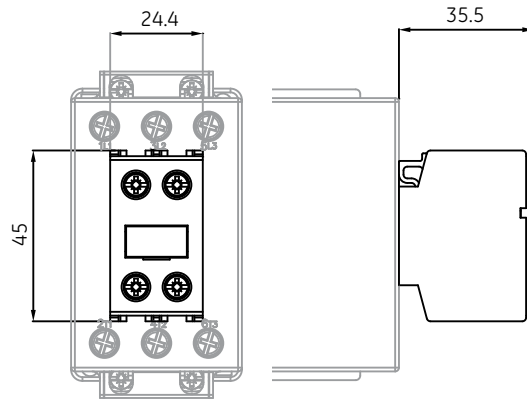
Combination of contactor EF95A3-105A3 and thermal overload relay RT2



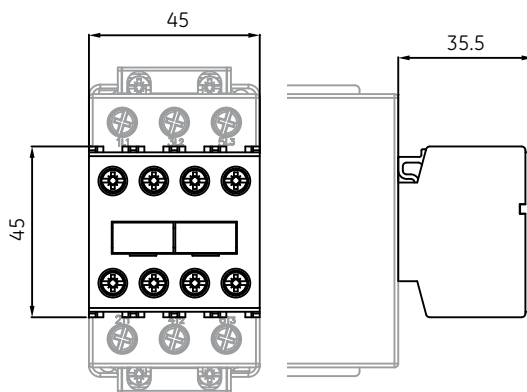
## Dimensions and weights

### EC contactors

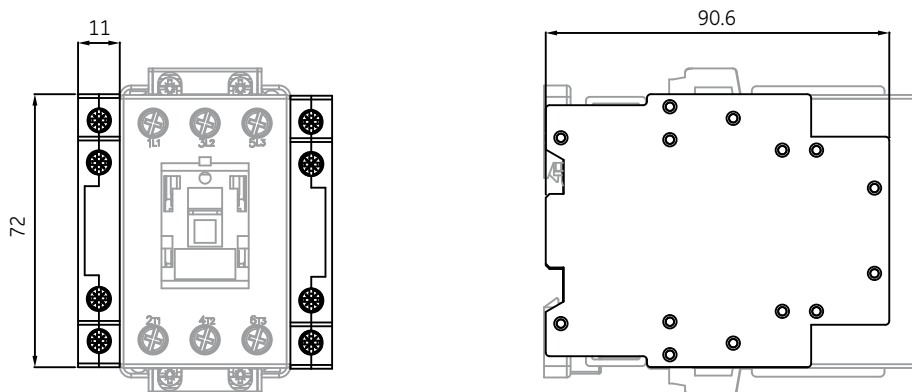
Frontal auxiliary contact block 2P ECFA2S  
42 g



Frontal auxiliary contact block 4P ECFA4S  
74 g



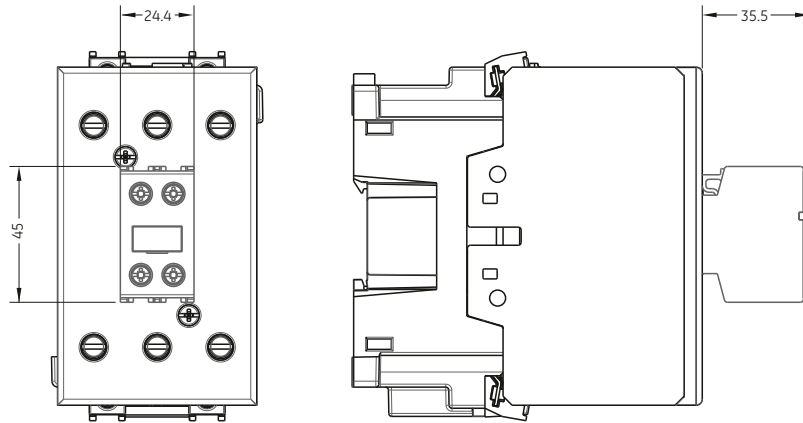
Lateral auxiliary contact block ECLA  
70 g



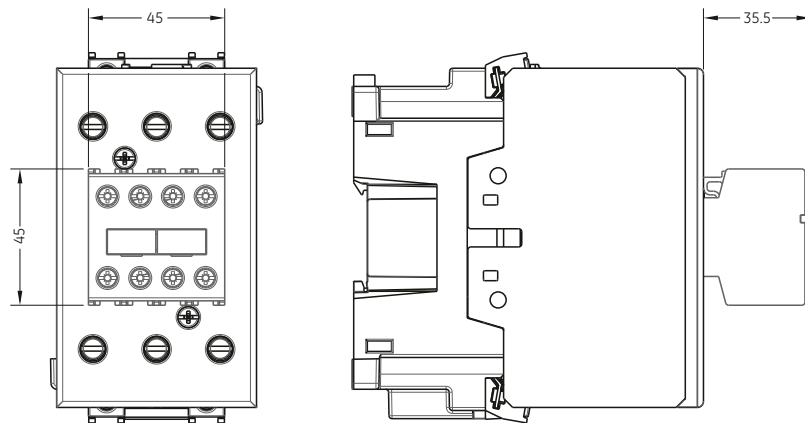
**Dimensions and weights**

**EF contactors**

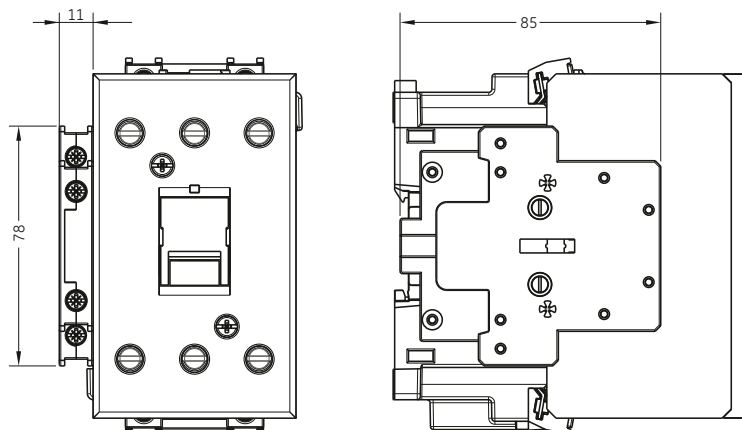
Frontal auxiliary contact block 2P ECFA2S



Frontal auxiliary contact block 2P ECFA2S



Lateral auxiliary contact block BCLL

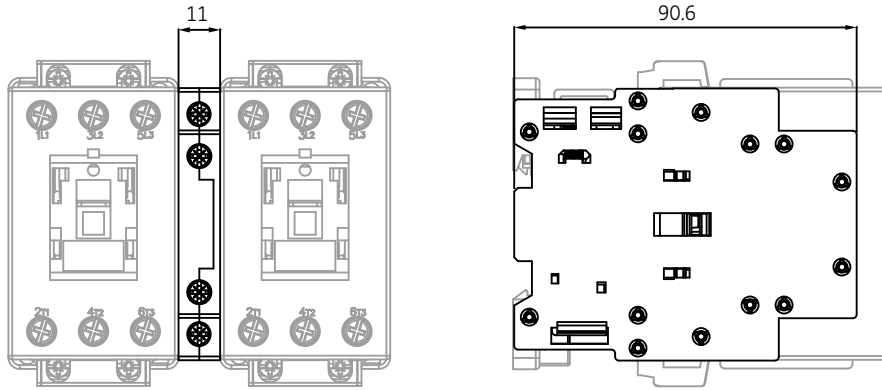




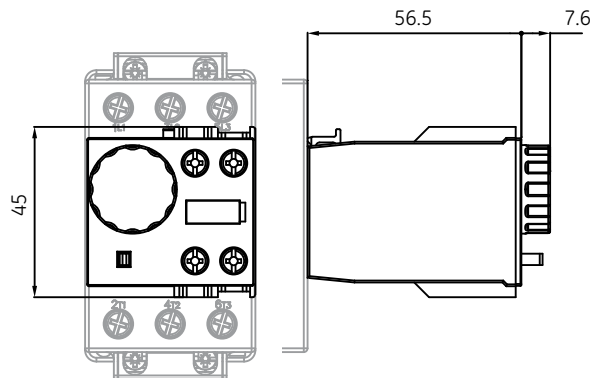
## Dimensions and weights

### EC contactors

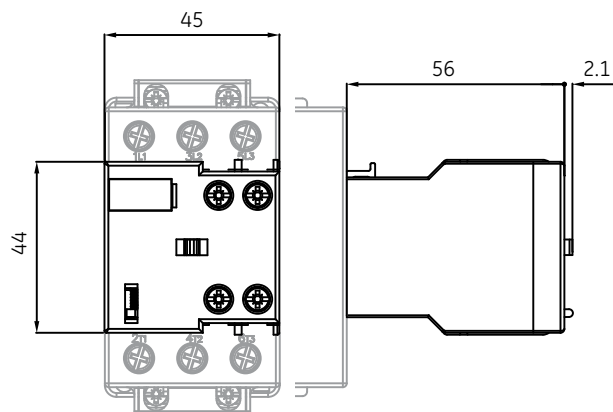
Lateral auxiliary mechanical interlock ECMI  
52 g



Pneumatic timer ECPT  
78 g



Mechanical latch ECML  
113 g



A

B

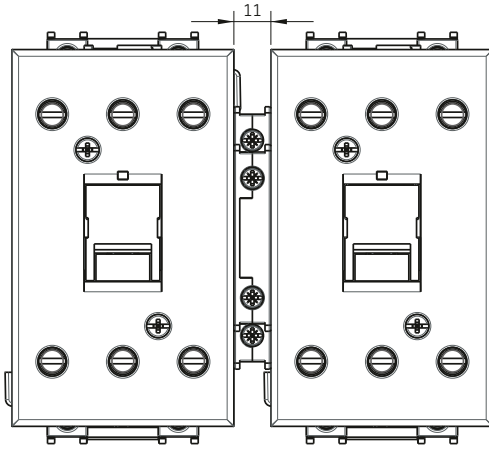
C

X

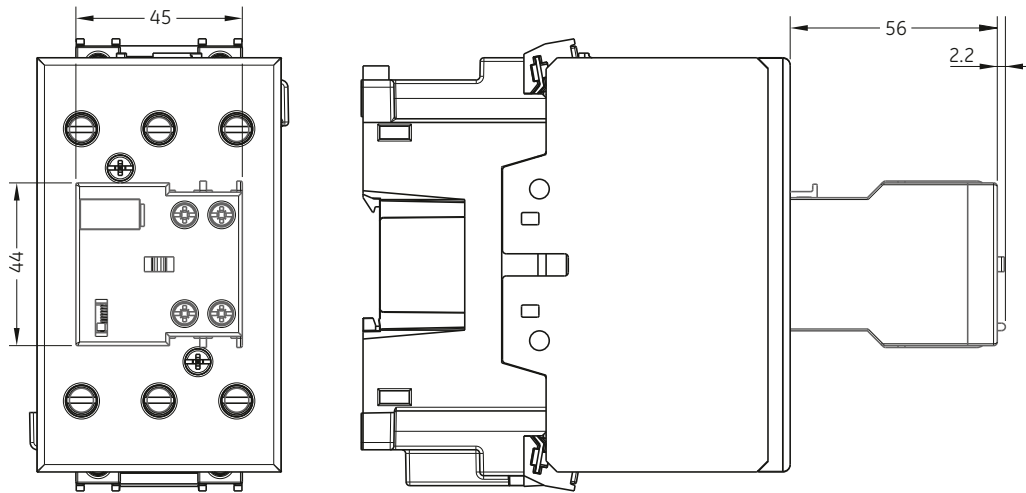
Dimensions and weights

EF contactors

Lateral auxiliary mechanical interlock BELA



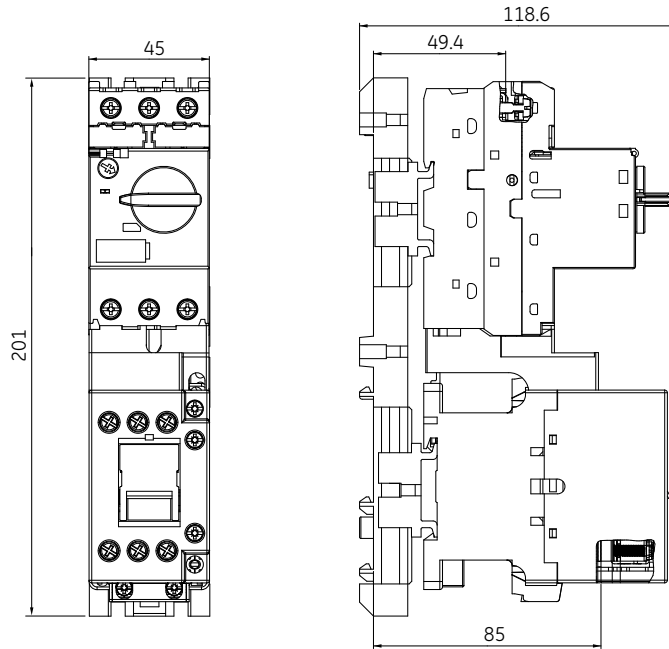
Mechanical latch ECML  
113 g



## Dimensions and weights

### EC contactors

Starter combination of manual motor starter Surion GPS1 and contactor EC09A-12A-18A  
787 g



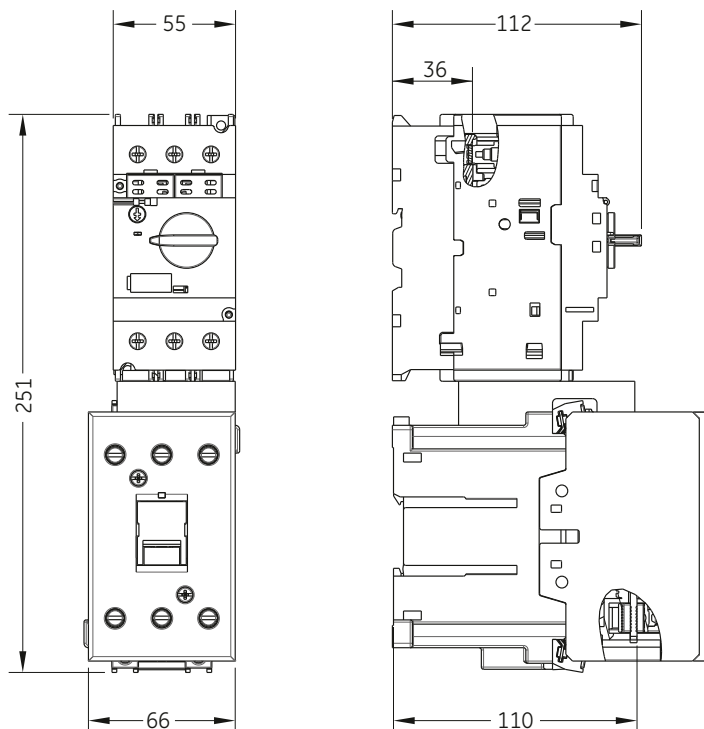
A

B

C

### EF contactors

Starter combination of manual motor starter Surion GPS2 and contactor EF50-65-80



X

By reference number

Numerical index

A

B

C

X

Ref. no.	Cat. no.	Pag.	Ref. no.	Cat. no.	Pag.	Ref. no.	Cat. no.	Pag.	Ref. no.	Cat. no.	Pag.
101000			255034	EFCSE250-500S	B.9	267080	EC40A300B400	B.2	267161	EC40D300B024W	B.2
101426	CLXC41	B.12	267000			267081	EC40A300B440	B.2	267162	EC40D300B036W	B.2
101866	RE1D	B.14	267001	EC09A311B012	B.2	267082	EC40A300B480	B.2	267163	EC40D300B048W	B.2
101867	RE1H	B.14	267002	EC09A311B024	B.2	267083	EC40A300B500	B.2	267164	EC40D300B060W	B.2
101868	RE1K	B.14	267003	EC09A311B042	B.2	267084	EC40A300B600	B.2	267165	EC40D300B072W	B.2
101869	RE1M	B.14	267004	EC09A311B048	B.2	267085	EC09D311B012W	B.2	267166	EC40D300B110W	B.2
101870	RE1S	B.14	267005	EC09A311B110	B.2	267086	EC09D311B024W	B.2	267167	EC40D300B125W	B.2
101871	RE1W	B.14	267006	EC09A311B120	B.2	267087	EC09D311B036W	B.2	267168	EC40D300B230W	B.2
101872	RE2H	B.14	267007	EC09A311B208	B.2	267088	EC09D311B048W	B.2	267169	EC40D300B250W	B.2
101873	RE2M	B.14	267008	EC09A311B230	B.2	267089	EC09D311B060W	B.2	267170	EC40D300B440W	B.2
104000			267009	EC09A311B240	B.2	267090	EC09D311B072W	B.2	267171	EC40D300B024L	B.2
104706	BCLL20	B.10	267010	EC09A311B400	B.2	267091	EC09D311B110W	B.2	267172	EC40D300B048L	B.2
104707	BCLL11	B.10	267011	EC09A311B440	B.2	267092	EC09D311B125W	B.2	267173	EC40D300B110L	B.2
104716	BSLR3G	B.10	267012	EC09A311B480	B.2	267093	EC09D311B230W	B.2	267174	EC40D300B230L	B.2
104717	BSLR3K	B.10	267013	EC09A311B500	B.2	267094	EC09D311B250W	B.2	267175	EC12A400B012	B.4
104718	BSLR3R	B.10	267014	EC09A311B600	B.2	267095	EC09D311B440W	B.2	267176	EC12A400B024	B.4
104720	BSLV3G	B.10	267015	EC12A311B012	B.2	267096	EC09D311B024L	B.2	267177	EC12A400B042	B.4
104721	BSLV3K	B.10	267016	EC12A311B024	B.2	267097	EC09D311B048L	B.2	267178	EC12A400B048	B.4
104722	BSLV3R	B.10	267017	EC12A311B042	B.2	267098	EC09D311B110L	B.2	267179	EC12A400B110	B.4
104723	BELA	B.10	267018	EC12A311B048	B.2	267099	EC09D311B230L	B.2	267181	EC12A400B120	B.4
104724	BELA02	B.10	267019	EC12A311B110	B.2	267100	EC12D311B012W	B.2	267181	EC12A400B208	B.4
108000			267020	EC12A311B120	B.2	267101	EC12D311B024W	B.2	267182	EC12A400B230	B.4
108864	RTXBS	B.14	267021	EC12A311B208	B.2	267102	EC12D311B036W	B.2	267183	EC12A400B240	B.4
110000			267022	EC12A311B230	B.2	267103	EC12D311B048W	B.2	267184	EC12A400B400	B.4
110836	BSLV3U	B.10	267023	EC12A311B240	B.2	267104	EC12D311B060W	B.2	267185	EC12A400B440	B.4
113000			267024	EC12A311B400	B.2	267105	EC12D311B072W	B.2	267186	EC12A400B480	B.4
113661	RTXRRB	B.14	267025	EC12A311B440	B.2	267106	EC12D311B110W	B.2	267187	EC12A400B500	B.4
113662	RTXRRD	B.14	267026	EC12A311B480	B.2	267107	EC12D311B125W	B.2	267188	EC12A400B600	B.4
113663	RTXRRG	B.14	267027	EC12A311B500	B.2	267108	EC12D311B230W	B.2	267189	EC18A400B012	B.4
113664	RTXRRJ	B.14	267028	EC12A311B600	B.2	267109	EC12D311B250W	B.2	267190	EC18A400B024	B.4
113665	RTXRRN	B.14	267029	EC18A311B012	B.2	267110	EC12D311B440W	B.2	267191	EC18A400B042	B.4
113666	RTXRRU	B.14	267030	EC18A311B024	B.2	267111	EC12D311B024L	B.2	267192	EC18A400B048	B.4
113717	RT2A	B.13	267031	EC18A311B042	B.2	267112	EC12D311B048L	B.2	267193	EC18A400B110	B.4
113718	RT2B	B.13	267032	EC18A311B048	B.2	267113	EC12D311B110L	B.2	267194	EC18A400B120	B.4
113719	RT2C	B.13	267033	EC18A311B110	B.2	267114	EC12D311B230L	B.2	267195	EC18A400B208	B.4
113720	RT2D	B.13	267034	EC18A311B120	B.2	267115	EC18D311B012W	B.2	267196	EC18A400B230	B.4
113721	RT2E	B.13	267035	EC18A311B208	B.2	267116	EC18D311B024W	B.2	267197	EC18A400B240	B.4
113722	RT2G	B.13	267036	EC18A311B230	B.2	267117	EC18D311B036W	B.2	267198	EC18A400B400	B.4
113723	RT2H	B.13	267037	EC18A311B240	B.2	267118	EC18D311B048W	B.2	267199	EC18A400B440	B.4
113724	RT2J	B.13	267038	EC18A311B400	B.2	267119	EC18D311B060W	B.2	267200	EC18A400B480	B.4
113725	RT2L	B.13	267039	EC18A311B440	B.2	267120	EC18D311B072W	B.2	267201	EC18A400B500	B.4
113726	RT2M	B.13	267040	EC18A311B480	B.2	267121	EC18D311B110W	B.2	267202	EC18A400B600	B.4
113762	RTX3	B.14	267041	EC18A311B500	B.2	267122	EC18D311B125W	B.2	267203	EC25A400B012	B.4
113764	RT2XP	B.13	267042	EC18A311B600	B.2	267123	EC18D311B230W	B.2	267204	EC25A400B024	B.4
113855	RTXS	B.14	267043	EC25A311B012	B.2	267124	EC18D311B250W	B.2	267205	EC25A400B042	B.4
113856	RTXSL	B.14	267044	EC25A311B024	B.2	267125	EC18D311B440W	B.2	267206	EC25A400B048	B.4
247000			267045	EC25A311B042	B.2	267126	EC18D311B024L	B.2	267207	EC25A400B110	B.4
247302	RE1XP	B.14	267046	EC25A311B048	B.2	267127	EC18D311B048L	B.2	267208	EC25A400B120	B.4
247303	RE2XP	B.14	267047	EC25A311B110	B.2	267128	EC18D311B110L	B.2	267209	EC25A400B208	B.4
247795	RETC	B.14	267048	EC25A311B120	B.2	267129	EC18D311B230L	B.2	267210	EC25A400B230	B.4
255000			267049	EC25A311B208	B.2	267130	EC25D311B012W	B.2	267211	EC25A400B240	B.4
255000	EFM2AL80	B.12	267050	EC25A311B230	B.2	267131	EC25D311B024W	B.2	267212	EC25A400B400	B.4
255001	CLXC51	B.12	267051	EC25A311B240	B.2	267132	EC25D311B036W	B.2	267213	EC25A400B440	B.4
255002	CLXC42	B.12	267052	EC25A311B400	B.2	267133	EC25D311B048W	B.2	267214	EC25A400B480	B.4
255003	CLXC43	B.12	267053	EC25A311B440	B.2	267134	EC25D311B060W	B.2	267215	EC25A400B500	B.4
255004	CLXC52	B.12	267054	EC25A311B480	B.2	267135	EC25D311B072W	B.2	267216	EC25A400B600	B.4
255005	ECML3A3032	B.11	267055	EC25A311B500	B.2	267136	EC25D311B110W	B.2	267217	EC32A400B012	B.4
255006	ECML3A3060	B.11	267056	EC25A311B600	B.2	267137	EC25D311B125W	B.2	267218	EC32A400B024	B.4
255007	ECML3A3127	B.11	267057	EC32A300B012	B.2	267138	EC25D311B230W	B.2	267219	EC32A400B042	B.4
255008	ECML3A3227	B.11	267058	EC32A300B024	B.2	267139	EC25D311B250W	B.2	267220	EC32A400B048	B.4
255009	ECML3A3480	B.11	267059	EC32A300B042	B.2	267140	EC25D311B440W	B.2	267221	EC32A400B110	B.4
255010	ECML3A3660	B.11	267060	EC32A300B048	B.2	267141	EC25D311B024L	B.2	267222	EC32A400B120	B.4
255011	ECML3D3036	B.11	267061	EC32A300B110	B.2	267142	EC25D311B048L	B.2	267223	EC32A400B208	B.4
255012	ECML3D3048	B.11	267062	EC32A300B120	B.2	267143	EC25D311B110L	B.2	267224	EC32A400B230	B.4
255013	ECML3D3072	B.11	267063	EC32A300B208	B.2	267144	EC25D311B230L	B.2	267225	EC32A400B240	B.4
255014	ECML3D3125	B.11	267064	EC32A300B230	B.2	267145	EC32D300B012W	B.2	267226	EC32A400B400	B.4
255015	ECML3D3250	B.11	267065	EC32A300B240	B.2	267146	EC32D300B024W	B.2	267227	EC32A400B440	B.4
255017	ECML3D3440	B.11	267066	EC32A300B400	B.2	267147	EC32D300B036W	B.2	267228	EC32A400B480	B.4
255020	EFCSA012S	B.9	267067	EFC32A300B440	B.2	267148	EC32D300B048W	B.2	267229	EC32A400B500	B.4
255021	EFCSA024S	B.9	267068	EC32A300B480	B.2	267149	EC32D300B060W	B.2	267230	EC32A400B600	B.4
255022	EFCSA048S	B.9	267069	EC32A300B500	B.2	267150	EC32D300B072W	B.2	267231	EC12D400B012W	B.4
255023	EFCSA110S	B.9	267070	EC32A300B600	B.2	267151	EC32D300B110W	B.2	267232	EC12D400B024W	B.4
255025	EFCSA208S	B.9	267071	EC40A300B012	B.2	267152	EC32D300B125W	B.2	267233	EC12D400B036W	B.4
255026	EFCSA230S	B.9	267072	EC40A300B024	B.2	267153	EC32D300B230W	B.2	267234	EC12D400B048W	B.4
255027	EFCSA400S	B.9	267073	EC40A300B042	B.2	267154	EC32D300B250W	B.2	267235	EC12D400B060W	B.4
255028	EFCSA480S	B.9	267074	EC40A300B048	B.2	267155	EC32D300B440W	B.2	267236	EC12D400B072W	B.4
255029	EFCSA575S	B.9	267075	EC40A300B110	B.2	267156	EC32D300B024L	B.2	267237	EC12D400B110W	B.4
255030	EFCSA600S	B.9	267076	EC40A300B120	B.2	267157	EC32D300B048L	B.2	267238	EC12D400B125W	B.4
255031	EFCSE24-60S	B.9	267077	EC40A300B208	B.2	267158	EC32D300B110L	B.2	267239	EC12D400B230W	B.4
255032	EFCSE48-130S	B.9	267078	EC40A300B230	B.2	267159	EC32D300B230L	B.2	267240	EC12D400B250W	B.4
255033	EFCSE100-250S	B.9	267079	EC40A300B240	B.2	267160	EC40D300B012W	B.2	267241	EC12D400B440W	B.4



Ref. no.	Cat. no.	Pag.	Ref. no.	Cat. no.	Pag.	Ref. no.	Cat. no.	Pag.	Ref. no.	Cat. no.	Pag.
267242	EC12D400B024L	B.4	267323	EC25AB00B110	B.6	268107	ECRT2B10U	B.13	268218	ECACD440B230W	B.8
267243	EC12D400B048L	B.4	267324	EC25AB00B120	B.6	268108	ECRT2B10V	B.13	268219	ECACD440B250W	B.8
267244	EC12D400B110L	B.4	267325	EC25AB00B208	B.6	268109	ECRT2B10W	B.13	268220	ECACD440B440W	B.8
267245	EC12D400B230L	B.4	267326	EC25AB00B230	B.6	268140	ECACA440B012	B.8	268221	ECACD440B024L	B.8
267246	EC18D400B012W	B.4	267327	EC25AB00B240	B.6	268141	ECACA440B024	B.8	268222	ECACD440B048L	B.8
267247	EC18D400B024W	B.4	267328	EC25AB00B400	B.6	268142	ECACA440B042	B.8	268223	ECACD440B110L	B.8
267248	EC18D400B036W	B.4	267329	EC25AB00B440	B.6	268143	ECACA440B048	B.8	268224	ECACD440B230L	B.8
267249	EC18D400B048W	B.4	267330	EC25AB00B480	B.6	268144	ECACA440B110	B.8	268225	ECACD431B012W	B.8
267250	EC18D400B060W	B.4	267331	EC25AB00B500	B.6	268145	ECACA440B120	B.8	268226	ECACD431B024W	B.8
267251	EC18D400B072W	B.4	267332	EC25AB00B600	B.6	268146	ECACA440B208	B.8	268227	ECACD431B036W	B.8
267252	EC18D400B110W	B.4	267333	EC32AB00B012	B.6	268147	ECACA440B230	B.8	268228	ECACD431B048W	B.8
267253	EC18D400B125W	B.4	267334	EC32AB00B024	B.6	268148	ECACA440B240	B.8	268229	ECACD431B060W	B.8
267254	EC18D400B230W	B.4	267335	EC32AB00B042	B.6	268149	ECACA440B400	B.8	268230	ECACD431B072W	B.8
267255	EC18D400B250W	B.4	267336	EC32AB00B048	B.6	268150	ECACA440B440	B.8	268231	ECACD431B110W	B.8
267256	EC18D400B440W	B.4	267337	EC32AB00B110	B.6	268151	ECACA440B480	B.8	268232	ECACD431B125W	B.8
267257	EC18D400B024L	B.4	267338	EC32AB00B120	B.6	268152	ECACA440B500	B.8	268233	ECACD431B230W	B.8
267258	EC18D400B048L	B.4	267339	EC32AB00B208	B.6	268153	ECACA440B600	B.8	268234	ECACD431B250W	B.8
267259	EC18D400B110L	B.4	267340	EC32AB00B230	B.6	268154	ECACA431B012	B.8	268235	ECACD431B440W	B.8
267260	EC18D400B230L	B.4	267341	EC32AB00B240	B.6	268155	ECACA431B024	B.8	268236	ECACD431B024L	B.8
267261	EC25D400B012W	B.4	267342	EC32AB00B400	B.6	268156	ECACA431B042	B.8	268237	ECACD431B048L	B.8
267262	EC25D400B024W	B.4	267343	EC32AB00B440	B.6	268157	ECACA431B048	B.8	268238	ECACD431B110L	B.8
267263	EC25D400B036W	B.4	267344	EC32AB00B480	B.6	268158	ECACA431B110	B.8	268239	ECACD431B230L	B.8
267264	EC25D400B048W	B.4	267345	EC32AB00B500	B.6	268159	ECACA431B120	B.8	268240	ECACD422B012W	B.8
267265	EC25D400B060W	B.4	267346	EC32AB00B600	B.6	268160	ECACA431B208	B.8	268241	ECACD422B024W	B.8
267266	EC25D400B072W	B.4	267347	EC12DB00B012W	B.6	268161	ECACA431B230	B.8	268242	ECACD422B036W	B.8
267267	EC25D400B110W	B.4	267348	EC12DB00B024W	B.6	268162	ECACA431B240	B.8	268243	ECACD422B048W	B.8
267268	EC25D400B125W	B.4	267349	EC12DB00B036W	B.6	268163	ECACA431B400	B.8	268244	ECACD422B060W	B.8
267269	EC25D400B230W	B.4	267350	EC12DB00B048W	B.6	268164	ECACA431B440	B.8	268245	ECACD422B072W	B.8
267270	EC25D400B250W	B.4	267351	EC12DB00B060W	B.6	268165	ECACA431B480	B.8	268246	ECACD422B110W	B.8
267271	EC25D400B440W	B.4	267352	EC12DB00B072W	B.6	268166	ECACA431B500	B.8	268247	ECACD422B125W	B.8
267272	EC25D400B024L	B.4	267353	EC12DB00B110W	B.6	268167	ECACA431B600	B.8	268248	ECACD422B230W	B.8
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267275	EC25D400B230L	B.4	267356	EC12DB00B250W	B.6	268170	ECACA422B042	B.8	268251	ECACD422B024L	B.8
267276	EC32D400B012W	B.4	267357	EC12DB00B440W	B.6	268171	ECACA422B048	B.8	268252	ECACD422B048L	B.8
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267278	EC32D400B036W	B.4	267359	EC12DB00B048L	B.6	268173	ECACA422B120	B.8	268254	ECACD422B230L	B.8
267279	EC32D400B048W	B.4	267360	EC12DB00B110L	B.6	268174	ECACA422B208	B.8	268270	ECACD404B012W	B.8
267280	EC32D400B060W	B.4	267361	EC12DB00B230L	B.6	268175	ECACA422B230	B.8	268271	ECACD404B024W	B.8
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267282	EC32D400B110W	B.4	267363	EC18DB00B024W	B.6	268177	ECACA422B400	B.8	268273	ECACD404B048W	B.8
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267298	EC12AB00B230	B.6	267379	EC25DB00B036W	B.6	268193	ECACA413B480	B.8	268408	ECACD413B230W	B.8
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