INTEGRAL™ Self-Protected Combination Motor Controllers

Class 8539

Merlin Gerin
Modicon
Square D
Telemecanique
Schneider Electric Brands

CONTENTS

SQUARE D
Schneider Electric

Integral 18

Integral 32

Integral 63

COMBINATION MOTOR CONTROL IN ONE COMPACT PACKAGE!

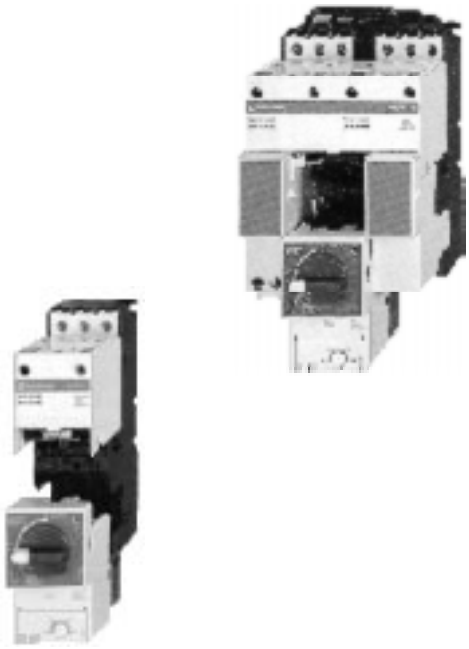
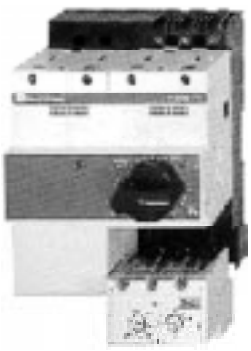
The INTEGRAL™ Self-Protected Combination Motor Controller (CMC) combines all the functions of a disconnect, circuit breaker, contactor, and overload relay in a coordinated motor controller. A wide variety of easy-to-install auxiliary blocks and interface modules provides powerful communication and control capabilities.

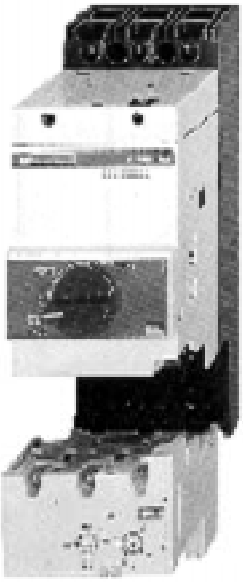
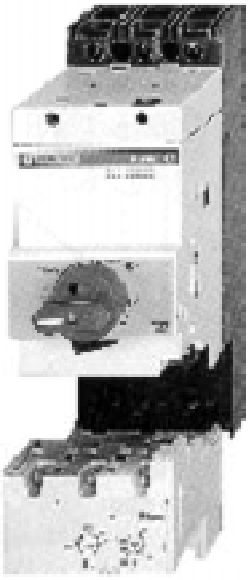
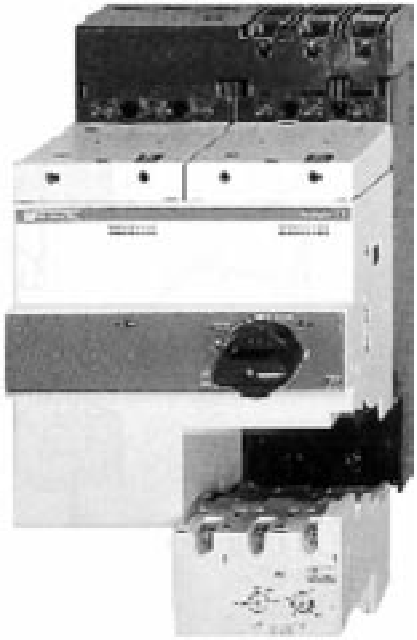
As much as 60% less panel space is required by the INTEGRAL CMC as compared to traditional combination motor control circuit installations. In addition, installation and wiring time is dramatically reduced — simply snap the INTEGRAL onto a 35 mm DIN rail and connect load and line side wires.

The entire family of INTEGRAL CMCs have proven their reliability and effectiveness in thousands of applications worldwide. By installing the INTEGRAL Self-Protected CMC, you are implementing the latest in motor control and protection technology, and assuring the lowest installed cost of any motor control scheme.

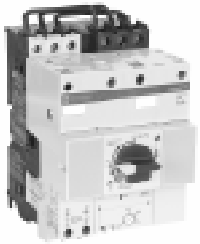
Features

- Non-reversing and reversing combination motor controllers available in 18, 32, or 63 ampere ratings.
- NEMA Type 1 and 12 enclosed combination motor controllers and open style combination motor controllers both available.
- Current-limiting short-circuit protection provides 42 kA interrupt rating.
- UL listed as a Type E combination motor controller.
- UL verified to meet “Type 2” coordination protection per IEC 947-4.
- Meets “Total Coordination” requirements of IEC 947-6 — no damage to contactor or overload relay, and no welding of contacts after interruption of short-circuit faults.
- Padlockable isolation knob.
- Minimum 1.5 million operation life expectancy.
- Proven reliability — even after exposure to multiple short-circuit faults!
- Control direct from PLC or PC with optional interface modules.

	INTEGRAL 18		INTEGRAL 32		
					
	LD1LB030• + LB1LB03P••	**LD5LB030• + LB1LB03P••**	**LD1LC030• + LB1LC03M••**	**LD4LC030• + LB1LC03M••**	**LD5LC130• + LB1LC03M••**
Rated Operational Current for AC-3 Duty	18 A		32 A		
Rated Breaking Capacity	42 KA at 480 Vac		42 KA at 480 Vac		
Approvals	ASTA, BS, CSA, DEMKO, IEC, NEMKO, SEMKO, UL, VDE		ASTA, BS, CSA, DEMKO, IEC, NEMKO, SEMKO, UL, VDE		
Number of Poles	3		3		
Protection Module	LB1LB03P••		LB1LC03M••		
Magnetic Protection	Fixed, 15 times maximum thermal current		Adjustable, 6 to 12 times maximum thermal current		
Overload Protection	0.1 to 0.16 A: **P01**				
	0.16 to 0.25 A **P02**				
	0.25 to 0.4 A **P03**		0.25 to 0.4 A **M03**		
	0.4 to 0.63 A **P04**		0.4 to 0.63 A **M04**		
	0.63 to 1.0 A **P05**		0.63 to 1.0 A **M05**		
	1.0 to 1.6 A **P06**		1.0 to 1.6 A **M06**		
	1.6 to 2.5 A **P07**		1.6 to 2.5 A **M07**		
	2.5 to 4.0 A **P08**		2.5 to 4.0 A **M08**		
	4.0 to 6.0 A **P10**		4.0 to 6.3 A **M10**		
	6.0 to 10.0 A **P13**		6.3 to 10.0 A **M13**		
	10.0 to 16.0 A **P17**		10.0 to 16.0 A **P17**		
	12.0 to 18.0 A **P21**		–		
	–		16.0 to 25.0 A **M22**		
	–		23.0 to 32.0 A **M23**		

	INTEGRAL 63		
			
	LD1LC030• + LB1LC03M••	**LD4LC030• + LB1LC03M••**	**LD5LC130• + LB1LC03M••**
Rated Operational Current for AC-3 Duty	63 A		
Rated Breaking Capacity	42 KA at 480 Vac		
Approvals	ASTA, BS, CSA, DEMKO, IEC, NEMKO, SEMKO, UL, VDE		
Number of Poles	3		
Protection Module	LB1LD03M••		
Magnetic Protection	Adjustable, 6 to 12 times maximum thermal current		
Overload Protection			
	10.0 to 13.0 A **M16**		
	13.0 to 18.0 A **M21**		
	18.0 to 25.0 A **M22**		
	23.0 to 32.0 A **M53**		
	28.0 to 40.0 A **M55**		
	35.0 to 50.0 A **M57**		
	45.0 to 63.0 A **M61**		

LD1LB030•



LD5LB130•

LD4LC030•

LD5LC030•

LD4LD030•

To order an INTEGRAL CMC, complete these four steps:

1. Select the correct combination motor controller from Table 1A (open) or Table 1B (enclosed).
2. Complete the catalog number by adding the coil voltage code from Table 2.
3. Choose the appropriate protection module from Table 3.
4. For enclosed combination motor controllers only, select any desired INSTA-KITS™ or factory modifications from Table on page 20. For factory modification, add the "form" number to the end of the catalog number.

Table 1A: Open Style INTEGRAL CMC Base Unit Selection Table

Continuous Current Rating	Maximum 3-Phase HP Rating			With Isolator	Without Isolator
Amperes	230 V	460 V	575 V	Catalog Number	Catalog Number
Non-Reversing					
18	5	10	15	LD1LB030*	N/A
32	10	20	30	LD4LC030*	LD1LC030 ●
63	20	40	60	LD4LD030*	LD1LD030 ●
Reversing					
18	5	10	15	LD5LB130*	N/A
32	10	20	30	LD5LC030*	N/A
63	20	40	60	LD5LD030*	N/A

Table 1B: Enclosed INTEGRAL CMC Selection Table

Continuous Current Rating	Maximum 3-Phase HP Rating			Type 1 Enclosure	Type 12 Enclosure
Amperes	230 V	460 V	575 V	Catalog Number	Catalog Number
Non-Reversing					
18	5	10	15	LE1UI1846 ●	LE1UI1847 ●
32	10	20	20	LE1UI3246 ●	LE1UI3247 ●
63	20	40	60	LE1UI6346 ●	LE1UI6347 ●
Reversing					
18	5	10	15	LE2UI1846 ●	LE2UI1847 ●
32	10	20	20	LE2UI3246 ●	LE2UI3247 ●
63	20	40	60	LE2UI6346 ●	LE2UI6347 ●

● Complete the catalog number by adding the voltage code from Table 2

Table 2: Coil Voltage Codes

		Control Voltage									
INTEGRAL	Frequency Hz	24	48	110	120	220	240	380	415	480	600
I18	50	B	E	F	-	M	U	Q	N	-	-
	60	BC	D	K	FC	LC	MC	-	-	N	S
	DC ■	BD	-	-	-	-	-	-	-	-	-
I32	50	B	E	F	-	M	U	Q	N	-	-
	60	BC	D	FC	FC	MC	MC	-	-	Q	S
	DC ■	BD	ED	FD	-	-	-	-	-	-	-
I63	50	B	E	F	-	M	U	Q	N	-	-
	60	BC	CE	K	FC	LC	MC	-	-	Q	S
	DC ■	BD	ED	FD	-	-	-	-	-	-	-

■ INTEGRAL Base Units ordered with DC voltage code (BD, ED or FD) are shipped with LA1L*080*D Voltage Converter Module already installed.

Open INTEGRAL CMC Dimensions. . . . . page 48
Enclosed INTEGRAL CMC Dimensions. . . . . page 51

Open Product

File E164871
CCN NKJH
NKJH7

File LR 43364
Class 3211 08

Enclosed Product

File E163364
CCN NKJH
NKJH7

File LR 105062
Class 3211 08

LB1LB03P05

LB1LC03M22

LB1LD03M57

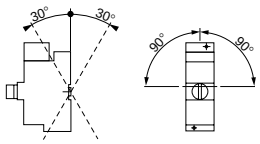
Table 3: Overload Protection Modules (Class 10, Ambient Compensated)

Thermal Setting Range, Amperes ■	Magnetic Setting Range, Amperes	Standard Module with Thermal & Magnetic Trip Catalog No.	Magnetic only Module
For 18 Ampere models			
0.1 - 0.16	–	LB1LB03P01	N/A
0.16 - 0.25	–	LB1LB03P02	N/A
0.25 - 0.4	–	LB1LB03P03	N/A
0.4 - 0.63	–	LB1LB03P04	N/A
0.63 - 1	–	LB1LB03P05	N/A
1 - 1.6	–	LB1LB03P06	N/A
1.6 - 2.5	–	LB1LB03P07	N/A
2.5 - 4	–	LB1LB03P08	N/A
4 - 6	–	LB1LB03P10	N/A
6 - 10	–	LB1LB03P13	N/A
10 - 16	–	LB1LB03P17	N/A
12 - 18	–	LB1LB03P21	N/A
For 32 Ampere models			
0.25 - 0.40	2.4 - 4.8	LB1LC03M03	LB6LC03M03
0.40 - 0.63	3.8 - 7.6	LB1LC03M04	LB6LC03M04
0.63 - 1.0	6.0 - 12	LB1LC03M05	LB6LC03M05
1.0 - 1.6	9.5 - 19	LB1LC03M06	LB6LC03M06
1.6 - 2.5	15 - 30	LB1LC03M07	LB6LC03M07
2.5 - 4.0	24 - 48	LB1LC03M08	LB6LC03M08
4.0 - 6.3	38 - 76	LB1LC03M10	LB6LC03M10
6.3 - 10	60 - 120	LB1LC03M13	LB6LC03M13
10 - 16	95 - 190	LB1LC03M17	LB6LC03M17
16 - 25	150 - 300	LB1LC03M22	LB6LC03M22
23 - 32	190 - 380	LB1LC03M53	LB6LC03M53
For 63 Ampere models			
18 - 25	150 - 300	LB1LD03M22	LB6LD03M22
23 - 32	190 - 380	LB1LD03M53	LB6LD03M53
28 - 40	240 - 480	LB1LD03M55	LB6LD03M55
35 - 50	300 - 600	LB1LD03M57	LB6LD03M57
45 - 63	380 - 760	LB1LD03M61	LB6LD03M61

■ Thermal settings are based on motors with a service factor (S.F.) of 1.0.

Specifications

Operating Positions:



UL Listed and CSA certified

Conforms to IEC standards CE

Shock resistance - 8 g (Duration of impulse: 11 ms)

Vibration resistance - 3 g (5 to 150 Hz)

AC control circuit temperature limits:

Storage -40 to +176 °F/-40 to +80 °C

Operation -13 to +104 °F/-25 to +70 °C

Rated voltage - 600 Vac

Rated thermal current - 18 A (INTEGRAL 18), 32 A (INTEGRAL 32), 63 A (INTEGRAL 63)

Interrupting current at 480 Vac: 42 kA ms

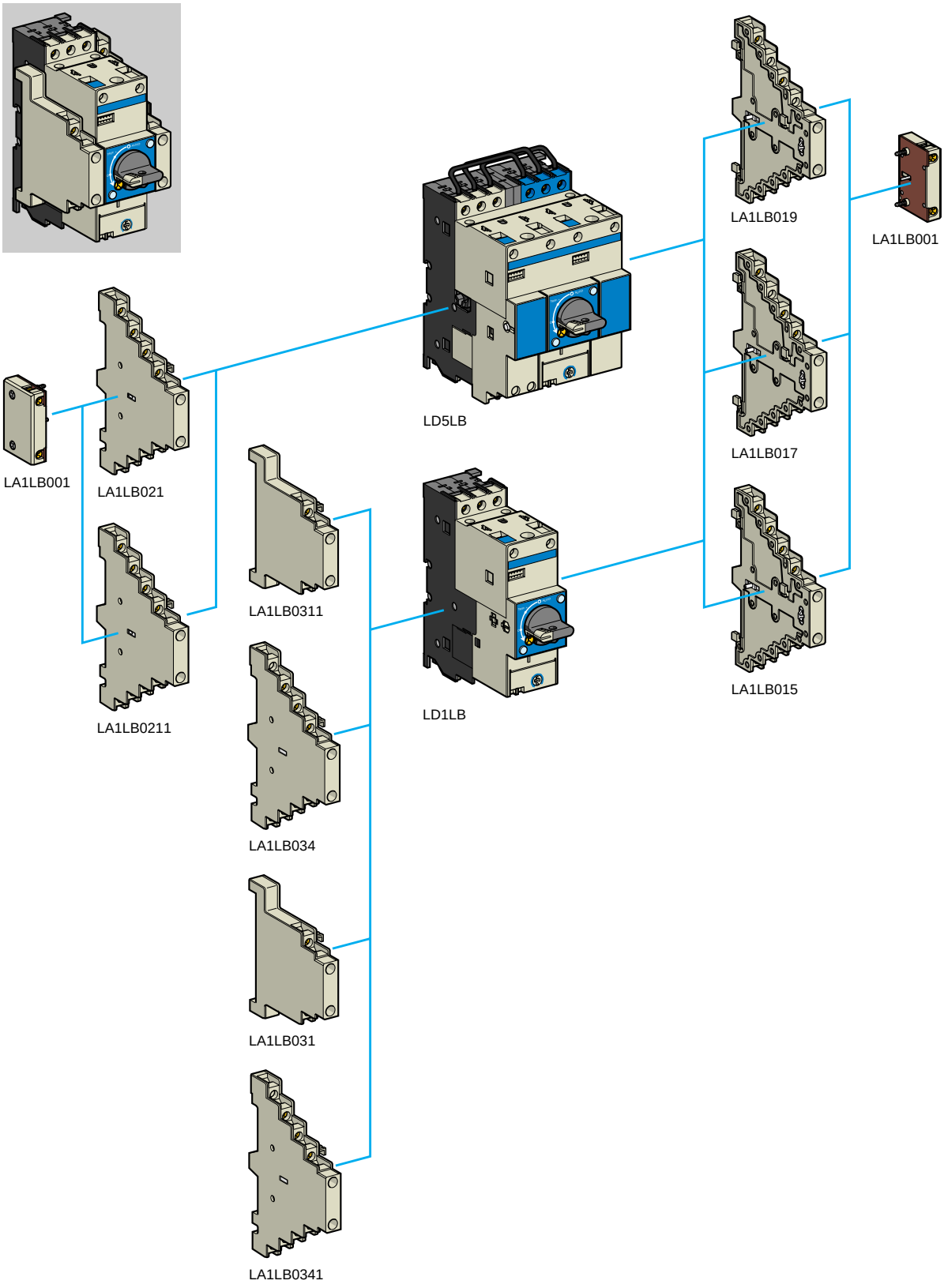
Fixed magnetic trip is set at approximately 15 times full load current (FLC)

	Mechanical life:
INTEGRAL 18	20 million operations
INTEGRAL 32	10 million operations
INTEGRAL 63	5 million operations

Operating current of magnetic trip is approximately 15 times maximum thermal trip (non-adjustable setting)

File E164871
CCN NKJH
NKJH7

File LR 43364
Class 3211 08



LD1LB03FC + LB1LB03P01

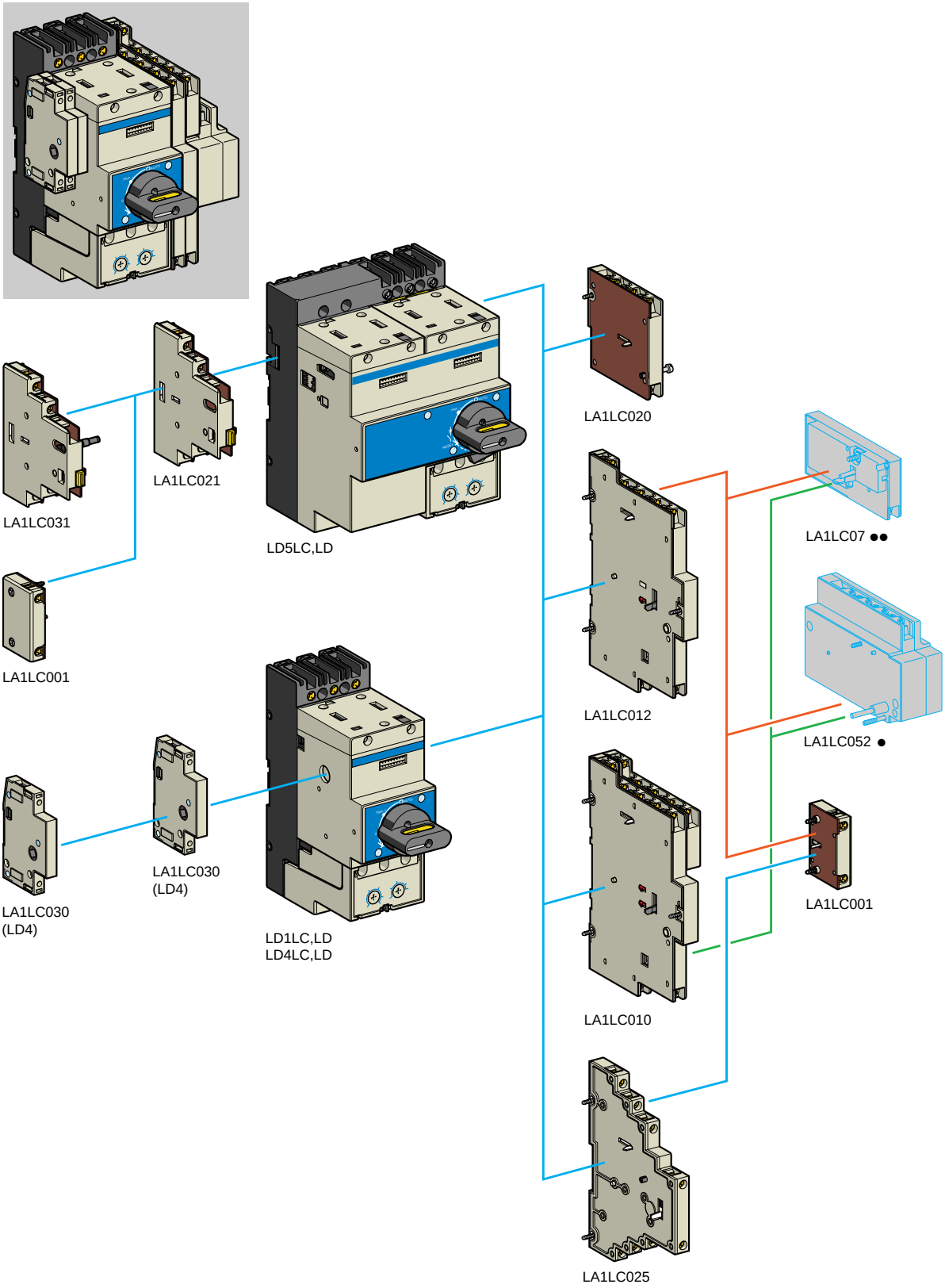
Auxiliary Contact Blocks for the INTEGRAL 18 CMC

For Use On	Mounting Location	Type and Number of Contacts per Block	Contact Type	Catalog Number
LD1 or LD5	Right Side	Block of 5 instantaneous contacts 3 signal "contactor state" 2 signal "tripped" status	2 N/O + 1 N/C 1 N/O + 1 N/C	LA1LB015
	Right Side	Block of 3 instantaneous contacts 2 signal "contactor state" 1 signal "tripped" status	1 N/O + 1 N/C 1 N/O	LA1LB017
	Right Side	Block of 3 instantaneous contacts 2 signal "contactor state" 1 signal "tripped" status	1 N/O + 1 N/C 1 N/C	LA1LB019
	Left or Right Side	Complementary auxiliary block 1 signal "contactor state"	1 N/C	LA1LB001★
LD1	Left Side	2 signal operating handle not in "Auto" position	2 N/O	LA1LB031
	Left Side	2 signal operating handle not in "Auto" position	1 N/O + 1 N/C	LA1LB0311
	Left Side	Block of 3 instantaneous contacts 2 signal operating handle not in "Auto" position 2 signals "tripped on short circuit" status	2 N/O 1 N/O + 1 N/C	LA1LB034
	Left Side	Block of 3 instantaneous contacts 2 signal operating handle not in "Auto" position 2 signals "tripped on short circuit" status	1 N/O + 1 N/C 1 N/O + 1 N/C	LA1LB0341
LD5	Left Side	Block of 5 instantaneous contacts 3 signal "contactor state" 2 signal operating handle not in "Auto" position	2 N/O + 1 N/C 2 N/O	LA1LB021
	Left Side	Block of 5 instantaneous contacts 3 signal "contactor state" 2 signal operating handle not in "Auto" position	2 N/O + 1 N/C 1 N/O + 1 N/C	LA1LB0211

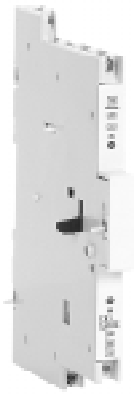
★ Use of auxiliary contact LA1LB001 requires combination with contact block LA1LB015, LA1LB021, LA1LB017, or LA1LB019.

File E164871
CCN NKJH
NKJH7

File LR 43364
Class 3211 08



LA1LC030



LA1LC012

LC4LC030+
LB1LC03M22+
LA1LC030+
LA1LC010+
LA1LC070F

Auxiliary Contact Blocks for the INTEGRAL 32/63 CMC

For Use On	Mounting Location	Type and Number of Contacts per Block	Contact Type	Catalog Number
LD1, LD4 or LD5	Right Side	Block of 6 instantaneous contacts 3 signal "contactor state" 1 signal "tripped on short circuit" 1 signal "tripped" 1 signal "not in Auto position"	2 N/O + 1 N/C 1 N/O-N/C (form C contact) 1 N/O-N/C (form C contact) 1 N/O-N/C (form C contact)	LA1LC010
	Right Side	Block of 5 instantaneous contacts 3 signal "contactor state" 1 signal "tripped on short circuit" 1 signal "tripped"	2 N/O + 1 N/C 1 N/O 1 N/O	LA1LC012
	Right Side	Block of 4 instantaneous contacts 3 signal "contactor state" 1 signal "tripped"	2 N/O + 1 N/C 1 N/O or 1 N/C, User Selectable	LA1LC025
	Right Side	Block of 3 instantaneous contacts 3 signal "contactor state"	2 N/O + 1 N/C	LA1LC020
	Left or Right Side	Complementary auxiliary block 1 signal "contactor state"	1 N/C	LA1LC001▲
LD4	Left Side	Block of 1 "control circuit isolation" contact	1 N/O	LA1LC030
LD5	Left Side	Block of 3 instantaneous contacts 3 signal "contactor state"	2 N/O + 1 N/C	LA1LC021
	Left Side	Block of 2 "control circuit isolation" contact	2 N/O	LA1LC031▲

▲ See table below.

Complementary blocks LA1LC001 and LA1LC031, as well as LA1LC052** reset modules and LA1LC07** trip modules on page 12 must be used with an additional auxiliary block. This following table shows all allowable combinations.

Possible Combinations of Auxiliary Contact Blocks for the INTEGRAL 32/63 CMC

			LA1LC001	LA1LC07**	LA1LC052*	LA1LC031
LA1LC010	Block of 6 auxiliary contacts	Right Side		√	√	
LA1LC012	Block of 5 auxiliary contacts	Right Side	√ ♦	√	√ ♦	
LA1LC025	Block of 4 auxiliary contacts	Right Side	√			
LA1LC021	Block of 3 auxiliary contacts	Left Side	√ ✱			√✱

♦ Only one attachment may be added -- either LA1LC001 or LA1LC052
✱ Only one attachment may be added -- either LA1LC001 or LA1LC031

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CCN NKJH
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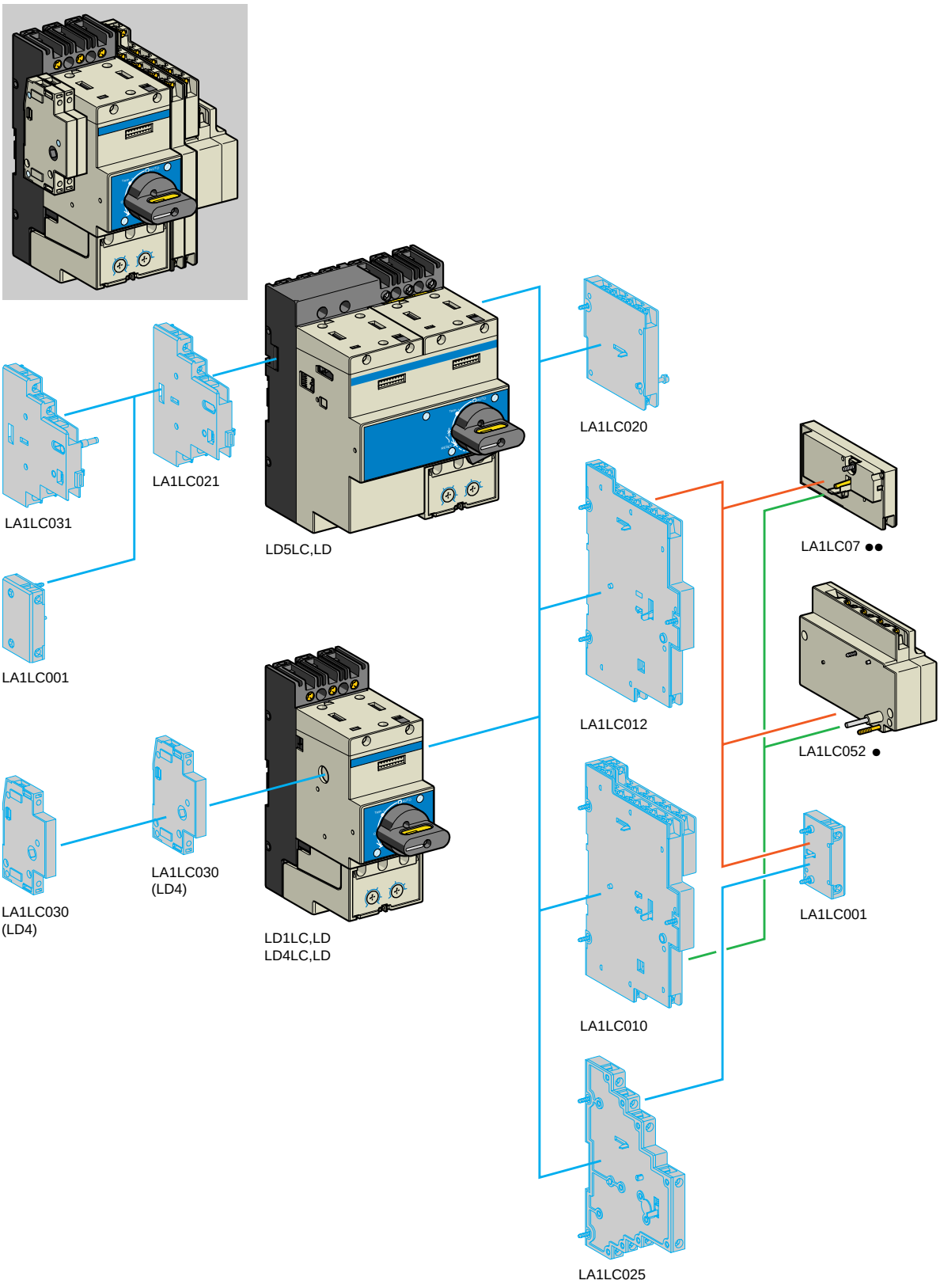
Class 3211 08
3211 04



LA1LC070F

The shunt and undervoltage trip modules are for use with any 32 A or 63 A INTEGRAL CMC fitted with either an LA1LC010 or LA1LC012 add-on block.

Shunt and Undervoltage Trip Modules

Description	Trip Specifications	Catalog Number
Undervoltage Trip Module	Time Delay (0.2 seconds)	LA1LC070●
	Instantaneous	LA1LC072●
Shunt Trip Module	Instantaneous	LA1LC071●

● Complete the catalog number with the letter shown below for the required coil voltage

Volts	24	48	110	120	220	240	380	415	440
50 Hz	B	E	F	-	M	U	Q	N	N
60 Hz	B	E	F	F	M	M	Q	-	N

LA1LC052F

The remote reset modules are for use with any 32 A or 63 A INTEGRAL CMC fitted with either an LA1LC010 or LA1LC012 add-on block.

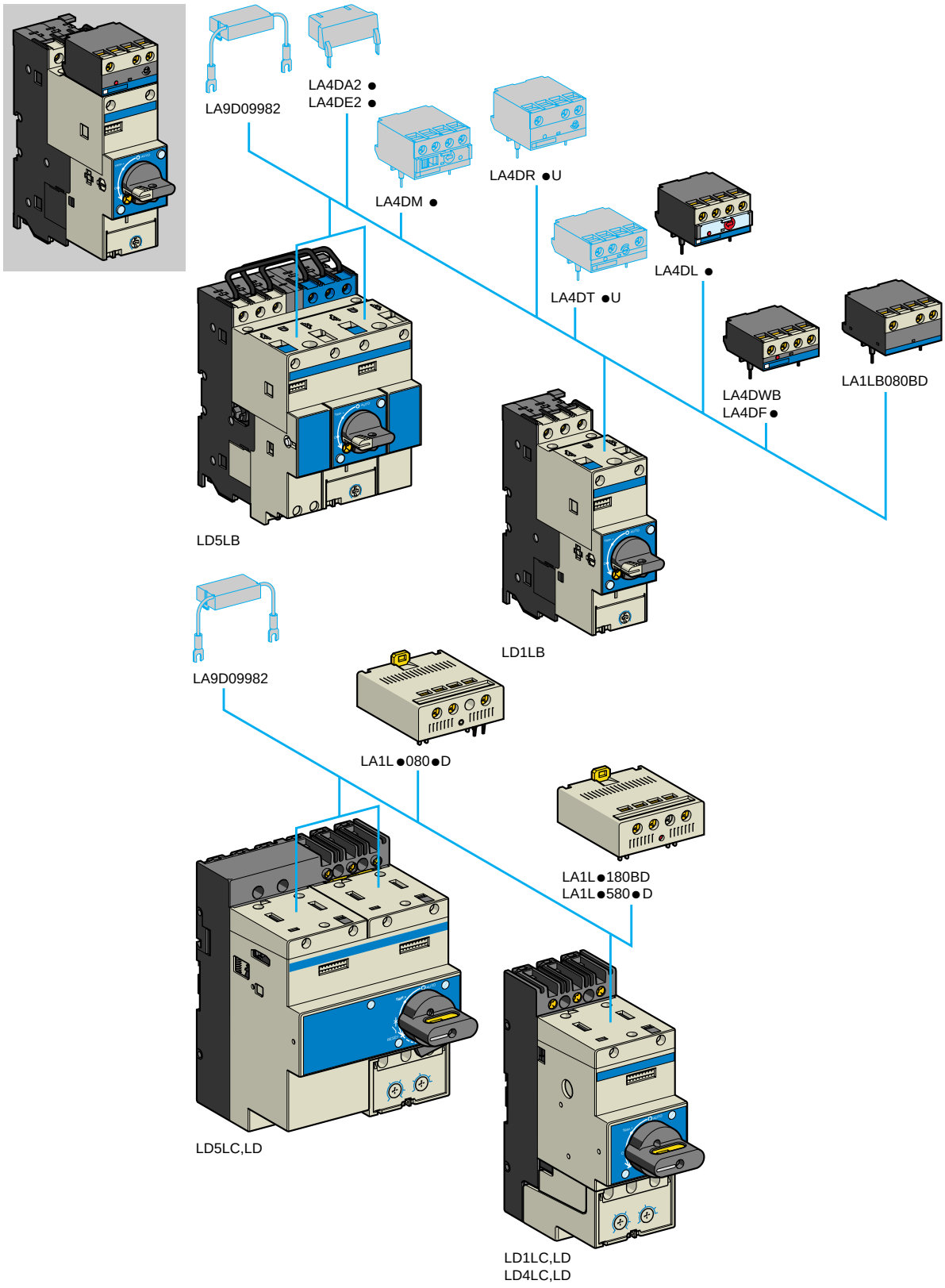
Remote Reset Modules

Description	Control Voltage	Catalog Number
Remote Reset Module ■	24 V 50/60 Hz	LA1LC052B
	42 V 50 Hz 48 V 50/60 Hz	LA1LC052E
	100/127 V 50/60 Hz	LA1LC052F
	200/240 V 50/60 Hz	LA1LC052M

■ When adding a remote reset module to a LE•UI••• enclosed device (page 6), an oversized enclosure is required.

File E164871
CCN NKJH
NKJH7

File LR 43364
Class 3211 08



LA1LC180BD

The top-mounted, add-on voltage converter modules are required to allow operation of an INTEGRAL CMC with DC control voltage. The converters may only be used with the coils shown in the table below.

NOTE: When INTEGRAL CMCs are factory ordered with a DC coil code (from Table 1A / 1B and Table 2, Page 6), these converter modules need not be ordered separately.

Voltage Converter Modules ■ ★

Description	Nominal Voltage	For Use With Coils	Catalog Number
INTEGRAL 18 Converter Module	24 Vdc	LX1LB024	LA1LB080BD
INTEGRAL 32 Converter Module	24 Vdc	LX1LC0249	LA1LC080BD
	48 Vdc	LX1LC0489	LA1LC080ED
	110 Vdc	LX1LC1109	LA1LC080FD
INTEGRAL 63 Converter Module	24 Vdc	LX1LD0249	LA1LD080BD
	48 Vdc	LX1LD0489	LA1LD080ED
	110 Vdc	LX1LD1109	LA1LD080FD

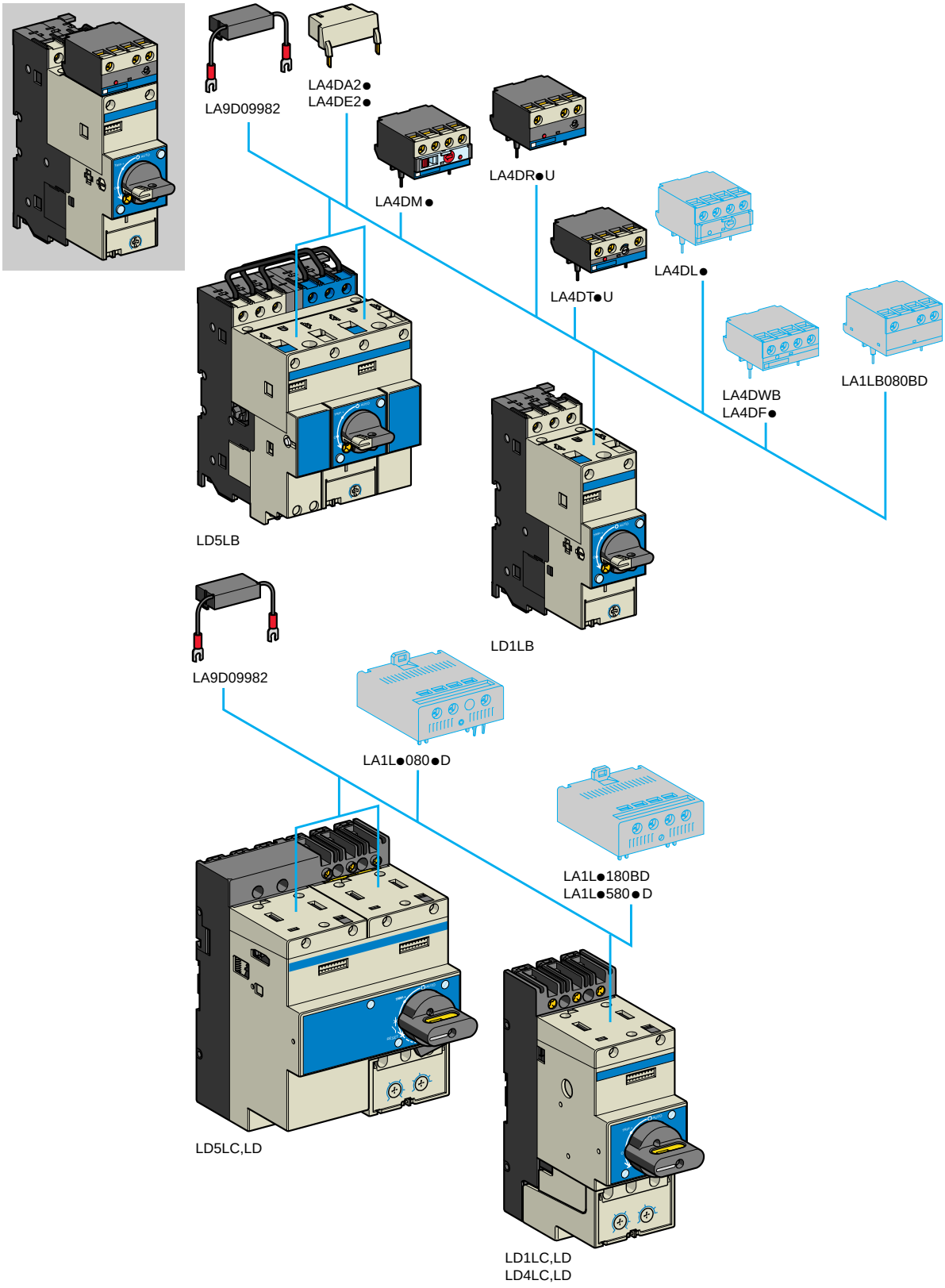
■ When using a rectified AC supply, ripple must not exceed 14%.
★ Reversing INTEGRAL CMCs require use of two converter modules.

The interface modules allow INTEGRAL CMCs to be energized from low voltage and low current signals. Solid state and mechanical relay versions are both available. The “relay plus manual override” version includes a slide switch for manually energizing the contactor.

Interface Modules

Description ▲	Type	Input Voltage	Operational Voltage	Catalog Number
INTEGRAL 18 Interface Module	Solid State Relay	5 to 24 Vdc	24 to 250 Vac	LA4DWB
File E164871 CCN NKJH NKJH7	Mechanical Relay	24 Vdc	24 to 250 Vac	LA4DFB
		48 Vdc	24 to 250 Vac	LA4DFE
	Mechanical Relay plus manual override	24 Vdc	24 to 250 Vac	LA4DLB
File LR 43364 Class 3211 08		48 Vdc	24 to 250 Vac	LA4DLE
INTEGRAL 32 Interface Module	Solid State Relay	5 to 24 Vdc	24 to 240 Vac	LA1LC180BD
	Mechanical Relay	24 Vdc	24 to 240 Vac	LA1LC580BD
		48 Vdc	24 to 240 Vac	LA1LC580ED
INTEGRAL 63 Interface Module	Solid State Relay	5 to 24 Vdc	24 to 240 Vac	LA1LD180BD
	Mechanical Relay	24 Vdc	24 to 240 Vac	LA1LD580BD
		48 Vdc	24 to 240 Vac	LA1LD580ED

▲ Reversing INTEGRAL CMCs require use of two interface modules.



LA4DMU

The control modules allow local or remote operation of the 18 A INTEGRAL CMC. The module includes a slide switch to change from automatic (remote) operation to manual (local) operation. When in manual mode, a separate dial allows the user to locally energize and de-energize the combination motor controller.

"Automatic - Manual - Stop" Control Module (for INTEGRAL 18 only)

Description	Control Voltage	Catalog Number
Auto- Manual-Stop Module	24 - 100 Vac	LA4DMK
	100 - 250 Vac	LA4DMU

LA4DROU

These electronic timer modules delay the energization or de-energization of the 18 ampere INTEGRAL CMC.

Electronic Timer Module (for INTEGRAL 18 only)

Description	Time Delay	Operational Voltage ■ 50/60 Hz AC	Catalog Number
On-Delay Timer Module	0.1 to 2 sec.	24 to 240 Vac	LA4DT0U
	1.5 to 30 sec.	24 to 240 Vac	LA4DT2U
	25 to 500 sec.	24 to 240 Vac	LA4DT4U
Off-Delay Timer Module	0.1 to 2 sec.	24 to 240 Vac	LA4DR0U
	1.5 to 30 sec.	24 to 240 Vac	LA4DR2U
	25 to 500 sec.	24 to 240 Vac	LA4DR4U

■ For 24 Vac operation, INTEGRAL CMCs requires a 21 volt coil, see coil table page 19.

LA4DA2U

The coil suppressor modules reduce electrical noise generated by operation of the INTEGRAL CMC.

Coil Suppressor Modules

Description	For Use With	Operational Voltage 50/60 Hz AC	Catalog Number
RC Circuit	18A INTEGRAL	24 to 48 Vac	LA4DA2E
		50 to 127 Vac	LA4DA2G
		110 to 250 Vac	LA4DA2U
Varistor	18A INTEGRAL	24 to 48 Vac	LA4DE2E
		50 to 127 Vac	LA4DE2G
		110 to 250 Vac	LA4DE2E
RC Circuit	18A, 32A, 63A INTEGRAL	24 to 250 Vac	LA9D09982

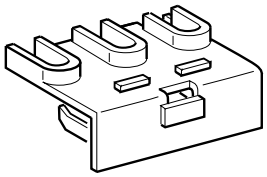
File E164353
CCN NKJH

File LR 43364
Class 3211 03

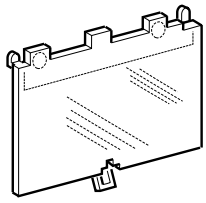
LA9LB930

GV1G09

LA9LB960



LA9LC701



LA9L●090

Other Accessories

Description	Usage	Catalog Number
Control Knob Padlocking Kit	Attaches to front face of INTEGRAL 18 to allow attachment of up to 3 padlocks	LA9LB390
Control Circuit Test Device	Used on INTEGRAL 18 only	LA9LB398
Mounting Plate	To mount I18 or I32 on two 32 mm Omega rails	LA9LC010
	To mount I32 on one 75mm or two 32mm Omega rails	LA9LC012
	To mount I63 on one 75mm Omega rail	LA9LD010
DIN Rail, 35 mm		AM1DE200
DIN Rail, 75 mm		AM1DL201

Connection Accessories (INTEGRAL 18 Units Only)

Description	Catalog Number
Set of 63 A 3-pole busbars to supply an additional INTEGRAL	LA9LB930 (2)
Terminal to supply one or more LA9LB930 busbar sets; cables connected to top	GV1G09 (1)
Terminal to supply one or more LA9LB930 busbar sets; cables connected to bottom	LA9LB960 (2)

Through the Door Operators (IP54)

Description	For Use With	Knob Color	Catalog Number
Adjustable Depth Operator ∗ (from 0 to 185mm depth)	I18 (LD1 or LD5)	Red	LA9LB330
		Black	LA9LB331
	I32, I63 (LD1)	Red	LA9LC330
		Black	LA9LC331
	I32, I63 (LD4 or LD5)	Red	LA9LC530
		Black	LA9LC531
Fixed Depth Operator ∗	I18 (LD1 or LD5)	Red	LA9LB320
		Black	LA9LB321
	I32, I63 (LD1)	Red	LA9LC320
		Black	LA9LC321
	I32, I63 (LD4 or LD5)	Red	LA9LC520
		Black	LA9LC521

∗ See page 49 for mounting dimensions.

Protection Accessories

Description	For use with	Sold in Lots of	Catalog Number
Finger Protection Cover for power terminals (L1, L2, L3)	INTEGRAL 32	5	LA9LC701
	INTEGRAL 63	5	LA9LD701
Anti-tamper cover for:	INTEGRAL 18	1	LA1LB090
protection module LB ■			
protection module LC or LD	INTEGRAL 32 or 63	1	LA1LC090

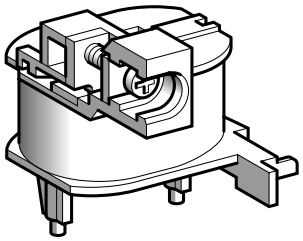
■ For use with trip modules manufactured after January 1, 1998.

(1) File E164864 CCN NLRV

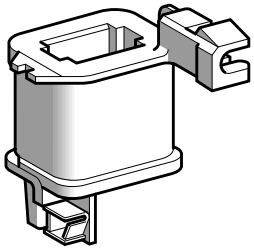
File LR 81630 Class 3211 05

(2) File E164871 CCN NKJH NKJH7

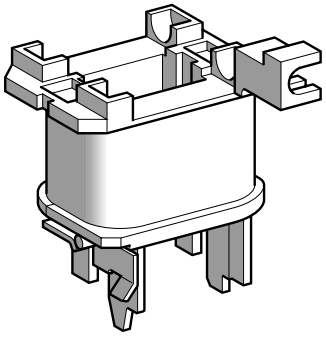
File LR 43364 Class 3211 08



LX1LB●●●



LX1LC●●●



LX1LD●●●

AC Coils

Nominal Voltage	60 Hz Coil Cat. No.	50 Hz Coil Cat. No.
18 A Models		
21	LX1LB019	LX1LB021
24	LX1LB021	LX1LB024
36	LX1LB032	–
42	–	LX1LB042
48	LX1LB042	LX1LB048
110	LX1LB100	LX1LB110
115/120	LX1LB105	–
127	–	LX1LB127
220	LX1LB200	LX1LB220
230/240	LX1LB210	–
240	–	LX1LB240
380	–	LX1LB380
415	–	LX1LB415
440	LX1LB380	LX1LB440
460/480	LX1LB415	–
500	–	LX1LB500
575/600	LX1 LB500	–
660	–	LX1LB660
32 A models		
24	LX1LC020	LX1LC024
110	-	LX1LC110
120	LX1LC100	-
220	LX1LC190	LX1LC220
240	LX1LC190	LX1LC240
480	LX1LC380	-
63 A models		
24	LX1LD020	LX1LD024
110	LX1LD090	LX1LD110
120	LX1LD100	-
220	LX1LD180	LX1LD220
240	LX1LD190	LX1LD240
480	LX1LD380	-

DC Coils ■

Nominal Voltage	Converter Cat. No.	DC Coil Cat. No.
18 A model		
24	LA1LB080BD	LX1LB024
32 A models		
24	LA1LC080BD	LX1LC0249
48	LA1LC080ED	LX1LC0489
110	LA1LC080FD	LX1LC1109
63 A models		
24	LA1LD080BD	LX1LD0249
48	LA1LD080ED	LX1LD0489
110	LA1LD080FD	LX1LD1109

■ INTEGRAL CMCs can operate on D.C. control voltage when fitted with a coil and converter from the table above.

LA9C6P12

Pilot devices and control transformers for enclosed INTEGRAL CMCs can be ordered in one of two convenient ways. Telemecanique INSTA-KITS™ may be installed at our factory by attaching the form number suffix from the table below to the end of the catalog number selected in Table 1B on page 6. Alternatively, the INSTA-KIT may be ordered separately by choosing the appropriate catalog number from the right-most column below. INSTA-KITS are easily installed in the field by removing the existing cover plate on the enclosure, installing the INSTA-KIT plate, and plugging the pre-terminated wires into its mating connector.

Table 4: INSTA-KITS™ Selection.

Description	Factory-Installed Form Number★	INSTA-KIT Catalog Number
On/Off Selector Switch	C6	LA9C6
Hand-Off-Auto Selector Switch	C	LA9C
Green Pilot Light	P2 ▲	LA9P12 ▲
Red Pilot Light	P1 ▲	LA9P12 ▲
Green Transformer Pilot Light	P52 ▲	LA9P5152* ■ ▲
Red Transformer Pilot Light	P51 ▲	LA9P5152* ■ ▲
Start/Stop Pushbutton	A	LA9A
Start/Stop (Mushroom Head) Pushbuttons	A22	LA9A2
I/O (Start/Stop) Pushbutton	A6	—
On/Off Selector Switch with Green Pilot Light	C6P2	LA9C6P12
On/Off Selector Switch with Red Pilot Light	C6P1	LA9C6P12
Hand-Off-Auto Selector Switch with Green Pilot Light	CP2	LA9CP12
Hand-Off-Auto Selector Switch with Red Pilot Light	CP1	LA9CP12
H-O-A Selector Switch with Green Transformer Pilot Light	CP52	LA9CP5152✱ ■
H-O-A Selector Switch with Red Transformer Pilot Light	CP51	LA9CP5152✱ ■
Forward-Reverse-Stop Pushbuttons	A1	LA9A1
Start/Stop Pushbutton with Green Pilot Light	AP2	LA9AP12
Start/Stop Pushbutton with Red Pilot Light	AP1	LA9AP12
Start/Stop Pushbutton with Green Transformer Pilot Light	AP52	LA9AP5152✱ ■
Start/Stop Pushbutton with Red Transformer Pilot Light	AP51	LA9AP5152✱ ■
Standard Control Transformer with Top Mounted Fuse Block:		
50 VA Transformer (Standard size for INTEGRAL 18 and 32)	FF4TKF50♦	LA9FF4TKF50♦
100 VA Transformer (Extra capacity for I18 or I32; Std. capacity for I63)	FF4TKF100♦	LA9FF4TKF100♦
150 VA Transformer (Extra capacity for INTEGRAL 63)	FF4TKF150♦	LA9FF4TKF150♦
Local/Remote Adapter - Three Wire ▲	—	LA93W
Local/Remote Adapter - Four Wire ▲	—	LA94W
Local/Remote Adapter - Five Wire ▲	—	LA95W
Local/Remote Adapter - Seven Wire ▲	—	LA97W
Fuse Kit for Remote ◪	—	LA9FK

♦ Complete the form number or catalog number with one of the following voltage codes:

Voltage	D1	D2	D3	D14	D33
Primary	480/240	480/240	208	208	380/400/415
Secondary	120	24	120	24	115/230

■ Replace ✱ with the suffix letter corresponding to the pilot light voltage.

Voltage	24 V	120 V	208/240 V	480 V
Suffix Letter	B	K	P	W

★ For factory modification, add form number to the end of the catalog number.

▲ ●LA93W required when START/STOP pushbutton remote station is used in conjunction with START/STOP local control OR if local pilot light only is used.
●LA94W required when FOR/REV/STOP is required for both local and remote control.
●LA95W required when START/STOP pushbutton with pilot light remote station OR pilot light only remote is used with START/STOP pushbutton local control.
●LA97W required for remote control only applications.

◪ Required when local/remote adapters are used.

All except Transformers

File E14839
CCN NKCR
NKCR7

File LR 105062
Class 3211 02

Transformers

File E 61239
CCN XPTQ
XPTQ7

Mechanical and Electrical Life Curves Based on Utilization Category and Number of Switching Cycles

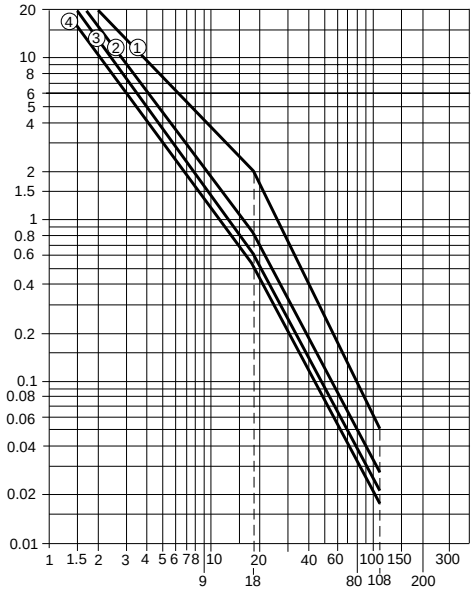
Alternating Current Utilization Category AC-3

Operating voltage	200 V	230 V	460 V	575 V
Operating current at q ≤ 104 °F (40 °C)				
INTEGRAL 18	18 A	18 A	18 A	18 A
INTEGRAL 32	32 A	32 A	32 A	32 A
INTEGRAL 63	63 A	63 A	63 A	63 A
Rated horsepower at q ≤ 104 °F (40 °C)				
INTEGRAL 18	5 hp	5 hp	10 hp	15 hp
INTEGRAL 32	10 hp	10 hp	20 hp	30 hp
INTEGRAL 63	20 hp	20 hp	40 hp	60 hp
Electrical life				
Motor control and protection in utilization categories AC-2, AC-3, AC-4, at Ue ≤ 400 volts				

Current Breaking Limit

INTEGRAL 18

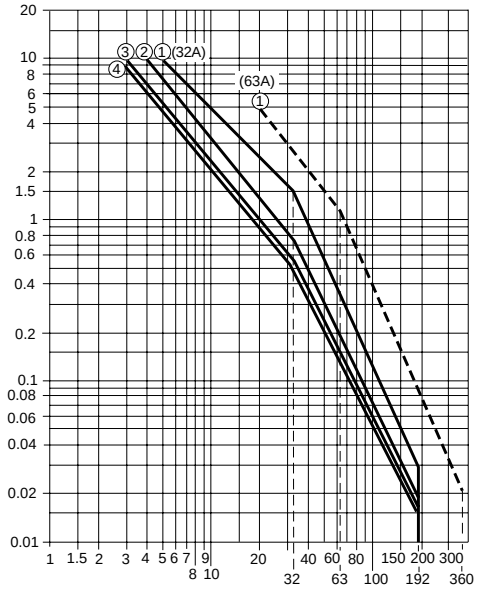
Millions of operating cycles



Current broken in amperes

INTEGRAL 32 and 63

Millions of operating cycles



Current broken in amperes

① Not having previously broken a short circuit current
② Having broken a short circuit current 10 times at 30 In ★
③ Having broken a short circuit current 20 times at 30 In ★
④ Having broken a short circuit current 10 times at 100 In
★ Most common value of short circuit current

Mechanical and Electrical Life Curves Based on Utilization Category and Number of Switching Cycles

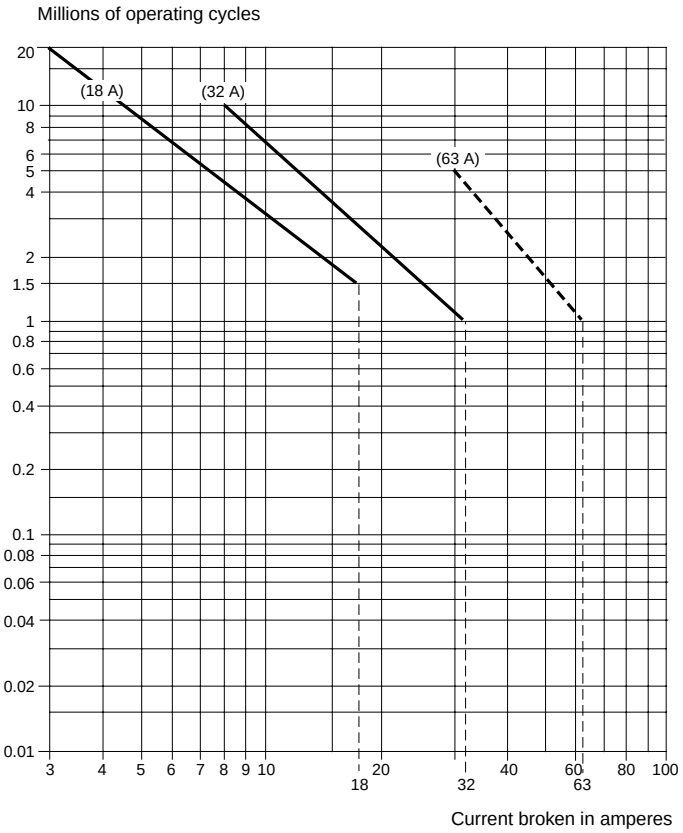
Electrical life curves			
CMC size	18	32	63
Wire size (AWG)	12-10	12-8	8-3

Maximum rate of operating cycles per hour			
Operating duty 85% - operation at maximum current	600	1200	1200
- operation at 50% of maximum current	1200	2400	2400
Operating duty 25% - operation at maximum current	900	1800	1800

Operating current (according to ambient temperature)			
q ≤ 104 °F (40 °C)	18 A	32 A	63 A
q ≤ 131 °F (55 °C)	16 A	28 A	55 A
q ≤ 158 °F (70 °C)	14 A	25 A	50 A

Electrical Life

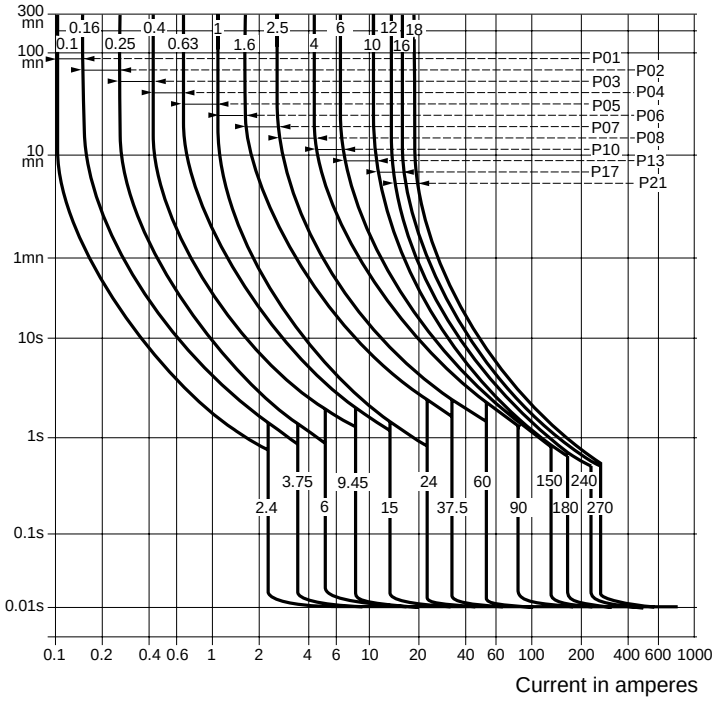
Utilization category AC-1, Ue ≤ 400 Volts



PROTECTON MODULE TRIPPING SPECIFICATIONS

Motor Protection

By thermal magnetic modules **LB1LB03P**



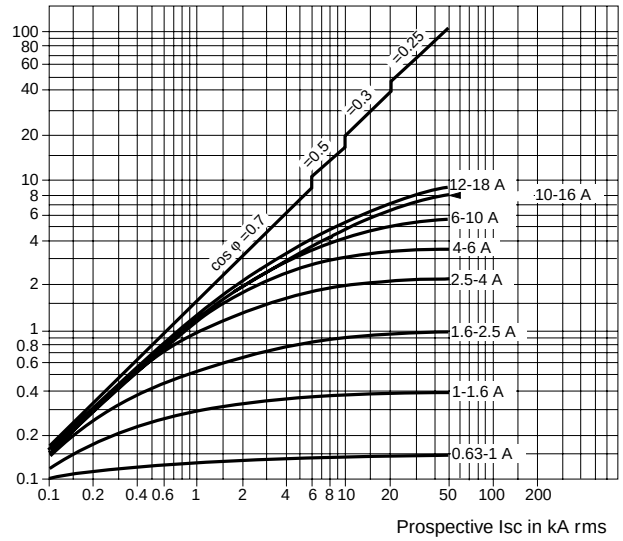
The average operating times shown are for ambient temperature of 68 °F (20 °C), without prior current flow (cold state). The average operating time after prolonged current flow (hot state) can be calculated by applying a coefficient of 0.5.

CURRENT LIMITATION AND THERMAL LIMIT ON SHORT CIRCUIT

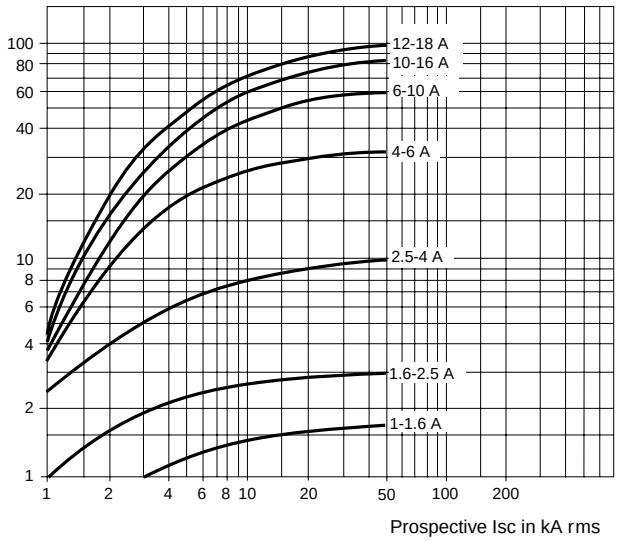
3-Phase 380/415 V, 50 Hz

Current limit on short circuit

Max. I peak in KA

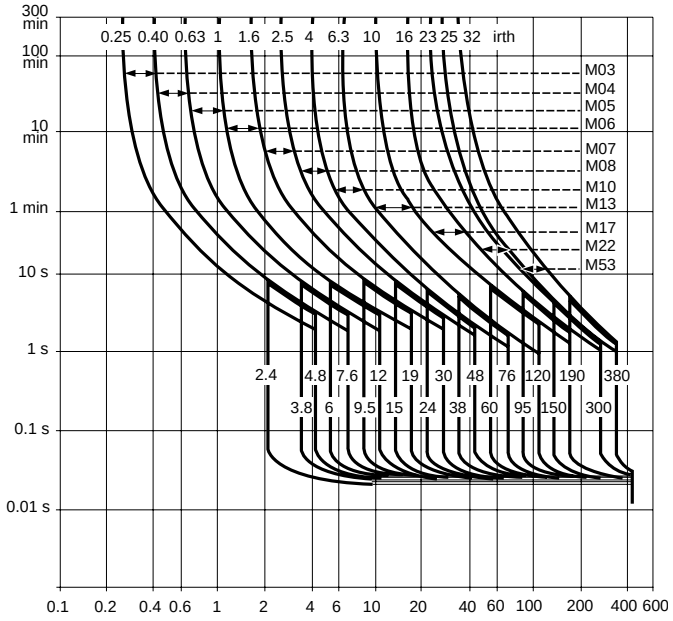


Thermal limit I^2t in kA^2s in short circuit protection zone



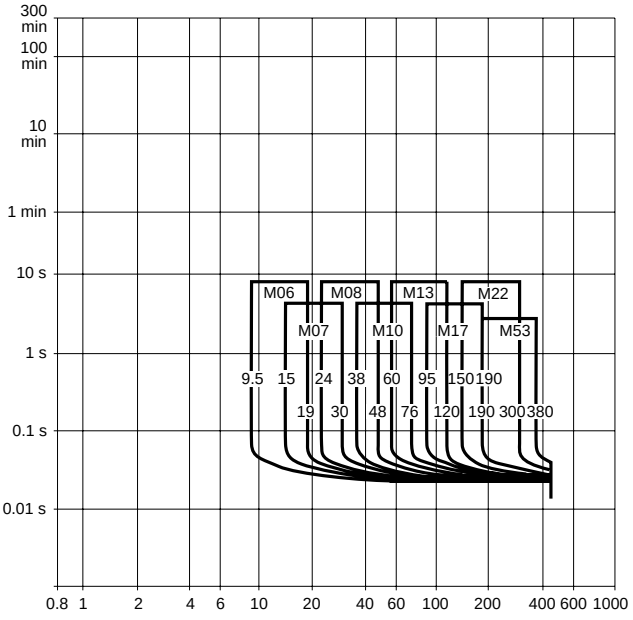
Motor Protection

By thermal magnetic modules **LB1LC03M**



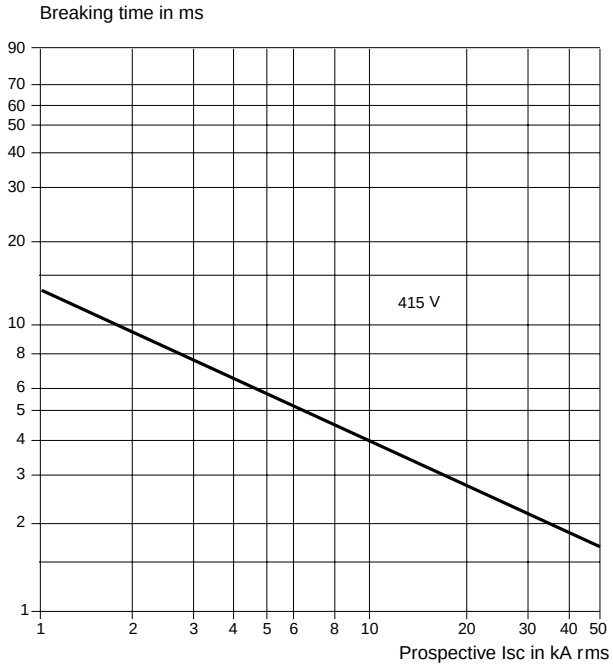
Motor Protection (frequent starting)

By magnetic modules **LB6LC03M**



The average operating times shown are for ambient temperature of 68 °F (20 °C), without prior current flow (cold state).
The average operating time after prolonged current flow (hot state) can be calculated by applying a coefficient of 0.5.

Tripping Curve on Short Circuit

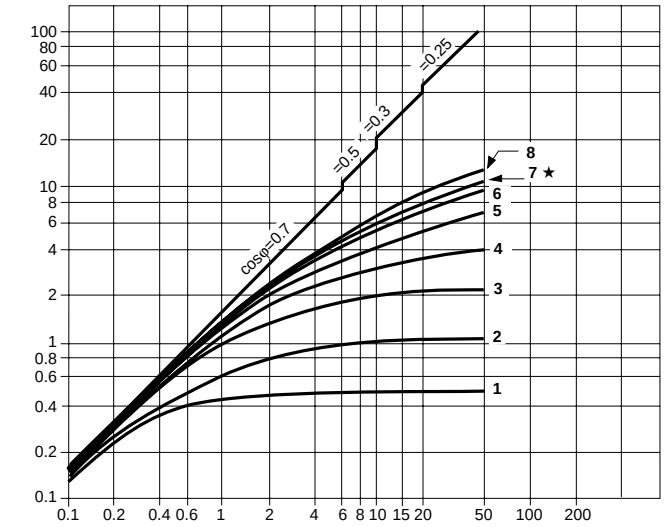


CURRENT LIMITATION AND THERMAL LIMIT ON SHORT-CIRCUIT

3-Phase 400/415 V, 50 Hz

Current limitation on short-circuit

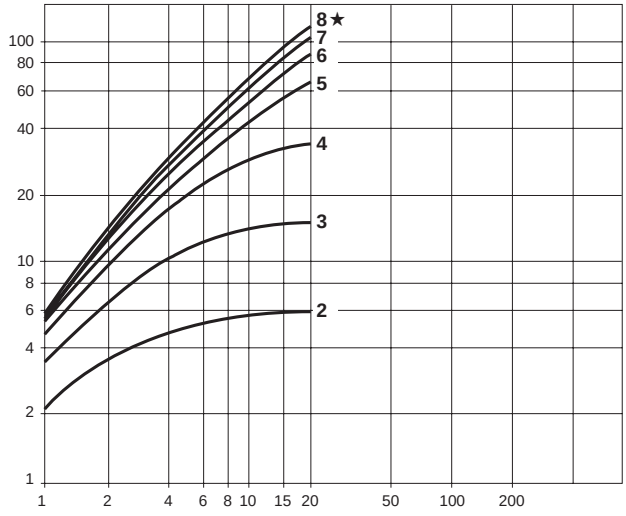
Max. I peak in KA



Prospective rms short-circuit current in kA

Maximum thermal limit on short-circuit

Thermal limit I^2t in kA^2s in short circuit protection zone

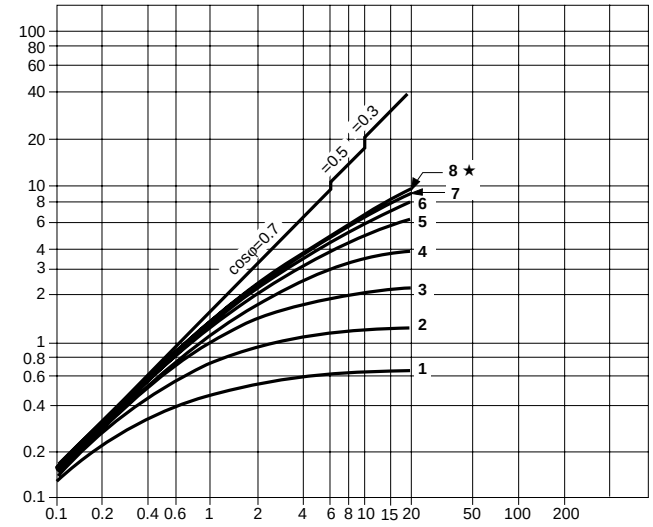


Prospective rms short-circuit current in kA

3-Phase 400/415 V, 50 Hz

Current limitation on short-circuit

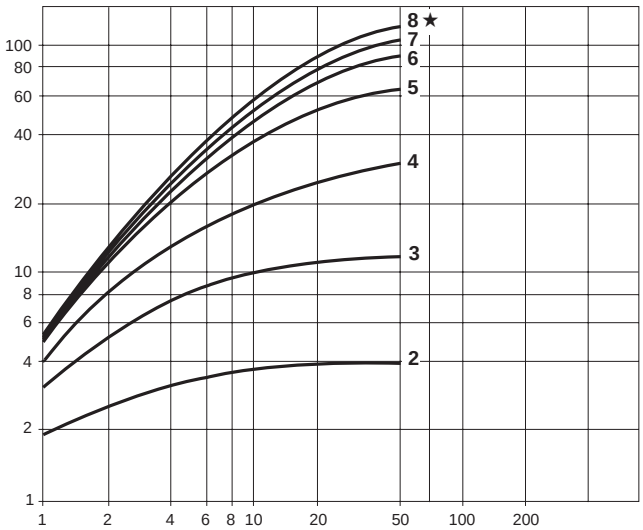
Max. I peak in KA



Prospective rms short-circuit current in kA

Maximum thermal limit on short-circuit

Thermal limit I^2t in kA^2s in short circuit protection zone



Prospective rms short-circuit current in kA

★ Associated thermal protection rating.

1 1-1.6 A
2 1.6-2.5 A
3 2.5-4 A
4 4-6.3 A
5 6.3-10 A
6 10-16 A
7 16-25 A
8 23-32 A

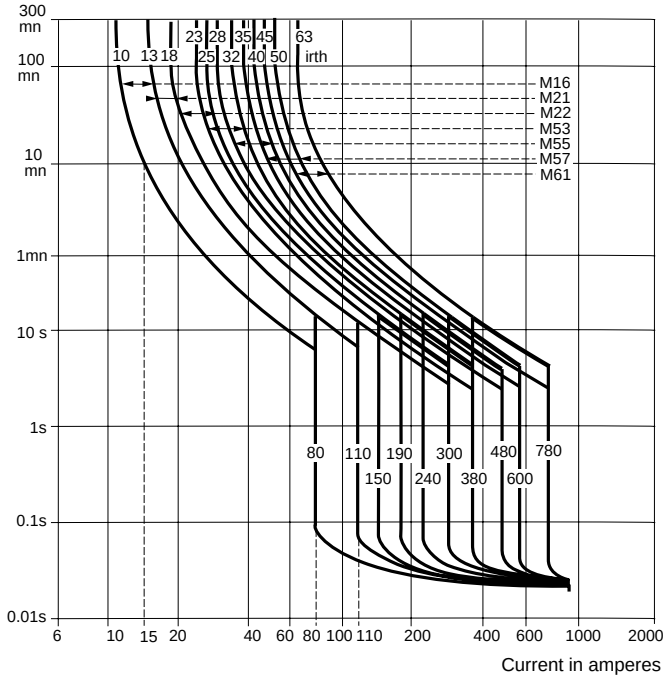
For 1-1.6 A ratings, the thermal limit is less than $1x10^3$ A^2s

The breaking capacity is unlimited on contactor breakers fitted with modules:
- up to a rating of 10-16 A at 220/380/415 V.
- up to a rating of 6.3-10 A at 440/500 V.

PROTECTION MODULE TRIPPING SPECIFICATIONS

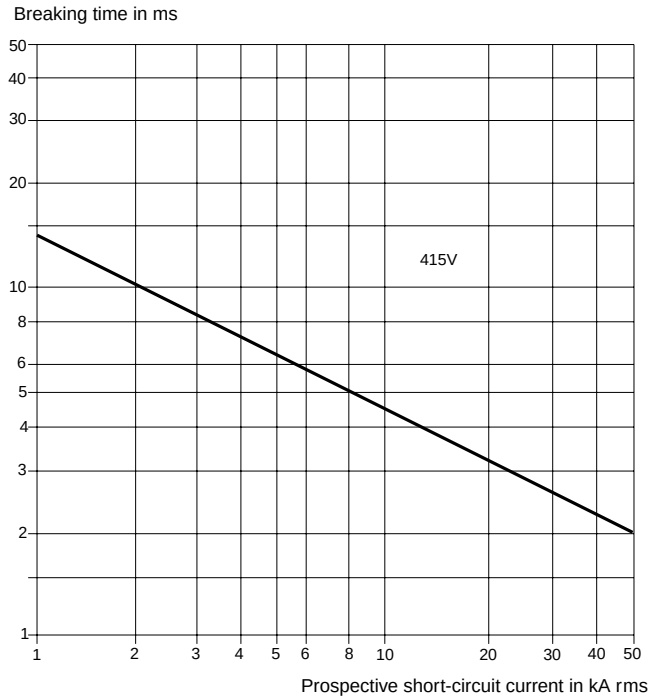
Motor Protection (normal starting duty)

By thermal magnetic modules **LB1LD03M**



The average operating times shown are for ambient temperature of 68 °F (20 °C), without prior current flow (cold state).
The average operating time after prolonged current flow (hot state) can be calculated by applying a coefficient of 0.5.

Tripping Curve on Short Circuit

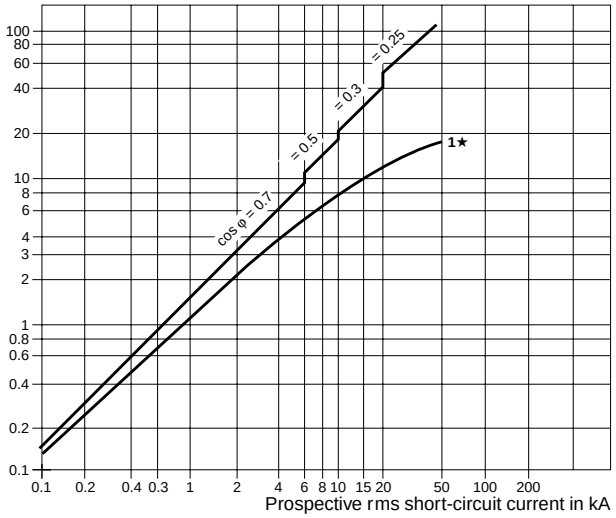


CURRENT LIMITATION AND THERMAL LIMIT ON SHORT-CIRCUIT

3-Phase 400/415 V, 50 Hz

Current limitation on short-circuit

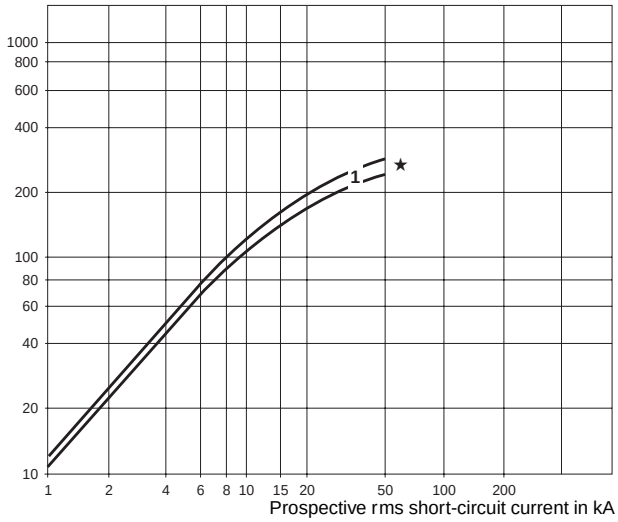
Maximum peak current in kA



Prospective rms short-circuit current in kA

Maximum thermal limit on short-circuit

Thermal limit I^2t in kA^2s in short circuit protection zone

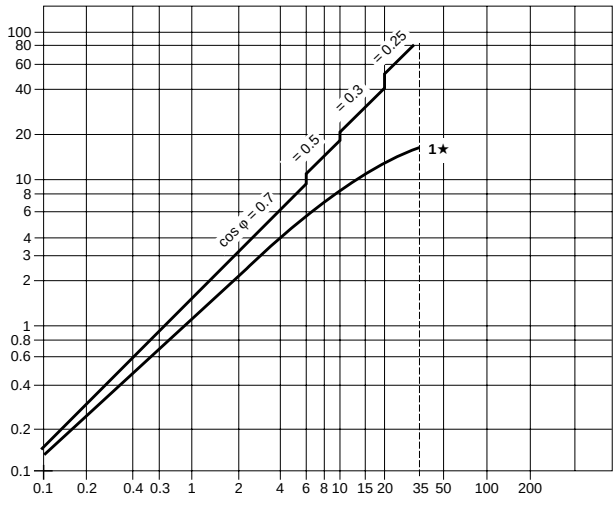


Prospective rms short-circuit current in kA

3-Phase 400/415 V, 50 Hz

Current limitation on short-circuit

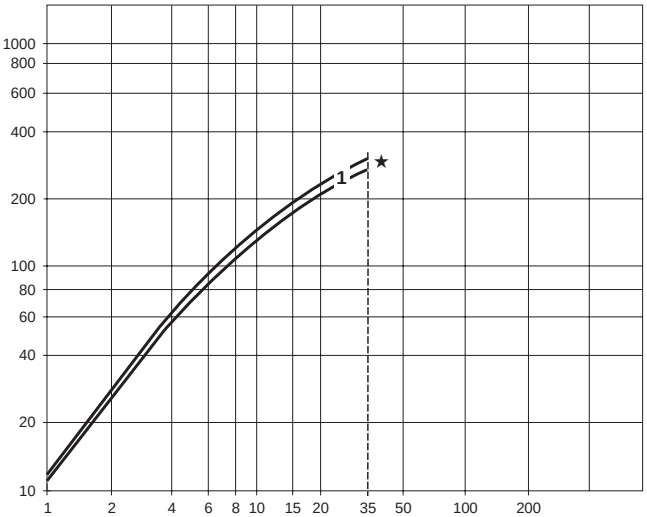
Maximum peak current in kA



Prospective rms short-circuit current in kA

Maximum thermal limit on short-circuit

Thermal limit I^2t in kA^2s in short circuit protection zone

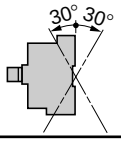
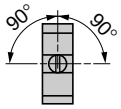


Prospective rms short-circuit current in kA

1 18-25 A up to 45-63A

★ **LB1LD03•22** to **LD03•61**: rating of associated thermal overload module.

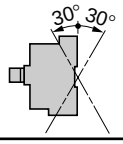
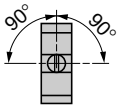
Specifications

Type			INTEGRAL 18
Rated operational current (Ie)	Category AC-3		18 A
Rated operational voltage (Ue)			600 Vac
Breaking capacity at 480 Vac			42 kA RMS
Electrical durability in AC-3 at 400 V			2 million operating cycles
Mechanical durability at Uc			10 million operating cycles
Maximum operating rate at ambient temperature ≤ 131 °F (55 °C)	AC control voltage		1200 operating cycles/hour
	DC control voltage with converter		600 operating cycles/hour
Environment			
Conforming to standards			IEC: 364, 947-1, 947-2, 947-4-1, 947-6-2 UTE: NF C 63-110, C 63-120, C 63-130, C 63-650, C 79-100, C 20-040 VDE: 0100, 0110, 0113, 0170, 0171, 471, 0660 EN 60947-1, 60947-2, 60947-4-1, 60947-6-2 NEN, NBN
Product approvals			ASE, ASEFA, ASTA, CSA, DEMKO, DNV NEMKO, RINA, SEMKO, SETI, UL
UL File Number			File E164871, CCN NKJH
CSA File Number			File LR43364 Class 3211 08
Protective treatment			"TH"
Ambient air temperature around the device	Operation		-13 to +131 °F (-25 to +55 °C)
	Storage		-40 to +176 °F (-40 to +80 °C)
	Operation ■		-13 to +122 °F (-25 to +50 °C)
	Storage		-13 to +158 °F (-25 to +70 °C)
Vibration resistance Permissible acceleration	5 to 100 Hz		Energized state: 3 g De-energized state: 3 g
Shock resistance Permissible acceleration	Impulse duration: 11 ms		Energized state: 8 g De-energized state: 8 g
Degree of protection	To IEC 144 and 529 To VDE 0106		IP 20B Protection against direct finger contact
Flame resistance			Conforming to IEC 295-2-1, NF C 20-455, and to decree of 22-12-81 (JO 27 NC of 1st and 2/2/1982) Conforming to UL 94 - V0 and NF T 51-072
Maximum operating altitude	Without derating		9,580/3000 ft/m
Operating position (without derating)	In relation to normal vertical mounting plane		From fixing plane (fore-aft tilt)  From main axis (left-right tilt) 
Control Circuit Specifications			
Rated control circuit voltage (Uc)	50 Hz 60 Hz DC with converter		21 to 660 Vac 21 to 600 Vac 24 Vdc
Voltage limits at θ ≤ 131 °F (55 °C)	Operating Drop out		0.85 to 1.1 Uc 0.25 to 0.7 Uc
Average consumption at 68 °F (20 °C) and at Uc	AC	Inrush Sealed	75 VA (50 Hz), 90 VA (60 Hz) 8 VA (50 Hz), 9 VA(60 Hz)
	DC ■	Inrush Sealed	100 W 1.5 W
Heat dissipation			2.5 W (50 Hz), 2.8 W (60 Hz)
Operating time ● at 68 °F (20 °C) and at Uc	50/60 Hz	"C" "O"	9 to 25 ms 7 to 25 ms
	DC with converter	"C" "O"	15 to 20 ms 20 to 25 ms

■ With converter.

● The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measure from the moment the coil supply is switched off to the moment the main poles separate.

Specifications

INTEGRAL 32	INTEGRAL 63
32 A	63 A
600 Vac	600 Vac
42 kA RMS	42 kA RMS
1.5 million operating cycles	1.2 million operating cycles
10 million operating cycles	10 million operating cycles
3600 operating cycles/hour	3600 operating cycles/hour
600 operating cycles/hour	600 operating cycles/hour
Environment	
IEC: 364, 947-1, 947-2, 947-4-1, 947-6-2 UTE: NF C 63-110, C 63-120, C 63-130, C 63-650, C 79-100, C 20-040 VDE: 0100, 0110, 0113, 0170, 0171, 471, 0660 EN 60947-1, 60947-2, 60947-4-1, 60947-6-2 NEN, NBN	IEC: 364, 947-1, 947-2, 947-4-1, 947-6-2 UTE: NF C 63-110, C 63-120, C 63-130, C 63-650, C 79-100, C 20-040 VDE: 0100, 0110, 0113, 0170, 0171, 471, 0660 EN 60947-1, 60947-2, 60947-4-1, 60947-6-2 NEN, NBN
ASE, ASEFA, ASTA, BV, CSA, DEMKO, DNV, GL, NEMKO, NKK, ÖVE, PTB, RINA, SCC, SETI, UL, USSR, LROS	ASE, ASEFA, ASTA, BV, CSA, DEMKO, DNV, GL, NEMKO, NKK, ÖVE, RINA, SCC, SETI, UL, USSR, LROS pending
File E164871, CCN NKJH	File E164871, CCN NKJH
File LR43364 Class 3211 08	File LR43364 Class 3211 08
“TH”	“TH”
-13 to +158 °F (-25 to +70 °C)	-13 to +158 °F (-25 to +70 °C)
-40 to +176 °F (-40 to +80 °C)	-40 to +176 °F (-40 to +80 °C)
-13 to +122 °F (-25 to +50 °C)	-13 to +122 °F (-25 to +50 °C)
-13 to +158 °F (-25 to +70 °C)	-13 to +158 °F (-25 to +70 °C)
Energized state: 3 g De-energized state: 3 g	Energized state: 3 g De-energized state: 3 g
Energized state: 8 g De-energized state: 8 g	Energized state: 8 g De-energized state: 8 g
IP 20B Protection against direct finger contact	IP 20B Protection against direct finger contact
Conforming to IEC 295-2-1, NF C 20-455, and to decree of 22-12-81 (JO 27 NC of 1st and 2/2/1982) Conforming to UL 94 - V0 and NF T 51-072	Conforming to IEC 295-2-1, NF C 20-455, and to decree of 22-12-81 (JO 27 NC of 1st and 2/2/1982) Conforming to UL 94 - V0 and NF T 51-072
9,580/3000 ft/m	9,580/3000 ft/m
From fixing plane (fore-aft tilt) 	From fixing plane (fore-aft tilt) 
Control Circuit Specifications	
24 to 660 Vac 24 to 600 Vac 24, 48, 110 Vdc	24 to 660 Vac 24 to 600 Vac 24, 48, 110 Vdc
0.85 to 1.1 Uc 0.25 to 0.7 Uc	0.85 to 1.1 Uc 0.25 to 0.7 Uc
160 VA (50 Hz), 185 VA (60 Hz) 12 VA (50 or 60 Hz)	375 VA (50 Hz), 450 VA (60 Hz) 25 VA (50 or 60 Hz)
250 W, duration 50 ms 4 W	300 W, duration 50 ms 8 W
4 W (50 Hz), 5 W (60 Hz)	8 W (50 Hz), 11 W (60 Hz)
9 to 25 ms 7 to 20 ms	12 to 35 ms 7 to 20 ms
25 to 35 ms 10 to 20 ms	25 to 40 ms 15 to 25 ms

Specifications

Type		INTEGRAL 18											
Pole Specifications													
Rated thermal current (Ith)	θ ≤ 104 °F (40 °C)	18 A											
Frequency limits of operational current		40-60 Hz											
Rated impulse withstand voltage	To IEC 947.4	6 kV in envelope											
Rated insulation voltage (Ui)	To IEC 947-1 and NF C 20-040	600 Vac											
Heat dissipation in the power circuits of the contactor breaker and its protection module	Operational current	0.16 A	0.25 A	0.4 A	0.6 A	1.0 A	1.6 A	2.5 A	4.0 A	6.0 A	10.0 A	16.0 A	18.0 A
	Power per pole, hot state	2.3 W	2.3 W	2.3 W	2.3 W	2.3 W	2.3 W	2.3 W	2.4 W	2.9 W	3.2 W	3.8 W	3.8 W
Rated making capacity I RMS	To IEC 947-4 and NF C 63-110	15 x Ith (above this value, the breaker trips											
I Peak	To IEC 947-2 and NF C 63-120	105 kA											
Total breaking time		2.5 ms											
Electrical durability in AC-3 at Ie max, Ue = 415 V after 1 P2 cycle (O-t-CO-t-CO) (short-circuit test)	Prospective RMS short-circuit current at terminals of a new device	3 kA		10 kA		25 kA		35 kA		42 kA			
	Millions of operating cycles	0.6		0.15		0.12		0.1		0.1			
Maximum let-through energy	With Isc max, at 415 V, 50 Hz	100 x 10^3 A^2s											
Wiring		Maximum cross-sectional area (c.s.a.)				Minimum cross-sectional area (c.s.a.)				AWG			
	Flexible cable without cable end	2 x 6 mm^2				2 x 1.5 mm^2				2 - #16 to 2 - #10			
	Flexible cable with cable end	2 x 4 mm^2 or 1 x 6 mm^2				2 x 1 mm^2				2 - #16 to 2 - #10			
	Solid cable	2 x 6 mm^2				2 x 1.5 mm^2				2 - #16 to 2 - #10			
Tightening torque		12 lb-in (1.7 N•m)											
Specifications of Thermal-magnetic or Magnetic Only Protection Modules													
Type		**LB1LB03P**											
Protection		Standard motors											
	Conforming to standards	IEC 947-4 type 2 (Iq = 80 kA except P21) and NF C 63-650											
	Number of poles	3											
	Number of protection poles	3											
	Rated operational voltage	600 Vac											
	Maximum continuous current	0.16 to 18 A											
Thermal protection	Setting range (Irth min/Irth max)	0.1/0.16 to 12/18 A											
	Temperature compensation	-4 to +131 °F (-20 to +55 °C)											
	Protection against phase imbalance	With											
	Tripping class	10											
Magnetic protection To IEC 158-1 and NF C 63-650 IEC 947-1/2/4 and NF C 63-120	Instantaneous trip current setting range	Fixed at 15 Irth max											
	Tripping tolerance	± 20%											
Specifications of Versions without Isolator Function													
Conforming to standards		IEC 947											
Rated operational voltage		600 Vac											
Mechanical durability		10,000 operating cycle											
Padlocking facility		1 padlock, ∅ 5 mm shank											
Specifications of Versions with Isolator Function													
Conforming to standards		–											
Rated operational voltage		–											
Mechanical durability		–											
Padlocking facility		–											

Specifications

INTEGRAL 32								INTEGRAL 63				
Pole Specifications												
32 A								63 A				
40-60 Hz								40-60 Hz				
6 kV in envelope								6 kV in envelope				
600 Vac								600 Vac				
1.6 A	2.5 A	4.0 A	6.3 A	10.0 A	16.0 A	25.0 A	32.0 A	25 A	32 A	40 A	50 A	63 A
1.6 W	1.8 W	1.8 W	2.0 W	2.0 W	3.4 W	4.8 W	6.0 W	4.4 W	5.0 W	5.8 W	7.0 W	9.0 W
12 x Ith (above this value, the breaker trips								12 or 15 x Ith (above this value, the breaker trips				
105 kA								105 kA				
4 ms								4 ms				
3 kA	10 kA	25 kA	35 kA	42 kA				3 kA	10 kA	25 kA	35 kA	42 kA
1	0.9	0.6	0.5	0.2				1	0.9	0.6	0.5	0.2
170 x 10^3 A^2s								300 x 10^3 A^2s				
Maximum cross-sectional area (c.s.a.)			Minimum cross-sectional area (c.s.a.)			AWG		Maximum cross-sectional area (c.s.a.)		Minimum cross-sectional area (c.s.a.)		AWG
1 X 10 or 2 x 6 mm^2			1 x 1 mm^2			#18 to #8		1 X 50 or 2 x 35 mm^2		1 x 6 mm^2		#10 to #2
1 x 6 or 2 x 4 mm^2			1 x 1 mm^2			#18 to #8		2 x 25 mm^2		1 x 6 mm^2		#10 to #2
1 x 10 or 2 x 6 mm^2			1 x 1 mm^2			#18 to #8		1 x 50 mm^2		1 x 6 mm^2		#10 to #2
14 lb-in (2.0 N•m)								42 lb-in (6.0 N•m)				

Specifications of Thermal-magnetic or Magnetic Only Protection Modules			
LB1LC03M	**LB6LC03M**	**LB1LD03M**	**LB6LD03M**
Standard motors	Frequent starting motors	Standard motors	Frequent starting motors
IEC 947-4 type 2 (Iq = 50 kA) and NF C 63-650	NF C 63-650	NF C 63-650	NF C 63-650
3	3	3	3
3	3	3	3
600 Vac	600 Vac	600 Vac	600 Vac
0.4 to 32 A	0.4 to 32 A	13 to 63	13 to 63
0.25/0.4 to 23/32 A	–	10/13 to 45/63 A	–
-4 to +158 °F (-20 to +70 °C)	-4 to +158 °F (-20 to +70 °C)	-4 to +158 °F (-20 to +70 °C)	-4 to +158 °F (-20 to +70 °C)
With	Without	With	Without
10	–	20	–
6 to 12 Irth max (Usual setting 9 to 10 Irth max)	6 to 12 Irth max	6 to 12 Irth max (Usual setting 9 to 10 Irth max)	6 to 12 Irth max
± 20%	± 20%	± 20%	± 20%

Specifications of Versions without Isolator Function	
IEC 947	IEC 947
600 Vac	600 Vac
10,000 operating cycles	10,000 operating cycle
1, 2, or 3 padlocks, ∅ 8 mm shank	1, 2, or 3 padlocks, ∅ 8 mm shank

Specifications of Versions with Isolator Function	
IEC 947, NF C 63-130, VDE 0660, VDE 0113	IEC 947, NF C 63-130, VDE 0660, VDE 0113
600 Vac	600 Vac
10,000 operating cycles	10,000 operating cycles
1, 2, or 3 padlocks (shank ∅ 8 mm max and ∅ 5 mm min). When flush mounting, interlocking of the enclosure or cabinet door is possible.	1, 2, or 3 padlocks (shank ∅ 8 mm max and ∅ 5 mm min). When flush mounting, interlocking of the enclosure or cabinet door is possible.

Instantaneous Auxiliary Contacts

Rated thermal current (Ith)		10 A (INTEGRAL 18), 6 A (INTEGRAL 32 and 63)				
Rated insulation voltage (Ui)	To IEC 947-1 and NF C 20-040	690 Vac				
Switching capacity	With U ≥ 17 V and I ≥ 10 mA	600 mVA				
Rated operational power AC category AC-15 ■	Voltage	**48 Vac**	**110/120 Vac**	**220/240 Vac**	**380/400 Vac**	**480 Vac**
	1 million operating cycles	300 VA	500 VA	600 VA	520 VA	500 VA
	1.5 million operating cycles	160 VA	300 VA	330 VA	300 VA	280 VA
Making capacity	AC category AC-15	1500 VA	3500 VA	6000 VA	7500 VA	7000 VA
Rated operational power DC category DC-13 ▲	Voltage	**24 Vac**	**48 Vac**	**110 Vac**	**220 Vac**	**440 Vac**
	1 million operating cycles	120 W	90 W	75 W	68 W	61 W
	1.5 million operating cycles	70 W	50 W	38 W	33 W	28 W
Making capacity	DC category DC-13	800 W	700 W	400 W	260 W	220 W
Wire size		Maximum c.s.a.: 2 x 2.5 mm^2. Minimum c.s.a.: 2 x 1 mm^2				
		Maximum: 2 x 14 AWG, Minimum: 2 x 16 AWG				

■ Electrical durability on an inductive load such as the coil of an electromagnet: making capacity (cosφ 0.7) = 10 times the breaking capacity (cos φ 0.4).
▲ Electrical durability on an inductive load such as the coil of an electromagnet, the time constant increasing with the power.

Signalling Contacts

Rated thermal current (Ith)		6 A (INTEGRAL 18), 3 A (INTEGRAL 32 and 63)			
Rated insulation voltage (Ui)	To IEC 947-1	690 Vac (INTEGRAL 18), 250 Vac (INTEGRAL 32 and 63)			
Operational power for 200 000 operating cycles	AC Voltage	–	–	**110/127 Vac**	**220 Vac**
	Resistive load	–	–	600 VA	750 VA
	Lamp load ●	–	–	90 VA	125 VA
	Inductive load ♦	–	–	875 VA	500 VA
	Motor ▼	–	–	160 VA	200 VA
	DC Voltage	**24 Vac**	**48 Vac**	**110/125 Vac**	**200 Vac**
	Resistive load	100 W	100 W	50 W	50 W
	Lamp load ●	50 W	50 W	6 W	7.5 W
	Inductive load ♦	75 W	75 W	50 W	50 W
	Motor ▼	75 W	75 W	6 W	7.5 W
Wire size		Maximum c.s.a.: 2 x 2.5 mm^2. Minimum c.s.a.: 2 x 1 mm^2			
		Maximum: 2 x 14 AWG, Minimum: 2 x 16 AWG			

● Lamp load: peak current = 10 times the rated current.
♦ Inductive load: cos φ 0.4 for AC operation; time constant 7 ms for DC operation.
▼ Motor: peak current = 6 times the rated current.

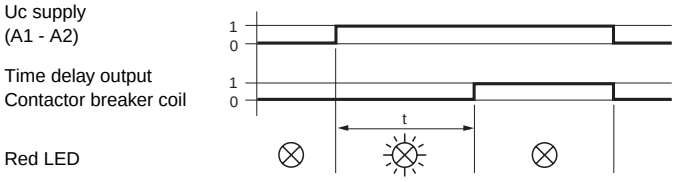
Isolating Auxiliary Contacts for INTEGRAL 32 and 63

Rated thermal current (Ith)		6 A
Rated insulation voltage (Ui) to IEC 947 and NF C 63-130	AC supply	690 Vac
	DC supply	125 Vac
Wire size		Maximum c.s.a.: 2 x 1.5 or 1 x 2.5 mm^2
		Maximum: 2 x 16 AWG or 1 x 14 AWG

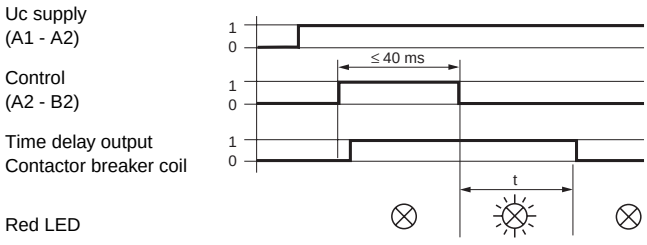
Environment			
Type		**LA4DT (On-delay)**	**LA4DR (Off-delay)**
Conforming to standards		IEC 255-5	IEC 255-5
Product approvals	Pending	UL, CSA	UL, CSA
Protective treatment		"TH"	"TH"
Degree of protection	To VDE 0106	Against direct finger contact	Against direct finger contact
Ambient air temperature around the device	Storage	-40 to +176 °F (-40 to +80 °C)	-40 to +176 °F (-40 to +80 °C)
	Operation	-13 to +131 °F (-25 to +55 °C)	-13 to +131 °F (-25 to +55 °C)
	Operation at Uc	-13 to +158 °F (-25 to +70 °C)	-13 to +158 °F (-25 to +70 °C)
Rated insulation voltage (Ui)	To IEC 947-1 and VDE 0110 (group C)	250 Vac	250 Vac
Time Delay Specifications			
Timing ranges		0.1-2/1.5-0/25-500 sec.	0.1-2/1.5-30/25-500 sec.
Repeat accuracy	32-104 °F (0-40 °C)	± 3% (10 ms minimum)	± 3% (10 ms minimum)
Reset time	During the time delay	100 ms	225 ms
	After the time delay	50 ms	–
Immunity to micro-breaks	During the time delay	10 ms	20 ms
	After the time delay	2 ms	–
Minimum control pulse duration		–	40 ms
Time delay signalling	By LED	Illuminates during time delay	Illuminates during time delay
Control Circuit Specifications			
Built-in protection	On input	By varistor	By varistor
	Contactor breaker coil suppression	By varistor	By peak limiting diode
Rated control circuit voltage (Uc)		24-250 Vac or Vdc	24-250 Vac
Voltage limits		0.8-1.1 Uc	0.8-1.1 Uc
Control type		By mechanical contact only	By mechanical contact only (connecting cable < 10 m)
Wire Size	Flexible or solid cable with or without cable end	Minimum c.s.a.: 1 x 1 mm^2 Maximum c.s.a.: 2 x 2.5 mm^2	Minimum c.s.a.: 1 x 1 mm^2 Maximum c.s.a.: 2 x 2.5 mm^2
		Minimum: 1 x 16 AWG Maximum: 2 x 14 AWG	Minimum: 1 x 16 AWG Maximum: 2 x 14 AWG
Switching Specifications (solid state type)			
Maximum power dissipated		2 W	3.5 W
Leakage current		< 5 mA	< 5 mA
Residual voltage		3.3 Vac	3.3 V
Overvoltage protection		3 kV; 0.5 joule	3 kV; 0.5 joule
Electrical durability		30 million operating cycles	30 million operating cycles

Operating diagrams

Electronic on-delay timer LA4DT



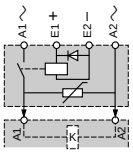
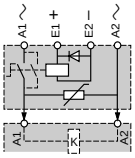
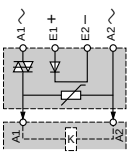
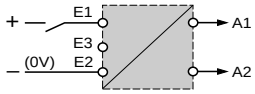
Electronic off-delay timer LA4DR



INTEGRAL™ Self-Protected Combination Motor Controllers
Specifications

Type	Interface modules	Converters
Used for direct control of the INTEGRAL 18	By a programmable controller, with AC control of the coil	By a programmable controller, with DC control of the coil.
Protective treatment	"TH"	"TH"
Ambient air temperature around the device	Storage: -104 to + 176 °F (- 40 to+ 80 °C)	Storage: -104 to + 176 °F (- 40 to + 80 °C)
	Operation: -13 to +131 °F (-25 to +55 °C)	Operation: -13 to +122 °F (-25 to +50 °C)
Rated insulation voltage (Ui)	250 Vac to IEC 158-1 and 947-1 and VDE 0110 (group C)	–
Protection against direct finger contact	Conforming to VDE 0106	Conforming to VDE 0106
Cabling	Max: 2 x 2.5 mm^2, Min: 1 x 1 mm^2	Max: 2 x 2.5 mm^2, Min: 1 x 1 mm^2
	Max: 2 x 14 AWG, Min: 1 x 16 AWG	Max: 2 x 14 AWG, Min: 1 x 16 AWG
Operating limits	–	0.8 to1.1 Uc ▲
Protection	Of the input and against reverse polarity: by diode	Against reverse polarity (by diode) and against overvoltage

Control Circuit Specifications

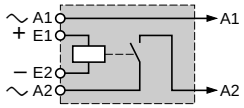
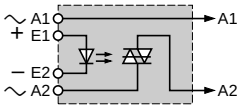
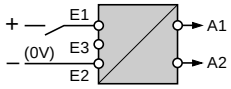
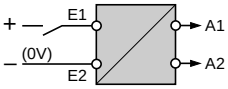
Type	**LA4DFB**	**LA4DFE**	**LA4DLB**	**LA4DLE**	**LA4DWB**	**LA1LB080BD**
Technology	Relay		Relay + override		Solid state	Solid state
Wiring Schematics						
Indication of input state	By built-in LED					
Input signals (logic side) Voltage (E1-E2)	24 Vdc	48 Vdc	24 Vdc	48 Vdc	5-24 Vdc	24 Vdc (E2-E3)
Current	25 mA	15 mA	25 mA	15 mA	8.5 for 5 V 15 for 24 V	10
State "0" guaranteed for U	< 2.4 Vac	< 4.8 Vac	< 2.4 Vac	< 4.8 Vac	< 2.4 Vac	< 7 Vac
or I	< 2 Vac	< 1.3 Vac	< 2 Vac	< 1.3 Vac	< 2 Vac	< 5 Vac
State "1" guaranteed for U	17 < U < 30 Vac	33 < U < 60 Vac	17 < U < 30 Vac	33 < U < 60 Vac	5 < U < 30	U > 14
Supply voltage	24-250 Vac (A1-A2)					24 Vdc (E1-E2) ▲

Operating Specifications

Electrical durability in		10 million operating cycles	10 million operating cycles	3 million operating cycles	3 million operating cycles	20 million operating cycles	2 million operating cycles
Immunity to control circuit interruptions		4 ms	4 ms	4 ms	4 ms	1 ms	–
Average consumption at 86 °F (30 °C)		0.6 W	0.6 W	0.6 W	0.6 W	0.4 W	Inrush: 100 Sealed: 1.5
Operating time ■ at 86 °F (30 °C) and at Uc	Pull-in	15-30 ms	15-30 ms	15-30 ms	15-30 ms	–	30 ms
	Drop-out	20-35 ms	20-35 ms	20-35 ms	20-35 ms	–	15 ms

■ The operating times depend on the type of electromagnet driving the contactor breaker and its control method. The closing time "C" is measured from the moment the INTEGRAL coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

▲ Warning: for supply from rectified AC, the power supply must exceed 150 VA and the maximum ripple must be ≤ 14%.

Type		Interface modules						Converters					
Used for direct control of the INTEGRAL 32 or 63		By a programmable controller, with AC control of the electromagnet						By a programmable controller, with DC control of the coil					
Ambient air temperature around the device		Storage: -13 to +158 °F (- 25 to + 70 °C)						Storage: -13 to +158 °F (- 25 to + 70 °C)					
		Operation: -13 to +122 °F (- 25 to+ 50 °C)						Operation: -13 to +122 °F (- 25 to + 50 °C)					
Insulation		rms voltage between inputs and outputs: 2.5 kV						Common negative terminals					
Wiring		Max: 2 x 2.5 mm^2, Min: 1 x 1 mm^2						Max: 2 x 2.5 mm^2, Min: 1 x 1 mm^2					
		Max: 2 x 14 AWG, Min: 1 x 16 AWG						Max: 2 x 14 AWG, Min: 1 x 16 AWG					
Operating limits		0.85-1.1 Uc						0.8-1.1 Uc ▲					
Protection		Against reverse polarity (by diode) and against overvoltage						Against reverse polarity (by diode) and against overvoltage					
Indication of input state		By LED						–					
Type		INTEGRAL 32			INTEGRAL 63			INTEGRAL 32			INTEGRAL 63		
		LA1LC			LA1LD			LA1LC			LA1LD		
		580BD	580ED	180BD	580BD	580ED	180BD	080BD	080ED	080FD	080BD	080ED	080FD
Wiring Schematics		LA1L•580•D 			LA1L•180BD 			LA1L•080BD LA1L•080ED 			LA1L•080FD 		
Input signals (logic side)		24 Vdc	48 Vdc	5-24 Vdc	24 Vdc	48 Vdc	5-24 Vdc	24 Vdc ■	48 Vdc ■		24 Vdc ■	48 Vdc	–
		(E1-E2)	(E1-E2)	(E1- E2)	(E1-E2)	(E1-E2)	(E1-E2)	(E3-E2)	(E3-E2)	–	(E3-E2)	(E3-E2)	–
		30 mA	20 mA	8.5 at 5V 15 at 24V	50 mA	25 mA	8.5 at 5V 15 at 24V	20 mA	10 mA	–	20 mA	10 mA	–
State “0” guaranteed for	U	< 2.4 Vac	< 4.8 Vac	< 2.5 Vac	< 2.4 Vac	< 4.8 Vac	< 2.5 Vac	< 7 Vac	< 14 Vac	–	< 7 Vac	< 14 Vac	–
	I	< 2 mA	< 2 mA	< 2 mA	< 2 mA	< 2 mA	< 2 mA	< 5 mA	< 2.5 mA	–	< 5 mA	< 2.5 mA	–
State “1” guaranteed for	U	> 20.4 Vac	> 40.8 Vac	> 4 Vac	> 20.4 Vac	> 40.8 Vac	> 4 Vac	> 14 Vac	> 28 Vac	–	> 14 Vac	> 28 Vac	–
Supply voltage		24-240 Vac	24-240 Vac	24-240 Vac	24-240 Vac	24-240 Vac	24-240 Vac	24 Vdc ▲	48 Vdc ▲	110 Vdc ▲	24 Vdc ▲	48 Vdc ▲	110 Vdc ▲
		(A1-A2)	(A1-A2)	(A1-A2)	(A1-A2)	(A1-A2)	(A1-A2)	(E1-E2)	(E1-E2)	(E1-E2)	(E1-E2)	(E1-E2)	(E1-E2)
Electrical durability in millions of operating cycles		5						1					
Average consumption	Inrush 50 Hz	160 VA	160 VA	160 VA	375 VA	375 VA	375 VA	–	–	–	–	–	–
	60 Hz	185 VA	185 VA	185 VA	450 VA	450 VA	450 VA	–	–	–	–	–	–
	DC	–	–	–	–	–	–	250 W	250 W	250 W	300 W	300 W	300 W
	Sealed 50/60 Hz	12 VA	12 VA	12 VA	25 VA	25 VA	25 VA	–	–	–	–	–	–
	DC	–	–	–	–	–	–	4 W	4 W	4 W	8 W	8 W	8 W
Operating time at 68 °F (20 °C) and at Uc	Pull-in	15-30 ms	15-30 ms	10-35 ms	20-40 ms	20-40 ms	10-45 ms	30 ms	30 ms	30 ms	35 ms	35 ms	35 ms
	Drop-out	22-35 ms	22-35 ms	8-30 ms	25-45 ms	25-45 ms	8-30 ms	15 ms	15 ms	15 ms	20 ms	20 ms	20 ms

■ For direct control by external contact: connect E1-E3.

▲ Warning: for supply from rectified a.c., the power supply must exceed 250 VA (300 VA for INTEGRAL 63) and the maximum ripple must be ≤ 14%.

Environment — Control and Suppressor Modules					
Conforming to standards		IEC 337-1			
Protective treatment		"TH"			
Ambient air temperature around the device	Storage	-104 to + 176 °F (- 40 to + 80 °C)			
	Operation	-13 to + 131 °F (- 25 to + 55 °C)			
	Permissible for operation at Uc	-13 to + 158 °F (- 25 to + 70 °C)			
Protection against direct finger contact		Conforming to VDE 0106			

Control modules "Automatic-Manual-Stop" LA4DM for INTEGRAL 18		
Application	The "Automatic-Manual" selector switch must be operated with the "Start-Stop" switch in the "Stop" position	
Indication	By LED incorporated in the unit; illuminated when the contactor breaker coil is energized	
Protection	Against electrical shocks	2 kV
Built-in protection	Contactor coil suppression	By varistor
Electrical life		20,000 operating cycles
Contact block specifications	Rated insulation voltage (Ui)	250 Vac conforming to IEC 158-1 and VDE 0110 group C
	Rated operational voltage (Ue)	250 Vac
Wire Size		Maximum c.s.a.: 2 x 2.5 mm^2, Minimum c.s.a.: 1 x 1 mm^2
		Maximum: 2 x 14 AWG, Minimum: 1 x 16 AWG

Suppressor modules LA4DA, DE for INTEGRAL 18					
Type		LA4DA2•			LA4DE2•
Type of protection		RC (Resistor-capacitor)			Varistor
Wiring Schematics					
Rated operational voltage (Ue)	50/60 Hz	24-250 Vac	24-250 Vac		
Maximum peak voltage		3 Uc	2 Uc		
Natural RC frequency		24/48 Vac	50/127 Vac	110/240 Vac	–
		400 Hz	200 Hz	100 Hz	–
Insulation voltage	Conforming to IEC 158-1 and VDE 0110 group C	250 Vac			250 Vac

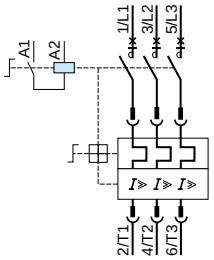
Suppressor module LA9-D09982 for INTEGRAL 18, 32 and 63		
Type of protection		RC (Resistor-Capacitor)
Wiring Schematic		
Operational voltage		≤ 250 Vac

Environment — Tripping and Reset Devices			
Conforming to standards			
Protective treatment			
Ambient air temperature around the device	Storage	-40 to +176 °F (-40 to +80 °C)	
	Operation	-13 to +131 °F (-25 to +55 °C)	
	Permissible for operation at Uc	-13 to +158 °F (-25 to +70 °C)	
Protection against direct finger contact		Conforming to VDE 0106	
Tripping devices			
Type		LA1LC070•, LC072•	LA1LC071•
Pull-in voltage		0.8-1.1 Uc	0.7-1.1 Uc
Drop-out voltage		0.35-0.7 Uc	–
Average consumption	Inrush	8 VA	8 VA
	Sealed	4 VA	4 VA
Minimum impulse duration		–	10 ms
Reset devices			
Type		LA1LC052•	
Consumption		9 VA	
Duration of a reset cycle		9 sec	
Minimum impulse duration		0.5 sec	

INTEGRAL™ Self-Protected Combination Motor Controllers
INTEGRAL 18 Auxiliary Contact States

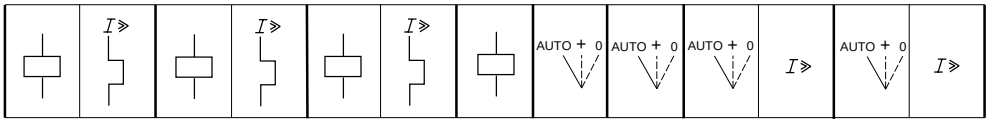
Non-Reversing INTEGRAL 18

LD1



□ contact open
■ contact closed

Auxiliary contact actuators

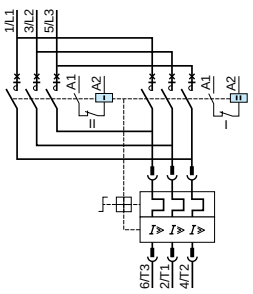


Auxiliary contacts

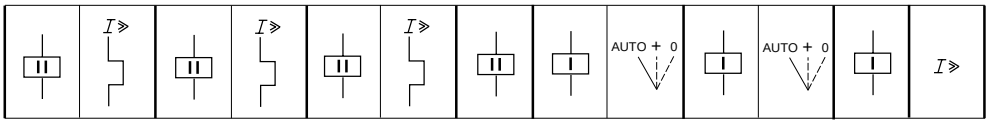
	LA1LB015		LA1LB017		LA1LB019		LA1 LB001	LA1 LB031	LA1 LB0311	LA1LB034		LA1LB0341	
	13 23 31 14 24 32	95 97 96 98	13 31 14 32	97 98	13 31 14 32	95 96	41 42	15 17 16 18	17 15 18 16	15 17 16 18	05 07 06 08	17 15 18 16	05 07 06 08
Off	13 23 31 14 24 32	95 97 96 98	13 31 14 32	97 98	13 31 14 32	95 96	41 42	15 17 16 18	17 15 18 16	15 17 16 18	05 07 06 08	17 15 18 16	05 07 06 08
On, contactor open								15 17 16 18	17 15 18 16	15 17 16 18		17 15 18 16	
On, contactor closed	13 23 31 14 24 32		13 31 14 32		13 31 14 32		41 42						
Tripped on overload	13 23 31 14 24 32	95 97 96 98	13 31 14 32	97 98	13 31 14 32	95 96	41 42	15 17 16 18	17 15 18 16	15 17 16 18		17 15 18 16	
Tripped on short-circuit											05 07 06 08		05 07 06 08
Off after short-circuit		95 97 96 98		97 98		95 96							
Manual reset											05 07 06 08		05 07 06 08

Reversing INTEGRAL 18

LD1



Auxiliary contact actuators



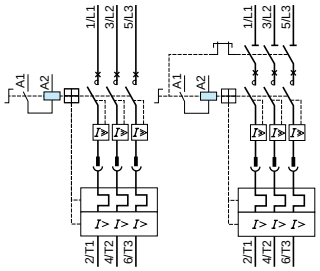
Auxiliary contacts

	LA1LB015		LA1LB017		LA1LB019		LA1 LB001	LA1LB021		LA1LB0211		LA1 LB001	On the INTEGRAL
	14 13 24 23 32 31	96 95 98 97	14 13 32 31	98 97	14 13 32 31	96 95	42 41	14 13 24 23 32 31	16 15 18 17	14 13 24 23 32 31	18 17 16 15	42 41	06 05 08 07
☐ contact open ■ contact closed													
Off	13 23 31 14 24 32	95 97 96 98	13 31 14 32	97 98	13 31 14 32	95 96	41 42	13 23 31 14 24 32	15 17 16 18	13 23 31 14 24 32	17 15 18 16	41 42	05 07 06 08
On, contactors open									15 17 16 18		17 15 18 16		
On, closed II	13 23 31 14 24 32		13 31 14 32		13 31 14 32		41 42						
On, closed I	13 23 31 14 24 32		13 31 14 32		13 31 14 32		41 42	13 23 31 14 24 32		13 23 31 14 24 32		41 42	
Tripped on overload		95 97 96 98		97 98		95 96		13 23 31 14 24 32	15 17 16 18	13 23 31 14 24 32	17 15 18 16	41 42	
Tripped on short-circuit													05 07 06 08
Off after short-circuit		95 97 96 98		97 98		95 96							
Manual reset													05 07 06 08

INTEGRAL™ Self-Protected Combination Motor Controllers
INTEGRAL 32 and 63 Auxiliary Contact States

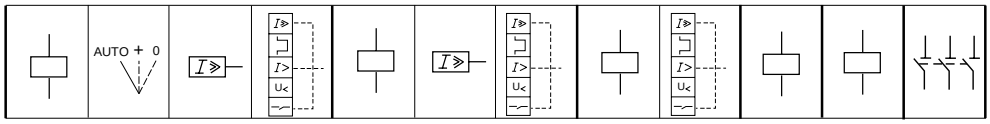
Non-Reversing INTEGRAL 32 and 63

LD1 **LD4**



☐ contact open
■ contact closed

Auxiliary contact actuators

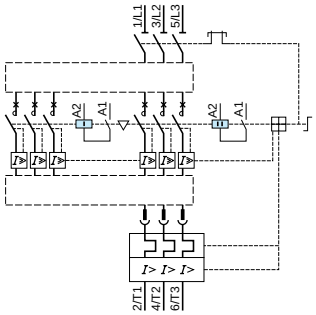


Auxiliary contacts

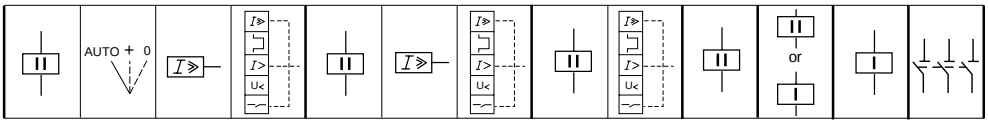
	LA1LC010				LA1LC012			LA1LC025		LA1 LC001	LA1 LC020	LA1 LC030
	14 24 32 / 13 23 31	15 / 16 18	05 / 06 08	95 / 96 98	14 24 32 / 13 23 31	05 / 08	95 / 98	14 24 32 / 13 23 31	95 / 96 or 95 / 98	42 / 41	14 24 32 / 13 23 31	(54) 64 / (53) 63
LD1 **LD4**												
Off + isolation	13 23 31 14 24 32	16 18 15	06 08 05	96 98 95	13 23 31 14 24 32	08 05	98 95	13 23 31 14 24 32	96 98 95 95	41 42	13 23 31 14 24 32	53 54
Off												53 54
On, contactor open		16 18 15										
On, contactor closed	13 23 31 14 24 32				13 23 31 14 24 32			13 23 31 14 24 32		41 42	13 23 31 14 24 32	
Tripped on overload	13 23 31 14 24 32	16 18 15		96 98 95	13 23 31 14 24 32		98 95	13 23 31 14 24 32	96 98 95 95	41 42	13 23 31 14 24 32	
Off after overload				96 98 95			98 95		96 98 95 95			
Tripped on short-circuit			06 08 05	96 98 95		08 05	98 95		96 98 95 95			
Off after short-circuit				96 98 95			98 95		96 98 95 95			
Manual reset			06 08 05			08 05						

Reversing INTEGRAL 32 and 63

LD5



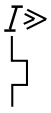
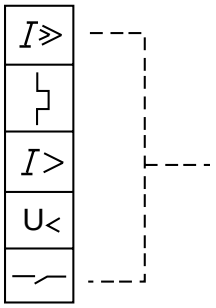
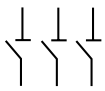
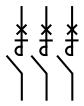
Auxiliary contact actuators



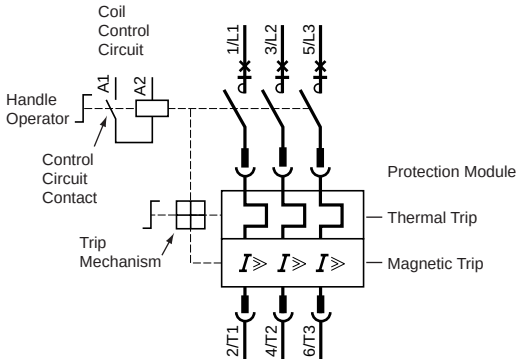
Auxiliary contacts

	LA1LC010				LA1LC012			LA1LC025		LA1 LC020	LA1 LC001	LA1 LC021	LA1 LC031
	13 23 31 / 14 24 32	16 18 / 15	06 08 / 05	96 98 / 95	13 23 31 / 14 24 32	08 / 05	98 / 95	13 23 31 / 14 24 32	96 98 / 95 95	13 23 31 / 14 24 32	41 / 42	13 23 31 / 14 24 32	53 63 / 54 64
□ contact open ■ contact closed													
Off + isolation	13 23 31 / 14 24 32	16 18 / 15	06 08 / 05	96 98 / 95	13 23 31 / 14 24 32	08 / 05	98 / 95	13 23 31 / 14 24 32	96 98 / 95 95	13 23 31 / 14 24 32	41 / 42	13 23 31 / 14 24 32	53 63 / 54 64
Off													53 63 / 54 64
On, reversing contactor open		16 18 / 15											
On, closed I											41 / 42	13 23 31 / 14 24 32	
On, closed II	13 23 31 / 14 24 32				13 23 31 / 14 24 32			13 23 31 / 14 24 32		13 23 31 / 14 24 32	41 / 42	13 23 31 / 14 24 32	
Tripped on overload	13 23 31 / 14 24 32	16 18 / 15		96 98 / 95	13 23 31 / 14 24 32		98 / 95	13 23 31 / 14 24 32	96 98 / 95 95	13 23 31 / 14 24 32	41 / 42		
Off after overload				96 98 / 95			98 / 95		96 98 / 95 95				
Tripped on short-circuit			06 08 / 05	96 98 / 95		08 / 05	98 / 95		96 98 / 95 95				
Off after short-circuit				96 98 / 95			98 / 95		96 98 / 95 95				
Manual reset			06 08 / 05			08 / 05							

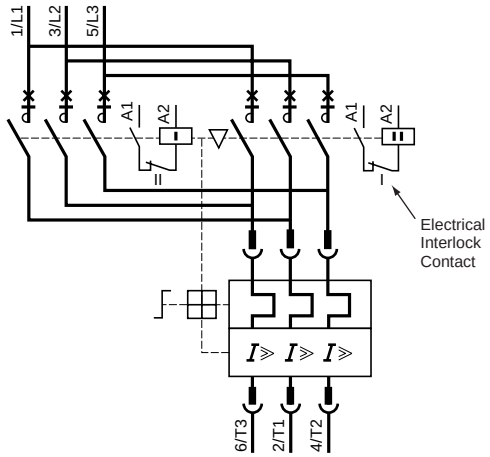
The symbols below are used to show the operation of the INTEGRAL CMC and its overload module and auxiliary blocks. Most are taken directly from IEC Standard symbology, but since the INTEGRAL CMC is a unique product, some of the symbols are unique to the device.

	Contactor Coil
	Left contactor coil on a reversing INTEGRAL CMC
	Right contactor coil on a reversing INTEGRAL CMC
	Normally open contact
	Normally closed contact
	“Magnetic-Level” trip – an occurrence of >15 times the dial current setting
	“Thermal-Level” trip – a trip caused by an overcurrent of 105% to 1500% of the dial current setting
	A trip caused by either thermal or magnetic level fault
	Undervoltage trip – when used with an LA1LC070 or LA1LC072
	Shunt trip – when used with an LA1LC071
	Auxiliary contact that activates when device trips due to: magnetic-level or thermal-level overcurrent, undervoltage, or shunt trip.
	Isolator contact on INTEGRAL 32 and INTEGRAL 63
	INTEGRAL contactor/circuit breaker contact set

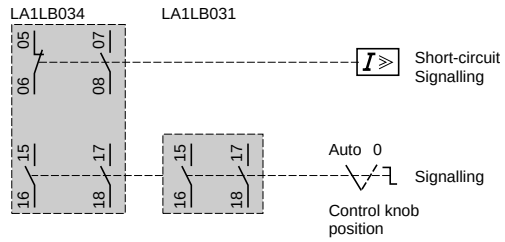
INTEGRAL 18 Non-Reversing CMC with protection module LB• LD1LB030 + LB1LB03P

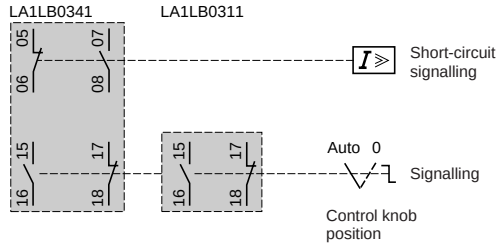


INTEGRAL 18 Reversing CMC with protection module LB• LD5LB130 + LB1LB03P

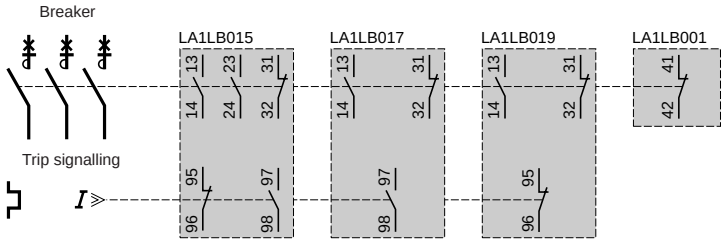


Add-on blocks
For LD1
Mounted on LH side

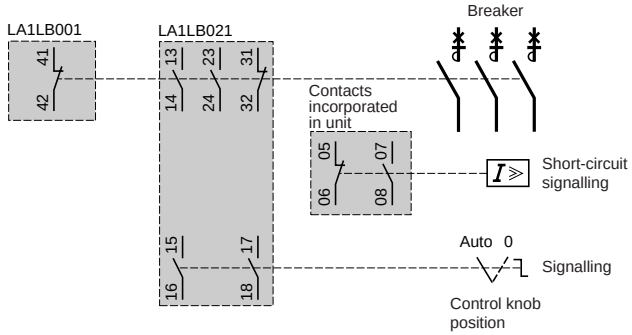


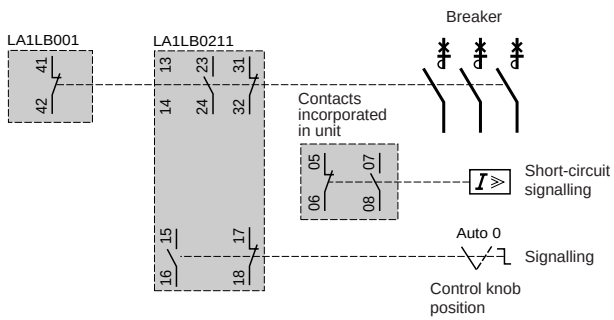


For LD1 and LD5
Mounted on RH side

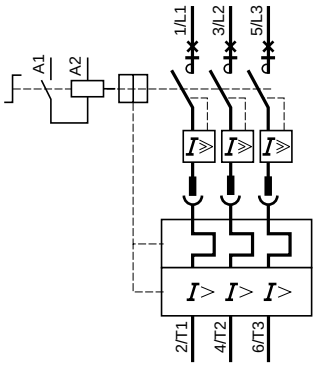


For LD5
Mounted on LH side

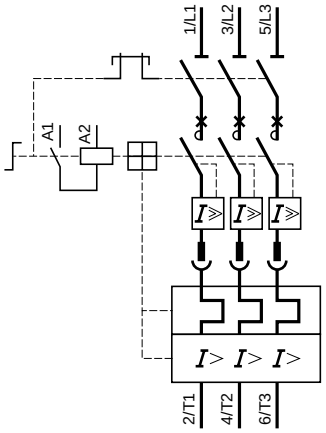




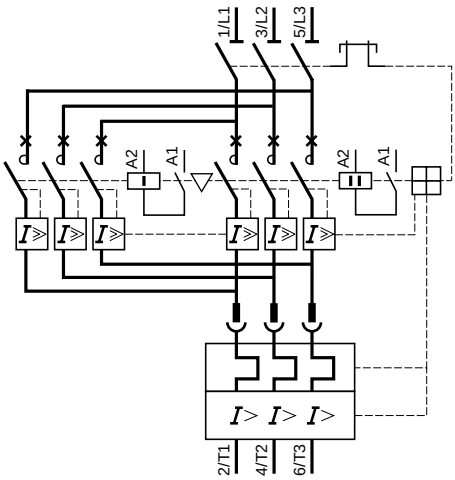
INTEGRAL 32 Non-Reversing CMC with protection module LB•
LD1LC0•0 + LB1LC0••



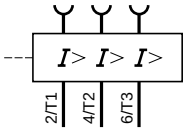
LD4LC••0 + LB1LC0••



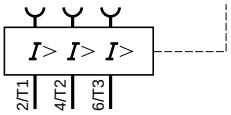
INTEGRAL 32 Reversing CMC with protection module LB•
LD5LC•30 + LB1LC03M



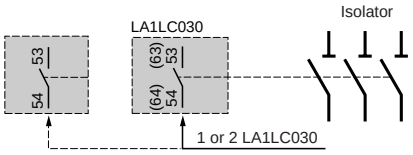
LB6LC03M



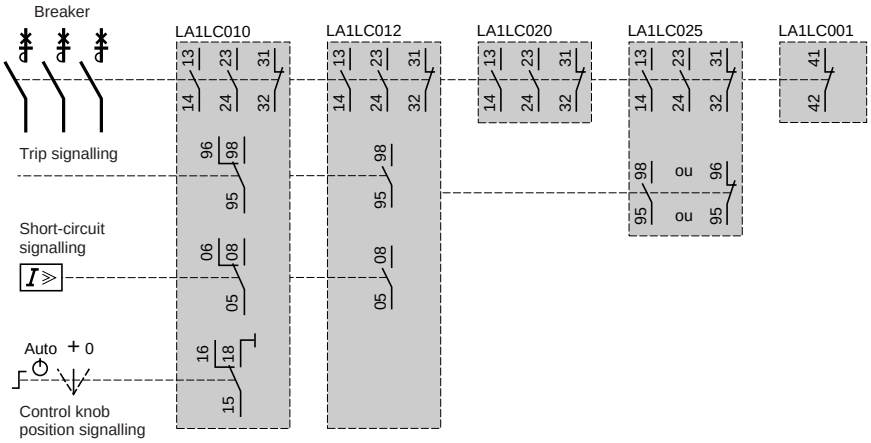
LB6LC03M



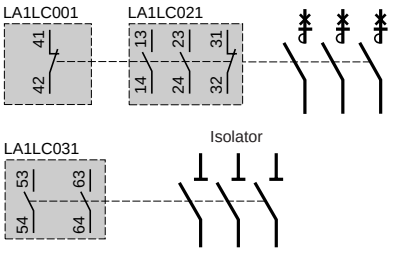
Add-on blocks
For LD4
Mounted on LH side



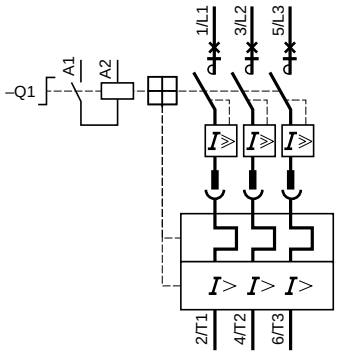
For LD1 or LD4 and LD5
Mounted on RH side



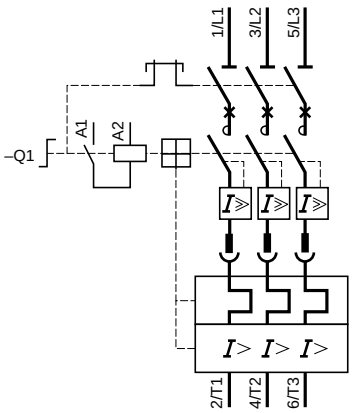
For LD5
Mounted on LH side



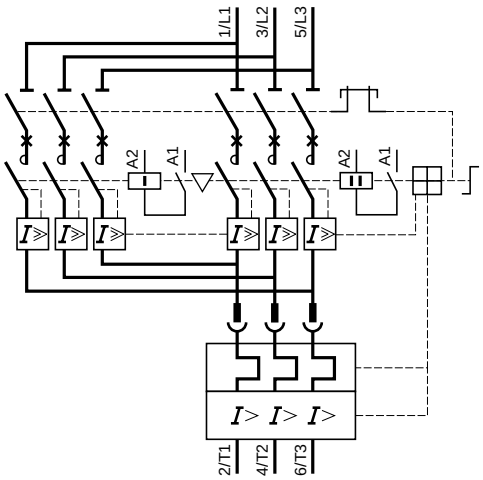
INTEGRAL 63 Non-Reversing CMC with protection module LB• LD1LD030 + LB1LD03•



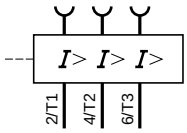
LD4LD•30 + LB1LD03•



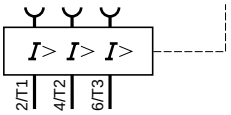
INTEGRAL 63 Reversing CMC with protection module LB• LD5LD•30 + LB1LD03M OR LD03P



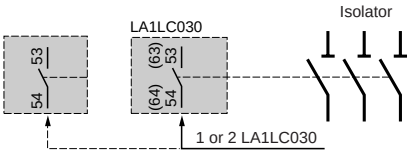
LB6LD03M



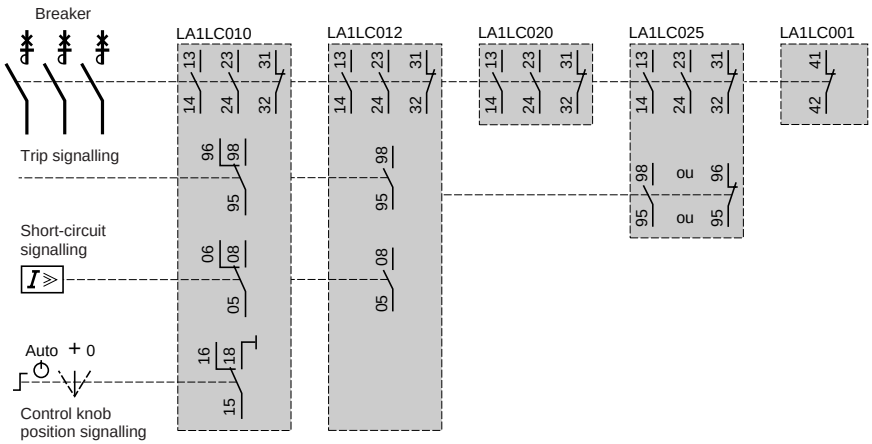
LB6LD03M



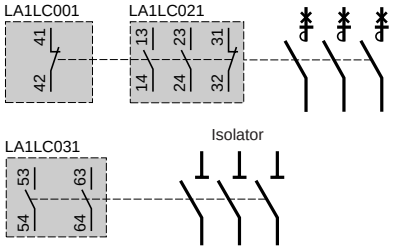
Add-on blocks
For LD4
Mounted on LH side



For LD1 or LD4 and LD5
Mounted on RH side



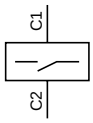
For LD5
Mounted on LH side



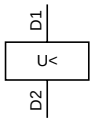
INTEGRAL™ Self-Protected Combination Motor Controllers
Wiring Diagrams

Tripping devices ■ for LD1, LD4, LD5

LA1LC071

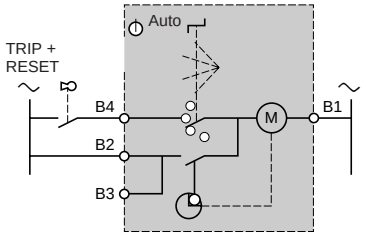


LA1LC070, LC072



Remote electrical reset devices ■ for LD1, LD4, LD5

LA1LC052•

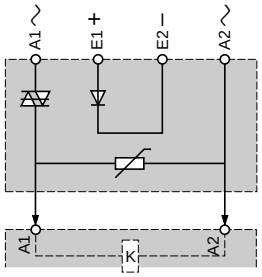


The use of instantaneous auxiliary contact block LA1LC020 prevents the use of tripping devices or electrical reset devices.

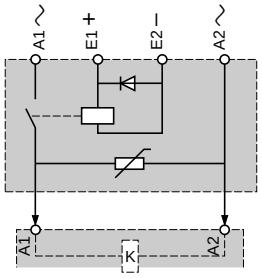
■ For INTEGRAL self-protected CMCs already fitted with an LA1LC010 or LA1LC012 instantaneous auxiliary contact block.

Interface modules

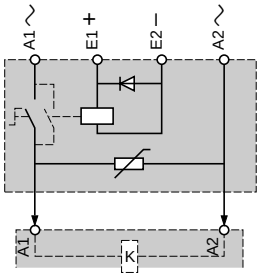
LA4DW solid state



LA4DF relay output

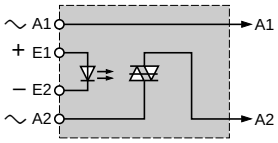


LA4DL relay output (with manual override)

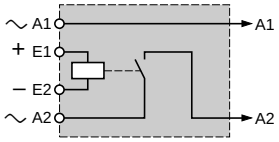


Interface modules

LA1LC180, LD180



LA1LC580, LD580

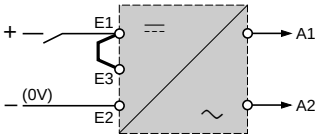


Voltage converters

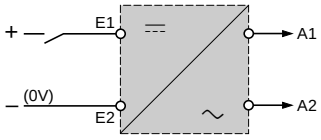
LA1LB080, LC080, LD080

(supplied with devices for DC operation)

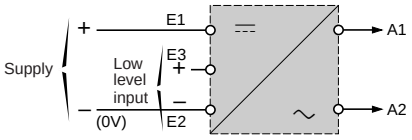
Switching by control contact 24 or 48 V



Switching by control contact 110 V

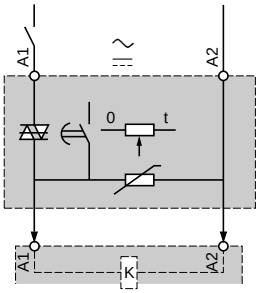


Switching by “low level” input 24 or 48 V

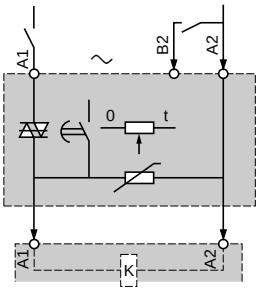


Electronic serial timer modules

LA4DT On-delay

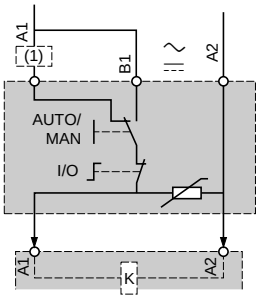


LA4DR Off-delay



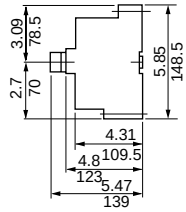
Control modules Automatic-Manual-Stop

LA4DM•

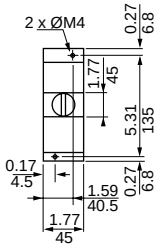


INTEGRAL 18 Non-Reversing and Reversing

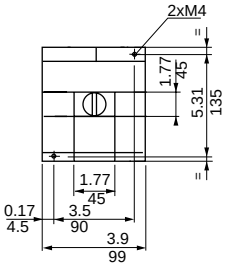
AC control circuit
Common side view



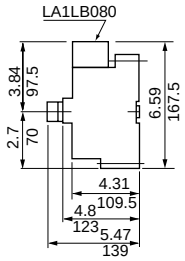
LD1LB030
+ LB1LB03P••

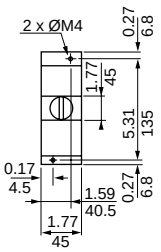


LD5LB130
+ LB1LB03P••.



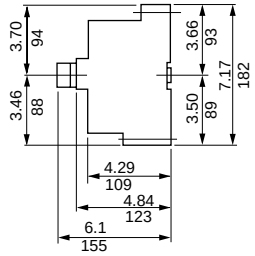
DC control circuit



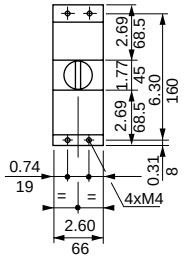


INTEGRAL 32 Non-Reversing and Reversing

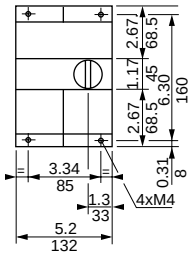
AC control circuit
Common side view



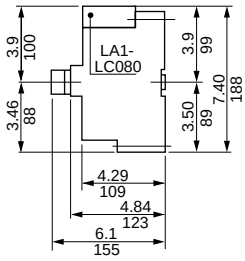
LD•LC030
+ LB•LC03M••



LD5LC030
+ LB•LC03M••



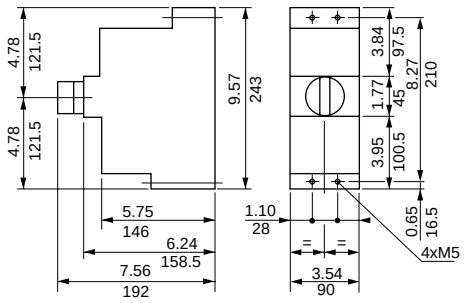
DC control circuit
LD•LC030 + LB•LC030M•• + LA1LC080



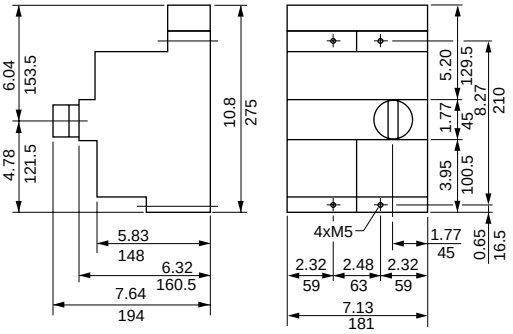
Dual Dimensions inches / mm

INTEGRAL 63 Non-Reversing and Reversing

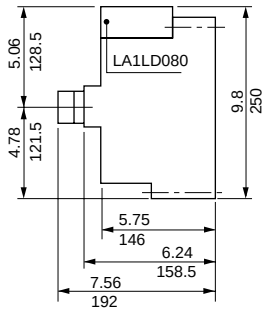
AC control circuit
Non-reversing, LD•LD030 + LB•LD03M••



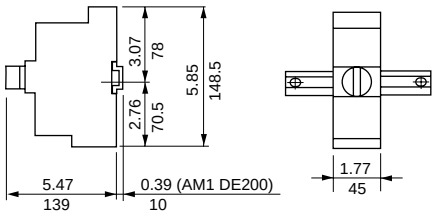
Reversing, LD5LD•30 + LB•LD03M••



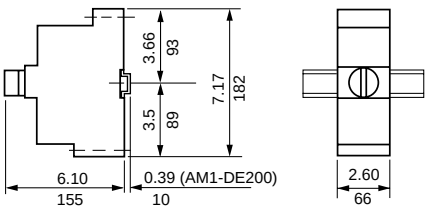
DC control circuit
LD•LD030 +
LB•LD030M•• + LA1D080



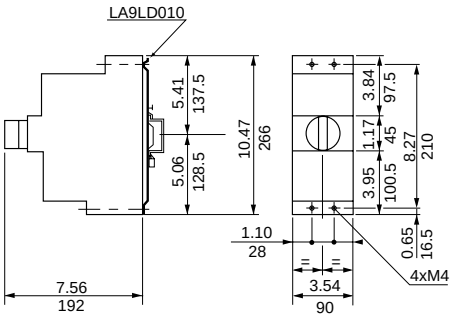
INTEGRAL 18
Mounting on 35 mm DIN rail



INTEGRAL 32
Mounting on 35 mm DIN rail



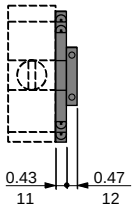
INTEGRAL 63
Mounting on 75 mm DIN rail



INTEGRAL™ Self-Protected Combination Motor Controllers
Dimensions

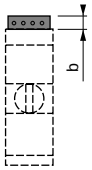
Auxiliary blocks
Mounting on INTEGRAL 18 self-protected CMCs

LA1B015/017/019
LA1LB001



LA1LB031
LA1LB0311

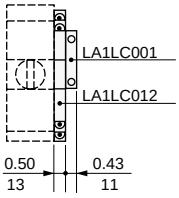
LA1LB034LA1LB080BD
LA1LB0341LA4D



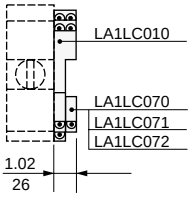
LA1LB080BD	b = 0.75 in (19 mm)
LA4DA, DE, DF, DT	b = 0.5 in (12 mm)
LA4DL, DM, DR, DW	b = 0.75 in (19 mm)

Auxiliary blocks
Mounting on INTEGRAL 32 and 63 self-protected CMCs

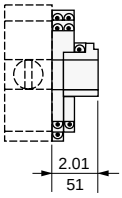
LA1LC012
LA1LC001



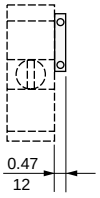
LA1LC010
LA1LC07•



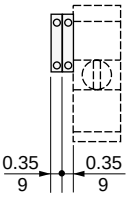
LA1LC052



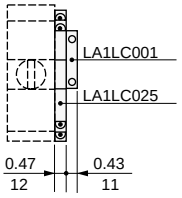
LA1LC020



LA1LC030
(1 or 2)



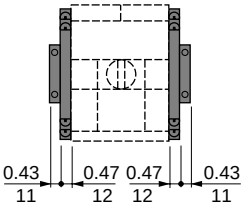
LA1LC025
LA1lC001



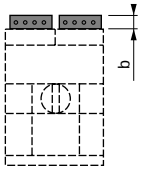
Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Auxiliary blocks
Mounting on INTEGRAL 18 self-protected CMCs

LA1B015/017/019
LA1LB021, LA1LB001



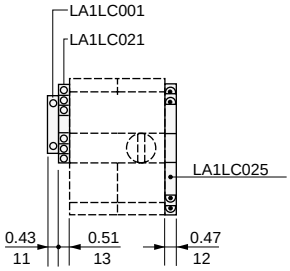
LA4D••



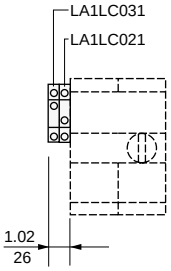
LA1LB080BD	b = 0.75 in (19 mm)
LA4DA, DE, DF, DT	b = 0.5 in (12 mm)
LA4DL, DM, DR, DW	b = 0.75 in (19 mm)

Auxiliary blocks
Mounting on INTEGRAL 32 and 63 self-protected CMCs

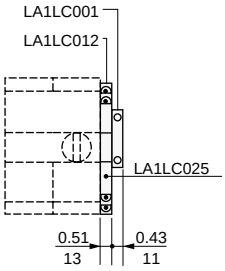
LA1LC021, LC025
LA1LC001



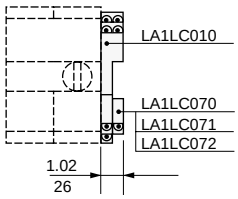
LA1LC031



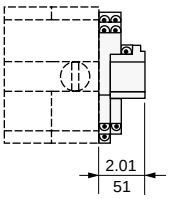
LA1LC012
LA1LC001



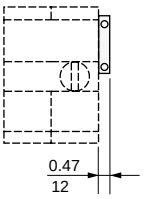
LA1LC010
LA1LC07••



LA1LC052



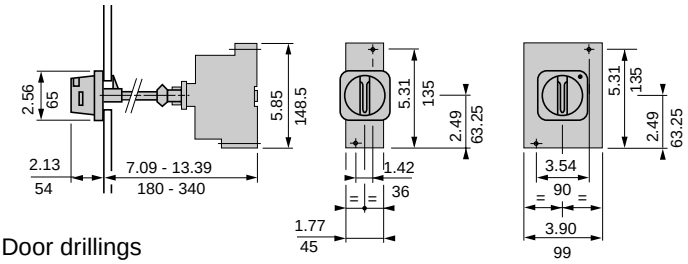
LA1LC020



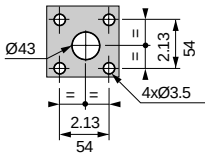
INTEGRAL 18

Adjustable door interlock mechanism LA9LB33•

For mounting on LD1LB030 + LB•LB03P••
LD5LB130 + LB•LB03P••

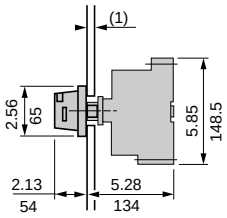


Door drillings



Non-adjustable door interlock mechanism LA9LB32•

For mounting on LD1LB030 + LB•LB03P••
LD5LB130 + LB•LB03P••



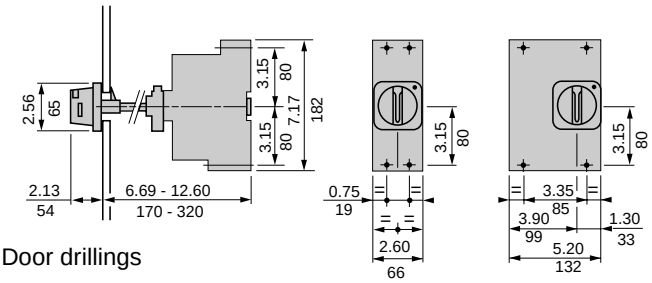
Dual Dimensions inches / mm

(1) Thickness: 0.2 in (5 mm) max

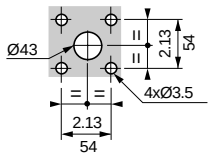
INTEGRAL 32

Adjustable door interlock mechanism LA9LC33• and LA9LC53•

For mounting on LD4LC•30, LD5LC•30

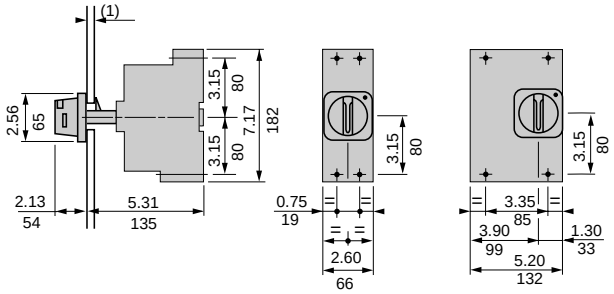


Door drillings



Non-adjustable door interlock mechanism LA9LC32• and LA9LC52•

For mounting on LD4LC•30 + LD5LC•30

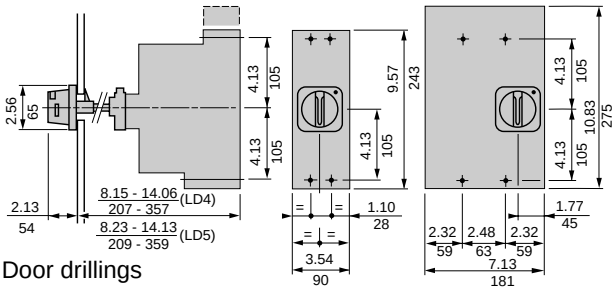


(1) Thickness: 0.2 in (5 mm) max

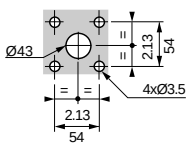
INTEGRAL 63

Adjustable door interlock mechanism LA9LC33• and LA9LC53•

For mounting on LD4LD•30, LD5LD•30

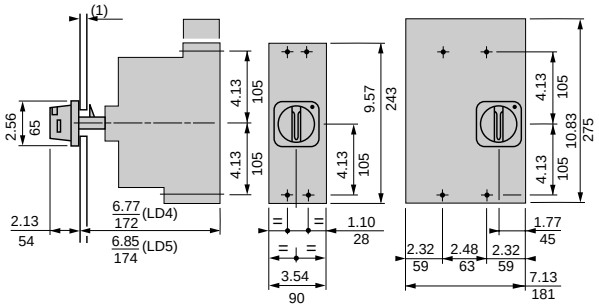


Door drillings



Non-adjustable door interlock mechanism LA9LC32• and LA9LC52•

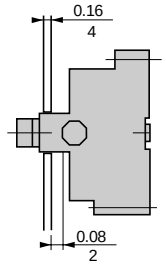
For mounting on LD4LC•30 + LD5LC•30

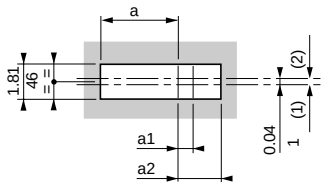


(1) Thickness: 0.2 in (5 mm) max

INTEGRAL™ Self-Protected Combination Motor Controllers
Dimensions

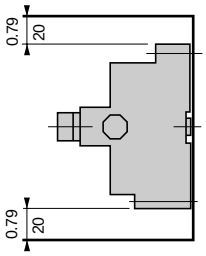
INTEGRAL 18 contactor breakers and reversing contactor breakers
Flush mounting





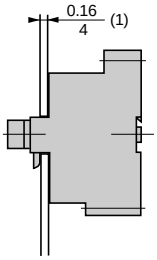
	a	a1	a2
LD1LB030	1.81/46	–	–
LD5LB130	3.94/100	–	–
LA1LB0••	–	0.53/13.5	–
2 x LA1LB0••	–	–	1.06/27
(1) Center of operating knob			
(2) Mounting center			

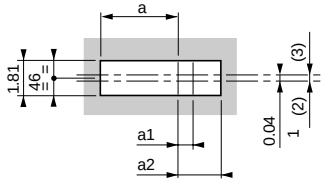
Safety clearance



Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

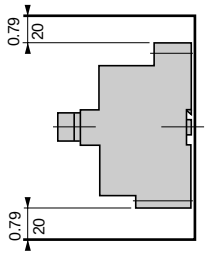
INTEGRAL 32 contactor breakers and reversing contactor breakers
Flush mounting



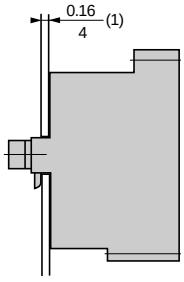


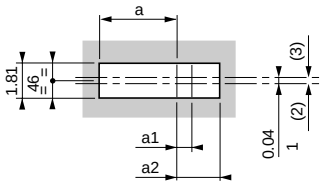
	a	a1	a2
LD1LC030	2.6/66	–	–
LD4LC•30	2.6/66	–	–
LD1LC040	3.35/85	–	–
LD4LC•40	3.35/85	–	–
LD5LC•30	4.8/122	–	–
LA1LC010	–	0.51/13	–
LA1LC012	–	0.51/13	–
LA1LC010 + LA1LC052•	–	–	2.01/51
LA1LC012 + LA1LC052•	–	–	2.01/51
(1) Maximum door thickness for interlocking by LD4 and LD5			
(2) Center of operating knob			
(2) Mounting center			

Safety clearance



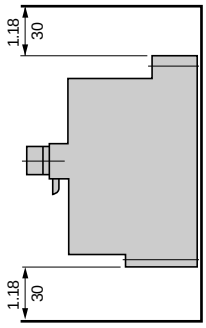
INTEGRAL 18 contactor breakers and reversing contactor breakers
Flush mounting



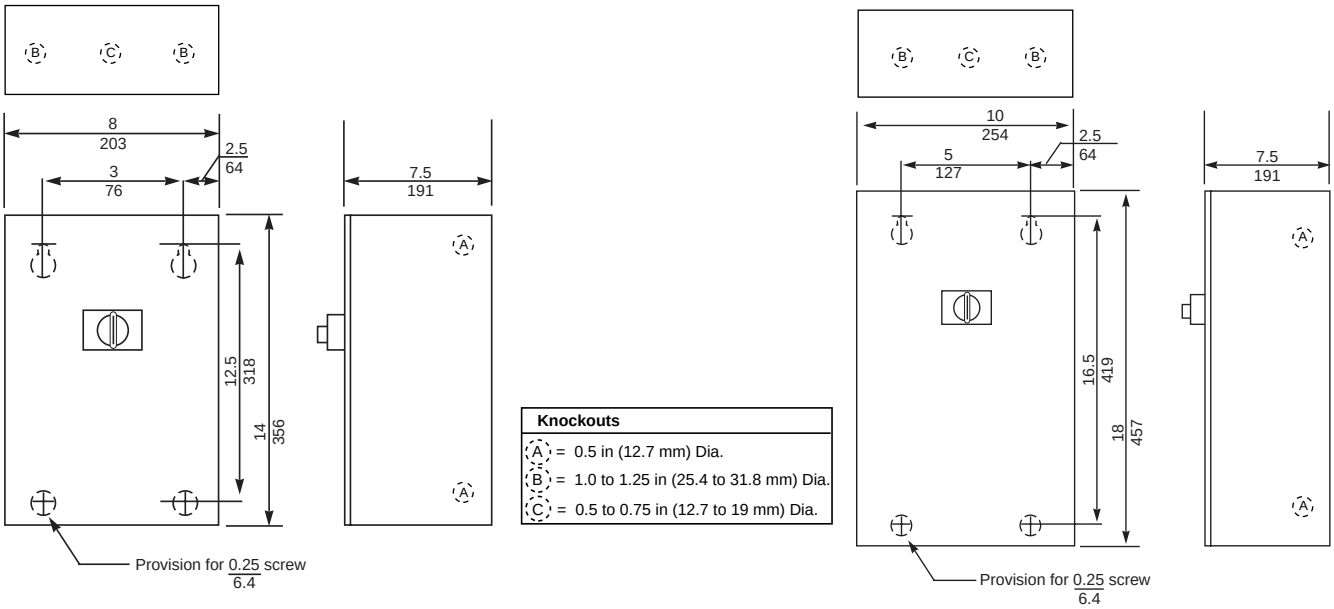


	a	a1	a2
LD1LD030	3.54/90	–	–
LD4LD•30	3.54/90	–	–
LD5LD•30	7.13/181	–	–
LA1LC010	–	0.51/13	–
LA1LC012	–	0.51/13	–
LA1LC010 + LA1LC052•	–	–	2.01/51
LA1LC012 + LA1LC052•	–	–	2.01/51
(1) Maximum door thickness for interlocking by LD4 and LD5			
(2) Center of operating knob			
(2) Mounting center			

Safety clearance



INTEGRAL Enclosures
Type 1

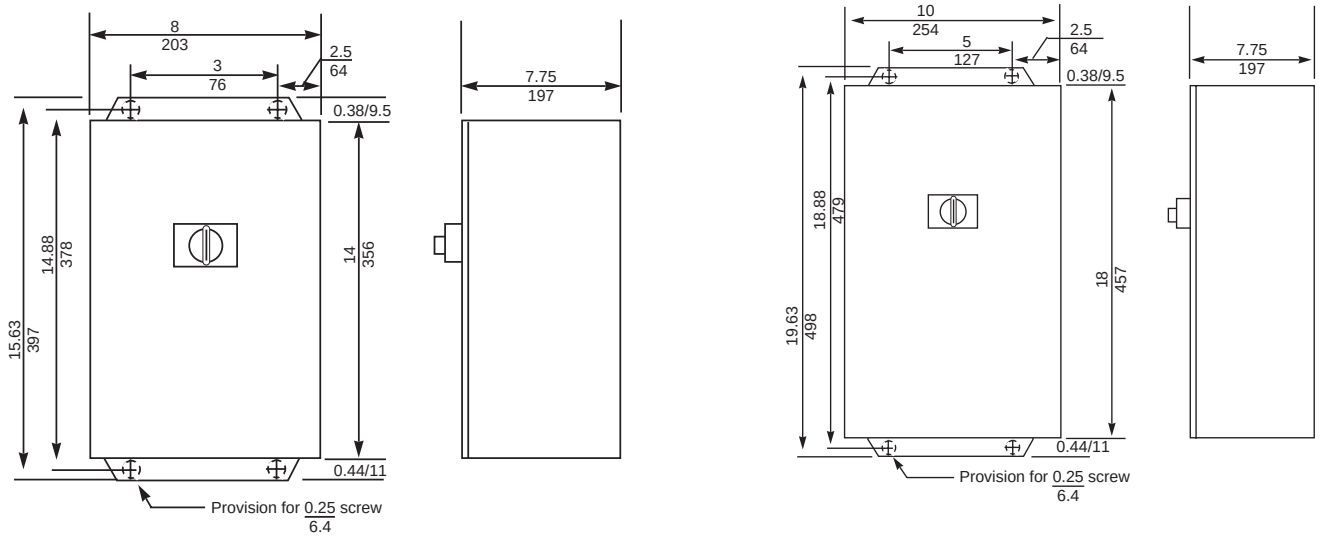


INTEGRAL 18 FVNR and FVR
INTEGRAL 32 FVNR and FVR

INTEGRAL 32 FVR
INTEGRAL 63 FVNR

Dual Dimensions inches / mm

Type 12



INTEGRAL 18 FVNR and FVR
INTEGRAL 32 FVNR

INTEGRAL 32 FVR
INTEGRAL 63 FVNR

Square D Company
8001 Highway 64 East
Knightdale, NC 27545 USA
(919) 266-3671
www.squared.com

Schneider Canada Inc.
19 Waterman Avenue,
M4B 1 Y2
Toronto, Ontario
(416) 752-8020
www.schneider.ca

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