



ENERGY AND AUTOMATION



# SHORTFORM CATALOGUE

2018-19

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## Lovato Electric.

### Where technology meets tradition.

Lovato Electric is a proud family owned business established in Bergamo, Italy in 1922: the starting point of a great industrial adventure.

Our family of products feature a full range of devices for a wide array of industry sectors:

Industrial Control, Power Factor Correction, Solar Energy, Power Generation and Energy Management.

We are proud to serve the UK market with a vast stockholding and UK starter assembly in Stourbridge, West Midlands for same day collection or next day delivery. We pride ourselves on excellent customer service and technical support.

### Sales, Technical Support & Customer Care

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## Motor Protection & Control



## Control & Signalling



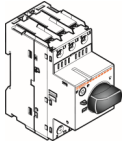
## Circuit Protection & Isolation



## Automation & Control

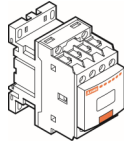


## Energy Management



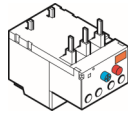
**2**

Motor Protection  
Circuit Breakers



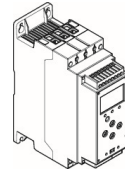
**6**

Contactors



**11**

Motor Protection  
Relays



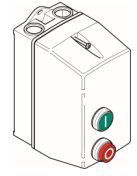
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Soft Starters



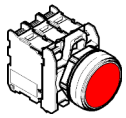
**13**

Variable Speed  
Drives



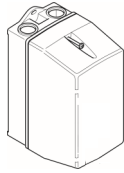
**14**

**L-STARTER**



**19**

Pushbutton &  
Selector Switches



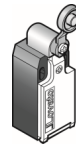
**27**

Control Stations  
& Enclosures



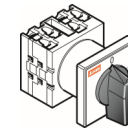
**28**

Signal Towers  
& Beacons



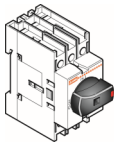
**30**

Limit, Micro &  
Foot Switches



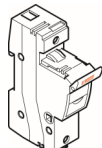
**31**

Rotary Cam  
Switches



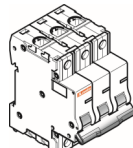
**32**

Switch  
Disconnectors



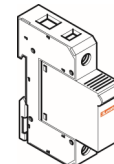
**38**

Fuse Holders  
& Fuses



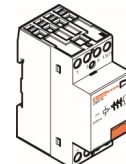
**39**

Miniature &  
Residual Circuit  
Breakers



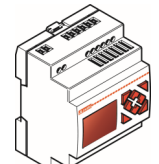
**42**

Surge Protection  
Devices



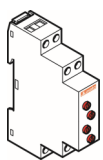
**43**

Modular  
Contactors



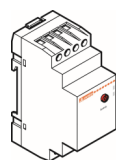
**44**

Micro PLC's



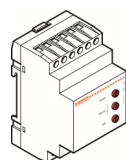
**45**

Time Relays



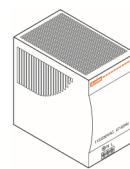
**46**

Protection  
Relays



**48**

Level Controls



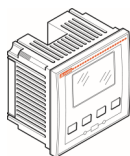
**50**

Switching Power  
Supplies



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Metering  
Instruments &  
Current  
Transformers



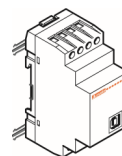
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Power Factor  
Controllers &  
Thyristor  
Modules



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Automatic  
Transfer Switch  
Controllers



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Expansion  
Modules



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Software &  
Applications

## SM1...Series



SM1P...



SM1R...

Order code	Thermal trip adjustment range [A]	Short circuit breaking capacity at 400V	
		I <sub>cu</sub> [kA]	I <sub>cs</sub> [kA]

### Push Button Control

SM1P 0016	0.1 - 0.16	100	100
SM1P 0025	0.16 - 0.25	100	100
SM1P 0040	0.25 - 0.4	100	100
SM1P 0063	0.4 - 0.63	100	100
SM1P 0100	0.63 - 1	100	100
SM1P 0160	1 - 1.6	100	100
SM1P 0250	1.6 - 2.5	100	100
SM1P 0400	2.5 - 4	100	100
SM1P 0650	4 - 6.5	100	100
SM1P 1000	6.3 - 10	100	100
SM1P 1400	9 - 14	25	12.5
SM1P 1800	13 - 18	25	12.5
SM1P 2300	17 - 23	15	5
SM1P 2500	20 - 25	15	5
SM1P 3200	24 - 32	10	5
SM1P 4000	30 - 40	10	5

### Rotary Knob Control

SM1R 0016	0.1 - 0.16	100	100
SM1R 0025	0.16 - 0.25	100	100
SM1R 0040	0.25 - 0.4	100	100
SM1R 0063	0.4 - 0.63	100	100
SM1R 0100	0.63 - 1	100	100
SM1R 0160	1 - 1.6	100	100
SM1R 0250	1.6 - 2.5	100	100
SM1R 0400	2.5 - 4	100	100
SM1R 0650	4 - 6.5	100	100
SM1R 1000	6.3 - 10	100	100
SM1R 1400	9 - 14	100	100
SM1R 1800	13 - 18	100	100
SM1R 2300	17 - 23	50	25
SM1R 2500	20 - 25	50	25
SM1R 3200	24 - 32	50	25
SM1R 4000	30 - 40	20	10

## SM1...Series Accessories



SM1X12...



SM1X13...



SM1X14...



SM1X16...



SM1X18200R



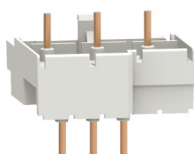
SM1X9032



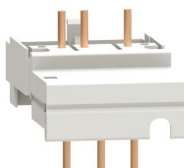
SM1X9030

Order Code	Description
<b>Add-on auxiliary contacts</b>	
SM1X11 20	Front mount 2NO
SM1X11 11	Front mount 1NO + 1NC
SM1X12 20	Side mount 2NO
SM1X12 11	Side mount 1NO + 1NC
SM1X12 02	Side mount 2NC
SM1X13 11	Side mounted contacts for thermal and magnetic tripping indication 1NO + 1NC
SM1X13 11M	Side mounted contacts for magnetic tripping indication 1NO + 1NC
<b>Undervoltage trip releases</b>	
SM1X14 110	110VAC 50/60Hz
SM1X14 230	230VAC 50/60Hz
SM1X14 400	400VAC 50/60Hz
With early-make contacts also available. Please refer to the motor protection circuit breaker section within the general catalogue	
<b>Shunt trip releases</b>	
SM1X16 024	24VAC 50/60Hz
SM1X16 110	110VAC 50/60Hz
SM1X16 230	230VAC 50/60Hz
SM1X16 400	400VAC 50/60Hz
<b>Adjuster sealing kit</b>	
SM1X18 12	With wire and lead included
<b>IP65 (4X) padlockable door coupling handle for SM1R...</b>	
SM1X18 200R	Red/yellow complete with rod length 200mm
SM1X18B 200R	Black complete with rod length 200mm
SM1X18 S	Support for rod > 145mm
<b>Phase separation barriers for SM1R...</b>	
SM1X9000R	For Type E as per UL508
<b>Three-phase connection busbars 45mm spacing</b>	
11SM90 32	For 2 breakers
11SM90 33	For 3 breakers
11SM90 34	For 4 breakers
11SM90 35	For 5 breakers
<b>Three-phase connection busbars 54mm spacing</b>	
11SM90 42	For 2 breakers
11SM90 43	For 3 breakers
11SM90 44	For 4 breakers
11SM90 45	For 5 breakers
<b>Terminal block for busbar supply</b>	
11SMX90 30	For all busbar types
SM1X90 50	For all busbar types. Type E as per UL508

## SM1...Series Accessories



SM1X30...



SM1X31...  
SM1X32...



SM1Z1702P



SM1Z1705P



11SMX9010



BFX8901

Order Code	Description
<b>Rigid SM1 breaker-contactor connections</b>	
SM1X30 40P	For motor protection breaker SM1P... with BG... mini-contactors
SM1X31 41P	For motor protection breaker SM1P... with BF09..25A contactors
SM1X32 41P	For motor protection breaker SM1P... with BF26..38A contactors
SM1X30 40R	For motor protection breaker SM1R... with BG... mini-contactors
SM1X31 41R	For motor protection breaker SM1R... with BF09..25A contactors
SM1X31 42R	For motor protection breaker SM1R... with BF09..25D and BF09..25L
SM1X32 41R	For motor protection breaker SM1R... with contactor BF26..38A
<b>Surface mount enclosures IP65 for SM1P...</b>	
SM1Z17 01P	Width 80mm retrofit for LMZ...
SM1Z17 02P	Width 80mm. With button for emergency stop
SM1Z17 11P	Extra width 100mm
SM1Z17 12P	Width 100mm. With button for emergency stop
<b>Flush mount enclosure IP65 for SM1P</b>	
SM1Z17 05P	Rubber membrane width 87mm
<b>Accessories and spare parts for SM1Z..P enclosures</b>	
SM1X17 40P	Emergency stop button. IP65 (4X)
SM1X17 45P	Rubber membrane insert. IP65 (4X)
SM1X17 46P	Lockable block. IP65 (4X)
<b>Starter assembly adapter plates</b>	
11SMX90 10	Adapter mounting plate for direct starter for breaker SM1... and contactors BG..., BF09A...BF38A
11SMX90 12	Adapter mounting plate for reversing switch for breaker for motor protection SM1... and contactors BG..., BF09A...BF38A
11SMX90 14	Adapter mounting plate for starter star-delta for motor protection breaker SM1... and contactors BF09A...BF38A
11SMX90 18	35mm rail for passage of wires underneath to contactor; for SMX9014
11SMX90 19	DIN rail extension 35mm
<b>Safety cover</b>	
11SMX90 31	For unused terminals
<b>Accessories for screw-fixing motor protection</b>	
SM1X89 02	Metal brackets for fixing SM1...motor protection breakers with screws
BFX89 01	Universal plastic base for screw-fixing SM1...motor protection breakers

## SM2... and SM3... Series



SM2R...

SM3R...

Order code	Thermal trip adjustment range [A]	Short circuit breaking capacity at 400V	
		I <sub>cu</sub> [kA]	I <sub>cs</sub> [kA]

Rotary motor protection circuit breakers up to 63A

SM2R 5000	34 - 50	50	50
SM2R 6300	45 - 63	50	50

Rotary motor protection circuit breakers up to 100A

SM3R 7500	55 - 75	50	38
SM3R 9000	70 - 90	50	38
SM3R 9900	80 - 100	50	38

## SM2... and SM3... Series Accessories



SM2X11...



SM2X12...



SM2X14...



SM2X16...



SM2X18...

Order Code	Description
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Add-on auxiliary contacts

SM2X11 20	Front mount 2NO
SM2X11 11	Front mount 1NO + 1NC
SM2X11 02	Front mount 2NC
SM2X12 20	Side mount 2NO
SM2X12 11	Side mount 1NO + 1NC
SM2X12 02	Side mount 2NC
SM2X13 11	Side mounted indicator contacts for thermal and magnetic tripping 1NO + 1NC

Undervoltage trip releases

SM2X14 230	230VAC 50/60Hz
SM2X14 400	400VAC 50/60Hz
SM2X14 440	440VAC 50/60Hz

Shunt trip releases

SM2X16 024	24VAC 50/60Hz
SM2X16 110	110VAC 50/60Hz
SM2X16 230	230VAC 50/60Hz
SM2X16 400	400VAC 50/60Hz

Padlockable IP65 (4X) door coupling handle

SM2X18 200R	Red/yellow complete with rod length 200mm
SM2X18 B200R	Black complete with rod length 200mm

Phase separation barriers for SM3R...

SM3X90 00R	For Type E as per UL508
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## BG...and BF...Series



Mini-contactors  
BG09...BG12



Size 1 Contactor  
BF09...BF25

Ie (AC3) ≤440V at ≤55°C [A]	Maximum EC power at ≤55°C (AC3) 400V [kW]	IEC operating current Ith (AC1) ≤40°C [A]	Auxiliary contacts		Coil voltage	Three-pole contactors order code	Four-pole contactors order code <i>excludes auxiliary contacts</i>
			NO	NC			
9	4	20	-	1	24VAC	11 BG09 01 A024	11 BG09 T4 A024 11 BG09 T4 A110 11 BG09 T4 A230 11 BG09 T4 A400 11 BG09 T4 D024
			-	1	110VAC	11 BG09 01 A110	
			-	1	230VAC	11 BG09 01 A230	
			-	1	400VAC	11 BG09 01 A400	
			-	1	24VDC	11 BG09 01 D024	
9	4	20	1	-	24VAC	11 BG09 10 A024	4 pole contactor DOES NOT include integrated auxiliary contact
			1	-	110VAC	11 BG09 10 A110	
			1	-	230VAC	11 BG09 10 A230	
			1	-	400VAC	11 BG09 10 A400	
			1	-	24VDC	11 BG09 10 D024	
12	5.7	20	-	1	24VAC	11 BG12 01 A024	-
			-	1	110VAC	11 BG12 01 A110	
			-	1	230VAC	11 BG12 01 A230	
			-	1	400VAC	11 BG12 01 A400	
			-	1	24VDC	11 BG12 01 D024	
12	5.7	20	1	-	24VAC	11 BG12 10 A024	-
			1	-	110VAC	11 BG12 10 A110	
			1	-	230VAC	11 BG12 10 A230	
			1	-	400VAC	11 BG12 10 A400	
			1	-	24VDC	11 BG12 10 D024	
9	4.2	25	-	1	24VAC	BF09 01 A024	BF09 T4 A024 BF09 T4 A110 BF09 T4 A230 BF09 T4 A400 BF09 T4 D024
			-	1	110VAC	BF09 01 A110	
			-	1	230VAC	BF09 01 A230	
			-	1	400VAC	BF09 01 A400	
			-	1	24VDC	BF09 01 D024	
9	4.2	25	1	-	24VAC	BF09 10 A024	4 pole contactor DOES NOT include integrated auxiliary contact
			1	-	110VAC	BF09 10 A110	
			1	-	230VAC	BF09 10 A230	
			1	-	400VAC	BF09 10 A400	
			1	-	24VDC	BF09 10 D024	
12	5.7	28	-	1	24VAC	BF12 01 A024	BF12 T4 A024 BF12 T4 A110 BF12 T4 A230 BF12 T4 A400 BF12 T4 D024
			-	1	110VAC	BF12 01 A110	
			-	1	230VAC	BF12 01 A230	
			-	1	400VAC	BF12 01 A400	
			-	1	24VDC	BF12 01 D024	
12	5.7	28	1	-	24VAC	BF12 10 A024	4 pole contactor DOES NOT include integrated auxiliary contact
			1	-	110VAC	BF12 10 A110	
			1	-	230VAC	BF12 10 A230	
			1	-	400VAC	BF12 10 A400	
			1	-	24VDC	BF12 10 D024	
18	7.5	32	-	1	24VAC	BF18 01 A024	BF18 T4 A024 BF18 T4 A110 BF18 T4 A230 BF18 T4 A400 BF18 T4 D024
			-	1	110VAC	BF18 01 A110	
			-	1	230VAC	BF18 01 A230	
			-	1	400VAC	BF18 01 A400	
			-	1	24VDC	BF18 01 D024	
18	7.5	32	1	-	24VAC	BF18 10 A024	4 pole contactor DOES NOT include integrated auxiliary contact
			1	-	110VAC	BF18 10 A110	
			1	-	230VAC	BF18 10 A230	
			1	-	400VAC	BF18 10 A400	
			1	-	24VDC	BF18 10 D024	
25	12.5	32	-	1	24VAC	BF25 01 A024	-
			-	1	110VAC	BF25 01 A110	
			-	1	230VAC	BF25 01 A230	
			-	1	400VAC	BF25 01 A400	
			-	1	24VDC	BF25 01 D024	
25	12.5	32	1	-	24VAC	BF25 10 A024	-
			1	-	110VAC	BF25 10 A110	
			1	-	230VAC	BF25 10 A230	
			1	-	400VAC	BF25 10 A400	
			1	-	24VDC	BF25 10 D024	



## BF...Series

I <sub>e</sub> (AC3) ≤440V at ≤55°C [A]	Maximum EC power at ≤55°C (AC3) 400V [kW]	IEC operating current I <sub>th</sub> (AC1) ≤40°C [A]	Auxiliary contacts		Coil voltage	Three-pole contactors order code	Four-pole contactors order code
			NO	NC			
26	13	45	-	-	24VAC	BF26 00 A024	BF26 T4 A024
			-	-	110VAC	BF26 00 A110	BF26 T4 A110
			-	-	230VAC	BF26 00 A230	BF26 T4 A230
			-	-	400VAC	BF26 00 A400	BF26 T4 A400
			-	-	24VDC	BF26 00 D024	BF26 T4 D024
32	16	56	-	-	24VAC	BF32 00 A024	-
			-	-	110VAC	BF32 00 A110	-
			-	-	230VAC	BF32 00 A230	-
			-	-	400VAC	BF32 00 A400	-
			-	-	24VDC	BF32 00 D024	-
38	18.5	56 (60)	-	-	24VAC	BF38 00 A024	BF38 T4 A024
			-	-	110VAC	BF38 00 A110	BF38 T4 A110
			-	-	230VAC	BF38 00 A230	BF38 T4 A230
			-	-	400VAC	BF38 00 A400	BF38 T4 A400
			-	-	24VDC	BF38 00 D024	BF38 T4 D024
40	18.5	70	-	-	24VAC	BF40 00 A024	BF40 T4 A024
			-	-	110VAC	BF40 00 A110	BF40 T4 A110
			-	-	230VAC	BF40 00 A230	BF40 T4 A230
			-	-	400VAC	BF40 00 A400	BF40 T4 A400
			-	-	24VAC/DC	BF40 00 E024	-
50	22	90	-	-	24VAC	BF50 00 A024	BF50 T4 A024
			-	-	110VAC	BF50 00 A110	BF50 T4 A110
			-	-	230VAC	BF50 00 A230	BF50 T4 A230
			-	-	400VAC	BF50 00 A400	BF50 T4 A400
			-	-	24VAC/DC	BF50 00 E024	-
65	30	100	-	-	24VAC	BF65 00 A024	BF65 T4 A024
			-	-	110VAC	BF65 00 A110	BF65 T4 A110
			-	-	230VAC	BF65 00 A230	BF65 T4 A230
			-	-	400VAC	BF65 00 A400	BF65 T4 A400
			-	-	24VAC/DC	BF65 00 E024	BF65 T4 E024
80	45	80	-	-	24VAC	BF80 00 A024	BF80 T4 A024
			-	-	110VAC	BF80 00 A110	BF80 T4 A110
			-	-	230VAC	BF80 00 A230	BF80 T4 A230
			-	-	400VAC	BF80 00 A400	BF80 T4 A400
			-	-	24VAC/DC	BF80 00 E024	BF80 T4 E024
95	50	125	-	-	24VAC	11 BF95 00 24	-
			-	-	110VAC	11 BF95 00 110	-
			-	-	230VAC	11 BF95 00 230	-
			-	-	400VAC	11 BF95 00 400	-
			-	-	24VDC	11 BF95 C00 24	-
110	61	125	-	-	24VAC	11 BF110 00 24	-
			-	-	110VAC	11 BF110 00 110	-
			-	-	230VAC	11 BF110 00 230	-
			-	-	400VAC	11 BF110 00 400	-
			-	-	24VDC	11 BF110 C00 24	-



Size 2 Contactor  
BF26...BF38



Size 3 Contactor  
BF40...BF80



Size 4 Contactor  
BF95...BF110



For Capacitor switching contactors please see Power Factor Controllers section

## BG...Series Accessories



11 BGX10... (02,22,20)



11 BGX50 00

Order Code	Description
Auxiliary contacts. Screw terminals	
11 BGX10 02	2NC
11 BGX10 11	1NO + 1NC
11 BGX10 20	2NO
11 BGX10 04	4NC
11 BGX10 13	1NO + 3NC
11 BGX10 22	2NO + 2NC
11 BGX10 31	3NO + 1NC
11 BGX10 40	4NO
Mechanical interlock	
11 BGX50 00	For BG...A and BG...D
Quick connect surge suppressors	
11 BGX77 048	≤48VAC/DC (Varistor)
11 BGX77 125	48...125VAC/DC (Varistor)
11 BGX77 240	125...240VAC/DC (Varistor)

## BF...Series Accessories



BFX10...



BFX10...



BFX12...



11 G485...  
11 G486...

Order Code	Description
Auxiliary contacts with front centre mounting. Screw terminals	
11 BFX10 02	2NC
11 BFX10 11	1NO + 1NC
11 BFX10 20	2NO
11 BFX10 04	4NC
11 BFX10 13	1NO + 3NC
11 BFX10 22	2NO + 2NC
11 BFX10 31	3NO + 1NC
11 BFX10 40	4NO
Auxiliary contacts with low side mounting. Screw terminals	
BFX12 02	2NC for BF09...BF80 only
BFX12 11	1NO + 1NC for BF09...BF80 only
BFX12 20	2NO for BF09...BF80 only
Delayed auxiliary contacts 1NO + 1NC (pneumatic operation) on energisation for front centre mounting. Screw terminals	
11 G485 3	3s
11 G485 6	6s
11 G485 15	15s
11 G485 30	30s
11 G485 60	60s
11 G485 120	120s
Delayed auxiliary contacts 1NO + 1NC (pneumatic operation) on de-energisation for front center mounting. Screw terminals	
11 G486 3	3s
11 G486 6	6s
11 G486 15	15s
11 G486 30	30s
11 G486 60	60s
11 G486 120	120s
11 G487	70ms

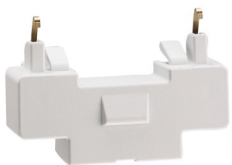
## BF...Series Accessories



**BFX 50 00**  
**BFX 53 00**



**BFX 50 01**  
**BFX 53 01**



**BFX 77...**



**BFX 31...**  
**BFX 32...**



**11 BA 135**  
**11 BA 235**



**11 BA 435**



**11 G 271**

Order Code	Description
<b>Mechanical interlock</b>	
<b>BFX 50 00</b>	Side mount for BF00, BF09...BF38
<b>BFX 50 01</b>	Side mount with 2NC contacts for BF00, BF09...BF38
<b>BFX 50 02</b>	Front mount, low profile for BF00, BF09...BF38
<b>BFX 53 00</b>	Side mount for BF40...BF80
<b>BFX 53 01</b>	Side mount with 2NC contacts for BF40...BF80
<b>BFX 53 03</b>	Front mount for BF40...BF80
<b>Quick connect surge suppressors for BF00A, BF09A...BF80A contactors</b>	
<b>BFX 77 048</b>	≤48VAC/DC (Varistor)
<b>BFX 77 125</b>	48...125VAC/DC (Varistor)
<b>BFX 77 240</b>	125...240VAC/DC (Varistor)
<b>Rigid connecting kits for three-pole reversing contactor assembly</b>	
<b>BFX 31 01</b>	For contactors BF09...BF25 side by side with BFX 50 02 and BFX 50 03 mechanical interlock
<b>BFX 31 02</b>	For contactors BF09...BF25 side by side with BFX 50 00 and BFX 50 01 mechanical interlock
<b>BFX 32 01</b>	For contactors BF26...BF38 side by side with BFX 50... mechanical interlock
<b>Rigid connecting kits for star-delta starters</b>	
<b>BFX 31 31</b>	For contactors BF09...BF25
<b>BFX 32 31</b>	For contactors BF26...BF38
<b>BFX 32 32</b>	For contactors BF26...BF38 (L/Δ) BF09...BF25 (λ)
<b>Paralleling links</b>	
<b>11 BA 135</b>	2 poles for contactors BF09...BF25 types
<b>11 BA 235</b>	2 poles for contactors BF26...BF38 types
<b>11 BA 435</b>	3 poles for contactors BF95...BF110 types
<b>One-pole enlarged terminals</b>	
<b>11 G 231</b>	1 x 6mm <sup>2</sup> for contactors BF09...BF25 types
<b>11 G 232</b>	1 x 16mm <sup>2</sup> for contactors BF26...BF38 types
<b>Three-pole enlarged terminals</b>	
<b>11 G 271</b>	1 x 50mm <sup>2</sup> for contactors BF95...BF110 types

## Empty Enclosures



**M 0N**



**M 3N**

Order code	Compatible contactor	Compatible thermal relay	Dimensions [mm]
<b>M 0N</b>	BG06, BG09, BG12	RF9...	184 x 88 x 119.5
<b>M 1N</b>	BF09A, BF12A, BF18A	RF38...	202 x 88 x 134.5
<b>M 2N</b>	BF25A, BF26A, BF32A	RF38...	234 x 110 x 148.5
<b>M 24N</b> (Inc mount plate)	ALL ABOVE	-	210 x 175 x 98.5
<b>M 25N</b> (Inc mount plate)	ALL ABOVE + BF38	RF38...	210 x 175 x 158.5
<b>M 3N</b>	BF40A, BF50, BF65, BF80, BF95, BF110	RF82... 11RF95...	280 x 220 x 170
<b>Metal mounting plate for M3N enclosure</b>			
<b>MX 30</b>	-	-	185W x 240H

## B...Series Maxi Contactors



B115...B630



B1250...B16

I <sub>e</sub> (AC3) ≤440V at ≤55°C [A]	Maximum EC power at ≤55°C (AC3) 400V [kW]	IEC operating current I <sub>th</sub> (AC1) ≤40°C [A]	Auxiliary contacts		Coil voltage AC/DC	Three-pole contactors	Four-pole contactors
			NO	NC		order code	order code
110	61	160	-	-	24V	11 B115 00 24	11 B115 4 00 24
			-	-	110V	11 B115 00 110	11 B115 4 00 110
			-	-	230V	11 B115 00 220	11 B115 4 00 220
			-	-	400V	11 B115 00 380	11 B115 4 00 380
150	80	250	-	-	24V	11 B145 00 24	11 B145 4 00 24
			-	-	110V	11 B145 00 110	11 B145 4 00 110
			-	-	230V	11 B145 00 220	11 B145 4 00 220
			-	-	400V	11 B145 00 380	11 B145 4 00 380
185	100	275	-	-	24V	11 B180 00 24	11 B180 4 00 24
			-	-	110V	11 B180 00 110	11 B180 4 00 110
			-	-	230V	11 B180 00 220	11 B180 4 00 220
			-	-	400V	11 B180 00 380	11 B180 4 00 380
265	140	350	-	-	24V	11 B250 00 24	11 B250 4 00 24
			-	-	110V	11 B250 00 110	11 B250 4 00 110
			-	-	230V	11 B250 00 220	11 B250 4 00 220
			-	-	400V	11 B250 00 380	11 B250 4 00 380
320	170	450	-	-	24V	11 B310 00 24	11 B310 4 00 24
			-	-	110V	11 B310 00 110	11 B310 4 00 110
			-	-	230V	11 B310 00 220	11 B310 4 00 220
			-	-	400V	11 B310 00 380	11 B310 4 00 380
420	225	550	-	-	24V	11 B400 00 24	11 B400 4 00 24
			-	-	110V	11 B400 00 110	11 B400 4 00 110
			-	-	230V	11 B400 00 220	11 B400 4 00 220
			-	-	400V	11 B400 00 380	11 B400 4 00 380
520	290	700	-	-	110V	11 B500 00 110	11 B500 4 00 110
			-	-	230V	11 B500 00 220	11 B500 4 00 220
			-	-	400V	11 B500 00 380	11 B500 4 00 380
630	335	800	-	-	110V	11 B630 00 110	11 B630 4 00 110
			-	-	230V	11 B630 00 220	11 B630 4 00 220
			-	-	400V	11 B630 00 380	11 B630 4 00 380
-	For AC1/ Resistive duties only	1000	-	-	110V	11 B630 1000 00 110	11 B630 1000 4 00 110
-			-	-	230V	11 B630 1000 00 220	11 B630 1000 4 00 220
-			-	-	400V	11 B630 1000 00 380	11 B630 1000 4 00 380
-	For AC1/ Resistive	1250	-	-	110V*	11 B1250 24 110	11 B1250 4 24 110
-			-	-	230V*	11 B1250 24 220	11 B1250 4 24 220
-	For AC1/ Resistive	1600	-	-	110V*	11 B1600 24 110	11 B1600 4 24 110
-			-	-	230V*	11 B1600 24 220	11 B1600 4 24 220

\*Only available in AC

## B...Series Accessories



11 G350 - 11 G354



11 BA1546 - 11 BA1796

Order Code	Description
Auxiliary contacts. Faston terminals. Side mounting	
11 G350	2NO + 1NC or 1NO + 2NC reversible
11 G354	1NO + 1NC
Mechanical interlock	
11 G355	Side by side
Up to B630...Refer to general catalogue for larger sizes	
Power terminal protection	
11 G360	For contactor B115
11 G361	For contactors B145-B180
11 G363	For contactors B250-B310-B400
Coil assembly (Coil, rectifier and coil protection)	
11 BA1546	B115-B145-B180
11 BA1671	B250-B310-B400
11 BA1796	B500-B630-B630 1000, B1250-B1600

Add coil voltage digit - 24/110/220/380

For more information on these products and others within the range, please refer to the general catalogue

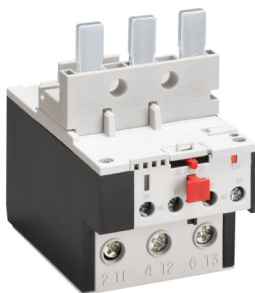
## Thermal Overload Relays



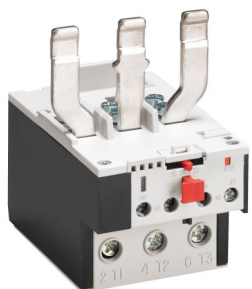
RF9...



RF38...



RF82...



11 RF95 3...

Order code	Adjustment range [A]	Three Phase Motor at 400V DOL [kW]	Three Phase Motor at 400V Star Delta [kW]
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RF9 overload relay for use with BG...mini contactors

RF9 1	0.6 - 1	0.37	-
RF9 1V5	0.9 - 1.5	0.55	-
RF9 2V3	1.4 - 2.3	0.75	-
RF9 33	2 - 3.3	1.1	-
RF9 5	3 - 5	1.5	-
RF9 75	4.5 - 7.5	2.2	-
RF9 10	6 - 10	4.0	-
RF9 15	9 - 15	5.5	-

RF38 overload relay for use with BF09 - BF38 contactors

RF38 0100	0.63 - 1	0.25	-
RF38 0160	1 - 1.6	0.55	-
RF38 0250	1.6 - 2.5	0.75	-
RF38 0400	2.5 - 4	1.5	2.2 - 3
RF38 0650	4 - 6.5	2.2	4
RF38 1000	6.3 - 10	4	5.5 - 7.5
RF38 1400	9 - 14	5.5	11
RF38 1800	13 - 18	7.5	15
RF38 2300	17 - 23	11	18.5
RF38 2500	20 - 25	11	22
RF38 3200	24 - 32	15	30
RF38 3800	32 - 38	18.5	30

RF82 overload relay for use with BF40 - BF80 contactors. Manual resetting

RF82 3300	20 - 33	15	22
RF82 4200	28 - 42	18.5	30
RF82 5000	35 - 50	22	45
RF82 6500	46 - 65	30	55
RF82 8200	60 - 82	37	-

11RF95 overload relay for use with 11BF95 - 11BF110 contactors. Manual resetting

11 RF95 3 82	60 - 82	37	75
11 RF95 3 95	70 - 95	45	-
11 RF95 3 110	90 - 110	55	-

For higher ratings, refer to the general catalogue

## Thermal Overload Relay Accessories



RFX38 04

Order Code	Description
	Independent mounting. Screw fixing or 35mm DIN rail (IEC/EN60715) mounting
RFX38 04	RF...38
11 G270	RF...82 - RF...95

For more information on these products and others within the range, please refer to the general catalogue

## ADXL Soft Starters



ADXL 0030...  
ADXL 0060...



ADXL 0075...  
ADXL 0115...



ADXL 0135...  
ADXL 0162...



ADXL 0195...  
ADXL 0320...

Order code	IEC rated starter current I <sub>e</sub> at 400V [A]	Motor rated power ≤40°C at 400V [kW] [HP]	
------------	--	---	--

For standard and heavy-duty applications. With built-in bypass relay. 100...240VAC auxiliary power supply. Start control from dry contact

ADXL 0030 600	15 - 30	7.5 - 15	15
ADXL 0045 600	23 - 45	11 - 22	25
ADXL 0060 600	30 - 60	15 - 30	30
ADXL 0075 600	38 - 75	18.5 - 37	40
ADXL 0085 600	43 - 85	22.5 - 45	50
ADXL 0115 600	58 - 115	27.5 - 55	60
ADXL 0135 600	68 - 135	37.5 - 75	75
ADXL 0162 600	81 - 162	45 - 90	75
ADXL 0195 600	98 - 195	55 - 110	100
ADXL 0250 600	125 - 250	66 - 132	150
ADXL 0320 600	160 - 320	80 - 160	200

## Accessories



CX 01



EXC 1042

Order Code	Description
CX 01	USB connection dongle PC ↔ ADXL with optical connector for programming, data download, diagnostics, and firmware update
CX 02	Wi-fi connection dongle PC ↔ ADXL for data download, programming, diagnostics, and cloning
EXC RDU1	Remote keypad, LCD display with touchscreen, 128 x 112 pixel, IP65 protection
EXC 1042	RS485 communication board
EXC CON 1	RS485/Ethernet converter, 12...48VDC, including DIN mounting guide kit
EXC M3G 01	RS485 gateway, 3G modem, 9.5...27VAC/9.5...35VDC, including antenna and programming cable
EXP80 03	DIN guide mount kit for ADXL0030...ADXL0115
EXP80 04	Fan for ADXL0030...ADXL0115 (codes ADXL0075...ADXL0115 max. of two EXP80 04 fans)

## ADXC Soft Starters



ADXC 012...ADXC 032

Order code	IEC rated starter current I <sub>e</sub> [A]	Motor rated power ≤40°C [kW] [UL/CSA HP]	
------------	--	--	--

With built-in bypass relay. Three-phase 400VAC motor control. Input voltage L1-L2-L3 220...400VAC. Start command 110...400VAC (A1-A2 terminals)

ADXC 012 400	12	5.5	5
ADXC 016 400	16	7.5	7.5
ADXC 025 400	25	11	10
ADXC 032 400	32	15	15
ADXC 037 400	37	18.5	20
ADXC 045 400	45	22	25

## Three-Phase Variable Speed Drives



VLB3...

Order code	Heavy Duty		Standard Duty	
	Output current [A]	3-phase motor power at 400VAC [kW]	Output current [A]	3-phase motor power at 400VAC [kW]

Three-phase supply 400...480VAC 50/60Hz. Three-phase motor output 480VAC max. Built-in EMC suppressor. **Built-in display and RS485 communication port**

VLB3 0004 A480	1.3	0.4	1.5	0.75
VLB3 0007 A480	2.4	0.75	2.7	1.5
VLB3 0015 A480	3.9	1.5	4.5	2.2
VLB3 0022 A480	5.6	2.2	6.4	4
VLB3 0040 A480	9.5	4	10.9	5.5
VLB3 0055 A480	13	5.5	15	7.5
VLB3 0075 A480	17	7.5	19.6	11
VLB3 0110 A480	23.3	11	27.1	15
VLB3 0150 A480	32	15	36.9	18.5
VLB3 0185 A480	40	18.5	46.1	22
VLB3 0220 A480	47	22	54.2	30
VLB3 0300 A480	66	30	76.1	37

Available in sizes up to 90kW (standard duty). Please refer to general catalogue

## Accessories



VLBX C01



VLBX C02



VLBX L...

Order Code	Description
VLBX C01	Display and keyboard
VLBX P01	Door-mount installation
VLBX C02	USB communication module
VLBX C03	Wi-fi communication module
VLBX SM	S.T.O (Safe torque off) module
VLBX L01	Logic unit with can OPEN
VLBX L02	Logic unit with ProfiBUS
VLBX L03	Logic unit with Profinet (available upon request)
VLBX L04	Logic unit with Ethercat (available upon request)
VLBX L06	Logic unit with Modbus RTU (available upon request)

## Single-Phase Variable Speed Drives

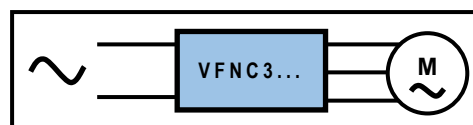


VFNC3S...

Order code	Output current [A]	3-phase motor power at 240VAC	
		[kW]	[HP]

Single-phase supply 200...240VAC 50/60Hz. Three-phase motor output 240VAC max. Built-in EMC suppressor, cat. C1

VFNC3S 2002 PLW	1.4	0.2	0.25
VFNC3S 2004 PLW	2.4	0.4	0.5
VFNC3S 2007 PLW	4.2	0.75	1
VFNC3S 2015 PLW	7.5	1.5	2
VFNC3S 2022 PLW	10	2.2	3



**Side by side installation**  
Multiple units can be installed without side clearance for space saving

**Standard installation**  
with gaps between one drive and the next one



L-Starter is our UK brand offering a complete range of compact and standard direct-on-line starters with options for built in isolators and reversing configurations up to 15kW. Beyond this we have star-delta starters up to 75kW with built-in isolator options. All our standard models provide ample room for ease of installation and come with clear and simple wiring instructions.

**Manufactured in the UK**





## Compact Direct On-line Starters - Overload Included



DOLC...

Order code	Control voltage [VAC]	Motor power at 400V [kW]	Horse power [HP]	Max motor current AC3 [A]	Dimensions H x W x D [mm]
------------	--------------------------	-----------------------------	---------------------	------------------------------	------------------------------

Compact direct on-line starter (3 phase) - **Complete with fitted overload relay**

DOLC0.75230	230	0.75	1	1.9	175 x 88 x 119
DOLC0.75400	400				
DOLC1.1230	230	1.1	1.5	2.7	
DOLC1.1400	400				
DOLC2.2230	230	2.2	3.0	5	
DOLC2.2400	400				
DOLC4.0230	230	4	5.5	8.6	
DOLC4.0400	400				

## Steel Enclosed Star-Delta Starters - Overload Included



SDSI...

Order code	Control voltage [VAC]	Motor power at 400V [kW]	Horse power [HP]	Max motor current AC3 [A]	Dimensions H x W x D [mm]
------------	--------------------------	-----------------------------	---------------------	------------------------------	------------------------------

Star delta starter with isolator - **Overload included**

SDSI 11415	400	11	15	22	300 x 300 x 200
SDSI 15415	400	15	20	28	
SDSI 22415	400	22	30	42	
SDSI 30415	400	30	40	56	
SDSI 45415	400	45	60	83	500 x 400 x 200
SDSI 55415	400	55	75	98	
SDSI 75415	400	75	100	135	

## Special Solutions

L-Starter Solutions provides bespoke starter solutions for OEM and unique volume applications. Starters can be manufactured to your bespoke requirements.

In this image are starters pre-wired with plugs ready for rapid install with external fixings removing the need for wiring by qualified persons.



## Standard Direct On-line Starters - Overload Not Included



DOLC5.5...



DOLS...



DOLSW...

Order code	Control voltage [VAC]	Motor power at 400V [kW]	Horse power [HP]	Max motor current AC3 [A]	Dimensions H x W x D [mm]
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Compact direct on-line starter (3 phase) - **Requires RF9...overload relay**

DOLC5.5230	230	5.5	7.5	12	175 x 88 x 119
DOLC5.5400	400				

Standard direct on-line starter (3 phase) - **Requires RF38...overload relay**

DOLS5.5230	230	5.5	7.5	12	193 x 88 x 134
DOLS5.5400	400				
DOLS7.5230	230	7.5	10	18	193 x 88 x 134
DOLS7.5400	400				
DOLS11230	230	11	15	25	225 x 110 x 148
DOLS11400	400				
DOLS15230	230	15	20	28.5	
DOLS15400	400				

Standard direct on-line starter with isolator (3 phase)

**Requires RF38...overload relay**

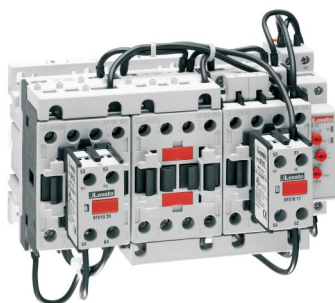
DOLSW5.5230	230	5.5	7.5	12	225 x 110 x 148
DOLSW5.5400	400				
DOLSW7.5230	230	7.5	10	18	
DOLSW7.5400	400				
DOLSW11230	230	11	15	25	
DOLSW11400	400				

Direct on-line reversing starter FWD/STOP/REV (3 phase)

**Requires RF38...overload relay**

DOLR5.5230	230	5.5	7.5	12	225 x 110 x 148
DOLR5.5400	400				
DOLR7.5230	230	7.5	10	18	
DOLR7.5400	400				
DOLR11230	230	11	15	25	
DOLR11400	400				

## Open Frame Star-Delta



BFA009...BFA025

Order Code	Three-phase motor control. Max IEC operating current ( $\leq 440V$ ) [A]	Motor power at 400V [kW]	Thermal overload relay
------------	---	-----------------------------	------------------------

Complete star-delta starters, open frame for starting time up to 12s and a maximum of 30 operations/hour

BFA009 70*	16	7.5	No
BFA012 70*	22	11	No
BFA018 70*	28	15	No
BFA025 70*	35	18.5	No
BFA026 70*	43	22	No
BFA038 70*	60	30	No

\*Complete with coil voltage 024, 110, 230, 400VAC. Overload relay not included

## Star-Delta Starters



YD...



YDSW...

Order code	Control voltage [VAC]	Motor power at 400V [kW]	Horse power [HP]	Max motor current AC3 [A]	Dimensions H x W x D [mm]
------------	--------------------------	-----------------------------	---------------------	------------------------------	------------------------------

Star delta starter - **Requires RF38...overload relay**

YD7.5230	230	7.5	10	15.2	220 x 280 x 170
YD7.5400	400				
YD11230	230	11	15	22	
YD11400	400				
YD15230	230	15	20	28	
YD15400	400				
YD22230	230	22	30	43	
YD22400	400				
YD30230	230	30	40	60	
YD30400	400				

Star delta starter with isolator - **Requires RF38...overload relay**

YDSW7.5230	230	7.5	10	15.2	220 x 280 x 170
YDSW7.5400	400				
YDSW11230	230	11	15	22	
YDSW11400	400				
YDSW15230	230	15	20	28	
YDSW15400	400				
YDSW22230	230	22	30	43	
YDSW22400	400				
YDSW30230	230	30	40	60	
YDSW30400	400				

## Thermal Overload Relays - For DOLC...starters



RF9...

Order code	Adjustment range [A]	Three Phase Motor at 400V DOL [kW]	Three Phase Motor at 400V Star Delta [kW]
RF9 1	0.6 - 1	0.37	-
RF9 1V5	0.9 - 1.5	0.55	-
RF9 2V3	1.4 - 2.3	0.75	-
RF9 33	2 - 3.3	1.1	-
RF9 5	3 - 5	1.5	-
RF9 75	4.5 - 7.5	2.2	-
RF9 10	6.3 - 10	4.0	-
RF9 15	9 - 15	5.5	-

## Thermal Overload Relays - For DOLS, DOLSW, DOLR, YD and YDSW...starters



RF38...

RF38 0100	0.63 - 1	0.25	-
RF38 0160	1 - 1.6	0.55	-
RF38 0250	1.6 - 2.5	0.75	-
RF38 0400	2.5 - 4	1.5	2.2 - 3
RF38 0650	4 - 6.5	2.2	4
RF38 1000	6.3 - 10	4	5.5 - 7.5
RF38 1400	9 - 14	5.5	11
RF38 1800	13 - 18	7.5	15
RF38 2300	17 - 23	11	18.5
RF38 3200	24 - 32	15	22
RF38 3800	32 ~ 38A	18.5	30

### \*IMPORTANT\*

For DOL starters select RF...overload relay above for setting motor at full load current (FLC)

For YD star-delta starters select RF38...overload relay above for setting at 58% of full load current (FLC)

Enclosed Control Stations



S1P10



S1PY91



S2P1001



S1MY71



S1S91

Description	Plastic Order Code	Metal Order Code	Stainless Steel Order Code
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1 gang enclosure. GREY cover in Plastic and Metal version

Standard GREEN PB "I" (Start) c/w 1NO contact	S1P10	S1M10	S1S10
Standard RED PB "O" (Stop) c/w 1NC contact	S1P01	S1M01	S1S01
Double touch PB "IO" (Start/Stop) c/w 1NO & 1NC contacts	S1P33	S1M33	S1S33
Key switch 2 pos "I-O" c/w 1NO contact	S1PK02	S1MK02	S1SK02
Key switch 3 pos "I-O-II" c/w 2NO contact	S1PK05	S1MK05	S1SK05
Key switch 2 pos "I-O" c/w 1NO contact	S1PSW7	S1MSW7	S1SW7
Key switch 3 pos "I-O-II" c/w 2NO contacts	S1PSW9	S1MSW9	S1SSW9

1 gang enclosure. YELLOW cover in Plastic and Metal version

40mm mushroom twist reset (Stop) c/w 1NC contact	S1PY71	S1MY71	S1S71
40mm mushroom key reset (Stop) c/w 1NC contact	S1PY81	S1MY81	S1S81
40mm mushroom twist reset (Emergency Stop) c/w 1NC contact	S1PY91	S1MY91	S1S91
40mm mushroom key reset (emergency stop) c/w NC contact	S1PY91KS	S1MY91KS	S1S91KS
40mm mushroom key reset (emergency stop) c/w NC contact and padlockable shroud	S1PY91KSS	S1MY91KSS	S1S91KSS
40mm mushroom pull reset (emergency stop) c/w NC contact	S1PY91P	S1MY91P	S1S91P
40mm mushroom pull reset (emergency stop) c/w NC contact and padlockable shroud	S1PY91PS	S1MY91PS	S1S91PS
40mm mushroom twist release (emergency stop) c/w NC contact and padlockable shroud	S1PY91S	S1MY91S	S1S91S

2 gang enclosure. GREY cover in Plastic and Metal version

Standard GREEN "I" PB's (Start/Stop) c/w 1NO & 1NC contacts	S2P1001	S2M1001	S2S1001
Standard GREEN "I" & 40mm mushroom twist release PB's (Start/Stop) c/w 1NO & 1NC contacts	S2P1071	S2M1071	S2S1071
Standard GREEN "I" & 40mm mushroom twist release EN418 PB's (Start/Emergency Stop) c/w 1NO & 1NC contacts	S2P1091	S2M1091	S2S1091

3 gang enclosure. GREY Cover

2x standard BLACK "↑" & 1x standard RED "O" PB's (Fwd/Stop/Rev) c/w 1NO & 1NC contacts	S3P101110	S3M101110	-
2x standard BLACK "↑" & 1x 40mm mushroom twist release PB's (Fwd/Stop/Rev) c/w 2NO & 1NC contacts	S3P107110	S3M107110	-
2x standard BLACK "↑" & 1x 40mm mushroom twist release EN418 PB's (Fwd/Emergency Stop/Rev) c/w 2NO & 1NC contacts	S3P109110	S3M109110	-

## PLatinum

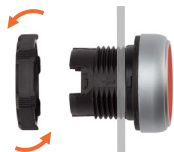
### Diverse Range

A variety of buttons appropriate for many different functions



### High Degree of Protection IP66, IP67 and IP69K

The actuators have been tested to guarantee a degree of protection per IEC/EN IP66, IP67, IP69K and UL Type 4X



Actuator fixing is obtained using its **threaded ring**, easily rotated by hand. Ø22mm ring fixing

### Usage at Extreme Temperature Conditions

Operation temperature between -25 and +70°C



### Long Actuator Mechanical Life

High performance characteristics assure 5,000,000 cycle mechanical life for spring-return actuators, 1,000,000 for double and triple touch units and 300,000 for emergency-stop types

### Materials Resistant to Oils, Solvents & Hydrocarbons



### Quick and Easy Installation



The **anti-rotation fastener** prevents actuator rotation on the mounting surface and provides an orientation reference point



The mounting adapters and actuators have clear **visible reference indicators** making the snap-on fitting simple



Electrical contact and LED elements are **snapped onto** the mounting adapter. Up to 9 elements can be mounted on a single adapter

## Spring Return



LPC B10...



LPC B20...



LPC B110...



LPC B114...



LPC B210...

Description	Black order code	Green order code	Red order code	Yellow order code	Blue order code	White order code
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Pushbutton actuators (without mounting adaptors) Ø22mm

Flush	LPC B102	LPC B103	LPC B104	LPC B105	LPC B106	LPC B108
Extended	LPC B202	LPC B203	LPC B204	LPC B205	LPC B206	LPC B208

Flush pushbutton actuators with symbols Ø22mm

O	LPC B1102	-	LPC B1104	-	-	-
I	-	LPC B1113	-	-	-	LPC B1118
II	-	LPC B1123	-	-	-	LPC B1128
←	LPC B1142	-	-	-	-	LPC B1148
↑	LPC B1152	-	-	-	-	LPC B1158

Extended pushbutton actuators with symbols Ø22mm

O	LPC B2102	-	LPC B2104	-	-	-
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## Mushroom Head



LPC B614...



LPC B674...



LPC B6634



LPC B684...

Description	Black order code	Green order code	Red order code
Spring Return (without mounting adaptors) Ø22mm			
Ø40mm	LPC B6142	LPC B6143	LPC B6144
Latch, pull to release (without mounting adaptors) Ø22mm			
For normal stopping Ø40mm	LPC B6742	-	-
For emergency stopping ISO 13850 compliant Ø40mm	-	-	LPC B6744
Latch, turn to release (without mounting adaptors) Ø22mm			
For normal stopping Ø40mm	LPC B6342	-	LPC B6344
For emergency stopping ISO 13850 compliant Ø30mm	-	-	LPC B6634
For emergency stopping ISO 13850 compliant Ø40mm	-	-	LPC B6644
Latch, turn key to release. Key code n° 455 (without mounting adaptors) Ø22mm			
For normal stopping Ø40mm	LPC B6842	-	-
For emergency stopping ISO 13850 compliant Ø40mm	-	-	LPC B6844

Other colours available. Please see the general catalogue

## Double-touch



LPC B72...

Description	Black/Red order code	Green/Red order code	White/Black order code
One extended and one flush pushbutton (without mounting adaptor). Ø22mm. Both spring return			
No symbol	LPC B7212	LPC B7213	LPC B7214
I-O	LPC B7222	LPC B7223	LPC B7224
Start/Stop	-	LPC B7233	-

## Triple-touch



LPC B7355



LPC B7375

Description Ø22mm	Black/Red order code	Green/Red order code	White/Black order code
One extended middle button (without mounting adaptor). Spring return Ø22mm			
I STOP II	-	LPC B7345	-
↑ STOP ↓	-	LPC B7355	-
→ STOP ←	-	LPC B7365	-
← STOP ←	-	LPC B7375	-

## Selector Switch Actuators



LPC S1...



LPC S2...



LPC S4...

Type of positions	Regular lever order code	Long lever order code	Knob order code
-------------------	--------------------------	-----------------------	-----------------

2 position (without mounting adaptors) Ø22mm

	LPC S120	LPC S220	LPC S420
	LPC S121	LPC S221	LPC S421

3 position (without mounting adaptors) Ø22mm

	LPC S130	LPC S230	LPC S430
	LPC S131	LPC S231	LPC S431
	LPC S132	LPC S232	LPC S432
	LPC S133	LPC S233	LPC S433

Activation of the middle contacts is coupled to the side contacts; the relative mechanism pins are standard supplied.



The middle contact activation, with respect to the right and left side contact, can be changed by the user, if required, by removing one or both mechanism pins.

Type of position



Maintained position



Spring return position

## Selector Switch Actuators Key



LPC S3...

Type of positions	Order code
-------------------	------------

2 position (without mounting adaptors) Ø22mm

	LPC S320
	LPC S321
	LPC S340

3 position (without mounting adaptors) Ø22mm

	LPC S330
	LPC S331
	LPC S332
	LPC S333
	LPC S350
	LPC S360
	LPC S370
	LPC S380
	LPC S390

Activation of the middle contacts is coupled to the side contacts; the relative mechanism pins are standard supplied.



The middle contact activation, with respect to the right and left side contact, can be changed by the user, if required, by removing one or both

Type of position



Maintained position



Spring return position



• Key extraction position

## Illuminated Button Spring Return



LPC BL10...

Description	Green order code	Red order code	Yellow order code	Blue order code	Transparent order code
Pushbutton actuators (without mounting adaptors) Ø22mm					
Flush	LPC BL103	LPC BL104	LPC BL105	LPC BL106	LPC BL107
Extended	LPC BL203	LPC BL204	LPC BL205	LPC BL206	LPC BL207

## Illuminated Mushroom Head



LPC BL614...

Description	Green order code	Red order code	Yellow order code	Blue order code	White order code
Spring Return (without mounting adaptors) Ø22mm					
Ø40mm	LPC BL6143	LPC BL6144	LPC BL6145	LPC BL6146	LPC BL6148
Latch, turn to release (without mounting adaptors) Ø22mm					
For normal stopping Ø40mm	LPC BL6643	-	LPC BL6645	LPC BL6646	-
For emergency stopping ISO 13850 compliant Ø40mm	-	LPC BL6644	-	-	-

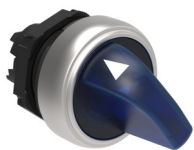
## Double-Touch With White Indicator



LPC BL72...

Description	Black/Red order code	Green/Red order code	White/Black order code
One extended and one flush pushbutton (without mounting adaptor) Ø22mm. Both spring return			
No symbol	LPC BL7212	LPC BL7213	LPC BL7214
I-O	LPC BL7222	LPC BL7223	LPC BL7224
Start/Stop	-	LPC BL7233	-

## Illuminated Selector Switch



LPC SL12...



LPC SL13...

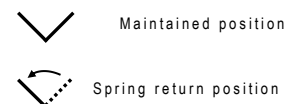
Description	Green order code	Red order code	Yellow order code	Blue order code	White order code
2 position (without mounting adaptors) Ø22mm					
	LPC SL1203	LPC SL1204	LPC SL1205	LPC SL1206	LPC SL1208
	LPC SL1213	LPC SL1214	LPC SL1215	LPC SL1216	LPC SL1218
3 position (without mounting adaptors) Ø22mm					
	LPC SL1303	LPC SL1304	LPC SL1305	LPC SL1306	LPC SL1308
	LPC SL1313	LPC SL1314	LPC SL1315	LPC SL1316	LPC SL1318
	LPC SL1323	LPC SL1324	LPC SL1325	LPC SL1326	LPC SL1328
	LPC SL1333	LPC SL1334	LPC SL1335	LPC SL1336	LPC SL1338

Activation of the middle contacts is coupled to the side contacts; the relative mechanism pins are standard supplied.



The middle contact activation, with respect to the right and left side contact, can be changed by the user, if required, by removing one or both mechanism pins.

### Type of position





## Pilot Light Heads



LPL...

Green order code	Red order code	Yellow order code	Blue order code	Transparent order code	Transparent order code*
LPL 3	LPL 4	LPL 5	LPL 6	LPL 7	LPL 1187

Ø22mm ring fixing

\*With symbol indicating dangerous voltage

## LED Integrated Monoblock Pilot Lights Steady Light



LPM...

Rated auxiliary supply voltage	Green order code	Red order code	Yellow order code	Blue order code	Transparent order code
12VAC/DC	LPM LA3	LPM LA4	LPM LA5	LPM LA6	LPM LA7
24VAC/DC	LPM LB3	LPM LB4	LPM LB5	LPM LB6	LPM LB7
48VAC/DC	LPM LD3	LPM LD4	LPM LD5	LPM LD6	LPM LD7
110VAC	LPM LE3	LPM LE4	LPM LE5	LPM LE6	LPM LE7
230VAC	LPM LM3	LPM LM4	LPM LM5	LPM LM6	LPM LM7

Ø22mm ring fixing

## Monoblock Potentiometers



LPC PA...

Order code	Resistance value
LPC PA001	1kΩ
LPC PA002	2.5kΩ
LPC PA005	5kΩ
LPC PA010	10kΩ
LPC PA050	50kΩ
LPC PA100	100kΩ
LPC PA500	500kΩ

Ø22mm ring fixing

## Monoblock Buzzers



LPC ZS...



LPC ZS...IP

Order code	Voltage [V]	Sound intensity at 2800Hz [dB/10cm]
Continuous or pulse tone, IP40 version Ø22mm		
LPC ZSA	9...15VAC/DC	90
LPC ZSB	18...30VAC/DC	90
LPC ZSE	85...140VAC/DC	90
LPC ZSM	185...265VAC/DC	90
Continuous or pulse tone, IP66, IP67, IP69K Ø22mm		
LPC ZSAIP	9...15VAC/DC	80
LPC ZSBIP	18...30VAC/DC	80
LPC ZSEIP	85...140VAC/DC	80
LPC ZSMIP	185...265VAC/DC	80

## USB and RJ45 Communication Interfaces



LPC D01

Order code	Description
LPC D01	USB interface, A/A female type connection
LPC D03	USB interface, A/B female type connection
LPC D05	USB interface, B/A female type connection
LPC D06	RJ45 interface, Ethernet connection type

Ø22mm ring fixing

For more information on these products and others within the range, please refer to the general catalogue

## Pushbutton Accessories



LPX AU100



LPX AU158



LPX DIN

Order code	Description
LPX AU100	Label holder for engraved plastic LPX AU109 label
LPX AU109	Engravable silver plastic label to use with LPX AU100 holder
LPX AU105	Label holder for engraved plastic LPX AU108 holder
LPX AU108	Engravable silver plastic label to use with LPX AU105 holder
LPX AU137	Clear rubber boot for flush button LPC B1/BL1/R1...
LPX AU147	Clear rubber boot for buttons LPC B2/3..., LPC BL2... and LPC R2...
LPX AU157	Rubber boot for double and triple-touch buttons, transparent
LPX AU158	Padlockable protection, Ø5-8mm locks or buttons LPC B66/67/68/BL664...;FOR LPC B634...Ø5-6mm locks only
LPX AU159	Shroud for buttons LPC B63..., LPC B66/67/68BL666
LPX DIN	Adaptor for mounting LPC...buttons on DIN rail 35mm wide (2 modules)

## Labels with Text for LPX AU100 Legend Holder



8 LM2T AGB230

Order code	Description	Order code	Description
General use		For selector switches	
8 LM2T AU206	Blank for writing	8 LM2T AI233	AUTO - MAN
8 LM2T AU207	Sheet with 108 labels for laser printing	8 LM2T AI234	AUTO - O - MAN
8 LM2T AGB211	OPEN	8 LM2T AI242	MAN - O - AUTO
8 LM2T AGB212	STOP	8 LM2T AI235	FWD - O - REV
8 LM2T AGB214	STOP RESET	8 LM2T AI236	ON - OFF
8 LM2T AGB215	FORWARD	8 LM2T AI241	MAN - AUTO
8 LM2T AGB216	CLOSE	8 LM2T AGB232	STOP - START
8 LM2T AGB218	LOWER	8 LM2T AGB236	OFF - ON
8 LM2T AGB221	OFF	For the complete range of labels please see the general catalogue	
8 LM2T AGB222	REVERSE		
8 LM2T AGB223	ON		
8 LM2T AGB225	START		
8 LM2T AGB226	RESET		
8 LM2T AGB227	RAISE		

## Plastic Disk for Mushroom Head Pushbuttons



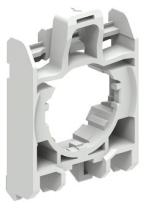
LPX AU115



LPX AU123

Order code	Description
LPX AU115	Emergency Stop Ø60mm
LPX AU123	With IEC60417-5638 symbol Ø60mm

## Mounting Adapter

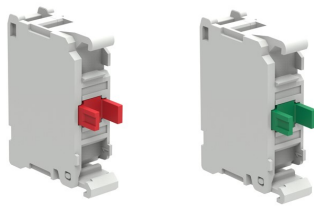


LPX AU120

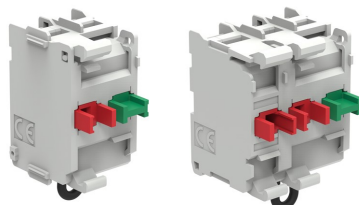
Order Code	Description
LPX AU120	Mounting Adapter

For use with LPC...actuators and LPL...pilot lightheads

## Contact Elements



LPX C...



LPX C01SM

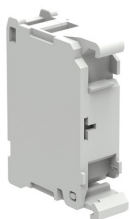
LPX C02SM

Order Code	Description
Screw termination. Without mounting adapter	
LPX C10	NO (Normally open)
LPX C10A	EM (Early make)
LPX C01	NC (Normally closed)
LPX C01D	LB (Late break)

Screw termination. Without mounting adapter. Auto-monitor contact elements for non-illuminated latch mushroom-head pushbuttons

LPX C01SM	1NC (Normally closed)
LPX C02SM	2NC (Normally closed)

## Test Elements for Steady-light LED Elements



LPX T...

Order Code	Description
LPX T100	Use with LED elements in AC/DC, types LPX LE...(all), LPX LFB..., LPX LPB and LPX LPSB
LPX T101	Use with LED elements AT 85-140VAC for types LPX LFE..., LPX LPE... and LPX LPSE...
LPX T102	Use with LED elements AT 185-265VAC for types LPX LFM..., LPX LPM...and LPX LPSM...

## LED Elements



LPX LP...



LPX LE...



LPX LF...

Description	Green order code	Red order code	Yellow order code	Blue order code	White order code
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Steady light, screw termination. Supplied without mounting adapter. **Total protection**

12...30VAC/DC	LPX LP B3	LPX LP B4	LPX LP B5	LPX LP B6	LPX LP B8
85...140VAC	LPX LP E3	LPX LP E4	LPX LP E5	LPX LP E6	LPX LP E8
185...265VAC	LPX LP M3	LPX LP M4	LPX LP M5	LPX LP M6	LPX LP M8

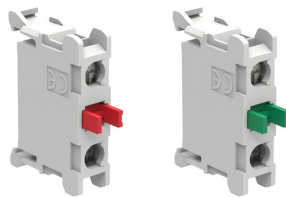
Steady light, screw termination. Supplied without mounting adapter. **Simple protection**

12...30VAC/DC	LPX LE B3	LPX LE B4	LPX LE B5	LPX LE B6	LPX LE B8
85...140VAC	LPX LE E3	LPX LE E4	LPX LE E5	LPX LE E6	LPX LE E8
185...265VAC	LPX LE M3	LPX LE M4	LPX LE M5	LPX LE M6	LPX LE M8

Flashing light, screw termination. Supplied without mounting adapter. **Total protection**

12...30VAC/DC	LPX LF B3	LPX LF B4	LPX LF B5	LPX LF B6	LPX LF B8
85...140VAC	LPX LF E3	LPX LF E4	LPX LF E5	LPX LF E6	LPX LF E8
185...265VAC	LPX LF M3	LPX LF M4	LPX LF M5	LPX LF M6	LPX LF M8

## Contact Elements, Base Mount on LPZP Plastic Control Stations



LPX CB...

Order Code	Description
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Screw termination. Direct snap-on mounting on LPZ...control station base

LPX CB10	 .3 NO (Normally open) .4
LPX CB01	 .1 ⊕ NC (Normally closed) .2

For use LPZP...Plastic control stations only

## LED Elements Base Mount on LPZP Plastic Control Stations



LPX LPB...

Description	Green order code	Red order code	Yellow order code	Blue order code	White order code
-------------	------------------	----------------	-------------------	-----------------	------------------

Steady light. Screw termination. Direct snap-on mounting on LPZ...control station base

12...30VAC/DC	LPX LPB B3	LPX LPB B4	LPX LPB B5	LPX LPB B6	LPX LPB B8
85...140VAC	LPX LPB E3	LPX LPB E4	LPX LPB E5	LPX LPB E6	LPX LPB E8
185...265VAC	LPX LPB M3	LPX LPB M4	LPX LPB M5	LPX LPB M6	LPX LPB M8

For use LPZP...Plastic control stations only

## Plastic Control Stations



LPZ P1 A5

LPZ P2 A8

Description	Yellow order code	Grey order code	Dimensions [mm]
For 1 actuator	LPZ P1 A5	LPZ P1 A8	72 x 72 x 56
For 2 actuators	LPZ P2 A5	LPZ P2 A8	117 x 72 x 56
For 3 actuators	-	LPZ P3 A8	151 x 72 x 56
For 4 actuators	-	LPZ P4 A8	186 x 72 x 56
For 5 actuators	-	LPZ P5 A8	220 x 72 x 56
For 6 actuators	-	LPZ P6 A8	252 x 72 x 56

Use LPXCB...and LPXLPB...base mount elements

## Metal Control Stations



LPZ M1 A5P

LPZ M1 A8

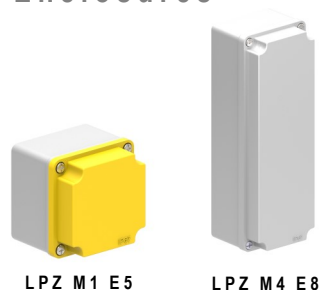
LPZ M4C A8

LPZ M12C A8

Description	Yellow order code	Grey order code	Dimensions [mm]
For 1 actuator	LPZ M1 A5	LPZ M1 A8	80 x 80 x 73
For 1 actuator with shroud	LPZ M1 A5P	-	80 x 80 x 108
For 2 actuators	LPZ M2 A5	LPZ M2 A8	80 x 130 x 73
For 3 actuators	-	LPZ M3 A8	80 x 170 x 73
For 4 actuators	-	LPZ M4 A8	80 x 170 x 73
For 4 actuators	-	LPZ M4C A8	80 x 130 x 73
For 5 actuators	-	LPZ M5 A8	80 x 230 x 73
For 6 actuators	-	LPZ M6 A8	80 x 230 x 73
For 6 actuators	-	LPZ M6C A8	80 x 170 x 73
For 8 actuators	-	LPZ M8C A8	80 x 230 x 73
For 12 actuators	-	LPZ M12C A8	170 x 190 x 90
For 16 actuators	-	LPZ M16C A8	190 x 250 x 90

Use LPXAU120 front mounted contact and LED elements

## Metal Enclosures



LPZ M1 E5

LPZ M4 E8

Description	Yellow order code	Grey order code	Dimensions [mm]
For 1 actuator	LPZ M1 E5	LPZ M1 E8	80 x 80 x 73
For 2 actuators	-	LPZ M2 E8	80 x 130 x 73
For 4 actuators	-	LPZ M3 E8	80 x 170 x 73
For 6 actuators	-	LPZ M4 E8	80 x 230 x 73
For 8 actuators	-	LPZ M5 E8	160 x 160 x 90
For 12 actuators	-	LPZ M6 E8	170 x 190 x 90
For 16 actuators	-	LPZ M7 E8	190 x 250 x 90

## Empty Enclosures



M0N

M3N

Order code	Internal mounting	Dimensions [mm]
M0N	Moulded din rail	184 x 88 x 119.5
M1N	Moulded din rail	202 x 88 x 134.5
M2N	Moulded din rail	234 x 110 x 148.5
M24N	Steel mounting plate (inc.)	210 x 175 x 98.5
M25N	Steel mounting plate (inc.)	210 x 175 x 158.5
M3N	Steel mounting plate	280 x 220 x 170

Metal mounting plate for M3N enclosure

MX30	-	185W x 240H
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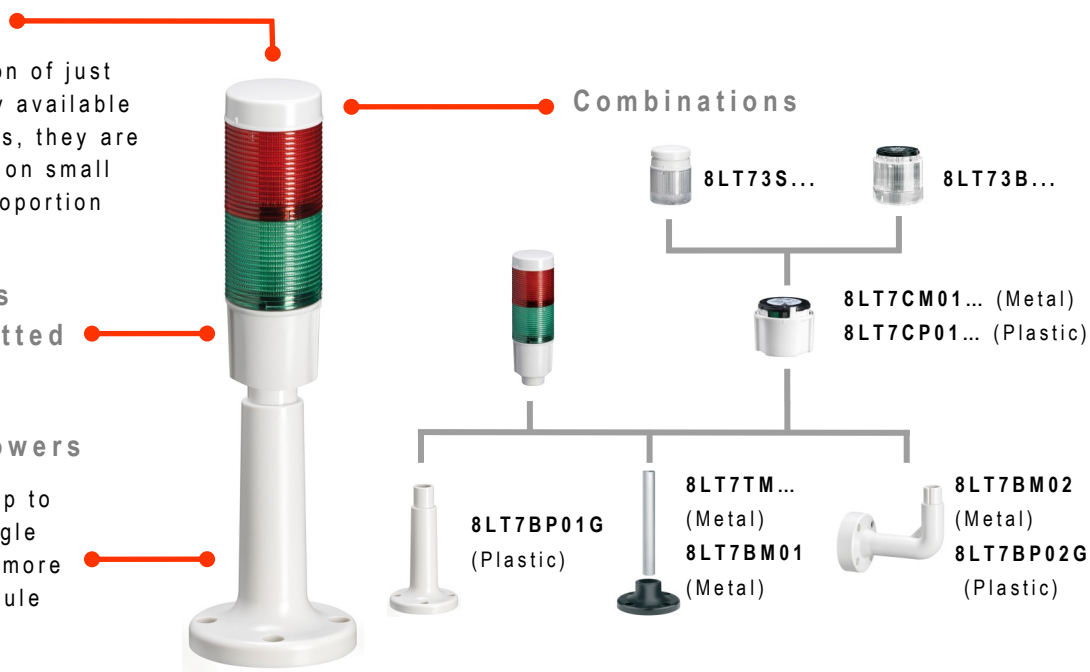
## Smaller Dimensions

Thanks to the smaller dimension of just 45mm compared to the already available 8LT7 series 70mm signal towers, they are particularly suitable for fitting on small machineries, offering better proportion with the size of the machine.

45mm signal towers supplied already fitted with LED lamps

## Multicoloured Signal Towers

Incorporate the possibility of up to three different colours in a single module. In the event of two or more alarms, the multi-coloured module lights up in alternating colours corresponding to the event.



## Signal Towers Ø45mm



8 LT4 K02BG

8 LT4 K05BG

Order Code	Description
Steady light and pulsed or continuous sound light modules. Built-in LED lamps	
8 LT4 K02BG	Green, red, 24VDC
8 LT4 K03BG	Green, red with continuous or pulsed sound, 24VDC
8 LT4 K04BG	Green, orange, red, 24VDC
8 LT4 K05BG	Green, orange, red with continuous or pulsed sound, 24VDC

### Accessories and spare parts

8 LT7 BP 01G	Horizontal surface mount, plastic grey colour with 100mm extension. Available in black
8 LT7 BP 02G	Vertical wall mount, plastic, grey. Available in black
8 LT7 TM...	Extension tube for metal base. Available in sizes 120mm/220mm/320mm/420mm/520mm/1020mm
8 LT7 BM 01	Horizontal surface mount, metal, black
8 LT7 BM 02	Wall mount, metal

## Multicoloured Signal Towers Ø70mm



8 LT7 3S...

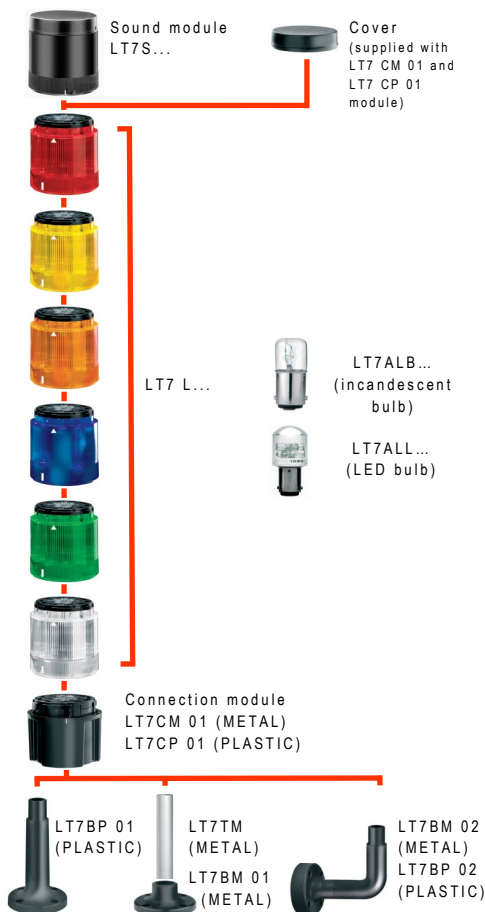
8 LT7 3B...

Order Code	Description
Steady light and pulsed or continuous sound multicoloured light modules. Built-in LED lamps	
8 LT7 3B 9A	Green, orange, red, 24VDC
8 LT7 3S2B 9A	Green, red with continuous or pulsed sound, 24VDC
8 LT7 3B 9B	Blue, orange, red, 24VDC
8 LT7 3S2B 9B	Blue, red with continuous or pulsed sound, 24VDC

### Accessories and spare parts

8 LT7 BP 01G	Horizontal surface mount, plastic grey colour with 100mm extension. Available in black
8 LT7 BP 02G	Vertical wall mount, plastic, grey. Available in black
8 LT7 TM...	Extension tube for metal base. Available in sizes 120mm/220mm/320mm/420mm/520mm/1020mm
8 LT7 BM 01	Horizontal surface mount, metal, black
8 LT7 BM 02	Wall mount, metal

## Signal Towers Ø70mm



Order code	Description
Steady light modules. BA15d fitting. Bulb (8 LT7 ALB....and 8 LT7 ALL...) not included	
8 LT7 EL1	Orange
8 LT7 EL3	Green
8 LT7 EL4	Red
8 LT7 EL5	Yellow
8 LT7 EL6	Blue
8 LT7 EL8	White

Accessories*	
8 LT7 BP 01G	Plastic Surface mount 100mm high fixing base, grey
8 LT7 BP 02G	Vertical wall mount, plastic, grey
8 LT7 TP 0100G	100mm, grey extension tube
8 LT7 BP 01	Plastic Surface mount 100mm high fixing base, black
8 LT7 BP 02	Vertical wall mount, plastic, black colour
8 LT7 TP 0100	100mm, black extension tube

Connection modules and cover (bottom entry)	
8 LT7 CP 01G	For plastic tubes, grey
8 LT7 CP 01	For plastic tubes, black

\*Accessories also available in metal version. Please see general catalogue



Extended range available in the general catalogue including:

- Sound modules
- Blinking and flashing light modules
- Wider range of mounting accessories

## Signal Beacons Ø62mm



Order code	Description
Steady light modules. BA15d fitting. Bulb (8 LT7 ALB... & 8 LT7 ALL...) not included	
8 LB6 EL1	Orange
8 LB6 EL3	Green
8 LB6 EL4	Red
8 LB6 EL5	Yellow
8 LB6 EL6	Blue
8 LB6 EL8	White

Fixing Bases for light modules	
8 LB6 BP 03	For horizontal mount, plastic, black
8 LB6 BP 05	For hole Ø22mm, plastic, black
8 LB6 BP 07	Extension connection. Use with 8LP7BP01 and 8LP7BP02

## LED Bulbs for Signal Towers and Beacons



Description	Green order code	Red order code	Yellow/Orange order code	Blue order code	White order code
LED bulbs, BA15d fitting					
24VAC/DC	8 LT7 ALL B3	8 LT7 ALL B4	8 LT7 ALL B5	8 LT7 ALL B6	8 LT7 ALL B8
110...120VAC	8 LT7 ALL E3	8 LT7 ALL E4	8 LT7 ALL E5	8 LT7 ALL E6	8 LT7 ALL E8
230...240VAC	8 LT7 ALL M3	8 LT7 ALL M4	8 LT7 ALL M5	8 LT7 ALL M6	8 LT7 ALL M8

8 LT7 ALB...incandescent bulbs also available . Please see general catalogue

For more information on these products and others within the range, please refer to the general catalogue

## Limit Switches



KX CB S11  
KX CM S11

KX CC S11  
KX CN S11



KX A A1    KX A B...    KX A C...



KX A D...    KX A E...    KX A E3



KX A F... KX A H... KX A L... KX A M...

Order Code	Description
<b>Limit switch body</b>	
KX CB S11	Plastic body complete with 1NO+1NC snap action auxiliary contacts. One bottom cable entry
KX CM S11	Metal body complete with 1NO+1NC snap action auxiliary contacts. One bottom cable entry
KX CC S11	Plastic body complete with 1NO+1NC snap action auxiliary contacts. Two side cable entries
KX CN S11	Metal body complete with 1NO+1NC snap action auxiliary contacts. Two side cable entries

### Operating heads to fit KX...Limit switch bodies

KX A A1	Metal Top push rod plunger
KX A B1	Plastic top roller push plunger
KX A B2	Metal top roller push plunger
KX A C1	Plastic roller centre push lever
KX A C2	Metal roller centre push lever
KX A D1	Plastic roller side push lever
KX A D2	Metal roller side push lever
KX A E1	Plastic roller lever plunger
KX A E2	Metal roller lever plunger
KX A E3	Rubber Ø50x10mm roller lever plunger
KX A F1	Adjustable plastic roller lever Ø19x5mm
KX A F2	Adjustable metal roller lever Ø19x5mm
KX A F3	Adjustable rubber Ø50x10mm roller
KX A F4	Adjustable offset rubber Ø50x10mm roller
KX A H1	Ceramic rod lever
KX A L1	Adjustable plastic rod lever
KX A L2	Adjustable stainless steel rod lever
KX A M1	Flexible wobble stick
KX A M2	Semi-rigid wobble stick

## Foot Switches



KG1 00 S11



KG2 10 S11



KR2 10 S11

Order Code	Description
<b>Plastic body foot switch M20 cable entry</b>	
KG1 00 S11	Open style with 1NO+1NC snap action auxiliary contacts
KG2 00 S11	1NO+1NC snap action auxiliary contacts with cover
KG1 10 S11	Open style with 1NO+1NC snap action auxiliary contacts with safety lever
KG2 10 S11	With 1NO+1NC snap action auxiliary contacts with cover and safety lever
KG1 20 S11	Open style with 1NO+1NC snap action auxiliary contacts with pedal actuator lock
KG2 20 S11	With 1NO+1NC snap action auxiliary contacts with cover and pedal actuator lock
<b>Metal body foot switch M20 cable entry</b>	
KR1 00 S11	Open with 1NO+1NC snap action auxiliary contacts
KR2 00 S11	1NO+1NC snap action auxiliary contacts. With cover
KR1 10 S11	Open with 1NO+1NC snap action auxiliary contacts. With safety lever
KR2 10 S11	With 1NO+1NC snap action auxiliary contacts. With cover and safety lever
KR1 20 S11	Open with 1NO+1NC snap action auxiliary contacts. With pedal actuator lock
KR2 20 S11	With 1NO+1NC snap action auxiliary contacts. With cover and pedal actuator lock



## GX... Series ON/OFF Switches



On/Off GX...

Order Code	IEC current AC1 [A]	Front plate [mm]	Switch positions
One-pole - 1 wafer - scheme 90. Front mount			
GX16 90 U	16	48	
GX20 90 U	20	48	
GX32 90 U	32	65	
GX40 90 U	40	65	
Two-pole - 1 wafer - scheme 91. Front mount			
GX16 91 U	16	48	
GX20 91 U	20	48	
GX32 91 U	32	65	
GX40 91 U	40	65	
Three-pole - 2 wafers - scheme 10. Front mount			
GX16 10 U	16	48	
GX20 10 U	20	48	
GX32 10 U	32	65	
GX40 10 U	40	65	
Four-pole - 2 wafers - scheme 92. Front mount			
GX16 92 U	16	48	
GX20 92 U	20	48	
GX32 92 U	32	65	
GX40 92 U	40	65	

## GX... Series Changeover Switches with 0 position



Changeover GX...

Order Code	IEC current AC1 [A]	Front plate [mm]	Switch positions
Two-pole - 2 wafers - scheme 52. Front mount			
GX16 52 U	16	48	
GX20 52 U	20	48	
GX32 52 U	32	65	
GX40 52 U	40	65	
Three-pole - 3 wafers - scheme 53. Front mount			
GX16 53 U	16	48	
GX20 53 U	20	48	
GX32 53 U	32	65	
GX40 53 U	40	65	
Four-pole - 4 wafers - scheme 75. Front mount			
GX16 75 U	16	48	
GX20 75 U	20	48	
GX32 75 U	32	65	
GX40 75 U	40	65	

## GX... Series Voltmeter/Ammeter Switches



Ammeter GX...

Order Code	IEC current AC1 [A]	Front plate [mm]	Switch positions
Voltmeter switch - For 1 phase voltage and 3 phase to phase voltage readings 3 wafers - scheme 60. Front mount			
GX16 60 U	16	48	
For L1-L2-L3 readings via 3 CTs - 4 wafers - scheme 98. Front mount			
GX16 98 U	16	48	

For more information on these products and others within the range, please refer to the general catalogue

## Three-pole Switch Disconnectors - Rear Mount



GA016 A...GA040 A  
GA063 SA  
36mm width

GA063 A...GA160 A  
70mm width

Order Code	IEC conventional free air thermal current I <sub>th</sub> AC21A (≤690V) [A]	IEC rated operational current I <sub>e</sub> AC22A (≤690V) AC23A (≤415V) [A]
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Direct operating version, complete with black handle. For door coupling version, separately purchase the handle and shaft extension

GA016 A	16	16
GA025 A	25	25
GA032 A	32	32
GA040 A	40	40
GA063 SA	63	45
GA063 A	63	63
GA080 A	80	80
GA100 A	100	100
GA125 A	125	125
GA160 A	160	125

## Fourth Pole Add-on For GA...A



GAX42...A  
GAX41...A  
GAX42 063SA  
GAX41 063SA

Order Code	IEC conventional free air thermal current I <sub>th</sub> AC21A (≤690V) [A]	IEC rated operational current I <sub>e</sub> AC22A (≤690V) AC23A (≤415V) [A]	Compatible switch disconnector
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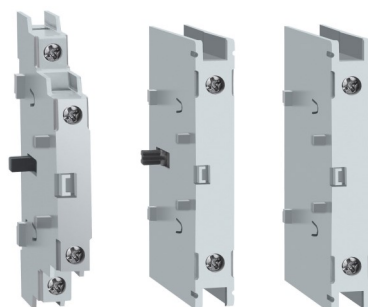
Simultaneous closing operation as switch disconnector poles. For GA...A

GAX42 040A	40	40	GA016A...GA040A
GAX42 063SA	63	45	GA063 SA
GAX42 063A	63	63	GA063 A
GAX42 080A	80	80	GA080 A
GAX42 100A	100	100	GA100 A
GAX42 125A	125	125	GA125 A
GAX42 160A	160	125	GA160 A

Early make closing operation with respect to switch disconnector poles. For GA...A version

GAX41 040A	40	40	
GAX41 063SA	63	45	
GAX41 125A	125	125	

## Add-on Blocks For GA...A



GAX10 11A GAX11 10EA GAX3...A  
GAX12 10EA

Order Code	Description
Auxiliary contacts, simultaneous closing as poles of switch disconnectors	
GAX10 11A	1NO + 1NC for GA...A, GA063 SA and GA040 D
Auxiliary contacts, early-break operation in respect to poles of switch disconnector	
GAX11 10EA	1EB (NO) for GA016 A...GA040 A, GA063 SA and GA040 D
GAX12 10EA	1EB (NO) for GA063 A...GA160 A
Neutral terminal	
GAX31 A	For GA016 A...GA040 A, GA063 SA and GA040 D
GAX32 A	For GA063 A...GA160 A
Earth/ground terminal	
GAX33 A	For GA016 A...GA040 A, GA063 SA and GA...D
GAX34 A	For GA063 A...GA160 A

For more information on these products and others within the range, please refer to the general catalogue

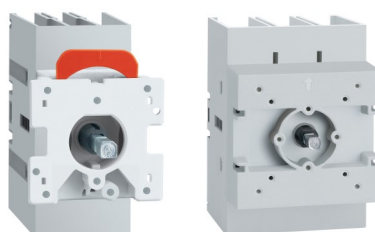
## Mechanical Coupling



GAX50...  
GAX60...

Order Code	Description
Mechanical interlock for line changeover (I-0-II)	
GAX50 00	For GA016 A...GA040 A, GA063 SA, GA040 D and GAX67 B; □5mm
GAX50 01	For GA063 A...GA160 A and GAX67 B; □5mm
Mechanical coupling system for 6-8 pole switch disconnectors	
GAX60 00	For GA016 A...GA040 A, GA063 SA, GA040 D; □5mm
GAX60 01	For GA063 A...GA125 A, □7mm

## Three-pole Switch Disconnectors - Door Mount Version



GA016 C...  
GA040 C

GA063 C...  
GA125 C

Order Code	IEC conventional free air thermal current I <sub>th</sub> AC21A (≤690V) [A]	IEC rated operational current I <sub>e</sub> AC22A (≤690V) AC23A (≤415V) [A]
Door mount version, complete with shaft extension		
GA016 C	16	16
GA025 C	25	25
GA032 C	32	32
GA040 C	40	40
GA063 C	63	45
GA080 C	80	80
GA100 C	100	100
GA125 C	125	125

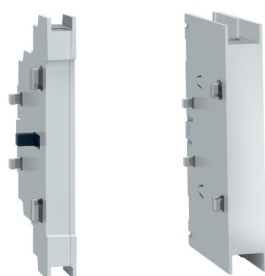
## Fourth Pole Add-on for GA...C



GAX42 040C  
GAX41 040C

Order Code	IEC conventional free air thermal current I <sub>th</sub> AC21A (≤690V) [A]	IEC rated operational current I <sub>e</sub> AC22A (≤690V) AC23A (≤415V) [A]	Compatible switch disconnector
Simultaneous closing operation as switch disconnector poles. For GA...C			
GAX42 040C	40	40	GA016C...GA040C
GAX42 063C	63	45	GA063 C
GAX42 080C	80	80	GA080 C
GAX42 100C	100	100	GA100 C
GAX42 125C	125	125	GA125 C
Early make closing operation with respect to switch disconnector poles. For GA...C			
GAX41 040C	40	40	
GAX41 125C	125	125	

## Add-on Blocks For GA...C



GAX10 11A

GAX3...C

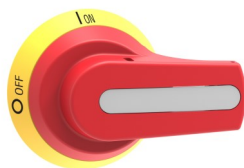
Order Code	Description
Auxiliary contacts, simultaneous closing as poles of switch disconnectors	
GAX10 11C	1NO + 1NC for GA...C
Neutral terminal	
GAX31 C	For GA016 C...GA040 C
GAX32 C	For GA063 C...GA125 C
Earth/ground terminal	
GAX33 C	For GA016 C...GA040 C
GAX34 C	For GA063 C...GA125 C

For more information on these products and others within the range, please refer to the general catalogue

## Handles



GAX61



GAX66N



GAX63 B

Description	Door coupling version padlockable, IP65	
	Red/Yellow order code	Black order code
For GA...A, GA063 SA, GA...C, GA040 D and GD...Screw fixing. Handle with selector flush-mounted □5mm	GAX61	GAX61 B
For GA...A, GA063 SA, GA016 C, GA040 C, GA040 D and GD...Ring fixing. Handle with 22mm selector protruding □5mm	GAX63	GAX63 B
For GA...A, GA063 SA, GA040 D and GD... Ring fixing. Handle with selector protruding-defeatable (req. UL508A) □5mm	GAX64	GAX64 B
For GA063 A...GA160 A and GAX60 01. Screw fixing. Pistol handle - defeatable (req. UL508A) □7mm	GAX66N	GAX66 NB
	*Use with GAX60 B adapter*	
For mechanical interlock GAX50...(I-0-II) □5mm	-	GAX67 B
For GA016 A...GA063 SA, GA040 D, GA016 C...GA040 C and GD...Screw fixing. Handle with selector lowered. □5mm	GAX68	GAX68 B

## Accessories for Door Coupling Control



GAX60 B

Order Code	Description
GAX60 B	Adapter □7mm per GA063 A...GA160 A

Always use with GAX66N handles to convert 5mm to 7mm shaft

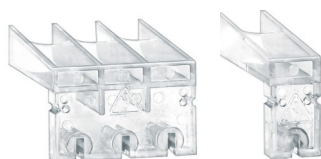
## Accessories



GAX7...



GAX7...AN



GAX8...



GAX39 1

Order Code	Description
Shaft extension for door coupling handles GAX61...GAX64, GAX68, GAX61 B, GAX67 B, GAX68 B and mechanical interlock type GAX50 00, GAX50 01 and mechanical coupling GAX60 00	
GAX7 150	150mm long □5mm
GAX7 200	200mm long □5mm
GAX7 300	300mm long □5mm
GAX7 400	400mm long □5mm
GAX7 500	500mm long □5mm
Shaft extension for door coupling handles GAX66N, GAX66NB and mechanical coupling system GAX60 01	
GAX7 150AN	150mm long □7mm
GAX7 200AN	200mm long □7mm
GAX7 300AN	300mm long □7mm
Set of 2 one-pole terminal covers for fourth pole	
GAX81	For GAX42 040A, GAX42 063SA, GAX42 040C, GAX42 040D, GAX41 040A, GAX41 063A and GAX41 040C
GAX 82	For GAX42 063A...GAX42 160A
Set of 2 three-pole terminal covers	
GAX 83	For GA016 A...GA040 A, GA063 SA, GA016 C...
GAX 84	For GA063 A...GA160 A, GA063 C...GA125 C
Fuse holder for switch disconnectors	
GAX39 1	For GA016 A...GA032 A. Suitable for 10.3 x 38 fuses

## Enclosed Switch Disconnectors



GAZ016...GAZ040...



GAZ063...100C



GAZ125...GAZ160...



GAZS...

IEC conventional free air thermal current Ith AC21A (≤690V) [A]	Three-pole with red/yellow handle order code	Four-pole with red/yellow handle order code	Dimensions H x W x D (including handle) [mm]
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IEC/EN IP65 non-metallic enclosures

16	GAZ016	GAZ016 T4	159 x 100 x 120
25	GAZ025	-	
32	GAZ032	GAZ032 T4	
40	GAZ040	GAZ040 T4	
63	GAZ063 SA	GAZ063 SAT4	210 x 175 x 121.5
63	GAZ063 C	GAZ063 CT4	
80	GAZ080 C	-	
100	GAZ100 C	GAZ100 CT4	
125	GAZ125	GAZ125 T4	280 x 220 x 193
160	GAZ160	GAZ160 T4	

Stainless steel enclosure

16	GAZS016	-	170 x 100 x 123
25	GAZS25	-	
32	GAZS032	-	
40	GAZS040	-	
63	GAZS063	-	285 x 185 x 153
80	GAZS080	-	
100	GAZS100	-	
125	GAZS125	-	

## Enclosed Changeover Switches



GAZ025 E...  
GAZ063SA E...



GAZ080 E...  
GAZ160 E...

Order Code	IEC conventional free air thermal current Ith AC21A (≤690V) [A]	IEC rated operational current Ie AC23B (≤400V) [A]	IEC rated operational current Ie AC23B (≤500V) [A]	Dimensions H x W x D (including handle) [mm]
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4-pole line changeover switches I-0-II

GAZ025 ET8	25	25	25	210 x 175 x 183.5
GAZ040 ET8	40	40	25	
GAZ063SA ET8	63	45	25	
GAZ080 ET8	80	80	63	220 x 280 x 208
GAZ125 ET8	125	125	100	
GAZ160 ET8	160	125	100	

## Other Enclosed Isolators



GAZ...F



GAZ...B

Order Code	Current rating [A]	Dimensions H x W x D (including handle) [mm]
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IP65 switchfuse isolator supplied with 10 x 38mm gG fuses

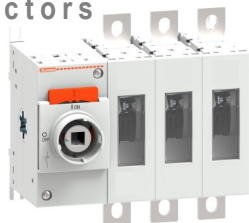
GAZ020F	20	234 x 110 x 97
GAZ032F	32	

IP65 DC isolator for photovoltaic applications at 800V DC21B

GAZ025DT2B	25	159 x 100 x 120
GAZ032DT3B	32	159 x 100 x 120
GAZ040DT4B	40	159 x 100 x 120

**Available From March 2018**

## IEC/EN Three-pole Switch Disconnectors



GL...

Order Code	IEC conventional free air thermal current I <sub>th</sub> AC21A (≤690V) [A]	IEC rated operational current I <sub>e</sub> AC22A (≤690V) AC23A (≤415V) [A]
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Supplied without handle. Complete with shaft extension and handle for door coupling version or with handle for direct operating version

GL0160 C1	160	160
GL0200 C1	200	200
GL0250 C1	250	250
GL0315 C1	315	250

## IEC/EN Fourth-pole Add-on



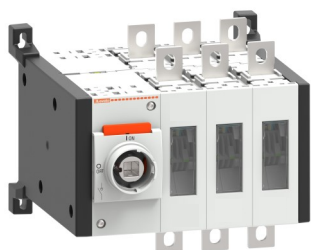
GLX42 0315

Order Code	IEC conventional free air thermal current I <sub>th</sub> AC21A (≤690V) [A]	IEC rated operational current I <sub>e</sub> AC22A (≤690V) AC23A (≤415V) [A]
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Simultaneous closing operation as switch disconnector poles. For GL0160 C1...GL0315 C1 versions

GLX42 0315	315	250
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## IEC/EN Three-pole Changeover Switches



GLC...C1

Order Code	IEC conventional free air thermal current I <sub>th</sub> AC21A (≤690V) [A]	IEC rated operational current I <sub>e</sub> AC22A (≤690V) AC23A (≤415V) [A]
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Supplied without handle. Complete with shaft extension and handle for door coupling version or with handle for direct operating version

GLC0160 C1	160	160
GLC0200 C1	200	200
GLC0250 C1	250	250
GLC0315 C1	315	250

## IEC Four-pole Changeover Switches



GLC...T4C1

Order Code	IEC conventional free air thermal current I <sub>th</sub> AC21A (≤690V) [A]	IEC rated operational current I <sub>e</sub> AC22A (≤690V) AC23A (≤415V) [A]
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Supplied without handle. Complete with shaft extension and handle for door coupling version or with handle for direct operating version

GLC0160 T4C1	160	160
GLC0200 T4C1	200	200
GLC0250 T4C1	250	250
GLC0315 T4C1	315	250

## Available From March 2018

### Add-on Blocks



GLX3 00



GLX8 00



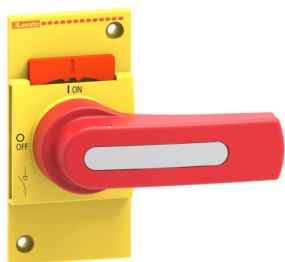
GLX5 00



GLX2 01

Order Code	Description
Auxiliary contacts	
GLX10 10EA	1EB with screw terminals
GLX10 01	1NC with screw terminals
Neutral terminal	
GLX3 00	For GL0160...GL0315
Earth/ground terminal	
GLX3 01	For GL0160...GL0315
One-pole terminal covers	
GLX8 00	3-piece set, each covers 1 pole
GLX8 01	4-piece set, each covers 1 pole
Terminal clamp sets for rigid and flexible cables	
GLX5 00	1-piece set, each covers 1 pole
GLX5 01	3-piece set, each covers 1 pole
One-pole bridging bars for changeover parallel connection GLC0160...GLC0315	
GLX2 01	3-piece set, each covers 1 pole
GLX2 02	4-piece set, each covers 1 pole

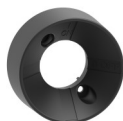
### Handles & Shafts



GLX61 D



GLX61



GLX00



GLX7...S10

Order Code	Description
Direct operating handles	
GLX61 D	For GL0160...GL0315 and GLC0160...GLC0315. Red/yellow
GLX61 DB	For GL0160...GL0315 and GLC0160...GLC0315. Black
Door coupling handles	
GLX61	For GL0160...GL0315. Screw fixing. 125mm lever length pistol handle - defeatable (req.UL508A). Red/yellow □10mm
GLX61 B	For GL0160...GL0315. Screw fixing. 125mm lever length pistol handle - defeatable (req.UL508A). Black □10mm
GLX61 CB	For GLC0160...GLC0315. Screw fixing. 125mm lever length pistol handle - defeatable (req.UL508A). Black □10mm
Accessories for door coupling handles	
GLX00	Shaft alignment ring
Shaft extensions for door coupling handles GLX61, GLX61 B, GLX61 CB type	
GLX7 150 S10	150mm long. □10mm
GLX7 200 S10	200mm long. □10mm
GLX7 300 S10	300mm long. □10mm
GLX7 400 S10	400mm long. □10mm
GLX7 500 S10	500mm long. □10mm

## UL Recognised & CSA certified Fuse Holders



FB01 F...

FB02 A...

FB03 A...

Order Code	Pole arrangement	Status indicator	DIN size
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For 10 x 38mm fuses. IEC 32A rated current at 690VAC

FB01 F 1P	1P	-	1
FB01 F 1N	1P + N	-	2
FB01 F 2P	2P	-	2
FB01 F 3P	3P	-	3
FB01 F 3N	3P + N	-	4

For 14 x 51mm fuses. IEC 50A rated current at 690VAC

FB02 A 1P	1P	-	1
FB02 A 2P	2P	-	2
FB02 A 3P	3P	-	3
FB02 A 3N	3P + N	-	4

For 22 x 58mm fuses. IEC 100A rated current at 690VAC

FB03 A 1P	1P	-	1
FB03 A 2P	2P	-	2
FB03 A 3P	3P	-	3
FB03 A 3N	3P + N	-	4

## Fuse Holders



FB01 B...

Order Code	Pole arrangement	Status indicator	DIN size
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For 10 x 38mm fuses. IEC 32A rated current at 690VAC

FB01 B 1P	1P	-	1
FB01 B 2P	2P	-	2
FB01 B 3P	3P	-	3
FB01 B 3N	3P + N	-	4

## Fuse Holders UL/CSA/Class CC



FB01 G...

Order Code	Pole arrangement	Status indicator	DIN size
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For 10 x 38mm Class CC fuses. IEC 30A rated current

FB01 G 1P	1P	-	1
FB01 G 2P	2P	-	2
FB01 G 3P	3P	-	3

## Accessories



FBX 00

FBX 01  
FBX 03

FBX 02

Order Code	Description
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FBX 00	Coupling clip for 10x38, 14x51 and 22x58mm sizes
FBX 01	Coupling pin for 10x38mm size type FB01 A1M, FB01 B1P and FB01 B1PL only
FBX 02	Coupling pin for 14x51 and 22x58mm sizes
FBX 03	Coupling pin for 10x38mm size types FB01 F, FB01 G, FB01 D only



## Miniature Circuit Breakers 1...63A



P1 MB 1P...



P1 MB 2P...



P1 MB 3P...



P1 MB 4P...



P2 MB 3P...

IEC In [A]	One-Pole order code	Two-pole order code	Three-pole order code	Four-pole order code	One-pole + Neutral order code
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### B-curve. 10kA. Thermal and magnetic trip type

1	P1 MB 1P B01	P1 MB 2P B01	P1 MB 3P B01	P1 MB 4P B01	-
2	P1 MB 1P B02	P1 MB 2P B02	P1 MB 3P B02	P1 MB 4P B02	-
4	P1 MB 1P B04	P1 MB 2P B04	P1 MB 3P B04	P1 MB 4P B04	-
6	P1 MB 1P B06	P1 MB 2P B06	P1 MB 3P B06	P1 MB 4P B06	P1 MB 1M B06
10	P1 MB 1P B10	P1 MB 2P B10	P1 MB 3P B10	P1 MB 4P B10	P1 MB 1M B10
13	P1 MB 1P B13	P1 MB 2P B13	P1 MB 3P B13	P1 MB 4P B13	-
16	P1 MB 1P B16	P1 MB 2P B16	P1 MB 3P B16	P1 MB 4P B16	P1 MB 1M B16
20	P1 MB 1P B20	P1 MB 2P B20	P1 MB 3P B20	P1 MB 4P B20	P1 MB 1M B20
25	P1 MB 1P B25	P1 MB 2P B25	P1 MB 3P B25	P1 MB 4P B25	P1 MB 1M B25
32	P1 MB 1P B32	P1 MB 2P B32	P1 MB 3P B32	P1 MB 4P B32	P1 MB 1M B32
40	P1 MB 1P B40	P1 MB 2P B40	P1 MB 3P B40	P1 MB 4P B40	-
50	P1 MB 1P B50	P1 MB 2P B50	P1 MB 3P B50	P1 MB 4P B50	-
63	P1 MB 1P B63	P1 MB 2P B63	P1 MB 3P B63	P1 MB 4P B63	-

### C-curve. 10kA. Thermal and magnetic trip type

1	P1 MB 1P C01	P1 MB 2P C01	P1 MB 3P C01	P1 MB 4P C01	P1 MB 1M C02
2	P1 MB 1P C02	P1 MB 2P C02	P1 MB 3P C02	P1 MB 4P C02	-
4	P1 MB 1P C04	P1 MB 2P C04	P1 MB 3P C04	P1 MB 4P C04	P1 MB 1M C04
6	P1 MB 1P C06	P1 MB 2P C06	P1 MB 3P C06	P1 MB 4P C06	P1 MB 1M C06
10	P1 MB 1P C10	P1 MB 2P C10	P1 MB 3P C10	P1 MB 4P C10	P1 MB 1M C10
13	P1 MB 1P C13	P1 MB 2P C13	P1 MB 3P C13	P1 MB 4P C13	P1 MB 1M C13
16	P1 MB 1P C16	P1 MB 2P C16	P1 MB 3P C16	P1 MB 4P C16	P1 MB 1M C16
20	P1 MB 1P C20	P1 MB 2P C20	P1 MB 3P C20	P1 MB 4P C20	P1 MB 1M C20
25	P1 MB 1P C25	P1 MB 2P C25	P1 MB 3P C25	P1 MB 4P C25	P1 MB 1M C25
32	P1 MB 1P C32	P1 MB 2P C32	P1 MB 3P C32	P1 MB 4P C32	P1 MB 1M C32
40	P1 MB 1P C40	P1 MB 2P C40	P1 MB 3P C40	P1 MB 4P C40	P1 MB 1M C40
50	P1 MB 1P C50	P1 MB 2P C50	P1 MB 3P C50	P1 MB 4P C50	-
63	P1 MB 1P C63	P1 MB 2P C63	P1 MB 3P C63	P1 MB 4P C63	-
80	P2 MB 1P C080	P2 MB 2P C080	P2 MB 3P C080	P2 MB 4P C080	-
100	P2 MB 1P C100	P2 MB 2P C100	P2 MB 3P C100	P2 MB 4P C100	-
125	P2 MB 1P C125	P2 MB 2P C125	P2 MB 3P C125	P2 MB 4P C125	-

### D-curve. 10kA. Thermal and magnetic trip type

1	P1 MB 1P D01	P1 MB 2P D01	P1 MB 3P D01	P1 MB 4P D01	-
2	P1 MB 1P D02	P1 MB 2P D02	P1 MB 3P D02	P1 MB 4P D02	-
4	P1 MB 1P D04	P1 MB 2P D04	P1 MB 3P D04	P1 MB 4P D04	-
6	P1 MB 1P D06	P1 MB 2P D06	P1 MB 3P D06	P1 MB 4P D06	-
10	P1 MB 1P D10	P1 MB 2P D10	P1 MB 3P D10	P1 MB 4P D10	-
13	P1 MB 1P D13	P1 MB 2P D13	P1 MB 3P D13	P1 MB 4P D13	-
16	P1 MB 1P D16	P1 MB 2P D16	P1 MB 3P D16	P1 MB 4P D16	-
20	P1 MB 1P D20	P1 MB 2P D20	P1 MB 3P D20	P1 MB 4P D20	-
25	P1 MB 1P D25	P1 MB 2P D25	P1 MB 3P D25	P1 MB 4P D25	-
32	P1 MB 1P D32	P1 MB 2P D32	P1 MB 3P D32	P1 MB 4P D32	-
40	P1 MB 1P D40	P1 MB 2P D40	P1 MB 3P D40	P1 MB 4P D40	-
50	P1 MB 1P D50	P1 MB 2P D50	P1 MB 3P D50	P1 MB 4P D50	-
63	P1 MB 1P D63	P1 MB 2P D63	P1 MB 3P D63	P1 MB 4P D63	-
80	-	-	P2 MB 3P D080	P2 MB 4P D080	-
100	-	-	P2 MB 3P D100	P2 MB 4P D100	-
125	-	-	P2 MB 3P D125	P2 MB 4P D125	-

## Add-on Blocks for Miniature Circuit Breakers 1...63A



P1X 1011

P1X 16230

Order Code	Description
Auxiliary contact	
P1X 1011	1 changeover contact
Indicator contact for thermal-magnetic	
P1X 1311	1 changeover contact
Undervoltage trip release	
P1X 14230	230V 50/60Hz
Shunt trip release	
P1X 16230	110...415V 50/60Hz

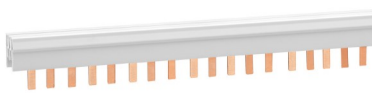
## Add-on Blocks for Miniature Circuit Breakers 80...125A



P2X 1311

Order Code	Description
Auxiliary contact	
P2X 1011	1 changeover contact
Indicator contact for thermal-magnetic	
P2X 1311	1 changeover contact
Undervoltage trip release	
P2X 16230	110...415V 50/60Hz

## Accessories for Miniature Circuit Breakers



P1X 90 33



P1X 91 33



P1X 92 10



P1X 92 02



P2X 18 10

Order Code	Description
P1X 90 31	Single-pole supply busbar
P1X 90 32	Two-pole supply busbar
P1X 90 33	Three-pole supply busbar
P1X 90 34	Four-pole supply busbar
P1X 91 30	Kit of 5 isolating covers for unused busbar terminals
P1X 91 31	End cap for P1X9031
P1X 91 32	End cap for P1X9032
P1X 91 33	End cap for P1X9133
P1X 91 34	End cap for P1X9034
P1X 92 01	Single-pole terminal busbar supply; conductor cross section 25mm <sup>2</sup> max.
P1X 92 10	1-pole terminal for supplying busbar; conductor cross section 25mm <sup>2</sup> max.; left entry
P1X 92 02	Single-pole terminal for busbar supply; conductor cross section 50mm <sup>2</sup> max.
P1X 18 10	Padlockable attachment for breaker P1MB...
P2X 18 10	Padlockable attachment for breaker P2MB...

## Residual Current Operated Circuit Breakers with Overcurrent Protection - 2 Modules



P1 RB 1N...

Order code	IEC In [A]	IEC I $\Delta$ n [mA]
<b>C-curve. Single-pole + neutral RCBO type AC. 10kA</b>		
P1 RB 1N C06 AC030	6	30
P1 RB 1N C06 AC300	6	300
P1 RB 1N C10 AC030	10	30
P1 RB 1N C10 AC300	10	300
P1 RB 1N C13 AC030	13	30
P1 RB 1N C13 AC300	13	300
P1 RB 1N C16 AC030	16	30
P1 RB 1N C16 AC300	16	300
P1 RB 1N C20 AC030	20	30
P1 RB 1N C20 AC300	20	300
P1 RB 1N C25 AC030	25	30
P1 RB 1N C25 AC300	25	300
P1 RB 1N C32 AC030	32	30
P1 RB 1N C32 AC300	32	300
P1 RB 1N C40 AC030	40	30
P1 RB 1N C40 AC300	40	300

Type A also available. Please see the general catalogue

## Residual Current Operated Circuit Breakers



P1 RC 2P...

Order code	IEC In [A]	IEC I $\Delta$ n [mA]	No of DIN module
<b>Two-pole RCCB type AC</b>			
P1 RC 2P 25 AC030	25	30	2
P1 RC 2P 25 AC300	25	300	2
P1 RC 2P 40 AC030	40	30	2
P1 RC 2P 40 AC300	40	300	2
P1 RC 2P 63 AC030	63	30	2
P1 RC 2P 63 AC300	63	300	2
<b>Four-pole RCCB type AC</b>			
P1 RC 4P 25 AC030	25	30	4
P1 RC 4P 25 AC300	25	300	4
P1 RC 4P 40 AC030	40	30	4
P1 RC 4P 40 AC300	40	300	4
P1 RC 4P 63 AC030	63	30	4
P1 RC 4P 63 AC300	63	300	4

Type A and B also available. Please see the general catalogue

Residual Add-on Blocks & Earth Leakage Relays are also available within the general catalogue



For more information on these products and others within the range, please refer to the general catalogue

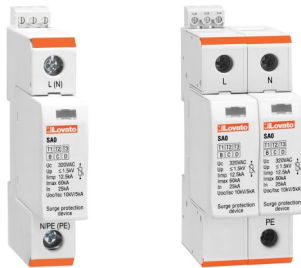
## Surge Protection Type 1 and 2 Monoblock



SA1B 1P A320R

Order code	Pole arrangement	Relay output (SPDT)	No of DIN modules
IEC impulse current limp (10/350µs) 25kA per pole			
SA1B 1P A320R	1P	YES	2
SA1B 1N A320R	1P + N	YES	4
SA1B 2P A320R	2P	YES	4
SA1B 3P A320R	3P	YES	6
SA1B 3N A320R	3P + N	YES	8
SA1B 4P A320R	4P	YES	8

## Surge Protection Type 1 and 2 with Plug-in Cartridge



SA0 1P A320R SA0 2P A320R

Order code	Pole arrangement	Relay output (SPDT)	No of DIN modules
IEC impulse current limp (10/350µs) 12.5kA per pole			
SA0 1P A320R	1P	YES	1
SA0 1N A320R	1P + N	YES	2
SA0 2P A320R	2P	YES	2
SA0 3P A320R	3P	YES	3
SA0 3N A320R	3P + N	YES	4
SA0 4P A320R	4P	YES	4

## Surge Protection Type 2 with Plug-in Cartridge



SA2 2P A320R SA2 3N A320R

Order code	Pole arrangement	Relay output (SPDT)	No of DIN modules
IEC maximum discharge current I <sub>max</sub> (8/20µs) 40kA per pole			
SA2 1P A230	1P	NO	1
SA2 1P A230R	1P	YES	1
SA2 1N A230	1P + N	NO	2
SA2 1N A230R	1P + N	YES	2
SA2 2P A230	2P	NO	2
SA2 2P A230R	2P	YES	2
SA2 3P A230	3P	NO	3
SA2 3P A230R	3P	YES	3
SA2 3N A230	3P + N	NO	4
SA2 3N A230R	3P + N	YES	4
SA2 4P A230	4P	NO	4
SA2 4P A230R	4P	YES	4

## Accessories and Spare Parts



SAX00 P A320 SAX02 P A320

Order Code	Description
Replacement plug-in cartridges	
SAX00 P A320	For SA0...types
SAX02 P A320	For SA2...types

## Modular Contactors



**CN20...**

**CN25...**

CN32 11... CN32 20... CN32 10... CN32 01...



**CN40...**



**CN63...**

Configuration of contacts	Rated auxiliary supply voltage [V]	
	24VAC/DC	220...230VAC
One-pole or two-pole. 1 module. Ith 20A		
1NO + 1NC	CN20 11 024	CN20 11 220
2NO	CN20 20 024	CN20 20 220
One-pole or two-pole. 1 module. Ith 32A		
1NO + 1NC	CN32 11 024	CN32 11 220
2NO	CN32 20 024	CN32 20 220
Three-pole or four-pole. 2 modules. Ith 25A		
4NO	CN25 10 024	CN25 10 220
3NO + 1NC	CN25 01 024	CN25 01 220
Three-pole or four-pole. 2 modules. Ith 32A		
4NO	CN32 10 024	CN32 10 220
3NO + 1NC	CN32 01 024	CN32 01 220
Three-pole or four-pole. 3 modules. Ith 40A		
4NO	CN40 10 024	CN40 10 220
3NO + 1NC	CN40 01 024	CN40 01 220
Three-pole or four-pole. 3 modules. Ith 63A		
4NO	CN63 10 024	CN63 10 220
3NO + 1NC	CN63 01 024	CN63 01 220

## Modular Contactors with Manual Control



CNM20...CNM32 20... CNM32 10...

Configuration of contacts	Rated auxiliary supply voltage [V]	
	24VAC/DC	220...230VAC
One-pole or two-pole. 1 module. Ith 20A		
1NO + 1NC	CNM20 11 024	CNM20 11 220
2NO	CNM20 20 024	CNM20 20 220
One-pole or two-pole. 1 module. Ith 32A		
2NO	CNM32 20 024	CNM32 20 220
Three-pole or four-pole. 2 modules. Ith 32A		
4NO	CNM32 10 024	CNM32 10 220

## Accessories



**CNH...**

Order code	Characteristics	Max. qty per contactor
Auxiliary contacts		
CNH 11*	1 NO + 1NC	1
CNH 20*	2NO	1
*Not suitable for CN20..., CN3211..., CN3220..., CNM20... and CNM32...		
Spacer		
CNX 80	1/2 mod. wide	1

For more information on these products and others within the range, please refer to the general catalogue

## Base Modules



LRD10...  
LRD12...

LRD20R D024 P1

Order Code	Auxiliary supply voltage	Inputs/Outputs
Base modules		
LRD12R D024	24VDC	8/4 relay
LRD12T D024	24VDC	8/4 transistor
LRD20R D024	24VDC	12/8 relay
LRD12R A024	24VAC	8/4 relay
LRD20R A024	24VAC	12/8 relay
LRD10R A240	100...240VAC	6/4 relay
LRD20R A240	100...240VAC	12/8 relay
LRD20R D012	12VDC	12/8 relay

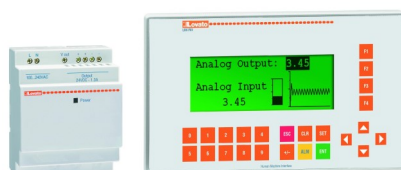
## Expansion & Communication Modules



LRE...

Order Code	Auxiliary supply voltage	Inputs/Outputs
Expansion and communication modules		
LRE02A D024	24VDC	2 analog outputs 0...10V/0...20mA
LRE04A D024	24VDC	4 analog outputs 0...10V/0...20mA
LRE04P D024	24VDC	4 PT100 temp. sensor inputs
LRE08R D024	24VDC	4/4 relay
LRE08T D024	24VDC	4/4 transistor
LRE08R A024	24VAC	4/4 relay
LRE08R A240	100...240VAC	4/4 relay
LRE P00	Modbus-RTU protocol communication unit	

## Accessories



LRX 1V3 D024

LRX P01

Order Code	Description
LRX C03	PC (USB) -LRD programming cable and LRX P01 (RS232)-LRD direct connection
LRX SW	Programming and supervision software (CD-ROM)
LRX 1V3 D024	Power supply unit, 100...240VAC/24VDC, 1.3A
LRX P01	HMI operator panel, 24VDC, RS232, RS485 (Modbus-RTU Master)
LRX C02	PC-LRX P01 programming cable
LRX SW P01	LRX P01 editor software (CD-ROM)

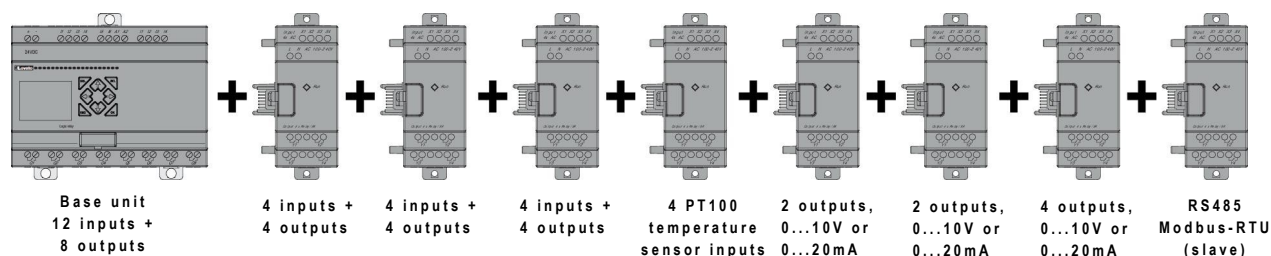
## Training Kits



LRX DEM...

Order Code	Description
LRD DEM 12R D024	Training kit with LRD12R D024 mounted on inputs/ outputs simulation board
LRD DEM 20R D024	Training kit with LRD20R D024 mounted on inputs/ outputs simulation board

### Maximum combinations



Models with multiscale 0.1 seconds ... 100 days

Immunity to industrial ambient noise

Reliable in most severe operating conditions

Excellent time accuracy and stability

Wide supply voltage range

DIN rail mounting or screw fixing by extractable clips



## Modular Time Relays



TM P



TM D



TM M1



TM M2



TM ST



TM LS

Order Code	Time of Scale Range	Rated auxiliary supply voltage [V]
<b>On delay time relay. Multiscale. Multivoltage</b>		
TM P	0.1...1s, 1...10s, 6...60s, 1...10min, 6min...1hr, 1...10hr, 0.1...1 day, 1...10 days ON only, OFF only	24...48VDC 24...240VAC
TM P A440	0.1...1s, 1...10s, 6...60s, 1...10min	380...440VAC
<b>Off delay time relay. Multiscale. Multivoltage</b>		
TM D	0.06...0.6s, 0.6...6s, 6...60s, 18...180s	24...240VAC/DC
<b>Multifunction time relay. Multiscale. Multivoltage. 1 changeover relay output. 10 functions incl. on delay, off delay, flasher, pulse generator, latch</b>		
TM M1	0.1...1s, 1...10s, 6...60s, 1...10min, 6min...1hr, 1...10hr, 0.1...1 day, 1...10 days ON only, OFF only	12...240VAC/DC
<b>Multifunction time relay. Multiscale. Multivoltage. 1 changeover relay output + 1 N/O contact. 10 functions incl. on delay, off delay, flasher, pulse generator, latch</b>		
TM M2	0.1...1s, 1...10s, 6...60s, 1...10min, 6min...1hr, 1...10hr, 0.1...1 day, 1...10 days ON only, OFF only	12...240VAC/DC
<b>Recycle time relay, independent timings. Multiscale. Multivoltage</b>		
TM PL	0.1...1s, 1...10s, 6...60s, 1...10min, 6min...1hr, 1...10hr, 0.1...1 day, 1...10 days, 3...30 days, 10...100 days	12...240VAC/DC
<b>Time relay for starting (star delta starters). Multiscale. Multivoltage</b>		
TM ST	0.1...1s, 1...10s, 6...60s, 1...10min	24...48VDC 24...240VAC
TM ST A440	0.1...1s, 1...10s, 6...60s, 1...10min	380...440VAC
<b>Time relay for staircase lighting</b>		
TM LS	0.5...20min	220...240VAC

## Voltage Monitoring Relays for Three Phase Systems Without Neutral



	PMV10 A440	PMV20 A240 PMV20 A575	PMV30 A240 PMV30 A575	PMV40 A240 PMV40 A575	PMV50 A240 PMV50 A575	PMV70 A240 PMV70 A575
Minimum AC voltage			•		•	•
Maximum AC voltage					•	•
Phase loss	•	•	•	•	•	•
Incorrect phase sequence	•	•	•	•	•	•
Asymmetry				•		•

## Voltage Monitoring Relays for Three Phase Systems With or Without Neutral



	PMV50N A240 PMV50N A440	PMV70N A240 PMV70N A440	PMV80N A240 PMV80N A440
Minimum AC voltage	•	•	•
Maximum AC voltage	•	•	•
Phase loss	•	•	•
Neutral loss	•	•	•
Incorrect phase sequence	•	•	•
Asymmetry		•	
Minimum frequency			•
Maximum frequency			•

## Voltage Monitoring Relays for Single Phase Systems



	PMV55 A240 PMV55 A440
Minimum AC voltage	•
Maximum AC voltage	•



## Current Monitoring Relays



PMA20/30...

PMA40...

Order code	Rated current I <sub>e</sub> [A]	Auxiliary supply voltage [V]
------------	----------------------------------	------------------------------

Single-phase system. AC/DC maximum current control. Auxiliary AC/DC power supply. Automatic or manual reset.

PMA20 240	5 or 16A	24...240VAC/DC
-----------	----------	----------------

Single and three-phase system. AC/DC minimum or maximum current control. Delayed trip. Auxiliary AC/DC power supply. Automatic or manual reset.

PMA30 240	5 or 16A	24...240VAC/DC
-----------	----------	----------------

Single and three-phase system. AC/DC minimum and maximum current control. Delayed trip. Auxiliary AC/DC power supply. Automatic or manual reset.

PMA40 240	0.02-0.05-0.25-1-5-16A	24...240VAC/DC
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## Pump Protection Relays



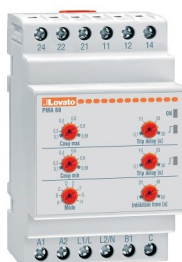
PMA50...

Order code	Rated current I <sub>e</sub> [A]	Auxiliary supply voltage [V]
------------	----------------------------------	------------------------------

Single and three-phase systems. Dry running, underload, overcurrent protection. Maximum AC current and minimum cosφ. Delayed trip. Phase loss and incorrect phase sequence. Instantaneous trip. Auxiliary AC power supply. Automatic or manual reset.

PMA50 A240	5 or 16A	220...240VAC
PMA50 A415		380...415VAC

## Phase Shift Monitoring Relays



PMV60...

Order code	Rated current I <sub>e</sub> [A]	Auxiliary supply voltage [V]
------------	----------------------------------	------------------------------

Single and three-phase systems. Minimum and maximum cosφ control. Delayed trip. AC auxiliary power supply. Automatic or manual reset.

PMA60 A240	16A	220...240VAC
PMA60 A415		380...415VAC

## Frequency Monitoring Relays



PMF20...

Order code	Rated voltage U <sub>e</sub> [V] 50/60Hz
------------	--

Single and three-phase systems. Minimum and maximum frequency. Delayed trip. Automatic reset.

PMF20 A240	220...240VAC
PMF20 A415	380...415VAC



Description	LVM20 A240*	LVM25 240 24...240VAC/DC	LVM30 A240*	LVM40 A240*
Modular version	● (2U)	● (1U)	● (3U)	● (3U)
3 detecting electrodes (MIN, MAX and COM)	●	●	●	
5 detecting electrodes (MIN1, MAX1, MIN2, MAX2 and COM)				●
Sensitivity adjustment 2.5...50kΩ	●		●	
Sensitivity adjustment 2.5...100kΩ		●		
Sensitivity adjustment 2.5...200kΩ				●
Adjustable sensitivity full-scale value 25-50-100-200 kΩ				●
Separate sensitivity adjustment for MAX probe (foam detection)				●
Emptying function	●	●	●	●
Filling function		●	●	●
Emptying function with Extra-MIN and/or Extra-MAX alarm relays				●
Filling function with Extra-MIN and/or Extra-MAX alarm relays				●
Emptying function with start change control				●
Filling function with start change control				●
Tank filling, well drawing functions and alarm				●
Filling-emptying adjustment selector		●	●	
Programming selector for 5 different functions				●

\* 24VAC, 110VAC and 400VAC versions available. Please see general catalogue

## Probes and Electrode Holders



Order code	Probe included	Probe length [mm]
Single pole electrodes		
11 SN1	YES	100
31 SCM 04	YES	43
31 SCM 50	YES	500
31 SCM 100	YES	1000
31 CGL125 3	YES	327
31 CGL125 5	YES	500
31 CGL125 7	YES	700
31 CGL125 10	YES	1000
Three pole electrodes		
31 PS31	YES	300/11.8
Electrode holder (for 3 rod probes)		
31 PS3S	NO	-

For guidance on probe selection refer to general catalogue

## Electrodes



Description	460mm Rod probe length	960mm Rod probe length
For SCM probes	31 ASTA 460 MM4	31 ASTA 960 MM4
For PS3S electrode holder	31 ASTA 460 MM6	31 ASTA 960 MM6

## Float Switches For Grey Water



Order code	Cable material	Cable length [mm]	Counter-weight included
LVFS P1 W 03	PVC	3	YES
LVFS P1 W 05	PVC	5	YES
LVFS P1 W 10	PVC	10	YES
LVFS P1 W 15	PVC	15	YES
LVFS N1 W 05	Neoprene	5	YES
LVFS N1 W 10	Neoprene	10	YES
LVFS N1 W 15	Neoprene	15	YES
LVFS N1 W 20	Neoprene	20	YES

Grey Water: These float switches are designed for use in grey water applications such as rainwater, groundwater, domestic waste water and industrial cooling water

## Float Switches For Dirty Water



Order code	Cable material	Cable length [mm]	Counter-weight included
LVFS N1 B 05	Neoprene	5	INTERNAL
LVFS N1 B 10	Neoprene	10	INTERNAL
LVFS N1 B 15	Neoprene	15	INTERNAL
LVFS N1 B 20	Neoprene	20	INTERNAL

Dirty Water: These float switches are designed for use in dirty water applications, often referred to as black water applications, such as sewage or industrial waste water

## Modular



PSL1M 010...

PSL1M 033 12  
PSL1M 036 24

Order code	Rated output voltage [V]	Rated output current [A]	Output power [W]
Single phase. Input voltage 100...240VAC			
PSL1M 010 12	12VDC	0.83	10
PSL1M 024 12		2	24
PSL1M 033 12		2.75	33
PSL1M 054 12		4.5	54
PSL1M 072 12		6	72
PSL1M 010 24	24VDC	0.42	10
PSL1M 024 24		1	24
PSL1M 036 24		1.5	36
PSL1M 060 24		2.5	60
PSL1M 100 24		4.2	100

## Din Rail Mount



PSL1 005 24  
PSL1 010 24  
PSL1 018 24

PSL1 030...  
PSL1 060...



PSL1 100...  
PSL1 120...

PSL1 240...  
PSL1 300...



PSL1 480 24  
PSL1 480 48



PSL3 960...

Order code	Parallel Operation (Redundant power & higher available power)	Rated output voltage [V]	Rated output current [A]	Output power [W]
Single phase. Input voltage 100...240VAC				
PSL1 005 24		24VDC	0.21	5
PSL1 010 24			0.42	10
PSL1 018 24			0.75	18
PSL1 030 24			1.25	30
PSL1 060 24			2.5	60
PSL1 100 24			4.2	100
PSL1 120 24	•		5	120
PSL1 240 24	•		10	240
PSL1 300 24	•		12.5	300
PSL1 480 24	•		20	480
PSL1 030 48		48VDC	0.625	30
PSL1 060 48			1.25	60
PSL1 100 48			2.1	100
PSL1 120 48	•		2.5	120
PSL1 240 48	•		5	240
PSL1 300 48	•		6.25	300
PSL1 480 48	•		10	480

Two phase. Input voltage 400...500VAC

PSL2 100 24	•	24VDC	4.2	100
PSL2 100 48		48VDC	2.1	100

Three phase. Input voltage 400...500VAC (Two-phase connection is admissible with a 25% output power derating)

PSL3 120 24		24VDC	5	120
PSL3 240 24	•		40	240
PSL3 480 24	•		20	480
PSL3 960 24	•		40	960
PSL3 240 48	•	48VDC	5	240
PSL3 480 48	•		10	480
PSL3 960 48	•		20	960

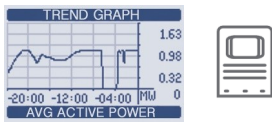
## Redundancy Modules



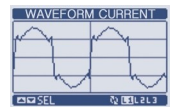
PSLRM 10 24

Order code	Rated output voltage [V]	Rated output current [A]
PSLRM 10 24	12...24VDC	10
PSLR 20 24	24VDC	20

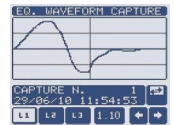
## Energy Consumption Monitoring



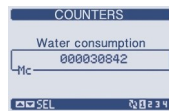
## Energy Quality Verification



## Energy Quality Analysis According to EN 50160



## Process Data Collection



DMG Multimeters



DME Energy Meters

## Various Add-on Options



## Energy Meters



DME D110 T1



DME D120 T1



DME D121



DME D301



DME D330



DME D310 T2

Order Code	Connection	Communication	Expandable	Fixing	MID approved
DME D110 T1	Single phase Direct 40A	Digital output programmable	NO	DIN Rail	DME D110 T1 MID
DME D120 T1	Single phase Direct 63A	Digital output programmable	NO	DIN Rail	DME D120 T1 MID
DME D121	Single phase Direct 63A	RS 485	NO	DIN Rail	-
DME D301	Three phase Direct 80A	RS 485	NO	DIN Rail	-
DME D330	Three phase CT connection 5A	RS 485	NO	DIN Rail	-
DME D310 T2	Three phase CT connection 5A	All types via add on modules	YES (via EXM modules)	DIN Rail	DME D310 T2 MID
DME CD (Data concentrator)	Meter interface	RS 485	YES (via EXM modules)	DIN Rail	-

For more information on these products and others within the range, please refer to the general catalogue

## Expansion Modules for Energy Meters



EXM 1000

Order code	Description	Meter
EXM 1000	2 digital inputs 2 static outputs	DMED 310 T2 DMED 310 T2 MID DME CD
EXM 1001	2 opto-isolated digital inputs 2 relay outputs 5A	
EXM 1010	USB Interface	
EXM 1012	RS485	
EXM 1013	Ethernet	
EXM 1020	RS 485 + 2 relay Outputs	
EXM 1030	Data storage/logging	

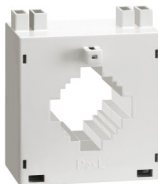
## Solid - Core Current Transformers for DMED and DMG Devices



DM0T...



DM2T...



DM3T...

Order code	Primary current $I_{pn}$ /5 [A]	Burden	
		cl. 0.5 [VA]	cl.1 [VA]
For Ø22mm cable			
DM0T 0050	50	-	1.25
DM0T 0060	60	-	1.5
DM0T 0080	80	-	1.5
DM0T 0100	100	-	1.5
DM0T 0150	150	-	2
For Ø23mm cable. For 30 x 10mm, 25 x 12.5mm, 10 x 15mm busbars			
DM2T 0100	100	-	1
DM2T 0150	150	-	1.5
DM2T 0200	200	-	2
DM2T 0250	250	-	2.5
DM2T 0300	300	1.5	3
DM2T 0400	400	2	3
For Ø30mm cable. For 30 x 10mm, 25 x 12.5mm, 10 x 15mm busbars			
DM3T 0200	200	-	5
DM3T 0250	250	-	5
DM3T 0300	300	2.5	5
DM3T 0400	400	2.5	5
DM3T 0500	500	2.5	5
DM3T 0600	600	5	10
DM3T 0800	800	5	10

Available up to 4000A

## Compact Prewire Split - Core



DM1TMA...

Order code	Primary current $I_{pn}$ /5 [A]	Burden	
		cl. 0.5 [VA]	cl.1 [VA]
24 x 24mm hole. Cable supplied as standard, 1m length			
DM1TMA 0100	100	-	1.2
DM1TMA 0150	150	-	1.2
DM1TMA 0200	200	-	1.2
DM1TMA 0250	250	-	1.2
36 x 38mm hole. Cable supplied as standard, 1m length			
DM2TMA 0250	250	-	1.5
DM2TMA 0300	300	-	1.5
DM2TMA 0400	400	-	1.5
DM2TMA 0500	500	-	1.5

For more information on these products and others within the range, please refer to the general catalogue

## Multimeters



DMG 100/DMG110



DMG 600/DMG 610



DMG 800



DMG 900

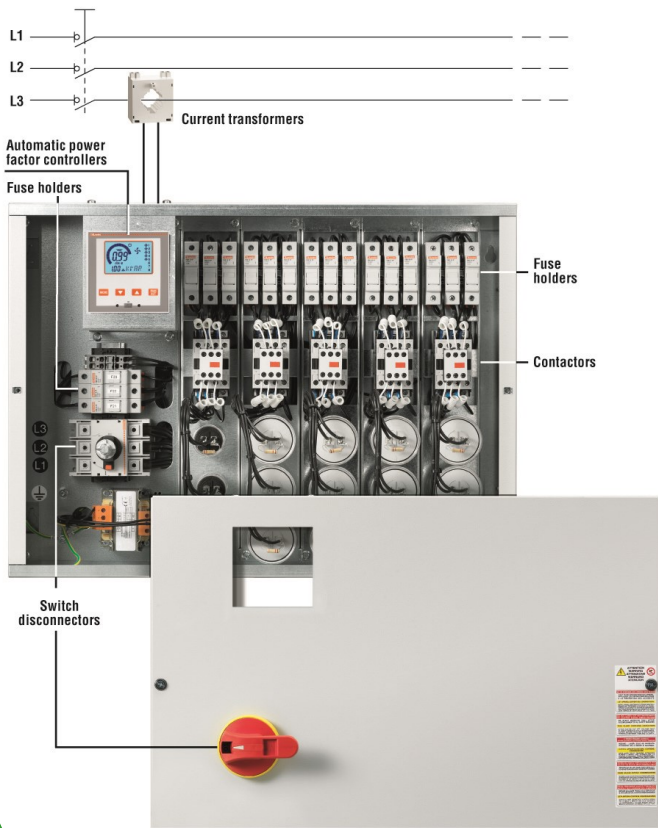
Order Code	Connection	Communication	Expandable	Fixing	Screen
DMG 100	CT connection 5-1A	-	NO	DIN rail	Backlit numerical
DMG 110	CT connection 5-1A	RS 485	NO	DIN rail	Backlit numerical
DMG 600	CT connection 5-1A	Via add on modules	YES (1 module only)	Panel mount	Backlit numerical
DMG 610	CT connection 5-1A	RS 485	YES (1 module only)	Panel mount	Backlit numerical
DMG 800	CT connection 5-1A	Via add on modules	YES (4 modules)	Panel mount	Backlit graphic
DMG 900	CT connection 5-1A	Via add on modules	YES (4 modules)	Panel mount	Graphic touchscreen

## Expansion Modules for Multimeters



EXP 10...

Order code	Description	Meter
EXP 1000	4 Digital outputs	DMG600/610/800/900
EXP 1001	4 static Outputs	
EXP 1002	2 digital inputs 2 static outputs	
EXP 1003	2 relay outputs 5A	
EXP 1008	2 digital inputs 2 relay outputs	
EXP 1010	USB	
EXP 1011	RS232	
EXP 1012	RS485	
EXP 1013	Ethernet	
EXP 1004	2 analog inputs	
EXP 1005	2 analog outputs	
EXP 1014	Profibus interface	
EXP 1030	Data storage	
EXP 1031	Data storage with energy quality EN50160	DMG 900



Power Factor is an indicator of the quality of design and management of an electrical installation.

Power factor correction brings the power factor of an AC power circuit closer to one (parity) by supplying or absorbing reactive power to a system by adding capacitors or inductors that act to cancel out the inductive or capacitive effects of a load.

Lovato Electric provide a complete solution to manage power factor efficiently and accurately.

## Thyristor Modules



DCTM3 400...

Order code	Description
DCTM3 400 030	Module for 30kvar step, 400...480VAC
DCTM3 400 050	Module for 50kvar step, 400...525VAC
DCTM3 400 100	Module for 100kvar step, 400...525VAC

## BFK Contactors



BFK...

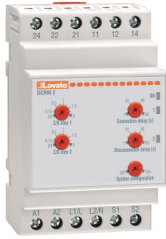
Order code	Maximum IEC operational power at $\leq 50^{\circ}\text{C}$ (AC-6b)				NO
	240V	400V	440V 480V	690V	
	[kvar]				

Capacitor switching contactors with 230VAC coil (other coil voltages available)

BFK09 10A230	4,5	7,5	9	10	1
BFK12 10A230	7	12,5	14	16	1
BFK18 10A230	9	15	17	20	1
BFK26 00A230	11	20	22	25	-
BFK32 00A230	14	25	27,5	30	-
BFK38 00A230	17	30	33	36	-
BFK50 00A230	22	40	41	46	-
BFK65 00A230	26	45	50	56	-
BFK80 00A230	30	50	56	65	-



## Reactive Current Control Relay



DCRM 2

Order code	Steps [No.]	Auxiliary Supply Voltage [V]
Single and three-phase low-voltage systems		
DCRM 2	2	380...415VAC

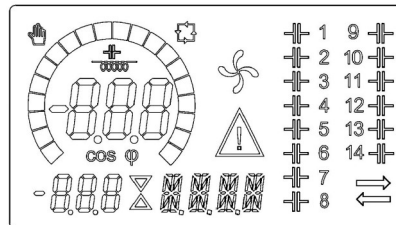
## Automatic Power Factor Controllers - DCRL Series



DCRL 3 - DCRL 5

Order code	Description
Single and three-phase low and medium-voltage systems	
DCRL 3	3 steps, expandable up to 6 steps, 100...440VAC
DCRL 5	5 steps, expandable up to 8 steps, 100...440VAC
DCRL 8	8 steps, expandable up to 14 steps, 100...440VAC

Backlit Icon LCD



## Automatic Power Factor Controllers - DCRG Series



DCRG 8

Order code	Description
DCRG 8	8 steps, expandable up to 24 steps, 100...440VAC
DCRG 8IND	8 steps, expandable up to 24 steps, 100...440VAC, for captive reactive power factor correction

Accessories

NTC 01	Remote temperature sensor, length 3m/3.3yd
--------	--

- Suitable for power factor correction using contactors and thyristor modules
- Independent power factor correction for each single phase
- Capacitive reactive power factor correction via inductive step management ( with DCRG 8IND model)
- SMS/data sending
- Slave functionality

## Expansion Modules



EXP 1006

Order code	Description
Additional steps	
EXP 1006	2 relay outputs to increase number of power factor correction steps
EXP 1007	3 relay outputs to increase number of power factor correction steps
Inputs and outputs	
EXP 1001	4 opto-isolated static outputs to increase number of static steps
Communication ports	
EXP 1012	Opto-isolated RS485 interface

For more information on these products and others within the range, please refer to the general catalogue

## ATL 100 Series



**ATL100** is the smallest device of the ATL series. It is housed in a modular box (3 modules). It is suitable for monitoring **2 independent power supplies** and will manage the transition between two SPN or TPN supplies using single phase control.

Order code	Description
ATL 100	Automatic transfer switch controller for 2 power sources with single phase control, modular housing, 110...230VAC supply

## ATL 600-610 Series



The automatic transfer switch controllers **ATL 600 - ATL 610** can supervise and manage the changeover between **2 three-phase power sources**. The voltage and frequency measurements are shown on the graphic LCD display and the LEDs on the front panel provide a clear indication about the power source status.

Order code	Description
ATL 600	Automatic transfer switch controller with optical port for 2 power sources, 144x144mm, power supply 110-440VAC
ATL 610	Automatic transfer switch controller with optical port for 2 power sources, 144x144mm, power supply 110-440VAC and 12/24VDC, expandable with EXP...expansion modules

## ATL 800 Series



The automatic transfer switch controllers **ATL 800** can supervise and manage the changeover between **2 three-phase power sources**. The voltage and frequency measurements are shown on the graphic LCD display and the LEDs on the front panel provide a clear indication about the power source status. Features also include tie breaker management, closed transition, customizable change-over devices layout, transfer strategy and built-in PLC & NFC technology

Order code	Description
ATL 800	Automatic transfer switch controller with optical port for 2 power sources, 180x240mm, power supply 110-440 VAC and 12/24/48VDC, expandable with EXP... expansion modules, built-in RS48

## ATL 900 Series



**ATL 900** is an ATS controller with high performance. Specific functions are available for the control of **three power sources and three switching breakers**. It is possible to use the default logics for the changeover strategy or personalise them with the integrated PLC. ATL 900 has four current inputs; with this feature, it can use measured power to define new logics on the control of the power sources.

- Management of 3 power sources and 3 changeover devices plus 2 tie-breakers
- Control of under and over-voltage, phase loss, asymmetry, minimum and maximum frequency, each with independent enabling and time delay
- Inputs, outputs, limits, counters and alarms are programmable by the user
- Power sources can be independently defined as utility or generator
- Automatic test management for standby or rotation generators
- Suitable for LV and MV systems
- Programmable maintenance alarms
- Suitable for contactors, motorised circuit breakers and motorised changeover switches
- 4 current inputs for the three phases and neutral
- Closed transition available
- Tie breaker management
- Built-in PLC technology
- Built-in NFC technology
- Dual AC/DC power supply

Order code	Description
<b>ATL 900</b>	Automatic transfer switch controller with optical port for 3 power sources, 180x240mm, power supply 110-440 VAC and 12/24/48VDC, expandable with EXP...expansion modules, built-in RS485, 3ph+N current input

## ATL DPS1 Series



**ATL DPS1** is capable of measuring and controlling **2 auxiliary supply voltages** at its inputs designating the most ideal to connect to the output. It reduces the number of components and improves installation safety.

Order code	Description
<b>ATL DPS1</b>	For measurement and control of voltages present at supply inputs to power motorised circuit breakers/changeover switches, power supply 110/230VAC configurable

## Expansion Modules for Flush-Mount Products



EXP 10...

Order code	Description
<b>Inputs and outputs</b>	
EXP10 00	4 digital inputs, opto-isolated
EXP10 01	4 static outputs, opto-isolated
EXP10 02	2 digital inputs and 2 static outputs, opto-isolated
EXP10 03	2 relay outputs, rated 5A 250VAC
EXP10 04	2 analog inputs, opto-isolated 0/4...20mA, PT100, 0-10V or 0...±5V
EXP10 05	2 analog outputs, opto-isolated 0/4...20mA, 0-10V or
EXP10 06	2 relay outputs to increase number of steps
EXP10 07	3 relay outputs to increase number of steps
EXP10 08	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250V
EXP10 40	2 digital/resistive inputs, 2 static outputs
EXP10 41	2 thermocouple inputs, 2 static outputs
<b>Communication ports</b>	
EXP10 10	Opto-isolated USB interface
EXP10 11	Opto-isolated RS232 interface
EXP10 12	Opto-isolated RS485 interface
EXP10 13	Opto-isolated Ethernet interface with Web server function
EXP10 14	Opto-isolated Profibus-DP interface
<b>Various functionality</b>	
EXP10 15	GPRS/GSM modem
EXP10 16	Capacitor bank protection
EXP10 30	Data storage, clock-calendar
EXP10 31	Data storage, clock-calendar with Energy Quality (EN 501)

## EXP Compatibility with Lovato Products

Type	Digital multimeters			Digital power analysers	Power factor controllers		Automatic transfer switch controllers		Engine and generator controllers			
	DMG600/610	DMG700	DMG800	DMG900/900T	DCRL3/5/8	DCRG 8	ATL610	ATL800/900	RGK...4SA	RGK610...	RGK800...	RGK900...
EXP10 00	•	•	•	•		•	•	•			•	•
EXP10 01	•	•	•	•		•	•	•			•	•
EXP10 02	•	•	•	•		•	•	•			•	•
EXP10 03	•	•	•	•	•	•	•	•			•	•
EXP10 04			•	•		•		•			•	•
EXP10 05			•	•		•		•			•	•
EXP10 06					•	•		•				
EXP10 07					•	•		•				
EXP10 08	•	•	•	•		•	•	•			•	•
EXP10 10	•	•	•	•	•	•	•	•		•	•	•
EXP10 11	•	•	•	•	•	•	•	•		•	•	•
EXP10 12	•	•	•	•	•	•	•	•		•	•	•
EXP10 13	•	•	•	•	•(DCRL 8)	•	•	•			•	•
EXP10 14			•	•		•		•			•	•
EXP10 15				•		•		•			•	•
EXP10 16						•						
EXP10 30			•	•		•						
EXP10 31				•								
EXP10 40									•		•	•
EXP10 41											•	•

Expansion Modules

## Expansion Modules for Modular Products - DME D310 T2, DME CD & DMG300



EXM 1000

Order code	Description
<b>Inputs and outputs</b>	
EXM10 00	2 digital inputs, 2 static outputs, opto-isolated
EXM10 01	2 digital inputs, opto-isolated and 2 relay outputs, rated 5A 250VAC
EXM10 02	4 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC
<b>Communication ports</b>	
EXM10 10	Opto-isolated USB interface
EXM10 11	Opto-isolated RS232 interface
EXM10 12	Opto-isolated RS485 interface
EXM10 13	Opto-isolated Ethernet interface with web server function
EXM10 20	Opto-isolated RS485 interface and 2 relay outputs, rated 5A 250VAC
EXM10 30	Data storage, RTC with backup reserve energy for data logging

## Communication Devices



CX 01

CX 02

Order code	Description
CX 01	PC ↔ Lovato product dongle, with USB optic connector for programming, data download, diagnostics and firmware upgrade
CX 02	PC ↔ Lovato product Wi-Fi dongle for programming, data download, diagnostics and firmware upgrade

## Remote Display Unit



RGK RA

Order code	Description
EXC RDU 1	Remote display unit, graphic LCD touch screen 128 x 112 pixels for ADXL..., IP65 protection
RGK RA	Remote display unit, graphic LCD touch screen 128 x 112 pixels for RGK..., IP65 protection

## Converters



EXC CON 01

Order code	Description
EXC CON 01	RS485/Ethernet converter, 12...48VDC, including DIN rail fixing kit
4 PX1	RS232/RS485 converter, opto-isolated, 220...240VAC power supply (110...120VAC on request). Repeater drive for RS 485 bus extension

## Gateway



EXC M3G 01

Order code	Description
EXC M3G 01	RS485 gateway/3G modem, 9.5...27VAC/9.5...35VDC, including antenna and programming cable

# SAM1

## APP

The configuration and maintenance operations, often carried out in uncomfortable environment due to weather conditions or noise, are now easier for all LOVATO Electric products equipped with front communication port compatible with CX02 device.

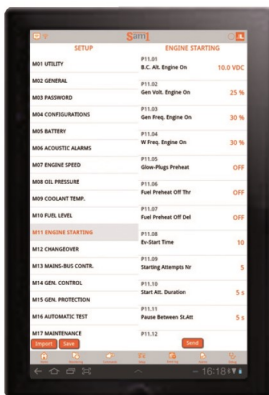
They can be connected to SAM1, the new application available for tablets and smartphones. Therefore it is no longer necessary turn on the laptop and connect cables to carry out configuration and parameters setting.

Through SAM1 it is also possible to load a previously saved file with a complete program, send commands and verify the measurements read from LOVATO Electric devices.

The events in the device memory and parameters can be displayed and saved in a text file which can be sent via email.

APP is downloaded from Google Play Store or Apple iTunes

### Parameter Setting



### Measurement Viewing



### Send Commands



# NFC

## Configuration & Remote Control Software

Programming the parameters via tablet and smartphone is now possible also through NFC wireless technology. Bringing a smartphone or tablet with NFC connection enabled close to the display of a Lovato electric product, activates the NFC APP and the device connected is recognised automatically. The application allows you to set the parameters for the device connected, save the parameters in a file and send via email & load a parameters saved previously.

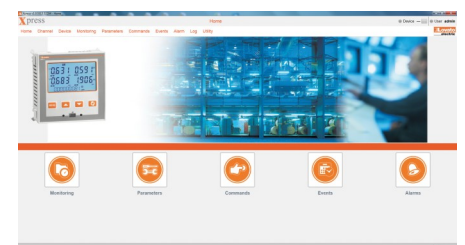


# Xpress

## Configuration & basic Measurement/Control

Is a software that allows you to:

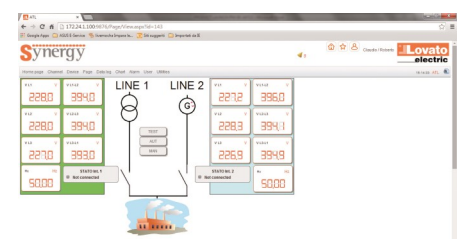
- Transfer setup parameters from a Lovato device to PC or vice versa
- Read measurements
- See events and alarms
- Send commands



# Synergy

## Supervision & Energy Management Software

Collects production and consumption data for energy supplies such as electricity, water, gas and air, using hardware measurement equipment which monitors the main parameters and communicates with the management software. This constitutes an integrated system for identifying key indicators (energy performance indicators, EnPIs), abnormal consumption trends and targets. They can also compare performance levels and perform other functions.



# Typical Full-Load Current Values of Single and Three Phase Electric Motors

THREE-PHASE POWER RATINGS		Rated motor current								
[HP]	[kW]	200V [A]	230V [A]	220-240V [A]	380-415V [A]	400V [A]	440-480V [A]	500V [A]	550-600V [A]	690V [A]
-	0.37	-	1.9	-	-	1.1	-	0.88	-	0.64
1/2	-	2.5	-	2.2	1.3	-	1.1	-	0.9	-
-	0.55	-	2.6	-	-	1.5	-	1.2	-	0.87
3/4	-	3.7	-	3.2	1.8	-	1.6	-	1.3	-
1	-	4.8	-	4.2	2.3	-	2.1	2	1.7	-
-	0.75	-	3.3	-	-	1.9	-	1.5	-	1.1
-	1.1	-	4.7	-	-	2.7	-	2.2	-	1.6
1-1/2	-	6.9	-	6	3.3	-	3	-	2.4	-
2	-	7.8	-	6.8	4.3	-	3.4	-	2.7	-
-	1.5	-	6.3	-	-	3.6	-	2.9	-	2.1
-	2.2	-	5.5	-	-	4.9	-	3.9	-	2.8
3	-	-	11.3	-	-	6.5	-	5.2	-	3.8
-	4	-	15	-	-	8.5	-	6.8	-	4.9
5	-	17.5	-	15.2	9.7	-	7.6	-	6.1	-
-	5.5	-	20	-	-	11.5	-	9.2	-	6.7
7-1/2	-	25.3	-	22	14	-	11	-	9	-
10	-	32.2	-	28	18	-	14	-	11	-
-	7.5	-	27	-	-	15.5	-	12.4	-	8.9
-	11	-	38	-	-	22	-	17.6	-	12.8
15	-	48	-	42	27	-	21	-	17	-
20	-	62.1	-	54	34	-	27	-	22	-
-	15	-	51	-	-	29	-	23	-	17
-	18.5	-	61	-	-	35	-	28	-	21
25	-	78.2	-	68	44	-	34	-	27	-
-	22	-	72	-	-	41	-	33	-	24
30	-	92	-	80	51	-	40	-	32	-
40	-	120	-	104	66	-	52	-	41	-
-	30	-	96	-	-	55	-	44	-	32
-	37	-	115	-	-	66	-	53	-	39
50	-	150	-	130	83	-	65	-	52	-
60	-	177	-	154	103	-	77	-	62	-
-	45	-	140	-	-	80	-	64	-	47
-	55	-	169	-	-	97	-	78	-	57
75	-	221	-	192	128	-	96	-	77	-
100	-	285	-	248	165	-	124	-	99	-
-	75	-	230	-	-	132	-	106	-	77
-	90	-	278	-	-	160	-	128	-	93
125	-	359	-	312	208	-	156	-	125	-
-	110	-	340	-	-	195	-	156	-	113
150	-	414	-	360	240	-	180	-	144	-
-	132	-	400	-	-	230	-	184	-	134
200	-	552	-	480	320	-	240	-	192	-
-	160	-	487	-	-	280	-	224	-	162
250	-	-	-	604	403	-	302	-	242	-
-	200	-	609	-	-	350	-	280	-	203
300	-	-	-	722	482	-	361	-	289	-
-	250	-	748	-	-	430	-	344	-	250
350	-	-	-	828	560	-	414	-	336	-
400	-	-	-	954	636	-	477	-	382	-
-	315	-	940	-	-	540	-	432	-	313
450	-	-	-	1030	-	-	515	-	412	-
-	355	-	1061	-	-	610	-	488	-	354
500	-	-	-	1180	786	-	590	-	472	-

SINGLE-PHASE POWER RATINGS [HP]	Rated motor current	
	[A] at 120V	[A] at 240V
1/10	3	1.5
1/8	3.8	1.9
1/6	4.4	2.2
1/4	5.8	2.9
1/3	7.2	3.6
1/2	9.8	4.9
3/4	12.8	6.9
1	16	8
1-1/2	20	10
2	24	12
3	34	17
5	56	28
7-1/2	80	40
10	100	50
15	135	68

The information in the chart has been obtained from the IEC/EN 60947-4-1 standards. The kW ratings are preferred rated values according to IEC 60072-1 (primary series) at 50/60Hz while Horsepower and corresponding current values are according to UL 508 Industrial Control Standard at 60Hz.

The full load current values listed are for motors running at standard speeds with normal torque characteristics. Motors which are non-standard, such as low speed, high torque or other special applications may have higher full load currents.

Caution: For accurate and reliable motor protection, motor nameplate current should be used to obtain actual motor full load amps for all motors. The information given is for indication and reference purposes only.

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**For the full range of products and technical information, please see the general catalogue**

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