

Power control.

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

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



EATON

Powering Business Worldwide

Control and indication

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Automation

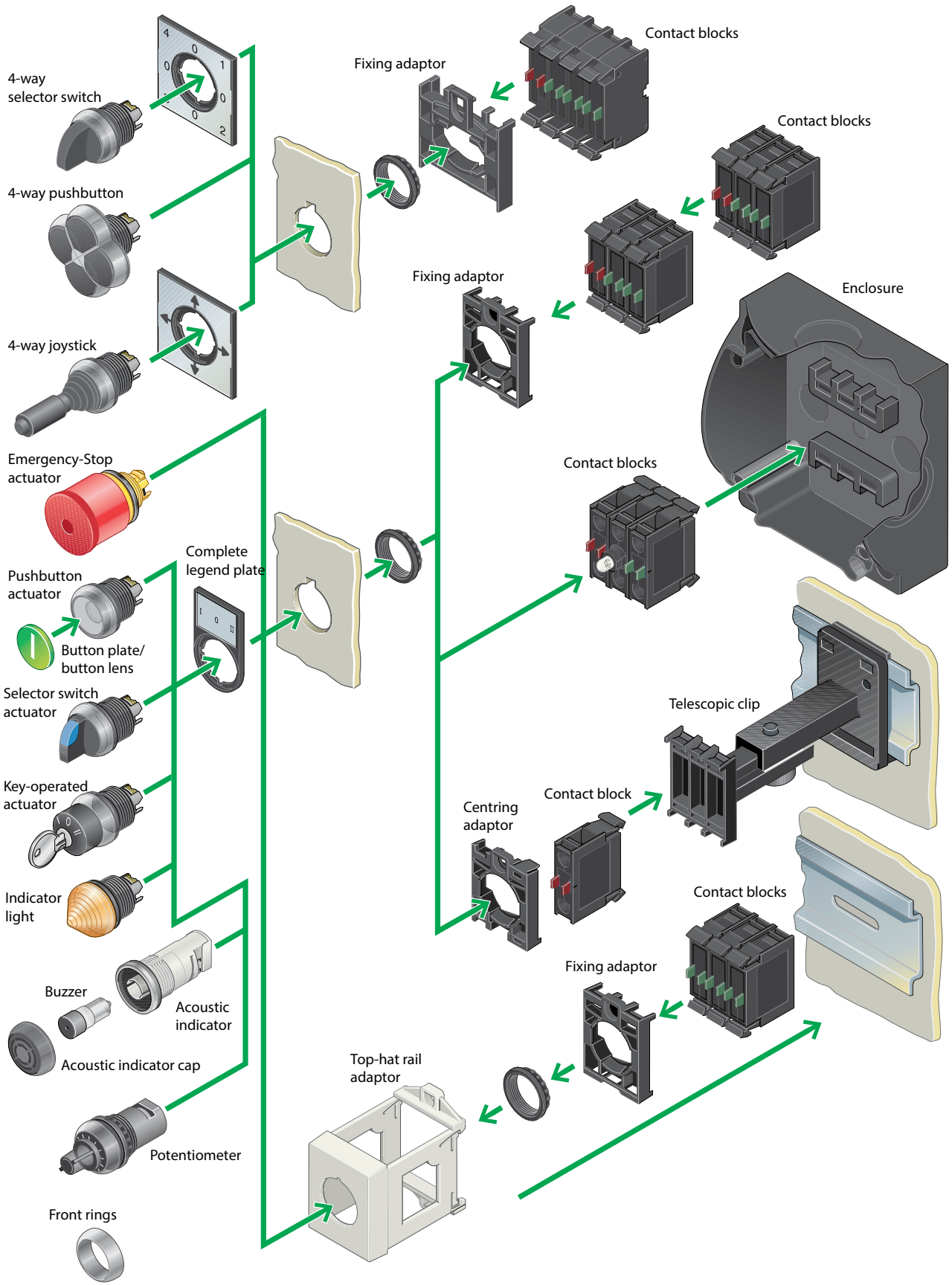
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Power control

Control and indication

22.5mm Pushbuttons

RMQ - Titan, system overview



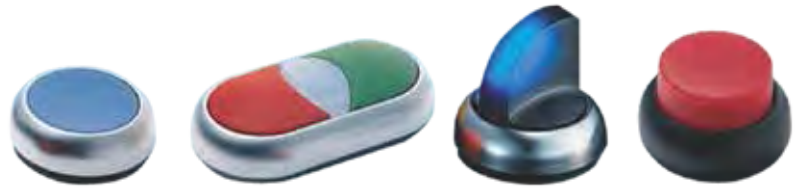
(Titanium appearance standard, black and gold options)

22.5mm Pushbuttons

RMQ - Titan

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

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



Features & benefits:

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

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



M22-DLH-R-K11-R-P



M22-L-G-G-P



M22-PVL-K12-R-P

Power control

Control and indication

22.5mm Pushbuttons

RMQ - Titan

Complete units

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

Enclosed units

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



M22-D-G-X1/K10



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



M22-PV/K01



M22-WRK/K10



M22-WRS/K11



M22-D-G-X1/KC11/I



M22-PV/KC11/IY



M22-WRS/KC11/I



M22-I2-M1



M22-I3-M1

22.5mm Pushbuttons

RMQ - Titan

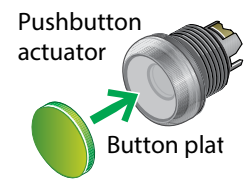
Pushbutton actuators, IP67

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



Actuators

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



M22-XD-G



M22-DH-R



M22-DP-R



M22-DDL-GR-X1/X0

22.5mm Pushbuttons

RMQ - Titan

Actuators



M22-PV



M22-PVL



M22-PVS



M22-PL-PV



FAK-RV/KC01/IY



FAK-RV/KC11/IY

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

Fixing adapters, contact blocks



M22-A



M22K10



M22-AK11

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

22.5mm Pushbuttons

RMQ - Titan

LED elements

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



M22-A



M22-A

Illuminated pushbutton actuators, indicator lights

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



M22-DL-R



M22-DRL-G



M22-DLH-W



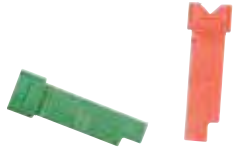
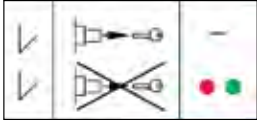
M22-L-R



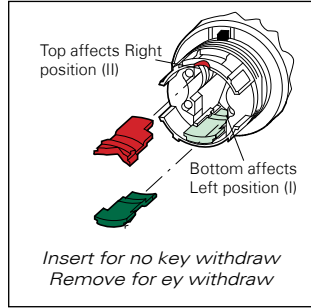
M22-LH-B

Power control

Control and indication



M22-XC-R



22.5mm Pushbuttons

RMQ - Titan

Set of coding adapters for selector switches

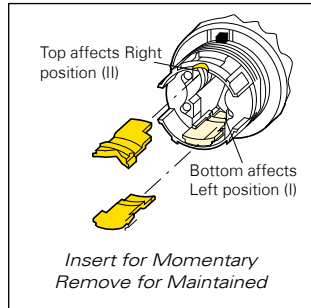
Description	For use with	Colour	Item no.
Used to convert key withdraw position to non-key withdrawn position	M22(S)-WRS(3)	-	M22-XC-R
Supplied with standard switches	M22(S)-WR(L)(K)(3)	-	M22-XC-Y
Used to convert maintained operation to momentary operation	M22(S)-WRS(3)	-	

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

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



M22-XC-Y



Two position adapter configurations

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

Bottom slot not implemented with two position switches

Shading indicates standard switch configuration

Three position adapter configurations

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

Shading indicates standard switch configuration

22.5mm Pushbuttons

RMQ - Titan

Selector switch actuators

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

Illuminated selector switch actuators, key-operated actuators

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



M22-W



M22-WR



M22-WK



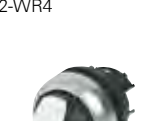
M22-WRK



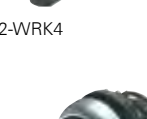
M22-W3



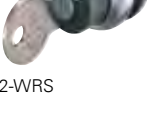
M22-WR3



M22-WK3



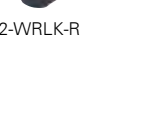
M22-WRK3



M22-WR4



M22-WRK4



M22-WRS



M22-WRLK-R

22.5mm Pushbuttons

RMQ - Titan

Four-way operators



M22-WJ2H



M22-WRJ4



M22-D4-S



M22-XCK



M22-XCK2



M22-I2



M22-I4



M22-EY1



M22-E6

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

Surface mounting enclosures, flush mounting plates

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

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


22.5mm Pushbuttons

RMQ - Titan, Accessories

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

⌀ NEMA/UL Type 1.

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

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

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



M22-H1



M22-B



M22-T-D



M22-T-DD



M22-TC



M22-R30



M22-GR



M22-AMC



M22-MS



M22-IVS



M22-XW



M22-XGWK



M22-DZ-B-GB14



M22-R10K



M22-XAK1

Power control

Control and indication

30.5mm Pushbuttons

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

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

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

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



Features

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

Standards

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

Contact blocks

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

Grounding nibs

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

Standard Pushbuttons

Chrome, T Series pushbuttons

Chrome

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



Applications for the chrome operators:

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

Corrosion Resistant, E34 Pushbuttons

Corrosion resistant

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



Applications for corrosion resistant operators:

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

Ultraviolet light

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

30.5mm Pushbuttons

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



Flush button

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



Extended button

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



Half-shrouded

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

Base mounted contact blocks

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

Logic level contact blocks

Description	Item no.
1NO 1NC	T1E
2NO	T2E
2NC	T3E
1NC	T51E
1NO	T53E

Standard contact blocks

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



T1P



T44



T57

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

STEP 1



Select Pushbutton operator above.

STEP 2



Select contact block above

Power control

Control and indication

30.5mm Pushbuttons

Mushroom operators momentary



Mushroom button 38.1mm

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



Palm head button 63.5mm zinc

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



Accessories for complete push-pull operators*

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

Legend Plates

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

* For use with push-pull mushroom operators maintained.

STEP 1



Select Pushbutton operator above.

STEP 2



Select contact block.
(previous page)

Mushroom operators components



Bare shaft operator for mushroom or palm pushbutton

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



38.1 Mushroom button for bare shaft operators

Colour	Item no.
● Black	T281
● Red	T282
● Green	T283
● Yellow	T284
● Blue	T288



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

Colour	Item no.
● Black	T291
● Red	T292
● Green	T293

STEP 1



Select bare shaft operator above.

STEP 2



Select mushroom button above

STEP 3



Select contact block.
(previous page)

30.5mm Pushbuttons

Push-pull mushroom operators maintained



T129P



T176P



T129M



E34129S

Push-pull operators complete padlockable

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

Push-pull operators complete non-padlockable

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

STEP 1



Select Pushbutton operator above.

STEP 2



Select contact block.

(previous page)

Push-Pull operators components



Push-pull operators

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

38.1Mm mushroom button for push-pull operators

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

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

description	Colour	Item no.
Operator Head	● Red	E34J2
Operator Head	● Red (Emergency Stop)	E34J2N8

STEP 1



Select push-pull operator above.

STEP 2



Select mushroom button above

STEP 3



Select contact block.

(previous page)

Power control

Control and indication

30.5mm Pushbuttons

Illuminated operators, indicating light lenses



Plastic lenses

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

Glass lenses (chrome)

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

Glass lenses (corrosion resistant)

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

Indicating Light Units



Direct voltage indicating light unit

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

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

*LED only 6-240V

Resistor type indicating light units

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

Incandescent bulb indicating light units

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

Transformer type indicating light units

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

STEP 1



Select a lens from above.

STEP 2



Select indicating light above

STEP 3



Select bulb (if not supplied)
(next page)

STEP 4



Select contact block.
(previous page)

30.5mm Pushbuttons

Illuminated operators, illuminated pushbutton lenses



Plastic illuminated lenses

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

Glass illuminated lenses (chrome)

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

Glass illuminated lenses (chrome) (corrosion resistant)

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

Press-to-test light units



Illuminated pushbutton light units



Press-To-Test Indicating Lights - Direct Voltage

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

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

Illuminated pushbuttons - transformer type

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

Direct Voltage Indicating Light Unit

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

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

*LED only 6-240V

Press-to-test indicating lights - transformer type

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

Press-to-test indicating lights - resistor type

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

STEP 1



Select a lens from above.

STEP 2



Select light from above

STEP 3



Select bulb (if not supplied)
(next page)

STEP 4



Select contact block.
(previous page)

Power control

Control and indication

30.5Mm pushbuttons

Illuminated operators, push-pull mushroom lenses



Standard push-pull lenses

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

Side lighted anodised aluminium lenses

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

Illuminated push-pull operators



Illuminated push-pull operators

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

Light units for illuminated push-pull operators



Direct voltage light modules for push-pull operators

Description	Voltage	Item no.
Direct Voltage	6-240V	10250T70

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

Transformer type light modules for push-pull operators

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

Resistor type light modules for push-pull operators

Description	Voltage	Item no.
Resistor Type 120V bulb supplied	120	10250T80
	240	10250T81

STEP 1



Select a lens from above.

STEP 2



Select push-pull operator from above

STEP 3



Select light unit from above

STEP 4



Select bulb (if not supplied)

STEP 5



Select contact block. (previous page)

30.5Mm pushbuttons

Illuminated operators, bulbs



Incandescent bulbs

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

Super bright LED bulbs

(recognisable in outdoor daylight applications - ac/dc)

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



Bright LED bulbs - single chip (ac/dc)

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



Neon bulbs

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

Bright LED bulbs - single chip (ac/dc)

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

30.5Mm pushbuttons

Selector switch operators,

2 Position selector switches

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

4 Position selector switches

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

* See cam selection chart to determine cam code.

3 Position selector switches

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



Selector switch
knobs & levers

Knobs & levers

Description	Material	Item no.
Knob	Plastic	E34K1
	Metal	T341M
Lever	Plastic	E34L1
	Plastic	E34A1*

* For maintained operators only.

Selector switches & joystick operators, cam selection guide

Cam selection chart showing contact sequence

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

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

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

STEP 1



Select bare shaft operator
(previous page)

STEP 2

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

STEP 3



Select knob or lever

STEP 3





Select contact block.
(previous page)

30.5mm Pushbuttons

Key operated selector switches

2 Position key operated selector switches




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

Spare key

Description	Item no.
Replacement Keys (2)	TA152

Other key codes are available contact eaton for more information.

3 Position key operated selector switches

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



STEP 1



Select switch operator

STEP 2

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

STEP 3



Select contact block.
(previous page)

Power control

Control and indication

30.5Mm pushbuttons

Selector switches & joystick operators, joystick operators



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

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

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

2 Position joystick operator

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

4 Position joystick operators (spring return only)

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

4 Position joystick operators (maintained)

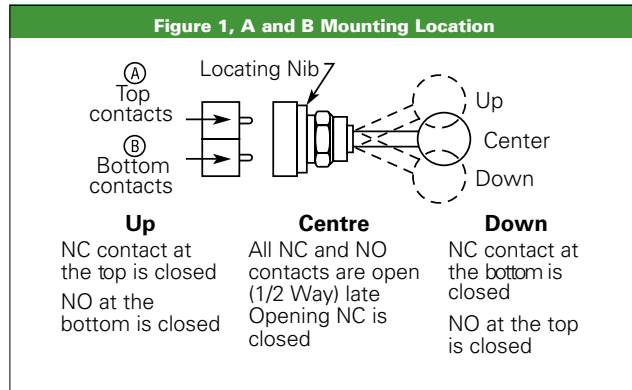
Description	Item no.
4 position - Without Latch	10250 T451_*
4 position - With Latch	10250 T461_*

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

Maintained positions

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

Two-position joystick operators - contact block operation



Contact block selection & mounting

Handle position			Contact block	Type	Mounting location	
Up	Centre	Down			Top	Bottom
			T51P	1NC		
X	O	O	T45	2LONC		
X	O	O	T3P	1NC		
O	O	X				
X	X	O	T45	1LONC		
O	X	X				
X	O	O	T44	1NC		
O	O	X		1NO		
O	O	X		1NC		
V	O	O		1NO		

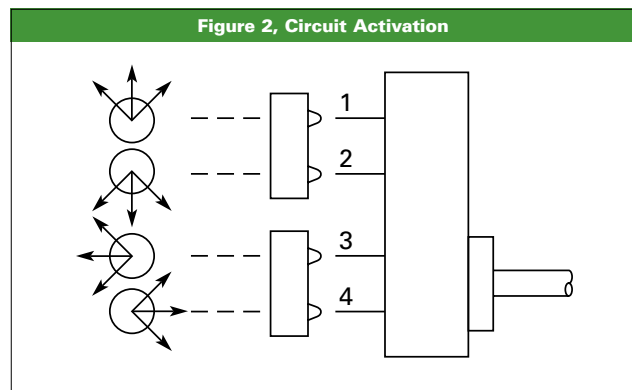
X = closed circuit, O = open circuit.

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

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

Four-position joystick operators - contact block operation

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



Application caution

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

30.5Mm pushbuttons control station and enclosures

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

Diecast aluminium enclosures

Standard

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

Corrosion resistant

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

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



TN4

TN2

TN11

Stainless steel enclosures

Stainless steel

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

Fibreglass enclosures

Fibreglass

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

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



XBS330

TFG12

Assembled control stations

Push-pull stop stations (padlockable)

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



10250T700P

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

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



ESM9/6

Stop start pushbutton station

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



T3500

Power control

Control and indication



TA38



TA2



TA26



10250TA64



TA48



TA85



TA25



10250TA6
E34TA6



10250TA12
E34TA12



10250TA15
E34TA15



TA56
10250TA56Y



10250ED1241



TA8



TA22

30.5mm Pushbuttons accessories

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

Boots	Colour	Item no.
Protective boot for flush pushbutton operators	Clear	10250TA46
	Blue	91000TA46
	Black	TA47
	Red	TA48
	Green	TA49
Protective boot for extended pushbutton operators	Yellow	TA50
	Black	TA3
	Red	TA4
Protective boot for illuminated pushbuttons.	Green	TA10
	Clear	TA85
Protective boot for momentary mushroom operators on page 295. Not suitable for use with T140 operator.	Clear	TA25
	Black	TA88

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

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

30.5mm Pushbuttons accessories

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

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

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

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



TA5



TA1



10250TA7



10250TA95



TA96



10250TA102



TFL2

Legend Plates

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

TJ34

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

TM31

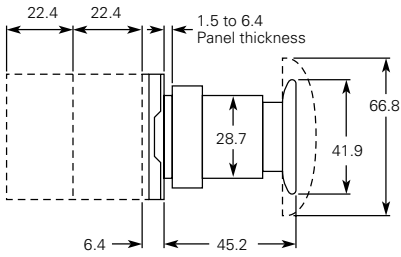
E34SP34

Power control

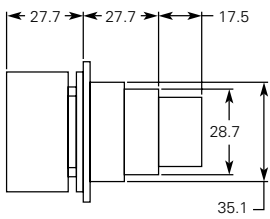
Control and indication

30.5mm Pushbuttons

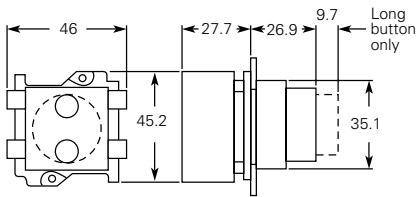
30.5mm Pushbuttons, dimensions & technical data



Push-Pull Switch

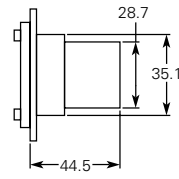
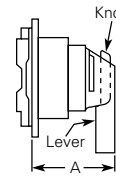


Illuminated Pushbutton

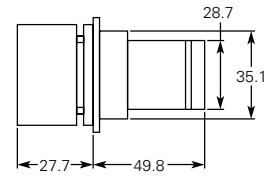


Flush and long pushbutton half shroud is the same as the long pushbutton with lower half of guard ring cut back

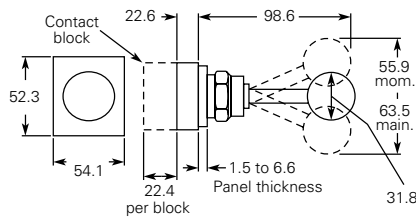
Operator	Dim. A
Knob	35.1
Lever	38.1



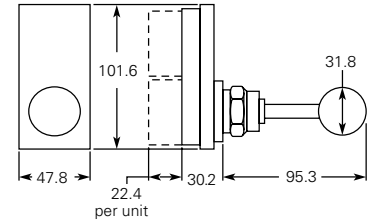
Key operated selector switch



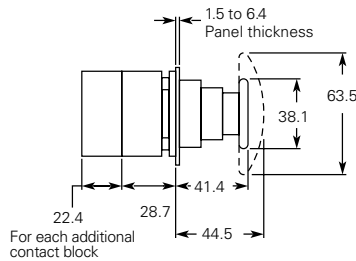
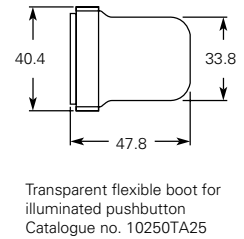
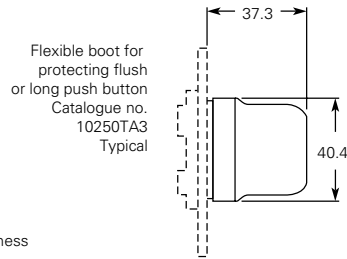
Illuminated Selector Switch



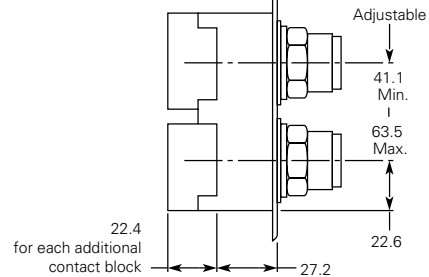
2-position joystick operator



4-position joystick operator



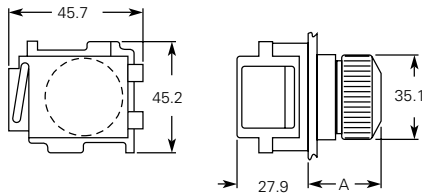
Mushroom and jumbo head pushbutton



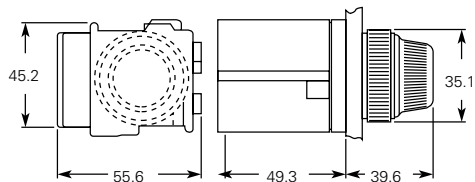
**Maintained Pushbutton
Catalog No. 10250TA66
Typical**

Lens	Dimension A
Plastic	35.1
Glass	39.6

Approximate Dimensions in mm



Indicating Light - Transformer Type



Press-To-Test Indicating Light - Transformer Type

Diecast aluminium enclosure dimensions

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

Fibreglass enclosure dimensions

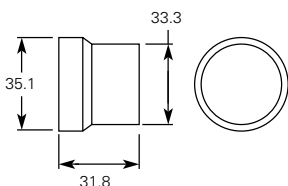
	Wide	High	Deep
1	97	100	75
2	97	150	75
3	97	200	75

316 Stainless steel enclosure dimensions

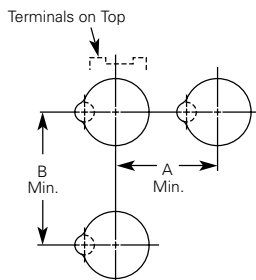
	Wide	High	Deep
1	120	120	84
2	120	160	84
3	120	220	84
4	120	280	84

30.5mm Pushbuttons

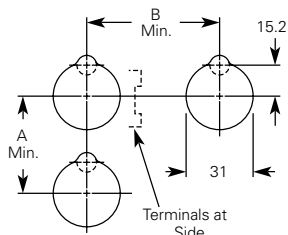
30.5mm Pushbuttons, dimensions & technical data



Extended Retaining Nut
Catalog No. 10250TA12



Horizontal Rows



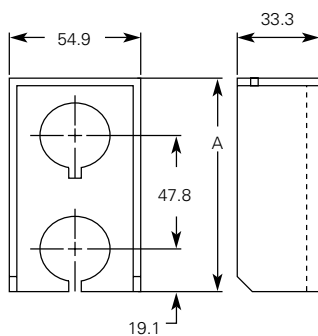
Vertical Rows

Panel drilling and minimum spacing

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

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

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



Multiple Button Guard

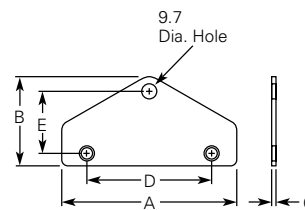
Number of elements	Dimension A
2	101.6
3	149.4
4	202.2
7	339.9

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

② For plastic legend plate, Dimension B is 28.4

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

Approximate Dimensions in mm



Chain Hook Bracket

Power control

Control and indication

30.5mm Pushbuttons, dimensions & technical data

Features

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

Benefits

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

Contact operation

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

Standards & certifications

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

Ingress protection (when mounted in similarly rated enclosure):

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

Technical data & specifications

Mechanical ratings:

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

Climate conditions:

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

Terminals:

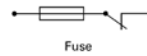
- Marking: NC-NO on the contact block to meet the NEMA requirements. Dual marking system 1 – 2 for normally closed, 3 – 4 for normally open to meet BS5472 (Cenelec EN50 005)
- Clamps: Terminals are saddle clamp type for 1 x 22 AWG (0.34 mm2) to 2 x 14 AWG (2.5 mm2) conductors
- Torque = 7 lb-in (0.8 Nm)
- Degree of protection against direct electrical contact: IP2X with fingerproof shroud

Light units:

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

Electrical ratings:

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



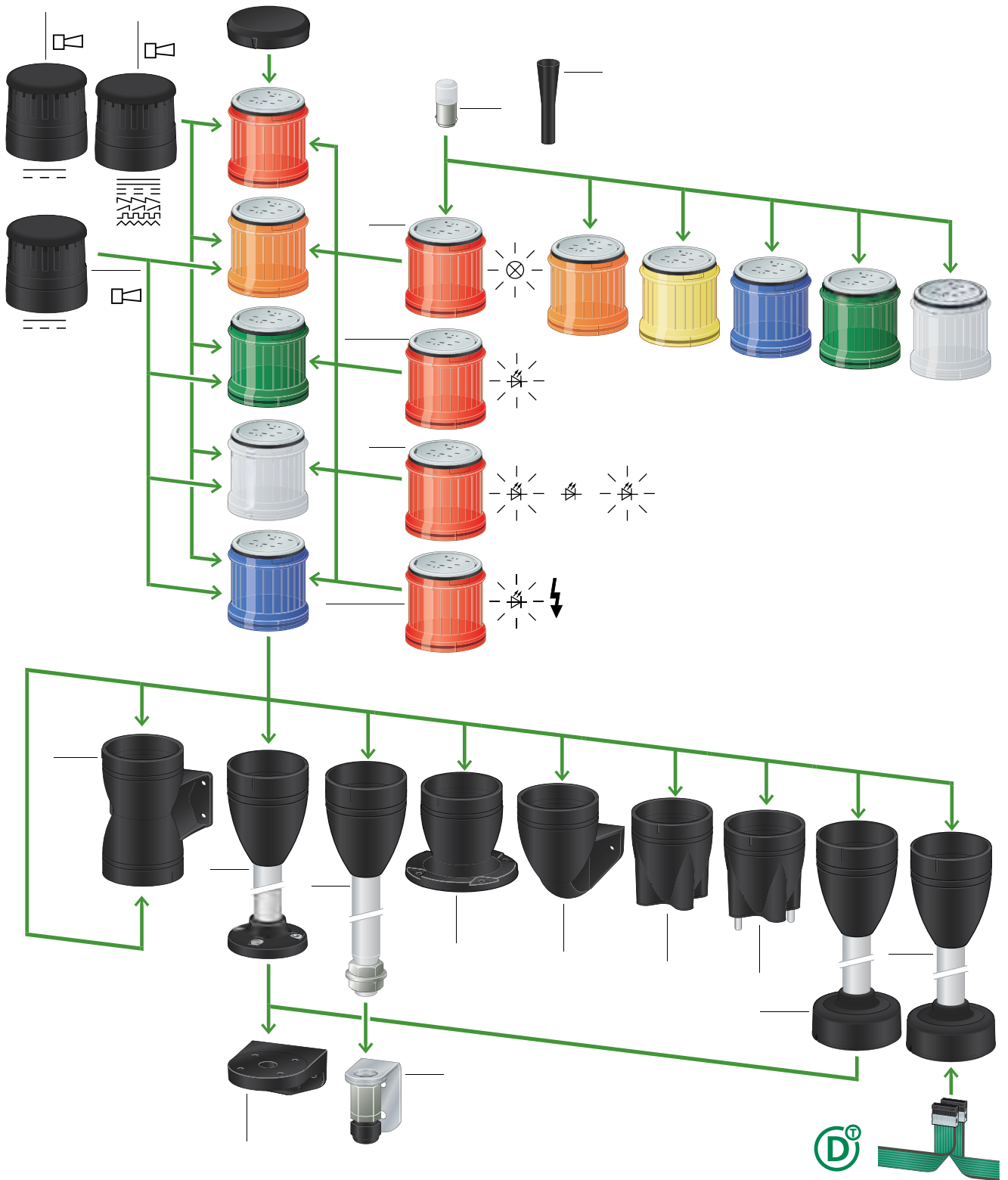
- UL rating: A600, P600: AC load life duty cycle 1200 operations/hour (– 10A: 110V pf 0.4 – 1 x 106 operations, – 5A: 250V pf 0.4 – 1 x 106 operations, – 2A: 660V pf 0.4 – 1 x 106 operations)
- Switching capacity: AC15 rated make/break (11 x I_e at 1.1 x U_e), (– 6A: 120V pf 0.3, – 4A: 240V pf 0.3, –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

Contact block

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

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

Stacklights - SL7 range



Stacklights - SL7 range

Complete devices

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



SL7-100-L-RG-24LED

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

Light Module with LED

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



White



Amber



Yellow



Green



Blue



Red

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

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

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

Stacklights - SL7 range

Light module with LED

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

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



White



Amber



Yellow

SL7 Light module with high-output LED

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

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



Green

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

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



Blue



Red

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

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

Stacklights - SL7 range

SL7 Light module for incandescent bulb

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

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

SL7 Acoustic modules

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



SL7-AP24

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

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



SL7-AP120-E

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

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



SL7-AP230-M

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

① Place only at the highest position on a pole.

Stacklights - SL7 range

SL7 Base modules

For horizontal mounting—Includes cover, maximum 5 modules

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

For vertical mounting—includes cover, maximum 5 modules

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

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

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



SL7-CB-250



SL7-CB-EMH



SL7-CB-SWD



SL7-CB-FW

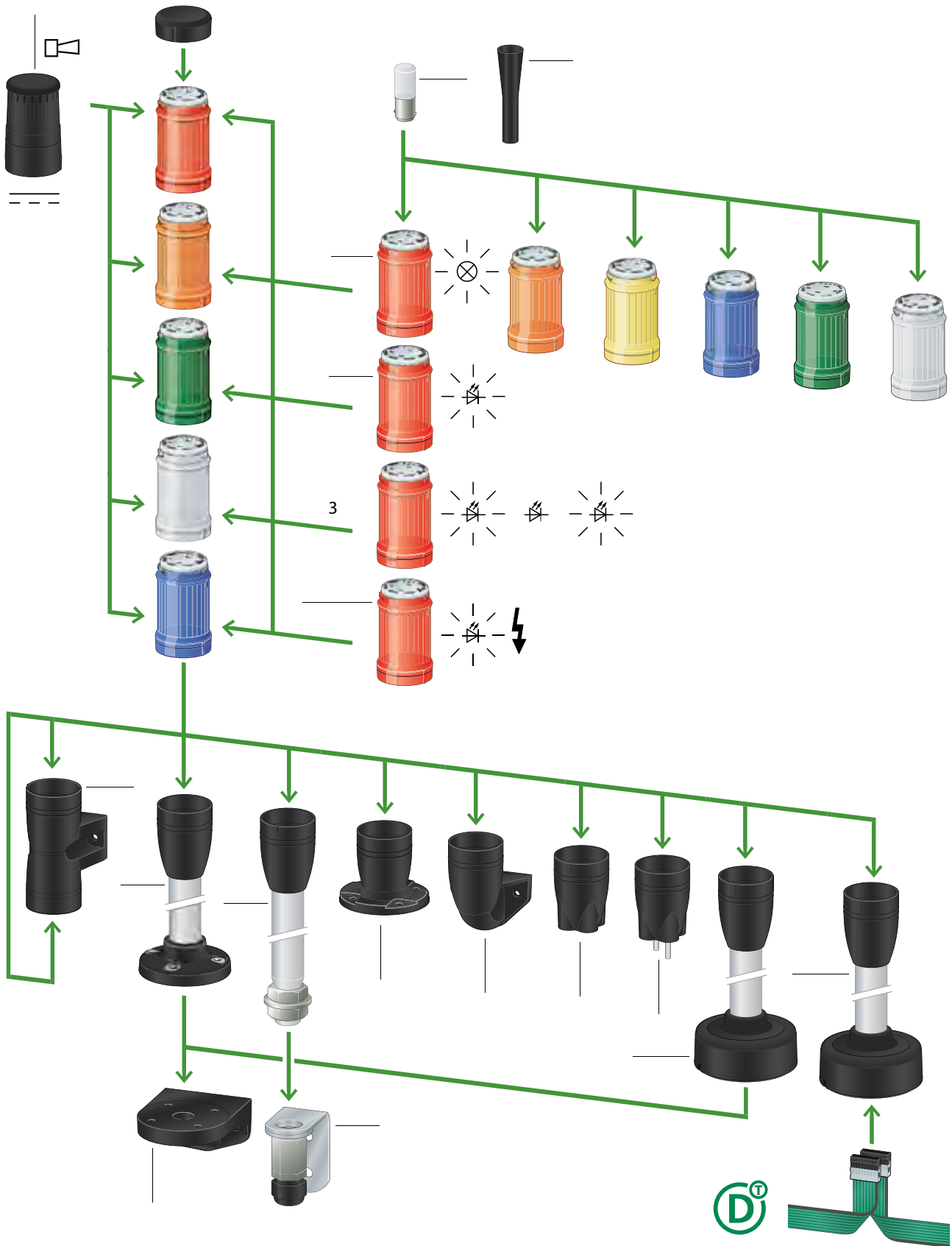


SL7-CB-D

Power control

Control and indication

Stacklights - SL4 range



Stacklights - SL4 range

Complete devices

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

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



SL7-100-L-RG-24LED

Light module with LED

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

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



White



Amber



Yellow

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

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



Green



Blue



Red

Stacklights - SL4 range

Light module with LED

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



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

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



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

SL4 Light module for Incandescent bulb

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

Blue

Red

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

SL4 Acoustic modules

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



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

Stacklights - SL4 range

SL7 Base modules

For horizontal mounting—Includes cover, maximum 5 modules

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

For vertical mounting—includes cover, maximum 5 modules

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

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

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



SL4-PIB-



SL4-PIB-IMH



SL4-PB-EMH



SL4-FMS-



SL4-PIB-FW



SL4-PIB-D

Stacklights - SL range accessories

Mounting brackets



SL7/4-FW

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



SL7/4-FW-T

Incandescent bulb tool

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

Incandescent bulbs

Mounting: Ba15d - SL7 series



SL7/4-BET

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

Mounting: Ba15d - SL4 series

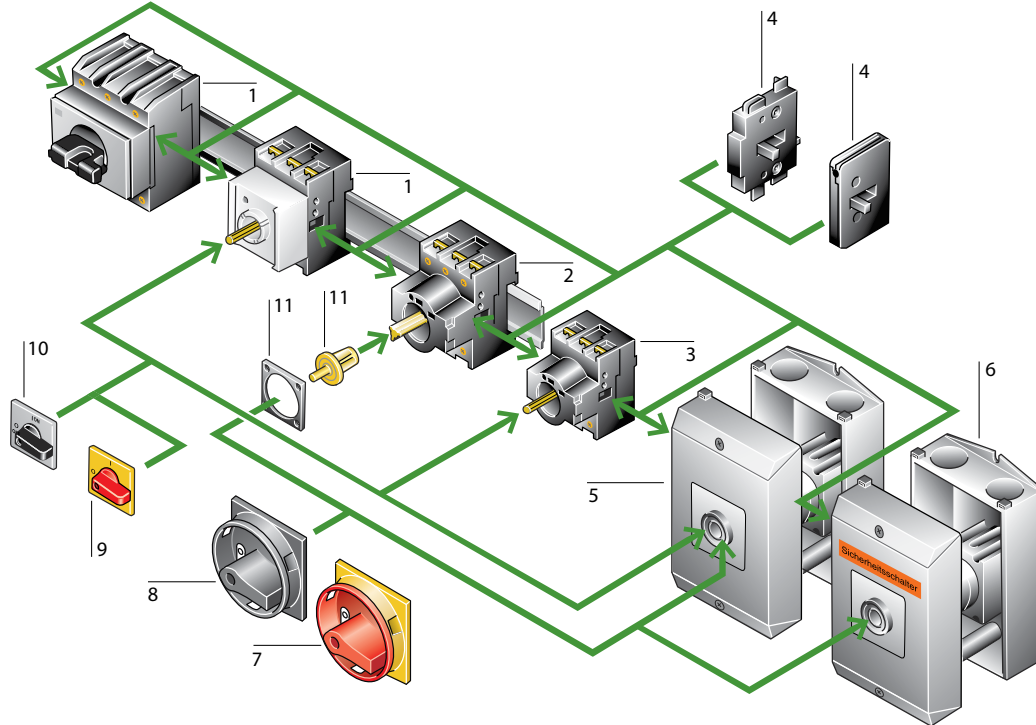


SL7-L12

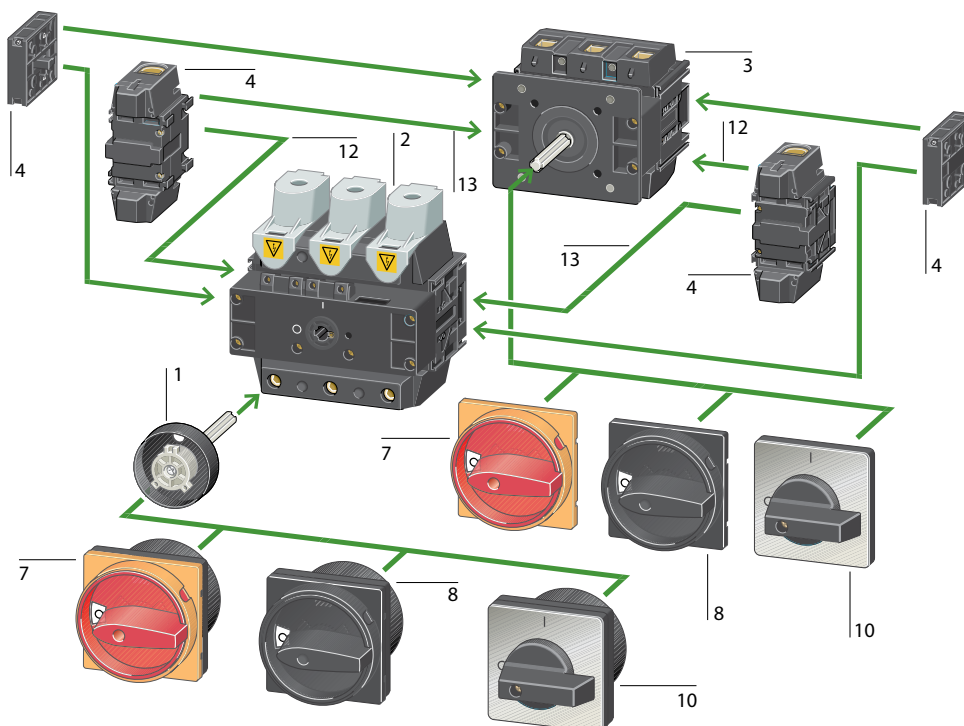
Lifespan (h)	Rated operational voltage (Ue V)	Power (Watts)	Standard pack	For use with..	Item no.
3000	12	4	1	SL4-L...	SL4-L12
	24				SL4-L24
	120				SL4-L120
	230				SL4-L230

Cam switches

ON-OFF switches - P1, P3



ON-OFF switches - P5



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

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

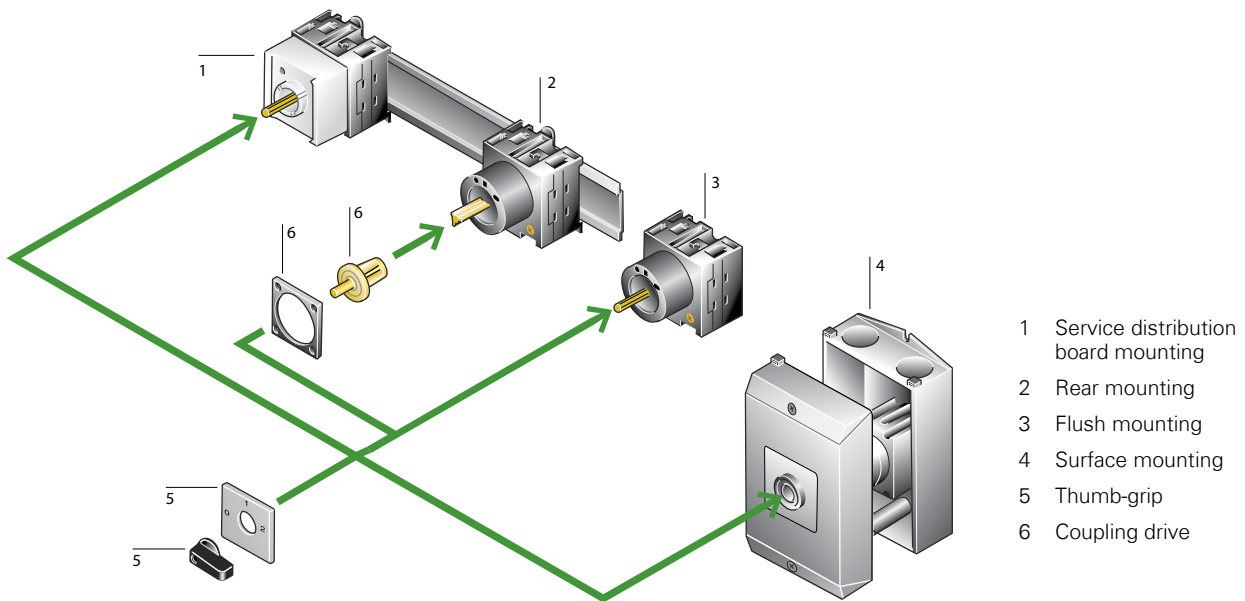
- 10 Thumb-grip
- 11 Coupling drive
- 12 Protective conductor terminal
- 13 Neutral terminal

Power control

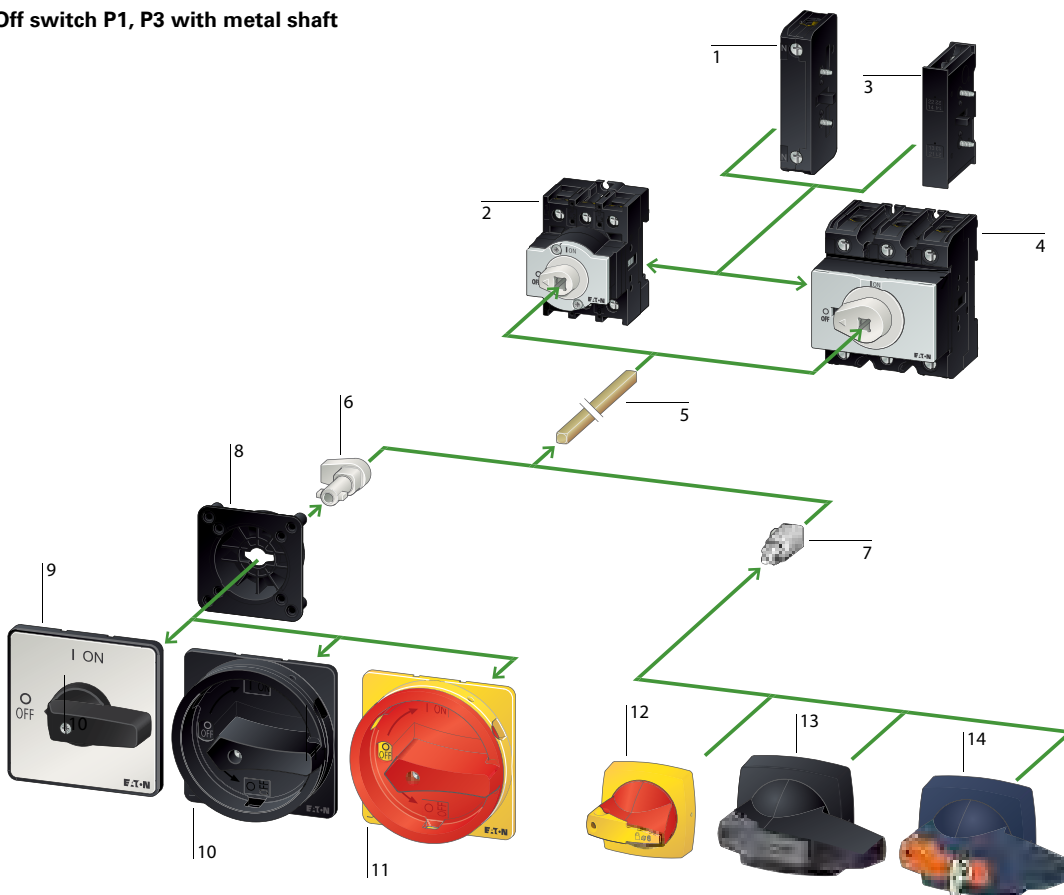
Control and indication

Cam switches

Control switches - T0, T3, T5B, T5



On-Off switch P1, P3 with metal shaft



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

Cam switches

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

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



T0-1-8200..



T0-1-8210..



T0-1-8240..



T0-3-8212..



T0-2-8400..



T0-3-8622...



T0-3-8048..

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

Power control

Control and indication

Cam switches



Main circuit poles	Auxiliary circuits		Rated uninterrupted current I A	Main switches surface mounting	Main switches flush mounting	Main switches rear mounting	Main switches rear mounting
	N/O	B		IP65 Item no.	front IP65 Item no.	front IP65 Item no.	front IP65 IP20 with terminal cover Item no.
Main switches, maintenance switches, repair switches With red rotary handle and yellow locking ring Note: All types are available with a black thumb-grip Lockable in the 0 (Off) position							
1	-	-	20	T0-1-8200/I1/SVB	T0-1-8200/EA/SVB	T0-1-8200/V/SVB	-
			32	T3-1-8200/I2/SVB	T3-1-8200/EA/SVB	T3-1-8200/V/SVB	-
			63	T5B-1-8200/I4/SVB	T5B-1-8200/EA/SVB	T5B-1-8200/V/SVB	-
			100	-	T5-1-8200/EA/SVB	T5-1-8200/V/SVB	-
2	-	-	20	T0-1-102/I1/SVB	T0-1-102/EA/SVB	T0-1-102/V/SVB	-
			32	T3-1-102/I2/SVB	T3-1-102/EA/SVB	T3-1-102/V/SVB	-
			63	T5B-1-102/I4/SVB	T5B-1-102/EA/SVB	T5B-1-102/V/SVB	-
			100	T5-1-102/I5/SVB	T5-1-102/EA/SVB	T5-1-102/V/SVB	-
3	-	-	20	T0-2-1/I1/SVB	T0-2-1/EA/SVB	T0-2-1/V/SVB	-
			25	P1-25/I2/SVB	P1-25/EA/SVB	P1-25/V/SVB	P1-25/M4/SVB
			32	P1-32/I2/SVB	P1-32/EA/SVB	P1-32/V/SVB	P1-32/M4/SVB
			63	P3-63/I4/SVB	P3-63/EA/SVB	P3-63/V/SVB	P3-63/M4/SVB
			100	P3-100/I5/SVB	P3-100/EA/SVB	P3-100/V/SVB	P3-100/M4/SVB
			125	-	P5-125/EA/SVB	P5-125/V/SVB	-
			160	-	P5-160/EA/SVB	P5-160/V/SVB	-
			250	-	P5-250/EA/SVB	P5-250/V/SVB	-
			315	-	P5-315/EA/SVB	P5-315/V/SVB	-
3 + N	-	-	20	T0-2-8900/I1/SVB	-	-	-
			25	P1-25/I2/SVB/N	P1-25/EA/SVB/N	P1-25/V/SVB/N	P1-25/M4/SVB/N
			32	P1-32/I2/SVB/N	P1-32/EA/SVB/N	P1-32/V/SVB/N	P1-32/M4/SVB/N
			63	P3-63/I4/SVB/N	P3-63/EA/SVB/N	P3-63/V/SVB/N	P3-63/M4/SVB/N
			100	P3-100/I5/SVB/N	P3-100/EA/SVB/N	P3-100/V/SVB/N	P3-100/M4/SVB/N
			125	-	P5-125/EA/SVB/N	P5-125/V/SVB/N	-
			160	-	P5-160/EA/SVB/N	P5-160/V/SVB/N	-
			250	-	P5-250/EA/SVB/N	P5-250/V/SVB/N	-
			315	-	P5-315/EA/SVB/N	P5-315/V/SVB/N	-
3	1	0	20	T0-2-15679/I1/SVB	T0-2-15679/EA/SVB	T0-2-15679/V/SVB	-
	1	1	25	P1-25/I2/SVB/Hi11	P1-25/EA/SVB/Hi11	P1-25/V/SVB/Hi11	P1-25/M4/SVB/Hi11
			32	P1-32/I2/SVB/Hi11	P1-32/EA/SVB/Hi11	P1-32/V/SVB/Hi11	P1-32/M4/SVB/Hi11
			63	P3-63/I4/SVB/Hi11	P3-63/EA/SVB/Hi11	P3-63/V/SVB/Hi11	P3-63/M4/SVB/Hi11
			100	P3-100/I5/SVB/Hi11	P3-100/EA/SVB/Hi11	P3-100/V/SVB/Hi11	P3-100/M4/SVB/Hi11
3 + N	1	1	20	T0-3-15680/I1/SVB	T0-3-15680/EA/SVB	T0-3-15680/V/SVB	-
			25	-	P1-25/EA/SVB/N/Hi11	P1-25/V/SVB/N/Hi11	P1-25/M4/SVB/N/Hi11
			32	T3-3-15680/I2/SVB	P1-32/EA/SVB/N/Hi11	P1-32/V/SVB/N/Hi11	P1-32/M4/SVB/N/Hi11
			63	P3-63/I4/SVB/N/Hi11	P3-63/EA/SVB/N/Hi11	P3-63/V/SVB/N/Hi11	P3-63/M4/SVB/N/Hi11
3			100	P3-100/I5/SVB/N/Hi11	P3-100/EA/SVB/N/Hi11	P3-100/V/SVB/N/Hi11	P3-100/M4/SVB/N/Hi11
	2	1	20	T0-3-15683/I1/SVB	T0-3-15683/EA/SVB	T0-3-15683/V/SVB	-
	-	-	20	T0-3-8342/I1/SVB	T0-3-8342/EA/SVB	T0-3-8342/V/SVB	-
			32	T3-3-8342/I2/SVB	T3-3-8342/EA/SVB	T3-3-8342/V/SVB	-
			63	T5B-3-8342/I4/SVB	T5B-3-8342/EA/SVB	T5B-3-8342/V/SVB	-
6			100	T5-3-8342/I5/SVB	T5-3-8342/EA/SVB	T5-3-8342/V/SVB	-

Cam switches

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



SVB-T0



SVB-SW-T0



V/EA/SVB-T0



V/EA/SVB-SW-T0



KNB-T0



KNB-RT-P3

Power control

Control and indication

Cam switches

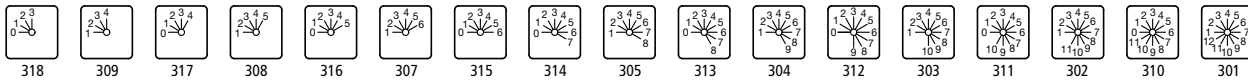
Switch size	Dimensions mm (w x h x d)	For use with	Item no.
Standard front plate			
T0, T3, P1	45 x 45	for frame 48 x 48)	FS(*)-T0
P3, T5, T5B	84 x 84	(for frame 88 x 88)	FS(*)-P3
Emergency switching off/emergency stop front plates			
T0, T3, P1	45 x 45	for frame 48 x 48)	FS908GE-T0
P3, T5, T5B	84 x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

Notes

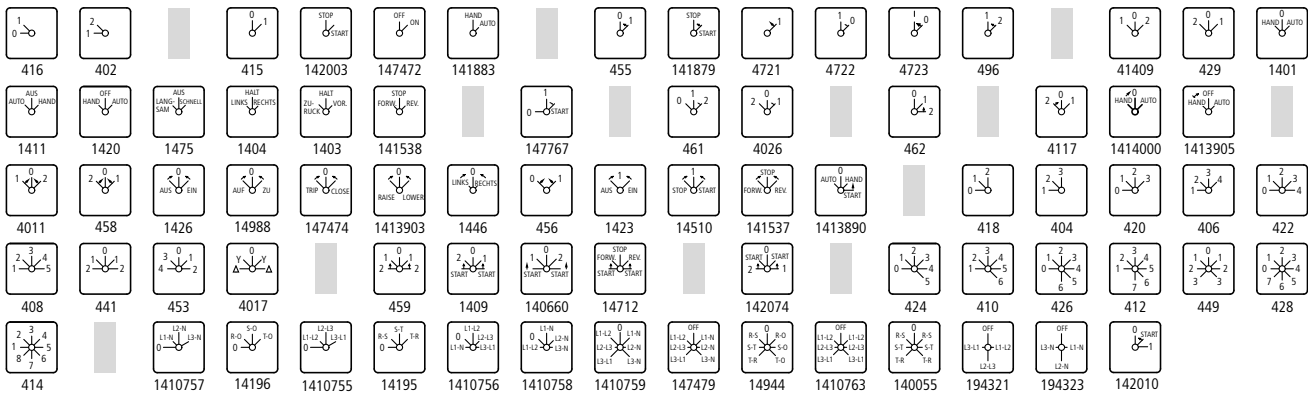
Standard front plate

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

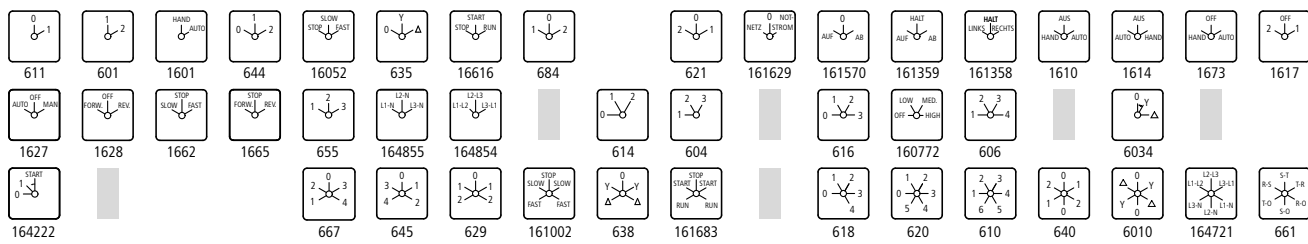
Switching angle 30°



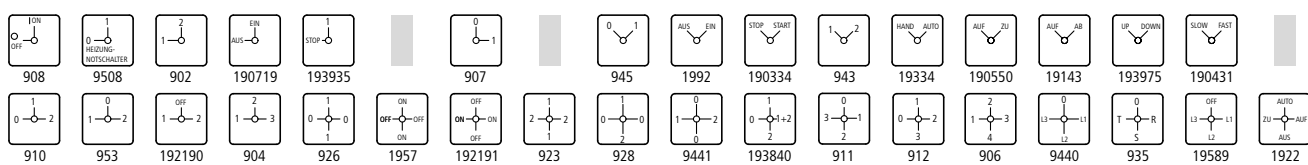
Switching angle 45°



Switching angle 60°



Switching angle 90°



Cam switches

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



S-T0



SVA-T3



SVC-T3

Cam switches



N-P1E



PE-P5-125/160Z



HI21-P5-125/160Z



IVS-T0



UV-T0



ZVV-T0



SAV-T0

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

Cam switches

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

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



H1-t5



VR-T0



MBS-I2



CI-K1-T0-2



K-CI-K5

Power control

Control and indication

Cam switches

Cam switches can be used for many switching and control applications. For example as ON-OFF switches, main switches, main/control switches, instrument switches. The switches consist of a hand actuator, the switch unit and the mounting accessories. The contact chamber (contact unit = BE) contains 1 or 2 contacts.

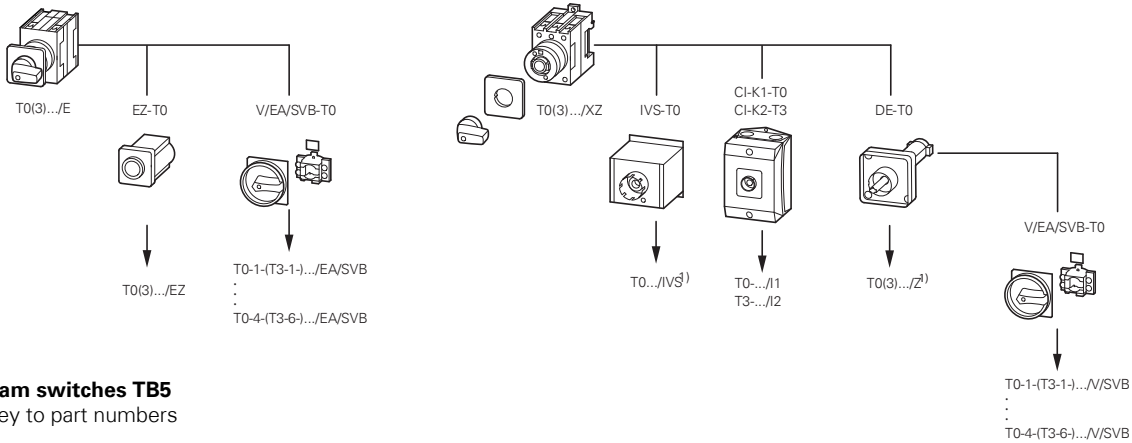
Our "T Cam Switches" catalog has over 800 popular standard contact sequences. The following pages feature a selection of our standard contact sequences. T cam switches and P switch-disconnectors are manufactured without PCB, CFC, asbestos and silicon. The contacts are cadmium free. The CI-K... insulated enclosures are silicon and halogen free.

Cam switches T0 and T3

Key to part numbers



Using the modular system to convert the mounting form

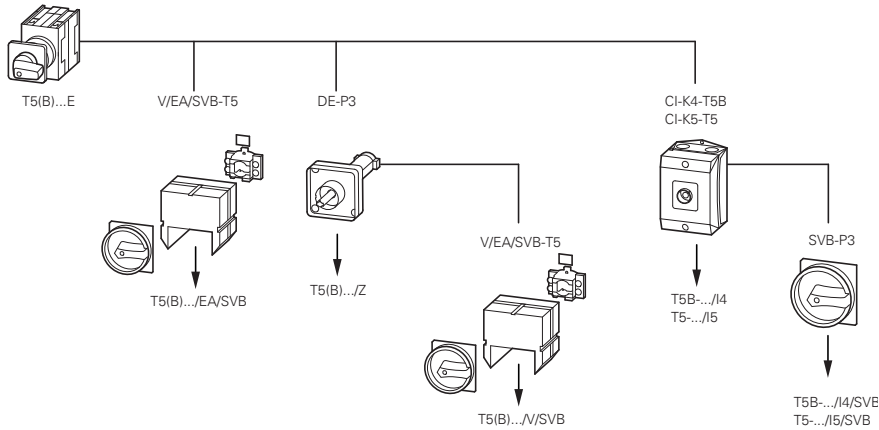


Cam switches T5B

Key to part numbers

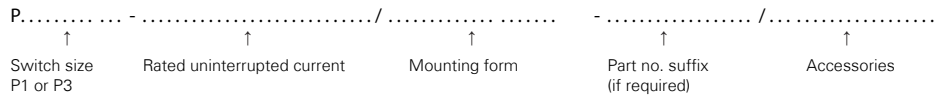


Using the modular system to convert the mounting form T5B

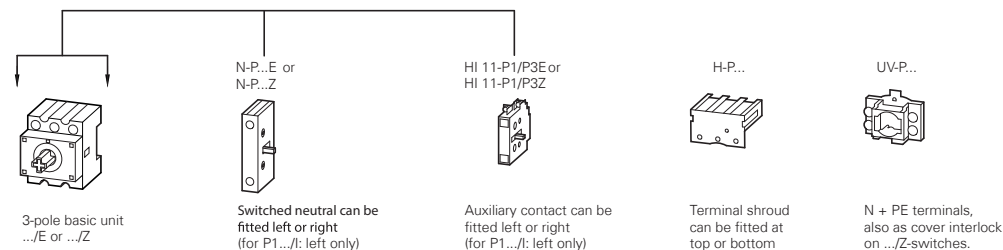


Switch-disconnectors P1 and P3

Key to part numbers



Add-on functions due to modular systems



Reliable, accurate, intelligent motor protection.

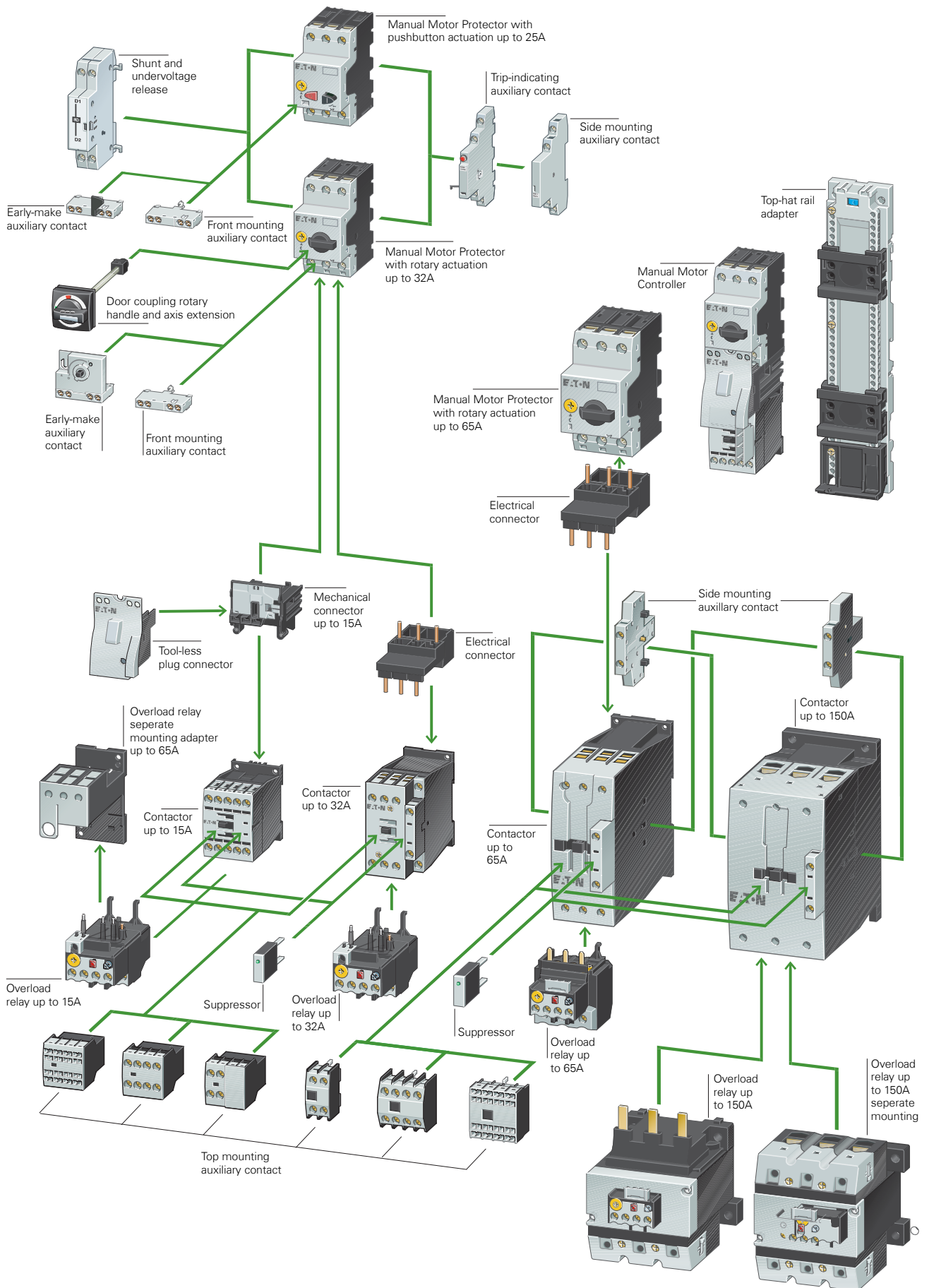


EATON
Powering Business Worldwide

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

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

Xstart IEC Motor control



Power control

Motor control



Xstart IEC Motor control

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

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

Xstart IEC Mini contactors

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



DILER-40

Mini contactor relays

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



DILEEM-10

IEC Miniature controls

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



ZE-0,16

IEC Miniature overload relays

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

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

Xstart IEC Mini contactors

IEC Miniature controls accessories

(auxiliary contacts for mini contactors, front (top) mounted)

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

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



11DILE

Coil selection chart

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

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

RC-suppressor

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

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



RCDILE250



Mechanical interlock

Description	Item no.
Mechanical Interlock	MVDILE

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



Reversing link kit

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

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



Star-delta link kit

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



Other accessories

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

Note: 0 mm distance between contactors with connector.

Xstart IEC control relays

Basic devices with positively driven contacts

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





Xstart IEC Contactors

IEC Contactors

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

Full voltage non-reversing 3-pole contactors

IEC ratings

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

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

IEC ratings

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

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



Frame B



Frame C



Frame D



Frame F & G



Frame L

Xstart IEC Contactors

Full voltage non-reversing 3-pole contactors

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

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



Frame M



Frame N



Frame R

Coil suffix tables

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

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

Power control

Motor control

Xstart IEC Contactors

IEC 4-Pole Contactors, frame B – frame G

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

IEC Capacitor contactors, frame C – Frame D

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

Note: Weld resistant contactors for capacitors, with inrush current peaks up to 180 I_n

Accessories - Auxiliary contacts

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



Frame B-C



Frame B



Frame C

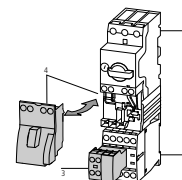


Frame D-G

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

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

[Ⓞ]Suitable for the combination with electrical wiringlinks in tool-less plug connection usable with: DILM12-XSL, DILM12-XRL, DILM12-XS1, PKZM0-XDM12, PKZM0-XRM12, PKZM0-XSM12



Xstart IEC Contactors

Accessories

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

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

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



DILM1000-XHI11-SI



DILM12-XMV



DILM32-XMV



DILM500-XMV

Mechanical interlock[Ⓞ]

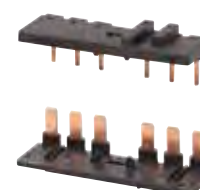
For use with...	Pkg. qty.	Item no.
DILM7 - 15 DILMP20 DILA	5	DILM12-XMV
DILM17 - 38	1	DILM32-XMV
DILM40 - 72	1	DILM65-XMV
DILM80 - 170	1	DILM150-XMV[Ⓜ]
DILM185A - 500	1	DILM500-XMV
DILM580 - 1000	1	DILM820-XMV[Ⓜ]

Reversing link kits

For use with...	Pkg. qty.	Item no.
DILM7 - 12	1	DILM12-XRL[Ⓞ]
DILM17 - 32	1	DILM32-XRL
DILM40 - 65	1	DILM65-XRL
DILM80 - 150	1	DILM150-XRL



DILM12-XRL



DILM32-XRL

[Ⓞ] For two contactors with AC or DC operated magnet system which are horizontally or vertically mounted. For B – G frames, mechanical lifespan is 2.5 x 10⁶ operations & the distance between contactors is 0 mm. For L – N frames, mechanical lifespan is 5 x 10⁶ operations & no auxiliary contact can be mounted between the mechanical interlock & the contactor — the distance between contactors is 15 mm.

[Ⓜ] DILM150-XMV and DILM820-XMV consist of an interlock element & mounting plate.

[Ⓝ] Also includes Interlocking Bridge (DILM12-XEV).

Accessories

Suppressor circuit

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



DILM12-XSPR48



DILM12-XSPV48



DILM12-XSPVL48



DILM12-XSPD

Accessories

Paralleling links for main contacts*

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

* Consisting of 2 paralleling links

Star-point bridges

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

Star-delta wiring kit

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

IP2X cover set

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



DILM12-XP1



DILM32-XP1



DILM150-XP1



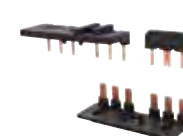
DILM12-XS1



DILM400-XS1



DILM12-XSL



DILM32-XSL



DILM32-XIP2X



DILM65-XIP2X

Accessories

Electronic timer modules

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



DILM32-XTEE11(RA24)



DILM32-XTED11-1(RA24)



DILM32-XTEY20(RA24)

Accessories

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



DIL-SWD-32-001



DILM12-XMCP/E

Accessories

Sealable shrouds - Transparent

For use with	Item no.
DILM32-XTE...	DILM32-XTEPLH

Suppressor circuits for vacuum contactors (on load side)

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

Terminal Cover

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



DILM32-XTEPLH



DILM1000-XSM



DILM225A-XHB

Amplifier module for separate mounting

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

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

Replacement coils for DILM contactors

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

* (Includes electronic module)



ETS4-VS3



DILM32-XSP(RDC24)

Contactors monitoring device

CMD

Application

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

Safety

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



CMD(24VDC)

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



Thermal overload relays



Electronic overload relays



Motor insight overload and motor protection relays

Overload relays

Product overview

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

Overload relays

ZB bi-metallic overload relays

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



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

Overload Relays

ZB bi-metallic Overload Relays



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

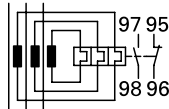
Note: Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting.
Trip Class: 10A. Suitable for protection of EEx e-motors.

Current transformer operated overload relay

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



ZB32-XEZ



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

Accessories

For use with...	Item no.
ZB32	ZB32-XEZ
ZB65	ZB65-XEZ

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

External reset button, IP65

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



M22-DZ-B-GB14

ZEB12 electronic overload relay

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

ZEB12 direct mounting

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



Overload relays

ZEB32 electronic overload relay

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



ZEB32 direct mounting

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

ZEB32 separate mounting

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

ZEB65 and ZEB150 electronic overload relay

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



ZEB65 direct mounting

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

ZEB150 direct mounting

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

ZEB150 separate mounting

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

Overload relays

ZEB accessories

Current sensors

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



EMT6



EMT6-DB



EMT6-DBK



CS-TE

Thermistor overload relays for machine protection

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

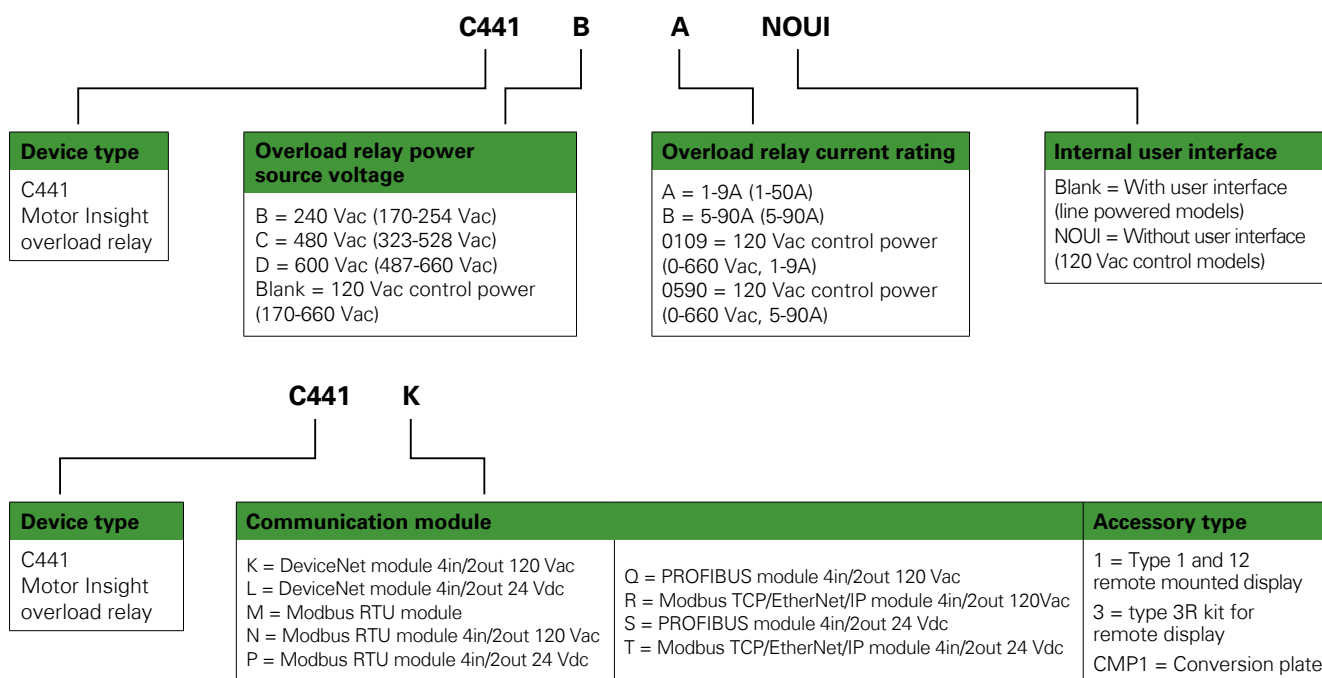
Description	Rated control voltage U_s , V	Item no.
Without automatic reset Mains & fault LED display	24 – 240 V 50/60 Hz, 24 – 240 V DC	EMT6 ①
Without automatic reset Mains & fault LED display With 2 sensor circuits		EMT62
Without automatic reset Mains & fault LED display Trip with short-circuit in the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

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

Overload relays

Motor insight motor protection relays

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



Motor Insight relays

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

Motor Insight CT multiplier and wire wrap schedule

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

① Underscore indicates operating voltage code required.

② Any manufacturer's CT's may be used

Operating Voltage Codes:

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

Overload relays

Modbus RTU communication modules

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

DeviceNet communication modules

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



C441S



C441R

PROFIBUS communication modules

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

Ethernet communication modules

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

Communication cables

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

Communication cable lengths

Length	Item no.
0.25 m	D77E-QPIP25
1 m	D77E-QPIP100
2 m	D77E-QPIP200
3 m	D77E-QPIP300

Current transformer kits

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



C4411

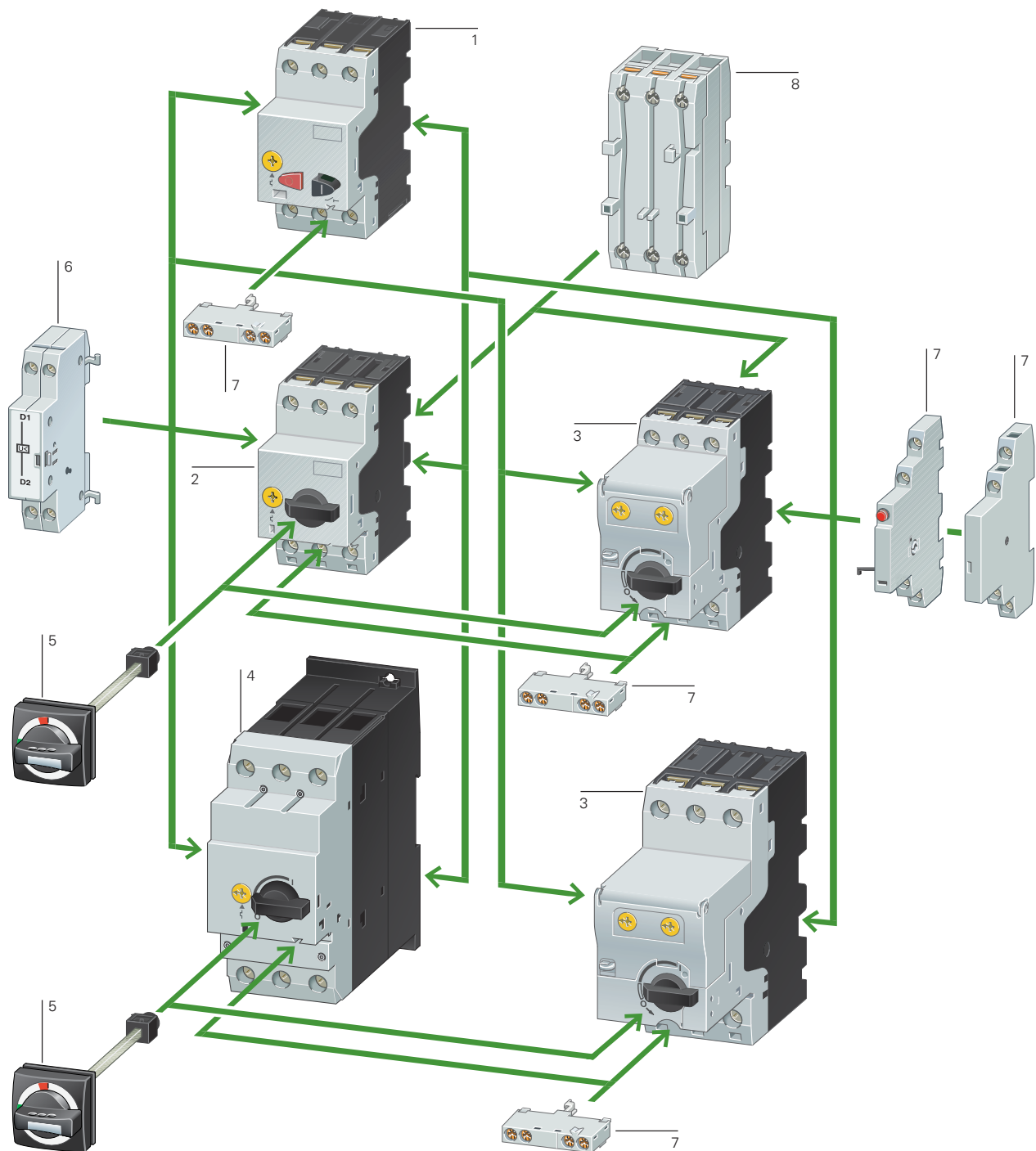


C4413

Motor insight – accessories

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

IEC Manual motor protectors



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



IEC Manual motor protectors

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

Pushbutton manual motor protectors

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



PKZM01-1

Rotary manual motor protectors

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

PKZM0-1

PKZM4-16



AK-PKZ0

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

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

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

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

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

Lockable rotary handle for MMPs

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

Electronic Motor-protective circuit-breaker PKE

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

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

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

PKE features & benefits:

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

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

PKE 12, 12A (45 mm)



0.3A → 12A
0.09 - 5.5 kW (400 V)

PKE 32, 32A (45 mm)



3A → 32A
1.5 - 15 kW (400 V)

PKE 65, 65A (55 mm)



8A → 65A
4 - 34 kW (400 V)

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



Standard



Extended



Power control

Motor control



PKE-XTUA-32



PKE-XTUWA-32



PKE-SWD-SP



NHI21-PKZ0



VHI20-PKZ0

Electronic motor-protective circuit-breaker PKE

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

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

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

IEC manual motor protectors accessories

Auxiliary contacts

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

Early-make auxiliary contacts

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

Electronic motor-protective circuit-breaker PKE

IP65 rotary handle mechanism - PKZM0 ①②③

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

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

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

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



PKZ0-XH



PKZ0-XRH-MCC

IP65 rotary handle mechanism - PKE

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

Shunt release

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



A-PKZ0(110V50HZ)

Undervoltage release

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



U-PKZ0(24VDC)

Sealing facility

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



PL-PKZ0

Current limiters

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



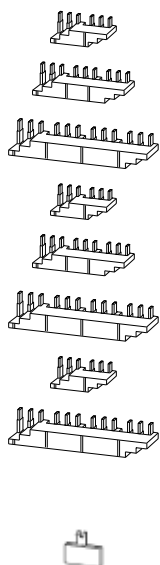
CL-PKZ0

IEC Manual motor protectors accessories

Three-phase commoning links ①



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



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

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

Incoming terminal for three-phase commoning link ②



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

② For three-phase commoning link, protected against accidental contact, $U_e = 690V$, $I_u = 63A$; for conductor cross-sections: 2.5 – 25 mm² stranded; 2.5 – 16 mm² flexible with ferrules, AWG 14-6.

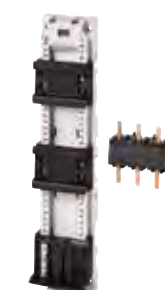
IEC Manual motor protectors accessories

Combination connection kits for connection of rotary MMP with IEC contactor

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



PKZMO-XDM12



PKZM4-XDM65



PKZMO-XM32DE

Insulated enclosures for surface mounting

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

① Integrated terminal for PE(N) connection.

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



CI-PKZ01-PVT



CI-K2-PKZ0-G

MMP enclosure accessories (padlock attachment)

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



SVB-PKZ0-CI

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

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



BBA0-25



BBA4L-63



BBA0R-32



BBA-XSM

IEC Motor control busbar adapters

Busbar adapter, 3 pole

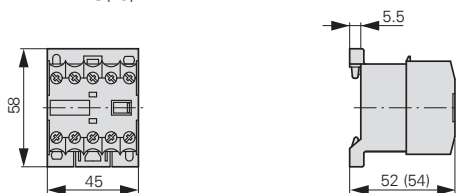
Rated operational voltage $U_e = 690$ V. For mounting on CU flat busbars with 60 mm interval between busbar centres, suitable for 5 mm & 10 mm busbar thickness.

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

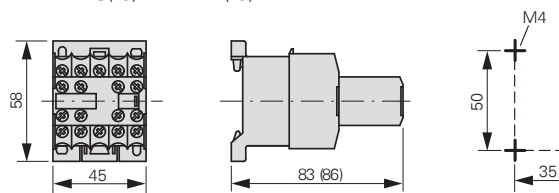
Dimensions

Mini contactor relays

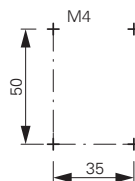
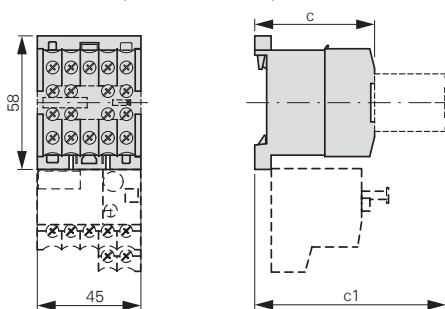
DILER...(-C)
DILER...-G(-C)



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



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



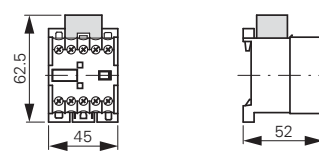
Part no.	c	c1
DILE(E)M...(-G)	52	83
DILE(E)M...-G(-C)	54	86

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

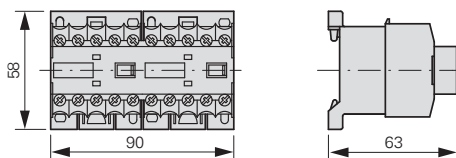


Suppressor circuit

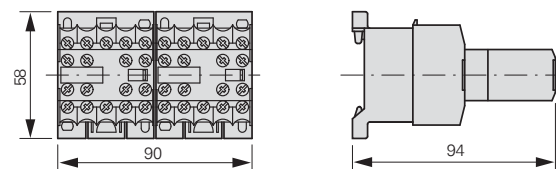
RCDILE...
VGDILE



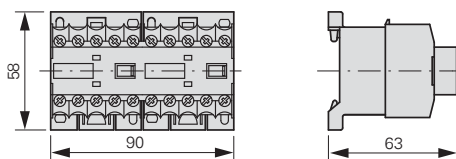
2DILE... + MVDILE
2DILE...-G + MVDILE



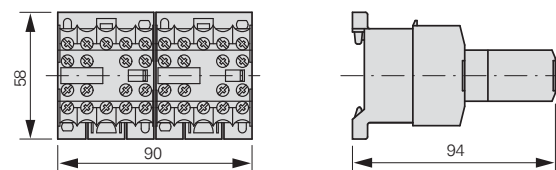
2DILE... + MVDILE + ...DILE
2DILE...-G + MVDILE + ...DILE



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

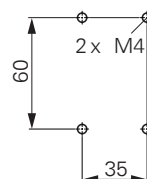
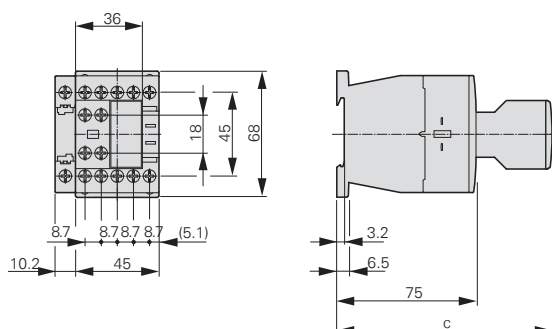


2DILE... + MVDILE + ...DILE
2DILE...-G + MVDILE + ...DILE



Contactor with auxiliary contact module

DILM7...DILM15
DILA...



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

Power control

Motor control

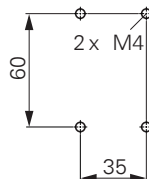
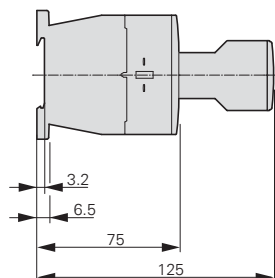
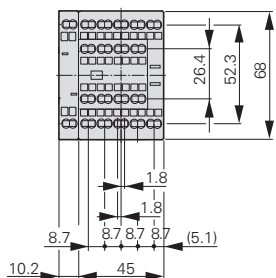
Dimensions

Contactors

DILMC7...DILMC15

DILAC...

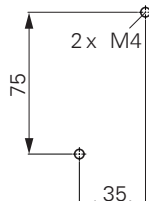
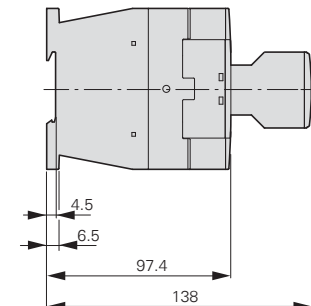
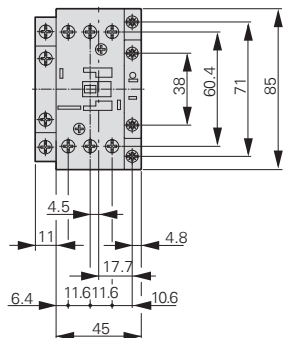
DILA-XHIC...



DILM17...DILM38

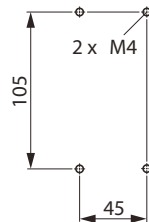
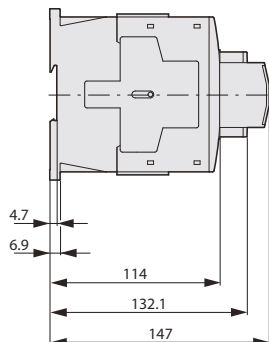
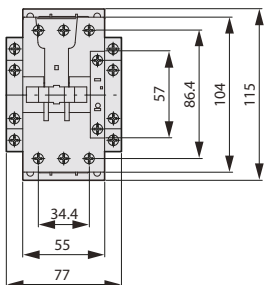
DILMC17...DILMC32

DILMF8...DILMF32



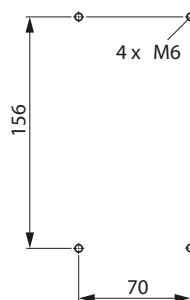
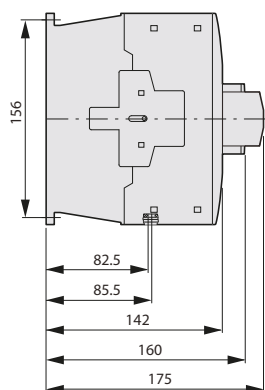
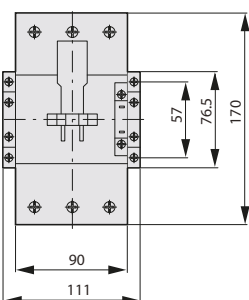
Clearance at side to grounded parts: 6 mm

DILM40...DILM72



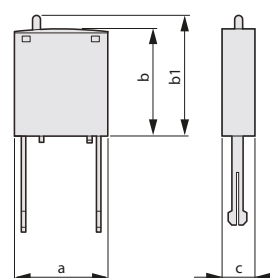
Clearance at side to grounded parts: 6 mm

DILM80...DILM170



Clearance at side to grounded parts: 10 mm

Suppressor circuit



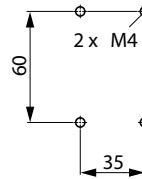
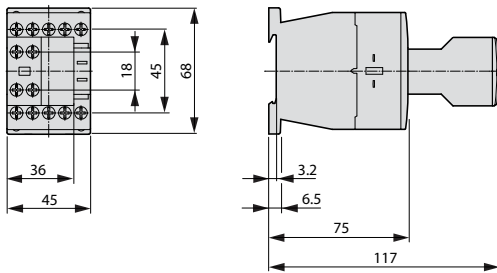
Part no.	a	b
DILM12-XSP...	25	28
DILM32-XSP...	25	28
DILM95-XSP...	25	28

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

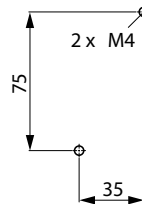
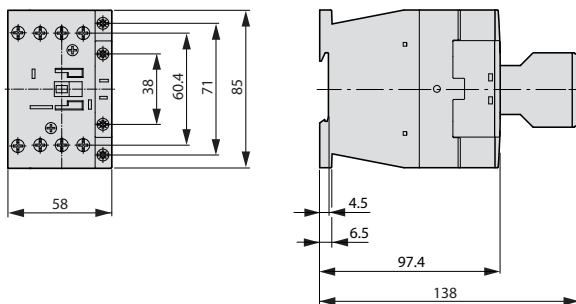
Dimensions

Contactor with auxiliary contact module

DILMP20



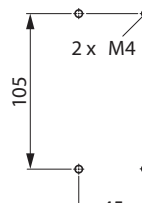
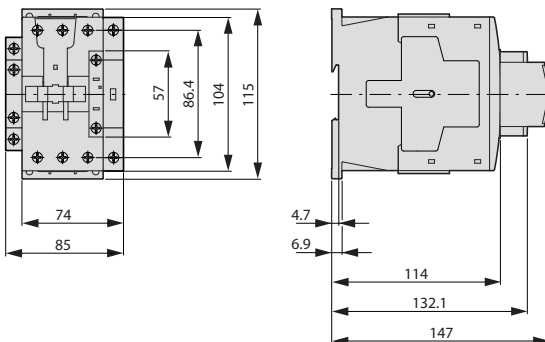
DILMP32 DILMP45



Distance at side to grounded parts: 6 mm

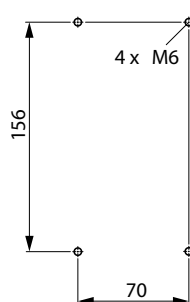
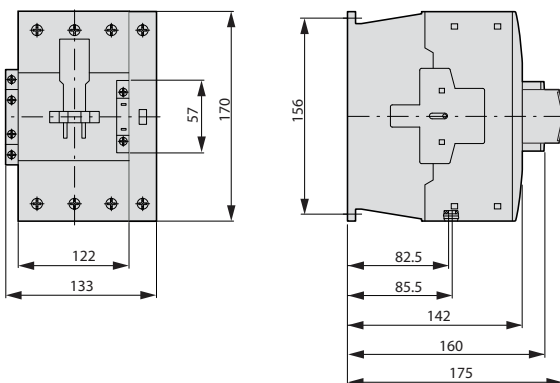
Contactors

DILMP63 DILMP80



Distance at side to grounded parts: 6 mm

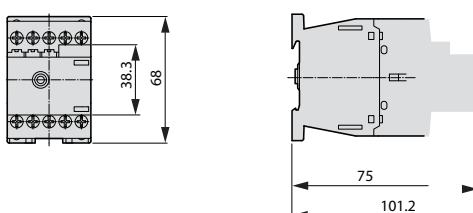
DILMP125 DILMP160 DILMP200



Clearance at side to earthed parts: 10 mm

Motor suppressor module

DILM12-XMSM



Power control

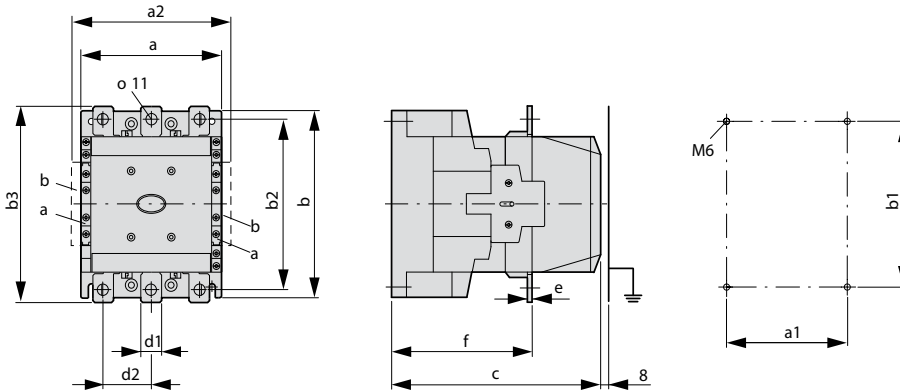
Motor control

Dimensions

Complete units

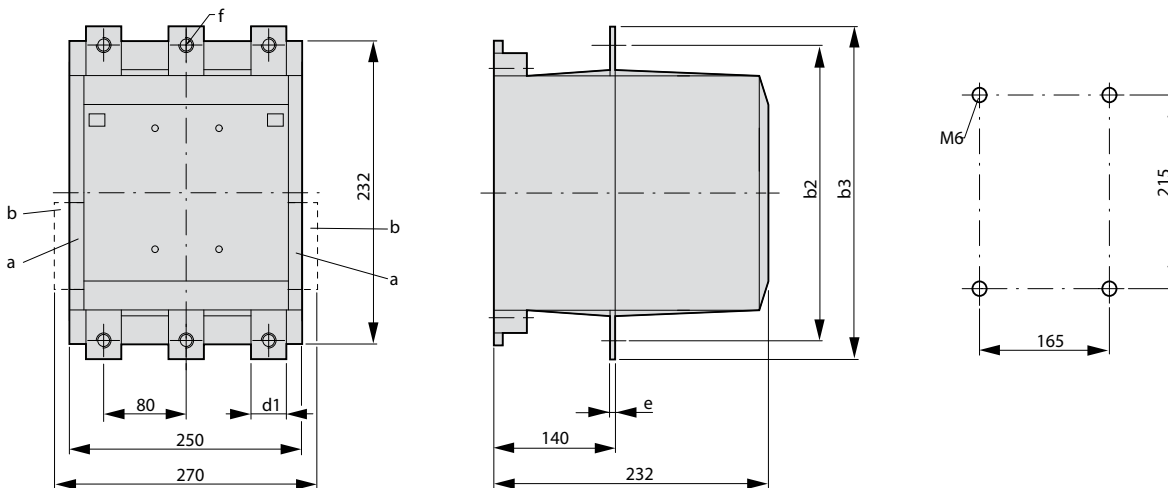
DILM185A...DILM500
DILM250-S...DILM570-S

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



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

DILM580...DILM1000



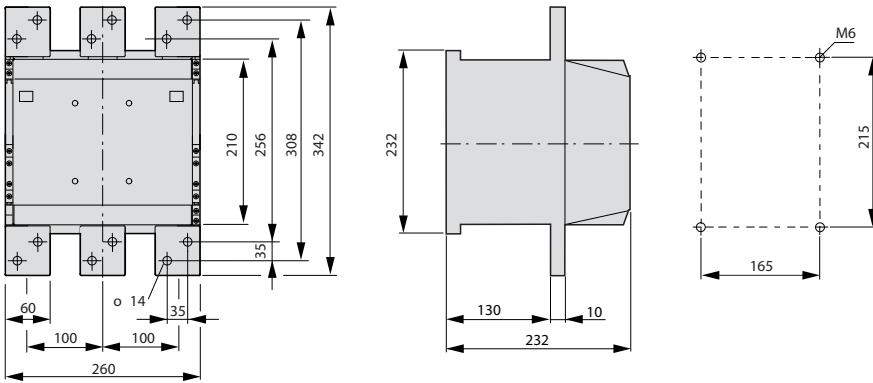
a DILM820-XHI...-SI
b DILM820-XHI11-SA

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

Dimensions

AC-1 contactors greater than 1000A

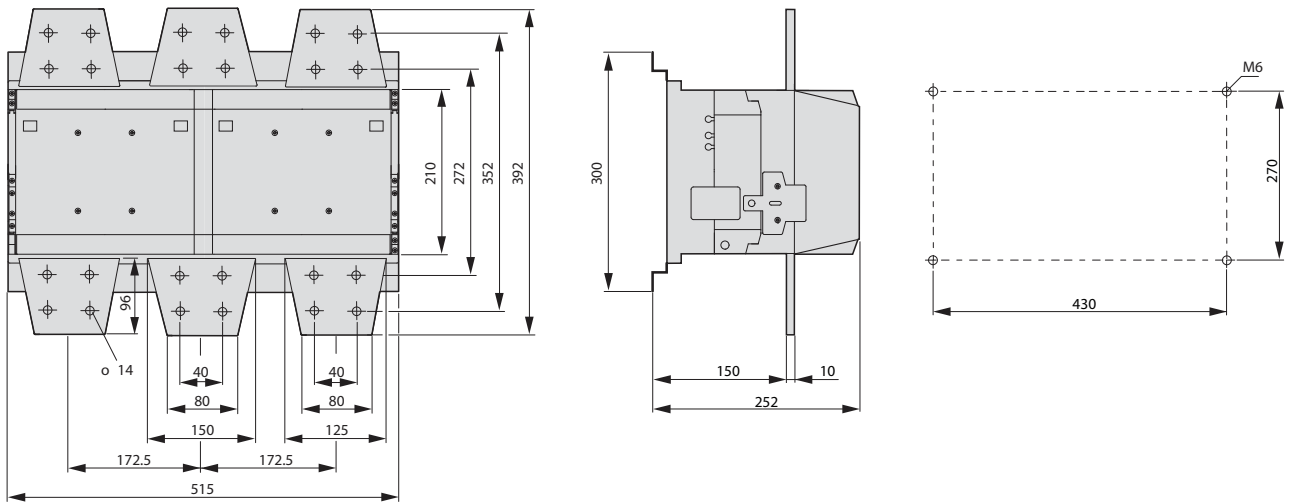
DILH1400



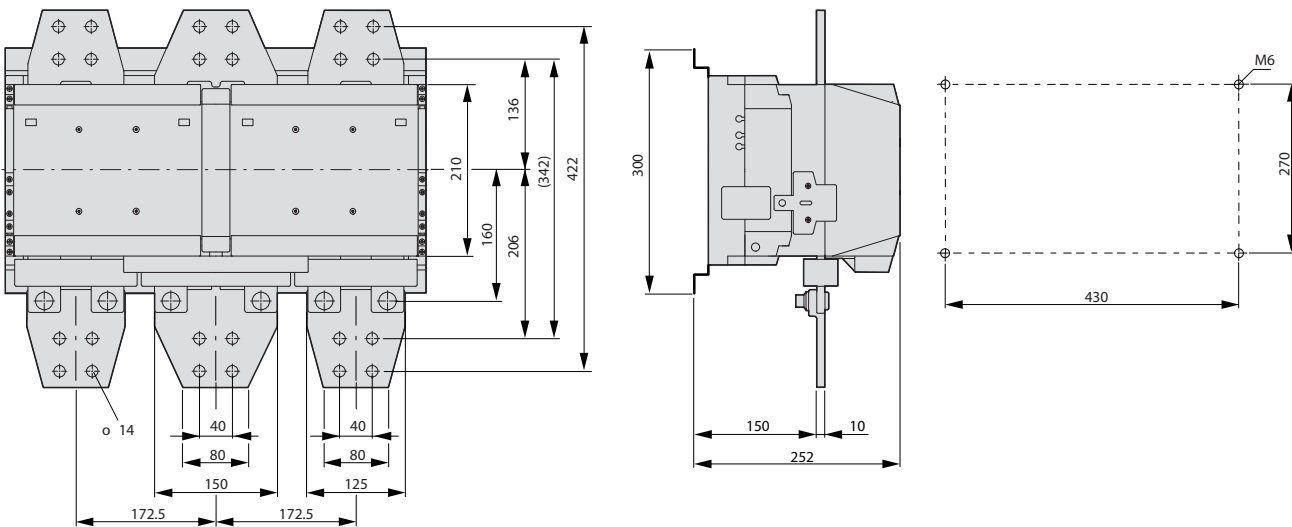
DILM1600

DILH2000

DILH2200



DILH2600



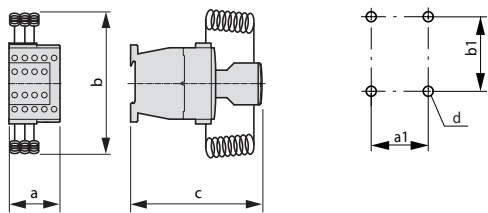
Power control

Motor control

Dimensions

Contactors for capacitors

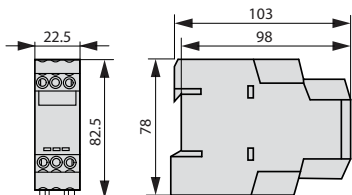
DILK...



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

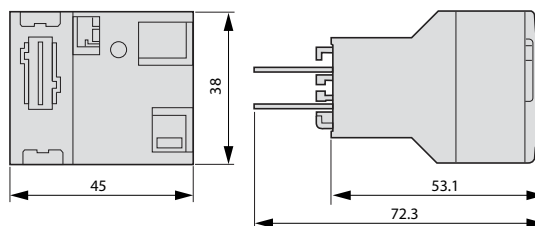
Contactors monitoring devices

CMD(...)



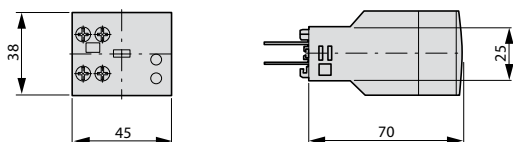
SWD contactor modules

DIL-SWD-32-...



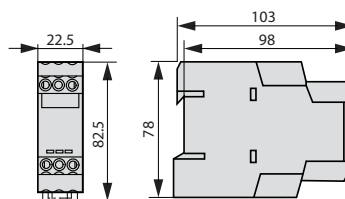
Electronic timer modules

DILM...XTE



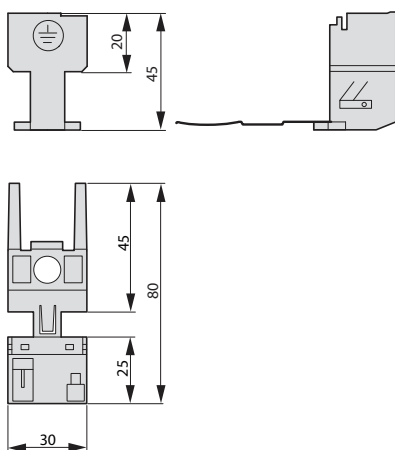
Amplifier module

ETS4-VS3

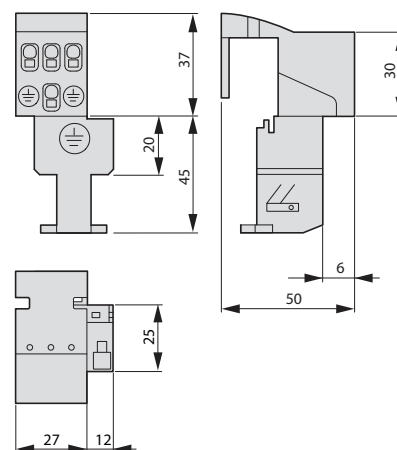


Wiring set for motor feeder plug

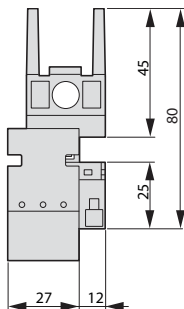
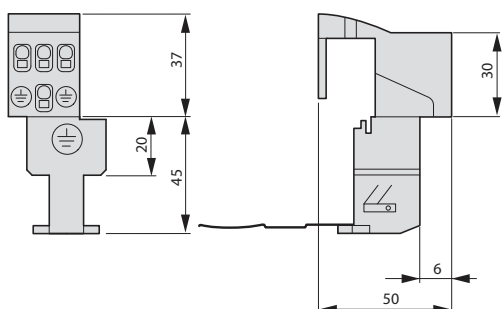
DILM12-XMCE



DILM12-XMCP/T

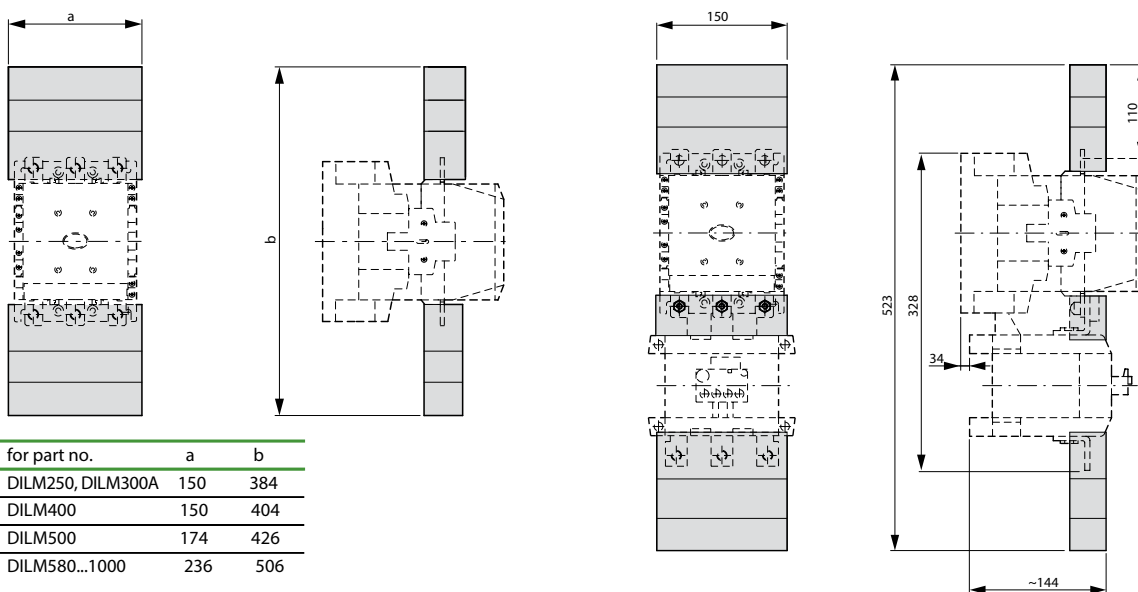


DILM12-XMCP/E

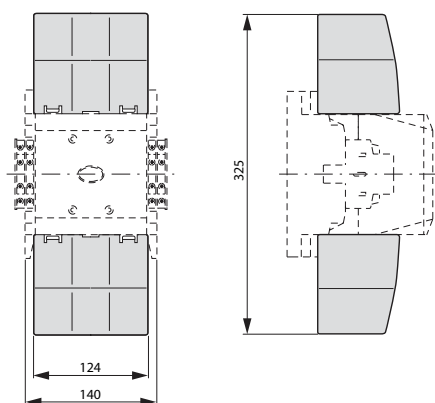


Dimensions

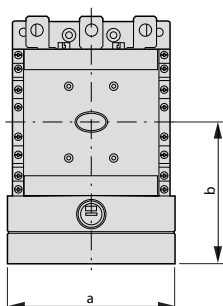
Contactors with terminal shrouds



DILM185A...DILM225A + DILM225A-XHB

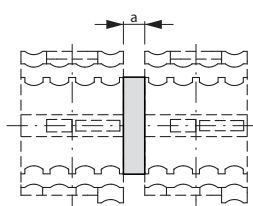


Contactors with star-point bridge and terminal shrouds



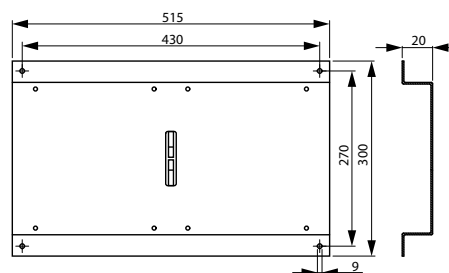
for part no.	a	b
DILM185...250	150	127
DILM300...400	150	137
DILM500	176	146

Mechanical interlock DILM500-XMV



for part no.	a
DILM185...500	15

DILM820-XMV



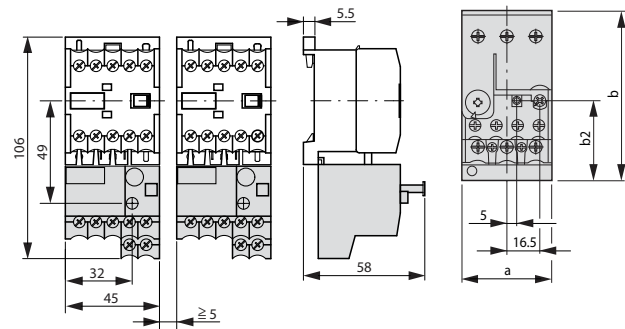
Power control

Motor control

Dimensions

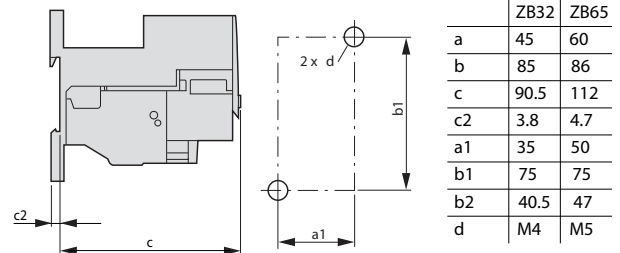
Overload relays

ZE...



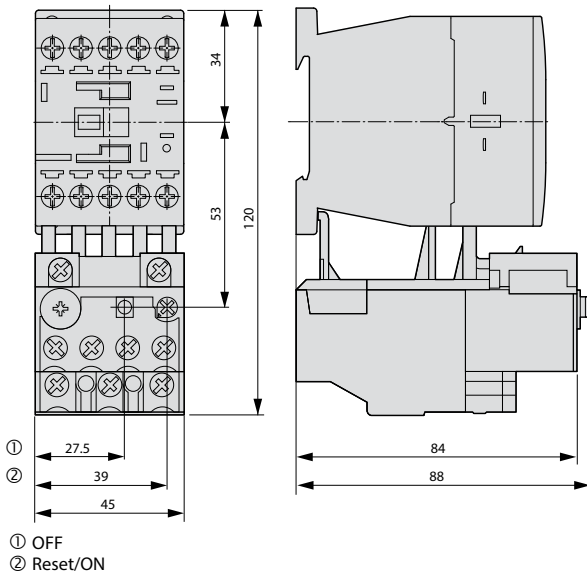
ZB32-XEZ

ZB65-XEZ

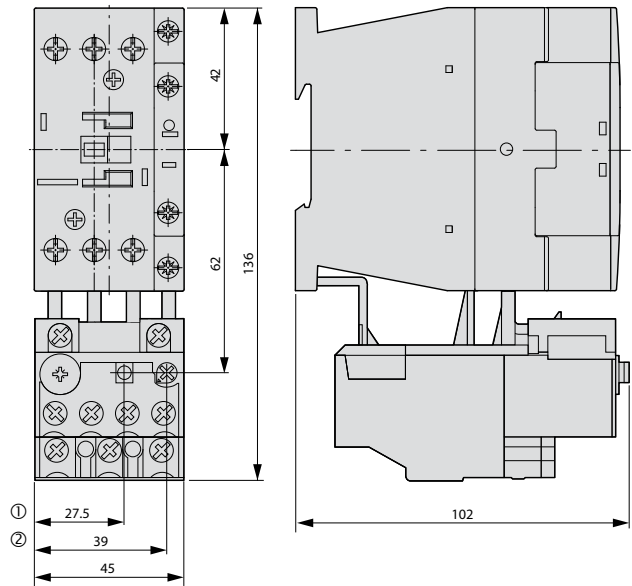


	ZB32	ZB65
a	45	60
b	85	86
c	90.5	112
c2	3.8	4.7
a1	35	50
b1	75	75
b2	40.5	47
d	M4	M5

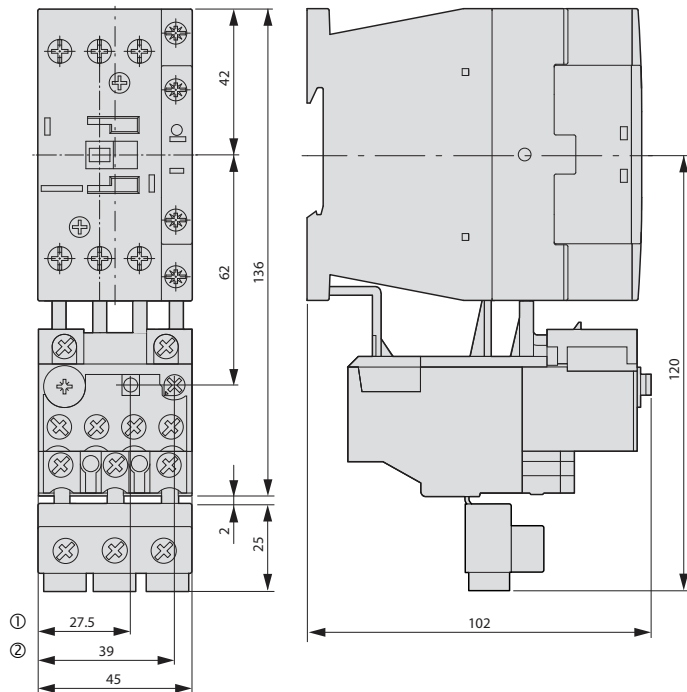
ZB12



ZB32



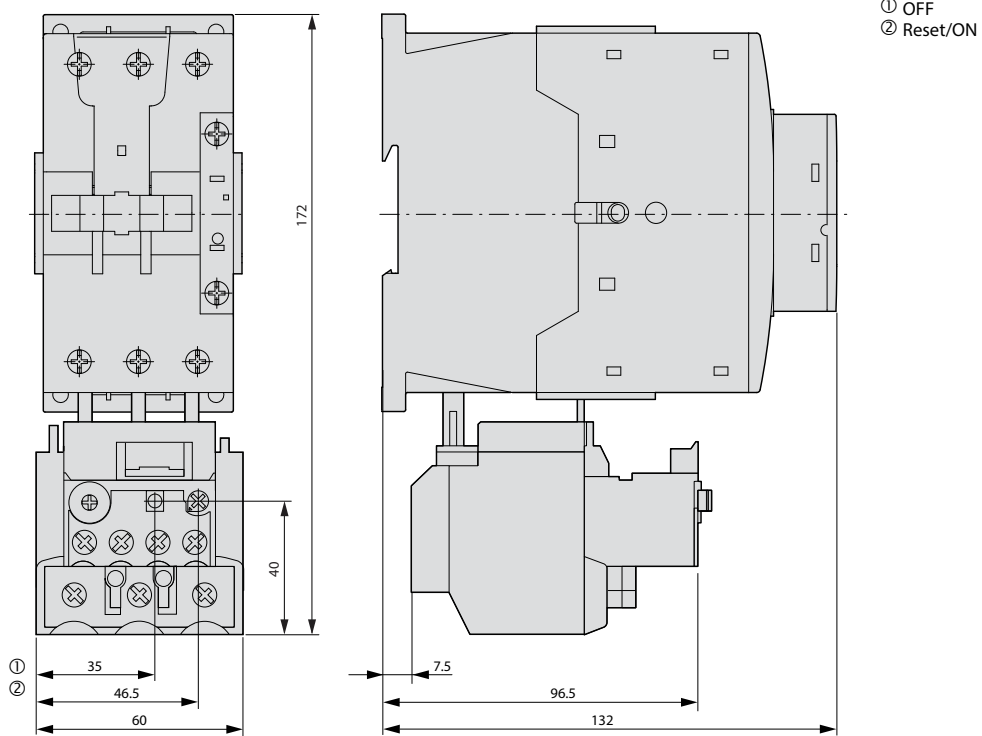
ZB32-38



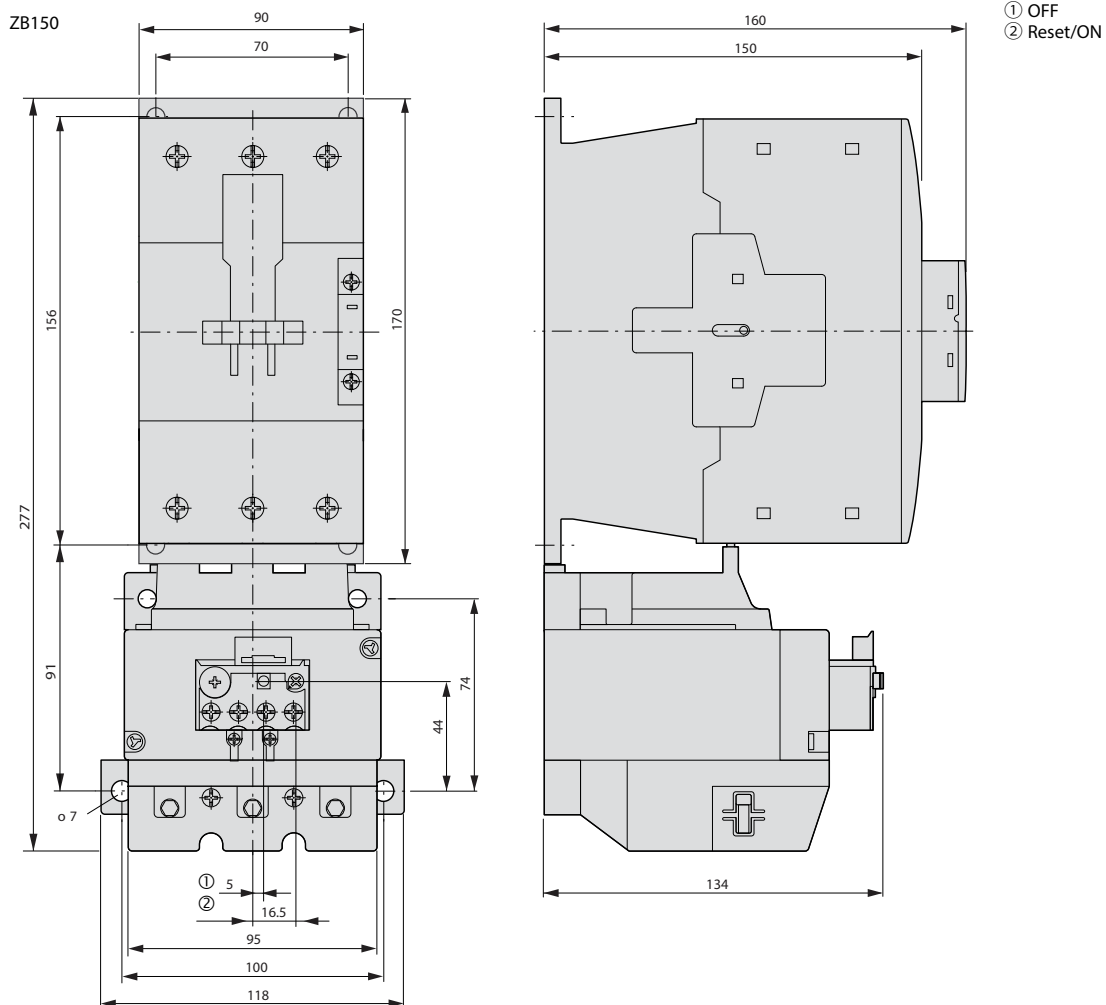
Dimensions

Overload relays

ZB65



ZB150



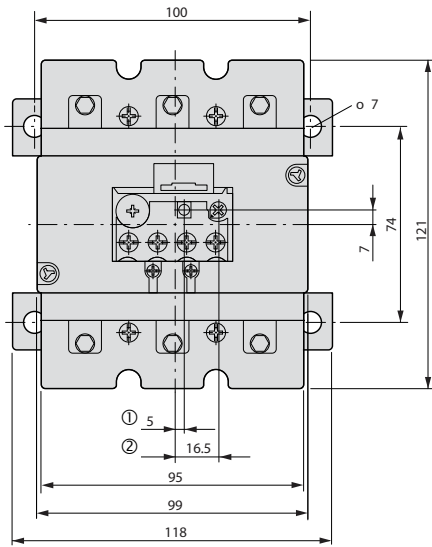
Power control

Motor control

Dimensions

Overload relays

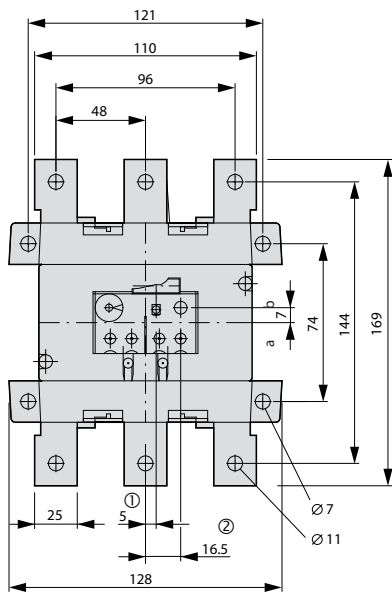
ZB150-50/KK



- ① OFF
- ② Reset/ON

Z5 overload relays greater than 150A

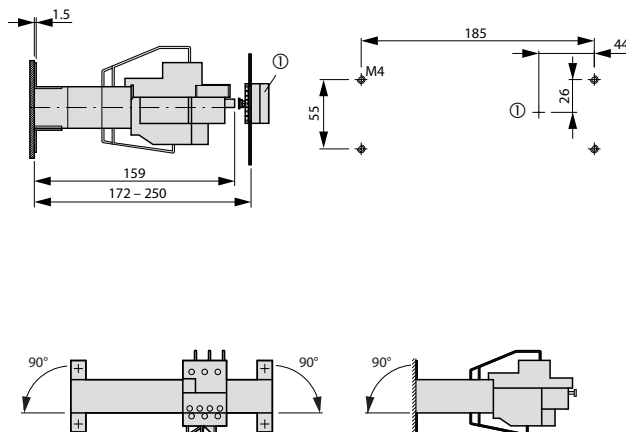
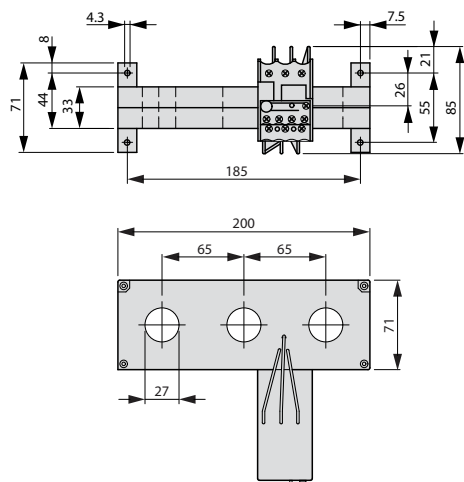
Z5.../FF250



- ① OFF
- ② Reset/ON

Current transformer-operated overload relays

ZW7-...

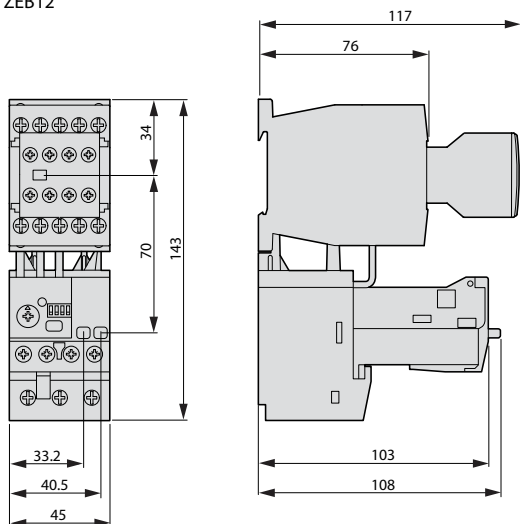


- ① Reset/ON

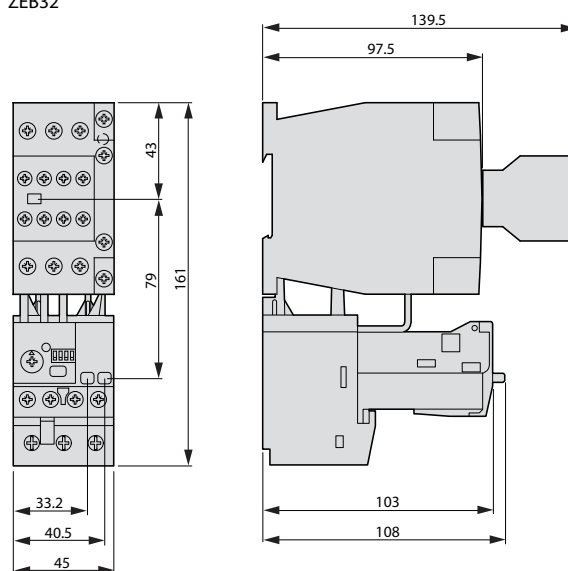
Dimensions

Electronic overload relays

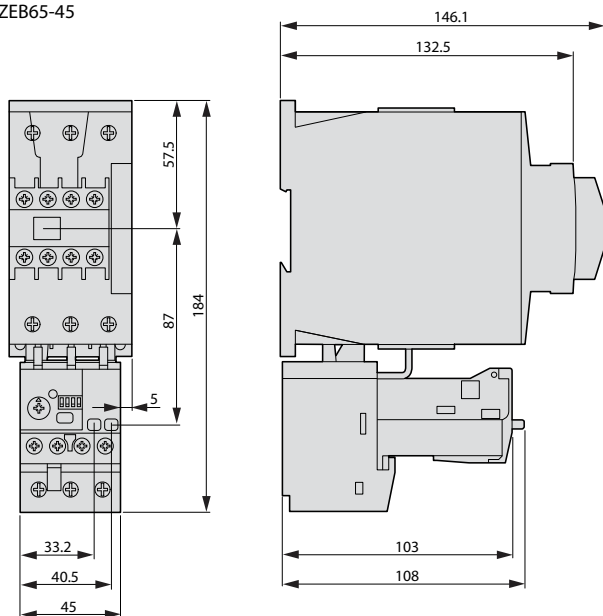
ZEB12



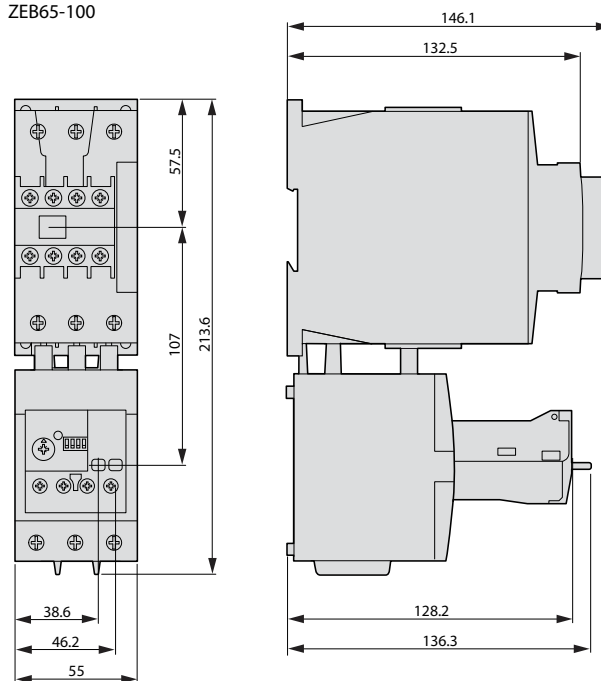
ZEB32



ZEB65-45



ZEB65-100



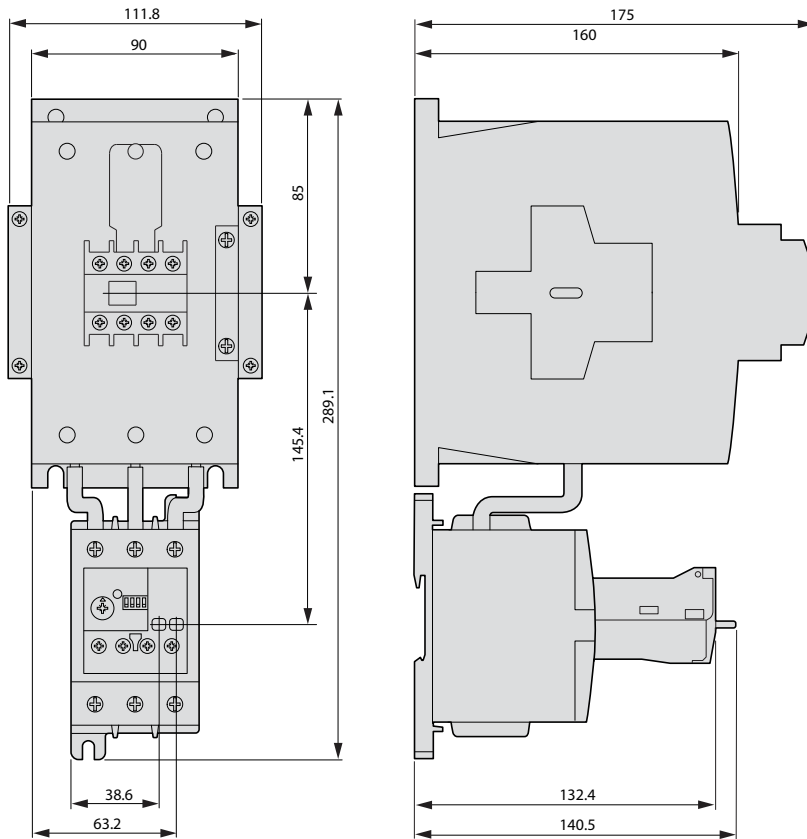
Power control

Motor control

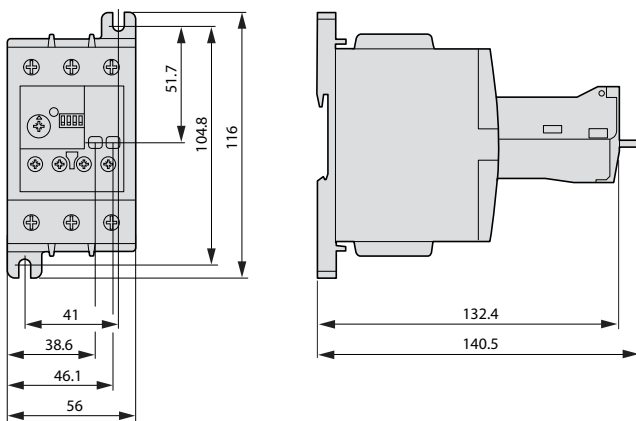
Dimensions

Electronic overload relays

ZEB150-100



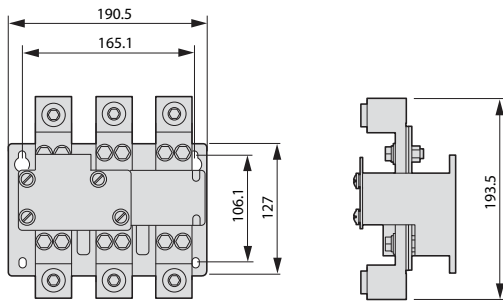
ZEB150-100/KK



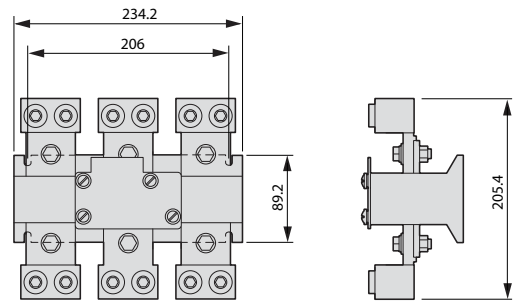
Dimensions

Current sensors

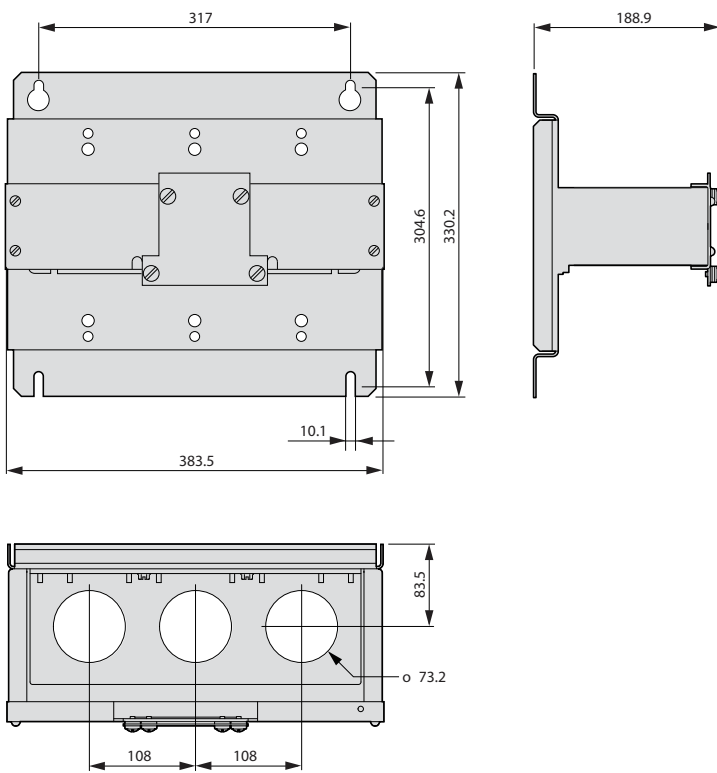
ZEB-XCT300



ZEB-XCT600

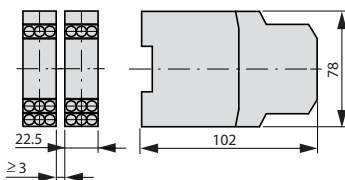


ZEB-XCT1000
ZEB-XCT1500



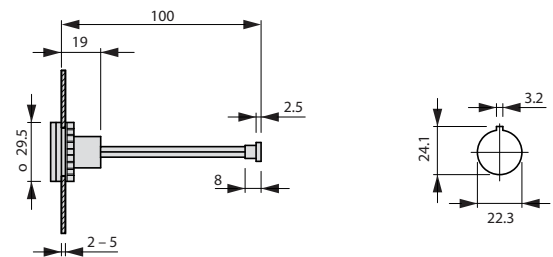
EMT6 thermistor overload relays for machine protection

EMT6...



External reset button

M22-DZ-B
M22-DZ-X



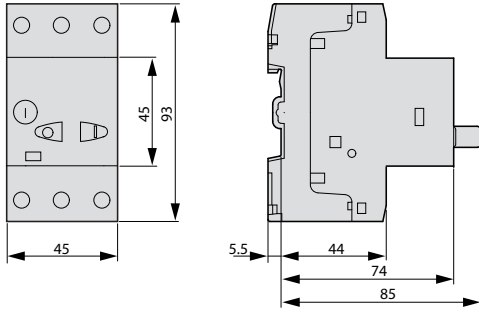
Power control

Motor control

Dimensions

Motor-protective circuit breaker

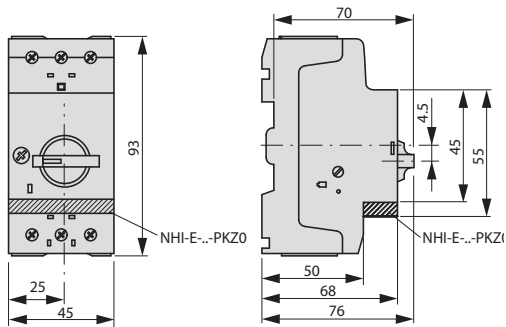
PKZM01...



Motor-protective circuit breaker Transformer-protective circuit breakers

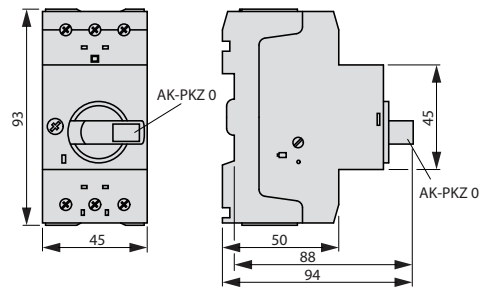
Motor-protective circuit breaker with auxiliary contacts

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



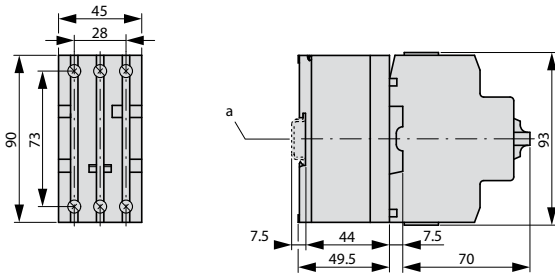
Motor-protective circuit breaker with lockable rotary handles

PKZM0-...+AK-PKZ0



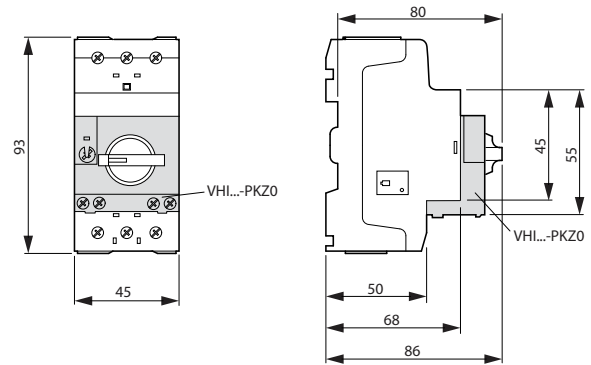
Current limiters

CL-PKZ...



Motor-protective circuit breaker with early-make auxiliary contacts

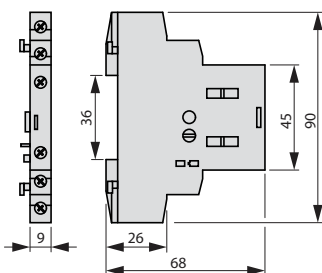
PKZM0-...+VHI-...-PKZ0



① Top-hat rail IEC/EN 60715

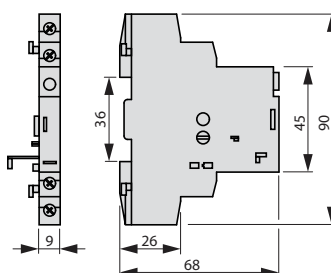
Standard auxiliary contacts

NHI-...-PKZ0



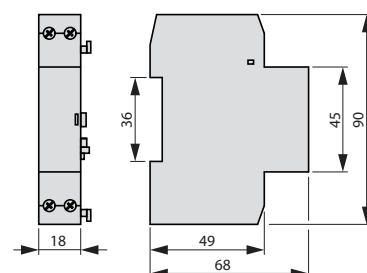
Trip indicators

AGM2-...-PKZ0



Shunt release - undervoltage release

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

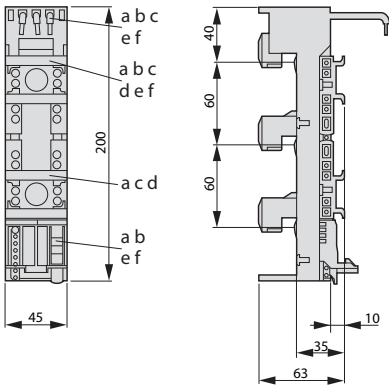


Dimensions

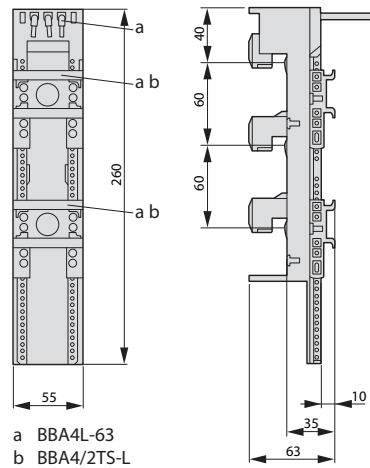
Busbar adaptors

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

BBA4/2TS-L
BBA4L-63



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



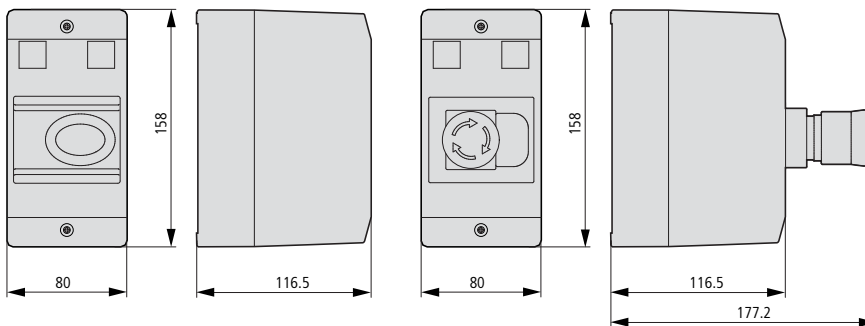
a BBA4L-63
b BBA4/2TS-L

Insulated enclosures for surface mounting

CI-PKZ01
CI-PKZ01-G

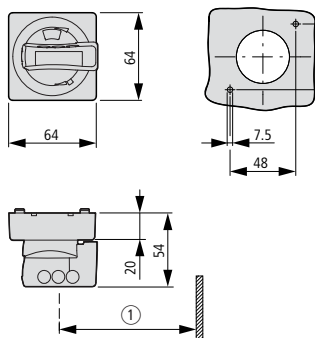
CI-PKZ01-PVT
CI-PKZ01-PVS

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



Door coupling handles

PKZ0-X(R)H...



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

① At least 100 mm from cover hinge

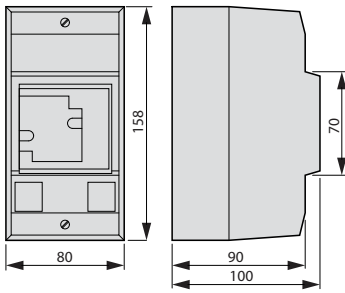
Power control

Motor control

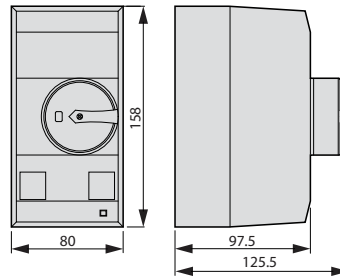
Dimensions

Insulated enclosures for surface mounting

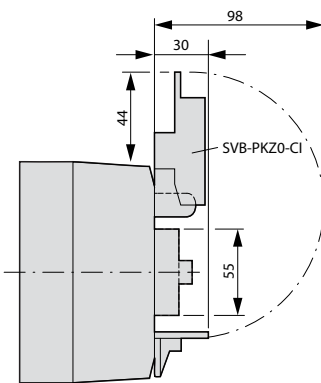
CI-PKZ0-M



CI-PKZ10G...M

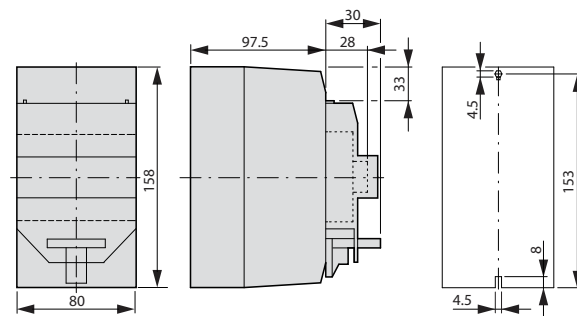


CI-PKZ0-...M
+ SVB-PKZ0-CI

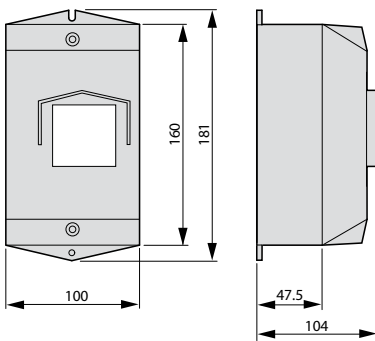


Drilling dimensions

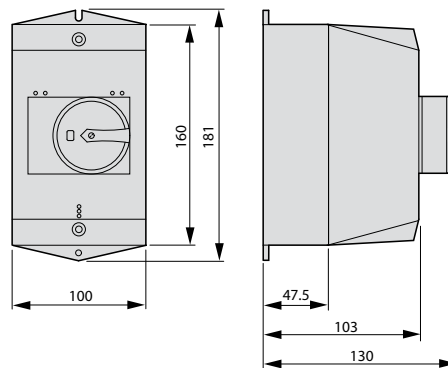
CI-PKZ0-...M



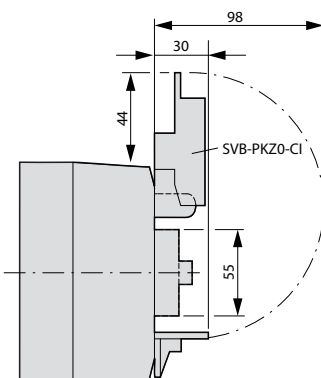
CI-K2-PKZ0



CI-K2-PKZ0G(R)(V)

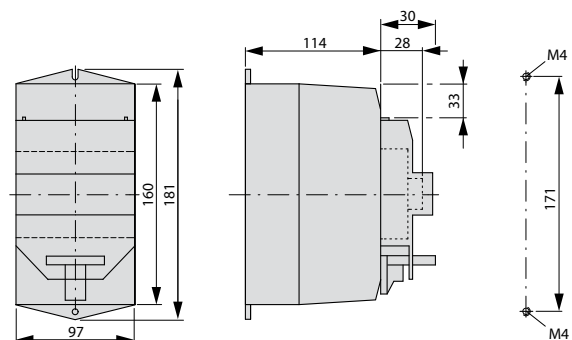


CI-K2-PKZ0-G(R)(V)
+ SVB-PKZ0-CI



Drilling dimensions

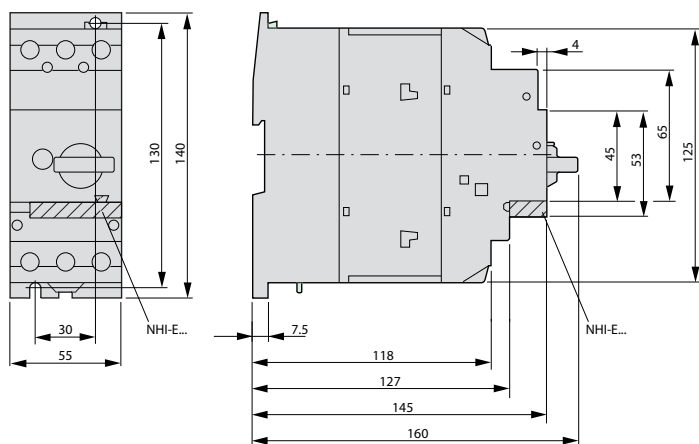
CI-K2-PKZ0...



Dimensions

Motor-protective circuit breakers

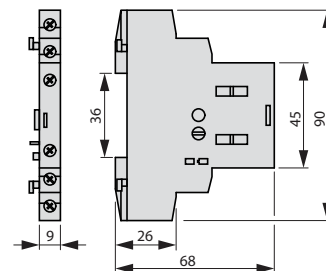
PKZM4-...



Standard auxiliary contacts

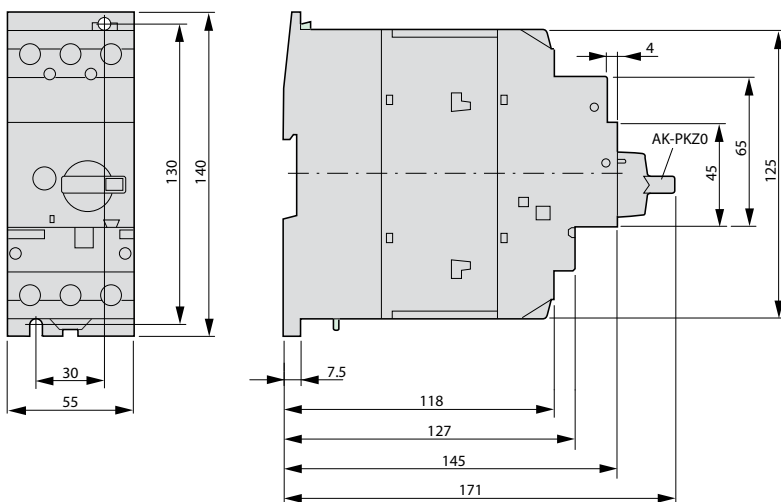
NHI...-PKZ...

NHI...-PKZ0



Motor-protective circuit breakers with lockable cover

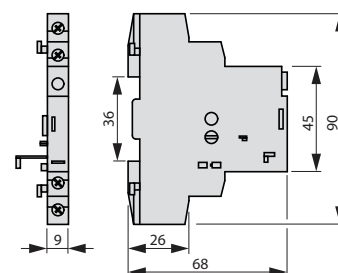
PKZM4-... +AK-PKZ0



Trup indicators

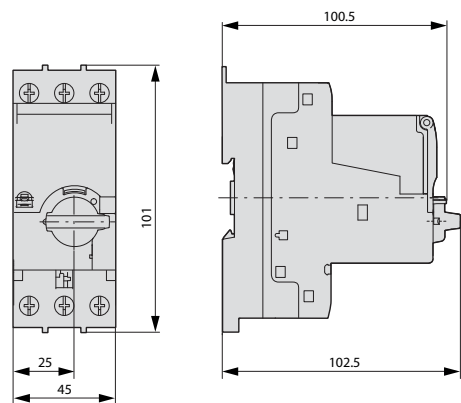
AGM2...-PKZ...

AGM2...-PKZ0

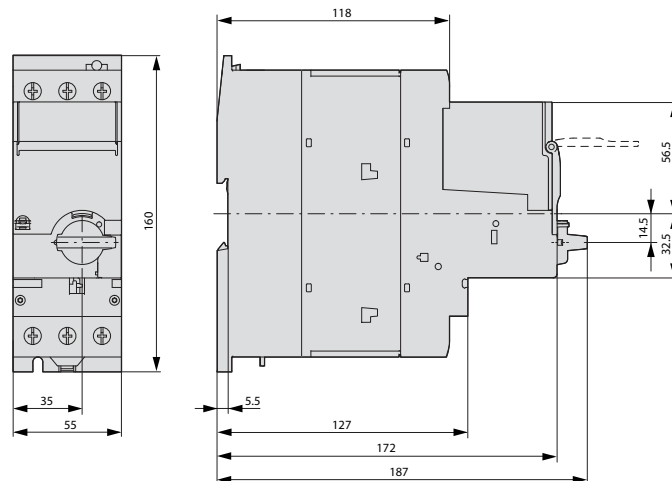


PKE Motor-protective circuit breakers

PKE12, PKE32



PKE65



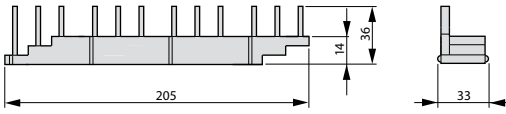
Power control

Motor control

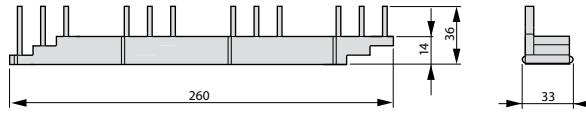
Dimensions

Three-phase commoning links

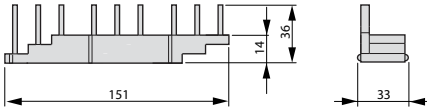
B3.0/4-PKZ4



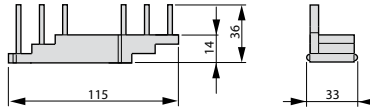
B3.2/4-PKZ4



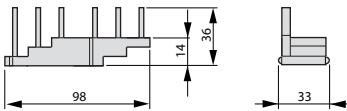
B3.0/3-PKZ4



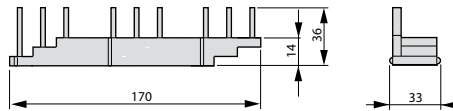
B3.2/2-PKZ4



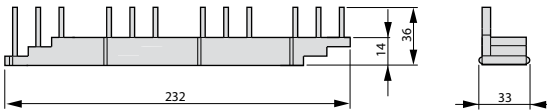
B3.0/2-PKZ4



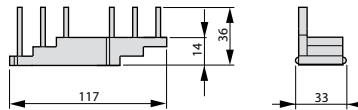
B3.1/3-PKZ4



B3.1/4-PKZ4

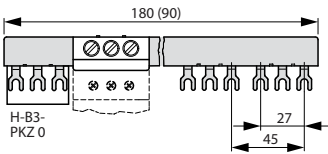


B3.1/2-PKZ4



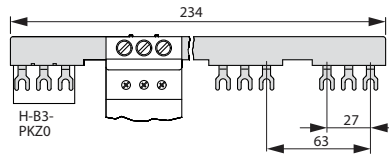
B3.0/4-PKZ0

B3.0/2-PKZ0



B3.2/4-PKZ0

B3.2/2-PKZ0

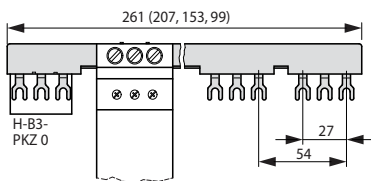


B3.1/5-PKZ0

B3.1/3-PKZ0

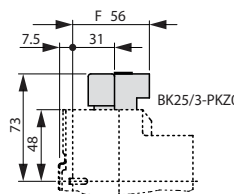
B3.1/4-PKZ0

B3.1/2-PKZ0

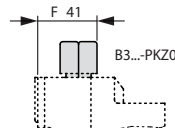


Incoming terminals

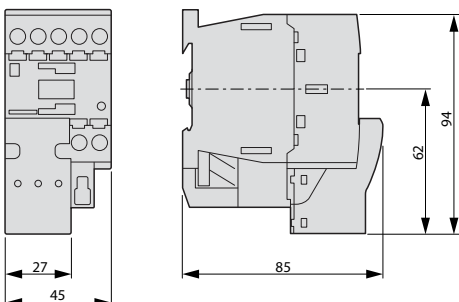
BK25/3-PKZ0



Overlapping mounting to extend the three-phase commoning link



Motor plug DILM12-XMCP/T

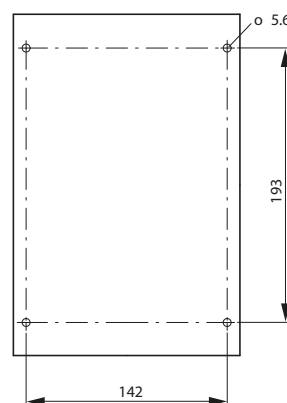
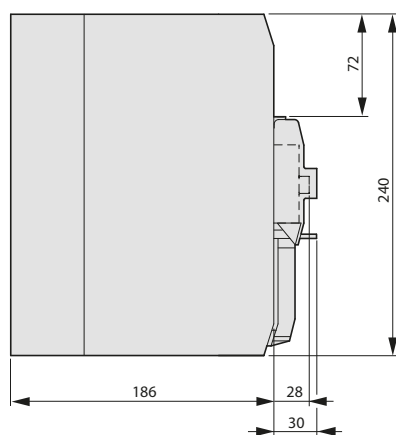
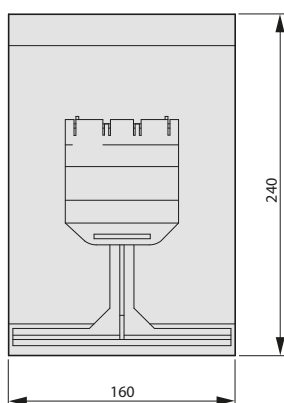
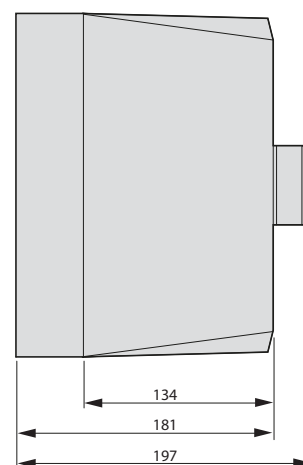
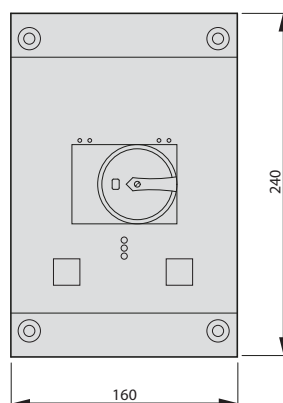
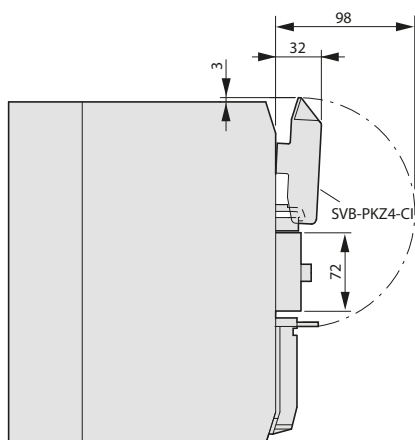


Dimensions

Insulated enclosures for surface mounting

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

CI-K4-PKZ4-G



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

SmartWire-DT™

Changing the way panels are wired.



Reduce cost throughout the value chain.

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

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



Powering Business Worldwide

DOL Starters

DOL starters

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

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



EDOL4DNO240

Order Overloads Separately.

Overload relays

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



EDOL25TOL

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

Spare coils

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



EDOLCOIL240A

Coils suit all starter sizes.

DOL starters

Reversing DOL starters



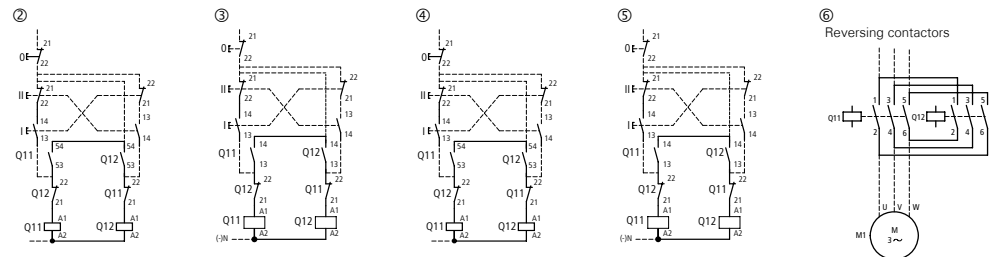
DOLRS4/u(...V50HZ)



DOLRS4/I(...V50HZ)

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

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



Star-delta starters

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



SDES5.5-U



SDES15-U

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

Overload relay settings

A: I_N × 0.58
B: I_N × 1
C: I_N × 0.58

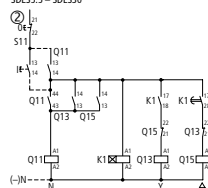
Starting

≤ 15 s
15 – 40 s
> 40 s

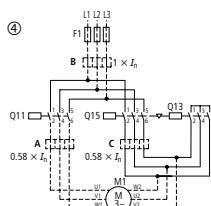
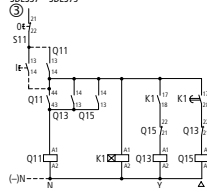
Protection of the motor in Y and d configuration
Only partial motor protection in star position
Motor not protected in star position.
Timing relay set to approx. 10 s.

Main circuit:
Depending on the coordination type required (i.e. Type “1” or Type “2”) it must be established whether the fuse protection and the input wiring for the mains contactor and delta contactor are to be common or separate.

SDES5.5 – SDES30



SDES37 – SDES75





1000V Mining contactors

Eaton V201 vacuum contactor

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

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

Vacuum contactors

Description	Item no.
160A	V201KRCJZ1
320A	V201KTCJZ1
540A	V201KVCJZ1

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

Auxiliary contacts for V201 vacuum contactors & DPCK air break contactors

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

Accessories

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

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

Replacement parts

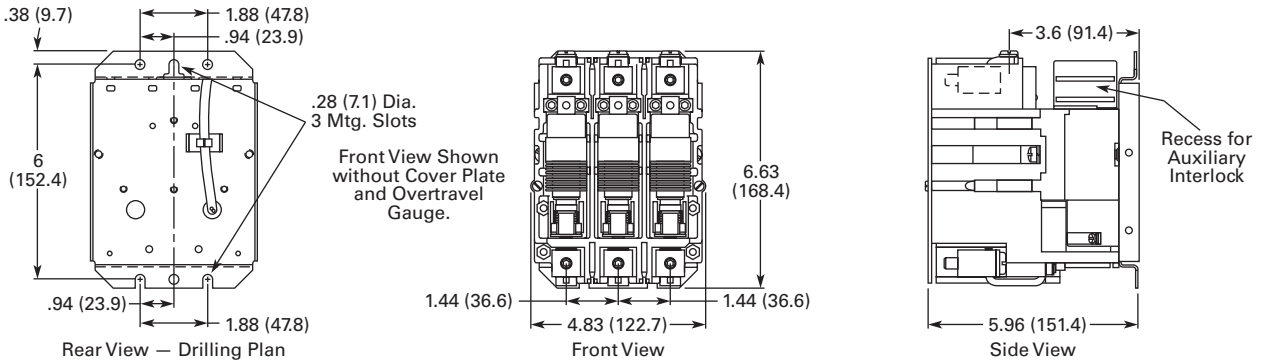
Description	Suffix	Item no.
Size 4	110/120 Vac, 50/60 Hz	J 9085A57G01
	220/240 Vac, 50/60 Hz	K 9085A57G02
	380/415 Vac, 50/60 Hz	H ID89221G07
	440/480 Vac, 50/60 Hz	U 9085A57G03
Size 5	110/120 Vac, 50/60 Hz	J 7874A09G01 ③
	220/240 Vac, 50/60 Hz	K 7874A09G04 ④
	380/415 Vac, 50/60 Hz	H 7874A09G10
	440/480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

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

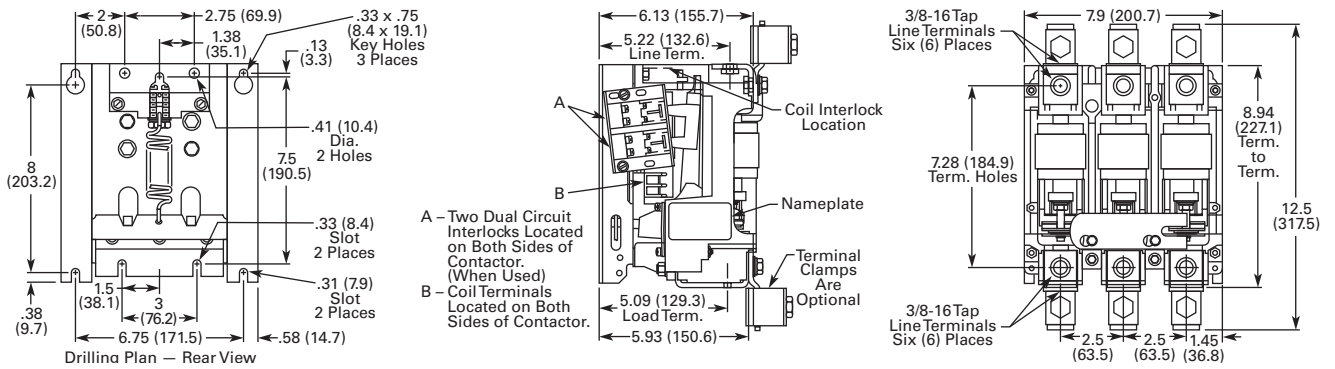
④ 250 Vdc can be directly applied to the Size 5 and 6 coil rated for 240 Vac/60 Hz (cannot be applied to Size 4).

Dimensions

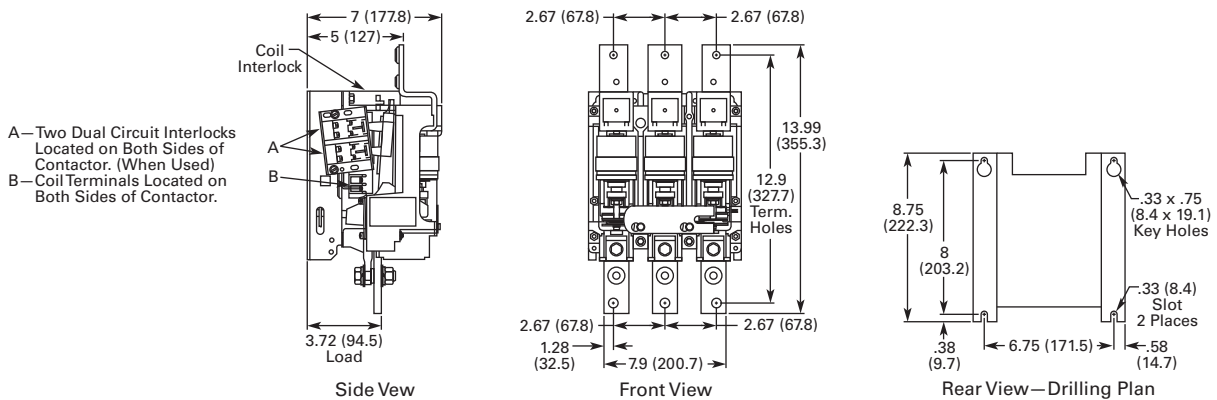
Open type contactors and starters - size 4 and 160A
Size 4 and 160A non-revising contactor



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



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



Solutions you can depend upon.



EATON

Powering Business Worldwide

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

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

For further information about Eaton's drives please visit www.eatoncorp.com.au

Drives and soft starters

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

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

Soft starters

DS7 Soft starters

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



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

Soft starters

Accessories



ZB12-4



PKZM0-XM32DE



DS7-FAN-032



PKZM0-XDM12



BBA0L-25

Overload relays

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

Electric contact module

For use with...	Item no.
DS7-34...SX016...	PKZM0-XM32DE
DS7-34...SX024...	
DS7-34...SX032...	

Device fans

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

PKZ-DS7 wiring set

For use with...	Item no.
DS7-34...SX004...	PKZM0-XDM12
DS7-34...SX007...	
DS7-34...SX009...	
DS7-34...SX012...	

Busbar adapter

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

Soft starters

S811+ intelligent technologies (IT)

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



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

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

Accessories for S811+ soft starters

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

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



EML24



EMA69C



PSG240E

Power control

Drives and soft starters



Variable speed drives

M-Max machinery drives

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

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

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

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

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

M-Max copy/paste module

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

PC cable

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

Remote Keypad ③

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

NEMA type 1 kit ①

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

Optional communication modules ②

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

① NEMA Type 1 kit provides conduit entry plate.

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

③ All three components are required for remote keypad operation.

Drives

DG1

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

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



DG1 general purpose drives

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

380-500V IP21

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

Power control

Drives and soft starters

380-500V IP54

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

Options & accessories

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



DXG-EXT-3DI3DO1T



DXG-KEY-LCD

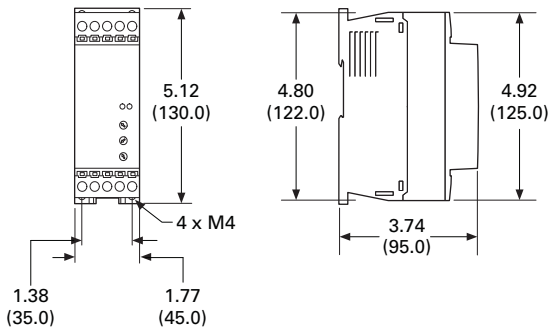


DXG-ACC-FR2N12KIT

Soft starter controllers

Dimensions (approximate dimensions in inches (mm))

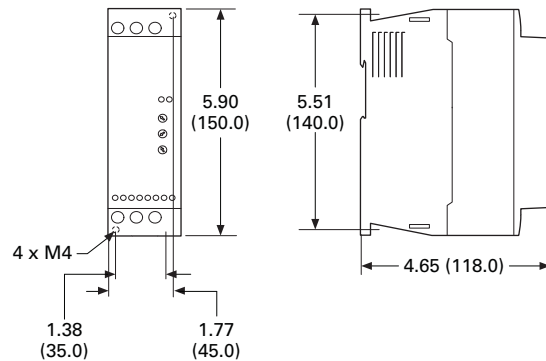
Frame 1



Item no.

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

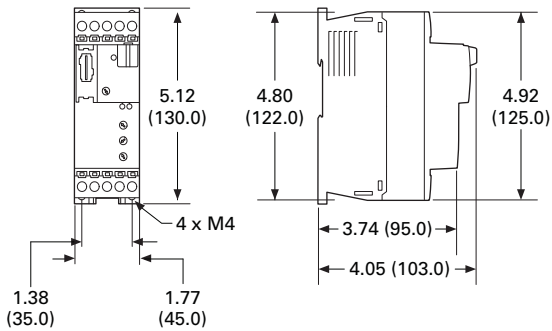
Frame 2



Item no.

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

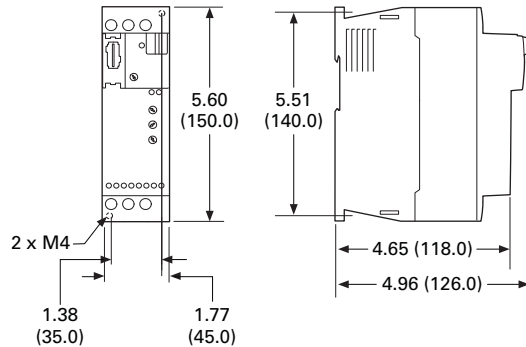
Frame 1—SmartWire-DT



Item no.

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

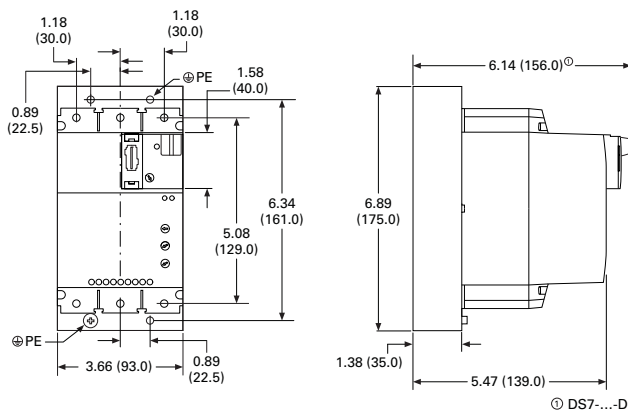
Frame 2—SmartWire-DT



Item no.

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

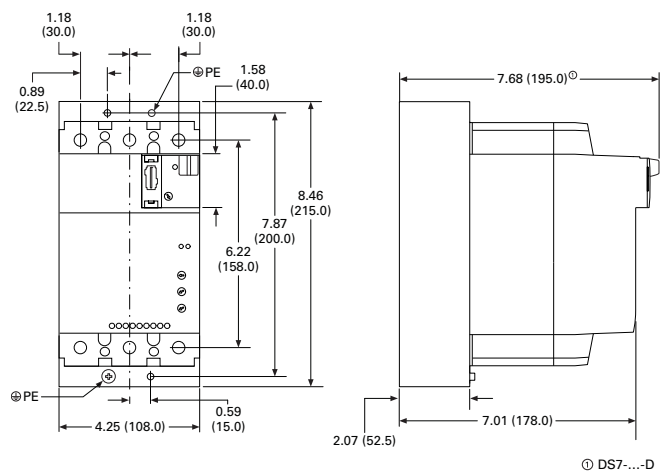
Frame 3—SmartWire-DT and Standard (Non SmartWire-DT)



Item no.

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

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



Item no.

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

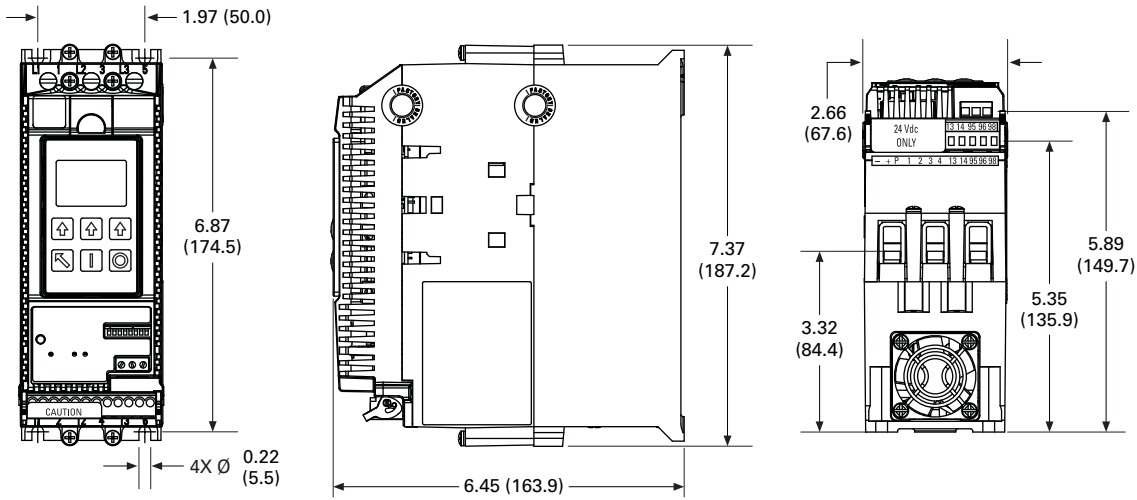
Power control

Drives and soft starters

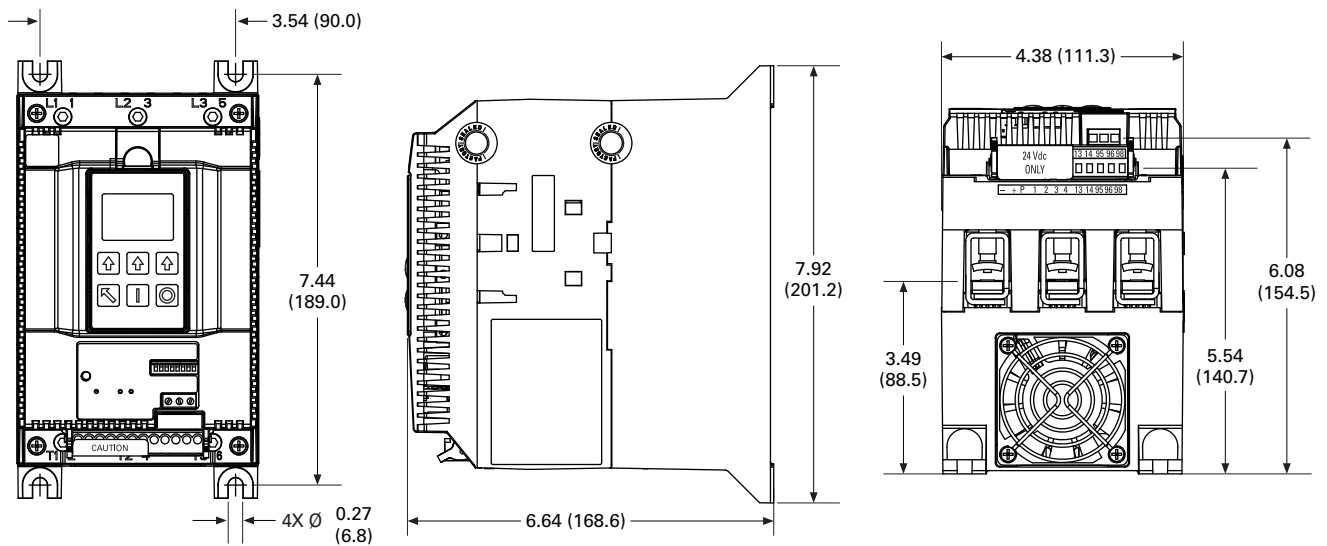
Solid soft starter

Dimensions (approximate dimensions in inches (mm))

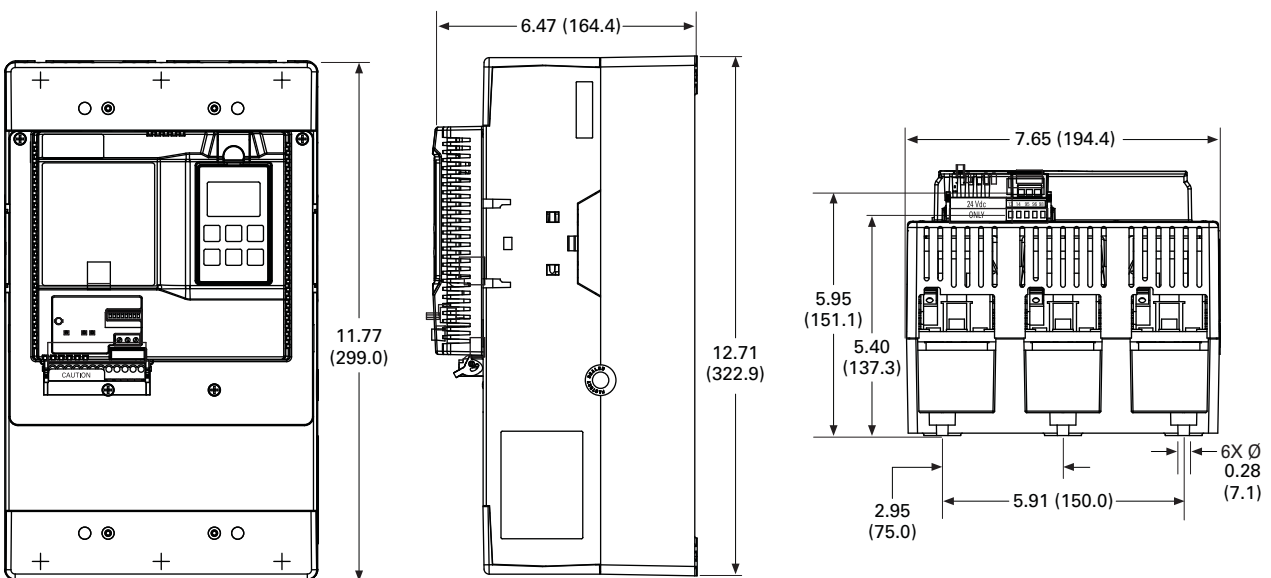
S811+N...



S811+R...



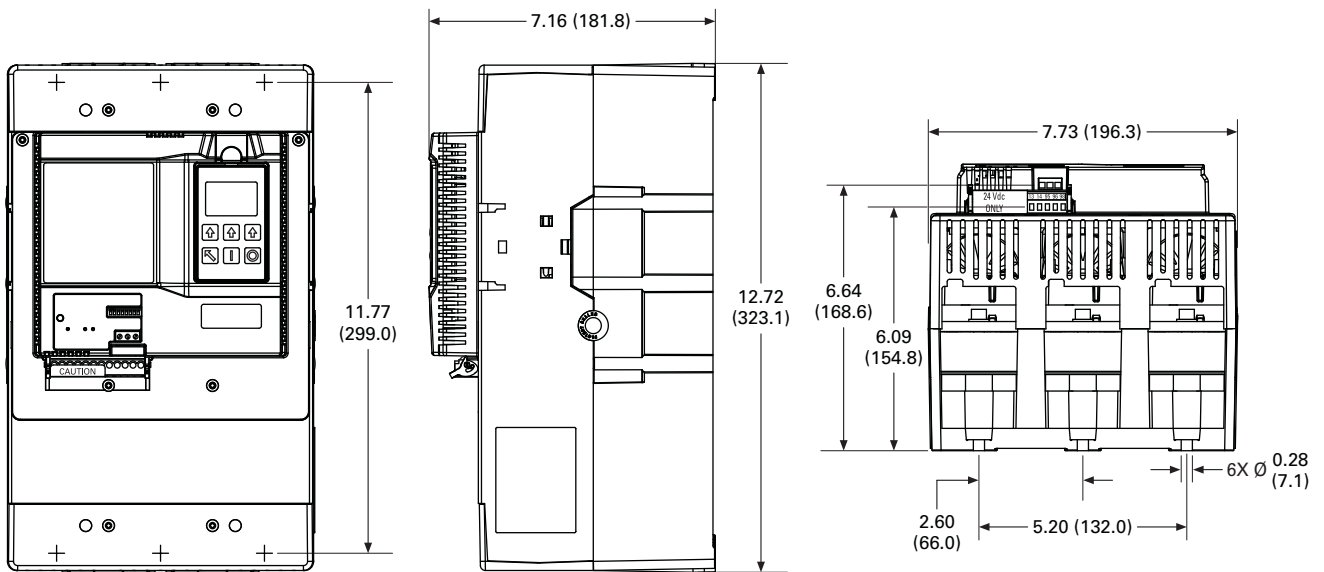
S811+T...



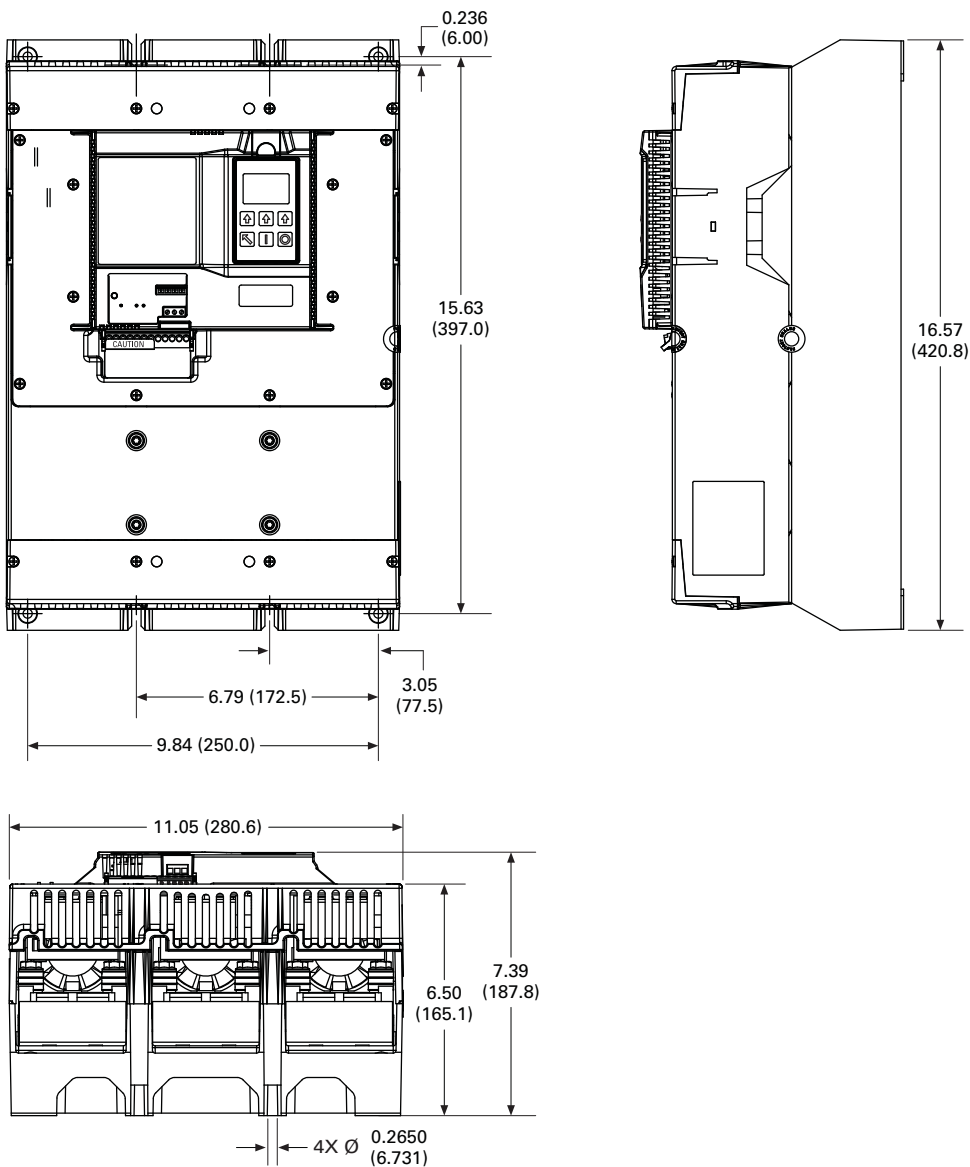
Solid soft starter

Dimensions (approximate dimensions in inches (mm))

S811+U...



S811+V...



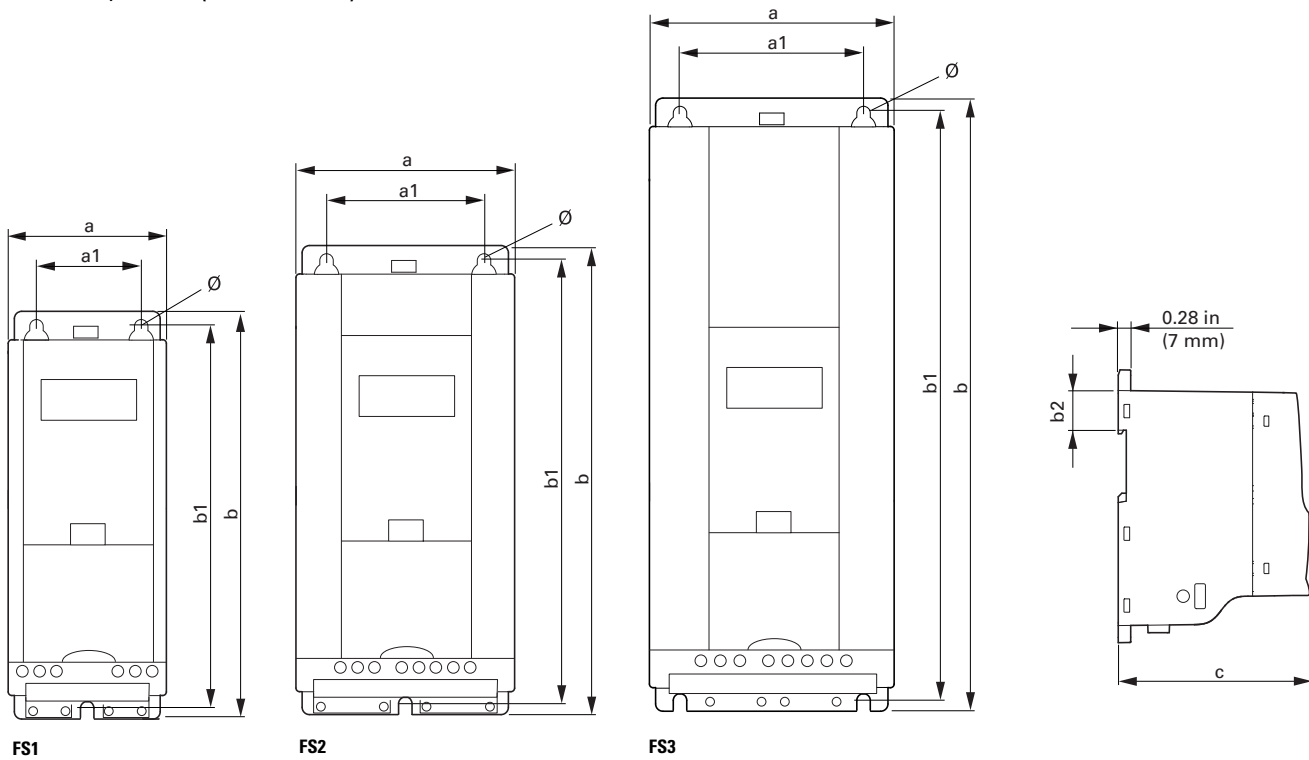
Power control

Drives and soft starters

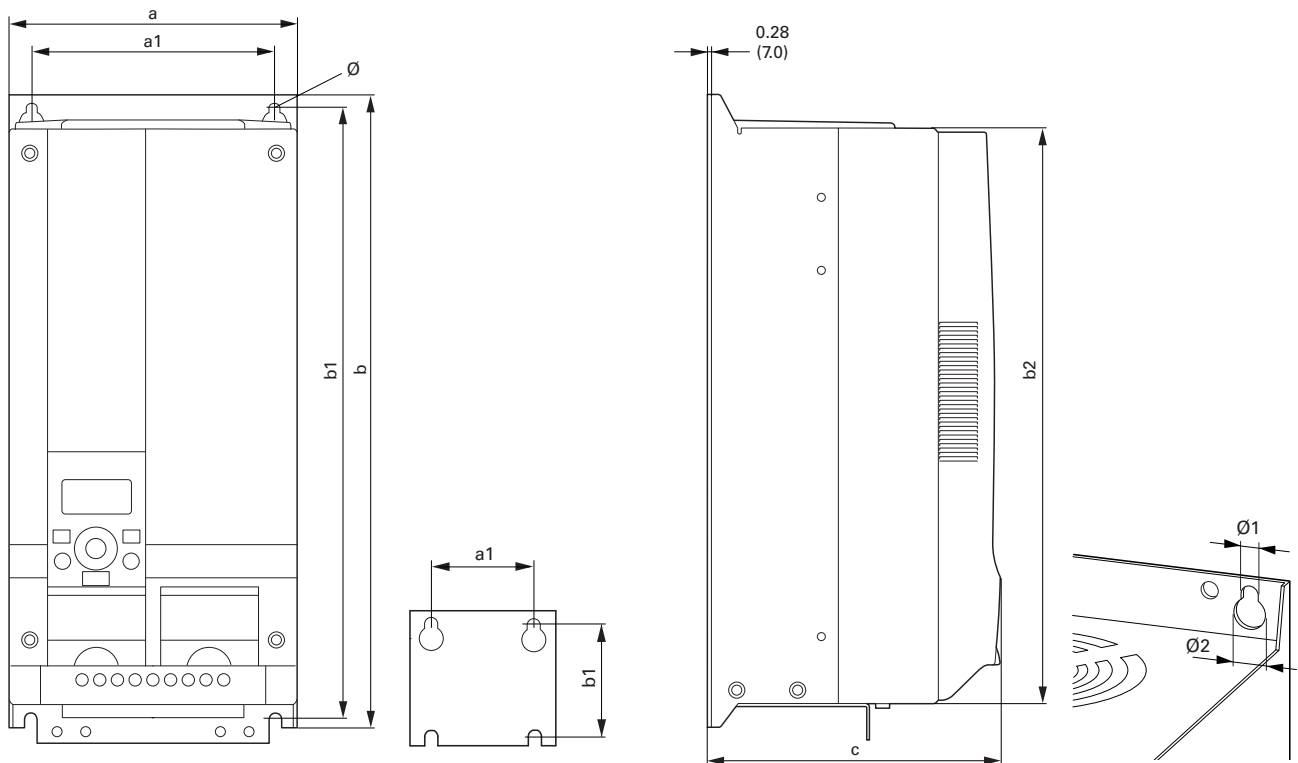
M-Max series drives

Dimensions (approximate dimensions in inches (mm))

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



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

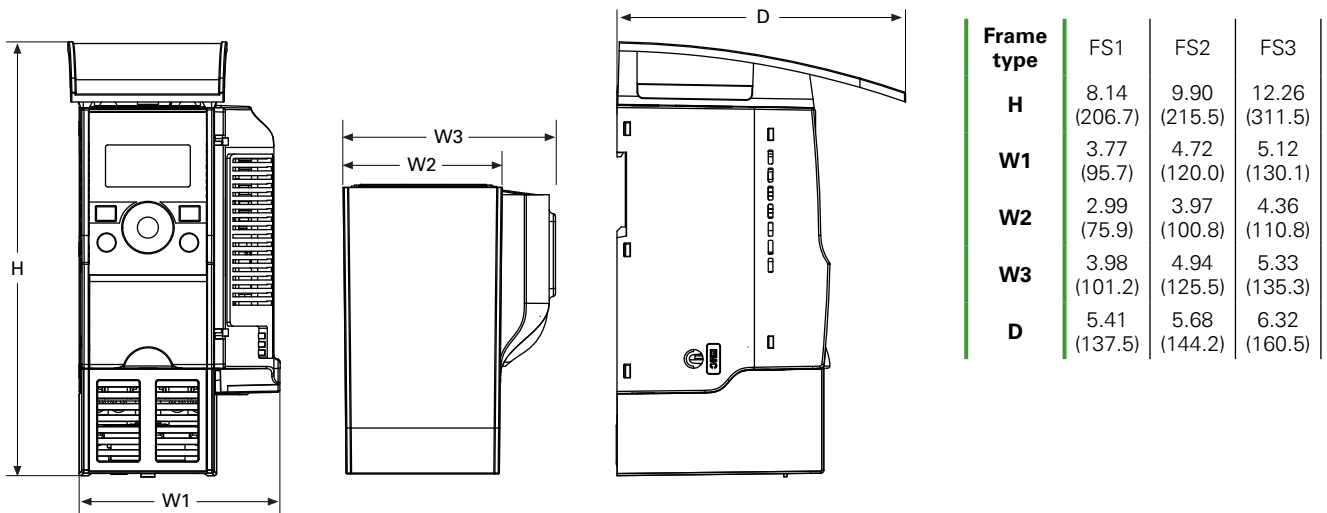


M-Max series drives

Dimensions (approximate dimensions in inches (mm))

Item no.	a	a1	b	b1	b2	c	Ø, Ø1	Ø2	Installation Size
MMX12AA1D7_ MMX12AA2D4_ MMX12AA2D8_	2.60 (66)	1.50 (38)	6.30 (160)	5.79 (147)	1.26 (32)	4.02 (102)	0.18 (4.5)	—	FS1
MMX34AA1D3_ MMX34AA1D9_ MMX34AA2D4_	3.54 (90)	2.46 (62.5)	7.68 (195)	7.17 (182)	1.26 (32)	4.14 (105)	2.17 (5.5)	—	FS2
MMX12AA3D7_ MMX12AA4D8_ MMX12AA7D0_	3.94 (100)	2.95 (75)	9.96 (253)	9.53 (242)	1.34 (34)	4.41 (112)	2.17 (5.5)	—	FS3
MMX34AA7D6_ MMX34AA9D0_ MMX34AA012_ MMX34AA014_	6.50 (165.0)	5.51 (140.0)	14.57 (370.0)	13.82 (351.0)	13.27 (337.0)	6.61 (168.0)	0.28 (7.0)	0.55 (14.0)	FS4
MMX34AA031_ MMX34AA038_	6.50 (165.0)	5.51 (140.0)	14.57 (414.0)	13.82 (398.0)	15.08 (383.0)	8.07 (205.0)	0.28 (7.0)	0.55 (14.0)	FS5

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



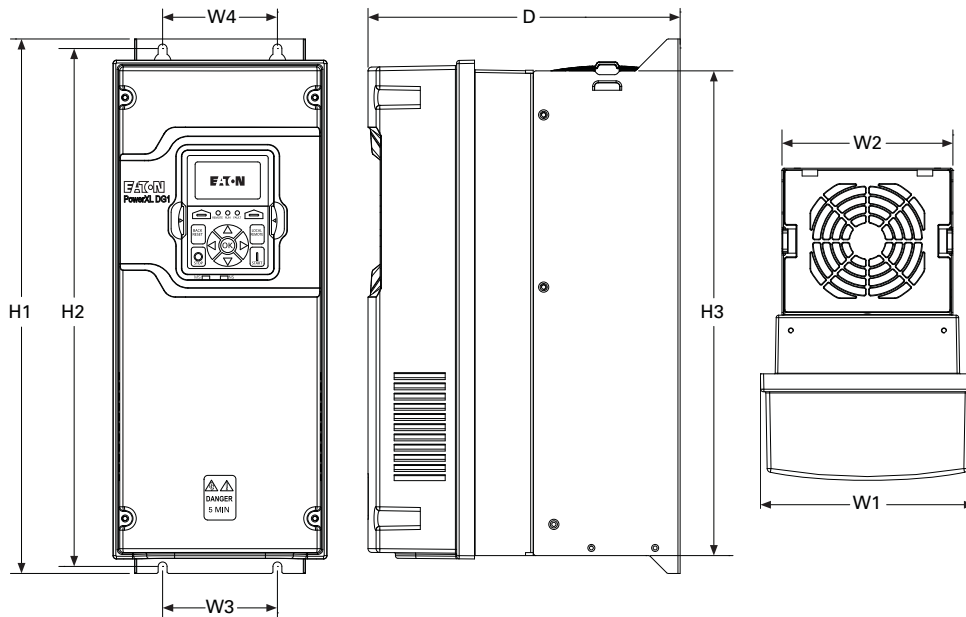
Power control

Drives and soft starters

DG1 drive

Dimensions (approximate dimensions in inches (mm))

PowerXL Series



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

Note ¹ FR6 and 575 Vac available in 2015.

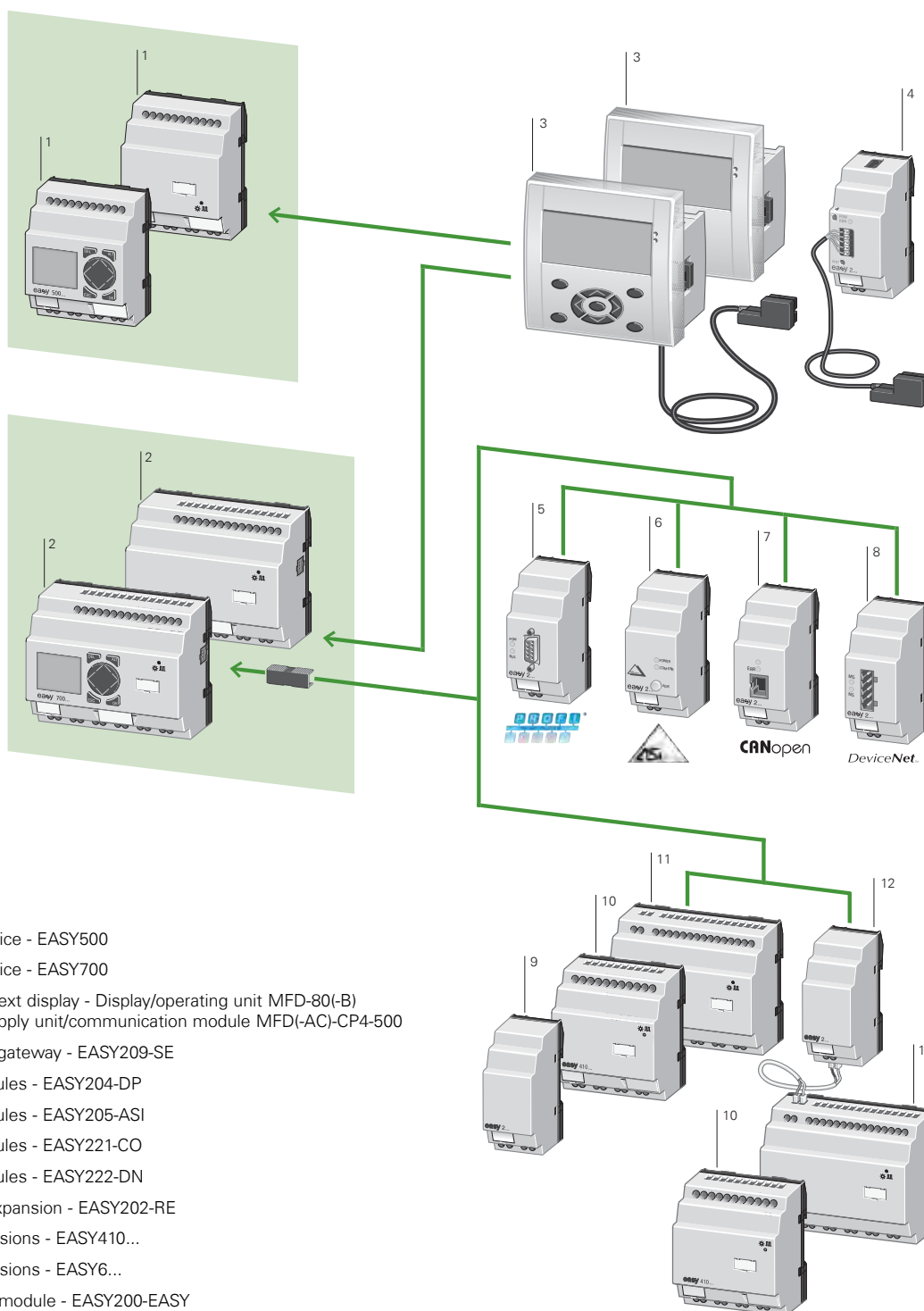
Control, monitor, protect.

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

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

easy relay controllers

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



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

easy relay controllers

Base units easy500, easy700, easy800



easy500



easy700



easy800

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

easy relay controllers

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

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



MFD-80-B



MFD-CP8-ME

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

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



MFD-R16



MFD-TP12-PT-A

easy relay controllers

Expansions, bus modules, Ethernet gateway



EASY618-AC-RE



EASY200-EASY



EASY209-SE



MFD-CP4-500

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

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

easy relay controllers

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

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



EASY-PC-CAB



EASY-LINK-DS



MFD-800-CAB5

easy relay controllers

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



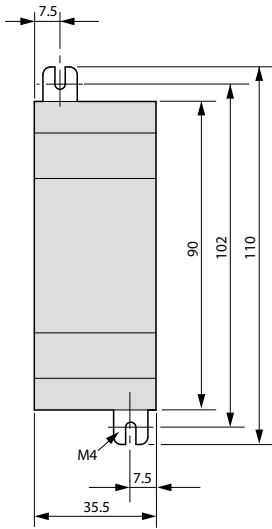
EASY400-POW

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

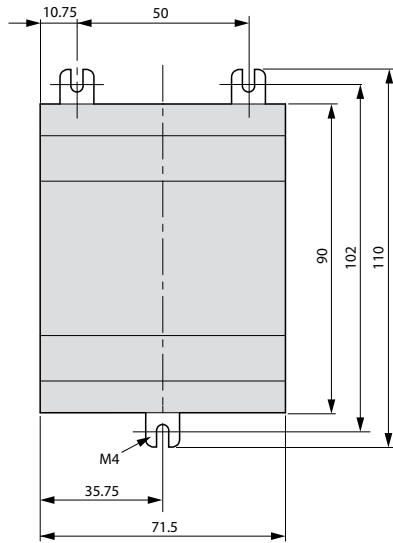
easy relay controllers

Dimension

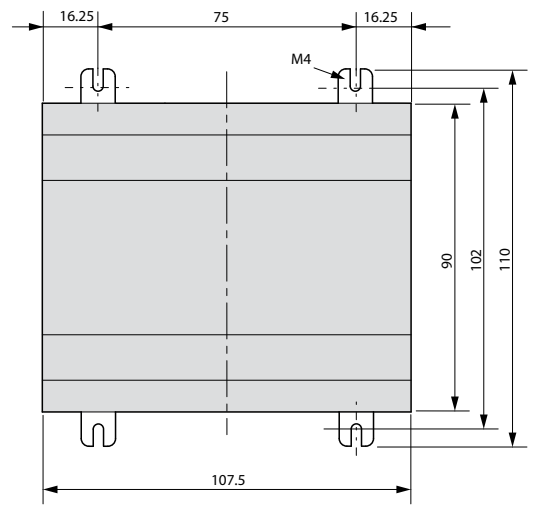
easy200



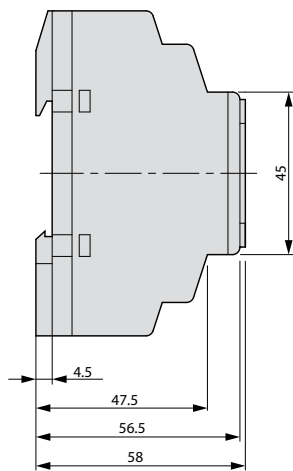
easy400
easy500



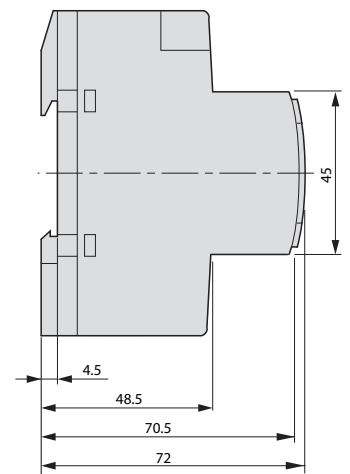
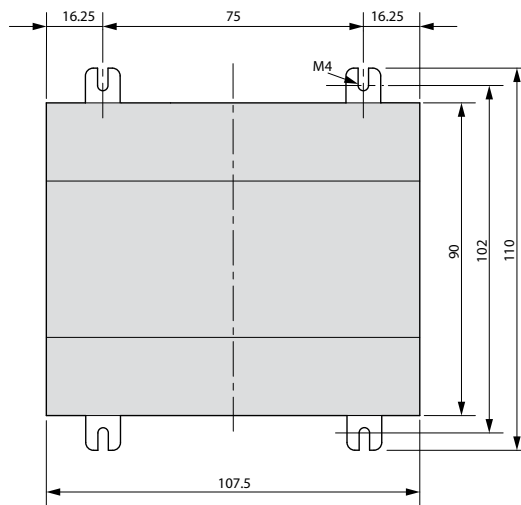
easy600
easy700



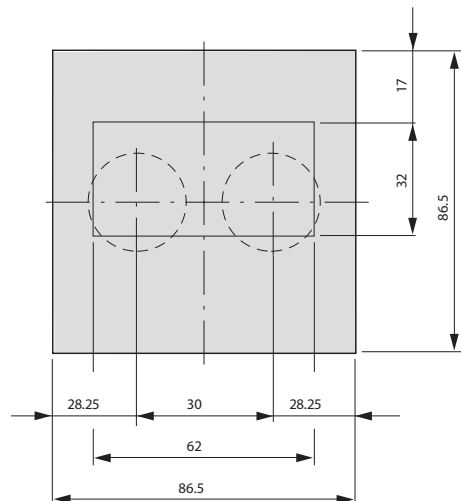
easy200
easy400
easy500
easy600
easy700



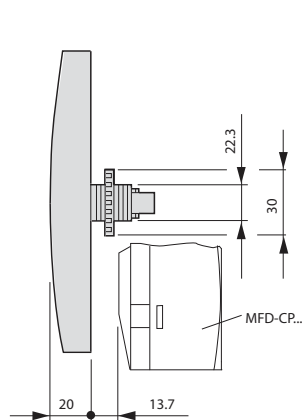
easy800



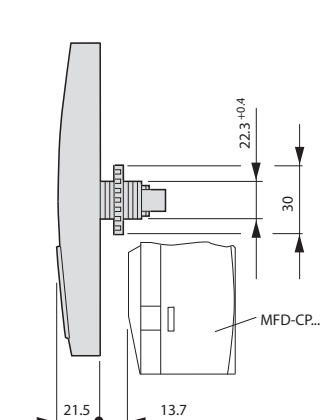
MFD-80...



MFD-80



MFD-80-B



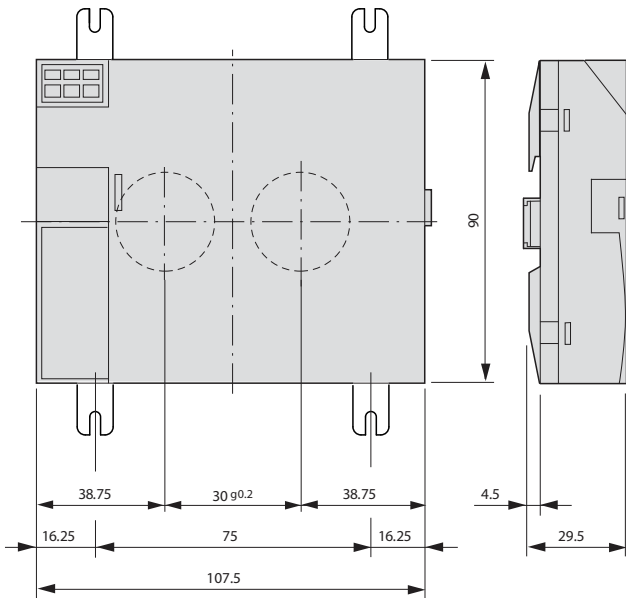
Power control

Automation

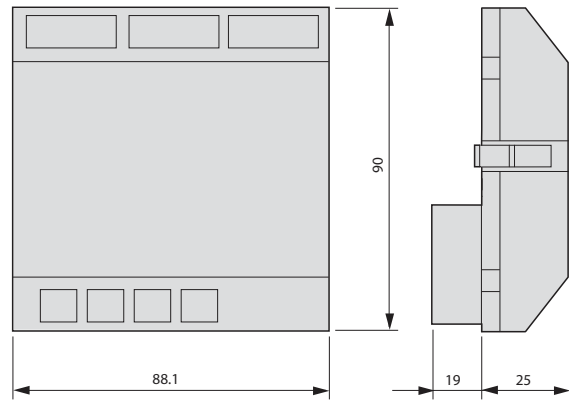
easy relay controllers

Dimension

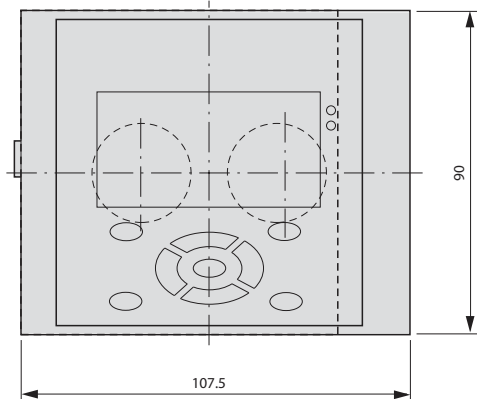
MFD-CP... , MFD-AC-CP...



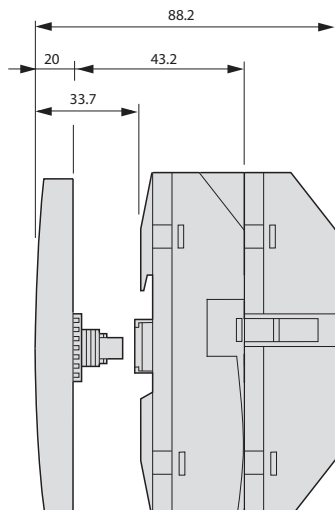
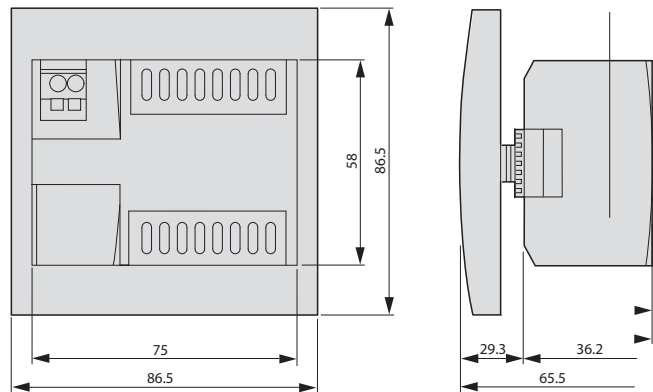
MFD-R... , MFD-T... , MFD-AC-R16



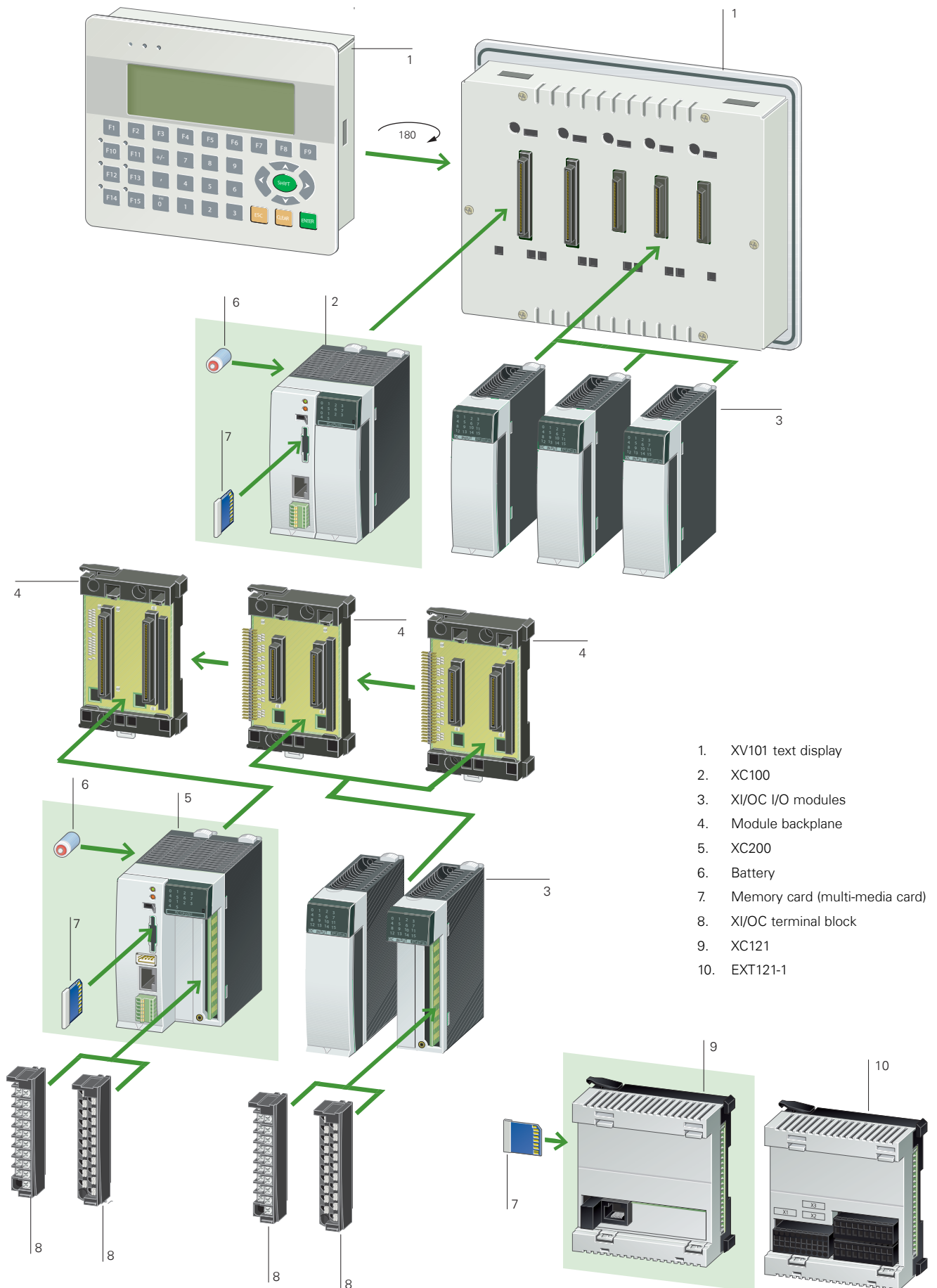
MFD-80... + MFD-CP... + MFD-R.../MFD-T...
MFD-80... + MFD-AC-CP... + MFD-AC-R16



MFD-80... + MFD-CP4



Programmable logic controllers



1. XV101 text display
2. XC100
3. XI/OC I/O modules
4. Module backplane
5. XC200
6. Battery
7. Memory card (multi-media card)
8. XI/OC terminal block
9. XC121
10. EXT121-1



XC-CPU101-C64K-8DI-6DO

Programmable logic controllers

XC100/XC200

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

XC100

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

XC200

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

XC-CPU...

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

Text display for XC100

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

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



XC-CPU121-2C256K

XC121

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

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

I/O expansion for XC121

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

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



XIO-EXT121-1

Programmable logic controllers

XIOC

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

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



XIOC-8DI



XIOC-8AI-U2



XIOC-1CNT-100KHZ



XIOC-NET-DP-M

Programmable logic controllers

Accessories XIOC-...



XIOC-TERM-18T



XIOC-BP-XC1



XT-MEM-MM512M



EASY-NT-30



XIOC-NOP



XT-RJ45-ETH-RS232

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

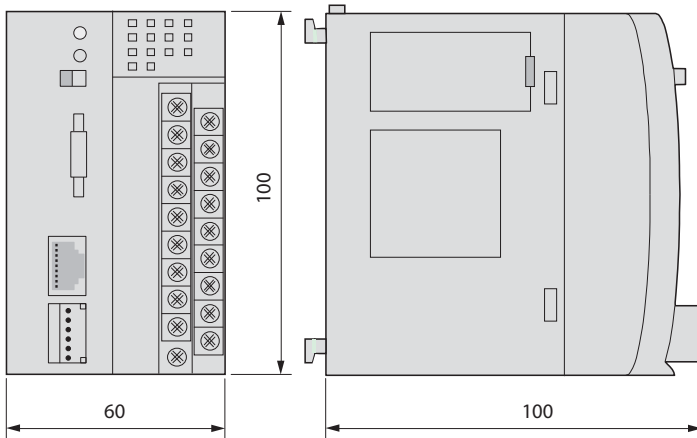
Other accessories

XIOC-..., XTT...

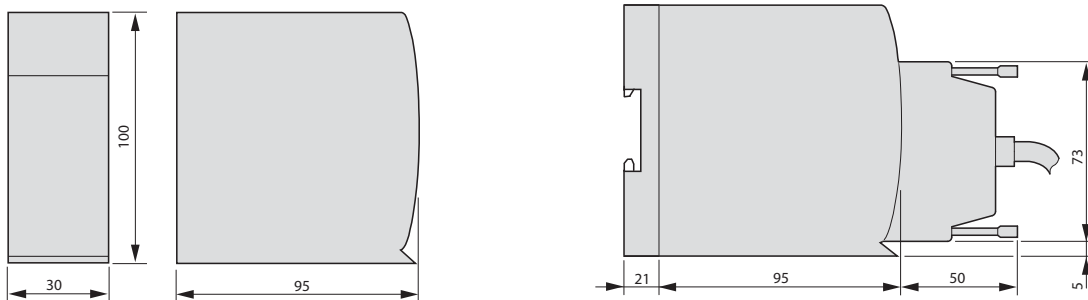
Description	Item no.
Multi-media card - for storage of programs, data, recipes	
- 512 MByte	XT-MEM-MM512M
- 32 MByte	XT-MEM-MM32M
Battery	For back-up of real-time clock & retentive data XT-CPU-BAT1
Programming cable	
2 m length D-sub, 9-pin, serial	XT-SUB-D/RJ45
2 m length Ethernet cross, 2 m	XT-CAT5-X-2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

Programmable logic controllers

XC-CPU101
XC-CPU201
XC-CPU202



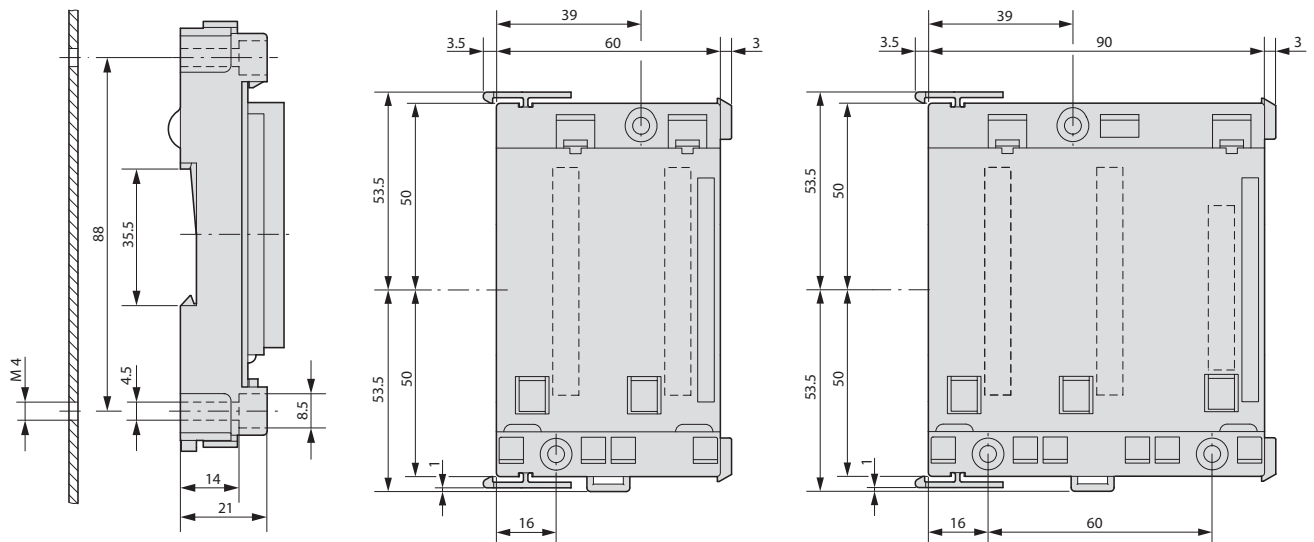
XIOC...



Backplanes

XIOC-BP-2
XIOC-BP-XC

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

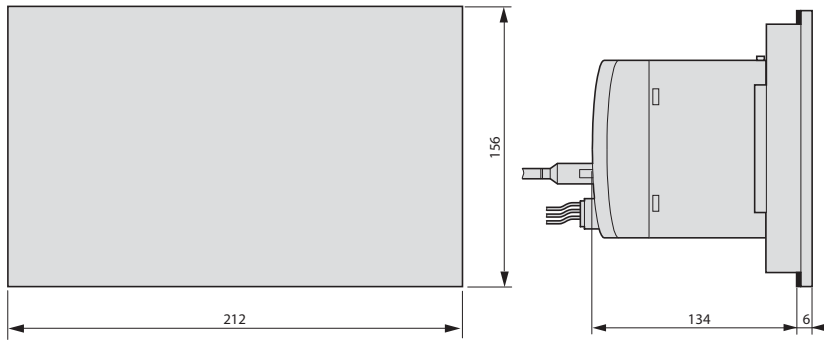


Power control

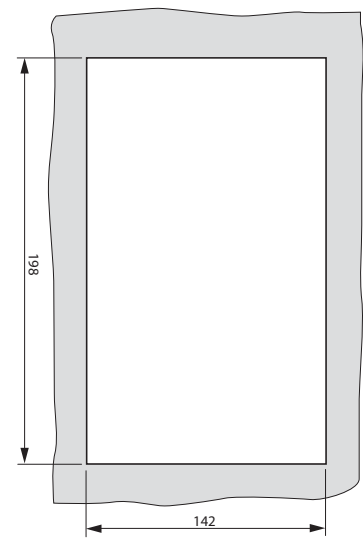
Automation

Programmable logic controllers

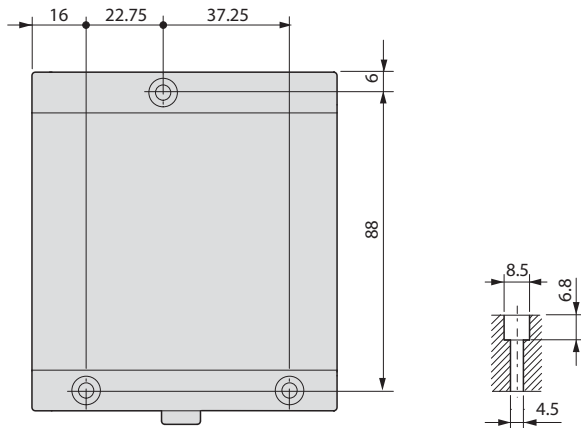
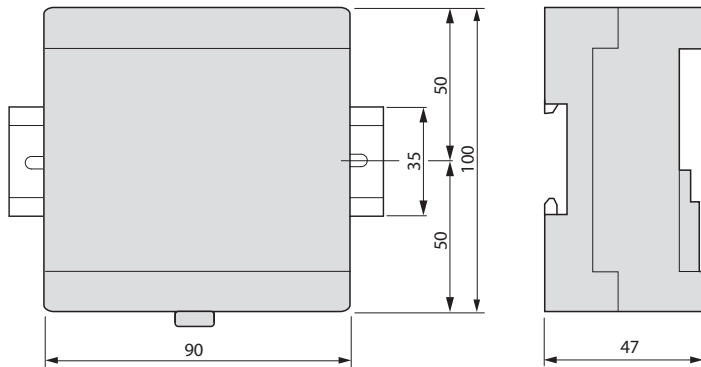
XV-101...



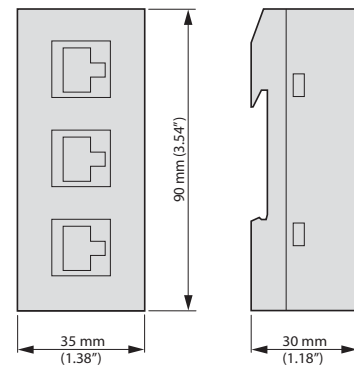
Mounting dimensions



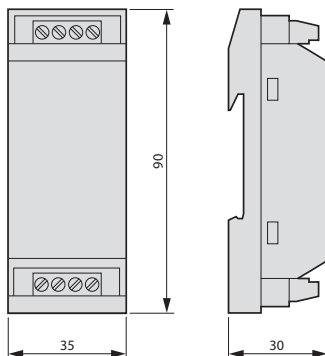
XC-CPU-121...
XIO-EXT121-1



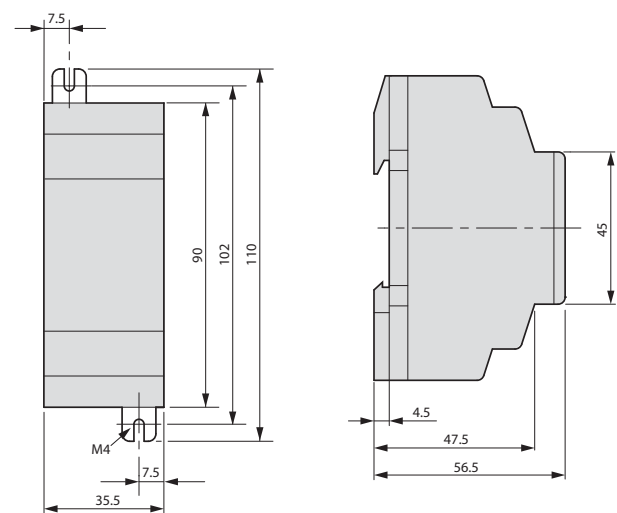
XT-RJ45-ETH-RS232



XT-FIL-1



XT-FIL-2



Programmable logic controllers

ELC modular PLCs

PB base model—

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

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

PH high-speed model

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

PC clock/calendar model

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

PA analog model

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

PV advanced model

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



ELC-PC

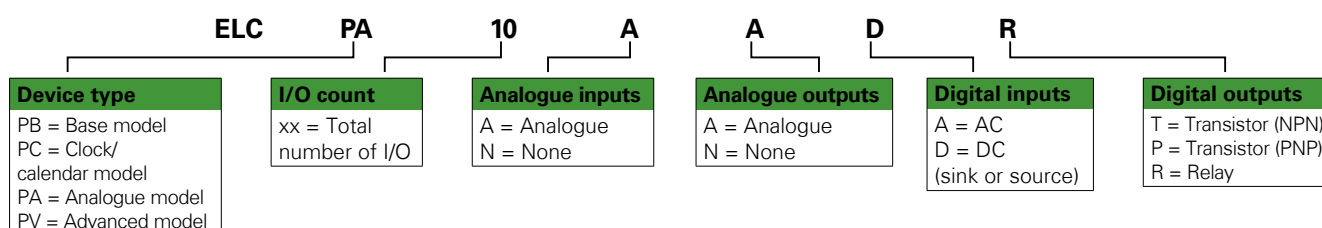


ELC-PA



ELC-PV

Controllers and modules



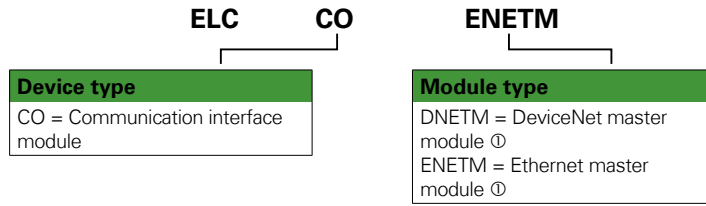
Description	Inputs	Outputs	Analogue	High speed I/O	Max. current	Item no.
ELC-PB module and 14 I/O built-in	(8) 24 Vdc	(6) Relay, 1.5A	-	(2) 20 kHz inputs	150 mA	ELC-PB14NNDR
	(8) 24 Vdc	6) Transistor, 100 mA	-			ELC-PB14NNDT
ELC-PC module and 12 I/O built-in	(8) 24 Vdc	4) Relay, 1.5A	-	(1) 30 kHz inputs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



ELC-EX16NNDR

Programmable logic controllers

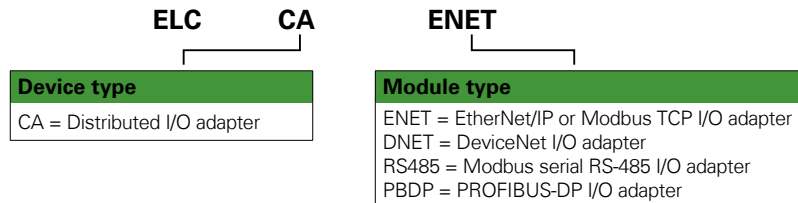
Master communication modules



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

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

Distributed I/O adapters

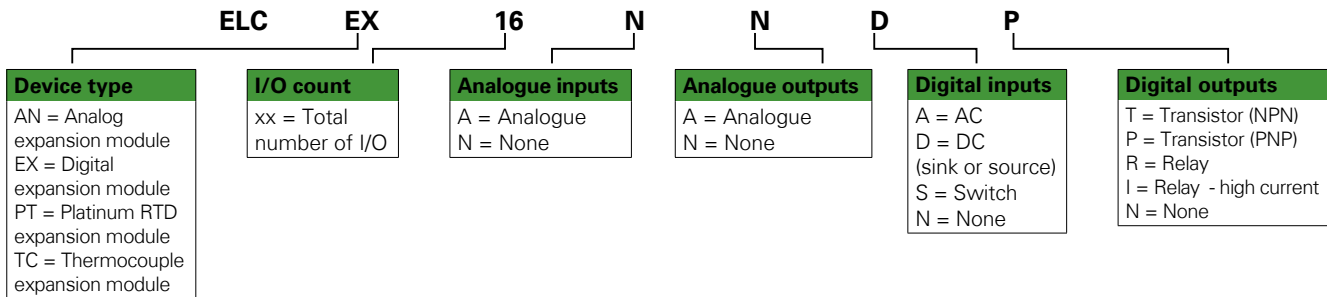


Features

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

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

Digital expansion modules (right side bus)



Features

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

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

Programmable logic controllers

Analogue input and out modules (right side bus)

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

Temperature input modules (right side bus)

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

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

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

Passive RS-485 connection device module.

RJ12 port for connecting to a drive.

2-pin screw terminal to connect to ELC controller.

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

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

Accessories

Power supplies

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

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



ELC-PS01

Cables

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

Storage devices

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

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

Programming software

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

Description	Item no.
Programming Software for ELC Controllers	ELCSOFT

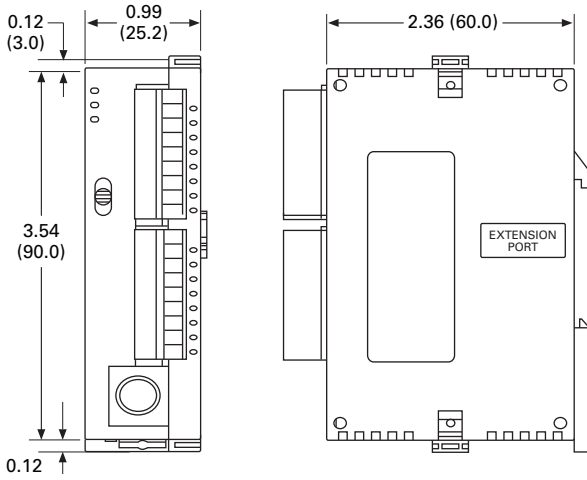
Power control

Automation

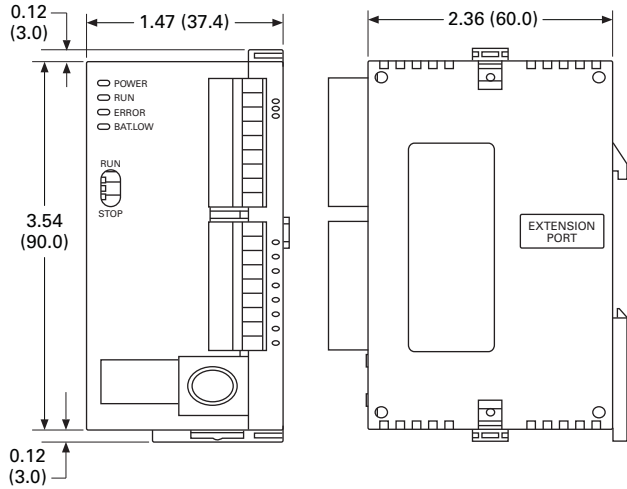
Programmable logic controllers

Dimensions (approximate dimensions in inches (mm))

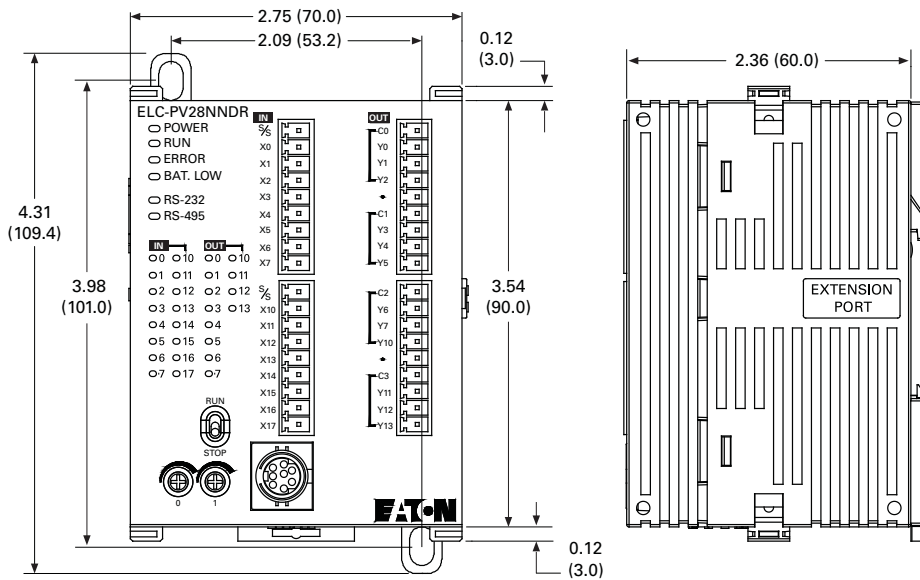
ELC-PB14 controllers



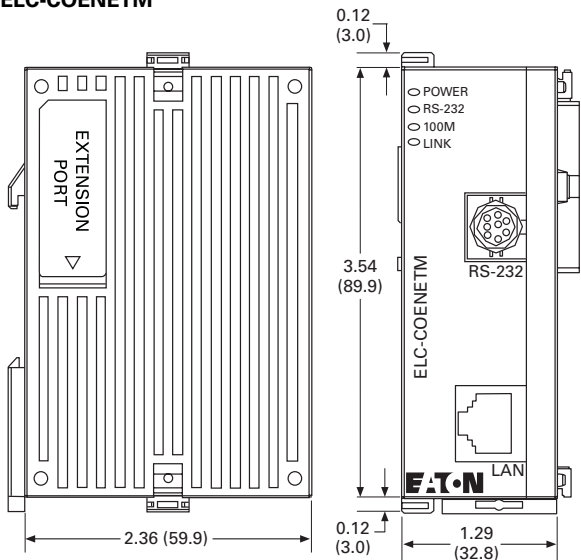
ELC-PC12, ELC-PH12 and ELC-PA10 controllers



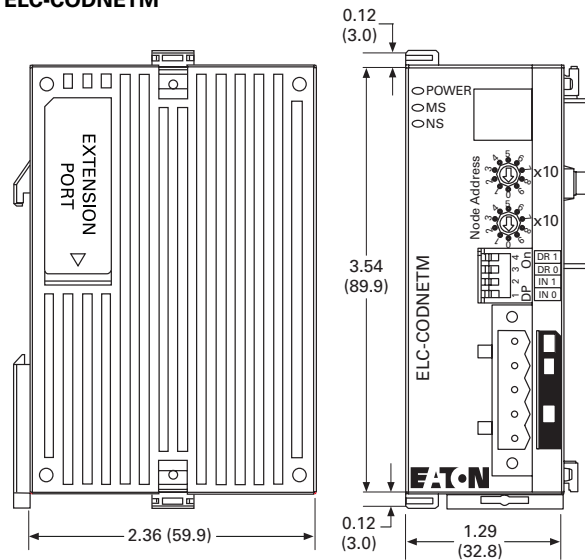
ELC-PV controller



ELC-COENETM



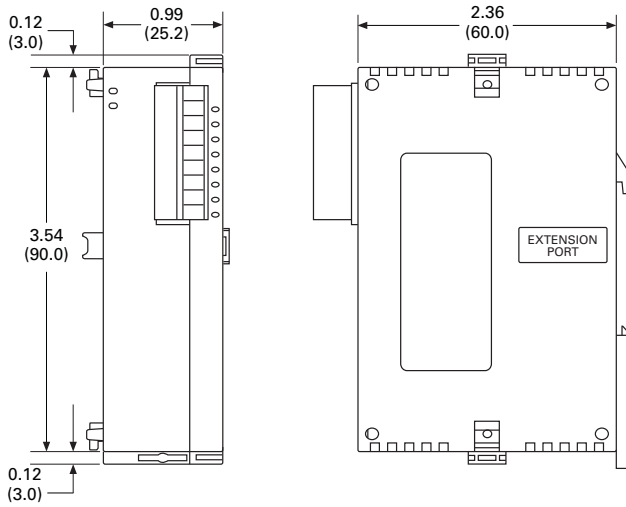
ELC-CODNETM



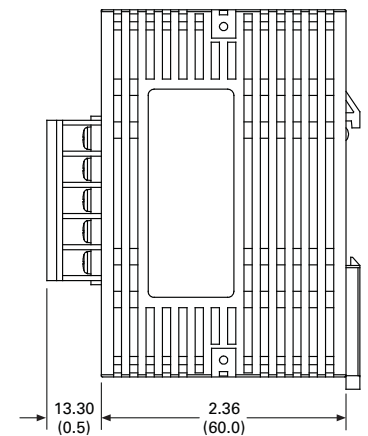
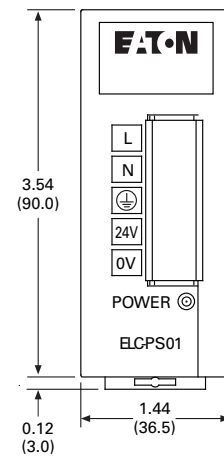
Programmable logic controllers

Dimensions (approximate dimensions in inches (mm))

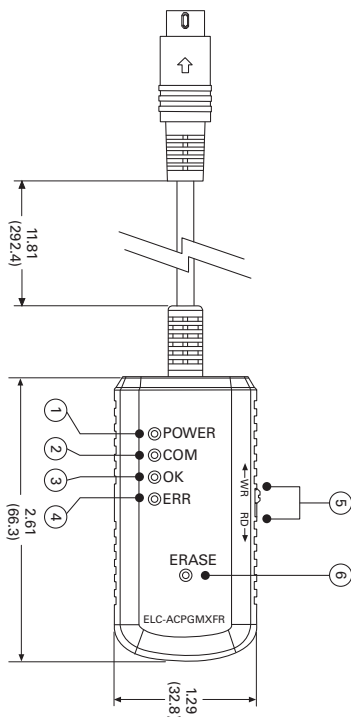
Right side specialty and expansion modules



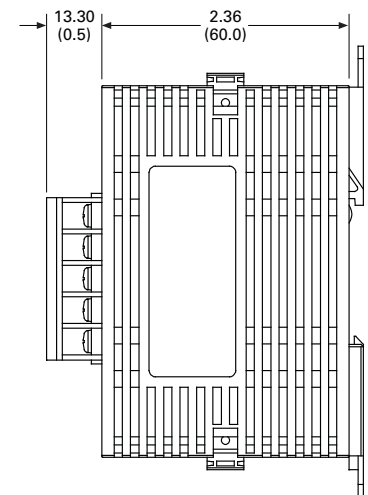
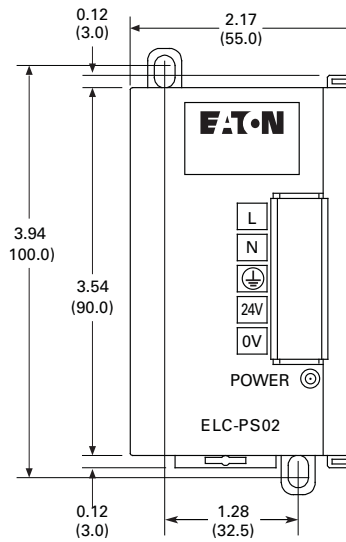
ELC-PS01



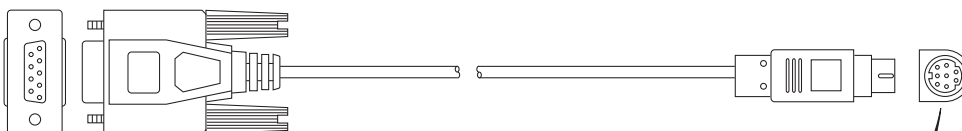
ELC-ACPGMXFR storage device



ELC-PS02



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



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

ELC Graphic touch panels

Eaton ELC Graphic touch panels

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

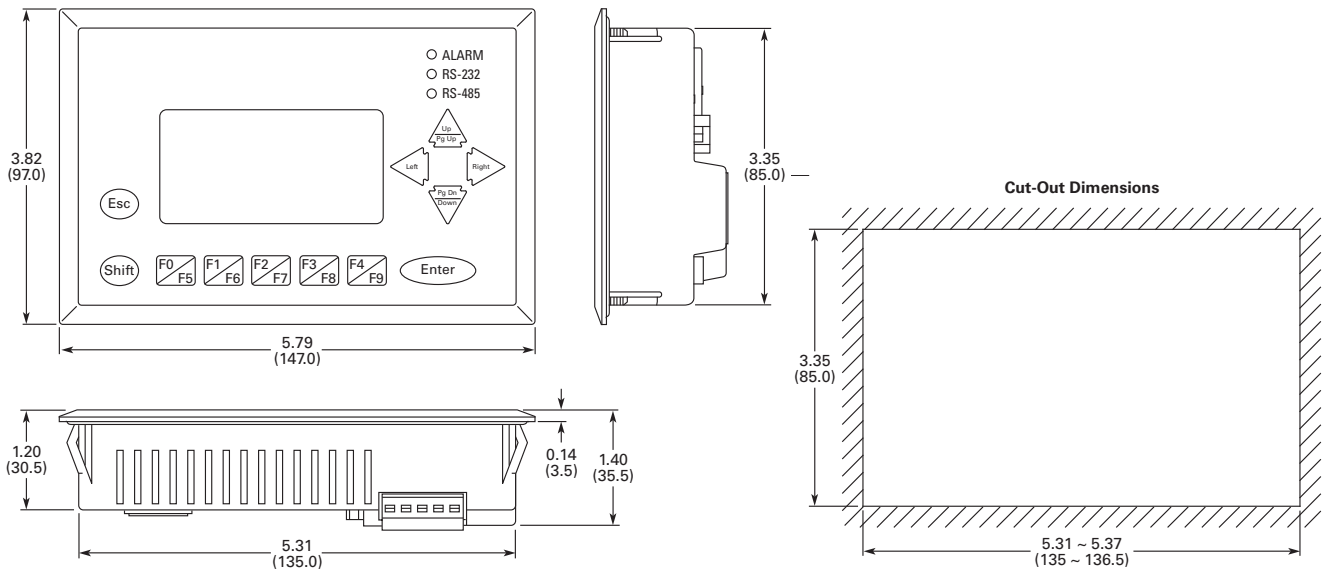


Description	Item no.
Graphic touch panels	
Touch panel, 160 x 32 pixels, 10 function keys, monochrome	ELC-GP02
Touch panel, 128 x 64 pixels, 10 function keys, monochrome	ELC-GP04
Programming software	
Programming software for ELC graphic touch panels	ELCSOFTGP
Power supplies	
Power supply, 110-240V AC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

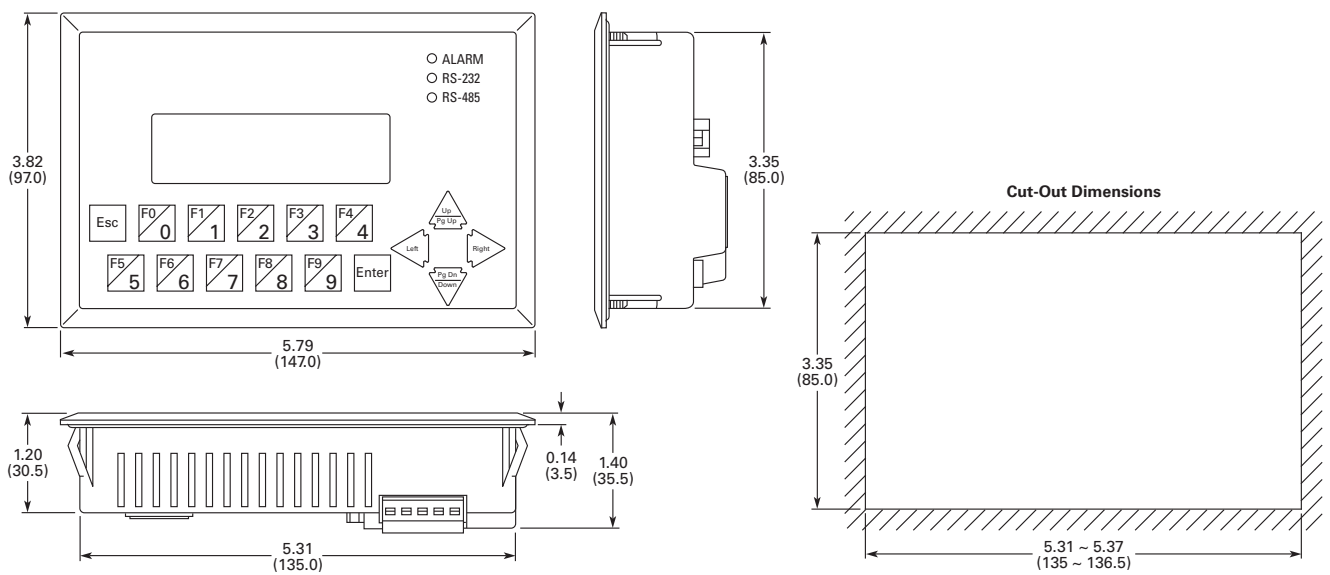
ELC Graphic touch panels

Dimensions (approximate dimensions in inches (mm))

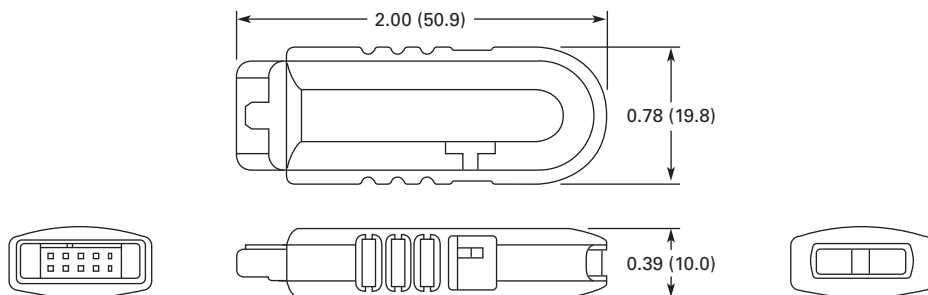
ELC-GP04



ELC-GP02



ELC-GPXFERMOD



Operator interface

HMI operator interface

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

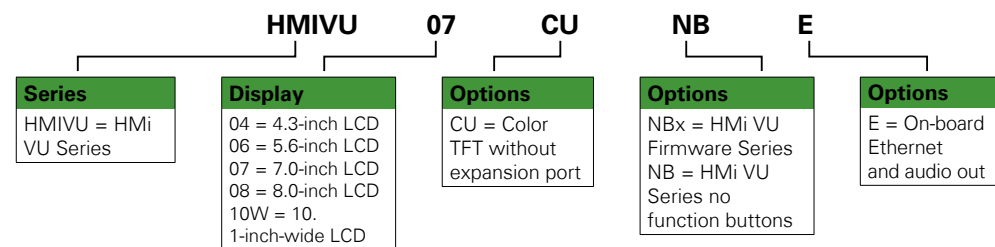


Features

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

HMI VU exclusive features

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



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

HMiSoft programming software

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

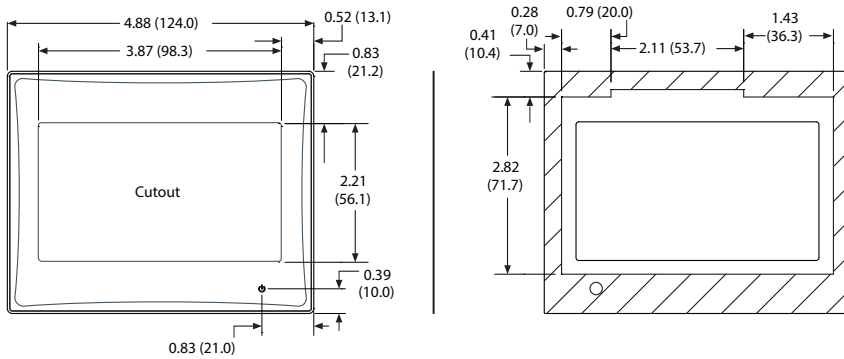
- Ethernet and serial communication drivers
- Up to four simultaneous protocols
- Screen manager
- Over 70 on-screen objects
- Pop-up screens
- Animated graphics
- Conditional visibility
- Built-in picture library
- Create your own picture library
- Multi-language
- Eight levels of security
- Macro editing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

Description	Item no.
Programming software for HMI and HMI VU models	HMISOFT

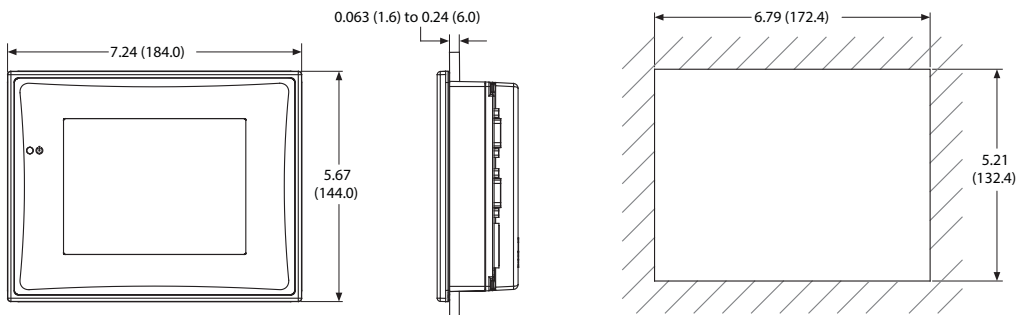
Operator interface

Dimensions (approximate dimensions in inches (mm))

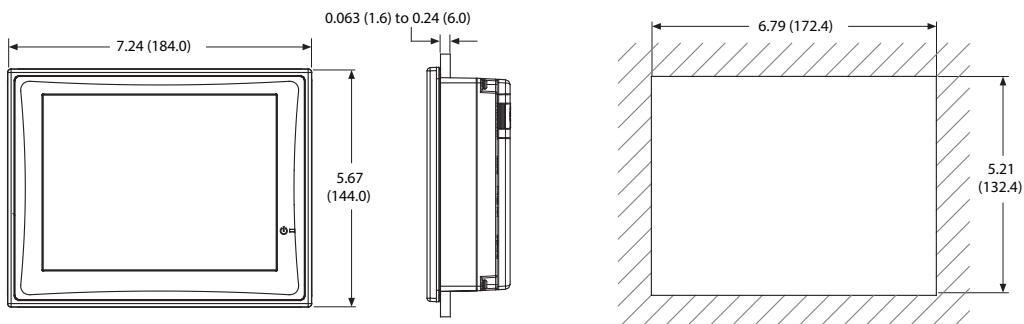
HMIVU04



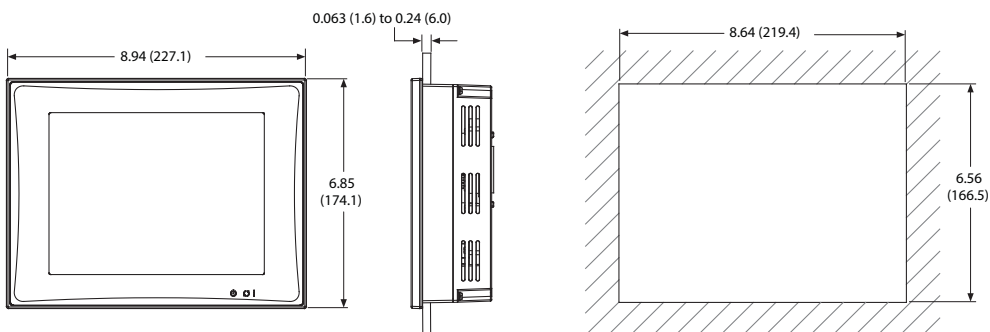
HMIVU06



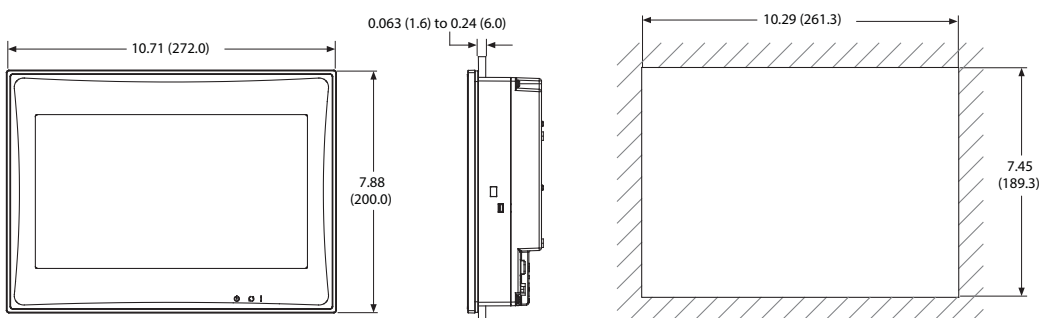
HMIVU07



HMIVU08



HMIVU10



LS-Titan position switches

Basic units

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

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

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

Features & benefits:

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



LS-11



LSM-11



M22-LS

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

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

LS-Titan position switches

Operating heads

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

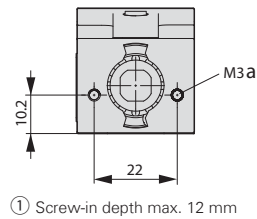
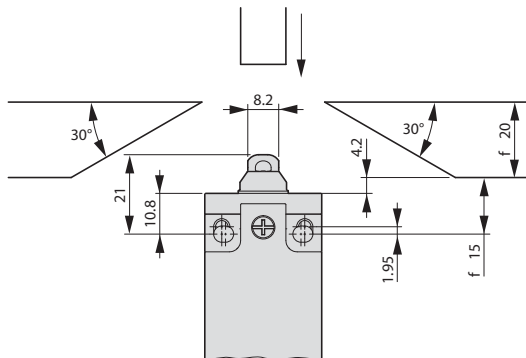


LS-Titan position switches

Dimensions

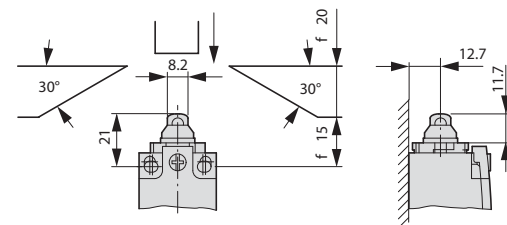
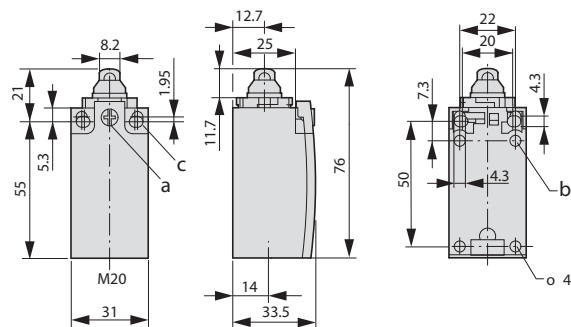
Basic units, non expandable (front fixing)

LS(M)-.../F



Basic units, expandable,

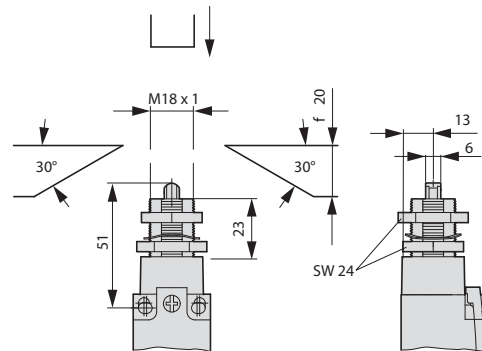
LS-..., LSM-..., LSE-...



- ① Tightening torque of cover screw: $0.8 \text{ Nm} \pm 0.2 \text{ Nm}$
- ② Only with LS (insulated version)
- ③ Fixing screw $2 \times M4 \geq 30$
 $M_A = 1.5 \text{ Nm}$

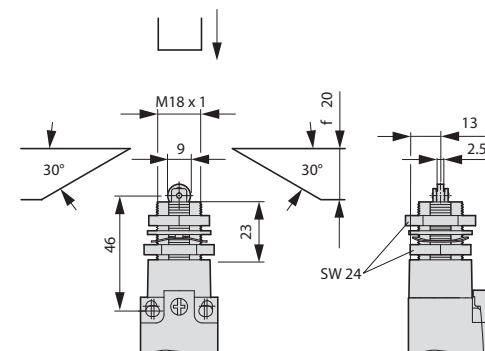
Rounded plunger, center fixing

LS-XZS



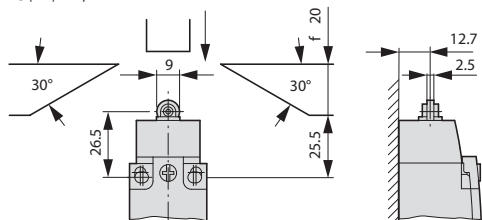
Roller plunger, center fixing

LS-XZRS



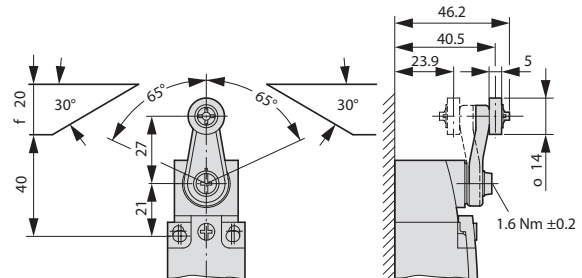
Roller plunger

LS(M)-.../P



Rotary lever

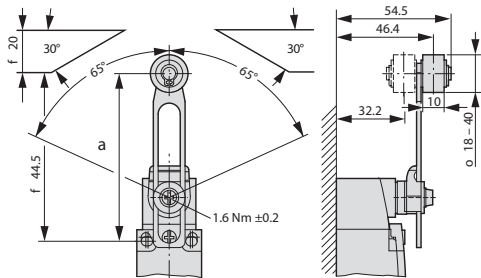
LS(M)-.../RL



LS-Titan position switches

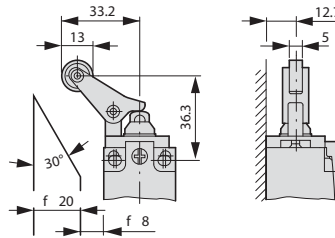
Dimensions

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

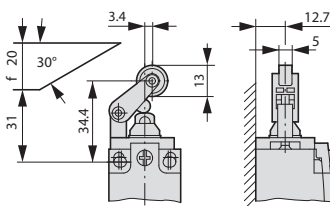


① Setting range from 54.5 to 97

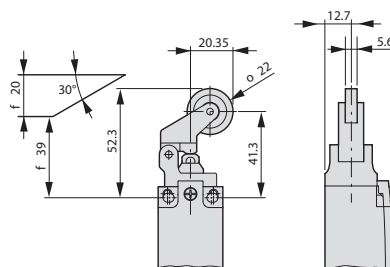
Angled roller lever
LS(M)-XLA



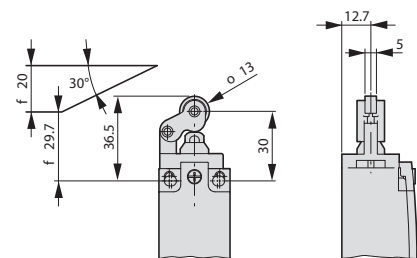
Roller lever
LS(M)-.../L



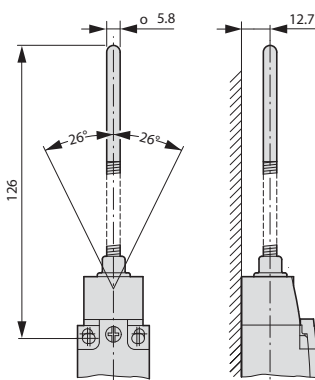
LS(M)-.../LB



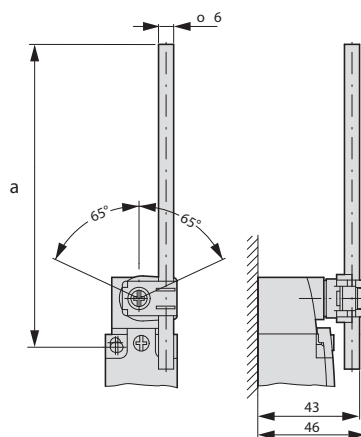
LS(M)-.../LS



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

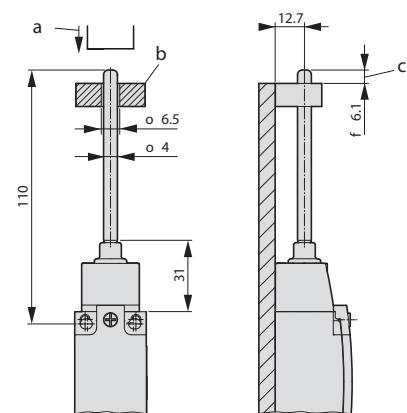


Actuating rod
LS(M)-.../RR



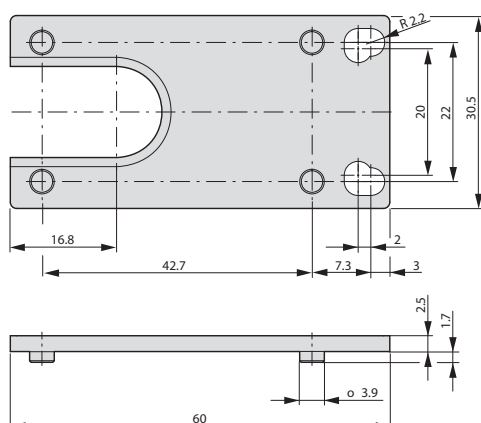
① LS.../RR ≤ 150
LS.../RRM ≤ 210

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

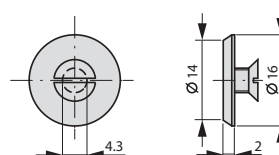


① Approach direction, vertical
② Guide is done by customer, not included
③ Max. push-through

Adapter plate
LS-XAP



Locating plate
FS-AT



Power control Automation



Assembled switch



Switch body



Single pole



Double pole



E50 Heavy duty modular limit switches

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

Complete switch = body + receptacle + Head

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

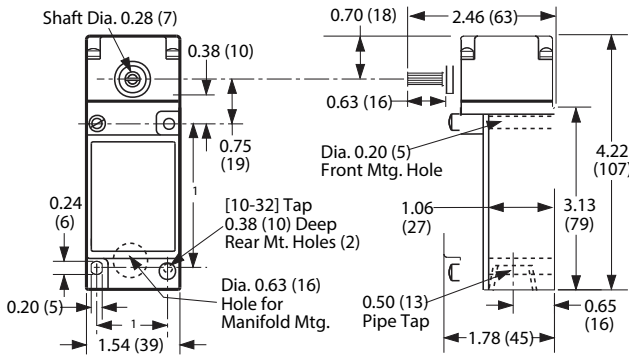
Operating head type	Item no.
Side Rotary	
Standard Spring Return	E50DR1
Low Force Spring Return	E50DL1
Maintained Two position	E50DM1
Side Pushbutton, Spring Return - E50DS1	E50DS1
Side Pushbutton, Spring Return - E50DS2	E50DS2
Side Push Roller, Spring Return - E50DS3	E50DS3

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

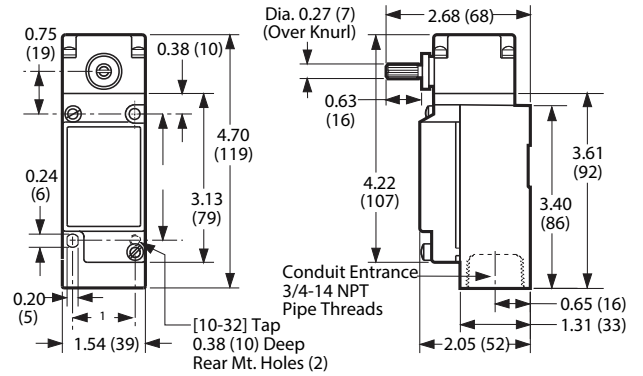
Plug-in switches

Dimensions (approximate dimensions in inches (mm))

Standard



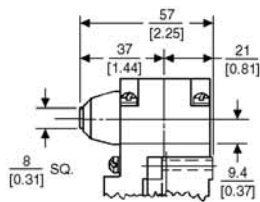
E50SB34



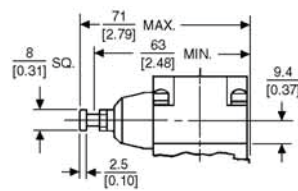
Side push operators

(approximate dimensions in mm (inches))

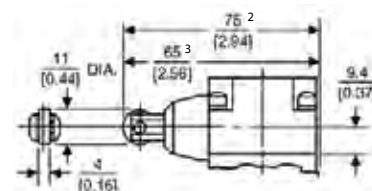
Pushbutton



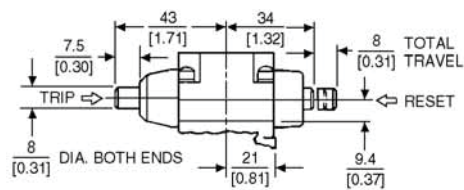
Adjustable pushbutton



Roller

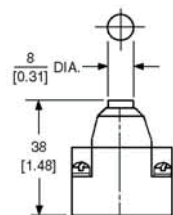


Maintained pushbutton

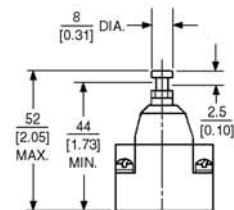


Top push operators

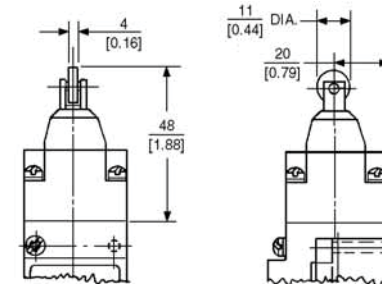
Pushbutton



Adjustable pushbutton



Roller



Notes

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

Limit switches

Roller type operators

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



E50KL200



E50KL355



E50KL377



E50KL554



E50KL580



E50KL24



E50KL27

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

Limit switches

Roller type operators

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



E50KL532



E50KL340



E50KL201



E50KL537

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



E50KL545



E50KL542

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

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

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

Precision adjustable to lesser dimensions.

④ Applies when lever is extended to the maximum dimension.

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

⑥ High-grade stainless steel.

Limit switches

Rod type operators

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



Nylon/metal



Metal/steel



Nylon/steel



Nylon covered wire



Nylatron



Nylatron loop



Zinc-plated steel



E50KW2



E50KW3



E50KW4

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

Clamps for adjustable rods (rod not included)				
clamp for..				
0.19 (4.8) diameter rods				E50KL35
0.12 (3.2) diameter rods				E50KL36
0.25 (6.4) diameter rods				E50KL41

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

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

② Length from the operating shaft axis to tip.

③ Applies when lever is extended to the maximum dimension.

Wobble type operators

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

Wobble type	Item no.
Nylon rod	E50KW2
Stainless steel rod	E50KW3
Coil spring	E50KW4

Limit switches

Dimensions

Standard roller

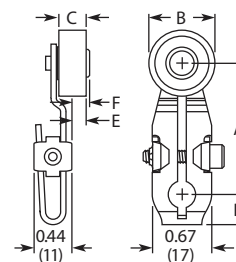
Approximate dimensions in inches (mm)

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

Note

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

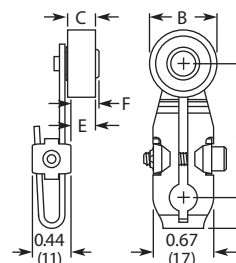
Roller Type Operators



Roller on reverse side

Approximate dimensions in Inches (mm)

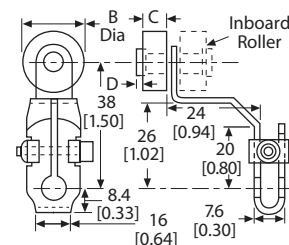
Item no.	A Lever Length ¹	B Roller Diameter	C Roller Width	D	E	F
E50KL580	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.18 (4.6)	0.24 (6.1)
E50KL310	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)
E50KL579	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)
E50KL536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



Offset roller

Approximate dimensions in mm [in]

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



Notes

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

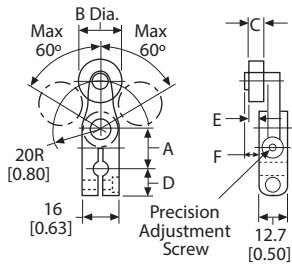
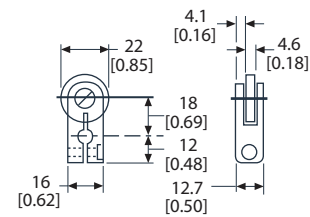
² Maximum length dimension between operating shaft axis to the roller axis for comparison. Precision adjustable to lesser dimensions.

Limit Switches

Dimensions

Bantam lever

Approximate dimensions
in mm [in]



Precision Adjustment

Approximate Dimensions in mm [in]

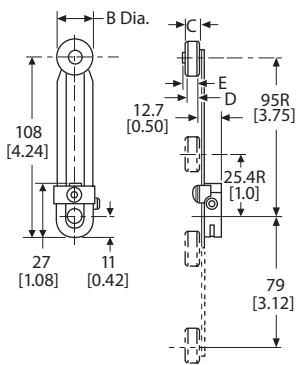
Item no.	A Lever Length ¹	B Roller Diameter	C Roller Width	D	E	F
E50KL340	17.5 [0.69]	19.0 [0.75]	8.1 [0.32]	12.2 [0.48]	6.1 [0.24]	7.1 [0.28]
E50KL465	Roller length: 38.1 [1.50] ²	19.0 [0.75]	8.1 [0.32]	12.2 [0.48]	6.1 [0.24]	7.1 [0.28]
E50KL535	17.5 [0.69]	6.4 [0.25]	12.2 [0.48]	4.1 [0.16]	5.6 [0.22]	

Notes

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

Adjustable roller

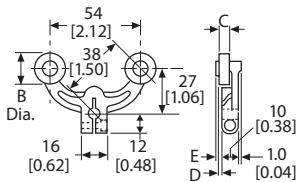
Approximate dimensions in mm [in]



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

Fork lever—Both rollers on one side

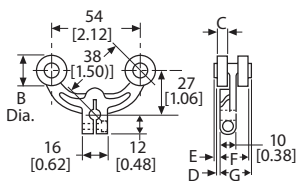
Approximate Dimensions in mm [in]



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

Fork lever— one roller outside, one inside

Approximate dimensions in mm [in]



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

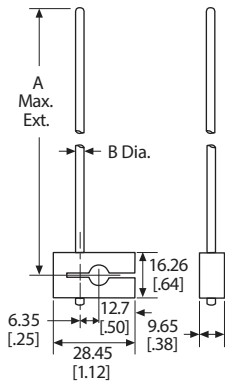
Notes

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

Limit Switches

Dimensions

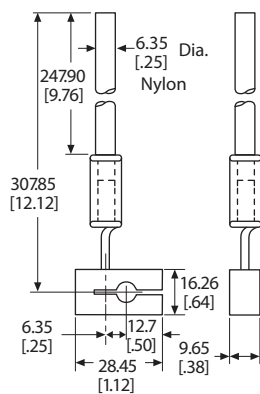
Rod type operators



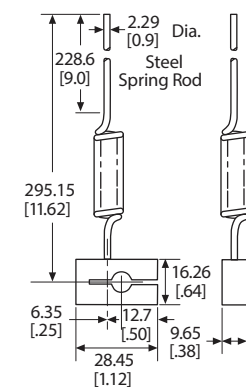
Adjustable rod

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

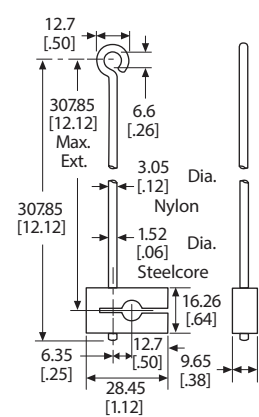
Spring rod—E50KL556



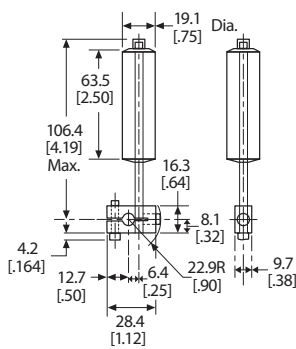
Spring rod—E50KL421



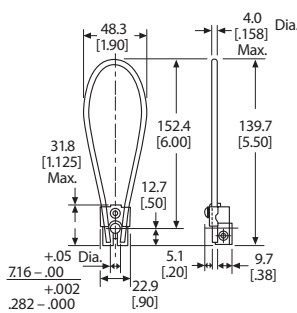
Adjustable wire



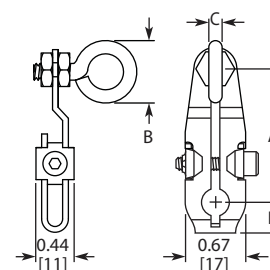
Adjustable wide roller lever



Nylatron loop—E50KL142



Eye bolt



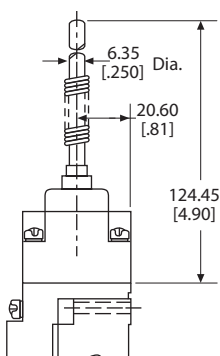
Notes

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

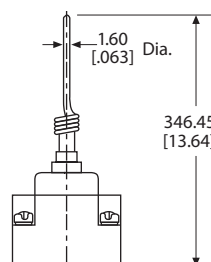
Catalog Number	A Rod Length ²	B Rod Diameter	C Rod Width	D
E50KL33	38.1 [1.50]	4.8 [0.1875] Loop ID: 9.5 [0.375]	13.1 [0.52]	8.6 [0.34]

Wobble Type Operators

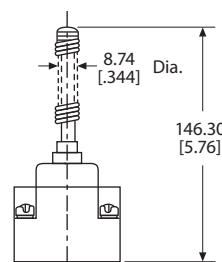
Nylon Rod



Stainless Steel Rod



Coil Spring



E49 metal body compact limit switches

Eaton E49 compact metal limit switches

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



Roller Lever



Top Push



Top Push Roller
- E49M11CP1



Rod Lever



Adjustable
Roller Lever



Wobble



Cat Whisker

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

* Includes 90° Roller.

E49 metal body compact limit switches

Eaton E49 mini metal limit switches

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

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

* Includes 90° Roller.



Side Rotary Lever



Adjustable Side Rotary Lever



Top Pushbutton



Top Push Roller



Top Push Roller



Adjustable Rod Lever



Wobble Stick (Nylon Coil)



Wobble Stick (Metal Coil)



Wobble Stick (Metal Rod)

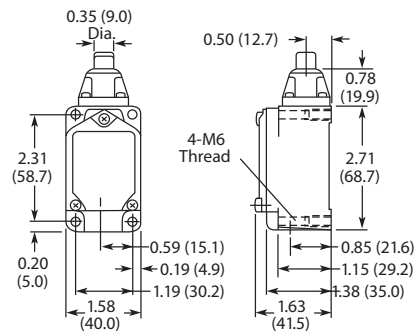


Wobble Stick (Whisker)

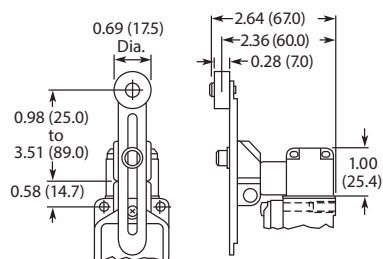
Limit switches

Dimensions

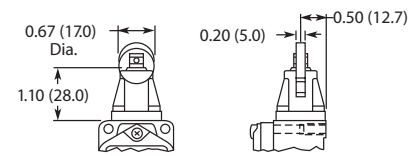
Switch Body with E49M11BP1



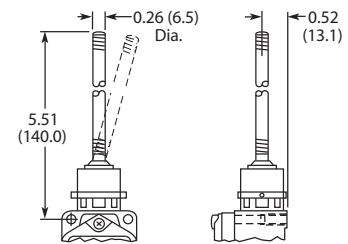
E49M11UP1



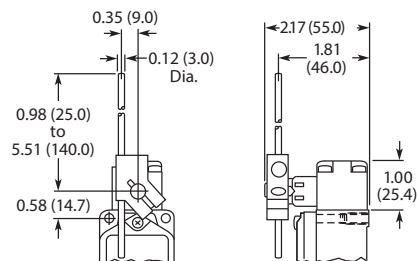
E49M11CP1/E49M11CP2



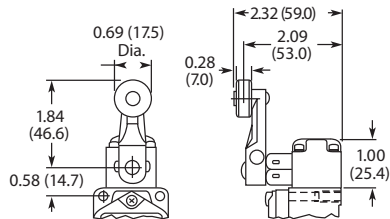
E49M11VP1



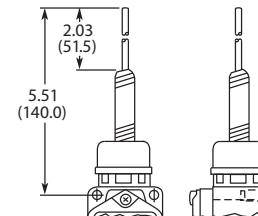
E49M11DP1



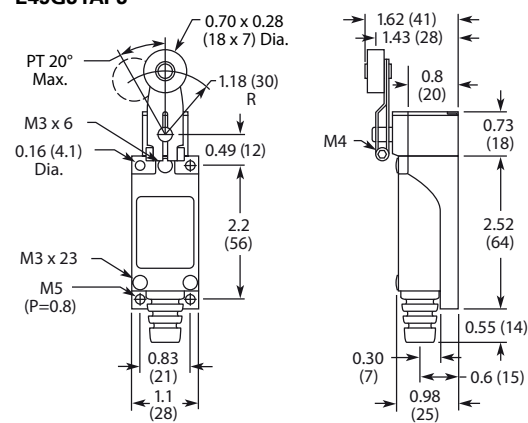
E49M11AP1



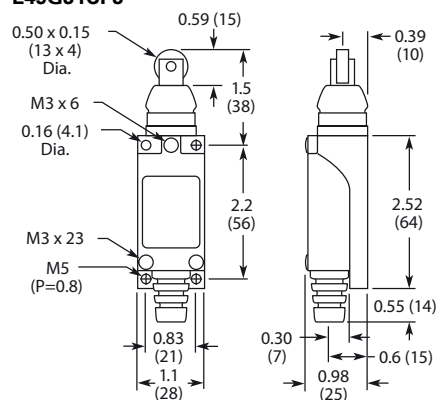
E49M11XM1



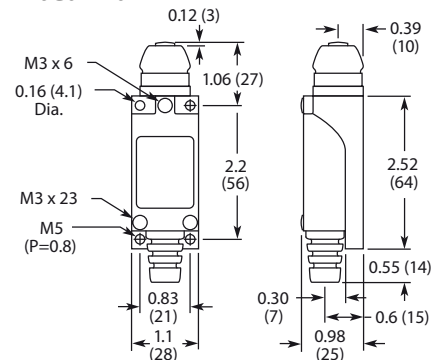
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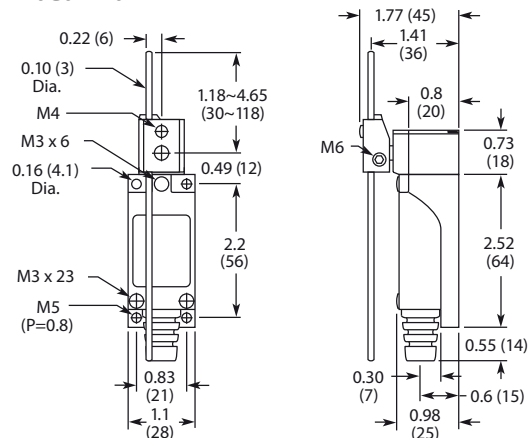
E49G31CP3



E49G31BP3



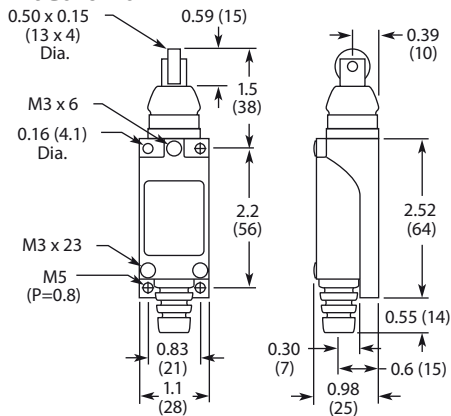
E49G31DP3



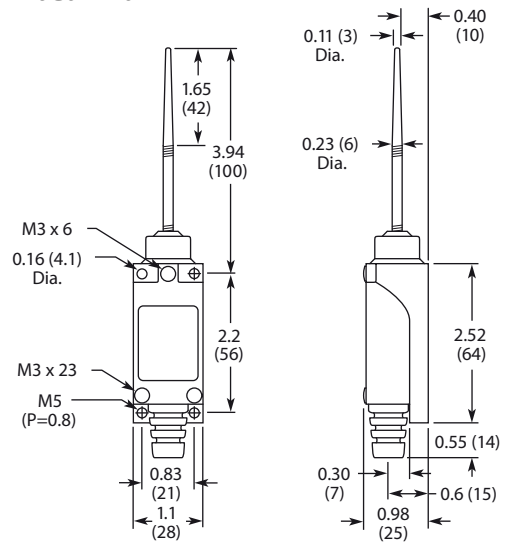
Limit switches

Dimensions

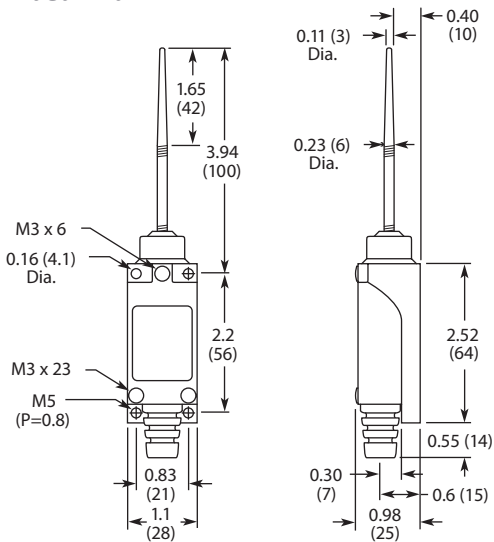
E49G31C1P3



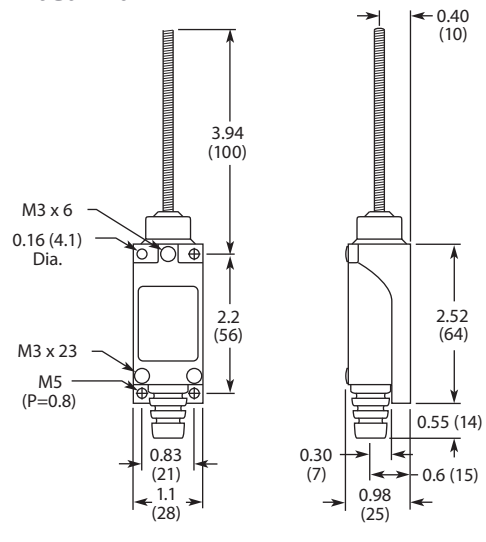
E49G31MP3



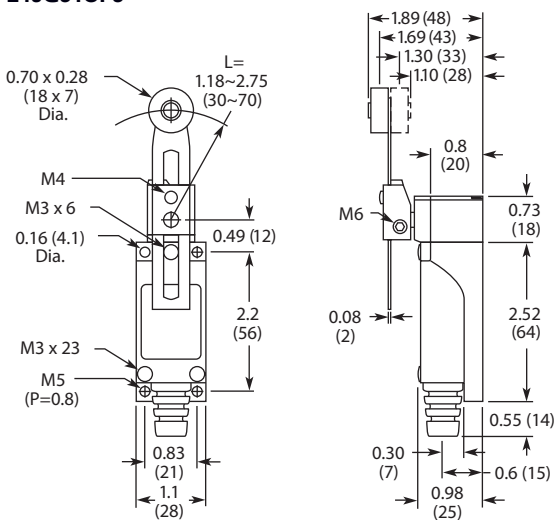
E49G31NP3



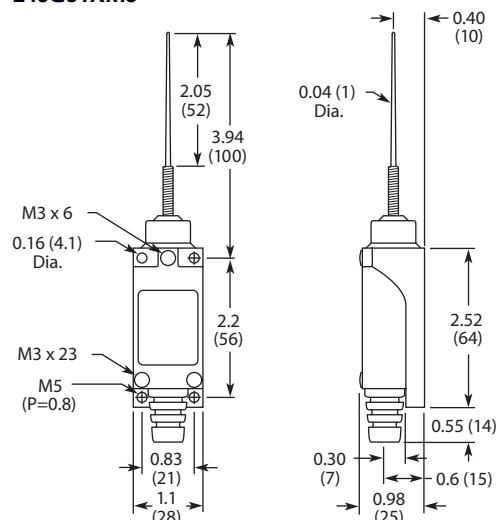
E49G31VP3



E49G31UP3



E49G31XM3



Global proximity sensors

Features

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

Two-wire sensors

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

☉☉ See listing of compatible connector cables



Global proximity sensors

Three-wire sensors

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



8mm diameter



12mm diameter

☉☉ See listing of compatible connector cables

Global proximity sensors

Three-wire sensors



18mm diameter

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






30mm diameter

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

☉ See listing of compatible connector cables

Global proximity sensors

Compatible connector cables

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



Micro-style

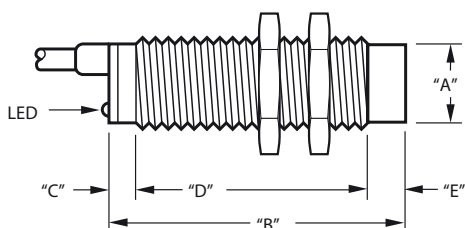


Nano-style

Dimensions

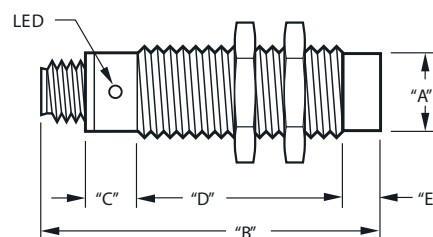
Two-wire sensors

Cable models



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

Connector modules



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

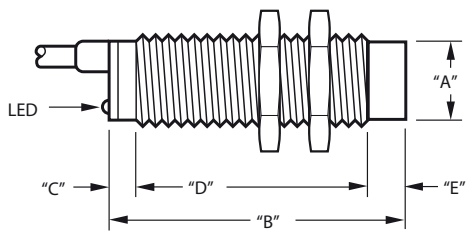
Note: Normally closed models are dimensionally identical to equivalent normally open models

Global proximity sensors

Dimensions

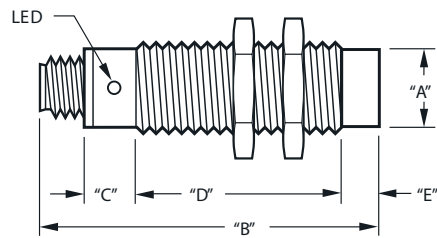
Three-wire sensors

Cable modules



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

Connector modules



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

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

Photoelectric sensors

Eaton E58 harsh duty series photoelectric sensors

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



3-Wire & 4-Wire sensors

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

* Retroreflector not included.
Connection type: 2 metre Cable

2-Wire sensors

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

Connection type: 2 metre Cable

3-Wire & 4-Wire sensors

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

Connection type: 2 metre Cable

Photoelectric sensors

Nano view series sensors

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



Thru-Beam



Polarized Reflex



Diffuse Reflective



Fixed Focus Diffuse Reflective



Clear Object Detector

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

① for compatible connector cables, refer to the following page

Photoelectric sensors

Standard cables—Nano

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

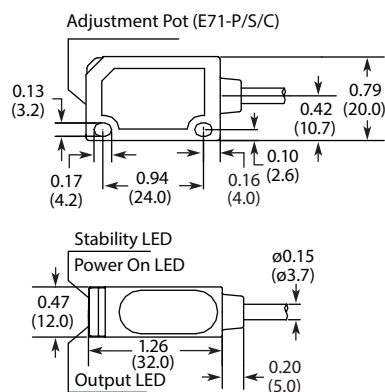


Accessories

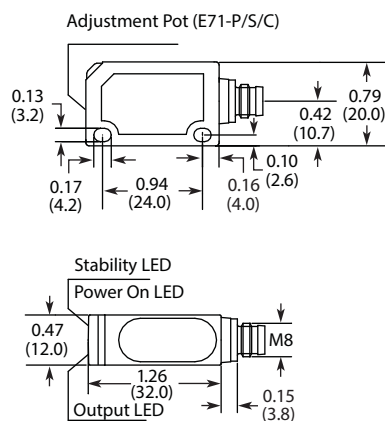
Description	Item no.
Mounting bracket	
L-shaped mounting bracket for NanoView sensors	E71-MTB1

Dimensions

Cable Models

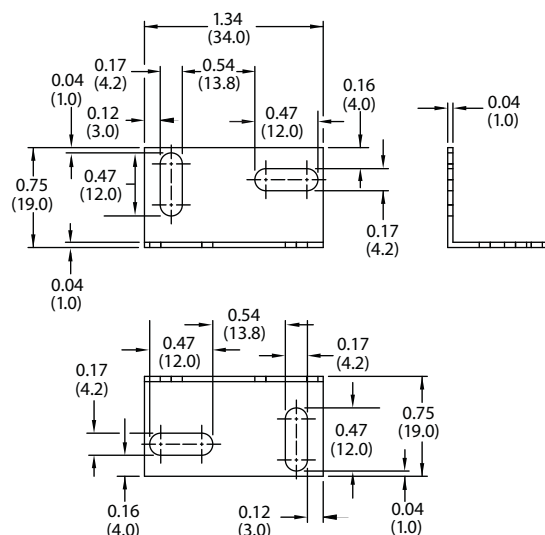


Nano-Connector Models



Accessories

E71-MTB1—Mounting Bracket





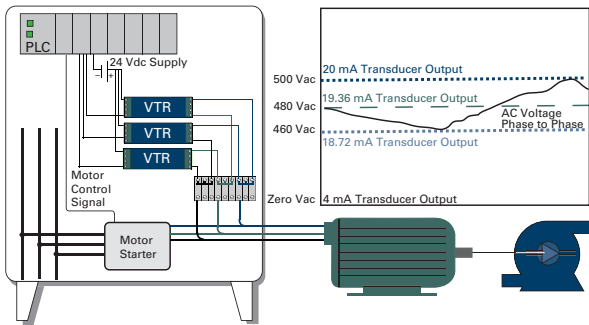
VoltageWatch EVT range

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

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

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

Example application - Phase loop

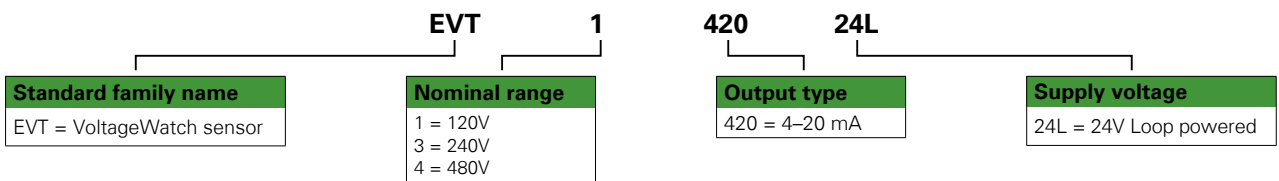


**Application description
true RMS voltage monitoring**

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

Features

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



VoltageWatch EVT—top terminal current sensors

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

ECS range CurrentWatch current switches

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

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

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



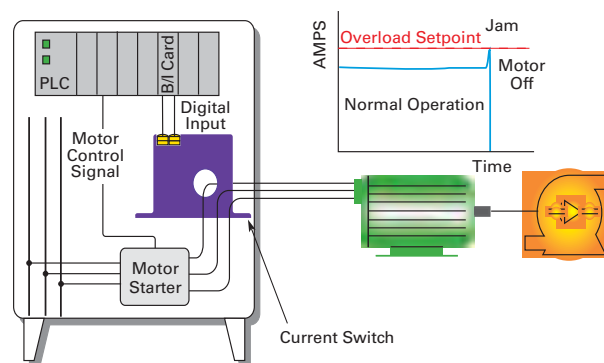
Features

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

Application description typical applications

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

Example application - Pump jam and suction loss protection



ECS range CurrentWatch current switches

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

Accessories

Description	Item no.
DIN rail mounting kit	EDINKIT



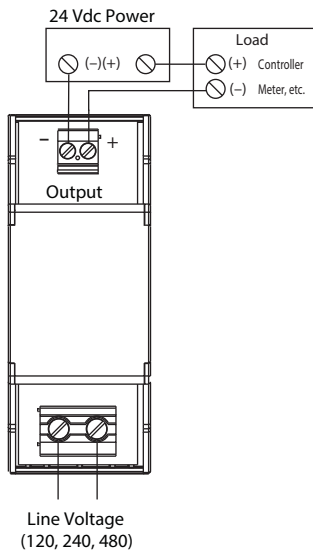
Power control

Automation

VoltageWatch EVT range

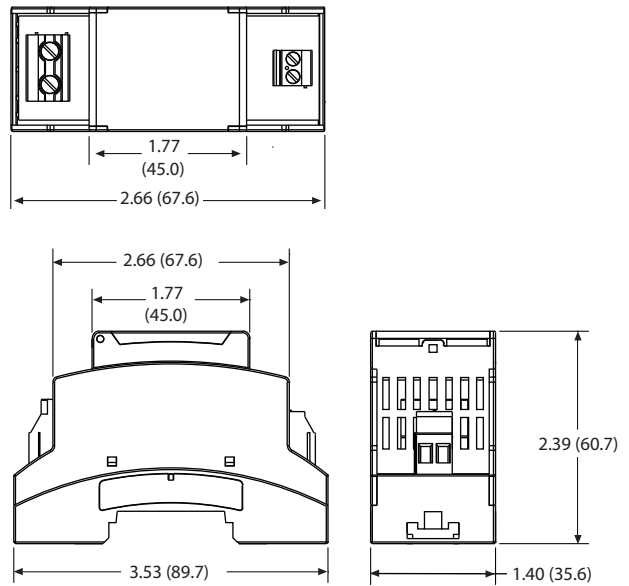
Wiring diagram

VoltageWatch EVT



Dimensions (approximate dimensions in inches (mm))

Complete unit

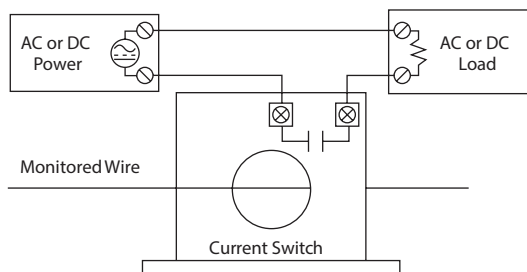


ECS range CurrentWatch current switches

Wiring diagram

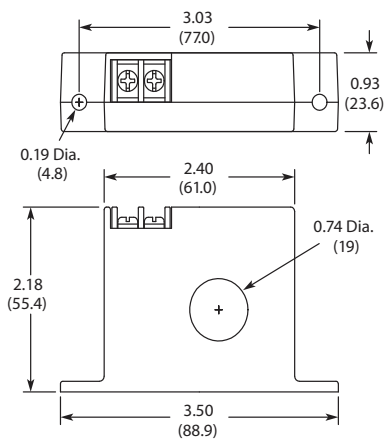
ECS CurrentWatch current switches

Normally open (NO) models shown

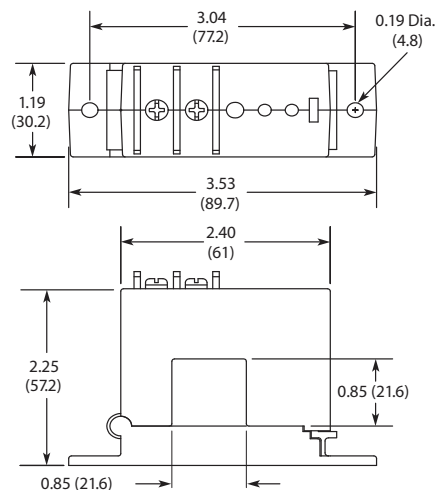


Dimensions (approximate dimensions in inches (mm))

Solid-core housing



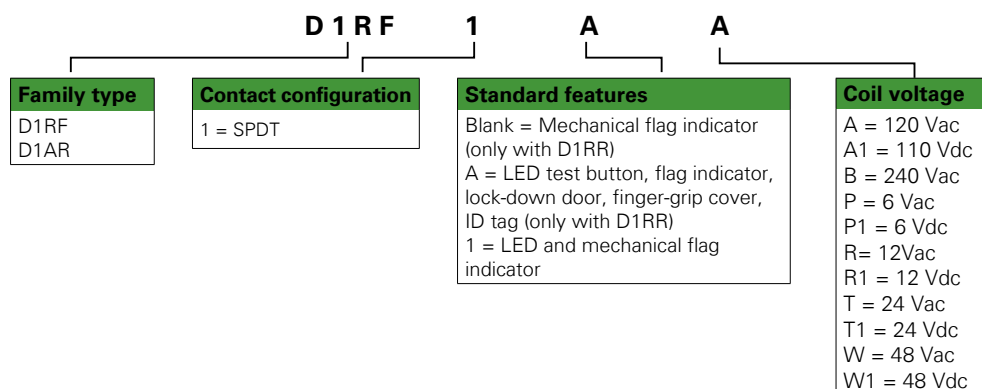
Split core housing



Plug-in relays – D1 range

Eaton D1RF 1-pole relays

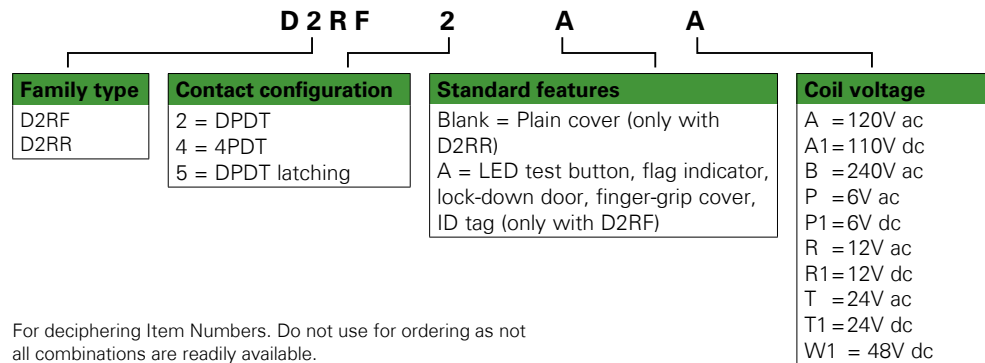
- The contact operation can be easily checked by Push-to-Test button
- Flag indicator shows relay status in manual or powered condition
- LED status lamp shows coil ON or OFF status— ideal for use in low light applications
- Push-to-Test button allows for manual operation of relay without the need for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



Eaton D1RF1 1-pole relays

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

Plug-in relays – D2 range



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

Eaton D2RF2 2 pole relays

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

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

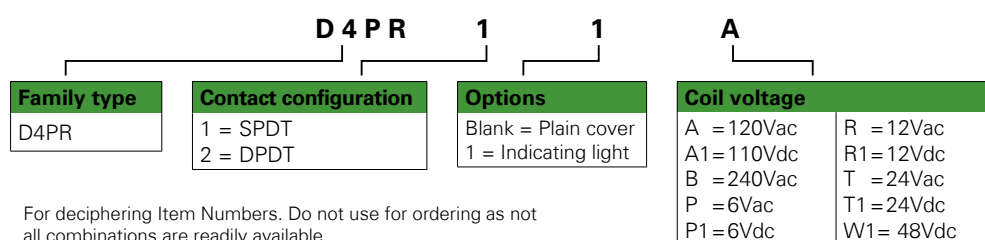
Eaton D2RF4 4 pole relays



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

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

Plug-in relays – D4 range



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

D4PR1, D4PR2 single & double pole slimline flat pin relay

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

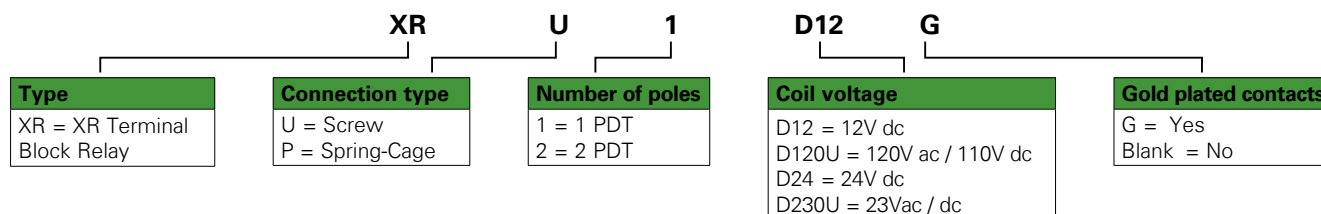
Eaton D4PR1 single pole slimline flat pin relay

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

D4PR2 double pole slimline flat pin relay

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

Interface relays – XR range



XR Terminal block interface relays

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



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

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

Accessories

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

EMR measuring & monitoring relays

Current, phase, sequence relays, phase imbalance monitoring



EMR4-F500-2



EMR5-A300-1-C



EMR4-N500-2-A



EMR5-N80-1-B

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

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

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

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

Description	Response sensitivity	Circuit symbol	Supply voltage	Item no.
Liquid level monitoring relays EMR4-N...				
<ul style="list-style-type: none"> Fill level monitoring of conductive liquids Mixture ratio monitoring of conductive liquids Selectable dry-running or overflow protection 	5 kΩ - 100 kΩ		220 - 240 V AC, 50/60 Hz	EMR4-N100-1-B
<ul style="list-style-type: none"> Fill level monitoring of conductive liquids Mixture ratio monitoring of conductive liquids Selectable on-delay or off-delay between 0.5 - 10 s 	250 Ω - 500 kΩ		24 - 240 V AC, 50/60 Hz	EMR4-N500-2-A
<ul style="list-style-type: none"> Fill level monitoring of conductive liquids Conductivity (mixture ratio) monitoring of conductive liquids 	5 kΩ - 100 kΩ		220 - 240 V AC, 50/60 Hz	EMR5-N80-1-B

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

EMR measuring & monitoring relays

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

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



EMR5-AWM720-2



EMR5-AWN500-1

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



EMR5-R400-1-A

Description	Width mm	Item no.
Sealable shroud EMR4-PH...	22.5	EMR4-PH22
	45	EMR4-PH45



ETR2-12



ETR2-44



ETR2-11-D



ETR4-11-A



ETR4-70-A

Timing relays - Electronic ETR2

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

Timing relays - Electronic ETR4

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

Timers

Eaton TRL 18mm DIN timers

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



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

Timeswitches

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

Benefits

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

Analogue timeswitches

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

Analogue range

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



Analogue timeswitches

Digital timeswitches

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

Digital range

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



Digital timeswitches

Software & memory card

Description	Item no.
Programming software, cable & memory card	TSAMEMKIT
Memory card	TSAMEM

DC power supplies

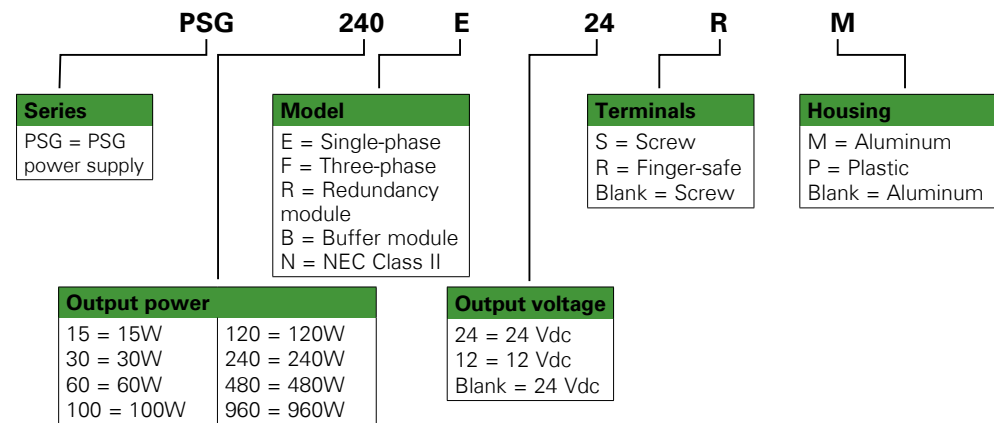
Eaton's PSG Series of power supplies is designed to be a high-performance, high-quality line of products covering a majority of 12 Vdc and 24 Vdc control applications.

Features, benefits and functions

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



PSG240F24RM



PSG120F24RM



PSG120E24RM

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

Pressure switches



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

Pressure switches



R1/2-MCS



E8-MCS



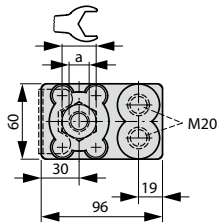
W-MCS


Accessories

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

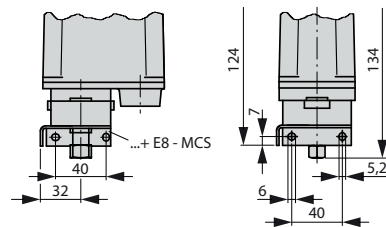
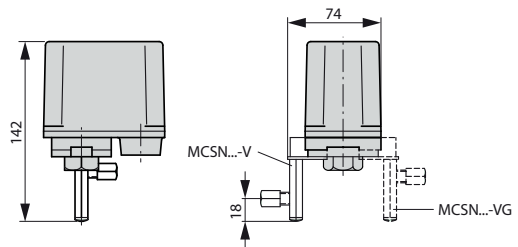
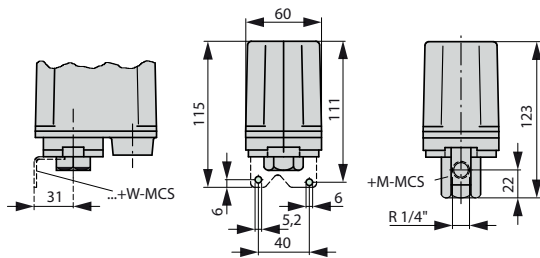
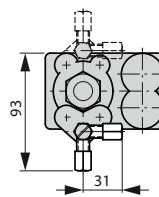
Dimensions

MCS..., MCSN...



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

MCSN...V
With relief valve



Simple, intelligent, pluggable, versatile.



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

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

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