

# EAT•N

# MEM

## Enclosed Motor, Heating and Lighting Control

Product guide

- ADS8 Metal clad starters
- ADS8 Moulded starters
- Pushbutton control units
- Local disconnectors
- Heating & lighting controls

Trusted by  
generations of  
electrical  
contractors



## Eaton's Electrical operations

As a market-leading manufacturer of circuit protection and control equipment, Eaton's world leading switch and fuse-gear, circuit breakers, motor control gear and wiring accessory products are distributed across the globe. Incorporating the latest technological advances, Eaton products are the result of a comprehensive ongoing development programme and comply with the industry's most rigorous quality standards. This all serves to make Eaton an industry benchmark, with unsurpassed quality and performance guaranteed. This extensive product range, together with a lengthy experience and specialist knowledge serves to make Eaton your first source solutions provider.

Find out more on [www.eatonelectrical.com](http://www.eatonelectrical.com)



## World-Class Support

**At Eaton, our goal is to deliver world-class support as well as products.**

This is why we continue to invest in our customer service capability to ensure you have easy access to the services you need, when you need them.

### Integrated service strategy

Our integrated service strategy is based upon linking key locations and personnel along with a complete range of services to provide you "one-call" customer service. A central support number allows you to access these support services by selecting the product group and service required. We then ensure it is quickly routed to a qualified support agent. The result is service that delivers you solutions ... fast.

A single point of contact for all your enquiries is just one of the benefits you can look forward to as an Eaton customer.

## Services Portfolio

### Extensive support services

Our service strategy includes an extensive selection of technical and commercial services designed to help you specify, order and receive products quickly and efficiently.

#### Price & Availability

- Prompt Product Pricing
- Up-to-date stock availability

#### Order & Shipment status

- Order Checking and Status
- Shipment details

#### Technical Support

- "Over the phone" resolution
- Technical data assistance
- Selection and cross-reference

#### After Sales Support

- Debit/Credit note resolution
- Policy Returns support

#### Project Co-Ordination

- Order tracking for Systems based orders
- On-site Project Management service
- Tailored Delivery service

#### Engineered Site Services

- Installation and Commissioning
- Maintenance and Service Solution support
- 24 hour "call out" emergency service

#### Distributor Product Training

- Individual or Group Product training forums
- Use of "In house" training facilities

## Two steps to find your product



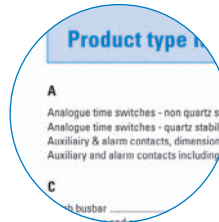
**STEP 1**  
Choose main group



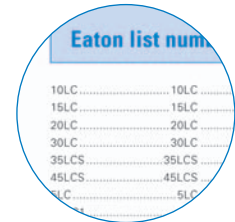
**STEP 2**  
Choose list number

## Indexes

Search by product name or list number.



Product type index



Eaton list number index

## Legend

Function of coloured text bars:

**Products**

Accessories

Technical details, drawings & specifications



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## General characteristics

### Motor, Heating and Lighting control

Eaton's MEM wide range of Motor Control Gear and Heating and Lighting Control equipment is an integral part of our single source commitment.

Since the late 1920's we have built countless motor starters, fitted and trusted by generations of contractors, while the increasing requirements of our markets have led us to constantly update and expand our ADS range to allow for an increased choice of current ratings and ingress protection.

This wealth of experience and expertise in the design and manufacture of Motor Control Gear is mirrored by our Heating and Lighting range which offers a versatile and comprehensive choice.

Although already offering a multitude of configurations and optional features, for those with particular requirements our Specials facility can cater for a variety of special purpose equipment including automatic changeover contactors and Stator-Rotor Starters.

#### Standards

- Designed to meet or exceed UL, IEC and CSA
- IEC 60947-4-1
- VDE 0660
- IEC 60269
- BS EN 60947-4-1

#### The feature packed Eaton ADS8 AC motor starters

##### Enclosures – moulded

- 9kW DOL max
- Tough polycarbonate in grey provides high IP protection to IP65
- Start and stop pushbuttons
- Internal earth terminals
- Cable entries — 20mm knockouts for M20 threaded glands.

##### Enclosures – metalclad

- Attractively styled rust protected pressed steel finished in grey polyester powder paint
- Start and mushroom-headed stop pushbuttons
- Substantial earth terminal
- Cable entries – 20mm knockouts for M20 threaded glands

##### Switch-disconnectors

- Means of isolation and switching for mechanical maintenance
- Padlocking facility available
- Isolators type tested for on-load disconnection
- T.P. interlocked with main cover

##### Overload relays

- T.P. adjustable thermal pattern connected directly to contactor
- Ambient temperature compensated between -40°C to +60°C
- Phase failure sensitive relays
- Changeover trip contact
- Simple Auto-reset

##### Contactors

- Modern block type
- 6 – 15 x 10<sup>6</sup> mechanical and 1.5 x 10<sup>6</sup> electrical operations – AC3 duty.
- Provisions for fitting additional auxiliary contacts either N/O or N/C – depending on version

##### Optional fittings and specials

- Provision for various optional fitments on standard starters
- Special starter arrangements





### The feature packed Eaton ADS8 enclosed industrial starters

- Developed to increase the range of enclosed starters up to 90kW
- Design profile and numerous optional features available developed from experience of user requirements.
- Starters will satisfy most specifications and are designed for mounting above or below busbar chambers
- Complements the lower rated ADS8 motor starters
- Provisions for TP interlocked and switch disconnectors with HRC main fuses
- Start and Stop pushbuttons, control circuit fuses, remote control terminal block and overload relays are fitted as standard
- Enclosures are robust rust-protected sheet steel with fully gasketed hinged covers

#### Contactors

- Modern block-type
- Each has provision for accepting additional auxiliary contacts.

#### Overload relays

- Starters supplied with appropriate ambient temperature compensated phase-failure-sensitive thermal relay.

#### Switch-disconnectors

- Interlocked stalled-motor complete with padlocking switch-disconnectors facility
- Available with provisions for auxiliary poles

#### Operating Conditions

-40°C to +60°C.

#### Optional features

- Motor rated ammeter with suppressed scale to indicate starting peaks
- Low voltage control circuit transformer
- Isolator auxiliary poles for separate control circuit supply
- Pilot indicating lamps
- Off/Auto or Local/Off/Remote selector switch
- Higher ratings up to 200kW available on request

#### Typical Specials

- Reversing starters
- Two-speed starters for dual or tapped-wound motors
- Stator and rotor starters
- Main/Standby starters



### The feature packed Eaton MSU pushbutton control units

- Designed to match Eaton's MEM ADS motor starter range
- Simplicity, versatility and robust construction successfully allied to attractive styling
- One, two and three button types available in a variety of configurations
- 3-button types 23MSU and 23MSU/L supplied with fitted front label reading Forward, Reverse, Stop
- Separate loose label provided for situations requiring Up, Down, Stop
- Each contact block comprises 1 – N/O and 1 – N/C contact
- Start units are push to make (N/O)
- Stop units are push to break (N/C)
- Latching device where fitted holds stop pushbutton in depressed position until latch is released by clockwise rotation of mushroom head.
- One 'a' contact + one 'b' contact per way
- Form Za Uimp = 6kV.
- Housings made from tough polycarbonate
- Enclosure material resistant to diluted mineral and organic acids
- 20mm conduit knockouts complete with M20 conduit threads incorporated at top and bottom
- Single way enclosures may be turned through 90° to permit side cable entry
- Ambient temperature rating -5°C to +40°C.
- Switch and earth terminals 2 x 1mm<sup>2</sup> – 2.5mm<sup>2</sup> rigid, 2 x 1.5mm<sup>2</sup> – 2.5mm<sup>2</sup> flexible
- Single way control stations readily available with a range of 22mm cover mounted control and indicating devices



### The feature packed Eaton CSU pushbutton control units

- Robust construction
- Ideally suited for heavy industrial applications
- Available in general purpose enclosures to IP4X and dust and hoseproof enclosures to IP65
- Cast iron bases and front plates
- Earth terminal is provided
- Finished in a grey stoved paint finish
- Contacts are single pole double break
- Stop units push to break
- Start units push to make.
- Ambient temperature -5°C to +40°C
- Maximum terminal capacity 2 x 2.5mm<sup>2</sup>



### The feature packed Eaton local disconnectors — Type RDMP

- Suitable for on load switching of general distribution AC power circuits and infrequent duty motor isolation
- Grey, moulded thermoplastic enclosures suitable for most indoor and outdoor environmental conditions
- Fitted with red/yellow operating handles padlockable in the 'OFF' position with up to three padlocks
- Enclosure design allows easy access for cabling
- Solid neutral and earth termination points are a standard feature



### The feature packed Eaton local disconnectors — Type PC2

- Suitable for on load switching of general distribution AC power circuits and infrequent duty motor isolation
- Robust pressed steel enclosures, rust protected with grey paint finish
- Fitted with black operating handles, padlockable in the 'OFF' position with up to 3 padlocks
- Enclosure design allows easy access for cabling by removal of the switch interior
- Switches with additional poles available on request
- 2 pole and 4 pole units have removable neutral links included for SPN (from 2P) or TPN (from 4P) conversions
- Earth terminals provided as standard



### The feature packed Eaton Autoline heating and lighting contactors

#### Open Contactors

- 18A, 25A and 32A, 4-pole, with optional auxiliary contacts

#### Enclosed Contactors

- 25A and 40A, 4-pole; 40A and 64A, 2-pole; 70A and 112A, single pole with fitted neutral link
- Robust pressed steel enclosures, rust protected with grey paint finish
- 220...240V units available with or without rectifiers for silent running
- 90-225A, 3-pole enclosed contactors can be supplied with switch-disconnector-fuse including HRC main fuses



## ADS8 AC contactors, starters and assemblies

This chapter covers the ADS8 range of DOL, DOL Reversing and Star Delta starters with associated overload relays and accessories / spares. Overload relays are supplied separately and enclosures are IP54 metal clad. A higher rated IP65 moulded 9kW DOL starter is also available.

- IEC / EN60947
- CE marked



See page 10 for Overload relays.  
See page 31 for trip and electrical life curves.  
See page 20 for dimensional drawings.



28ADSM1X

### 9kW DOL starter without switch disconnect

- IP 65 moulded surface mounting enclosure, less overload relay

Maximum current rating (AC3) A	Maximum kW rating AC3 415v 3ph	Control coil voltage 50Hz <sup>1</sup> Vac	Eaton list number
18	9	220–240	<b>28ADSM1X</b>
		380–415	<b>48ADSM1X</b>

<sup>1</sup>Other control voltages available, contact Eaton



28ADS3X

### 15kW DOL starter without switch disconnect

- IP 54 metalclad surface mounting enclosure, less overload relay

Maximum current rating (AC3) A	Maximum kW rating AC3 415v 3ph	Control coil voltage 50Hz <sup>1</sup> Vac	Eaton list number
18	9	220–240	<b>28ADS1X</b>
		380–415	<b>48ADS1X</b>
25	11	220–240	<b>28ADS2X</b>
		380–415	<b>48ADS2X</b>
32	15	220–240	<b>28ADS3X</b>
		380–415	<b>48ADS3X</b>

<sup>1</sup>Other control voltages available, contact Eaton



28ADSA1X

### 15kW DOL starter with switch disconnect

- IP 54 metalclad surface mounting enclosure, less overload relay

Maximum current rating (AC3) A	Maximum kW rating AC3 415v 3ph	Control coil voltage 50Hz <sup>1</sup> Vac	Eaton list number
18	9	220–240	<b>28ADSA1X</b>
		380–415	<b>48ADSA1X</b>
25	11	220–240	<b>28ADSA2X</b>
		380–415	<b>48ADSA2X</b>
32	15	220–240	<b>28ADSA3X</b>
		380–415	<b>48ADSA3X</b>

<sup>1</sup>Other control voltages available, contact Eaton



48ARD1X

### 11kW DOL Reversing starter without switch disconnect

- IP 54 metalclad surface mounting enclosure, less overload relay

Maximum current rating (AC3) A	Maximum kW rating AC3 415v 3ph	Control coil voltage 50Hz <sup>1</sup> Vac	Eaton list number
18	9	220–240	<b>28ARD1X</b>
		380–415	<b>48ARD1X</b>
25	11	220–240	<b>28ARD2X</b>
		380–415	<b>48ARD2X</b>

<sup>1</sup>Other control voltages available, contact Eaton



28SDA2X18

### 25kW Star Delta starter without switch disconnect

- IP 54 metalclad surface mounting enclosure, less overload relay

Maximum current rating (AC3) A	Maximum kW rating AC3 415 3ph	Control coil voltage 50Hz <sup>1</sup> Vac	Eaton list number
31	15	220–240	<b>28SDA2X18</b>
		380–415	<b>48SDA2X18</b>
43	22	220–240	<b>28SDA3X25</b>
		380–415	<b>48SDA3X25</b>
55	25	220–240	<b>28SDA3X32</b>
		380–415	<b>48SDA3X32</b>

<sup>1</sup>Other control voltages available, contact Eaton



8TT92

### DOL, DOL reversing, line connected thermal overload relays

Full load current A	Motor rating kW	Eaton list number
0.63–1	0.37	<b>8TT87</b>
1–1.6	0.55	<b>8TT88</b>
1.6–2.5	1.1	<b>8TT89</b>
2.5–4	1.5	<b>8TT90</b>
4–6	2.2	<b>8TT91</b>
5.5–8	3.7	<b>8TT98</b>
7–10	4	<b>8TT92</b>
10–13	5.5	<b>8TT93</b>
13–18	9	<b>8TT94</b>
18–25	11	<b>8TT104</b>
23–32	15	<b>8TT96</b>



8TT92SD

### Star Delta, phase connected thermal overload relays

Full load current A	Motor rating kW	Eaton list number
4.3–6.9	3	<b>8TT90SD</b>
6.9–10.4	5.5	<b>8TT91SD</b>
9.5–13.8	7	<b>8TT98SD</b>
12.1–17.3	9	<b>8TT92SD</b>
17.3–22.5	11	<b>8TT93SD</b>
22.5–31	15	<b>8TT94SD</b>
31–43	22	<b>8TT104SD</b>
40–55	25	<b>8TT96SD</b>



4832VCO

### Replacement contactors, DOL, DOL reversing & Star Delta Main contactor

- Open contactor, 3 pole with 1NO auxiliary
- Contactor technical details, see page 17

Maximum current rating (AC3) A	Maximum kW rating AC3 415v 3ph	Control coil voltage 50Hz <sup>1</sup> Vac	Eaton list number
18	9	220 – 240	<b>2818VCO</b>
		380 – 415	<b>4818VCO</b>
25	11	220 – 240	<b>2825VCO</b>
		380 – 415	<b>4825VCO</b>
32	15	220 – 240	<b>2832VCO</b>
		380 – 415	<b>4832VCO</b>
50	25	220 – 240	<b>2850VCO</b>
		380 – 415	<b>4850VCO</b>

<sup>1</sup>Other control voltages available, contact Eaton



4832VCOSD

### Replacement contactors, Star Delta. Star & Delta contactors

- Open contactor, 3 pole with 1NC auxiliary
- Contactor technical details, see page 17

Maximum current rating (AC3) A	Maximum kW rating AC3 415v 3ph	Control coil voltage 50Hz <sup>1</sup> Vac	Eaton list number
18	9	220–240	<b>2818VCOSD</b>
		380–415	<b>4818VCOSD</b>
25	11	220–240	<b>2825VCOSD</b>
		380–415	<b>4825VCOSD</b>
32	15	220–240	<b>2832VCOSD</b>
		380–415	<b>4832VCOSD</b>
50	25	220–240	<b>2850VCOSD</b>
		380–415	<b>4850VCOSD</b>

<sup>1</sup>Other control voltages available, contact Eaton



8COIL418

### Replacement coils, DOL, DOL reversing starters

Maximum current rating (AC3) A	Maximum kW rating AC3 415v 3ph	Control coil voltage 50Hz <sup>1</sup> Vac	Eaton list number
18	9	110	<b>8COIL118</b>
		220–240	<b>8COIL218</b>
		380–415	<b>8COIL418</b>
25	11	110	<b>8COIL132</b>
		220–240	<b>8COIL232</b>
		380–415	<b>8COIL432</b>
32	15	110	<b>8COIL132</b>
		220–240	<b>8COIL232</b>
		380–415	<b>8COIL432</b>
50	25	220–240	<b>8COIL250</b>
		380–415	<b>8COIL450</b>

<sup>1</sup>Other control voltages available, contact Eaton



8COIL418

### Replacement coils, Star Delta starters

Maximum current rating (AC3) A	Maximum kW rating AC3 415v 3ph	Control coil voltage 50Hz <sup>1</sup> Vac	Eaton list number
31	15	220–240	<b>8COIL218</b>
		380–415	<b>8COIL418</b>
43	22	220–240	<b>8COIL232</b>
		380–415	<b>8COIL432</b>
55	25	220–240	<b>8COIL232</b>
		380–415	<b>8COIL432</b>

<sup>1</sup>Other control voltages available, contact Eaton



8TA2DS2

### Replacement pneumatic timer, Star Delta Starter

Description	Contact rating AC11, 500v	Ith, Ui 600v	Eaton list number
Pneumatic timer	6A	10A	<b>8TA2DS2</b>



8TA8DN11

### Replacement and additional auxiliary contacts

- Suitable for all DOL, DOLR and Star Delta Starters

Description	Contact configuration	Contact rating Ith (A) Ui 600v	Eaton list number <sup>1</sup>
Side mounting auxiliary contact	1NO – 1NC	10	<b>8TA8DN11</b>
Front mountng auxiliary contact	1NO – 1NC	10	<b>8TA1DN11</b>

<sup>1</sup>See pages 29–30 for permissible configurations



## MSU and CSU

This chapter covers the moulded IP65 pushbutton control units - type MSU and the heavy duty cast iron CSU pushbutton control units (IP41 and IP65).

- IEC / EN60947
- CE marked

See page 27 for technical details.



22MSU

### MSU pushbutton control units (moulded IP65)

Number of buttons	Description	Eaton list number
1	Start	21MSSU
1	Stop	21MSU
1	Stop, latching pattern (push to latch, turn to release)	21MSUL
1	Stop (50mm dia. mushroom head)	21MSUM
1	Stop, latching pattern – (push to latch, turn to release) (50mm dia. mushroom head)	21MSUML
2	Start-Stop	22MSU
2	Start-Latch Stop/Reset	22MSUL
3	Forward-Reverse-Stop (Alternative label: Up-Down-Stop)	23MSU
3	Forward-Reverse-Latch Stop/Reset (Alternative label: Up-Down-Stop)	23MSUL

#### ■ Spare switch unit (not suitable for 22mm devices)

Description	Eaton list number
Complete replacement unit with N/O and N/C contacts and fixing screw	21MSB



21MSU2K

### MSU pushbutton control units (moulded IP65)

#### ■ Single way control stations incorporating 22mm control devices

Description	Eaton list number
Mushroom head latch stop, key release with 1-N/C contact	21MSULK
Two position key operated selector switch with 1-N/O contact labelled 0/1 (Key removable in both positions)	21MSU2K
Two position key operated spring return to "off" selector switch with 1-N/O and 1-N/C contact labelled 0/1 (Key removable in off position)	21MSU2SK



1CSUL

### CSU pushbutton control units (IP41 / IP65)

Number of buttons	Description	Eaton list number
1	Stop (IP41)	1CSU
1	Latched stop/reset (IP41)	1CSUL
1	Stop, large mushroom head 50mm dia. (IP41)	1CSUM
1	Latched stop/reset (IP65)	1CSUWL



## Local disconnectors

### Moulded and metalclad

This chapter covers the range of moulded IP65 RDMP local disconnectors, covering the range from 20A to 63A and from 2 pole and neutral up to 8 pole. Also covered is the PC2 range of metal clad IP54 disconnectors covering the range from 20A to 63A and 2 pole to 6 pole.

- IEC / EN60947-3
- CE marked



See page 27 for technical details.



204RDMP

#### Local disconnectors standard duty, type RDMP, 20 – 63A IP65

Nominal unit rating Ie	Poles	Eaton list number
20A	2P +sldN	2021RDMP <sup>1</sup>
25A	2P +sldN	2521RDMP <sup>1</sup>
40A	2P +sldN	4021RDMP <sup>1</sup>
63A	2P +sldN	6321RDMP <sup>1</sup>
20A	3P +sldN	2031RDMP <sup>1</sup>
25A	3P +sldN	2531RDMP <sup>1</sup>
40A	3P +sldN	4031RDMP <sup>1</sup>
63A	3P +sldN	6331RDMP <sup>1</sup>
20A	4P	204RDMP
25A	4P	254RDMP
40A	4P	404RDMP
63A	4P	634RDMP
20A	4P +sldN	2041RDMP <sup>1</sup>
25A	4P +sldN	2541RDMP <sup>1</sup>
40A	4P +sldN	4041RDMP <sup>1</sup>
63A	4P +sldN	6341RDMP <sup>1</sup>
20A	6P +sldN	2061RDMP <sup>1</sup>
25A	6P +sldN	2561RDMP <sup>1</sup>
40A	6P +sldN	4061RDMP <sup>1</sup>
63A	6P +sldN	6361RDMP <sup>1</sup>
25A	8P	258RDMP
63A	8P	638RDMP

<sup>1</sup>Includes early break auxiliary contact.  
2P+sldN = 2 pole and solid neutral



PC28G403

#### Local disconnectors standard duty, type PC2, 20 – 63A IP54

Nominal unit rating Ie	Poles	Eaton list number
20A	2P	PC28G202
25A	2P	PC28G252
40A	2P	PC28G402
63A	2P	PC28G632
20A	3P	PC28G203
25A	3P	PC28G253
40A	3P	PC28G403
63A	3P	PC28G633
20A	4P	PC28G204
25A	4P	PC28G254
40A	4P	PC28G404
63A	4P	PC28G634
20A	6P	PC28G206
25A	6P	PC28G256
40A	6P	PC28G406
63A	6P	PC28G636



## Autoline heating and lighting contactors

This chapter covers the range of Autoline heating and lighting contactors, in 1 pole, 2 pole and 4 pole configuration, with ratings at AC1 and AC5a. Metalclad enclosures have an IP55 rating.

- IEC / EN60947
- IEC408
- CE marked

See page 29 for technical details.



248ALCFP

### Heating and lighting contactors

Description	Cable capacity mm <sup>2</sup>	Coil voltage 50 Hz	Heating and general mixed loads, slightly inductive, amps per pole AC1	Lighting load, amps per pole AC5a	Eaton list number
4P enclosed without rectifier	4	220–240	25	12	<b>228ALCFP</b>
4P enclosed without rectifier	4	380–415	25	12	<b>248ALCFP</b>
4P enclosed without rectifier	10	220–240	40	32	<b>428ALCFP</b>
4P enclosed without rectifier	10	380–415	40	32	<b>448ALCFP</b>
4P enclosed with rectifier	4	220–240	25	12	<b>228ALCFPR</b>
4P enclosed with rectifier	10	220–240	40	32	<b>428ALCFPR</b>
2P enclosed without rectifier	16	220–240	40	25	<b>228ALCDP</b>
2P enclosed without rectifier	25	220–240	64	40	<b>428ALCDP</b>
2P enclosed with rectifier	16	220–240	40	25	<b>228ALCDPR</b>
2P enclosed with rectifier	25	220–240	64	40	<b>428ALCDPR</b>
1P enclosed without rectifier	50	220–240	70	50	<b>228ALCSPN</b>
1P enclosed without rectifier	50	220–240	112	50	<b>428ALCSPN</b>
1P enclosed with rectifier	50	220–240	70	50	<b>228ALCSPNR</b>
1P enclosed with rectifier	50	220–240	112	50	<b>428ALCSPNR</b>



2812004VCOA

### Replacement contactors – Autoline

- Open contactor, 4 pole
- Contactor technical details, see p17

Maximum Current rating (AC1) (A)	Control coil voltage 50Hz Vac	Poles	Eaton list number
25	220-240	4P	<b>2812004VCOA</b>
25	380-415	4P	<b>4812004VCOA</b>
40	220-240	4P	<b>2825004VCOA</b>
40	380-415	4P	<b>4825004VCOA</b>
40	220-240	2P	<b>2812004VCOA</b>
40	380-415	2P	<b>4812004VCOA</b>
64	220-240	2P	<b>2825004VCOA</b>
64	380-415	2P	<b>4825004VCOA</b>
70	220-240	1P	<b>2812004VCOA</b>
70	380-415	1P	<b>4812004VCOA</b>
112	220-240	1P	<b>2825004VCOA</b>
112	380-415	1P	<b>4825004VCOA</b>



## Non-reversing and reversing Contactor and Starter technical details

### AC motors, 3 phase full load current table, 1450rpm approx.

Provided as a guide to the selection of suitable Eaton control gear

The tables are based on motors of approx, 1450 rpm of average efficiency and power factor. Motors of higher speed than 1450 rpm usually take a lower current than that shown in the table; while motors of lower speed usually take higher current. Wide variations from these figures can arise, especially on single phase motors and engineers should, whenever possible, determine the actual full load current (F.L.C.) from the motor rating plate in each case

Motor rating kW	Approx F.L.C. at line voltage				
	220V	240V	380V	400-415V	550V
0.07	—	—	—	—	—
0.1	0.7	0.6	0.4	0.4	0.3
0.12	1	0.9	0.5	0.5	0.3
0.18	1.3	1.2	0.8	0.7	0.4
0.25	1.6	1.5	0.9	0.9	0.6
0.37	2.5	2.3	1.4	1.3	0.8
0.56	3.1	2.8	1.8	1.6	1.1
0.75	3.5	3.2	2	1.8	1.4
1.1	5	4.5	2.8	2.6	1.9
1.5	6.4	5.8	3.7	3.4	2.6
2.2	9.5	8.7	5.5	5	3.5
3	12	11	7	6.5	4.7
3.7	15	13	8	8	6
4	16	14	9	8	6
5.5	20	19	12	11	8
7.5	27	25	16	15	11
9.3	34	32	20	18	14
10	37	34	22	20	15
11	41	37	23	22	16
15	64	50	31	28	21
18.5	67	62	39	36	26
22	74	70	43	39	30
30	99	91	57	52	41

### AC motors, 1 phase full load current table, 1450rpm approx.

Motor rating (kW)	Approx F.L.C. at line voltage		
	110V	220V	230-240V
0.07	2.4	1.2	1.1
0.1	3.3	1.6	1.5
0.12	3.8	1.9	1.7
0.18	4.5	2.3	2.1
0.25	5.8	2.9	2.6
0.37	7.9	3.9	3.6
0.56	11	5.5	5
0.75	15	7.3	6.7
1.1	21	10	9
1.5	26	13	12
2.2	37	19	17
3	49	24	22
3.7	54	27	25
4	60	30	27
5.5	85	41	38
7.5	110	55	50

## ADS8 Contactors, technical characteristics overview: Voltage & Maximum rated current for motor control

- Maximum rated operational voltage is 690v in all units.

Contactor Reference		Voltage	Maximum rated current for motor control
2812VCO	DOL and Main <sup>1</sup>	220 - 240v Coil	12A
2818VCO	DOL and Main <sup>1</sup>	220 - 240v Coil	18A
2825VCO	DOL and Main <sup>1</sup>	220 - 240v Coil	25A
2832VCO	DOL and Main <sup>1</sup>	220 - 240v Coil	32A
2850VCO	DOL and Main <sup>1</sup>	220 - 240v Coil	50A
4812VCO	DOL and Main <sup>1</sup>	380 - 415v Coil	12A
4818VCO	DOL and Main <sup>1</sup>	380 - 415v Coil	18A
4825VCO	DOL and Main <sup>1</sup>	380 - 415v Coil	25A
4832VCO	DOL and Main <sup>1</sup>	380 - 415v Coil	32A
4850VCO	DOL and Main <sup>1</sup>	380 - 415v Coil	50A
2812VCOSD	Star and Delta <sup>1</sup>	220 - 240v Coil	12A
2818VCOSD	Star and Delta <sup>1</sup>	220 - 240v Coil	18A
2825VCOSD	Star and Delta <sup>1</sup>	220 - 240v Coil	25A
2832VCOSD	Star and Delta <sup>1</sup>	220 - 240v Coil	32A
2850VCOSD	Star and Delta <sup>1</sup>	220 - 240v Coil	50A
4812VCOSD	Star and Delta <sup>1</sup>	380 - 415v Coil	12A
4818VCOSD	Star and Delta <sup>1</sup>	380 - 415v Coil	18A
4825VCOSD	Star and Delta <sup>1</sup>	380 - 415v Coil	25A
4832VCOSD	Star and Delta <sup>1</sup>	380 - 415v Coil	32A
4850VCOSD	Star and Delta <sup>1</sup>	380 - 415v Coil	50A
2812004VCOA	Autoline 4 pole <sup>2</sup>	220 - 240v Coil	25A
2825004VCOA	Autoline 4 pole <sup>2</sup>	220 - 240v Coil	40A
4812004VCOA	Autoline 4 pole <sup>2</sup>	380 - 415v Coil	25A
4825004VCOA	Autoline 4 pole <sup>2</sup>	380 - 415v Coil	40A

1 DOL and Star Delta (3 phase 440v, 50-60hz, for AC3 Duty)

2 Autoline 4 pole (3 phase 440v, 50-60hz, for AC1 Duty)

## ADS8 Contactors, technical characteristics overview: Maximum standard power rating

Contactor Reference	Maximum standard power rating (for motor control for AC3 Duty; temperature less than or equal to 55°C)					
	415v	220 - 230v	380 - 400v	440v	500v	660 - 690v
2812VCO	5.5kW / 7.5hp	3kW	5.5kW	5.5kW	7.5kW	7.5kW
2818VCO	9kW / 12.5hp	4kW	7.5kW	9kW	10kW	10kW
2825VCO	11kW / 15hp	5.5kW	11kW	11kW	15kW	15kW
2832VCO	15kW / 20hp	7.5kW	15kW	15kW	18.5kW	18.5kW
2850VCO	25kW / 35hp	15kW	22kW	30kW	30kW	33kW
4812VCO	5.5kW / 7.5hp	3kW	5.5kW	5.5kW	7.5kW	7.5kW
4818VCO	9kW / 12.5hp	4kW	7.5kW	9kW	10kW	10kW
4825VCO	11kW / 15hp	5.5kW	11kW	11kW	15kW	15kW
4832VCO	15kW / 20hp	7.5kW	15kW	15kW	18.5kW	18.5kW
4850VCO	25kW / 35hp	15kW	22kW	30kW	30kW	33kW
2812VCOSD	5.5kW / 7.5hp	3kW	5.5kW	5.5kW	7.5kW	7.5kW
2818VCOSD	9kW / 12.5hp	4kW	7.5kW	9kW	10kW	10kW
2825VCOSD	11kW / 15hp	5.5kW	11kW	11kW	15kW	15kW
2832VCOSD	15kW / 20hp	7.5kW	15kW	15kW	18.5kW	18.5kW
2850VCOSD	25kW / 35hp	15kW	22kW	30kW	30kW	33kW
4812VCOSD	5.5kW / 7.5hp	3kW	5.5kW	5.5kW	7.5kW	7.5kW
4818VCOSD	9kW / 12.5hp	4kW	7.5kW	9kW	10kW	10kW
4825VCOSD	11kW / 15hp	5.5kW	11kW	11kW	15kW	15kW
4832VCOSD	15kW / 20hp	7.5kW	15kW	15kW	18.5kW	18.5kW
4850VCOSD	25kW / 35hp	15kW	22kW	30kW	30kW	33kW
2812004VCOA	5.5kW / 7.5hp	3kW	5.5kW	5.5kW	7.5kW	7.5kW
2825004VCOA	11kW / 15hp	5.5kW	11kW	11kW	15kW	15kW
4812004VCOA	5.5kW / 7.5hp	3kW	5.5kW	5.5kW	7.5kW	7.5kW
4825004VCOA	11kW / 15hp	5.5kW	11kW	11kW	15kW	15kW

## ADS8 Contactors, technical characteristics overview: 3 phase AC3

Contactor Reference	3 phase AC3 (UL and CSA)		
	230v	460 / 480v	575 / 600v
2812VCO	3	7.5	10
2818VCO	5	10	15
2825VCO	7.5	15	20
2832VCO	10	20	25
2850VCO	15	40	40
4812VCO	3	7.5	10
4818VCO	5	10	15
4825VCO	7.5	15	20
4832VCO	10	20	25
4850VCO	15	40	40
2812VCOSD	3	7.5	10
2818VCOSD	5	10	15
2825VCOSD	7.5	15	20
2832VCOSD	10	20	25
2850VCOSD	15	40	40
4812VCOSD	3	7.5	10
4818VCOSD	5	10	15
4825VCOSD	7.5	15	20
4832VCOSD	10	20	25
4850VCOSD	15	40	40
2812004VCOA	3	7.5	10
2825004VCOA	7.5	15	20
4812004VCOA	3	7.5	10
4825004VCOA	7.5	15	20

## ADS8 Contactors, technical characteristics: Maximum thermal current, Average coil consumption & Heat dissipation

- Maximum operating rate with both AC and DC is 3600 operations per hour in all units.

Contactor reference	Maximum thermal current I <sub>th</sub> (temp less than or equal to 40 °C)	Average coil consumption (inrush / sealed)			DC	Heat dissipation at	
		50Hz	60Hz	50/60HZ		50 & 60 Hz	DC
2812VCO	25A	60 / 7VA	60 / 7.5VA	70 / 8VA	9 / 9W	2 to 3W	9W
2818VCO	32A	60 / 7VA	60 / 7.5VA	70 / 8VA	9 / 9W	2 to 3W	9W
2825VCO	40A	90 / 7.5VA	90 / 8.5VA	100 / 8.5VA	11 / 11W	2.5 to 3.5W	11W
2832VCO	50A	90 / 7.5VA	90 / 8.5VA	100 / 8.5VA	11 / 11W	2.5 to 3.5W	11W
2850VCO	80A	200 / 20VA	200 / 22VA	245 / 26VA	22 / 22W	6 to 10W	22W
4812VCO	25A	60 / 7VA	60 / 7.5VA	70 / 8VA	9 / 9W	2 to 3W	9W
4818VCO	32A	60 / 7VA	60 / 7.5VA	70 / 8VA	9 / 9W	2 to 3W	9W
4825VCO	40A	90 / 7.5VA	90 / 8.5VA	100 / 8.5VA	11 / 11W	2.5 to 3.5W	11W
4832VCO	50A	90 / 7.5VA	90 / 8.5VA	100 / 8.5VA	11 / 11W	2.5 to 3.5W	11W
4850VCO	80A	200 / 20VA	200 / 22VA	245 / 26VA	22 / 22W	6 to 10W	22W
2812VCOSD	25A	60 / 7VA	60 / 7.5VA	70 / 8VA	9 / 9W	2 to 3W	9W
2818VCOSD	32A	60 / 7VA	60 / 7.5VA	70 / 8VA	9 / 9W	2 to 3W	9W
2825VCOSD	40A	90 / 7.5VA	90 / 8.5VA	100 / 8.5VA	11 / 11W	2.5 to 3.5W	11W
2832VCOSD	50A	90 / 7.5VA	90 / 8.5VA	100 / 8.5VA	11 / 11W	2.5 to 3.5W	11W
2850VCOSD	80A	200 / 20VA	200 / 22VA	245 / 26VA	22 / 22W	6 to 10W	22W
4812VCOSD	25A	60 / 7VA	60 / 7.5VA	70 / 8VA	9 / 9W	2 to 3W	9W
4818VCOSD	32A	60 / 7VA	60 / 7.5VA	70 / 8VA	9 / 9W	2 to 3W	9W
4825VCOSD	40A	90 / 7.5VA	90 / 8.5VA	100 / 8.5VA	11 / 11W	2.5 to 3.5W	11W
4832VCOSD	50A	90 / 7.5VA	90 / 8.5VA	100 / 8.5VA	11 / 11W	2.5 to 3.5W	11W
4850VCOSD	80A	200 / 20VA	200 / 22VA	245 / 26VA	22 / 22W	6 to 10W	22W
2812004VCOA	25A	60 / 7VA	60 / 7.5VA	70 / 8VA	9 / 9W	2 to 3W	9W
2825004VCOA	40A	90 / 7.5VA	90 / 8.5VA	100 / 8.5VA	11 / 11W	2.5 to 3.5W	11W
4812004VCOA	25A	60 / 7VA	60 / 7.5VA	70 / 8VA	9 / 9W	2 to 3W	9W
4825004VCOA	40A	90 / 7.5VA	90 / 8.5VA	100 / 8.5VA	11 / 11W	2.5 to 3.5W	11W

## ADS8 Contactors, technical characteristics overview: Mechanical life & Power contact terminal capacity

Contactor reference	Mechanical life (millions of operations)		Power contact terminal capacity mm <sup>2</sup>
	50 or 60 Hz	50 / 60Hz	
2812VCO	20	15	4
2818VCO	20	15	6
2825VCO	16	12	10
2832VCO	16	12	10
2850VCO	16	6	25
4812VCO	20	15	4
4818VCO	20	15	6
4825VCO	16	12	10
4832VCO	16	12	10
4850VCO	16	6	25
2812VCOSD	20	15	4
2818VCOSD	20	15	6
2825VCOSD	16	12	10
2832VCOSD	16	12	10
2850VCOSD	16	6	25
4812VCOSD	20	15	4
4818VCOSD	20	15	6
4825VCOSD	16	12	10
4832VCOSD	16	12	10
4850VCOSD	16	6	25
2812004VCOA	20	15	4
2825004VCOA	16	12	10
4812004VCOA	20	15	4
4825004VCOA	16	12	10

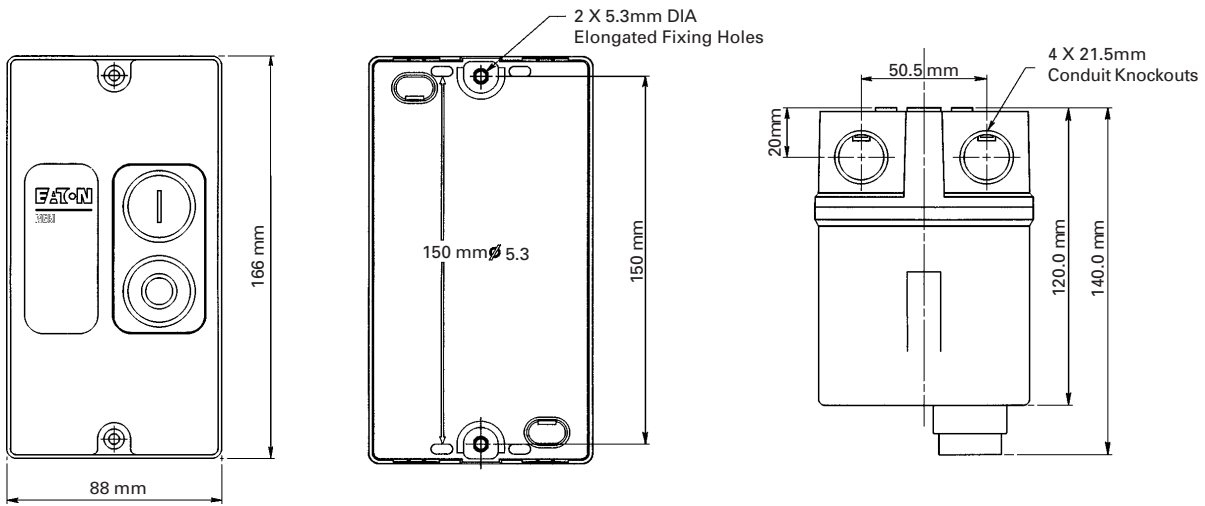
## ADS8 Contactors, technical characteristics overview: Overall dimensions, Weight & Mounting hole centres

- Mounting position (wrt normal vertical mounting plane) +/- 30° in all units.
- Ambient temperature compensation and operating limits -30°C to +60°C in all units.
- Ambient temperature storage limits -60°C to +70°C in all units.
- Auxilliary contacts

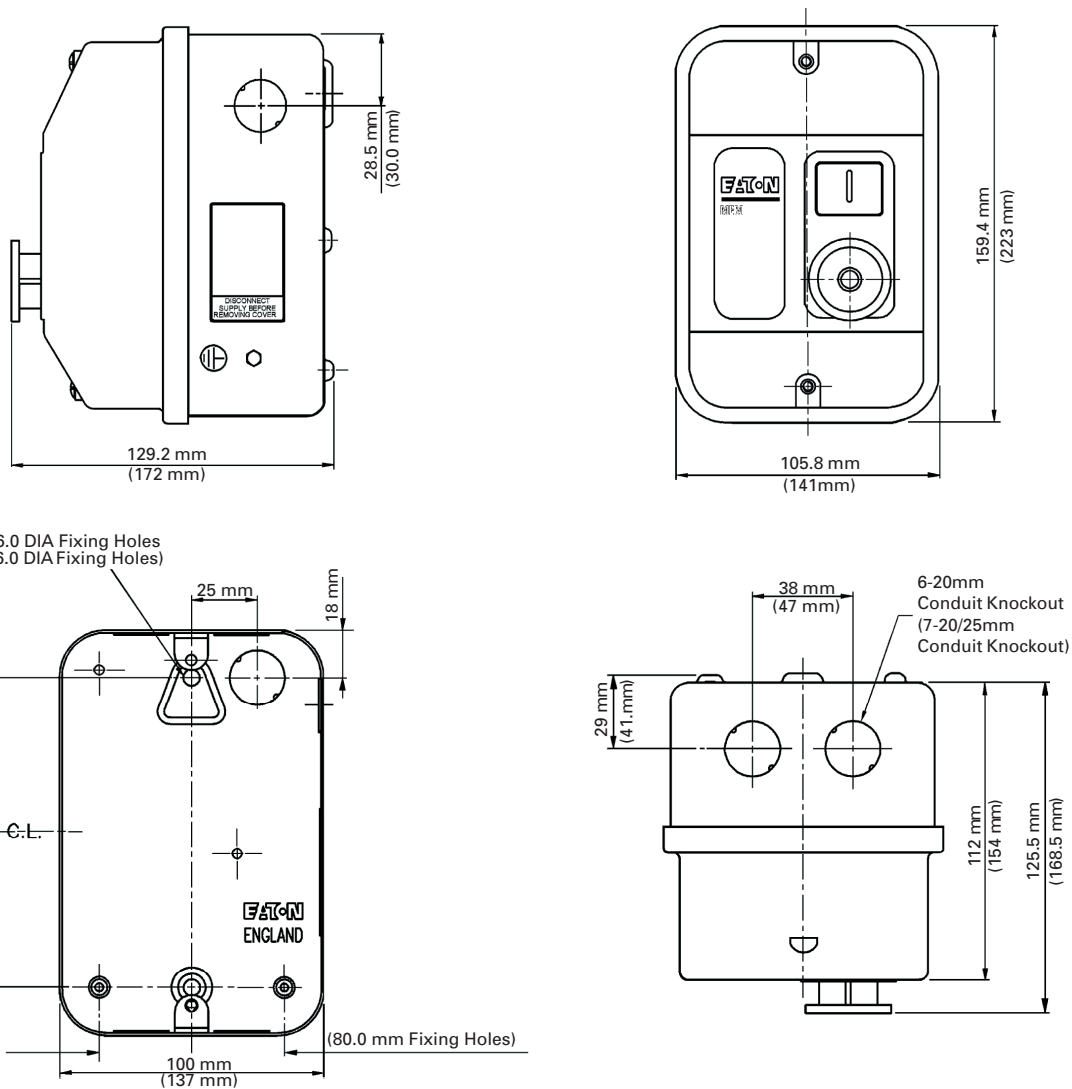
Type VCO (main & DOL) 1N/O in all units.  
 Type VCOSD (Star Delta) 1N/C in all units.  
 Rated thermal current (A) is 10 in all units.

Contactor reference	Overall dimensions (mm)			Weight Kg	Mounting hole centres (mm)	
	Width	Depth	Projection		Width	Depth
2812VCO	45	74	80	0.32	35	50 / 60
2818VCO	45	74	85	0.35	35	50 / 60
2825VCO	56	84	93	0.505	40	50 / 60
2832VCO	56	84	98	0.525	40	50 / 60
2850VCO	75	127	114	1.15	40	100 / 110
4812VCO	45	74	80	0.32	35	50 / 60
4818VCO	45	74	85	0.35	35	50 / 60
4825VCO	56	84	93	0.505	40	50 / 60
4832VCO	56	84	98	0.525	40	50 / 60
4850VCO	75	127	114	1.15	40	100 / 110
2812VCOSD	45	74	80	0.32	35	50 / 60
2818VCOSD	45	74	85	0.35	35	50 / 60
2825VCOSD	56	84	93	0.505	40	50 / 60
2832VCOSD	56	84	98	0.525	40	50 / 60
2850VCOSD	75	127	114	1.15	40	100 / 110
4812VCOSD	45	74	80	0.32	35	50 / 60
4818VCOSD	45	74	85	0.35	35	50 / 60
4825VCOSD	56	84	93	0.505	40	50 / 60
4832VCOSD	56	84	98	0.525	40	50 / 60
4850VCOSD	75	127	114	1.15	40	100 / 110
2812004VCOA	45	74	80	0.32	35	50 / 60
2825004VCOA	56	84	93	0.505	40	50 / 60
4812004VCOA	45	74	80	0.32	35	50 / 60
4825004VCOA	56	84	93	0.505	40	50 / 60

**9kW DOL starter without switch disconnect, IP 65 moulded surface mounting enclosure, dimensional drawings**

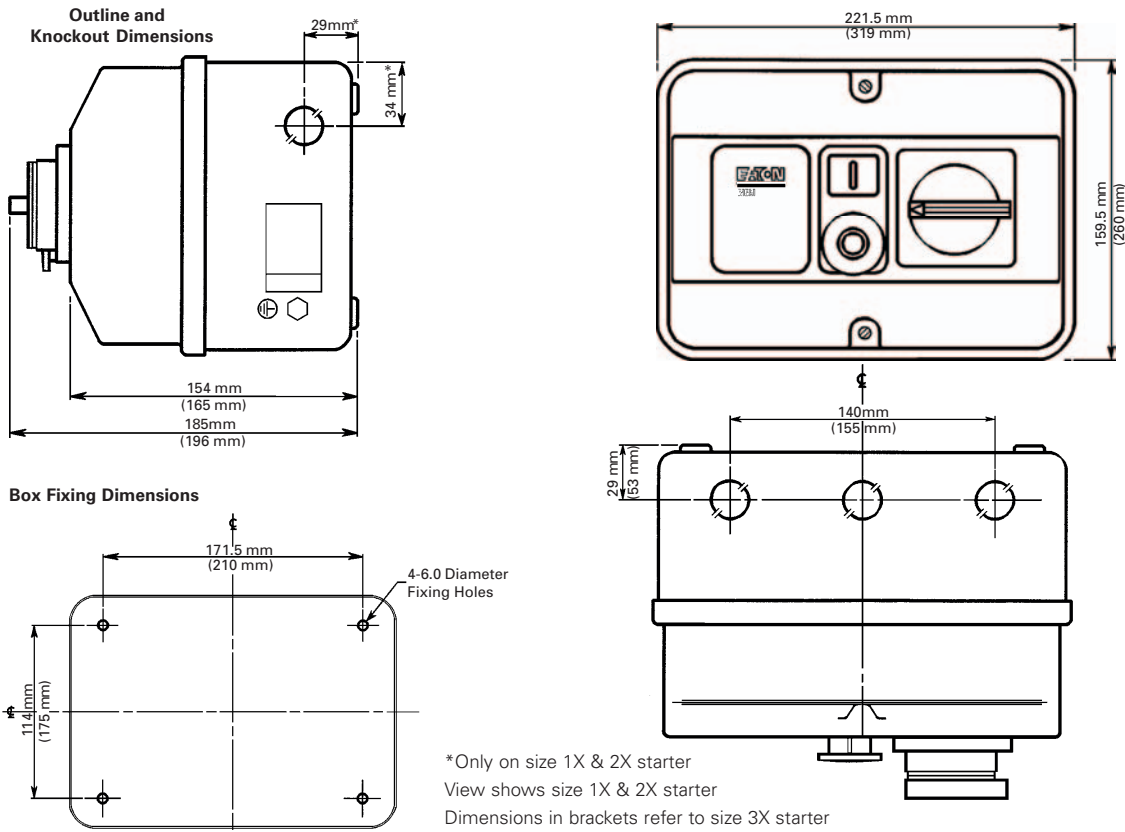


**15kW DOL starter without switch disconnect, IP 54 metalclad surface mounting enclosure, dimensional drawings**



Dimensions in brackets refer to types **2528ADS(2X)** & **3228ADS(3X)** sized enclosures

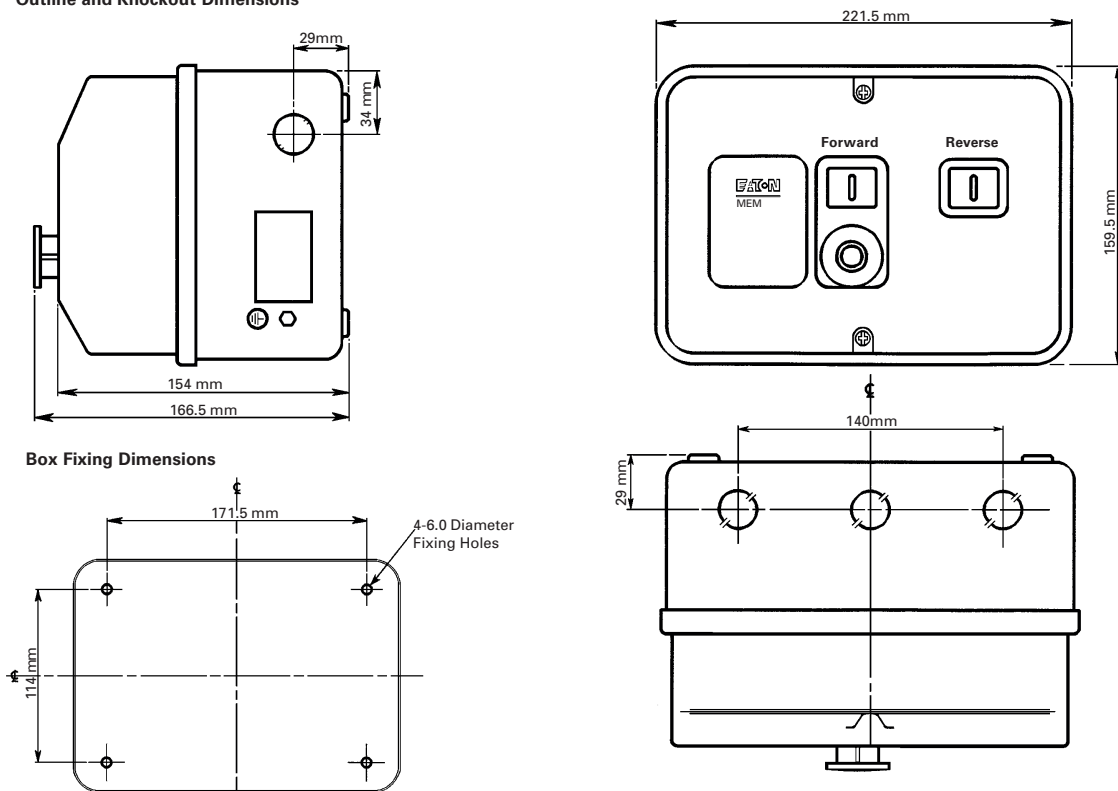
**15kW DOL starter with switch disconnect, IP 54 metalclad surface mounting enclosure, dimensional drawings**



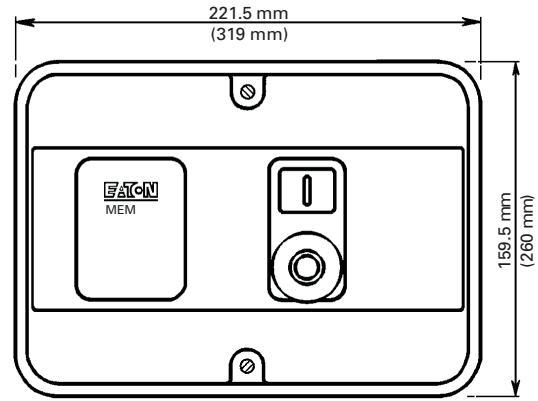
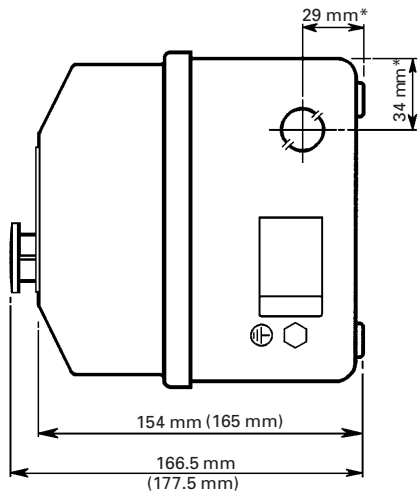
**11kW DOL reversing starter without switch disconnect, IP 54 metalclad surface mounting enclosure, dimensional drawings**

8 X 20.9mm (3/4") conduit knockouts are provided for cable entry at top, bottom and side of the enclosure and The earth terminal may be reversed for external connection but the components must be assembled in the same order as supplied.

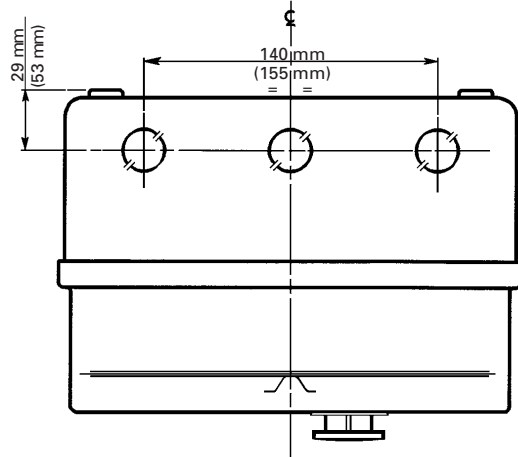
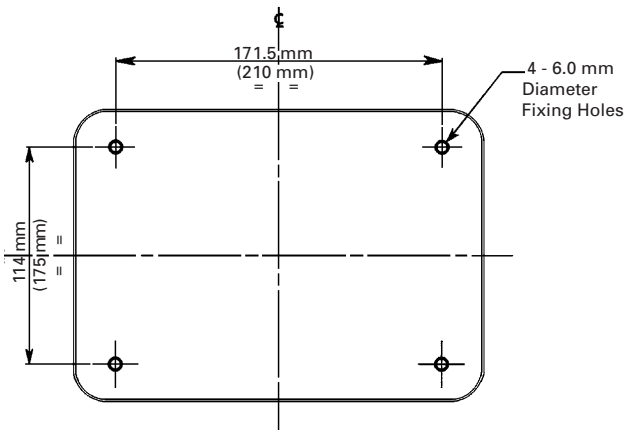
**Outline and Knockout Dimensions**



25kW Star Delta starter without switch disconnect, IP 54 metalclad surface mounting enclosure, dimensional drawings



Box Fixing Dimensions



**Star Delta starter enclosure (IP54 to BSEN60529:1992)** 20.9mm (3/4") conduit knockouts are provided for cable entry at top, bottom and side of the enclosure and the earth terminal may be reversed for external connection, but the components must be assembled in the same order as supplied.

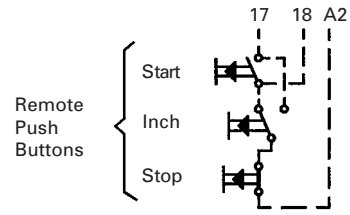
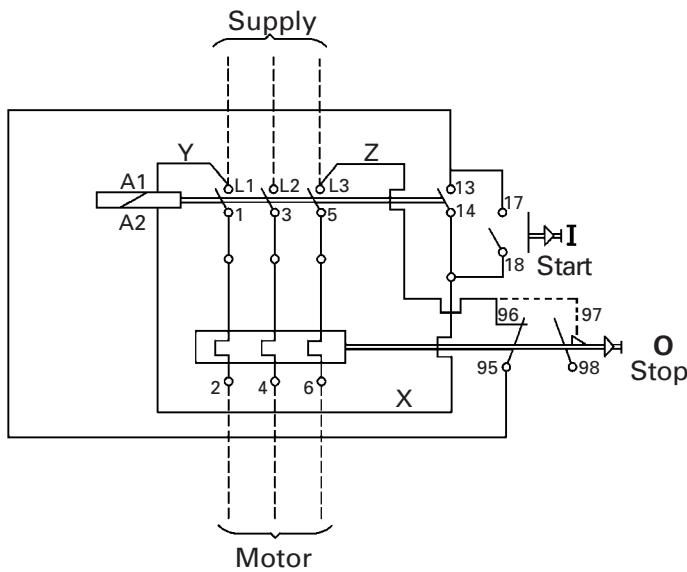
\*These 20.9mm conduit knockouts (not available on **28/48SDA3X25** or **28/48SDA3X32**).

Outline and knockout dimensions

View shows type **28/48SDA2X18** dimensions in brackets ( ) are for types **28/48SDA3X25** and **28/48SDA3X32**.

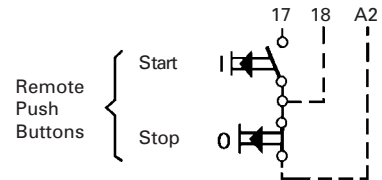
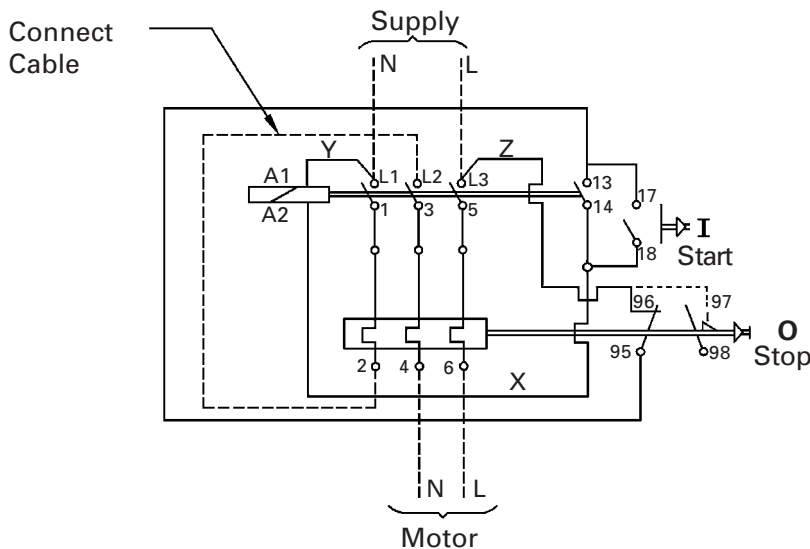
Circuit Diagrams

**A. Three Phase Motors-D.O.L. Starter.  
Local 3-Wire (Push Button) Control.**



**Remote Start/Inch/Stop Control**  
Connect as above except remove lead X and add connections shown.

**B. Single Phase Motors-D.O.L. Starter  
Local 3-Wire (Push Button) Control.**



**Local & Remote 3-Wire (Push Button) Control**  
Connect as above except remove lead X and add connections shown.

Connect supply to 1 and 5. Connect Motor to 4 and 6 and insert a cable of cross-sectional area equal to the supply cables between 3 and 2 as shown.

**Coil phase to neutral:** remove connector Y, connect Neutral to A1

**Separate coil supply:** remove connectors Y and Z, connect coil supply to A1 and 96.

**Coil voltage:** Ensure correct voltage coil is fitted for separate coil supply and phase to neutral applications.

**External interlock:** Remove connection Z and insert interlock between 5 and 96.

**Alarm circuit:** At trip an alarm signal voltage equal to the coil voltage is available between 98 and A1 when a link is added between 96 & 97. The switch is rated at 440VA, 500V maximum.

**Control circuit fuses (10A MAX).**

**Coil connected Phase to neutral (1 fuse):** remove connector Z and connect fuse between 5 and 96.

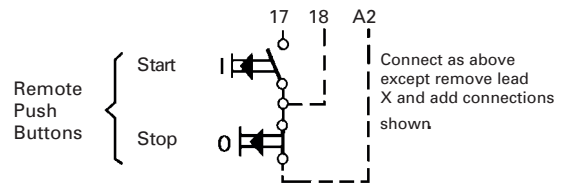
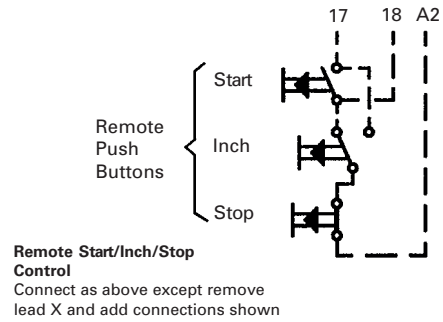
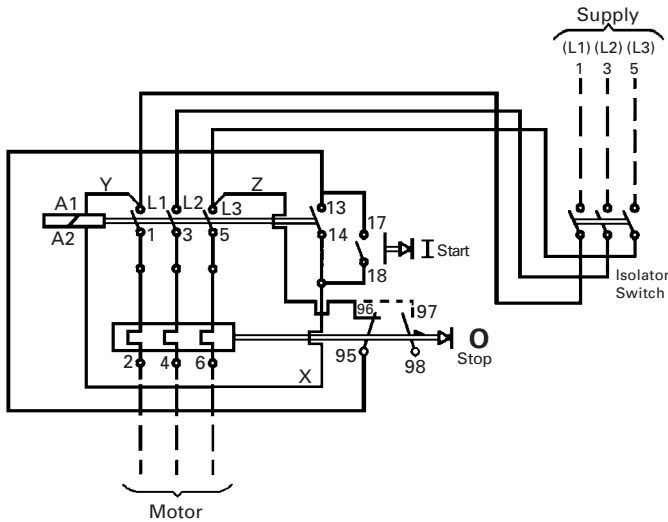
**Coil Connected Phase to Phase (2 fuses):** remove connector Z and connect fuse between 5 and 96. Remove connector Y and connect fuse between 1 and A1.

**Note:** the voltage rating of the fuse(s) must be suitable for the control circuit voltage.

**Short circuit protection:** Maximum sizes of fuses or MCB's to give short-circuit protection to this starter are tabulated on page 26.

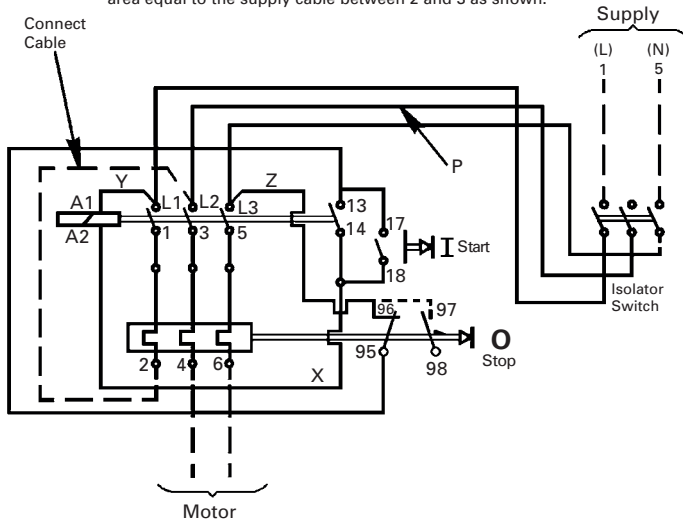
**To reverse direction of rotation (3-Phase Motors):** Interchange any two supply lines 1, 3 or 5.

**Three Phase Motors-D.O.L. Starter Isolator  
Local 3-Wire (Push Button) Control**



**Single Phase Motors-D.O.L. Starter Isolator  
Local 3-Wire (Push Button) Control**

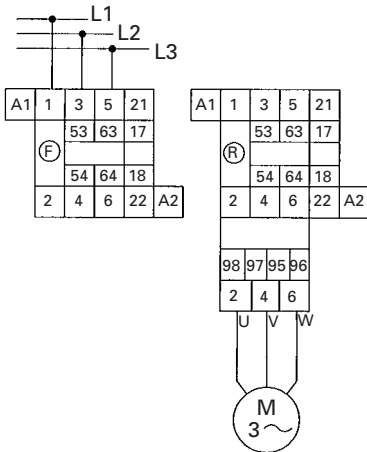
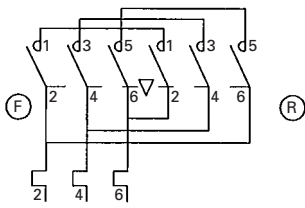
Connect supply to 1 and 5 at the Isolator.  
Connect Motor to 4 and 6 at the overload relay  
Remove existing cable P and connect a cable of cross sectional area equal to the supply cable between 2 and 3 as shown.



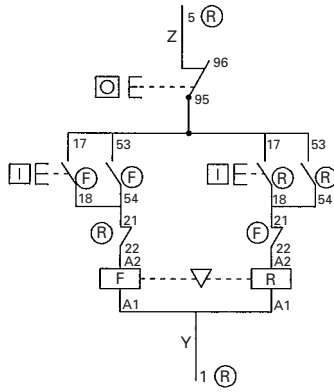
**Local & Remote 3-Wire  
(Push Button) Control**

- Coil phase to neutral:** Remove connector Y, connect Neutral to A1
- Separate coil supply:** Remove connectors Y and Z, connect coil supply to A1 and 96.
- Coil voltage:** Ensure correct voltage coil is fitted for separate coil supply and phase to neutral applications.
- Control circuit fuses (10A MAX).**
- Coil connected Phase to neutral (1 fuse):** remove connector Z and connect fuse between 5 and 96.
- Coil Connected Phase to Phase (2 fuses):** remove connector Z and connect fuse between 5 and 96. Remove connector Y and connect fuse between 1 and A1.
- Note:** The voltage rating of the fuses must be suitable for the control circuit voltage.
- External interlock:** Remove connection Z and insert interlock between 5 and 96
- Alarm circuit:** At trip an alarm signal voltage equal to the coil voltage is available between 98 and A1 when a link is added between 96 & 97. The switch is rated at 440VA, 500V maximum.
- Short circuit protection:** Maximum sizes of fuses or MCB's to give short-circuit protection to this starter are tabulated on page 26.

Circuit Diagrams:- Power

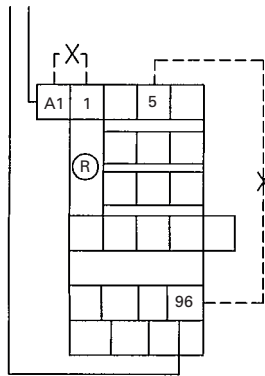


Control

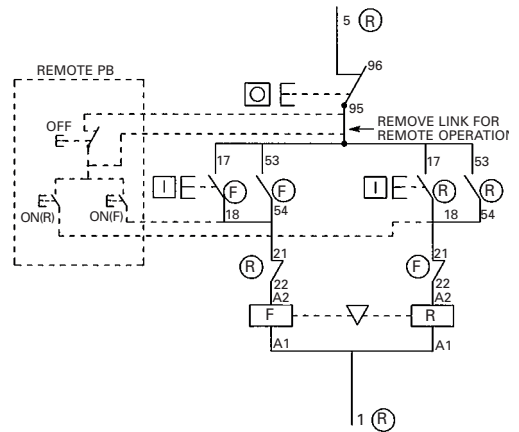


▽ Mechanical interlock

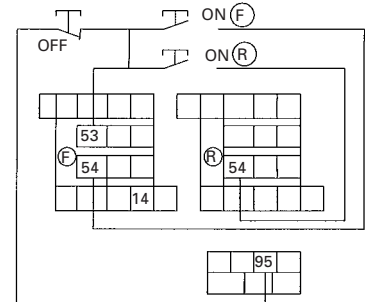
Separate Supply of Control Circuit



Remote Control Option



▽ Mechanical Interlock



Option for Remote Control

**Coil phase to neutral:** Remove connector Y, connect Neutral to A1 F

**Separate coil supply:** Remove connectors Y and Z, connect coil supply to A1 R and 96.

**Coil voltage:** Ensure correct voltage coil is fitted for separate coil supply and phase to neutral applications.

**Control circuit fuses (10A MAX).**

**Coil connected Phase to neutral (1 fuse):** remove connector Z and connect fuse between 5 and 96.

**Coil Connected Phase to Phase (2 fuses):** remove connector Z and connect fuse between 5 and 96. Remove connector Y and connect fuse between 1 and A1 R.

**Note:** The voltage rating of the fuses must be suitable for the control circuit voltage.

**External interlock:** Remove connector Z and connect interlock between 5 and 96. When using remote control, connect external interlock in series with remote 2 wire (switch control).

**To reverse direction of rotation:** (3 Phase Motors) interchange any two supply lines 1, 3 or 5.

**Alarm circuit:** At trip an alarm signal voltage equal to the coil voltage is available between 98 and A1 when a link is added between 96 and 97. The switch is rated at 400VA, 500V maximum.

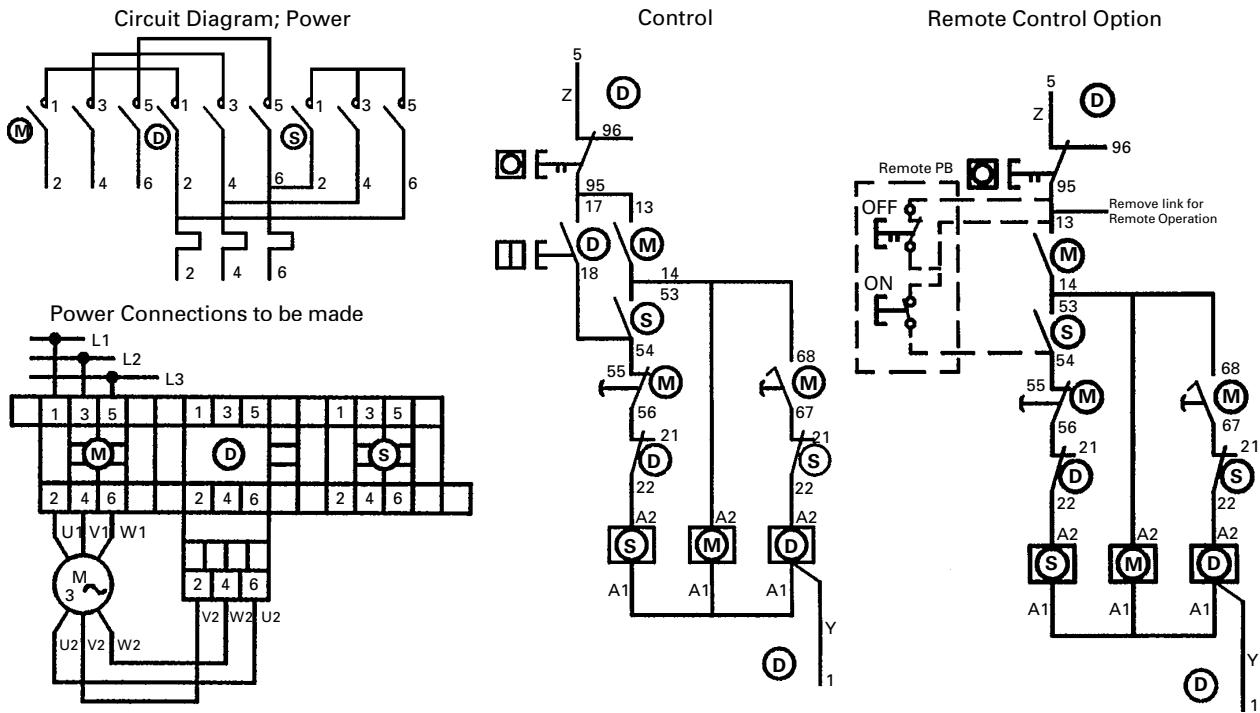
**Short circuit protection:** Maximum sizes of fuses or MCB's to give short-circuit protection to this starter are tabulated on page 26.

**Limit Switch Connections**

**Forward limit:** Remove connection between 54Forward and 21Reverse - connect limit switch between 54F and 21R.

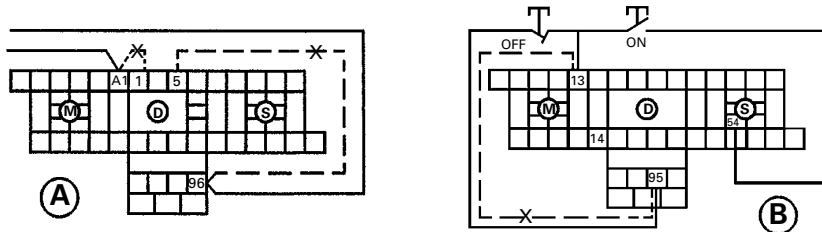
**Reverse limit:** Remove connection between 54Reverse and 21Forward - connect limit switch between 54R and 21F.

25kW Star Delta starter without switch disconnect, IP 54 metalclad surface mounting enclosure, wiring diagram



Control Connections to be made

1. Coil Voltage same as Power Voltage → No Change
2. Coil Voltage different to Power Voltage → Scheme (A)
3. Remote Control Option → Scheme (B)



Short circuit protection

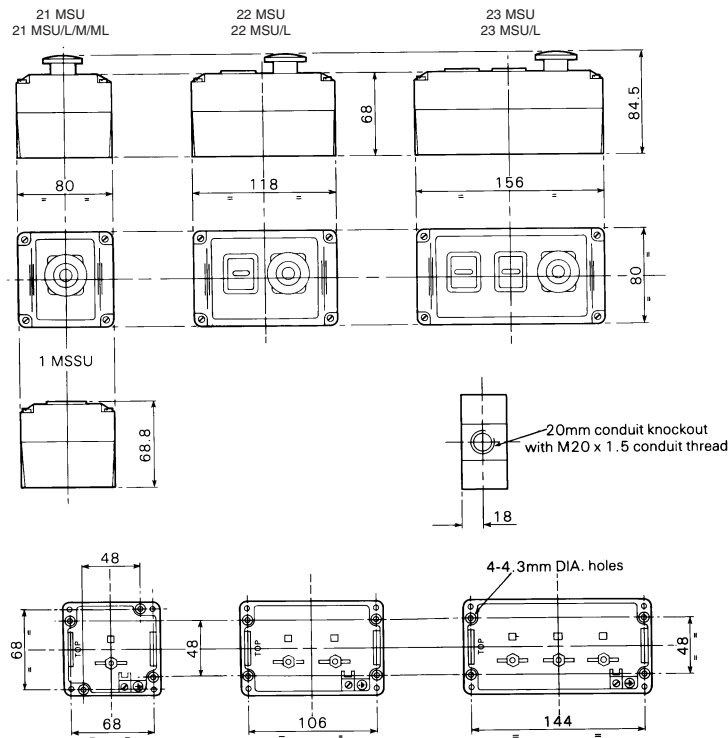
Direct on Line

Overload Relay list number	Motor FLC Ie (A)	SCPD Back-up protection MAX HRC fuse BS88:1 aM (A)	Back-up protection Max MCB Type C
8TT87	0.63–1	4	MCH306
8TT88	1–1.6	6	MCH306
8TT89	1.6–2.5	10	MCH306
8TT90	2.5–4	16	MCH310
8TT91	4–6	16	MCH310
8TT98	5.5–8.0	20	MCH316
8TT92	7–10	25	MCH320
8TT93	10–13	32	MCH320
8TT94	13–18	40	MCH332
8TT104	18–25	50	MCH340
8TT96	23–32	63	MCH363

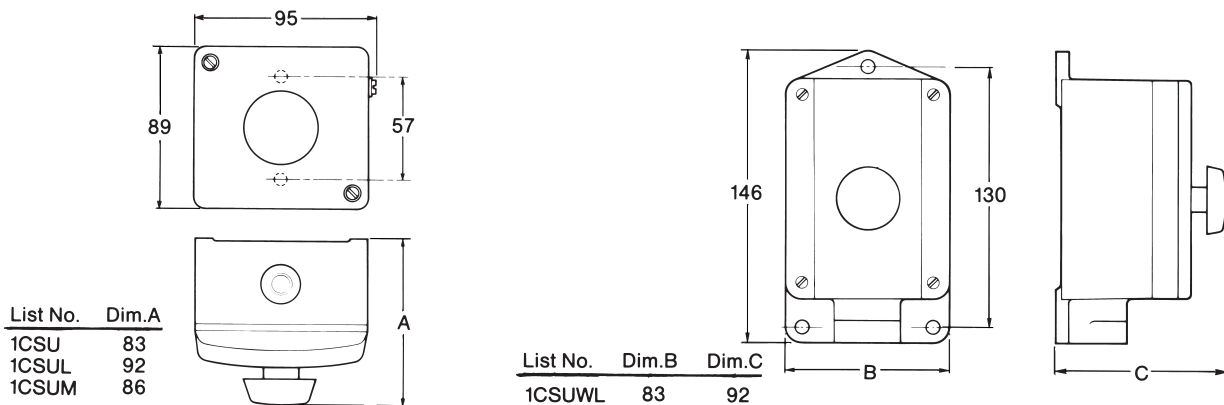
Star Delta

Overload Relay list number	Motor FLC Ie (A)	SCPD Back-up protection MAX HRC fuse BS88:1 aM (A)	Back-up protection Max MCB Type C
8TT90SD	4.3–6.9	16	MCH310
8TT91SD	6.9–10.4	16	MCH310
8TT98SD	9.5–13.8	20	MCH316
8TT92SD	12.1–17.3	25	MCH320
8TT93SD	17.3–22.5	32	MCH320
8TT94SD	22.5–31	40	MCH332
8TT104SD	31–43	50	MCH340
8TT96SD	40–55	63	MCH363

## MSU pushbutton control units (moulded IP65) dimensions



## CSU pushbutton control units dimensions



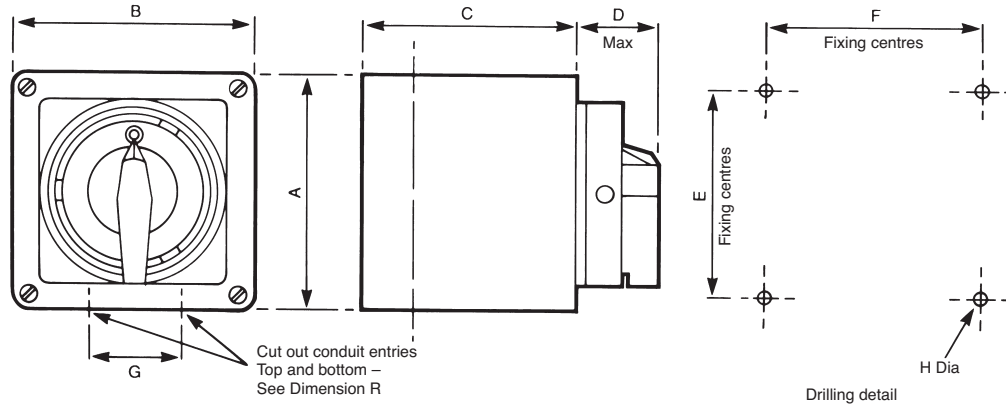
## Local disconnectors standard duty, type RDMP, 2-63A, IP65, 2-8pole

Nominal unit rating Ith (A)	AC23A-3ph 415V	AC23-1p motors 240V	Optional current 24V	DC21 (resistive loads) (A)		Rated short withstand current RMS for 10sec Icw (A)	Rated conditional short circuit current (prospective RMS amps at 415V AC, fused) kA	Fuse rated BS88 (max) (A)		Max terminal capacity mm <sup>2</sup>
				110V	220V					
20A	7.5kW	2.5kW	20	4	0.6	80	10	20	1x4	
							50	16	2x2.5	
25A	11.0kW	3.7kW	25	4	0.7	150	10	25	1x6	
							50	20	2x4	
40A	18.5kW	6.0kW	40	6	0.9	250	10	40	1x10	
							50	40	2x6	
63A	30kW	7.5kW	63	8	1	400	10	63	1x16	
							50	63	2x10	

**Note:** Units supplied with a late make/early break auxiliary are indicated by a figure 1 in the list number e.g. **2041RDMP** Auxiliary terminals are marked 1 and 2. Auxiliary contact rating as main poles.

### Local disconnectors standard duty, type RDMP, 20-63A, IP65, 2-8 poles, dimensions

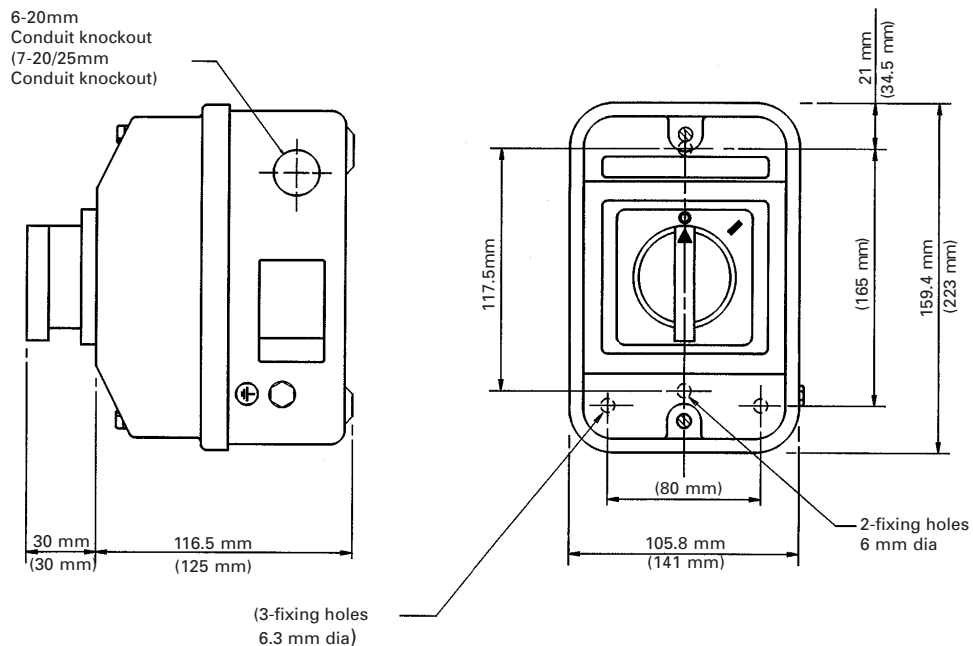
NOMINAL UNIT rating, Ie	A	B	C		D	E	F	G	H	R ISO Thread
			2-4 pole 20 & 40A 2-3 pole 25 & 63A	6 pole 20 & 40A 4-6 pole 25 & 63A						
20 and 25A	90	90	71	98	30	79	63	30	4.5	2 x 20
40 and 63A	176	125	85	119	36	146	112	68	5.5	2 x 25 1 x 16



### Local disconnectors standard duty, type PC2, 20-63A, IP55, 2-6 poles

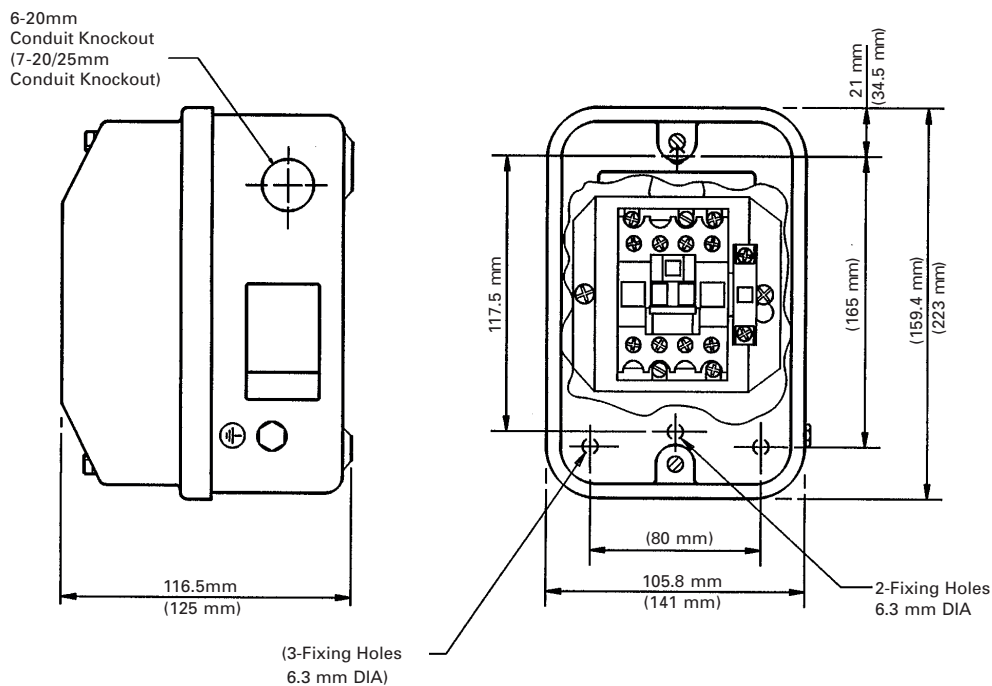
Nominal unit rating Ith	Operational current, Ie and power, 415V 3ph category:		Operational current, Ie and power, 660V 3ph category:		Rated short time withstand current RMS for 1 sec	Rated conditional short circuit current (prospective RMS amps at 415V AC, fused)		Max terminal capacity mm <sup>2</sup>	Degree of protection
	AC21	AC23	AC21	AC23		kA	Fuse rating		
20A	20A	5.5kW	20A	5.5kW	0.25kA	25 50	20A 16A	1 x 4 2 x 2.5	IP55
25A	25A	7.5kW	25A	7.5kW	0.40kA	25 50	25A 20A	1 x 6 2 x 4	IP55
40A	40A	15kW	40A	15kW	0.80kA	62	40A	1 x 10 2 x 6	IP55
63A	63A	22kW	63A	18.5kW	1.70kA	50	63A	1 x 16 2 x 10	IP55

### Local disconnectors standard duty, type PC2, 20-63A, IP55, 2-6-pole dimensions



Dimensions in brackets ( ) refer to **PC28G632, PC28G633, PC28G634, PC28G636.**

## Heating and lighting contactors



Dimensions in brackets ( ) refer to **228ALDPR, 228ALCSPN/R, 428ALCFP/R, 448ALCFP, 428ALCDP/R, 428ALCSPN/R**. All others refer to list numbers; **228ALCFP/R, 248ALCFP** and **228ALCDP**.

## Additional side mounting auxiliary contacts for DOL, DOL reversing, Star Delta starters and Autoline

- 1 NO, 1NC lth 10A Ui 600v

Description	Current rating (A)	Coil voltage	Starter list number	Maximum side mount auxiliaries	Eaton list number
DOL Starter	25	220–240	<b>28ADS2X</b>	2	<b>8TA8DN11</b>
DOL Starter	25	380–415	<b>48ADS2X</b>	2	<b>8TA8DN11</b>
DOL Starter	32	220–240	<b>28ADS3X</b>	2	<b>8TA8DN11</b>
DOL Starter	32	380–415	<b>48ADS3X</b>	2	<b>8TA8DN11</b>
Starter with disconnecter	18	220–240	<b>28ADSA1X</b>	2	<b>8TA8DN11</b>
Starter with disconnecter	18	380–415	<b>48ADSA1X</b>	2	<b>8TA8DN11</b>
Starter with disconnecter	25	220–240	<b>28ADSA2X</b>	1	<b>8TA8DN11</b>
Starter with disconnecter	25	380–415	<b>48ADSA2X</b>	1	<b>8TA8DN11</b>
Starter with disconnecter	32	220–240	<b>28ADSA3X</b>	1	<b>8TA8DN11</b>
Starter with disconnecter	32	380–415	<b>48ADSA3X</b>	1	<b>8TA8DN11</b>
Reversing starter	18	220–240	<b>28ARD1X</b>	1 reverse, 1 forward	<b>8TA8DN11</b>
Reversing starter	18	380–415	<b>48ARD1X</b>	1 reverse, 1 forward	<b>8TA8DN11</b>
Reversing starter	25	220–240	<b>28ARD2X</b>	1 reverse, 1 forward	<b>8TA8DN11</b>
Reversing starter	25	380–415	<b>48ARD2X</b>	1 reverse, 1 forward	<b>8TA8DN11</b>
Star Delta starter	18	220–240	<b>28SDA2X18</b>	1 main, 1 star	<b>8TA8DN11</b>
Star Delta starter	18	380–415	<b>48SDA2X18</b>	1 main, 1 star	<b>8TA8DN11</b>
Star Delta starter	25	220–240	<b>28SDA3X25</b>	1 main, 1 star	<b>8TA8DN11</b>
Star Delta starter	25	380–415	<b>48SDA3X25</b>	1 main, 1 star	<b>8TA8DN11</b>
Star Delta starter	32	220–240	<b>28SDA3X32</b>	1 main, 1 star	<b>8TA8DN11</b>
Star Delta starter	32	380–415	<b>48SDA3X32</b>	1 main, 1 star	<b>8TA8DN11</b>
Autoline 4 pole		230–240	<b>228ALCFP</b>	2	<b>8TA8DN11</b>
Autoline 4 pole with rectifier		230–240	<b>228ALCFPR</b>	1	<b>8TA8DN11</b>
Autoline 4 pole		400–415	<b>248ALCFP</b>	2	<b>8TA8DN11</b>
Autoline 2 pole		230–240	<b>228ALCDP</b>	2	<b>8TA8DN11</b>
Autoline 2 pole with rectifier		230–240	<b>228ALCDPR</b>	1	<b>8TA8DN11</b>
Autoline 1 pole and neutral		230–240	<b>228ALCSPN</b>	1	<b>8TA8DN11</b>
Autoline 1 pole and neutral with rectifier		230–240	<b>228ALCSPNR</b>	1	<b>8TA8DN11</b>
Autoline 4 pole		230–240	<b>428ALCFP</b>	2	<b>8TA8DN11</b>
Autoline 4 pole with rectifier		230–240	<b>428ALCFPR</b>	1	<b>8TA8DN11</b>
Autoline 4 pole		400–415	<b>448ALCFP</b>	2	<b>8TA8DN11</b>
Autoline 2 pole		230–240	<b>428ALCDP</b>	2	<b>8TA8DN11</b>
Autoline 2 pole with rectifier		230–240	<b>428ALCDPR</b>	1	<b>8TA8DN11</b>
Autoline 1 pole and neutral		230–240	<b>428ALCSPN</b>	1	<b>8TA8DN11</b>
Autoline 1 pole and neutral with rectifier		230–240	<b>428ALCSPNR</b>	1	<b>8TA8DN11</b>

## Replacement front mounting auxiliary contacts and pneumatic timer for Star Delta

- 1 NO, 1NC lth 10A Ui 600v

For Star Delta	Pneumatic timer Eaton list number	Front mounting auxiliary Eaton list number
28SDA2X18	8TA2DS2	8TA1DN11
28SDA2X25	8TA2DS2	8TA1DN11
28SDA2X32	8TA2DS2	8TA1DN11
48SDA2X18	8TA2DS2	8TA1DN11
48SDA2X25	8TA2DS2	8TA1DN11
48SDA2X32	8TA2DS2	8TA1DN11

## Tightening torques for Star Delta and DOL starters

Starter type	Maximum starter rating (kW)	Relay tightening torque (Nm)		Contactor tightening torque (Nm)	
		Power	Aux	Power	Aux
DOL	9	1.85	1.2	1.7	1.2
DOL	11	1.85	1.2	1.85	1.85
DOL	15	2.5	1.2	2.5	1.2
Star delta	15	1.85	1.2	1.7	1.2
Star delta	22	1.85	1.2	1.85	1.85
Star delta	25	2.5	1.2	2.5	1.2

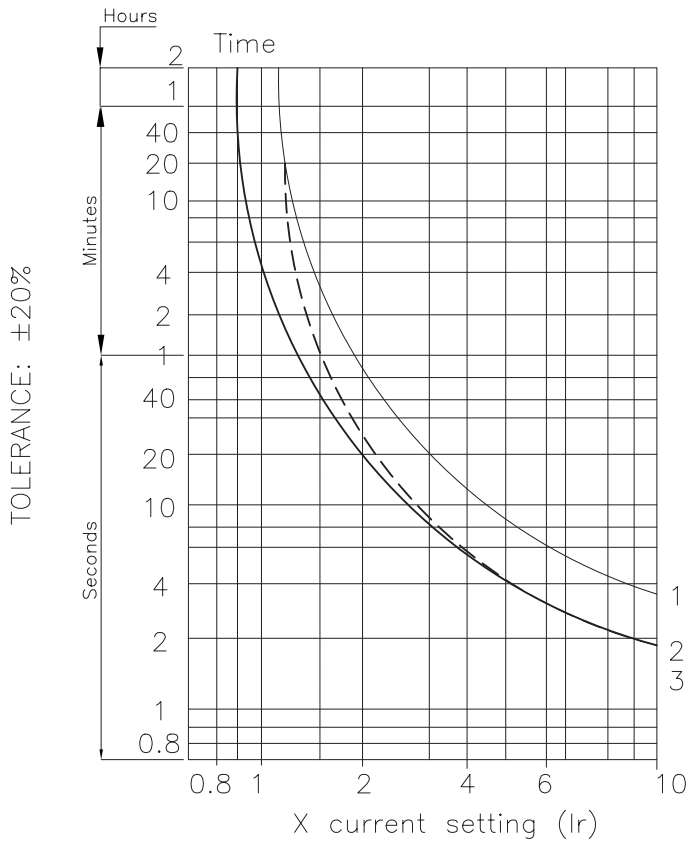
## Tightening torques for Autoline contactors

Starter type	Contactor tightening torque (Nm) Power
228ALCFP	1.7
248ALCFP	1.7
428ALCFP	2.5
448ALCFP	2.5
228ALCFPR	1.7
428ALCFPR	2.5
228ALCDP	3.0
428ALCDP	3.5
228ALCDPR	3.0
428ALCDPR	3.0
228ALCSPN	3.5
428ALCSPN	4.0
228ALCSPNR	4.0
428ALCSPNR	4.0

## Tightening torques for Spare contactors

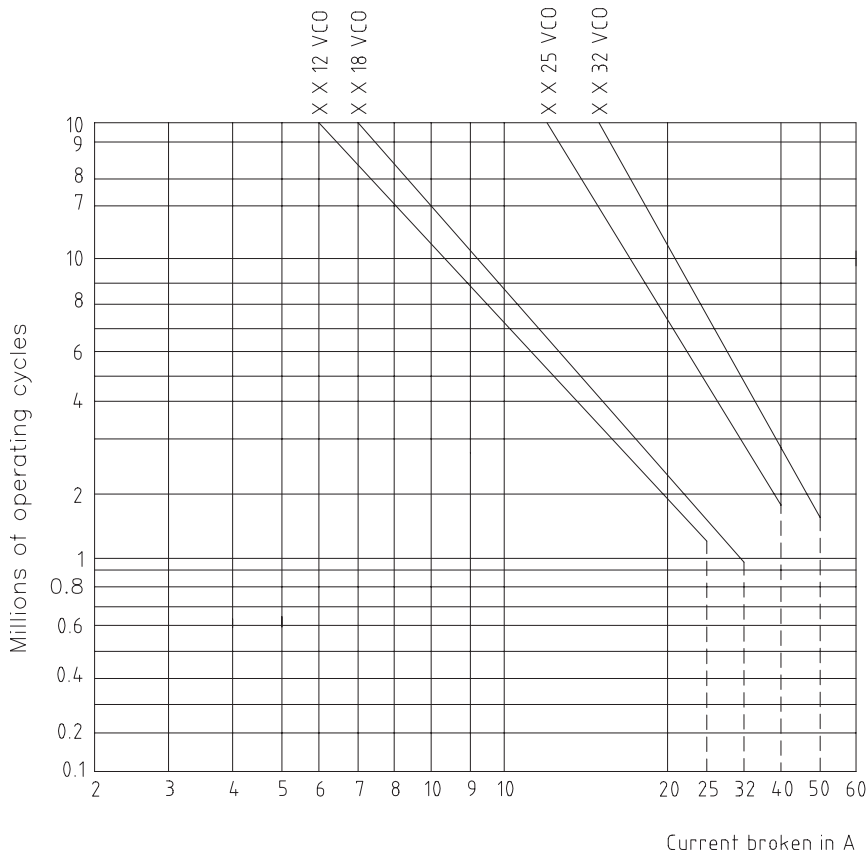
Starter type	Relay tightening torque (Nm)		Contactor tightening torque (Nm)	
	Power	Aux	Power	Aux
2818VCO/SD	1.85	1.2	1.7	1.2
4818VCO/SD	1.85	1.2	1.7	1.2
2825VCO/SD	1.85	1.2	1.85	1.85
4825VCO/SD	1.85	1.2	1.85	1.85
2832VCO/SD	2.5	1.2	2.5	1.2
4832VCO/SD	2.5	1.2	2.5	1.2
2812004VCOA	–	–	1.7	–
4812004VCOA	–	–	1.7	–
2825004VCOA	–	–	1.85	–
4825004VCOA	–	–	1.85	–

## 8TT series, overload relay tripping characteristics

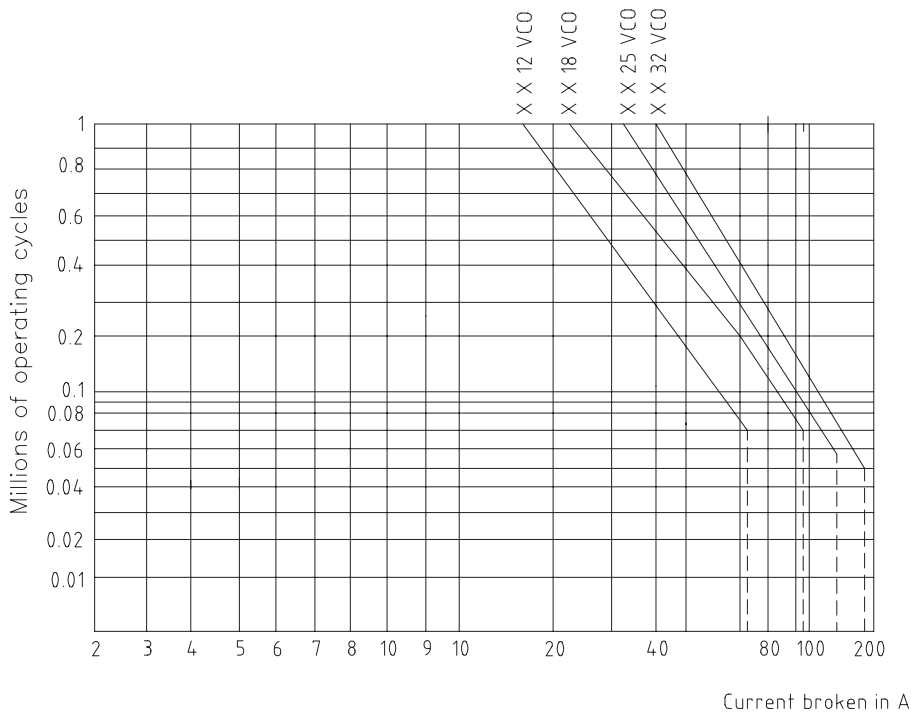


1. ——— Balanced operation, 3-phase, from cold state
2. - - - - - Balanced operation, 3-phase, after a long period at the set current (hot state)
3. ——— Operation following the loss of one phase (single phase tripping) from cold state

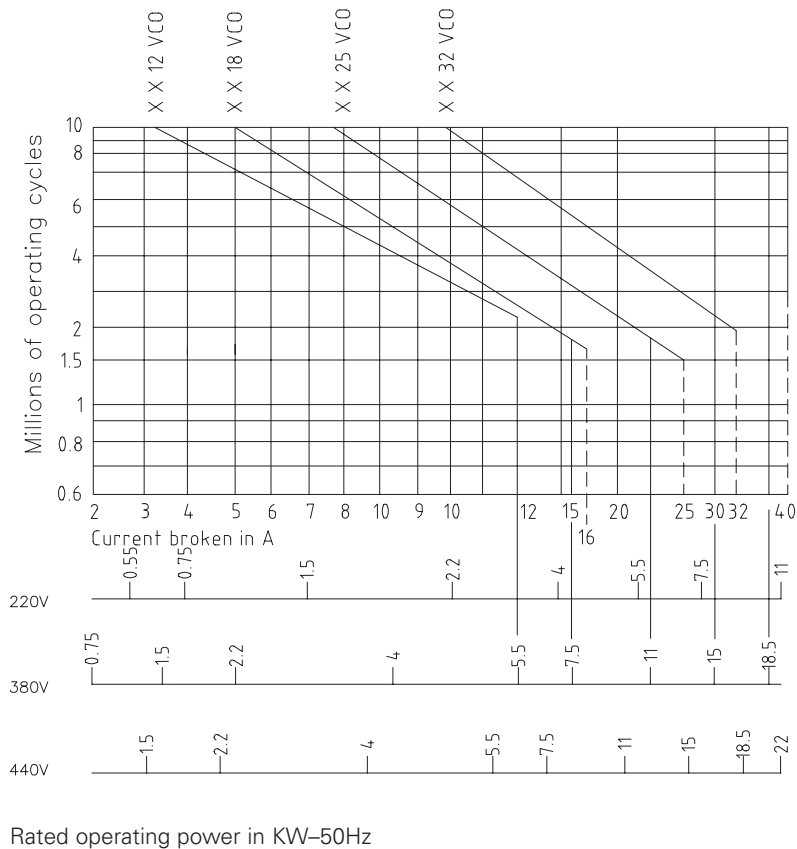
## Contactors utilisation category, AC1 ( $U_e < 440V$ ) Electrical life curve



**Contactor utilisation category, AC2 (Ue < 440v) Electrical life curve**



**Contactor utilisation category, AC3 (Ue < 440v) Electrical life curve**



11kW DOL Reversing starter without switch disconnect	10, 21
15kW DOL Starter with switch disconnect	9, 20
25kW DOL Star Delta Starter without switch disconnect	10, 22
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Local disconnectors	14
MSU pushbutton control units	13
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Replacement contactors, DOL reversing & Star Delta main contactor	11
Replacement contactors, Star Delta, Star contactors	11
Replacement Pneumatic timer, Star Delta Starter	12
Star Delta, phase connected thermal overload relays	10
Technical details	16
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Tightening torques for Autoline contactors	30
Tightening torques for Spare contactors	30

1CSU .....	13	28ARD1X .....	10	8TT91 .....	10
1CSUL .....	13	28ARD2X .....	10	8TT91SD .....	10
1CSUM .....	13			8TT92 .....	10
1CSUWL .....	13	28SDA2X18 .....	10	8TT92SD .....	10
		28SDA3X25 .....	10	8TT93 .....	10
2021RDMP .....	14	28SDA3X32 .....	10	8TT93SD .....	10
2031RDMP .....	14			8TT94 .....	10
2041RDMP .....	14	4021RDMP .....	14	8TT94SD .....	10
204RDMP .....	14	4031RDMP .....	14	8TT96 .....	10
2061RDMP .....	14	4041RDMP .....	14	8TT96SD .....	10
		404RDMP .....	14	8TT98 .....	10
21MSB .....	13	4061RDMP .....	14	8TT98SD .....	10
21MSSU .....	13				
21MSU .....	13	428ALCDP .....	15	PC28G202 .....	14
21MSU2K .....	13	428ALCDPR .....	15	PC28G203 .....	14
21MSU2SK .....	13	428ALCFP .....	15	PC28G204 .....	14
21MSUL .....	13	428ALCFPR .....	15	PC28G206 .....	14
21MSULK .....	13	428ALCFPR .....	15	PC28G252 .....	14
21MSUM .....	13	428ALCSPN .....	15	PC28G253 .....	14
21MSUML .....	13	428ALCSPNR .....	15	PC28G254 .....	14
				PC28G256 .....	14
228ALCDP .....	15	448ALCFP .....	15	PC28G402 .....	14
228ALCDPR .....	15			PC28G403 .....	14
228ALCFP .....	15	4818VCO .....	11	PC28G404 .....	14
228ALCFPR .....	15	4818VCOSD .....	11	PC28G406 .....	14
228ALCSPN .....	15	4825VCO .....	11	PC28G632 .....	14
228ALCSPNR .....	15	4825VCOSD .....	11	PC28G633 .....	14
22MSU .....	13	4832VCO .....	11	PC28G634 .....	14
22MSUL .....	13	4832VCOSD .....	11	PC28G636 .....	14
		4850VCO .....	11		
23MSU .....	13	4850VCOSD .....	11		
23MSUL .....	13				
		48ADS1X .....	9		
248ALCFP .....	15	48ADS2X .....	9		
		48ADS3X .....	9		
2521RDMP .....	14	48ADSA1X .....	9		
2531RDMP .....	14	48ADSA2X .....	9		
2541RDMP .....	14	48ADSA3X .....	9		
254RDMP .....	14	48ADSM1X .....	9		
2561RDMP .....	14	48ARD1X .....	10		
258RDMP .....	14	48ARD2X .....	10		
2812004VCOA .....	15	48SDA2X18 .....	10		
4812004VCOA .....	15	48SDA3X25 .....	10		
2825004VCOA .....	15	48SDA3X32 .....	10		
4825004VCOA .....	15			6321RDMP .....	14
2812004VCOA .....	15			6331RDMP .....	14
4812004VCOA .....	15			6341RDMP .....	14
2825004VCOA .....	15			634RDMP .....	14
4825004VCOA .....	15			6361RDMP .....	14
2812004VCOA .....	15			638RDMP .....	14
4812004VCOA .....	15				
2825004VCOA .....	15	8COIL118 .....	11		
4825004VCOA .....	15	8COIL132 .....	11		
		8COIL218 .....	11		
2818VCO .....	11	8COIL232 .....	11		
2818VCOSD .....	11	8COIL250 .....	11		
2825VCO .....	11	8COIL418 .....	11		
2825VCOSD .....	11	8COIL432 .....	11		
2832VCO .....	11	8COIL450 .....	11		
2832VCOSD .....	11				
2850VCO .....	11	8TA1DN11 .....	12		
2850VCOSD .....	11	8TA8DN11 .....	12		
28ADS1X .....	9	8TT104 .....	10		
28ADS2X .....	9	8TT104SD .....	10		
28ADS3X .....	9	8TT87 .....	10		
28ADSA1X .....	9	8TT88 .....	10		
28ADSA2X .....	9	8TT89 .....	10		
28ADSA3X .....	9	8TT90 .....	10		
28ADSM1X .....	9	8TT90SD .....	10		



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