Enclosed Motor Starters

Installation and Commissioning Instructions

This document applies to following Eaton Electric Motor Starters:

Motor Starter (without Isolator)	Enclosure Material	AC-3 400V Rating	AC-3 400V Rating	AC 230V Rating
		≤4kW 3 Phase (Diagram 1)	≤4kW 3 Phase (Diagram 2)	≤0.75kW 1 Phase (Diagram 3)
Direct-on-Line	Insulated	D4E/I2/3P+N (230V50Hz,240V60Hz)	D4E/I2/3P (400V50Hz,440V60Hz)	D4E/I2/1P+N (230V50Hz,240V60Hz)

IMPORTANT SAFETY INSTRUCTIONS – PLEASE READ

This product should be installed, commissioned and maintained by a competent person in accordance with these instructions, and the appropriate clauses of the current edition of the IET Wiring Regulations (BS 7671).

It is essential that the mains electricity supply that will be, or is currently, connected to this product is isolated before commencing work.

All connections should be made to the product as instructed; field cables should not be stressed, and terminal screws should be fully tightened to the maximum recommended torque values of 1.2Nm.

To avoid risk of fire, do not exceed the maximum rated current of this product.

Please ensure that these instructions are left with the person responsible for the future operation and maintenance of this product.

Notes Specific to Insulated Enclosures

Motor Starters supplied in insulated enclosures are “Totally Insulated” in accordance with BS EN 61439-1:2011. The metal mounting plate and other exposed conductive parts within the enclosure are therefore not earthed.

To maintain total insulation the enclosure must not be pierced by conducting parts such as metallic screws, conduit, cable glands, etc. (See BS7671. IEE Regs. 413-03)

For conduit entry, insulated conduit fittings must be used for attaching plastic or metal conduit to the enclosure, thus avoiding metallic penetration of the enclosure wall.

Where cable entry to the Motor Starter is required to be via metal trunking, this shall be adhered by insulated conduit fittings. Alternatively, where the enclosure is to be butted up to the trunking, an opening should be cut into the wall of the trunking to clear the insulated grommets or glands that must be fitted to the enclosure openings (knockouts). The enclosure must not be attached to the trunking itself unless screws of insulating materials are used.

Enclosures can be cleaned by a mild detergent, always try on sample before use.

These products are supplied without an Overload Relay.
An Overload Relay must be fitted and wired to the Contactor K1M and the flying leads terminated, as indicated elsewhere in this document, before the starter is put into service.
DANGER OF DEATH exists if this instruction is not followed.

Motor Starter Circuit Diagrams

One of these circuit diagrams will apply to this Motor Starter; please note that overload relay is NOT supplied and must be installed separately by the end user. The dashed lines represent the installation of, mains and final control circuit connections to the contactor and the Overload Relay which is available separately. The Incoming Supply Cables are connected directly onto K1M terminals 1, 3, 5, E & N.

Diagram 1
D4E/I2/3P+N (230V50Hz,240V60Hz)

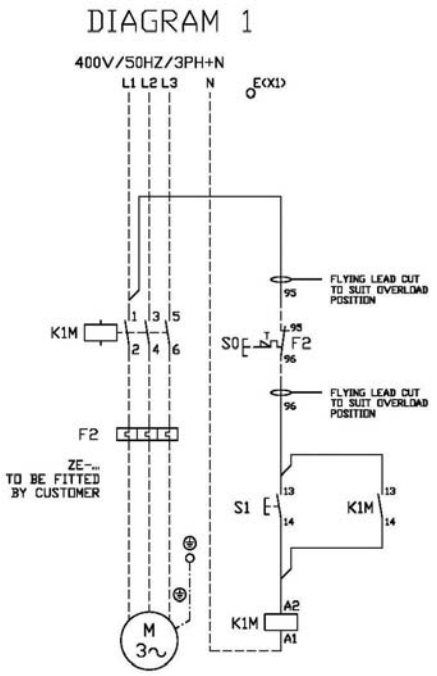


Diagram 2
D4E/I2/3P (400V50Hz,440V60Hz)

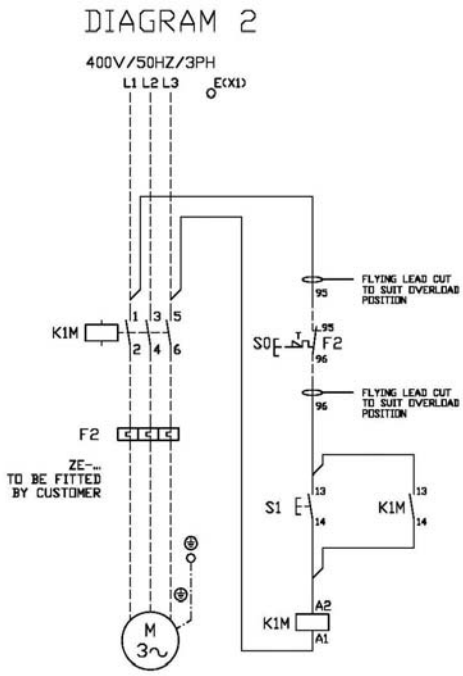
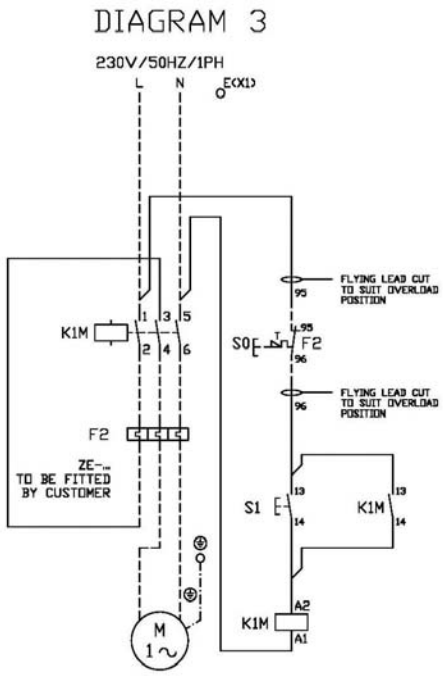


Diagram 3
D4E/I2/1P+N (230V50Hz,240V60Hz)



Key to Notes:

(1) Incoming and motor Earth cable to be connected to terminal marked E.
(2) For 400V 50Hz starter type with 230V Ph–N control voltage supply, wire neutral on ‘A1’ on K1M.

Final Control Cable Connections to Overload Relay

This Motor Starter is not fitted with an Overload Relay at the factory, and therefore the control circuit is not complete. Once an F2 Overload Relay has been installed, the factory cable tails should be terminated according to the appropriate diagram above.

Selection and Setting of Overload Relay

All Overload Relays have an adjustment dial (yellow in colour) marked with the range of motor full load current that can be accommodated by that particular size of relay. The dial should be turned so that the full load current of the motor (obtained from the motor rating label) lines up with the pointer below the dial.

The Overload Relay is supplied set to manual reset operation (H). To obtain automatic reset operation (A), depress and rotate the Hand/Auto plunger (blue in colour) anti-clockwise to the ‘A’ position. The ‘A’ position should not be used with 2-wire control.

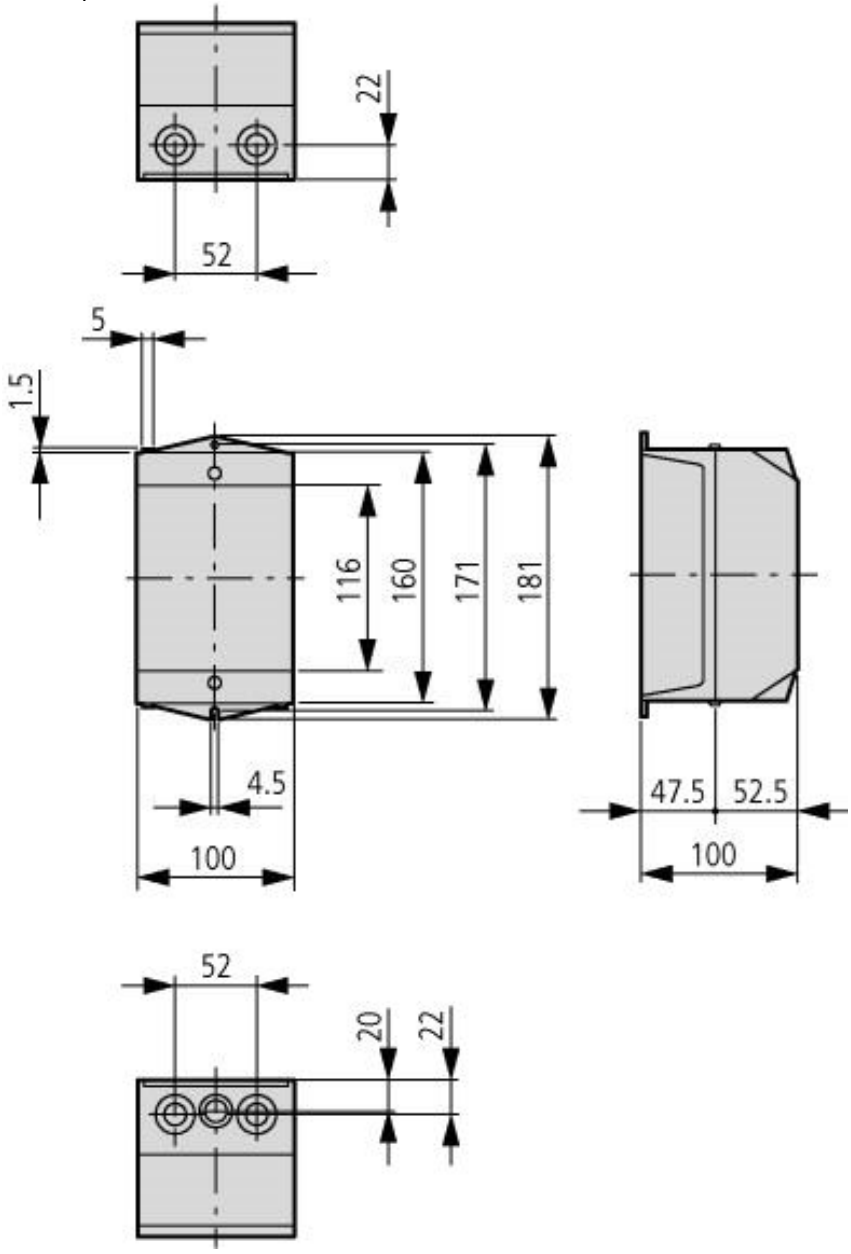
Starter Type	Starter Rating	Typical FLC @400V	Overload Relay	Setting Range	Typical Setting
D4E/I2/3P(+N)(*V,*Hz)	0.05kW	0.1A	ZE0-0.16	0.1-0.16A	0.1A
D4E/I2/3P(+N)(*V,*Hz)	0.06kW	0.21A	ZE-0.24	0.16-0.24A	0.21A
D4E/I2/3P(+N)(*V,*Hz)	0.12kW	0.4A	ZE-0.4	0.24-0.4A	0.4A
D4E/I2/3P(+N)(*V,*Hz)	0.18kW	0.6A	ZE-0.6	0.4-0.6A	0.6A
D4E/I2/3P(+N)(*V,*Hz)	0.25kW	0.8A	ZE-1.0	0.6-1A	0.8A
D4E/I2/3P(+N)(*V,*Hz)	0.37kW	1.1A	ZE-1.6	1-1.6A	1.1A
D4E/I2/3P(+N)(*V,*Hz)	0.55kW	1.5A	ZE-1.6	1-1.6A	1.5A
D4E/I2/3P(+N)(*V,*Hz)	0.75kW	1.9A	ZE-2.4	1.6-2.4A	1.9A
D4E/I2/3P(+N)(*V,*Hz)	1.1kW	2.6A	ZE-4	2.4-4A	2.6A
D4E/I2/3P(+N)(*V,*Hz)	1.5kW	3.6A	ZE-4	2.4-4A	3.6A
D4E/I2/3P(+N)(*V,*Hz)	2.2kW	5A	ZE-6	4-6A	5A
D4E/I2/3P(+N)(*V,*Hz)	3kW	6.6A	ZE-9	6-9A	6.6A
D4E/I2/3P(+N)(*V,*Hz)	4kW	8.5A	ZE-9	8.5A	8.5A

Where (*,*) refers to the available in 230V50Hz, 240V60Hz for 3P+N version only or only 400V 50Hz,440V60Hz coil voltage for 3P version.

Starter Type	Starter Rating	Typical FLC @230V	Overload Relay	Setting Range	Typical Setting
D4E/I2/1P+N(230V50Hz,240V60Hz)	0.07kW	1.1A	ZE-1.6	1-1.6A	1.1A
D4E/I2/1P+N(230V50Hz,240V60Hz)	0.1kW	1.5A	ZE-1.6	1-1.6A	1.5A
D4E/I2/1P+N(230V50Hz,240V60Hz)	0.12kW	1.8A	ZE-2.4	1.6-2.4A	1.8A
D4E/I2/1P+N(230V50Hz,240V60Hz)	0.18kW	2.2A	ZE-2.4	1.6-2.4A	2.2A
D4E/I2/1P+N(230V50Hz,240V60Hz)	0.25kW	2.7A	ZE-4	2.4-4A	2.7A
D4E/I2/1P+N(230V50Hz,240V60Hz)	0.37kW	3.7A	ZE-4	2.4-4A	3.7A
D4E/I2/1P+N(230V50Hz,240V60Hz)	0.56kW	5.2A	ZE-6	4-6A	5.2A
D4E/I2/1P+N(230V50Hz,240V60Hz)	0.75kW	7A	ZE-9	6-9A	7A

Enclosure Detail

Top: 2 off M25/20 Knockouts



Bottom: 2 off M25/20 Knockouts

All dimensions in mm.

Before Commissioning and Operation

All connections of current carrying parts are rated for any load likely to occur during operation and are secured against working loose in the factory. It is possible however that some connections can work loose due to vibrations experienced during shipment; therefore terminal screws on all devices, especially those in the main circuit, should be checked before commissioning.

Maintenance

Check that contactor(s) are free from dust and foreign bodies before energising motor starter. Never lubricate or grease contacts, sliding guides or magnet armatures.

Variations and alternative specifications

For alternative voltages and options please refer to Eaton Technical Support, who are also able to quote for the complete KeyBuild range of Starters, Distribution Boards and Custom Control Panels.

Direct sales ordering

Tel 08700 545 333 Option1
Fax 08700 540 333
Email ukcommorders@eaton.com

Technical support

Tel 08700 545 333 Option 2
Fax 08700 540 333
Email ukcommorders@eaton.com

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