

Enclosed Direct-On-Line Starter User Guide

(0.37kW~5.5kW)



V1.0.0

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Safety Information

This chapter provides very important information so that you can use the **Enclosed Direct-On-Line Starter** safely, prevent injury or death, or damage to equipment. Please read this information thoroughly and make sure you observe all the safety information shown below and elsewhere in this manual. Please make this User Guide available for the end user.

Safety symbols



Danger: Danger of electrical shock which can cause injury or death, or damage to equipment



Warning: Potential hazard, other than electrical, that can cause physical injury or damage to equipment



Danger

- The Enclosed Direct-On-Line Starter should **ONLY** be installed, commissioned and maintained by qualified and competent personnel.
- The Enclosed DOL starter must be installed to the latest IEE wiring regulations taking into account local regulations.
- Dangerous voltages are present when the input power supply is connected to the Enclosed DOL starter. Before attempting any work on the Enclosed DOL starter or motor, isolate and lock off the input power supply. Prove dead using a voltage tester. The voltage tester itself should be proved immediately before and after testing using a proving unit with a low power output.
- The earth terminal of the Enclosed DOL starter must be connected to the system ground. The size of the earth conductor and earth loop impedance must comply with national and local electrical regulations.
- The Enclosed DOL starter is a non-field repairable unit. Contact the supplier of the Enclosed DOL starter.
- The mains supply to the Enclosed DOL starter must be protected by suitable rated fuses/MCBs.



Warning

- All machinery, in which this Enclosed DOL starter is used, within the European Union, must comply with directive 98/37/EC, Safety of Machinery.
- Do not install the Enclosed DOL starter in an explosive environment.
- The motor must be used within the manufacturers guidelines.
- Do not allow conductive material to enter the components within the Enclosed DOL starter, e.g. from drilling during installation.

Technical data

| Model | kW rating | Input phase | Input voltage on main contacts (VAC ±10%) | Max allowed motor current (A) | Motor current (A) (overload range) |
|--------------|-----------|-------------|---|-------------------------------|------------------------------------|
| DOL037EN400V | 0.37 | 3 | 400 | 1.6 | 1.0 to 1.6 |
| DOL075EN400V | 0.75 | 3 | 400 | 2.5 | 1.6 to 2.5 |
| DOL15EN400V | 1.5 | 3 | 400 | 4.0 | 2.5 to 4.0 |
| DOL22EN400V | 2.2 | 3 | 400 | 6.0 | 4.0 to 6.0 |
| DOL30EN400V | 3.0 | 3 | 400 | 8.0 | 5.5 to 8.0 |
| DOL40EN400V | 4.0 | 3 | 400 | 10.0 | 7.0 to 10.0 |
| DOL55EN400V | 5.5 | 3 | 400 | 18.0 | 12.0 to 18.0 |

NOTE: The thermal overload setting is set to minimum as default. It should be adjusted to suit the motor used.

NOTE: The thermal overloads are set to manual reset as standard.

NOTE: The contactor coil is a 400V coil and supplied from two of the input supply phases.

Please note: Starting the motor more than once every 10 minutes will alter the thermal overload tripping characteristic by heating the current sensing elements, making the overload trip more quickly for a given setting.

| Approvals | CE approval | CE |
|--------------------------------|-----------------------|--|
| Environment | Altitude | 1000m rated 1000m~3000m, 1% rated current de-rating per 100m |
| | Operating Temperature | -10°C~+40°C |
| | Max. Humidity | ≤90%RH, non-condensing |
| | Vibration | ≤5.9m/s ² (0.6g) |
| | Storage Temperature | -40°C~+70°C |
| | Running Environment | Non-flammable, No corrosive gasses, no contamination with electrically conductive material |
| Supported Power Supply Systems | | TT & TN |
| Enclosed DOL Enclosure Rating | | IP42 |
| Supply frequency | | 50 to 60Hz |
| Supply voltage | | 3 phase 400VAC ±10% |
| Contactor coil voltage | | 400VAC (+/-10%) |

Enclosed DOL Dimensions

| Dimensions (H x W x D) mm | Weight Kg |
|------------------------------|--------------|
| 150 x 88 x 140 | 0.9 |

DOL Trip Class

The MCW DOL starters are fitted with a **Trip Class 10** thermal overload relay as standard which is suitable for the majority of light to medium industrial type load applications.

The MCW DOL range is not suitable for applications that have a heavy load on start that takes greater than 10s to start or high inertia loads such as high inertia fans, centrifuges or loaded crushers.

Trip Class Explained

At 600% of the maximum current rating of the motor the **Trip Class 10** unit will trip in 10 seconds or less, **Trip Class 20** will trip in 20 seconds or less, and **Trip Class 30** will trip in 30 seconds or less.

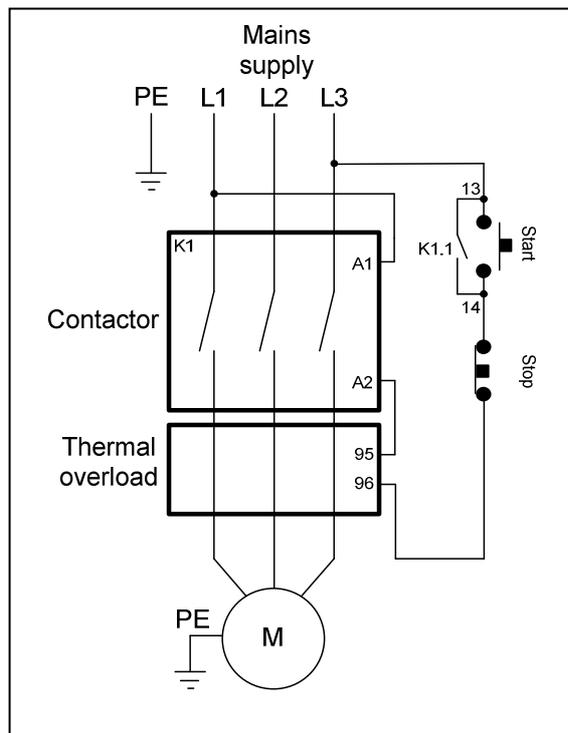
The class number indicates the thermal overload trip characteristics from cold state.

I_r = Current setting of overload relay. This should be the Full Load Current (FLC or FLA) shown on motor rating plate.

| | 1.05 x I_r | 1.2 x I_r | 1.5 x I_r | 7.2 x I_r |
|----------------------|---------------------------------------|-------------|-------------|-------------|
| | Time to trip from a cold start | | | |
| Trip Class 10 | >2 hours | <2 hours | <4 minutes | 2s< to <10s |

Please note: Starting more than once every 10 minutes will alter the thermal overload tripping characteristic by heating the current sensing elements, making the overload trip more quickly for a given setting.

Enclosed DOL Circuit diagram



Other Enclosed Products from Motor Control Warehouse

- **Enclosed Star Delta Starters**, three phase input from 7.5kW to 55kW. Rated for medium industrial loads.

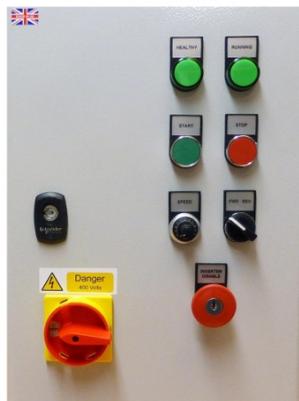


Features

Powder coated steel enclosure
Lockable panel door
Interlocked mains isolator
3 phase MCB - Power
1 phase MCBs - Control
Tri rated cable
Motor outputs to terminals
Terminals for external stop/start
Key release E-Stop button
Adjustable changeover timer
Ingress protection – IP65.

Other Enclosed Products from Motor Control Warehouse

- **Enclosed Inverter Drives**, single phase input from 1.5kW to 4kW. Three phase input from 0.75kW to 22kW.



Features

IP54 robust enclosure
Interlocked isolator
10kA MCBs
Tri rated cable
Keyed Inverter Disable button
IP rated speed pot
Motor connections to terminals
Fwd/Rev switch
Stop/Start buttons
Indication lamps
Thermostat controlled cooling
HD700 industrial inverter

- **Enclosed Soft Starters**, from 7.5kW to 55kW, three phase input. All these products are rated at trip class 10 (medium industrial loads).



Features

3 phase MCB
Control MCBs
Interlocked mains isolator
Motor thermal overload
Bypass contactor
Stop/start pushbuttons
Keyed soft stop button
Running and healthy lamps
Customer terminals
IP65 Steel enclosure
24Vdc power supply
Tri rated cable
Fairford Electronics DFE Soft