SAFETY NOTES

1. Eurotherm shall not be held responsible for any damage, injury, losses or expenses caused by inappropriate use of the product or failure to comply with this manual
2. Accordingly the user is responsible for checking, before commissioning the unit, that all the nominal characteristics correspond to the conditions under which it is to be installed and used
3. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment might be impaired.
4. The product must be commissioned and maintained by suitably qualified personnel, authorized to work in an industrial low voltage environment.
5. BRANCH-CIRCUIT PROTECTION AND SAFETY OVERLOAD PROTECTION
   This product does not contain any branch-circuit protection or internal safety overload protection. It is the responsibility of the user to add branch-circuit protection upstream of the unit. It is also the responsibility of the user to provide external or remote safety overload protection to the end installation. Such branch-circuit and safety overload protection must comply with applicable local regulations.
   UL: The above mentioned branch-circuit protection is necessary for compliance with National Electric Code (NEC) requirements
6. If opening of the branch circuit protective or the supplemental fuses (high speed fuse) the product (Epack) shall be examined and replaced if damaged.
7. The product (Epack) is not suitable for isolation applications, within the meaning of EN60947-1.
8. The instrument shall have one of the following as a disconnecting device, fitted within easy reach of the operator, and labelled as the disconnecting device.
   a. A switch or circuit breaker which complies with the requirements of IEC60947-1 and IEC60947-3
   b. A separable coupler which can be disconnected without the use of a tool.
9. EPack alarms protect thyristors and loads against abnormal operation, and provide the user with valuable information regarding the type of fault. Under no circumstances should these alarms be regarded as a replacement for proper personnel protection. It is strongly recommended that the installing authority include independent, system-safety mechanisms to protect both personnel and equipment against injury or damage, and that such safety mechanisms be regularly inspected and maintained. Consult the EPack supplier for advice.
10. Units are designed to be installed in a cabinet connected to the protective earth according to IEC60364-1 and IEC60364-5-54 or applicable national standards.
11. The cabinet must be closed under normal operating conditions. Adequate air conditioning/ filtering/ cooling equipment must be fitted to the cabinet in order to prevent the ingress of conductive pollution, the formation of condensation etc.
12. We recommend fitting fan-cooled cabinets with a fan failure detection device or a thermal safety cut-out
13. Before any other connection is made, the protective earth terminal shall be connected to a protective conductor. Wire conductor cross sections must comply with table 9 of IEC60947-1 or NEC Article 310 Table 310-16. U.L.: The earth connection must be made using a Listed ring type crimp. Used cables must be rated 90°C stranded copper only
14. The earth connection should be tightened at the torque defined in table 2-1. It is recommended to perform regular inspection of the earth tightening
15. Any interruption of the protective conductor inside or outside the apparatus, or disconnection of the protective earth terminal is likely to make the apparatus dangerous under some fault conditions. Intentional interruption is prohibited.
    Whenever it is likely that protection has been impaired, the unit shall be made inoperative, and secured against accidental operation. The manufacturers nearest service centre should be contacted for advice.
16. Before carrying out any wiring to the unit it must be ensured that all relevant power and control cables, leads or harnesses are isolated from voltage sources.
17. Power connections. Wire conductor cross sections must comply with table 9 of IEC60947-1 or NEC Article 310 Table 310-16. Used cables must be rated 90°C stranded copper only.
18. Power terminals should be tightened according to the torque values defined in table 2-1. It is recommended to perform regular inspection of the power terminals tightening.
19. The cable use to connect auxiliary supply should be correctly protected by a branch-circuit protection. It is the responsibility of the user to add branch-circuit protection. Such branch-circuit must comply with applicable local regulations.
20. To comply with safety requirements, the 24V auxiliary supply must be derived from a SELV or PELV circuit
21. The 85Vac to 550Vac auxiliary supply shall be protected by supplemental fuse ATM2 rated 600Vac/dc, 2A by MERSEN/Ferraz Shawmut (E33925). The maximum voltage between any pole of the power supply and terminals 1/ L1, N/L2 should be lower than 550Vac. The maximum voltage between any pole of the power supply and earth should be lower than 550Vac (rated insulation voltage 500V)
22. For safety reasons, opening the unit is strictly forbidden.
23. Units are designed to be mounted vertically. There must be no obstructions (above or below) which could reduce or hamper airflow. If more than one set of units is located in the same cabinet, they must be mounted in such a way that air from one unit is not drawn into another.
24. Under some circumstances, the power module heatsink temperature may rise above 50 degrees Celsius and it can take up to 15 minutes to cool after the unit is shut down. If operators are likely to come into contact with such heatsinks, adequate warnings and barriers must be put in place in order to prevent injury.
25. To reach the thermal performance the gap between two Epack units should be at minimum 10mm
26. Signal and power voltage wiring must be kept separate from one another. Where this is impractical, shielded cables should be used for the signal wiring.
27. To ensure that EPack comply with Electromagnetic Compatibility requirements, ensure that the panel or DIN rail to which they are attached is correctly grounded. The ground connection, designed to ensure ground continuity, is not in any way a substitute for the protective earth connection.
28. This product has been designed for environment A (Industrial). Use of this product in environment B (domestic, commercial and light industrial) may cause unwanted electromagnetic disturbances in which cases the user may be required to take adequate mitigation measures.

SELV is defined (in IEC60947-1) as an electrical circuit in which the voltage cannot exceed 'ELV' under normal conditions or under single fault conditions, including earth faults in other circuits. The definition of ELV is complex as it depends on environment, signal frequency, etc. See IEC 61140 for further details.

The I/O connector (5-way) & EPack supply (24V ac/dc) (2-way) are compliant to the SELV requirements.

The alarm relay terminal block named ALR is compliant to the SELV requirements; it can be connected to SELV or to voltage up to 230V (Rated insulation voltage Ui : 230V)

EPack™

Eurotherm by Schneider Electric

Power Controller

DVD CONTENTS AND INSTALLATION

Product documentation. The documentation on this DVD is in pdf format which requires the use of Adobe® Acrobat® 4.0 or later to view it. The English language version of Adobe Acrobat 4.0 for Microsoft® Windows® may be installed from this DVD.

DOCUMENTATION

EPack Controller User Guide HA031414

Eurotherm: International sales and support www.eurotherm.com

Contact Information

Eurotherm Head Office
Faraday Close,
Durrington,
Worthing, West Sussex,
BN13 3PL

Sales Enquiries
T +44 (01903) 695888
F 0845 130 9936

General Enquiries
T +44 (01903) 268500
F 0845 265982

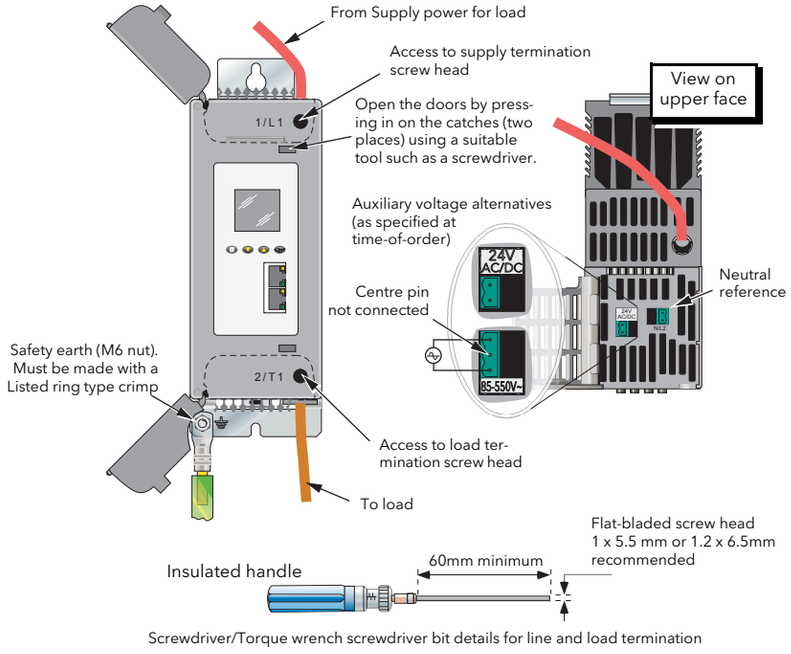
Worldwide Offices
www.eurotherm.com/worldwide

Scan for local contacts

HA032269ENG issue 2 June 2016 (CN34584)

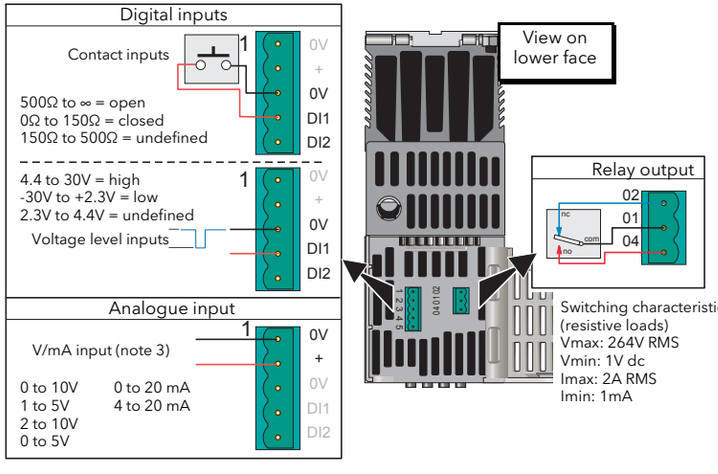
ELECTRICAL INSTALLATION

SUPPLY WIRING



Screwdriver/Torque wrench screwdriver bit details for line and load termination

IO WIRING



Notes:
1. DI1 shown; DI2 similar
2. DI1 and DI2 can both be contact inputs or both be voltage inputs or be one of each.
3. Analogue input type (Volts or mA) is selected in I/O Analogue IP configuration. When a mA range is selected, a suitable shunt resistor is automatically connected into circuit. It is thus unnecessary for the user to fit external components.
4. Use 0.6 x 3.5 mm screwdriver for pluggable connectors

Supply cable sizes and torques

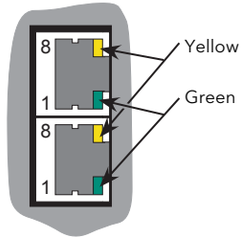
Terminals	Terminal capacity		Wire Type	Torque
	mm²	AWG		
Supply voltage (1/L1) and Load supply (2/T1)	10 mm² to 50 mm²	AWG 8 to AWG 2/0	Stranded copper rated 90°C	5.6 Nm (50 Lb.inch.)
Safety earth	M6 ring-type crimp terminal U.L. : Listed ring-type crimp terminal must be used			5.6 N.m (50 Lb.inch.)
Phase reference (N/L2) (2-way) Supply (24V ac/dc) (2-way) Supply (85V-550Vac)(3-way) I/O connector (5-way) Relay connector (3-way)	0.25 mm² to 2.5 mm²	AWG 24 to AWG 12	Stranded copper rated 75°C	0.56 Nm (5 lb. inch)

Warning: Connection of 2 conductors in the same terminal is not allowed.

COMMUNICATIONS WIRING

Pin	Signal
8	Not used
7	Not used
6	Rx-
5	Not used
4	Not used
3	Rx+
2	Tx-
1	Tx+

LEDs:
Green = Tx activity
Yellow = Connected



SPECIFICATION

STANDARDS

EN60947-4-3:2000 + A1:2006 + A2 :2011 (Low-voltage switchgear and controlgear -Part 4-3: Contactors and motor-starters - AC semiconductor controllers and contactors for non-motor loads (identical to IEC60947-4-3:2014)
UL60947-4-1 CAN/CSA C22.2 NO.60947-4-1-14 Low-Voltage Switchgear and Controlgear - Part 4-1: Contactors and Motor-Starters - Electromechanical Contactors and Motor-Starters
Russian Approvals: EAC approval and Pattern Approval

INSTALLATION CATEGORIES

General installation category details are summarized in the table below.

	Installation category	Rated impulse withstand voltage (Uimp)	Rated insulation voltage
Communication	II	0.5 kV	50V
Standard IO	II	0.5 kV	50V
Relays	III	4 kV	230V
Module power	III	6 kV	500V

PHYSICAL

Dimensions and fixing centres — See figures below for details
Weight — 80 and 100A units — 1800g + user connectors
125A units — 2500g + user connectors

EMC

EMC immunity tests — EN60947-4-3:2000 + A1:2006 + A2 :2011 & EN60947-4-3:2014
EMC emission tests — EN60947-4-3:2000 + A1:2006 + A2 :2011
This product has been designed for environment A (Industrial). Use of this product in environment B (domestic, commercial and light industrial) may cause unwanted electromagnetic disturbances in which case the user may need to take adequate mitigation measures

POWER (at 45°C)

Voltage range — Load: — 100 to 500V (+10% -15%)
auxiliary: — 24V ac/dc (+20% -20%) or 100 to 500V (+10% -15%)
Frequency range — 47 to 63 Hz for load and ac auxiliary supplies)
Power requirement — 24V dc supply: — 12W
24V ac supply: — 18VA
500V ac supply: — 20VA

WARNING
For 24V supplies: in order to comply with safety requirements, the supply voltage must be derived from a SELV or PELV circuit.

Installation category — See adjacent table.
Nominal load current — 80 to 125Amps
Short circuit protectionby — external supplemental fuses (high speed fuse) see User Manual
Rated short-circuit conditional current — 100kA (co-ordination type 1)
Pollution degree — Pollution degree 2
Utilization categories (Load types) — AC51: Non-inductive or slightly inductive loads, resistance furnaces
AC56a: Transformer Primary or MOSI (Molybenum Silicide) Time temperature dependant loads (Silicon Carbide, Carbon)

Duty cycle — **Uninterrupted duty / continuous operation**
Load Types — Single phase control of resistive loads (low/high temperature coefficient and non-ageing/ageing types) and transformer primaries.
Overload conditions — AC51: 1xle continuous

OPERATOR INTERFACE

Display — 1.5" square TFT colour display allowing viewing of selected parameter values in real time, plus configuration of instrument parameters for users with adequate access permission.
Pushbuttons — Four push buttons provide page, item entry and scroll facilities.

ENVIRONMENT

Temperature limits — Operating: — 0°C to 45°C at 1000m, 0°C to 40°C at 2000m
Storage: — -25°C to +70°C
Altitude — 1000m maximum at 45°C, 2000m maximum at 40°C.
Humidity limits — 5% to 95% RH (non-condensing)
Protection — CE: — IP20 (EN60529) see IP20 warnings
UL: — Open Type
Atmosphere — Non-explosive, non-corrosive, non-conductive
External wiring — General: — Must comply with IEC60364-1 and IEC60364-5-54 and all applicable local regulations. Cross sections must comply with table 9 of IEC60947-1
UL: — Must comply with NEC and all applicable local regulations. Cross sections must comply with NEC, Article 310 Table 310-16. Temperature rating: Power conductors: 90°C; other wires: 75°C
Shock — To (EN60068-2-27) and IEC60947-1 Annex Q
Vibration (EN60068-2-6) — To (EN60068-2-6) and IEC60947-1 Annex Q

IP20 WARNINGS

1. In order to maintain IP20 protection, the stripped length of the power cables (1/L1 and 2/T1) must be adapted according to the insulation thickness.
2. If the upper and/or lower access door is open, the product protection is IP10.
3. If the N/L2 connector is removed, IP20 rating is not guaranteed.
4. Breakaway features have been designed into the product especially to improve the IP20 rating. These features should be removed only for cable cross sections of 50mm^2 or more.

SYMBOLS USED IN THE INSTRUMENT LABELLING

One or more of the symbols below may appear as a part of the instrument labelling

	Protective conductor terminal		Risk of electric shock
~	AC supply only		Precautions against static electrical discharge must be taken when handling this unit
c UL us LISTED 74B5 E86160	Underwriters Laboratories listed mark for Canada and the US		Refer to the manual for instructions
	Do not touch Heatsink Hot Surface	CE	Declaration of conformity to European standard

RoSH

部件名称 Part Name	有害物质 - Hazardous Substances 铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
金属部件 Metal parts	O	O	O	O	O	O
塑料部件 Plastic parts	O	O	O	O	O	O
电子件 Electronic	X	O	O	O	O	O
触点 Contacts	O	O	O	O	O	O
线缆和线缆附件 Cables & cabling accessories	O	O	O	O	O	O

本表格依据SJ/T11364的规定编制。
O: 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。
X: 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。

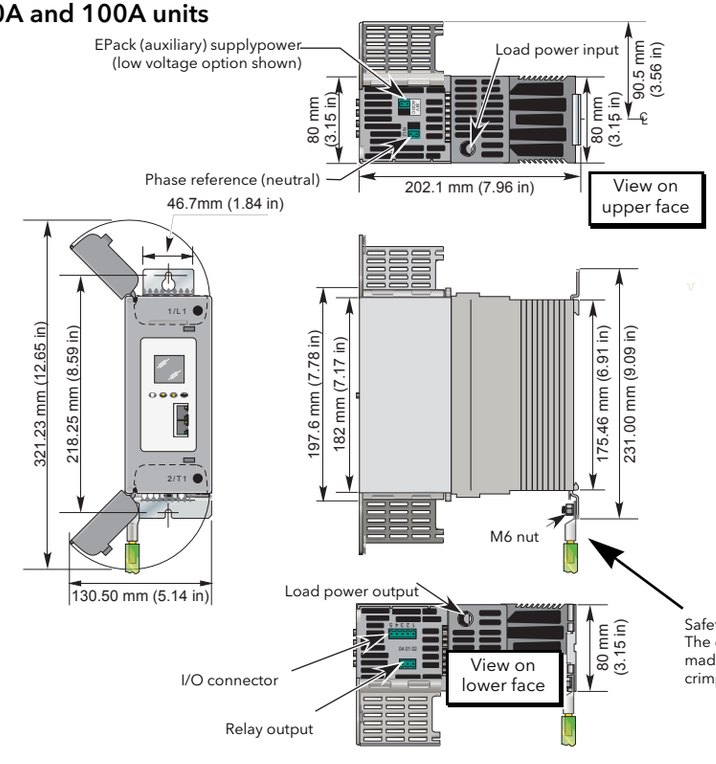
This table is made according to SJ/T 11364.
O: indicates that the concentration of hazardous substance in all of the homogeneous materials for this part is below the limit as stipulated in GB/T 26572.
X: indicates that concentration of hazardous substance in at least one of the homogeneous materials used for this part is above the limit as stipulated in GB/T 26572

Signed (Kevin Shaw, R&D Director): K Shaw Date: 24th June 2016

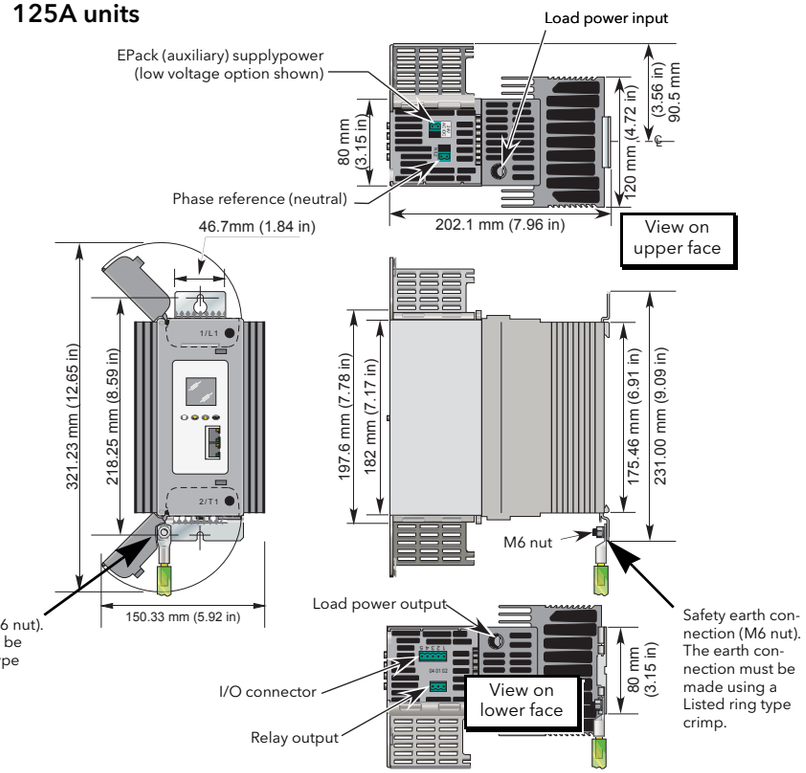
The data shown here is related to the China RoHS 2.0 Administrative Measures for the Restriction of Hazardous Substances in Electric Appliances and Electronic Products released January 21st 2016.

MECHANICAL INSTALLATION

80A and 100A units



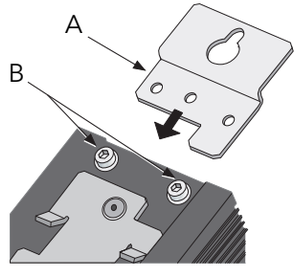
125A units



MOUNTING

BULKHEAD MOUNTING

For Bulkhead mounting, fit the upper bracket 'A' to the rear of the unit by removing screws 'B' and associated shakeproof washers, offering the bracket up to the unit, and then securing it using screws 'B' ensuring that the bracket is correctly oriented (as shown) and that the shakeproof washers are fitted between the screw head and the bracket. The relevant screwdriver should have a 3mm AF hexagonal bit. The recommended tightening torque is 1.5Nm (13.3 lb. in).



DIN RAIL MOUNTING

These units can be mounted using two horizontal, parallel, 7.5 mm or 15 mm DIN rails, as shown below.