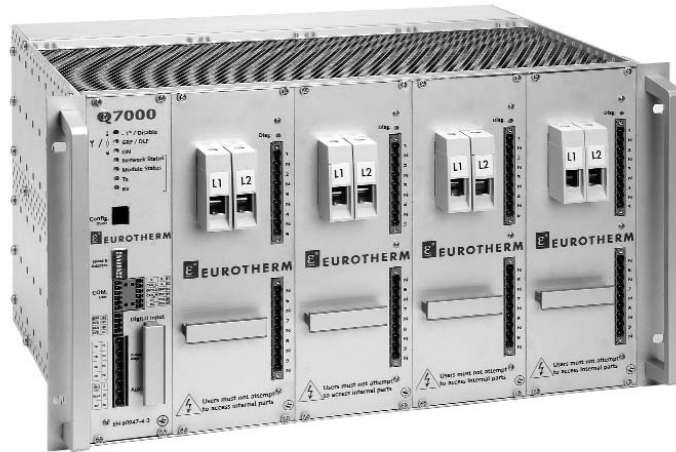# Q7000

MODEL

Multi Channel Power Controller
Technical Specifications

Ideal for :

- **Plastic extrusion**
- **Thermoforming**
- **Ovens**
- **Trace Heating**
- **Moulding**
- **Gilding**
- **Drying**
- **Blowing**
- **Windscreen bending**

Features :

- **11 amps at 45°C**
- **Heater failure detection**
- **Current monitoring**
- **Communications ModBus, ProfiBus DP**
- **RJ11 configuration port**
- **Power, current and voltage control**
- **Adjustable burst firing mode**

The Q7000 is a compact power unit with high performance for your multizones process.

An innovative solution for your multichannel applications
The Q7000 is a 19" x 6U rack with one driver module and four power modules, with nine channels each, allowing to control 9, 18, 27 or 36 channels reducing the space used per channel.

A global installation cost reduction of 30%
Rapid and simple commissioning
Reduced size
Wiring economy (no internal wiring)
Driver and power modules are unpluggable from the rack

Optimization of your process
Due to high performance :
Control, Alarms, Diagnosis, and digital communication

The Q7000 is available in different formats
Rack (up to 36 channels)
Cabinet (up to 3 racks per cabinet, 108 channels)

Advanced monitoring functions
- The Q7000 allows load monitoring on each 36 channels with a sensitivity on the partial load failure of one element out of two connected in parallel.
- With the digital communication , the 36 load currents and many other parameters are available.

Simplified maintenance and productivity gain
- Power boards pluggable, with connection on the backplane
- Available Diagnosis per channel:
  - Over temperature
  - Thyristor short circuit
  - Partial load failure or total load failure
- Real time fault indications
- Front panel LEDs
- Remote load state
- Digital communication

**Easy configuration and commissioning, using the digital communication**

The Q7000 has two communication ports :

■ Configuration port :
- using the configuration software iTools (ModBus), used with all the Eurotherm instruments. The Q7000 can be configured in accordance with the process : control, firing mode, PLF settings.
- Your configurations can be loaded or cloned from a PC or a PLC, using this port.

■ User port :
The Q7000 unit and the controlled loads status can be monitored at any time using this port. The communication protocols available are ModBus and ProfiBus DP.
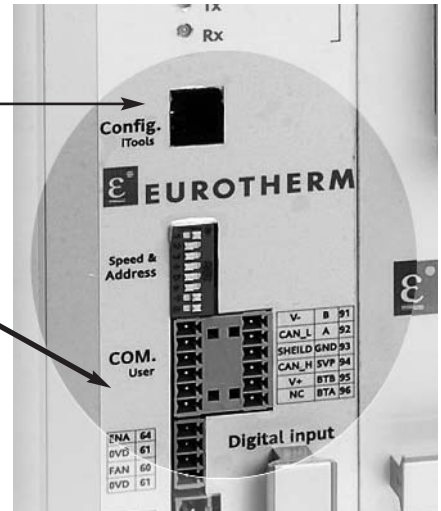
Configuration using iTools

The configuration software, iTools, allows a rapid and simple access to all the parameters : of the unit and each one of the 36 channels.
Each channels are independent from one another and all of them can have different settings : calibration, setpoint, firing mode, limitation...
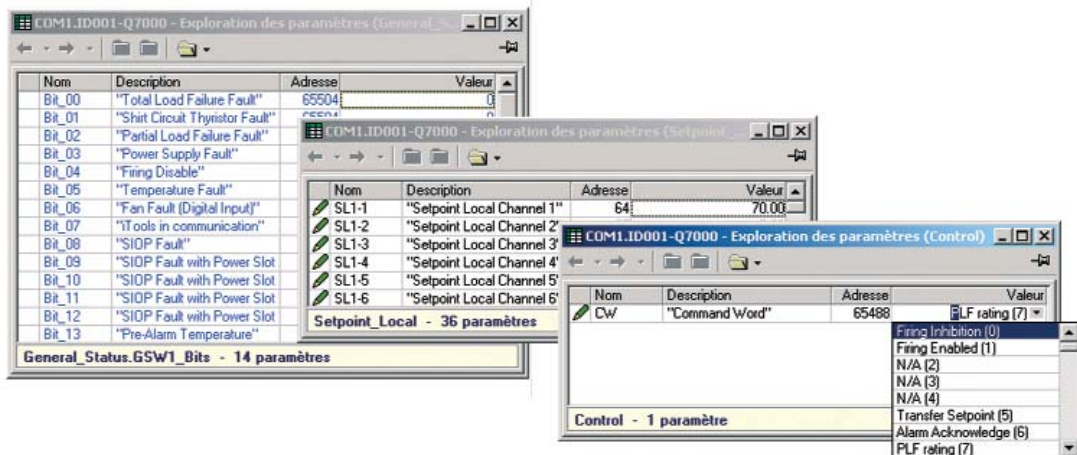
Cabinet installation

Eurotherm innovates and can also offer the complete mounting solution into a cabinet.

Configuration port

iTools
Local config.
Diagnostic work station

Up to 3 Q7000 per cabinet

Up to 108 channels per cabinet entirely wired, ventilated or water cooled (option).

Filters clogging detection systems and integrated temperature pre-alarm.

Ventilation Racks
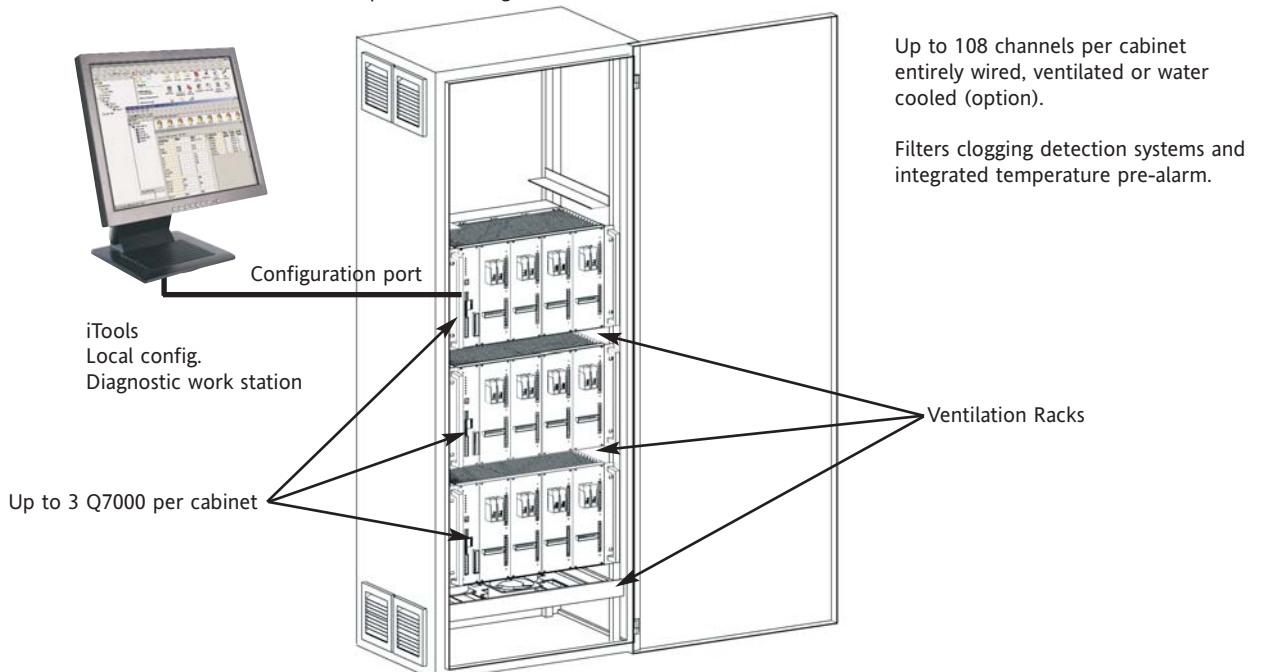
TECHNICAL SPECIFICATION

Product standard Q7000 products comply with the terms of product standard EN 60947-4-3 'Contactors and motor-starters - AC semiconductor controllers and contactors for non-motor loads'.

CE labeling Compliance with the essential requirements of the European Low Voltage Directive and the Electromagnetic Compatibility Directive

Environment
Use 0 to 40 °C at nominal current of 11 amps or 0 to 60 °C at nominal current of 5.5 amps max. altitude 2000 m.
Storage -10°C to +70°C.
Pollution Degree 2 acceptable (defined by IEC 664).
Humidity 5% to 95% RH non-condensing, non-streaming.

Power
Nominal current 11A at 45 °C - derated 5,5 A for 60 °C,
Nominal voltage 230 V or 115 V (+10 % ; -15 %) standards. For other voltages (24V, 48V and 63.5V) please contact Eurotherm.
Frequency Use from 47 to 63 Hz (automatic matching)
Dissipated power ≈ 1.3 W per amp and per phase.
Cooling Ventilation rack. 115 V or 230 V - 10 VA. (Water cooling available for condition of use different than those indicated - Contact Eurotherm)
Load Single-phased load, distributed among one, two or three phase according to the customer choice
Category of use AC-51. Resistive load with low temperature coefficient.

Protection Triacs protection by RC snubbers (each) and by fuse on each line inside the rack. Protection of the product by Varistors.

Supply External power supply (115 V or 230 V ; +10%; -15%) Consumption : 100 VA.

Firing modes
Zero crossing firing 'Burst mode' : base time 16 or 64 cycles. 'Single-cycle' : base time 1 cycle Digital Communication configuration.

Control
Control type Voltage squared (V2), Current squared (I2), Power (V x I), Open Loop, Voltage (Vrms) or Current (Irms).
Linearity ±1 % (Balanced load and supply)
Stability ±1 % (supply variation from +10 % to -15%)
Accuracy ±1 % (Balanced load and supply)

Alarms
Serious alarms (GRF option) Total load failure and thyristor short circuit detection Signalling : Red 'GRF' LED and alarm relay contact
Diagnostic alarm (DLF option) Partial load failure detection. Signalling : Orange 'DLF' LED and alarm relay contact
Sensitivity (for each phase) Detects the failure of at least one heating element for two identical elements mounted in parallel. The DLF option includes Serious alarm monitoring
Over-temperature For all units, the unit cuts out if the temperature alarm threshold is exceeded. Signalling :Red 'T°' LED and alarm relay contact

Alarm relay The relay contact (0.25 A/230 Vac; 32Vdc) is either open on alarm or closed on alarm depending on the product code.

User Communication
Protocol ModBus RTU and ProfiBus
Transmission Standard RS485, 2 wires (A and B)
ModBus Protocol
Transmission speed 9600 to 19200 bauds (dip swith 1),
Address Switches from 1 and 127
ProfiBus Protocol The Profibus communication protocol specifications are defined by the EN 50170 / DIN 19245 / Part3 directives.
*DeviceNet Protocol** * Contact Eurotherm

Configurator port
Protocol ModBus
Transmission Standard RS232, 3 wires (Rx, Tx and GND)
Transmission speed 19200 bauds
Address 1 by default
Connection RJ11 connector

Protection
Electrical protection IP 20 protection without any added protections.
Over-voltage Over-voltage category 2

Dimensions
Rack Height : 6 U (265,9 mm) Width : 19'' (482,6 mm) Depth : 295 mm Weight : 10 kg (max).
Cabinet Height : ≤ 2 m Width : 400 mm Depth : 600 mm Mounting from 1 to 3 racks into a cabinet.

CONTROL AND POWER CONNECTIONS

CONTROL TERMINALS

Terminal	N°	\multicolumn{2}{DeviceNet (DVN)}	ModBus or ProfiBus (MOP / PFP)	

Terminal	N°	Label	Purpose	Label	Purpose
COM. User	91	**V-**	CAN low supply	**B**	- Tx /Rx
	92	**CAN_L**	- Tx /Rx	**A**	+ Tx / Rx
	93	**SHIELD**	Shield	**0VP**	0 V
	94	**CAN_H**	+ Tx / Rx	**5VP**	+ 5 V
	95	**V+**	CAN high supply	**BTB**	Line B Adaptation
	96	**NC**	Not connected	**BTA**	Line A Adaptation

Terminal	N°	Label	Purpose	Capacity
Aux	7		NC	2.5 mm²
	16	Vaux	Aux. external supply 230V	13 AWG
	18	0V	Neutral	
Digital input	64	ENA	Enable	2.5 mm²
	62	FAN	Ventilator	3 AWG
	61	0Vd	0 Volts	
Output Relay	71	1a	Contact	
	72	1b	Contact	2,5 mm²
	81	2a	Contact	13 AWG
	82	2b	Contact	

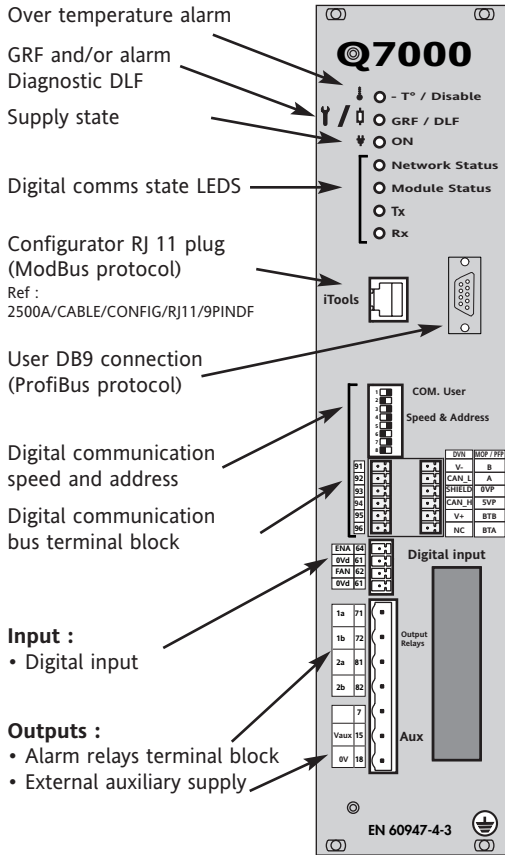Note : NC or NO contact (see code)

POWER TERMINALS

Power terminal supply side
Rating 100 A under 230 V supply
Terminal capacity from 16 mm² / 5 AWG to 35 mm² / 2 AWG
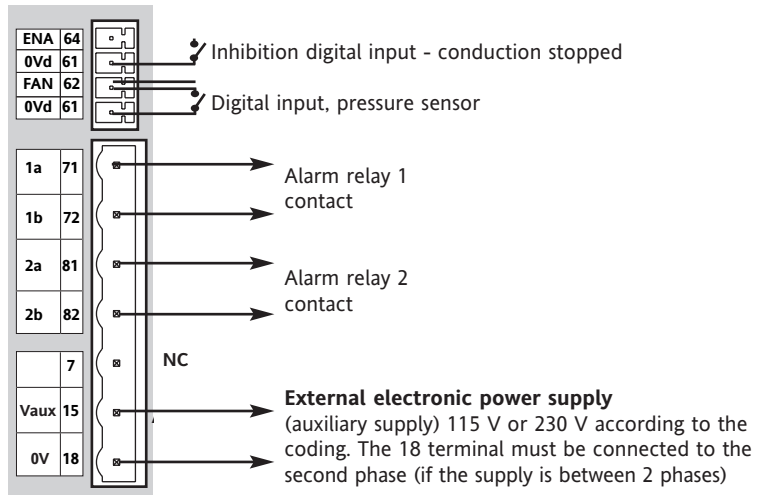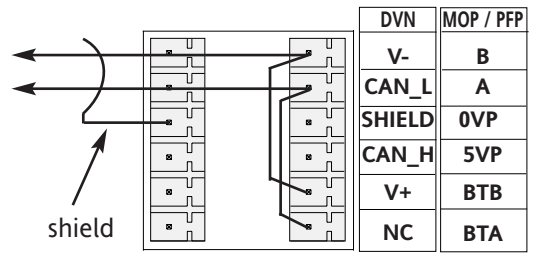**Clamping torque** 3.8 Nm

Power terminal load side
Rating 11 A under 230 V supply
Terminal capacity from 2.5 mm² / 13 AWG
Clamping torque 1.2 Nm

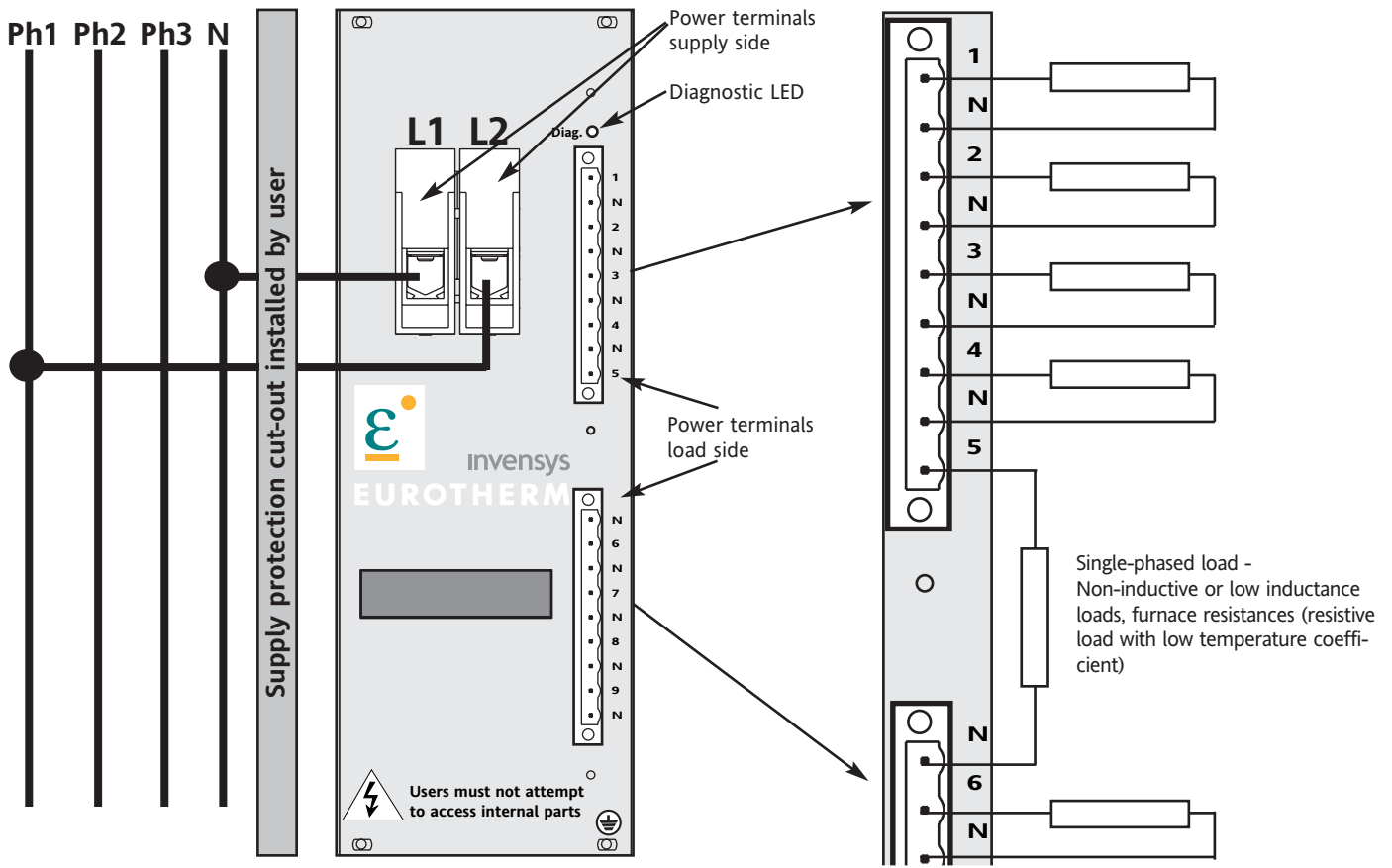Conductor cross-sections should comply with the IEC 943

CONTROL CONNECTION DIAGRAM

Q7000

- Over temperature alarm
- GRF and/or alarm Diagnostic DLF
- Supply state

- ♨ ○ - T° / Disable
- ⚙ / ○ ○ GRF / DLF
- ⚡ ○ ON
- ○ Network Status
- ○ Module Status
- ○ Tx
- ○ Rx

- Digital comms state LEDS

- Configurator RJ 11 plug (ModBus protocol)
  Ref : 2500A/CABLE/CONFIG/RJ11/9PINDF

iTools

- User DB9 connection (ProfiBus protocol)

COM. User
Speed & Address

- Digital communication speed and address
- Digital communication bus terminal block

	DVN	MOP / PFP
91	V-	B
92	CAN_L	A
93	SHIELD	0VP
94	CAN_H	5VP
95	V+	BTB
96	NC	BTA

ENA	64
0Vd	61
FAN	62
0Vd	61

Digital input

Input :
- Digital input

1a	71
1b	72
2a	81
2b	82

Output Relays

	7
Vaux	15
0V	18

Aux

Outputs :
- Alarm relays terminal block
- External auxiliary supply

EN 60947-4-3

Digital communication wiring RS 485 ModBus and ProfiBus protocols
Note : For DeviceNet protocol, contact Eurotherm

shield

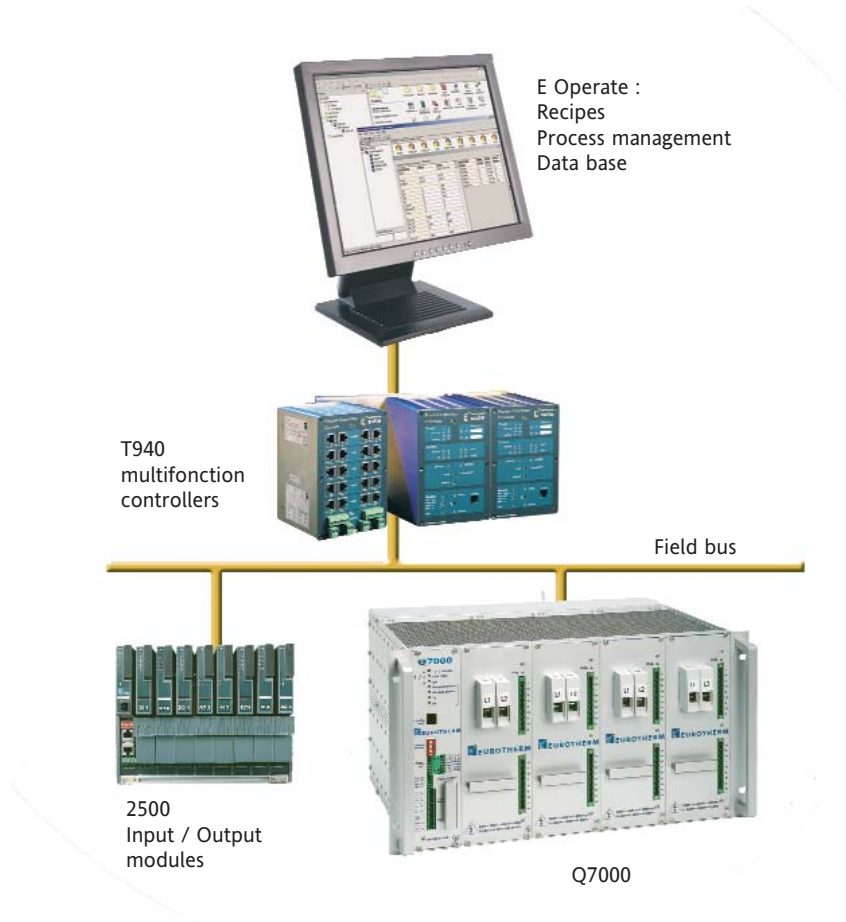| DVN	MOP / PFP
V-	B
CAN_L	A
SHIELD	0VP
CAN_H	5VP
V+	BTB
NC	BTA

ENA	64
0Vd	61
FAN	62
0Vd	61

- Inhibition digital input - conduction stopped
- Digital input, pressure sensor

1a	71
1b	72
2a	81
2b	82

- Alarm relay 1 contact
- Alarm relay 2 contact

	7
Vaux	15
0V	18

NC

External electronic power supply
(auxiliary supply) 115 V or 230 V according to the coding. The 18 terminal must be connected to the second phase (if the supply is between 2 phases)

POWER CONNECTION DIAGRAM

Ph1 Ph2 Ph3 N

Supply protection cut-out installed by user

L1 L2

Diag. ○

invensys
EUROTHERM

⚡ **Users must not attempt to access internal parts**

Power terminals supply side

Diagnostic LED

1, N, 2, N, 3, N, 4, N, 5

Power terminals load side

N, 6, N, 7, N, 8, N, 9, N

1, N, 2, N, 3, N, 4, N, 5

Single-phased load - Non-inductive or low inductance loads, furnace resistances (resistive load with low temperature coefficient)

N, 6, N

Eurotherm Global Solution
Eurotherm can provide a turn-key and complete solution adapted to your process.

E Operate :
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Process management
Data base

T940
multifonction
controllers

Field bus

2500
Input / Output
modules

Q7000

Eurotherm turn-key solution including
power cabinets, supervision and Eurotherm Suite process control, multifunction controllers, Input/output units, communication network and the Eurotherm engineering and associated services.

ORDER CODE

Product	Number of channels	Slot 1	Slot 2	Slot 3	Slot 4	Fan	Power supply	Comms	Relay	Cert.
Q7000										

Number of channels	
9	9 channels
18	18 channels
27	27 channels
36	36 channels

Fan	
FAN	With fan
NOFAN	Without fan

Communication	
MOP	ModBus
PFP	ProfiBus DP

Slot 1	Slot 2	Slot 3	Slot 4
115V	115 V nominal voltage		
230V	230 V nominal voltage		
XXXX	No slot (code only available for slots 2,3 & 4)		

Power supply	
Electronics and Fan supply	
115V	115 Vac supply
230V	230 Vac supply

Relay configuration		
	Relay 1	**Relay2**
NC-NC	Normally closed	Normally closed
NC-NO	Normally closed	Normally open
NO-NC	Normally open	Normally closed
NO-NO	Normally open	Normally open

Certification	
CERT	With certificat
XXXX	Without certificat

Fuse	
Rating	Fuse reference
16 A	CH260163

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Understanding and providing local support is a key part of Eurotherm's business. Complementing worldwide Eurotherm offices are a whole range of partners and a comprehensive technical support team... a soothing melody to ensure you get a service you will want to go back to.
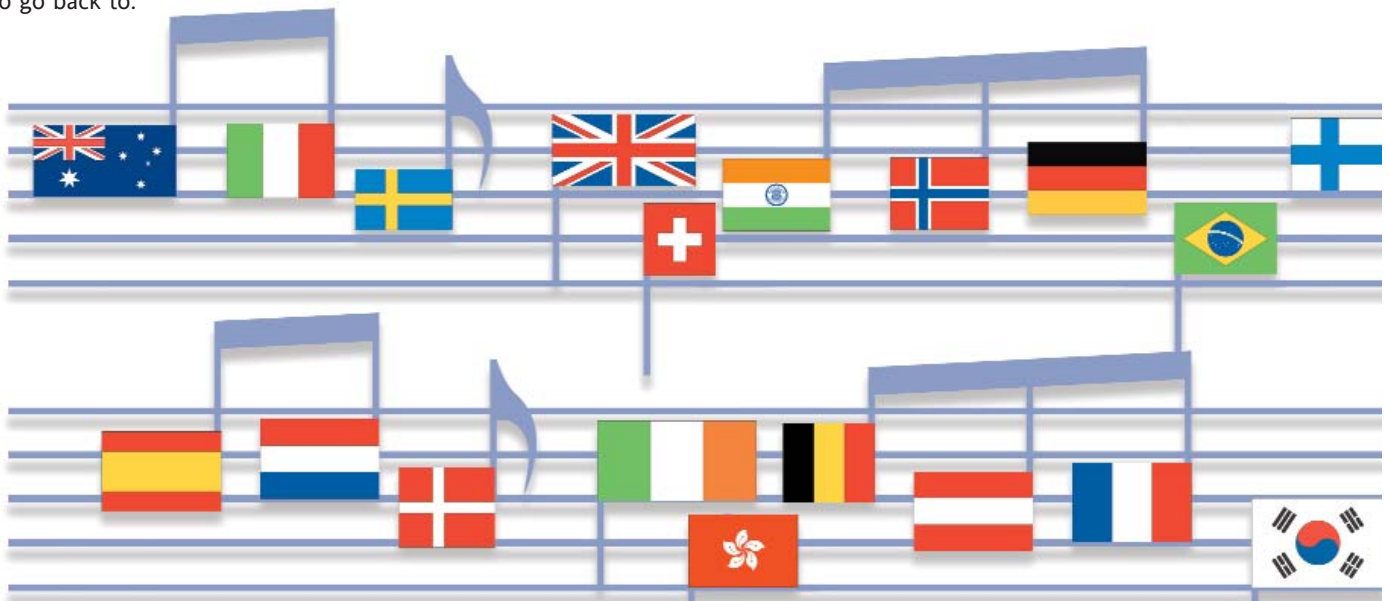
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ED43

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