2216e

MODEL

DIN rail mounting temperature controller, alarm unit and signal conditioner

Ideal for:

- **Plastic extrusion**
- **Conveyor furnaces and ovens**
- **Signal conditioning and isolation**
- **Overtemperature protection**
- **Process alarms**

The DIN rail mounting 2216e can be used as an accurate temperature or process controller, independent alarm unit, or as an isolating signal conditioner. The back of panel mounting has the benefit of reducing cable runs and wiring costs.

The 2216e can operate standalone or be connected to an operator panel, Programmable Logic Controller or Supervisory Control System using Modbus or DeviceNet communications. Using a 2216e ensures repeatable, independent front end control.

A universal input is configurable for 9 internally stored thermocouple types. Other input types can be downloaded in the factory or with 'iTools' configuration software. Linear 4-20mA or 0-10Vdc inputs can be configured and scaled to the desired display range.

Three outputs are provided.

Output 1 is a modular logic, relay, triac or mA output

Output 2 is a modular logic, relay or triac output

Output 3 is a relay output

The outputs are configurable for heating, cooling, alarm or PV retransmission.

Configuration is 100% in software and can be performed either via the controller front panel or with 'iTools'.

Features:

- **Modular heating and cooling outputs**
- **Universal input for connection to thermocouples and process transmitters**
- **Modbus and DeviceNet digital communications**
- **Fan and water cooling algorithms for stable control**
- **Isolated PV retransmission**
- **High, low and deviations alarms, latching and non-latching**
- **Plug-in from front**

EUROTHERM

CONTROLS
DATA MANAGEMENT
PROCESS AUTOMATION

invensys
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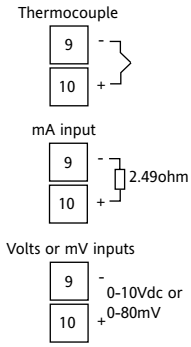
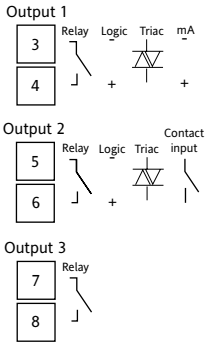
Electrical connections

Input sensor



Outputs 1, 2 and 3



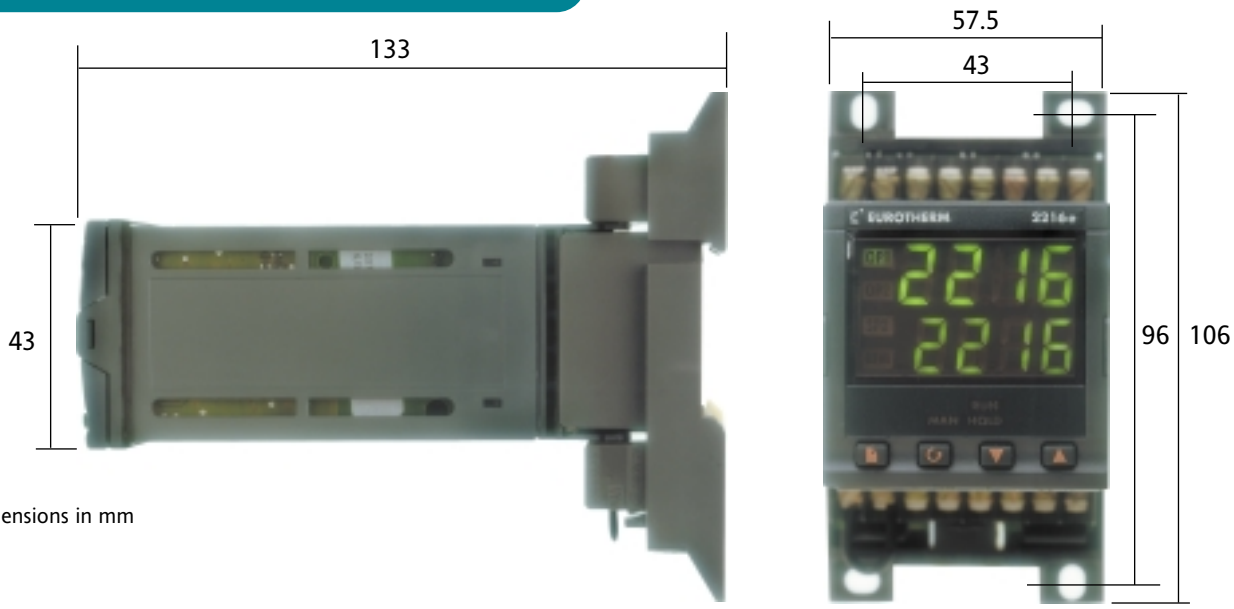
Digital communications

DeviceNet connections

	RS232	2-wire RS485	4-wire RS485 /RS422
11	-----	Not used	-----
12	-----	Not used	Rx+
13	-----	Not used	Rx-
14	-----	Common	-----
15	Tx	A(+)	Tx+
16	Rx	B(-)	Tx-

	Can Label	Colour Chip
11	V+	Red
12	CAN_H	White
13	SHIELD	None
14	CAN_H	Blue
15	CAN_H	Black
16	Not used	Not used

Dimensional details



All dimensions in mm

Ordering code

Hardware code

Model Number	Function	Supply Voltage	Output 1	Output 2	Output 3	Comms Module	Manual	DIN Labelling	DIN Rail Mounting
2216e								F0492	EU0492

Function

CC	PID Control
NF	On/Off Control
VC	Motorised valve control
AL	Alarm unit

Output 1

XX	Not fitted
Relay	
R1	Fitted unconfigured
RH	Heating output
RU	Valve open output
FH	High alarm 1
FL	Low alarm 1
DB	Dev band alarm 1
DL	Dev low alarm 1
DH	Dev high alarm 1
Logic - SSR drive	
L1	Fitted unconfigured
LH	Heating output
M1	PSDS Heater break detect
M2	PDS current monitoring
Triac	
T1	Fitted unconfigured
TH	Heating output
TU	Valve open output
DC control	
R3	Fitted unconfigured
H6	0-20mA heating
H7	4-20mA heating
C6	0-20mA cooling
C7	4-20mA cooling
DC retransmission	
R6	Fitted unconfigured
First character	
V-	PV retrans
P-	Setpoint retrans
0-	Output retrans
Z-	Error retrans
Second character	
-1	0-20mA
-2	4-20mA
-3	0-5V
-4	1-5V
-5	0-10V

Output 2

XX	Not fitted
Relay	
R1	Fitted unconfigured
RC	Cooling output
RH	Heating output
RW	Valve close output
FH	High alarm 2
FL	Low alarm 2
DB	Dev band alarm 2
DL	Dev low alarm 2
DH	Dev high alarm 2
AL	High & low alarms 1 & 2
Logic - SSR drive	
L1	Fitted unconfigured
LC	Cooling output
LH	Heating output
Logic input	
AM	Auto manual select
S2	Setpoint 2 select
AC	Alarm ack/reset
EH	Integral hold
SB	Standby select
M5	Mode 5 current input
Triac	
T1	Fitted unconfigured
TC	Cooling output
TH	Heating output

Output 3

XX	Not fitted
Relay	
RF	Fitted unconfigured
RH	Heating output
RC	Cooling output
RW	Valve close output
FH	High alarm 3
FL	Low alarm 3
DB	Dev band alarm 3
DL	Dev low alarm 3
DH	Dev high alarm 3
AL	High & low alarms 3 & 4
PDS alarms	
LF	Heater break (PDS M1)
LC	Heater break (PDS M2)
LH	SSR failure (PDS M2)

Digital Comms

2X	Not fitted
Modbus comms	
2AM	RS232
2YM	2-wire RS485
2FM	4-wire RS485-422
DeviceNet	
2DN	DeviceNet
Eurotherm Bisynch	
2AE	RS232
2YE	2-wire RS485
2FE	4-wire RS485/422

Manual

XXX	None
ENG	English
FRA	French
GER	German
NED	Dutch
SPA	Spanish
SWE	Swedish
DEN	Danish
ITA	Italian

Configuration code (optional)

Sensor Input	Setpoint Min.	Setpoint Max.	Display Units	Control Options	Heating Options	Cooling Options

Sensor Input / Setpoint Min / Setpoint Max

	Standard Sensor Inputs	Min	°C	Max
J	J Thermocouple	-210		1200
K	K Thermocouple	-200		1372
T	T Thermocouple	-200		400
L	L Thermocouple	-200		900
N	N Thermocouple-Nicrosil/Nisil	-200		1300
R	R Thermocouple-Pt/Pt13%Rh	-50		1700
S	S Thermocouple-Pt /Pt10%Rh	-50		1768
B	B Thermocouple-Pt/Pt30%Rh -6%Rh	0		1820
P	Platinel II Thermocouple	0		1369
	Factory Downloaded Input	**Min**	**°C**	**Max**
C	C Thermocouple - W5%Re/W26%Re (Hoskins)	0		2319
D	D Thermocouple - W3%Re/W25%Re	0		2399
E	E Thermocouple	-250		1000
1	Ni/Ni18%Mo Thermocouple	0		1399
2	Pt20%Rh/Pt40%Rh Thermocouple	0		1870
3	W/W26%Re (Englehard) Thermocouple	0		2000
4	W/W26%Re (Hoskins) Thermocouple	0		2010
5	W5%Re/W26%Re (Engelhard) Thermocouple	10		2300
6	W5%Re/W26%Re (Bucose) Thermocouple	0		2000
7	Pt10%Rh/Pt40%Rh Thermocouple	200		1800
8	Exergen K80 I.R. pyrometer	-45		650
	Process Inputs (Scaled to setpoint min and max)	**Min**	**°C**	**Max**
M	-9.99 to 80.00mV linear	-999		9999
Y	0 to 20mA linear	-999		9999
A	4 to 20mA linear	-999		9999
W	0 to 5Vdc linear	-999		9999
G	1 to 5Vdc linear	-999		9999
V	0 to 10Vdc linear	-999		9999

Units

C	°C
F	°F
K	Kelvin
X	Linear input

Control Options

XX	Reverse acting
DP	Direct acting

Heating Options

XX	Enabled on logic, relay & triac heating outputs
PD	Feedback disabled

Cooling options

XX	Linear cooling
CF	Fan cooling
CW	Water cooling

Technical specification

Process value input

Low level range	-10 to +80mV
High level range	0-20mA or 0-10Vdc
Sample rate	9Hz
Resolution	4uV for low level inputs 2mV for high level inputs
Linearity	Better than 0.1% of reading
Calibration accuracy	The greater of ±1°C or ±0.25% of reading
User calibration	Low and high offsets can be applied
Input filtering	OFF to 999.9 seconds
Thermocouple types	See sensor input table in ordering code
Cold junction compensation	>30 to 1 rejection of ambient temperature change External references 0°C, 45°C and 50°C

Digital output ratings

Relay	Min:12V, 100mA. Max: 2A, 264Vac resisitive
Logic output	18Vdc, 20mA (non-isolated)
Triac	1A, 30-264Vac resistive

Analogue output (OP1)

Range	0-20mA, (isolated)
Analogue output functions	Control or PV retransmission

Control functions

Control modes	On/Off, PID or motorised valve control
Cooling algorithms	Linear, water, fan, oil
Tuning	One-shot tuning
Auto manual control	Bumpless transfer or forced manual output available
Setpoint rate limit	Display units per sec, per min or per hour

Alarms

Number of alarms	Four
Alarm types	High, low, deviation high, deviation low, deviation band
Alarm modes	Latching or non-latching. Blocking. Energised or de-energised in alarm

Communications

DeviceNet	500Kbaud, ODVA compliant
Modbus	RS232, 2-wire RS485, 4-wire RS485/RS422

General

Display range	Four digits with up to two decimal places
Supply	100 to 240Vac -15%, +10%
Operating ambient	0 to 55°C and 5 to 95fi RH non-condensing
Storage temperature	-10 to +70°C
Dimensions (mm)	56W x 107H x 133D
EMC standards	Meets generic emmisions standards EN50081-2 and immunity standard EN50082-2 for industrial environments
Safety Standards	Meets EN61010, installation category II, pollution degree 2

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Part No. HA027533 Issue 1 Printed in England 10.01