

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

Electrical connections

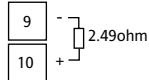


Input sensor

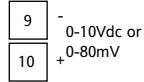
Thermocouple



mA input

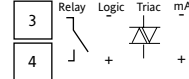


Volts or mV inputs

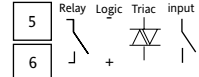


Outputs 1, 2 and 3

Output 1



Output 2



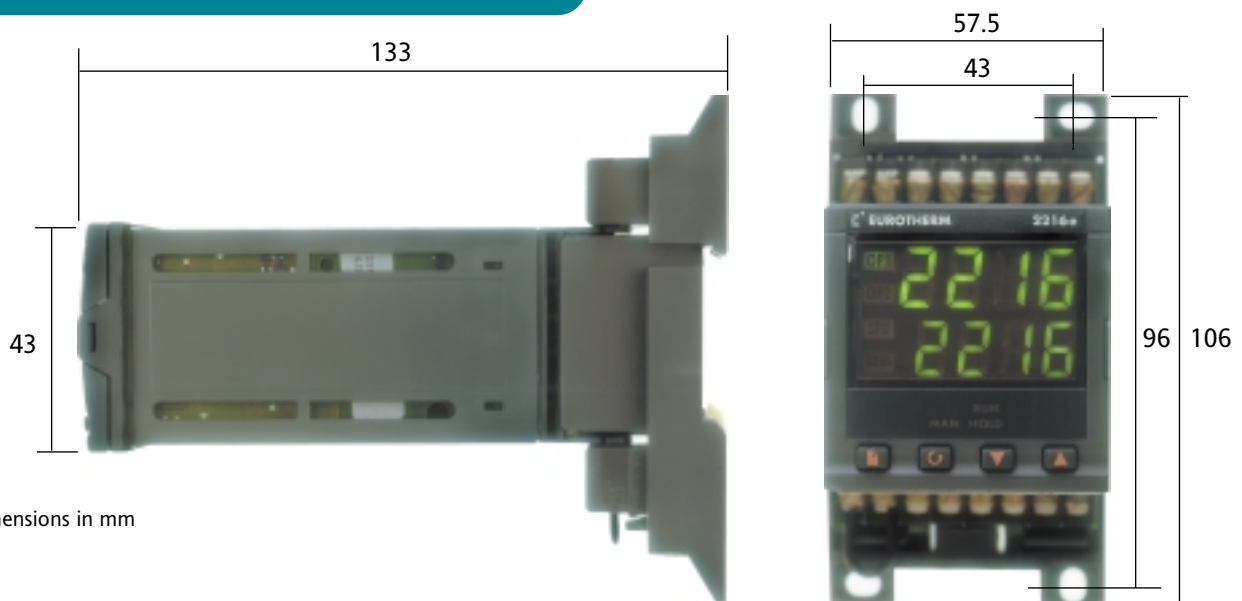
Output 3



Digital communications

Terminal	Digital Communications			DeviceNet connections	
	RS232	2-wire RS485	4-wire RS485 /RS422	Can Label	Colour Chip
11	-----	Not used	-----	V+	Red
12	-----	Not used	Rx+	CAN_H	White
13	-----	Not used	Rx-	SHIELD	None
14	-----	Common	-----	CAN_H	Blue
15	Tx	A(+)	Tx+	CAN_H	Black
16	Rx	B(-)	Tx-	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	Output 1	Output 2	Digital Comms
CC PID Control NF On/Off Control VC Motorised valve control AL Alarm unit	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 PSDS 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 <i>First character</i> V- PV retrans P- Setpoint retrans 0- Output retrans Z- Error retrans <i>Second character</i> -1 0-20mA -2 4-20mA -3 0-5V -4 1-5V -5 0-10V	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
	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)	2X Not fitted Modbus comms 2AM RS232 2YM 2-wire RS485 2RC 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	Units	Control Options
Standard Sensor Inputs	Min	Max	°C	XX Reverse acting DP Direct acting
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	Max	°C	Heating Options XX Enabled on logic, relay & triac heating outputs PD Feedback disabled
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 (Engelhard) 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	Max	°C	Cooling options XX Linear cooling CF Fan cooling CW Water cooling
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		

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 $\pm 1^{\circ}\text{C}$ or $\pm 0.25\%$ 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 resistive
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 95f RH non-condensing
Storage temperature	-10 to $+70^{\circ}\text{C}$
Dimensions (mm)	56W x 107H x 133D
EMC standards	Meets generic emissions 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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