

2416 Programmable Temperature/Process Controller



Ideal for

- single and multi-zone ovens and furnaces
- ceramic and brick kilns
- environmental chambers

The 2416 is a high stability controller with a wide range of options. Either PID, On/Off or motorized valve control can be configured - satisfying both electrical and gas heating applications. Dual PID settings and advanced tuning algorithms optimize control performance.

Plug-in modules provide outputs for heating, cooling and analog retransmission, as well as logic telemetry.

Four setpoint programs can be stored, with 16 ramp-dwell segments and three event outputs per program.

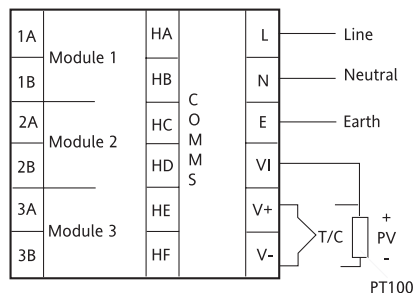
High speed digital communications with industry standard protocols allows easy connection to supervisory control and data logging systems.

Eliminate ammeters by using Eurotherm's advanced load current monitoring facility. Heater current can be displayed and open or short circuit faults detected. See page 3-50 for more information.

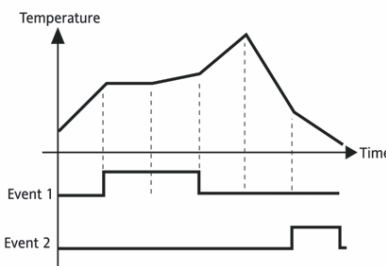
Multi-zone programming can be implemented using 'PDS' retransmission to deliver a master setpoint to up to three slave controllers, with holdback from any slave if the temperature deviates from the setpoint by more than a set value.

Rear terminal connections

Model 2416



Programmer Functionality



Specifications

Dimensions:

48W x 48H x 150D mm

Control modes:

PID or On/Off or motorized valve

Supply voltages:

85-264Vac, 10 watts maximum
20-29Vac or dc, 10 watts maximum

Operating ambient:

0-55°C, 0-90% RH non-condensing

Inputs:

See Sensor Inputs in the Configuration coding

Output ratings:

Relay: 2A, 264Vac resistive

Logic: 18Vdc, 20mA

Triac: 1A, 264Vac resistive

DC: 0-20mA, or 0-10Vdc

configurable

Panel sealing:

IP65, plug-in from front panel

Ordering codes

Model Number	Function	Supply Voltage	Module 1	Module 2	Module 3	Comms	Manual
2416							

Function	Module 1	Module 2	Module 3	Comms
Standard PID control CC Controller only CG 1 x 8 seg Prog CP 1 x 16 seg Prog P4 4 x 16 seg Prog On/Off Control NF Controller only NG 1 x 8 seg Prog NP 1 x 16 seg Prog N4 4 x 16 seg Prog Motorized valve control VC Controller only VG 1 x 8 seg Prog VP 1 x 16 seg Prog V4 4 x 16 seg Prog	XX None Relay: 2-pin R2 Fitted unconfigured RH Heating output RU Valve raise 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 L2 Fitted unconfigured LH Heating output M1 PDS Heater break detect (note 1) M2 PDS Current monitoring (note 2) Triac T2 Fitted unconfigured TH Heating output TU Valve raise output DC control (Non-isol) D2 Fitted unconfigured H1 0-20mA PID heating H2 4-20mA PID heating H3 0-5V PID heating H4 1-5V PID heating H5 0-10V PID heating	XX None Relay: 2-pin R2 Fitted unconfigured RC Cooling output RW Valve lower output FH High alarm 2 FL Low alarm 2 DB Dev. band alarm 2 DL Dev. low alarm 2 DH Dev. high alarm 2 PO Program event 1 (not with 8-seg prog) PE Program END output Logic L2 Fitted unconfigured LC Cooling output Triac T2 Fitted unconfigured TC Cooling output TW Valve lower output DC control (Non-isol) D2 Fitted unconfigured C1 0-20mA PID cooling C2 4-20mA PID cooling C3 0-5V PID cooling C4 1-5V PID cooling C5 0-10V PID cooling	XX None Relay: 2-pin R2 Fitted unconfigured FH High alarm 4 FL Low alarm 4 DB Dev. band alarm 4 DL Dev. low alarm 4 DH Dev. high alarm 4 RA Rate of change alarm PO Program event 2 (not with 8-seg prog) PE Program END output PDS Alarms LF Heater break detect HF Current monitoring heater break SF Current monitoring SSR failure Logic L2 Fitted unconfigured Triac T2 Fitted unconfigured DC retrain (Non-isol) D2 Fitted unconfigured First character V- PV retrans S- Setpoint retrans O- Output retrans Z- Error retrans Second character -1 0-20mA -2 4-20mA -3 0-5V -4 1-5V -5 0-10V	XX None 2 wire, RS485 Y2 Fitted unconfigured YM Modbus protocol YE El-Bisynch protocol RS232 A2 Fitted unconfigured AM Modbus protocol AE El-Bisynch protocol 4 wire, RS422 F2 Fitted unconfigured FM Modbus protocol FE El-Bisynch protocol PDS Input M6 Fitted unconfigured RS Setpoint input PDS Output M7 Fitted unconfigured PT PV retrans TS Setpoint retrans OT Output retrans

Supply Voltage
VH 85-264Vac
VL 20-29Vac/dc

Manual
XXX No manual
ENG English
FRA French
GER German
NED Dutch
SPA Spanish
SWE Swedish
ITA Italian

Note 1.
PDS heater break detect will transmit the power demand to a TE10S Solid State Relay and read back a heater break alarm.

Note 2.
PDS current monitoring will transmit the power demand signal to a TE10S Solid State Relay (or PD/CTX) and read back load current and open and short circuit alarms.

Note 3.
Setpoint limits: Include the decimal position required in the displayed value. Up to one for temperature inputs, up to two for process inputs.

Note 4.
An external 1% current sense resistor is supplied as standard. If greater accuracy is required, a 0.1% 2.49Ω can be ordered as part no. SUB2K/249R.1.

Setpoint Input	Setpoint Min	Setpoint Max	Display Units	Control	Power	Options Cooling	Buttons	Program
	note 3	note 3						

Sensor Input	Setpoint Min	Setpoint Max	Display Units	Options
Standard Sensor Inputs J J Thermocouple K K Thermocouple T T Thermocouple L L Thermocouple N N Thermocouple-Nicrosil/Nisil R R Thermocouple-Pt/Pt13%Rh S S Thermocouple-Pt /Pt10%Rh B B Thermocouple-Pt/Pt30%Rh -6%Rh P Platinel II Thermocouple Z RTD/PT100 DIN 43760 Factory Downloaded Input C C Thermocouple - W5%Re/W26%Re (Hoskins) D D Thermocouple - W3%Re/W25%Re E E Thermocouple 1 Ni/Ni18%Mo Thermocouple 2 Pt20%Rh/Pt40%Rh Thermocouple 3 W/W26%Re (Engelhard) Thermocouple 4 W/W26%Re (Hoskins) Thermocouple 5 W5%Re/W26%Re (Engelhard) Thermocouple 6 W5%Re/W26%Re (Bucose) Thermocouple 7 Pt10%Rh/Pt40%Rh Thermocouple 8 Exergen K80 I.R. pyrometer Process Inputs (Scaled to setpoint min and max) M -9.99 to 80.00mV linear Y 0 to 20mA linear (note 4) A 4 to 20mA linear (note 4) W 0 to 5Vdc linear G 1 to 5Vdc linear V 0 to 10Vdc linear	Min	Max	°C	C Celsius F Fahrenheit K Kelvin X Blank
				Control action XX Reverse acting (standard) DP Direct acting Power feedback XX Enabled on logic, relay and triac heating outputs PD Feedback disabled Cooling options XX Linear cooling CF Fan cooling CW Water cooling CL Oil cooling CO On/Off cooling Front panel buttons XX Enabled MD Auto/manual disabled MR Auto/man & run/hold disabled RD Run/hold disabled Programmer timing XX Ramp and dwell in mins HD Dwell time in hours HR Ramp rate in units/hour

Example ordering code

2416 - CC - VH - LH - RC - FH - YM - ENG - K - 0 - 1000 - C - XX - XX - XX - MD - XX

2416, Controller, 85 to 264Vac, Logic heating, Relay cooling, High alarm relay, RS485, Modbus comms, English manual, type K thermocouple, 0 to 1000°C, Manual button disabled.