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 ‘iT ools’ 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 ‘iT ools’.

### Ideal for:
- Plastic extrusion
- Conveyor furnaces and ovens
- Signal conditioning and isolation
- Overtemperature protection
- Process alarms

### 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
Electrical connections

100-240Vac

1    2     3    4    5    6     7    8
9   10   11   12   13   14  15  16

Digital Communications

Thermocouple

mA input

2.49 ohm

Volts or mV inputs

0-10Vdc or 0-80mV

Outputs 1, 2 and 3

Input sensor

Digital communications

DeviceNet connections

<table>
<thead>
<tr>
<th>Can Label</th>
<th>Colour Chip</th>
</tr>
</thead>
<tbody>
<tr>
<td>V+</td>
<td>Red</td>
</tr>
<tr>
<td>CAN_H</td>
<td>White</td>
</tr>
<tr>
<td>SHIELD</td>
<td>None</td>
</tr>
<tr>
<td>CAN_H</td>
<td>Blue</td>
</tr>
<tr>
<td>CAN_H</td>
<td>Black</td>
</tr>
<tr>
<td>Not used</td>
<td>Not used</td>
</tr>
</tbody>
</table>

| Sensor input |

Dimensional details

All dimensions in mm
## Digital Comms

- **Output 1**
  - Fitted unconfigured
  - DC control
  - 0-20mA heating
  - 4-20mA cooling
  - 0-5V linear
  - 4-20mA linear
  - -999 to 80.00 mV linear

- **Output 2**
  - Fitted unconfigured
  - Cooling output
  - Valve close output
  - High alarm 2
  - Low alarm 2
  - Dev low alarm 2
  - Dev alarm 2
  - Dev high alarm 2
  - High & low alarms
  - Logic - SSR drive
  - 4-20mA cooling
  - 0-20mA heating
  - 4-20mA

- **Output 3**
  - Fitted unconfigured
  - Cooling output
  - Heating output

## Manual

- **Sensor Input**
  - DIN Rail

## Sensor Input

<table>
<thead>
<tr>
<th>Standard Sensor Inputs</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>J Thermocouple</td>
<td>-210</td>
<td>1200</td>
</tr>
<tr>
<td>K Thermocouple</td>
<td>-200</td>
<td>1172</td>
</tr>
<tr>
<td>L Thermocouple</td>
<td>-200</td>
<td>400</td>
</tr>
<tr>
<td>N Thermocouple - Nicrosil/Nisit</td>
<td>0</td>
<td>1300</td>
</tr>
<tr>
<td>R Thermocouple - Pt100</td>
<td>-50</td>
<td>1700</td>
</tr>
<tr>
<td>S Thermocouple - Pt100</td>
<td>-50</td>
<td>1708</td>
</tr>
<tr>
<td>B Thermocouple - Pt100 - 650 K</td>
<td>0</td>
<td>1820</td>
</tr>
<tr>
<td>P Platinum II Thermocouple</td>
<td>0</td>
<td>1350</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factory Downloaded Input</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Thermocouple - W5%Re/W26%Re (Hoskins)</td>
<td>0</td>
<td>2191</td>
</tr>
<tr>
<td>D Thermocouple - W5%Re/W26%Re</td>
<td>0</td>
<td>2199</td>
</tr>
<tr>
<td>E Thermocouple</td>
<td>-250</td>
<td>1000</td>
</tr>
<tr>
<td>1 Ni/11%RhMo Thermocouple</td>
<td>0</td>
<td>1399</td>
</tr>
<tr>
<td>2 Pt20%Rh/Pt40%Rh Thermocouple</td>
<td>0</td>
<td>1870</td>
</tr>
<tr>
<td>3 W26%Rh (Engelhard) Thermocouple</td>
<td>0</td>
<td>2000</td>
</tr>
<tr>
<td>4 W26%Rh (Hoskins) Thermocouple</td>
<td>0</td>
<td>2010</td>
</tr>
<tr>
<td>5 W5%Re/W26%Re (Engelhard) Thermocouple</td>
<td>10</td>
<td>2300</td>
</tr>
<tr>
<td>6 W5%Re/W26%Re (Bucose) Thermocouple</td>
<td>0</td>
<td>2000</td>
</tr>
<tr>
<td>7 Pt10%Rh/Pt40%Rh Thermocouple</td>
<td>200</td>
<td>1800</td>
</tr>
<tr>
<td>8 Exergen K801K pyrometer</td>
<td>-45</td>
<td>650</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process Inputs (Scaled to setpoint min and max)</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>M -9.99 to 80.00mV Linear</td>
<td>-999</td>
<td>9999</td>
</tr>
<tr>
<td>V 0 to 20mA linear</td>
<td>-999</td>
<td>9999</td>
</tr>
<tr>
<td>4 to 20mA linear</td>
<td>-999</td>
<td>9999</td>
</tr>
<tr>
<td>W 0 to 5Vdc linear</td>
<td>-999</td>
<td>9999</td>
</tr>
<tr>
<td>G 1 to 5Vdc linear</td>
<td>-999</td>
<td>9999</td>
</tr>
<tr>
<td>V 0 to 10Vdc linear</td>
<td>-999</td>
<td>9999</td>
</tr>
</tbody>
</table>

## Control Options

- **Control Options**
  - Reverse acting
  - Direct acting

## Heating Options

- **Heating Options**
  - Enabled on logic, relay & triac heating outputs
  - Feedback disabled

## Cooling Options

- **Cooling Options**
  - Linear cooling
  - Fan cooling
  - 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**:
  - Low level inputs: 4uV
  - High level inputs: 2mV
- **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

#### 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 modes**: Latching or non-latching, Blocking. Energised or de-energised in alarm
- **Alarm types**: High, low, deviation high, deviation low, deviation band

#### 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 95% 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