The innovative range of 3200 controllers offer precision control of temperature and other process variables together with a host of advanced features not normally found in this class of controller.

The emphasis is on ease of use. In operator mode every parameter has a scrolling text message describing its function and is available in English, German, French, Spanish or Italian. More advanced features are configured using iTools, a PC based configuration wizard which is an easy to use and instructive guide to all the functions in the controller.

**Remote setpoint**
An option exists for the 3200 to have a Remote Analogue Input. This can be either volts or mA and is used to allow the setpoint to be generated by a master controller or PLC.
Setpoint retransmission
Sending the setpoint or other parameters from the 3200 to slave devices can be achieved either using conventional analogue communications or using Master Modbus communications. Master Modbus in the 3200 allows a broadcast of a single parameter to the network.
A typical application is a setpoint being retransmitted to a number of slave controllers in a multi-zone furnace.

Modbus communications
All units support both EIA232 and 2-wire EIA485 communications using the Modbus protocol. The 3216 supports 4-wire EIA485.

Configuration adaptor
iTools configuration to all 3200 controllers can be achieved by using a configuration adaptor. It provides iTools with the ability to communicate with and configure devices without the need for any power being connected.

Specification

**General**

<table>
<thead>
<tr>
<th>Environmental performance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature limits</td>
<td>Operation: 0 to 55°C, Storage: -10 to 70°C</td>
</tr>
<tr>
<td>Humidity limits</td>
<td>Operation: 5 to 90% RH non condensing, Storage: 5 to 90% RH non condensing</td>
</tr>
<tr>
<td>Panel sealing</td>
<td>IP65, Nema 4X</td>
</tr>
<tr>
<td>Shock</td>
<td>BS EN61010</td>
</tr>
<tr>
<td>Vibration</td>
<td>2g peak, 10 to 150Hz</td>
</tr>
<tr>
<td>Altitude</td>
<td>&lt;2000 metres</td>
</tr>
<tr>
<td>Atmospheres</td>
<td>Not suitable for use in explosive or corrosive atmosphere</td>
</tr>
</tbody>
</table>

| Electromagnetic compatibility (EMC) |  |
| Emissions and immunity | BS EN61326 |

| INSTALLATION CATEGORY II |
| The rated impulse voltage for equipment on nominal 230V mains is 2500V |
| POLLUTION DEGREE 2 |
| Normally, only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation shall be expected |

| Physical |  |
| Panel mounting | 3216: 1/16 DIN, 3208: 1/8 DIN, 3204: 1/4 DIN, 32h8: 1/8 DIN, horizontal |
| Weight | 3216: 250g, 3208: 350g, 3204: 420g, 32h8: 350g |
| Panel cut-out dimensions | 3216: 45W x 45Hmm, 3208: 45W x 92Hmm, 3204: 92W x 92Hmm, 32h8: 92W x 45Hmm |
| Panel depth | All: 90mm |

| Operator interface |  |
| Type | LCD TN with backlight |
| Main PV display | 4 digits, green |
| Lower display | 3216, 3208, 3204: 5 character starburst, green, 32h8: 9 character starburst, green |
| Status beacons | Units, outputs, alarms, active setpoint |

| Power requirements |  |
| 3216 | 100 to 240Vac, -15%, +10%, 48 to 62 Hz, max 6W |
| 3208/32h8/04 | 24Vac, -15%, +10%, 24Vdc, -15% +20% ±5% ripple voltage max 6W |
| 3208/32h8/04 | 100 to 240Vac, -15%, +10%, 48 to 62 Hz, max 8W |
| 3216/32h8/04 | 24Vac, -15%, +10%, 24Vdc, -15% +20% ±5% ripple voltage max 8W |

| Approvals |  |
| CE, cUL listed (file E57766), Gost, DIN 3440 (3216 only) |
| Suitable for use in Nadcap and AMS2750D applications under Systems Accuracy Test calibration conditions |

| Transmitter PSU (not 3216) |  |
| Rating | 24Vdc, >28mA, <33mA |
| Isolation | 264Vac double insulated |

| Communications |  |
| Serial communications option |  |
| Protocol | Modbus RTU slave, Modbus RTU Master broadcast (1 parameter) |
| Isolation | 264Vac, double insulated |
| Transmission standard | EIA232 or EIA485 (2 wire), EIA485(4 wire) on 3216 only |
**Process variable input**

- **Calibration accuracy:** $<\pm 0.25\%$ of reading $\pm 1\%$D
- **Sample rate:** 4Hz (250ms)
- **Isolation:** 264Vac double insulation from the PSU and communication
- **Resolution ($\mu$V):** $<3.5\mu$V with 1 nsec filter
- **Resolution (effective bits):** $>17$ bits
- **Linearity accuracy:** $<0.1\%$ of reading
- **Drift with temperature:** $<50$ ppm (typical) $<100$ ppm (worst case)
- **Common mode rejection:** $48-62$ Hz, $>-120$ db
- **Series mode rejection:** $48-62$ Hz, $>-93$ dB
- **Input impedance:** $>100\$M$
- **Cold junction compensation:** $>30:1$ rejection of ambient change
- **Reference of:** 0°C
- **Linear (process) input range:** -10 to 80mV, 0 to 10V
- **Cold junction accuracy:** $<\pm1°C$ at 25°C ambient
- **External cold junction:** $<\pm3°C$ at 25°C ambient
- **Input range:** -10 to 80mV, 0 to 10V
- **Current transformer input:** $<0$ to $10V$ and $4$ to $20mA$ with external divider module
- **Input impedance:** Voltage: $223K\Omega$ and Current: $2R49$
- **Series mode rejection:** $48-62$Hz, $>-90$dB
- **Drift with temperature:** $<50$ppm (typical) $<150$ppm (worst case)
- **Resolution (effective bits):** $>14$ bits
- **Current monitor:**
  - **Alarm types:** Partial load failure, over current, SSR short circuit, SSR open circuit
  - **Indication type:** Numerical or ammeter
  - **Custom messages:**
    - **Number:** 15 scrolling text messages
    - **No of characters:** 127 characters per message max
    - **Languages:** English, German, French, Spanish, Italian
    - **Selection:** Active on any parameter status using conditional command
  - **Recipes:**
    - **Number:** 5 recipes with 38 parameters
    - **Selection:** HMI interface, communications or digital IO
- **Notes:**
  - (3) Voltage output can be achieved by external adaptor
  - (4) By using recipes five SP programs can be stored

**Relay output channels**

- **Type:** Form A (normally open)
- **Rating:** Min 100mA@12vdc, max 24A@264Vac resistive
- **Functions:** Control outputs, alarms, events

**Triac output**

- **Rating:** 0.75A (rms) 30 to 264V (rms) resistive load
- **Isolation:** 264Vac double insulated
- **Functions:** Control outputs, alarms, events

**Analogue output**

- **OP1, OP2**
  - **Rating:** 0-20mA into $<500$Ω
  - **Accuracy:** $\pm(<1\%$ of Reading $+<100\mu$A)
  - **Resolution:** 13.6 bits
  - **Isolation:** 266Vac double insulated
  - **Functions:** Control outputs, retransmission
  - **OP 3 (not on 3216)**
    - **Rating:** 0-20mA into $<500$Ω
    - **Accuracy:** $<0.25\%$ of Reading $+<50\mu$A
    - **Resolution:** 5.6 bits
    - **Isolation:** 266Vac double insulated
    - **Functions:** Control outputs, retransmission

**Remote setpoint input**

- **Calibration accuracy:** $<\pm 0.25\%$ or reading $\pm 1LSD$
- **Sample rate:** 4Hz (250ms)
- **Isolation:** 266Vac double insulation from instrument
- **Resolution:** $<0.5\mu$V (for 0-10V) or $<2\mu$A (for 4-20mA)
- **Resolution (effective bits):** $>14$ bits
- **Drift with temperature:** $<550$ ppm (typical) $<1500$ ppm (worst case)
- **Common mode rejection:** $48-62$ Hz, $>-120$ db
- **Input impedance:** $<100\$K$
- **Series mode rejection:** $48-62$Hz, $>-90$dB
- **Max input range:** 0 to 10V and 4 to 20mA

**Software features**

- **Control**
  - **Number of loops:** 1
  - **Loop update:** 250ms
  - **Control types:** PID, ON/OFF, VP
  - **Cooling types:** Linear, fan, oil, water
  - **Modes:** Auto, manual, standby, forced manual
  - **Overshoot inhibition:** High, low

- **Alarms**
  - **Number:** 4
  - **Type:** Absolute high & low, deviation high, low or band, rate of change
  - **Latching:** Auto or manual latching, non-latching, event only
  - **Output assignment:** Up to two conditions can be assigned to one output

- **Other status outputs**
  - **Functions:** Including sensor break, manual mode, timer status, loop break, heater diagnostics, program event
  - **Output assignment:** Up to two conditions can be assigned to one output

- **Setpoint programmer**
  - **Program function:** 1 program x 8 segments with 1 event output
  - **Start mode:** Servo from PV or SP
  - **Power fail recovery:** Continue at SP or Ramp back from PV
  - **Guaranteed soak:** Inhibits dwell timing until PV within limits

- **Timer**
  - **Modes:** Dwell when setpoint reached
  - **Delayed control action:** Soft start limits power below PV threshold

- **Current monitor**
  - **Alarm types:** Partial load failure, over current, SSR short circuit, SSR open circuit
  - **Indication type:** Numerical or ammeter

- **Custom messages**
  - **Number:** 15 scrolling text messages
  - **No of characters:** 127 characters per message max
  - **Languages:** English, German, French, Spanish, Italian
  - **Selection:** Active on any parameter status using conditional command

- **Recipes**
  - **Number:** 5 recipes with 38 parameters
  - **Selection:** HMI interface, communications or digital IO

**Notes**

- (1) Calibration accuracy quoted over full ambient operating range and for all input linearisation types
- (2) Contact Eurotherm for details of availability of custom downloads for alternative sensors

**AA relay**

- **Type:** Form C (changeover)
- **Rating:** Min 100mA@12vdc, max 24A@264Vac resistive
- **Functions:** Control outputs, alarms, events

**Current transformer input**

- **Input range:** 0-50mA rms, 48/62Hz. 100$\mu$A burden
- **Calibration accuracy:** $<1\%$ of reading (Typical), $<4\%$ of reading (Worst case)
- **Isolation:** By using external CT
- **Input impedance:** $<200$
- **Measurement scaling:** 10, 25, 50 or 100 Amps
- **Functions:** Partial load failure, SSR fault

**Digital input (DigIn A/B, B not on 3216)**

- **Contact closure:** Open $>600\Omega$, closed $<300\Omega$
- **Input current:** $<13mA$
- **Isolation:** None from PV or system
  - 264Vac double insulated from PSU and communications
- **Functions:** Includes alarm acknowledge, SP2 select, manual keylock, timer functions, standby select, RSP select

**Logic I/O module**

- **Output**
  - **Rating:** CN 12Vdc@44mA, OFF $<300mV@100\mu$A
  - **Isolation:** None from PV or system
  - 264Vac double insulated from PSU and communications
  - **Functions:** Control outputs, alarms, events

**Relay output channels**

- **Type:** Form A (normally open)
- **Rating:** Min 100mA@12vdc, max 24A@264Vac resistive
- **Functions:** Control outputs, alarms, events
Isolation diagrams

3216

3208/h8/04

Dimensional details

3216

3208

3204

32h8

Panel cut-out
For more information on Eurotherm controllers, contact Mokon’s Sales department today. Should you need technical assistance, please dial 716-876-9951 and ask for our Customer Service department. A technician is available 24/7.

Phone: 716-876-9951
Fax: 716-874-8048
Sales Email: sales@mokon.com
Customer Service Email: custserv@mokon.com

www.mokon.com