The 4101/2 are low cost, 100mm strip chart recorders, providing recording for up to 4 (continuous pen) or 6 (multi-point) process variables. Designed to fit a DIN cut out (138 x 138 mm) the recorders feature an exceptionally small back panel dimension of 236mm with the cover fitted.

**Display**
An analogue scale, specified at the time of order is supplied with all 4101 recorders. The 4102 is supplied with a high visibility seven segment display, providing clear numeric indication of the process variables, and alarm status. The display will cycle through each PV, but can be paused on a particular channel if required.

**Configuration**
The 4101 is supplied pre-configured and ready for use. The addition of a keypad to the 4102 allows for configuration to be carried out on site. In order to prevent unauthorised access to the 4102, the configuration is password protected. Entry of the password provides access to the instrument configuration pages. It is possible to provide the operator access to certain parameters, for example you may require the operator to be able to change the chart speed

**Modular Design – All**
The modular design of the 4100 Series allows for upgrades to be carried out in situ thus reducing downtime.
### TECHNICAL SPECIFICATION

#### Input Board

**General**

- **Input types:** dc Volts, dc millivolts, dc milliamps (with shunt), Thermocouple, 2 / 3-wire RTD

**Input type mix**

- User configurable

**Max no of inputs**

- 4101C, 4102C: 4
- 4101M, 4102M: 6

**Input ranges**

- –30 to +150mV; –0.2 to +1 Volt; –2 to +10 Volts

**Termination**

- Edge connector / terminal block

**Noise rejection (48 to 62 Hz)**

- Common mode: >140dB (channel to channel and channel to ground).

**DC Input ranges**

- 250 Volts continuous

**Maximum common mode voltage**

- 180 mV at lowest range;
- 12 Volts peak at highest range.

**Isolation (dc to 65 Hz; EN61010)**

- Installation cat. II; Pollution deg. 2

**Dielectric strength (BS EN61010)**

- 2300 Vac

**Input impedances**

- >10 MΩ

**Additional error due to attenuator**

- 0.2% of input

**Additional error due to shunt**

- 0.1% of input

**Shunt/attenuator**

- Externally mounted resistor modules

**Power requirements**

- 90 to 264V at 45 to 65 Hz

**Altitude (max.)**

- 2000 metres

**Humidity limits**

- Operation: 5% to 80% RH
- Storage: 5% to 90% RH
- Transportation (non-condensing): 5% to 90% RH

**Temperature limits**

- Operation: 0 to 50°C
- Storage: –20 to + 70°C

**Pollution degree**

- 2

**Environmental performance**

- The rate impulse voltage for equipment on nominal 230V mains is 2500V.

**Power requirements**

- Line voltage: Standard: 20 to 35V ac (45 to 400 Hz)
- Enhanced: 20 to 35V ac (45 to 400 Hz)

**Electromagnetic compatibility (EMC)**

- Emissions: B, EN55022-1
- Immunity: B, EN55022-2

**Physical**

- Panel mounting: DIN43700
- Bezel size: 144 x 144 mm.
- Panel cutout dimensions: 138 x 138 (both - 0 + 1 mm)
- Depth behind bezel rear face: 220 mm (No terminal cover);
- 236 mm (standard terminal cover)
- 275 mm (long terminal cover closed)
- 390mm (long terminal cover open)
- Weight: 3.5kg
- Panel mounting: Vertical ±30°C

---

### Table 1 DC performance

<table>
<thead>
<tr>
<th>Voltage Level</th>
<th>Resolution</th>
<th>Maximum Error (Instrument at 20°C)</th>
<th>Worst Case Temperature Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>–30mV to 150mV</td>
<td>5.5μV</td>
<td>0.08% input + 0.05% range</td>
<td>0.08% input per °C</td>
</tr>
<tr>
<td>–0.2V to 1V</td>
<td>37μV</td>
<td>0.08% input + 0.03% range</td>
<td>0.08% input per °C</td>
</tr>
<tr>
<td>–2V to 10V</td>
<td>370μV</td>
<td>0.27% input + 0.04% range</td>
<td>0.27% input per °C</td>
</tr>
</tbody>
</table>

---

### Table 2 Thermocouple types and ranges

#### Type

<table>
<thead>
<tr>
<th>T/C Type</th>
<th>Overall range (°C)</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 to +1820</td>
<td>IEC 584.1</td>
</tr>
<tr>
<td></td>
<td>0 to +400 @ 1°C</td>
<td>IEC 584.2</td>
</tr>
</tbody>
</table>

#### Resolution

<table>
<thead>
<tr>
<th>Voltage Level</th>
<th>Resolution (Ω)</th>
<th>Maximum Error (Instrument at 20°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>–30mV to 600Ω</td>
<td>0.045% input + 0.065% range</td>
<td>35ppm of input per °C</td>
</tr>
<tr>
<td>–2V to 6kΩ</td>
<td>0.049% input + 0.035% range</td>
<td>35ppm of input per °C</td>
</tr>
</tbody>
</table>

---

### Table 3 Resolution and performance for resistance inputs

<table>
<thead>
<tr>
<th>RTD Type</th>
<th>Overall range (°C)</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>–220 to +650</td>
<td>JIS C 1604/1989</td>
</tr>
<tr>
<td></td>
<td>–60 to +250</td>
<td>DIN43760/1987</td>
</tr>
<tr>
<td></td>
<td>–50 to +170</td>
<td>DIN43760/1987</td>
</tr>
<tr>
<td></td>
<td>–200 to +850</td>
<td>IEC 751</td>
</tr>
<tr>
<td></td>
<td>–200 to +600</td>
<td>Eurotherm Recorders SA</td>
</tr>
<tr>
<td></td>
<td>–200 to +850</td>
<td>IEC 751</td>
</tr>
</tbody>
</table>

---

### Table 4 RTD types and ranges

#### Type

- **J:** –210 to +1200 (IEC 584.1) 0.02°C
- **K:** –200 to +1372 (IEC 584.1) 0.04°C
- **L:** –200 to +900 (DIN43700/1985) 0.20°C
- **N:** –200 to +1372 (To IPTS68) 0.04°C
- **Ni100:** –50 to +600 (DIN43760/1987) 0.01°C
- **Ni120:** –50 to +170 (DIN43760/1987) 0.01°C
- **Pt100:** –200 to +850 (IEC 751) 0.01°C
- **Pt1000:** –200 to +850 (IEC 751) 0.01°C
- **Pt100A:** –200 to +600 (IEC 751) 0.09°C
- **Pt1000:** –200 to +850 (IEC 751) 0.01°C
- **Ni120:** –50 to +600 (Ni120) 0.01°C
- **Ni1000:** –60 to +250 (Ni1000) 0.01°C

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### Recorders

- **Board types:** Standard: Universal input / control board
- Options: 3- Change-over relay output board
- Transmitter power supply
- Event input board, Annotator board

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### Resolution and performance for resistance inputs

<table>
<thead>
<tr>
<th>RTD Type</th>
<th>Overall range (°C)</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>–200 to +630</td>
<td>JIS C 1604/1989</td>
</tr>
<tr>
<td></td>
<td>–60 to +250</td>
<td>DIN43760/1987</td>
</tr>
<tr>
<td></td>
<td>–50 to +170</td>
<td>DIN43760/1987</td>
</tr>
<tr>
<td></td>
<td>–200 to +850</td>
<td>IEC 751</td>
</tr>
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<td>IEC 751</td>
</tr>
</tbody>
</table>

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### INSTALLATION CATEGORY II

The rate impulse voltage for equipment on nominal 230V mains is 2500V.

**Humidity limits**

- Operation: 5% to 80% RH
- Storage: 5% to 90% RH
- Transportation: 5% to 90% RH

**Power requirements**

- Line voltage: Standard: 90 to 264V at 45 to 65 Hz
- Enhanced: 90 to 132V at 45 to 65 Hz
- Low voltage: 20 to 54V dc or
- Enhanced: 20 to 35V ac (45 to 400 Hz)

**Fuse type**

- Not user accessible

**Intercept protection**

- Standard: 40ms at 75% max. instrument load
- Enhanced: 120ms at 75% max. instrument load

**Electromagnetic compatibility (EMC)**

- Emissions: B, EN55022-1
- Immunity: B, EN55022-2

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### Physical

- Panel mounting: DIN43700
- Bezel size: 144 x 144 mm.
- Panel cutout dimensions: 138 x 138 (both - 0 + 1 mm)
- Depth behind bezel rear face: 220 mm (No terminal cover);
- 236 mm (standard terminal cover)
- 275 mm (long terminal cover closed)
- 390mm (long terminal cover open)
- Weight: 3.5kg
- Panel mounting: Vertical ±30°C
**MECHANICAL INSTALLATION**

**Panel cutout**
- View on under side (STC shown)

**Case clamp**
- Front view
- Maximum panel thickness 25mm
- Min. inter-recorder distance: 35mm
- Alternative location for case clamp 4101 only

**SUPPLY VOLTAGE AND INPUT BOARD TERMINATION**

**Options**
- All isolation figures are installation category II and Pollution degree 2

**Relay outputs**
- Maximum switching power: 500VA
- Maximum breaking current: 2 Amps within above power ratings
- Maximum contact voltage: 250V within above power ratings
- Maximum dc ratings: See Graph 2

**Isolation (dc to 65Hz; BS EN61010)**
- Contact-contact: 300V RMS or dc (double insulation)
- Contact to ground: 300V RMS or dc (basic insulation)

**Estimated life**: 30,000,000 operations

* With resistive loads. With inductive loads, derate according to Graph 1, in which:
  - Contact life = resistive life x F1 or F2 where
  - F1 = measured on representative examples and
  - F2 = typical values according to experience

**Graph 1 Derating curves**

**Graph 2 DC ratings**

**Event inputs**
- Isolation (dc to 65Hz; BS EN61010)
  - Event input to ground: 100V RMS or dc (double insulation)
  - Event input to Event input: 0V
- Recognition levels
  - Low: –30V to +0.8V
  - High: 2 to 30V

**Transmitter Power Supply**
- Output voltage: 3 or 6 x 25V dc (nom) outputs
- Isolation (dc to 65Hz; BS EN61010)
  - Channel to channel: 100V RMS or dc (double insulation)
  - Channel to ground: 100V RMS or dc (basic insulation)

**Cover rating**: IP10
### INPUT BOARD SIGNAL WIRING

#### Steriliser Option 4101/2
This option offers four inputs to control chart on/off and annotation of events.

Contact 1, when closed the chart runs normally. When open the pens are parked at Zero and the chart winds on 80mm.

Contact 2, applies to annotating recorders only. When closed the current time and date is printed, and as long as the contact remains closed the chart will run at its selected speed, with annotation inhibited. Once the contact goes open the pens are zeroed; the time date, scales and chart speed are printed and the chart is advanced by 80mm and stopped.

Contact 3, applies to annotating recorders only. On closure the message "EVENT START HH:MM:SS" is printed, where HH:MM:SS show the time of closure in hours, minutes and seconds. On the contact opening, the message "DURATION HH:MM:SS" is printed, where HH:MM:SS shows how long the contact was closed, therefore providing Sterilisation time.

Contact 4, If either contact 1 or 2 is closed then pen 4 (continuous) or pen 6 (multipoint) is used to show the status of Contact 4. Whilst contact 4 is open the trace is at 100%, whilst closed the trace is at 96%.

#### Configuration Editor
An offline configuration package that allows a recorder configuration to be set up on a PC and transferred by the 3.5mm jack plug.

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