Four Digit, Programmable Displays with Alarms and Analogue Output

PMX400TMP Temperature Display
PMX400HZX Frequency Display/Tachometer

- Bright four digit LED display in engineering units
- Up to 4 alarm channels
- Optional analogue output
- AC or DC powered
- Fully Isolated
- LED alarm status indication
- 1/8 DIN standard front with IP65 rating
- Integral power supply for active input devices
- Indicate and change setpoints in engineering units
- Full on–site programming from the front panel keypad
PMX400 Series Displays

PMX400 Series

The PMX400 series consists of two models:
- Temperature display
- Frequency display/Tachometer

Each model supports a wide variety of input signal types and ranges.

The analogue and alarm outputs are optional, except for the HZX which comes with two open collector alarms as standard. Units can be ordered with two or four SPDT relay channels.

Alarm channel four can be set up as a group/siren alarm which operates according to the state of the other three alarms.

Note: if your process measurement is represented by a current or voltage signal you may be interested in the PMX420 Series displays.

General Technical Data

### Display
- **Type**: Full 4 digit, red 14.2 mm LED
- **Display range**: –9999 to 9999
- **Status indicators**: Alarm ch 1–4 and key status

### Analogue output (optional)
- **Type**: Analogue current/voltage
- **Scaling**: To represent any portion of the input range
- **Range**: Any range inside the limits 0–22 mA or 0–11 V
- **Current drive**: Up to 850Ω load (at 20mA)
- **Voltage drive**: True voltage source (up to 20mA)
- **Output ripple**: Less than 20mV P/P
- **Output action**: Direct/reverse

### Input filtering
- **Type**: Digital filter (programmable)
- **Damping factor**: 1 to 99 (default = 2)

### General
- **Accuracy**: Typically ±0.1% of span
- **Linearity**: Better than 0.05%
- **Repeatability**: Less than 0.02% span/°C
- **Temperature drift**: 0.1% per 10,000 hours
- **Long term drift**: Less than 0.02% span/°C
- **Frequency response**: –3dB point = 5Hz
- **Response time**: 300 mS for 10–90% output change (digital filtering = 1)

### Insulation Co-ordination
- **Ports**: Input / Output / Case
- **Rated Insulation Voltage**: 300Veff
- **Overvoltage Category**: III
- **Impulse Withstand**: 4kV (1.2 / 50)

### Environmental Conditions
- **Operating temperature**: 0 to 60 °C
- **Storage temperature**: –25 to +70 °C
- **Pollution Degree**: 2
- **Relative humidity**: 10–90% (non–condensing)

### Housing
- **Type**: Panel mount
- **Front bezel**: 1/8 DIN format with IP65 rating

### Approvals
- **Mark**: E205105
- **UL508, 17th Edition
- **CE**: LV Directive

### Standards
- **CAN/CSA C22.2 No. 142-M1987, 1st Edition
- **UL508, 17th Edition
- **EN60178:1998
- **BS EN 61326-1998 + A2
- **E205105 CAN/CSA C22.2 No. 142-M1987, 1st Edition
- **UL508, 17th Edition
- **EN50178:1998
- **BS EN 61326-1998 + A2

### General set-up menu options

**Display**
- **Hib**: Display brightness (High or Low)
- **dPr**: Display Decimal Point (0.000 to 0000)
- **dLo**: Display low [Value]
- **dHi**: Display high [Value]

**Inputs**
- **Ip**: Input type (See individual units)
- **IPL**: Input range low [Value]
- **IPH**: Input range high [Value]
- **dF**: Input filtering (1 to 99)

**Analogue output**
- **AOPY**: Analogue Output (Enable/disable)
- **OPL**: Output low [Value]
- **OPH**: Output high [Value]
- **OP**: Output sense (Direct or reversed)

**Alarms 1–4 (general options)**
- **A12y**: Alarms 1 & 2 (Enable/disable)
- **A34y**: Alarms 3 & 4 (Enable/disable)
- **SECy**: Setpoint security (On-the-fly–changes or locked)
- **nOr**: Alarm reset mode (Manual or Automatic)

**Alarms (set for each channel)**
- **R1nE**: Output Coil energisation (Normally Energised or De-energised)
- **R1H**: Alarm Type (High/Low and Siren/Group for channel four only)
- **SP**: Setpoint (e.g., 50.00 units)
- **db**: Deadband (e.g., 10.00 units)
- **dl**: Alarm Timer Delay (e.g., 20 seconds)

**Approvals**
- **Mark**: E205105
- **UL508, 17th Edition
- **CE**: LV Directive

**Standard**
- **CAN/CSA C22.2 No. 142-M1987, 1st Edition
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PMX400 Series

The PMX400 series consists of two models:
- Temperature display
- Frequency display/Tachometer

Each model supports a wide variety of input signal types and ranges.
PMX400 Series Displays

Universal Temperature Indicator

PMX400TMP

- Accepts thermocouple, RTD or mV inputs
- Total sensor diagnostics
- Indicates temperature in °C or °F
- Configure without the need to calibrate
- Indicates setpoints in °C or °F
- Automatic CJC for thermocouple inputs
- Automatic lead length compensation for RTD inputs

Options

The basic software will control the optional analogue outputs and alarm channels without modification. So, to retrofit an option, you can simply add a card, calibrate and setup for your installation from the front panel.

Technical Data

Display

Scaling

To display in °C, °F or mV

Inputs

Type

Thermocouple, PT100 RTD or mV

Standard ranges:

<table>
<thead>
<tr>
<th>Type</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>J Type</td>
<td>–50°C (–58°F) to 870°C (1598°F)</td>
</tr>
<tr>
<td>N Type</td>
<td>–50°C (–58°F) to 1300°C (2372°F)</td>
</tr>
<tr>
<td>T Type</td>
<td>–50°C (–58°F) to 400°C (752°F)</td>
</tr>
<tr>
<td>E Type</td>
<td>–50°C (–58°F) to 700°C (1292°F)</td>
</tr>
<tr>
<td>B Type</td>
<td>0°C (32°F) to 1820°C (3308°F)</td>
</tr>
<tr>
<td>S Type</td>
<td>–50°C (–58°F) to 1768°C (3214°F)</td>
</tr>
<tr>
<td>R Type</td>
<td>–50°C (–58°F) to 1768°C (3214°F)</td>
</tr>
<tr>
<td>mV signals</td>
<td>–200.00mV to 200.00mV</td>
</tr>
<tr>
<td>RTD (Pt100)</td>
<td>–220.0°C (–364.0°F) to 820.0°C (1508.0°F)</td>
</tr>
</tbody>
</table>

Cold junction compensation for thermocouple inputs

Lead length compensation for RTD inputs

Power supply

Type

AC or DC powered

AC (selectable) 100 – 132 Vac (47–63Hz) or 200 – 264 Vac (47–63Hz)

DC

Power usage

Alarm outputs (all channels)

Type

6VA or 6W at 24Vdc

Rating

Isolation

5 samples per second

5V between channels

General

Sampling rate

Options

/AO

With analogue output fitted

/4RO

With all alarm channels fitted

Notes

Ordering Information

<table>
<thead>
<tr>
<th>Type (Model: Supply/Options)</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMX400TMP 24Vdc</td>
<td>7940017862</td>
</tr>
<tr>
<td>PMX400TMP 24Vdc/4RO/AO</td>
<td>7940012968</td>
</tr>
</tbody>
</table>

For other ranges please specify PMX400TMP 1/2 where:

1 = Supply and 2 = Options

Connections

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Neutral / –</td>
<td>Power supply</td>
</tr>
<tr>
<td>2</td>
<td>Live / +</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Output +</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Current –</td>
<td>Analog output (AO option only)</td>
</tr>
<tr>
<td>5</td>
<td>Voltage –</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Security Link</td>
<td>Link to allow access to the set-up mode (normally not connected)</td>
</tr>
<tr>
<td>7</td>
<td>Security Link</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>CJC Board (white mark aligns with terminal 11)</td>
<td>Thermocouple inputs</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Not used</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Common</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Normal Open</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Normal Closed</td>
<td>Alarm Channel One (4RO option only)</td>
</tr>
<tr>
<td>17</td>
<td>Common</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Normal Open</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Normal Closed</td>
<td>Alarm Channel Two (4RO option only)</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Normal Open</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Normal Closed</td>
<td>Alarm Channel Three (4RO option only)</td>
</tr>
<tr>
<td>23</td>
<td>Common</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Normal Open</td>
<td>Alarm Channel Four (4RO option only)</td>
</tr>
</tbody>
</table>
**PMX400HZX**
- Measures frequency of signals from industrial sensors
- Provides power for active input devices
- Two alarm channels
- Debounce for contact closure inputs

**Options**
The basic software will control the optional analogue outputs and alarm channels without modification. So, to retrofit an option, you can simply add a card, calibrate and setup for your installation from the front panel.

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**Technical Data**

<table>
<thead>
<tr>
<th>Display</th>
<th>To display in engineering units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs</td>
<td>Programmable frequency</td>
</tr>
<tr>
<td>Sensor power output</td>
<td>Any range within the limits shown</td>
</tr>
<tr>
<td>Input voltage range</td>
<td>Span range</td>
</tr>
<tr>
<td>Power supply</td>
<td>0 to 9.999Hz</td>
</tr>
<tr>
<td>AC (selectable)</td>
<td>0 to 99.99Hz</td>
</tr>
<tr>
<td>DC</td>
<td>0 to 999.9Hz</td>
</tr>
<tr>
<td>AC 6V or 6W at 24Vdc</td>
<td>Nominally 12Vdc (to 25mA) – others on request (FPS option)</td>
</tr>
<tr>
<td>Alarm outputs (channels one and two)</td>
<td>50mVac to 250Vac or 3Vdc to 250Vdc</td>
</tr>
<tr>
<td>Alarm outputs (channels three and four)</td>
<td>AC or DC powered</td>
</tr>
<tr>
<td>Alarm outputs (channels one and two)</td>
<td>100 – 132 Vac (47–63Hz) or 200 – 264 Vac (47–63Hz)</td>
</tr>
<tr>
<td>Alarm outputs (channels three and four)</td>
<td>24Vdc ±10% (others on request)</td>
</tr>
<tr>
<td>Alarm outputs (channels one and two)</td>
<td>AC 6V or 6W at 24Vdc</td>
</tr>
<tr>
<td>Alarm outputs (channels three and four)</td>
<td>NPN open collector transistor type</td>
</tr>
<tr>
<td>Alarm outputs (channels one and two)</td>
<td>Switched to OV when &quot;on&quot;</td>
</tr>
<tr>
<td>Alarm outputs (channels three and four)</td>
<td>to 200mA &quot;on&quot; state current</td>
</tr>
<tr>
<td>Alarm outputs (channels one and two)</td>
<td>or 50Vdc &quot;off&quot; state voltage</td>
</tr>
<tr>
<td>Alarm outputs (channels three and four)</td>
<td>Note: back-emf protection must be used for inductive loads</td>
</tr>
<tr>
<td>Alarm outputs (channels one and two)</td>
<td>Common negative rail</td>
</tr>
<tr>
<td>Alarm outputs (channels three and four)</td>
<td>SPD relay contacts</td>
</tr>
<tr>
<td>Alarm outputs (channels one and two)</td>
<td>3A at 240Vac (resistive)</td>
</tr>
<tr>
<td>Alarm outputs (channels three and four)</td>
<td>3A at 24Vac (resistive)</td>
</tr>
<tr>
<td>Alarm outputs (channels one and two)</td>
<td>1kV between channels</td>
</tr>
<tr>
<td>Alarm outputs (channels three and four)</td>
<td>222mS (10–90mS, cf=1)</td>
</tr>
<tr>
<td>Alarm outputs (channels one and two)</td>
<td>With analogue output fitted</td>
</tr>
<tr>
<td>Alarm outputs (channels three and four)</td>
<td>With alarm channels three and four fitted</td>
</tr>
<tr>
<td>Alarm outputs (channels one and two)</td>
<td>Custom input sensor supply voltage. State voltage, e.g.,</td>
</tr>
</tbody>
</table>

**Ordering Information**

<table>
<thead>
<tr>
<th>Type (Model Supply/Options)</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMX400HZX 24Vac</td>
<td>7840015595</td>
</tr>
<tr>
<td>PMX400HZX 24Vac/ROAO</td>
<td>7840011979</td>
</tr>
</tbody>
</table>

For other ranges please specify PMX401HZX 1/2 where: 1 = Supply and 2 = Options

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**Inputs**
Inputs can be taken from many sources, including:
- NAMUR sensors
- 3–wire PNP/NPN sensors
- PNP/NPN open collector outputs
- TTL logic
- Solid State Switches
- Low and high voltage pulses
- Volt–free contacts

**Connections**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Power supply</th>
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<td>1</td>
<td>Neutral / –</td>
<td>Power supply</td>
</tr>
<tr>
<td>2</td>
<td>Live / +</td>
<td>Power supply</td>
</tr>
<tr>
<td>3</td>
<td>Output +</td>
<td>Analogue output</td>
</tr>
<tr>
<td>4</td>
<td>Output –</td>
<td>Analogue output</td>
</tr>
<tr>
<td>5</td>
<td>Common</td>
<td>Alarm Channel One</td>
</tr>
<tr>
<td>6</td>
<td>Channel 1</td>
<td>Alarm Channel Two</td>
</tr>
<tr>
<td>7</td>
<td>Channel 2</td>
<td>Alarm Channel Two</td>
</tr>
<tr>
<td>8</td>
<td>Security Link</td>
<td>Link 12 &amp; 8 for set-up mode (otherwise leave disconnected)</td>
</tr>
<tr>
<td>9</td>
<td>Pull up/down</td>
<td>Inputs/Security link</td>
</tr>
<tr>
<td>10</td>
<td>Signal – / 0V</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Signal +</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>+12Vdc out</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Normally Closed</td>
<td>Alarm Channel Three</td>
</tr>
<tr>
<td>14</td>
<td>Common</td>
<td>Alarm Channel Three</td>
</tr>
<tr>
<td>15</td>
<td>Normally Open</td>
<td>Alarm Channel Three</td>
</tr>
<tr>
<td>16</td>
<td>Normally Closed</td>
<td>Alarm Channel Three</td>
</tr>
<tr>
<td>17</td>
<td>Common</td>
<td>Alarm Channel Four</td>
</tr>
<tr>
<td>18</td>
<td>Normally Open</td>
<td>Alarm Channel Four</td>
</tr>
</tbody>
</table>

See user manual for full explanation of input connections

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**PMX400 Series Displays**

Universal Frequency Indicator/Tachometer

- Measures frequency of signals from industrial sensors
- Provides power for active input devices
- Two alarm channels
- Debounce for contact closure inputs

- **Technical Data**
  - Display Scaling
  - Inputs Type Programmable frequency
  - Range Any range within the limits shown
  - Span range Zero range Resolution
  - 0 to 9.999Hz 0 to 9.998Hz 0.001Hz
  - 0 to 99.99Hz 0 to 99.98Hz 0.01Hz
  - 0 to 999.9Hz 0 to 999.8Hz 0.1Hz
  - 0 to 9999Hz 0 to 9998Hz 1Hz
  - Sensor power output Nominally 12 Vdc (to 25 mA) – others on request (FPS option)
  - Input voltage range 50 mVac to 250 Vac or 3 Vdc to 250 Vdc
  - Power supply Type AC or DC powered
  - AC (selectable) 100 – 132 Vac (47–63Hz) or 200 – 264 Vac (47–63Hz)
  - DC 24 Vdc ±10% (others on request)
  - Power usage AC 6VA or 6W at 24Vdc
  - Alarm outputs (channels one and two) Type NPN open collector transistor type
  - Operation Switched to 0V when “on”
  - Rating to 200mA “on” state current
  - Isolation or 50Vdc “off” state voltage
  - Note: back-emf protection must be used for inductive loads
  - Alarm outputs (channels three and four) Type SPD relay contacts
  - Rating 3A at 240Vac (resistive)
  - Isolation 3A at 24Vac (resistive)
  - General 1kV between channels
  - Response time 222mS (10–90mS, cf=1)
  - Options With analogue output fitted
  - With alarm channels three and four fitted
  - Custom input sensor supply voltage. State voltage, e.g., PMX400HZX/.../FPS/24Vdc

- **Inputs**
  - Inputs can be taken from many sources, including:
    - NAMUR sensors
    - 3–wire PNP/NPN sensors
    - PNP/NPN open collector outputs
    - TTL logic
    - Solid State Switches
    - Low and high voltage pulses
    - Volt–free contacts

- **Connections**
  - Terminal Signal Power supply
  - 1 Neutral / – Power supply
  - 2 Live / + Power supply
  - 3 Output + Analogue output
  - 4 Output – Analogue output
  - 5 Common Alarm Channel One
  - 6 Channel 1 Alarm Channel Two
  - 7 Channel 2 Alarm Channel Two
  - 8 Security Link Link 12 & 8 for set-up mode (otherwise leave disconnected)
  - 9 Pull up/down Inputs/Security link
  - 10 Signal – / 0V |
  - 11 Signal + |
  - 12 +12Vdc out |
  - 13 Normally Closed Alarm Channel Three
  - 14 Common Alarm Channel Three
  - 15 Normally Open Alarm Channel Three
  - 16 Normally Closed Alarm Channel Four
  - 17 Common Alarm Channel Four
  - 18 Normally Open Alarm Channel Four

- **Ordering Information**
  - Type (Model Supply/Options) Cat. No.
  - PMX400HZX 24Vac 7840015595
  - PMX400HZX 24Vac/ROAO 7840011979

For other ranges please specify PMX401HZX 1/2 where: 1 = Supply and 2 = Options