

## 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



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# PMX400 Series Displays

## PMX400 Series

The PMX400 series consists of two models:

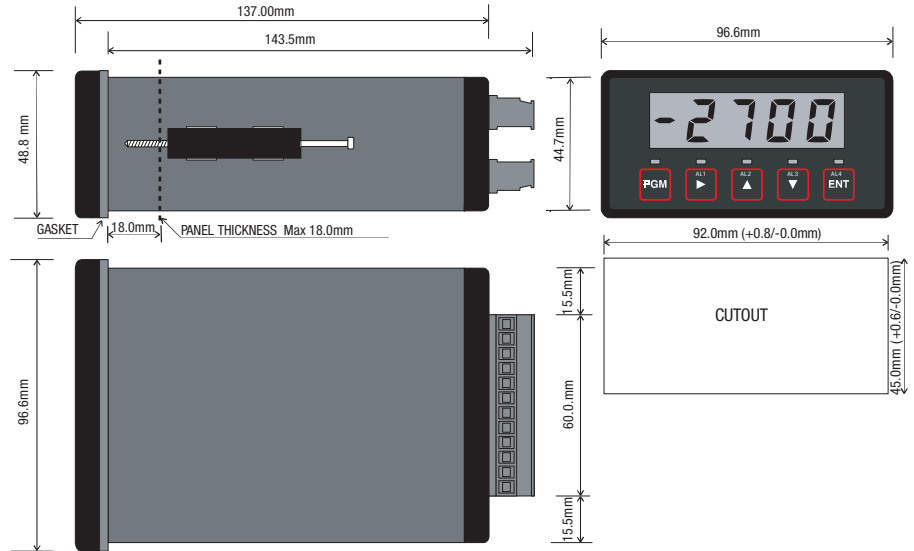
- Temperature display
- Frequency display/Tachometer

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
Scaling	To display in % or engineering units
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	±0.02% of span
Temperature drift	Less than 0.02% span/°C
Long term drift	0.1% per 10,000 hours
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
DC Powered Units only	E205105
DC Powered Units only	LV Directive EMC
Standard	
	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		
<b>H 18 r</b>	Display brightness	High or Low
<b>d P =</b>	Display Decimal Point	0.000 to 0000
<b>d L 0 =</b>	Display low	[Value]
<b>d H 1 =</b>	Display high	[Value]
Inputs		
<b>i P = 1</b>	Input type	See individual units
<b>i P L =</b>	Input range low	[Value]
<b>i P H =</b>	Input range high	[Value]
<b>d F = 2</b>	Input filtering	1 to 99
Analogue output		
<b>R O P Y</b>	Analogue Output	Enable/disable
<b>O P L =</b>	Output low	[Value]
<b>O P H =</b>	Output high	[Value]
<b>O P = d</b>	Output sense	Direct or reversed
Alarms 1-4 (general options)		
<b>R 1 2 Y</b>	Alarms 1 & 2	Enable/disable
<b>R 3 4 Y</b>	Alarms 3 & 4	Enable/disable
<b>S E C Y</b>	Setpoint security	On-the-fly-changes or locked
<b>n 0 r</b>	Alarm reset mode	Manual or Automatic
Alarm options (set for each channel)		
<b>R 1 n E</b>	Output Coil energisation	Normally Energised or De-energised
<b>R 1 = H</b>	Alarm Type	High/Low (and Siren/Group for channel four only)
<b>S P 1 =</b> <b>50.00</b>	Setpoint e.g., 50.00 units	According to display range
<b>d b 1 =</b> <b>10.00</b>	Introduces deadband e.g., 10.00 units	From 1 count to display range
<b>d L 1 =</b> <b>20</b>	Alarm Timer Delay e.g., 20 seconds	0-4200s (default = 0s)

**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

**Inputs**

Type

Standard ranges:

J Type Thermocouple

N Type Thermocouple

T Type Thermocouple

E Type Thermocouple

B Type Thermocouple

S Type Thermocouple

R Type Thermocouple

mV signals

RTD (Pt100)

Cold junction compensation for thermocouple inputs

Lead length compensation for RTD inputs

**Power supply**

Type

AC (selectable)

DC

Power usage

**Alarm outputs (all channels)**

Type

Rating

Isolation

**General**

Sampling rate

**Options**

/AO

/4RO

**Notes**

**Ordering Information**

**Display**

To display in °C, °F or mV

**Inputs**

Thermocouple, PT100 RTD or mV

Any range inside limits shown (no recalibration required)

-50°C (-58°F) to 870°C (1598°F)

-50°C (-58°F) to 1300°C (2372°F)

-50°C (-58°F) to 400°C (752°F)

-50°C (-58°F) to 700°C (1292°F)

0°C (32°F) to 1820°C (3308°F)

-50°C (-58°F) to 1768°C (3214°F)

-50°C (-58°F) to 1768°C (3214°F)

-200.00mV to 200.00mV

-220.0°C (-364.0°F) to 820.0°C (1508.0°F)

Automatic

Automatic

**Power supply**

AC or DC powered

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

20–28Vdc (others on request)

AC 6VA or 6W at 24Vdc

**Alarm outputs (all channels)**

SPDT relay contacts

3A at 240Vac (resistive)  
3A at 24Vdc (resistive)

1kV between channels

**General**

5 samples per second

**Options**

With analogue output fitted

With all alarm channels fitted

**Ordering Information**

Type (Model Supply/Options)	Cat. No.
PMX400TMP 24Vdc	7940017862
PMX400TMP 24Vdc/4RO/AO	7940012968

For other ranges please specify PMX400TMP 1/2 where:  
1 = Supply and 2 = Options

**Connections**

Terminal	Signal	
1	Neutral / -	Power supply
2	Live / +	
3	Output +	Analogue output (/AO option only)
4	Current -	
5	Voltage -	
6	Security Link	Link to allow access to the set-up mode (normally not connected)
7	Security Link	
8	CJC Board (white mark aligns with terminal 11)	Thermocouple inputs
9		
10		
11		
12	Not used	
8	Not used	RTD inputs
9		
10		
11	B <sub>sense</sub>	
12	A	
8	Not used	Millivolt inputs
9		
10		
11	mV input +	
12	Not used	
13	Normally Closed	Alarm Channel One (/4RO option only)
14	Common	
15	Normally Open	
16	Normally Closed	Alarm Channel Two (/4RO option only)
17	Common	
18	Normally Open	
19	Normally Closed	Alarm Channel Three (/4RO option only)
20	Common	
21	Normally Open	
22	Normally Closed	Alarm Channel Four (/4RO option only)
23	Common	
24	Normally Open	

**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.

**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



**Technical Data**

<b>Display</b>																
Scaling	To display in engineering units															
<b>Inputs</b>																
Type	Programmable frequency															
Range	Any range within the limits shown															
	<table border="1"> <thead> <tr> <th>Span range</th> <th>Zero range</th> <th>Resolution</th> </tr> </thead> <tbody> <tr> <td>0 to 9.999Hz</td> <td>0 to 9.998Hz</td> <td>0.001Hz</td> </tr> <tr> <td>0 to 99.99Hz</td> <td>0 to 99.98Hz</td> <td>0.01Hz</td> </tr> <tr> <td>0 to 999.9Hz</td> <td>0 to 999.8Hz</td> <td>0.1Hz</td> </tr> <tr> <td>0 to 9999Hz</td> <td>0 to 9998Hz</td> <td>1Hz</td> </tr> </tbody> </table>	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
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0 to 999.9Hz	0 to 999.8Hz	0.1Hz														
0 to 9999Hz	0 to 9998Hz	1Hz														
Sensor power output	Nominally 12Vdc (to 25mA) – others on request (/FPS option)															
Input voltage range	50mVac to 250Vac or 3Vdc to 250Vdc															
<b>Power supply</b>																
Type	AC or DC powered															
AC (selectable)	100 – 132 Vac (47–63Hz) or 200 – 264 Vac (47–63Hz)															
DC	24Vdc ±10% (others on request)															
Power usage	AC 6VA or 6W at 24Vdc															
<b>Alarm outputs (channels one and two)</b>																
Type	NPN open collector transistor type															
Operation	Switched to 0V when "on"															
Rating	to 200mA "on" state current or 50Vdc "off" state voltage Note: back- $\epsilon$ mf protection must be used for inductive loads															
Isolation	Common negative rail															
<b>Alarm outputs (channels three and four)</b>																
Type	SPDT relay contacts															
Rating	3A at 240Vac (resistive) 3A at 24Vdc (resistive)															
Isolation	1kV between channels															
<b>General</b>																
Response time	220mS (10–90mS, df=1)															
<b>Options</b>																
/AO	With analogue output fitted															
/RO	With alarm channels three and four fitted															
/FPS	Custom input sensor supply voltage. State voltage, e.g., PMX400HZX/.../FPS/24Vdc															

**Connections**

Terminal	Signal	
1	Neutral / –	Power supply
2	Live / +	
3	Output +	Analogue output (/AO option only)
4	Output –	
5	Common	Alarm Channel One and Alarm Channel Two
6	Channel 1	
7	Channel 2	
8	Security Link	Inputs/Security link
9	Pull up/down	
10	Signal – / 0V	Link 12 & 8 for set-up mode (otherwise leave disconnected)
11	Signal +	
12	+12Vdc out	
See user manual for full explanation of input connections		
13	Normally Closed	Alarm Channel Three (/RO option only)
14	Common	
15	Normally Open	
16	Normally Closed	Alarm Channel Four (/RO option only)
17	Common	
18	Normally Open	

**Ordering Information**

Type (Model Supply/Options)	Cat. No.
PMX400HZX 24Vdc	7940015595
PMX400HZX 24Vdc/RO/AO	7940011979

For other ranges please specify PMX400HZX 1/2 where:  
1 = Supply and 2 = Options