



MPT PRESSURE SENSOR  
**User Manual**



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## Subject to Technical Changes

Owing to our policy of continuous product development, the illustrations and technical data contained in this document may differ slightly from the current version of the device.

## Legal Manufacturer

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## Certifications/Compliances

CE Compliance via the following testing:

1. EN61000-4-2: Electrostatic Discharge
2. EN61000-4-3: Radiated Immunity (and Radiated Emissions)
3. EN61000-4-4: Electrical Fast Transients
4. EN61000-4-5: Surge - Power Line
5. EN61000-4-6: Conducted Immunity

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# 1.00 Introduction

## 1.01 Safety Precautions

The Model MPT pressure transmitter undergoes rigorous factory testing before shipment. Upon delivery, conduct a visual inspection to ensure no damage occurred during transit.


**CAUTION**

Please read the following cautions carefully before using this instrument. If you have any questions or encounter problems, contact your sales agent or Malema.

- **Pressure Limits:** Do not exceed the maximum allowable pressure. Exceeding this limit may result in injury or damage due to the device bursting or exploding.
- **Corrosive Substances:** Avoid using this device with corrosive substances. Exposure to corrosive materials can lead to device failure and potential hazards.
- **Mechanical Stress:** Do not subject the device to excessive weight, vibration, or shock. This can cause damage or failure.
- **Power Supply:** Use only the specified power supply. Incorrect power supply usage may pose fire or electric shock hazards.
- **Temperature Range:** Operate the device within the specified temperature range. Exceeding this range can result in damage or failure.
- **Wiring:** Connect the wiring accurately according to the wiring diagrams and instructions in the operation manual. Incorrect wiring can lead to injury or fire hazards.
- **Hazardous Environments:** This product is designed for use in non-hazardous areas only.
- **Installation:** Install the device accurately following the installation instructions in the operation manual.
- **Modifications:** Do not attempt to modify or repair the device yourself. Contact Malema Sensors for repairs.

**Note:** Please ensure you have read the User Manual before installing the Pressure Sensor. Contact Malema Sensors if you require further assistance. Incorrect installation might result in fatal or serious injury due to malfunction or incorrect operation of the product.

## 1.02 Overview

MPT Pressure Sensors are specifically designed for high-purity applications in the semiconductor industry. The internal flow path is designed to minimize the hold up volume. The wetted components of these nonmetallic transducers are constructed using PTFE, PFA, or other similar high-purity inert materials.



MPT-750-P and MPT-750-T  
Sensors with Cable Connection



MPT-751-P and MPT-751-T  
Sensors with Hirose Connector

<b>Models</b>	Pressure Sensor Only (MPT-750-P and MPT-751-P)				
	Pressure and Temperature Sensor (MPT-750-T and MPT-751-T)				

Sizes	1/4"	3/8"	1/2"	3/4"	1"
Single Port	✓	✓	✓		
Flow-Through	✓	✓	✓	✓	✓

Fluid Connections: Tube, Pillar, and Flare

## 1.00 Introduction

### CAUTION

Malema Sensor is not responsible for damage or physical injury caused by the following,

- Repairs or alterations by other companies
- Use of non authorized parts for maintenance causing damage
- Non-compliance with the precautions outlined in this manual or improper use and service conditions
- Fire, earthquake, water damage or other natural disaster

### 1.03 Chemicals

The service life of the instrument when used with chemicals can vary significantly depending on the specific working conditions, including chemical concentration, temperature, and pressure. For applications involving strong acids or strong alkalis, consult Malema for guidance.

It is strongly recommended to conduct a thorough confirmation test under actual operating conditions before using the instrument. Please note that the chemical resistance data is a guideline but may require separate testing.

### 1.04 Storage

### CAUTION

- **Warning:** Risk of Damage from Humidity.
- **Shield from Moisture:** Protect the flow meter from rain and humidity.
- **Humidity Control:** Ensure that relative humidity does not exceed 95%.
- **Warning:** Risk of Mechanical Wear.
- **Secure Storage Location:** Store the flow meter in an area that is protected from mechanical influences.
- **Temperature Compliance:** Adhere to the specified storage temperature limits outlined in the Operating Conditions.
- **Avoid Direct Sunlight:** Protect the flow meter from direct sunlight to prevent overheating.
- **Humidity Protection:** Again, ensure protection from rain and excessive humidity.
- **Maintain Protective Materials:** Keep all protective stickers or covers on process connections intact or reapply them as needed.
- **Preparation for Storage:** Prior to storing a previously used flow meter, completely drain all fluids from the measuring tube.

### 1.05 Maintenance

To ensure optimal performance and longevity, conduct regular inspections of the instrument approximately twice a year, based on usage conditions. If any abnormalities are detected, contact Malema immediately.

Check Items:

- Conduct visual inspection
- Check the pressure inlet for signs of corrosion, dirt, clogging, leaks, etc.
- Verify the output accuracy using a standard pressure gauge.

## 2.00 Installation

To prevent the product from malfunctioning or deteriorating, be sure to avoid installing it in the following places:

- Areas with extreme temperatures (high or low)
- Locations exposed to corrosive or volatile gases
- Areas subject to strong vibration or noise
- Places prone to lightning strikes
- Areas exposed to liquid splashes or submersion
- Mounting positions where the process connection faces vertically upward

## 3.00 Standard Specifications

### 3.01 Performance Specifications

<b>Accuracy</b>	±1% FS
<b>Repeatability</b>	±0.5% FS
<b>Ambient Temperature</b>	0-50°C
<b>Media Operating Temperature</b>	10°C to 70°C
<b>Measurable Fluids</b>	Gases or non-phase changing Liquids
<b>Maximum Operating Pressure</b>	Depends on pressure range; typically, 2 bar over max pressure
<b>Ingress Protection Class</b>	IP64
<b>Output Options</b>	Analog 4-20 mA or 0-10 V DC
<b>Power Supply</b>	24 V DC ±10%
<b>Digital Communication</b>	RS-485 Malema Addressable Sensor Network (ASN)

### 3.02 Electrical Specifications

<b>Output Options</b>	Analog Output	Dual Passive 4-20 mA Current Loops, or Dual 0-10 V DC
	Digital Output	Dual Open Collectors Max 30 mA @ 60 V DC
<b>Power Supply</b>	24 V DC ±10%	
<b>Power Consumption</b>	Max 30 mA @ 24 V DC	
<b>Digital Communication</b>	RS-485	Malema Addressable Sensor Network (ASN)
<b>Connector</b>	12-Pin-HR-30 Series Hirose Connector (MPT-751-P and MPT-751-T)	
<b>Cable</b>	1 meter, 3 meter or custom length available for MPT-750-P and MPT-750-T	

# 3.00 Standard Specifications

## 3.03 Electrical Connections

### MPT - 750 Cable Version

Option F	
Color	Description
Red	24 V DC
Black	Ground
Violet	-Analog (4-20 mA) PRESS, Passive
Blue	+Analog (4-20 mA) PRESS, Passive
Green	RS-485 A (+)
Orange	RS-485 B (-)
Yellow	-Analog (4-20 mA) Temp, Passive
White	+Analog (4-20 mA) Temp, Passive

Option G	
Color	Description
Red	24 V DC
Black	Ground
Violet	-Analog (4-20 mA) PRESS, Active
Blue	+Analog (4-20 mA) PRESS, Active
Green	RS-485 A (+)
Orange	RS-485 B (-)
Yellow	DO1 (Open Collector) PRESS- High
White	DO2 (Open Collector) PRESS- Low

Option H	
Color	Description
Red	24 V DC
Black	Ground
Violet	-Analog (0-10 V DC) PRESS, Active
Blue	+Analog (0-10 V DC) PRESS, Active
Green	RS-485 A (+)
Orange	RS-485 B (-)
Yellow	DO1 (Open Collector) PRESS- High
White	DO2 (Open Collector) PRESS- Low

Option I	
Color	Description
Red	24 V DC
Black	Ground
Violet	-Analog (4-20 mA) PRESS, Active
Blue	+Analog (4-20 mA) PRESS, Active
Green	RS-485 A (+)
Orange	RS-485 B (-)

Option J	
Color	Description
Red	24 V DC
Black	Ground
Violet	-Analog (0-10 V DC) PRESS, Active
Blue	+Analog (0-10 V DC) PRESS, Active
Green	RS-485 A (+)
Orange	RS-485 B (-)



## 3.00 Standard Specifications

### 3.03 Electrical Connections

#### MPT - 751 Hirose

Option A	
Pins	Description
1	24 V DC
2	Ground
3	-Analog (4-20 mA) PRESS, Passive
4	+Analog (4-20 mA) PRESS, Passive
5	-Analog (4-20 mA) Temp, Passive
6	+Analog (4-20 mA) Temp, Passive
7	RS-485 A (+)
8	RS-485 B (-)
9	DO1 (Open Collector) PRESS- High
10	DO2 (Open Collector) PRESS- Low
11	NA
12	NA

Option B	
Pins	Description
1	24 V DC
2	Ground
3	-Analog (4-20 mA) PRESS, Active
4	+Analog (4-20 mA) PRESS, Active
5	RS-485 A (+)
6	RS-485 B (-)
7	DO1 (Open Collector) PRESS- High
8	DO2 (Open Collector) PRESS- Low
9	NA
10	NA
11	NA
12	NA

Option C	
Pins	Description
1	24 V DC
2	Ground
3	-Analog (0-10 V DC) PRESS, Active
4	+Analog (0-10 V DC) PRESS, Active
5	RS-485 A (+)
6	RS-485 B (-)
7	DO1 (Open Collector) PRESS- High
8	DO2 (Open Collector) PRESS- Low
9	NA
10	NA
11	NA
12	NA

Option D	
Pins	Description
1	24 V DC
2	Ground
3	-Analog (4-20 mA) PRESS, Active
4	+Analog (4-20 mA) PRESS, Active
5	RS-485 A (+)
6	RS-485 B (-)

Option E	
Pins	Description
1	24 V DC
2	Ground
3	-Analog (0-10 V DC) PRESS, Active
4	+Analog (0-10 V DC) PRESS, Active
5	RS-485 A (+)
6	RS-485 B (-)

# 4.00 Dimensional Drawing



Figure 1: MPT Pressure Sensor Flow Through Configuration



Figure 2: MPT Pressure Sensor Single Port Configuration

MPT Size	A	B
Flow through Design (Female Flare) - 1/4	101.7mm	
Flow through Design (Female Flare) - 3/8	106.9mm	
Flow through Design (Female Flare) - 1/2	127mm	
Flow through Design (Female Flare) - 3/4	143mm	
Flow through Design (Female Flare) - 1.0	160.3mm	
For Flow through Design (Female S300 Pillar) - 1/4	81.78mm	
For Flow through Design (Female S300 Pillar) - 3/8	92.2mm	
For Flow through Design (Female S300 Pillar) - 1/2	117.4mm	
For Flow through Design (Female S300 Pillar) - 3/4	133.9mm	
For Flow through Design (Female S300 Pillar) - 1.0	146.2mm	
For Single Port Design (Female Flare) - 1/4		32.2mm
For Single Port Design (Female Flare) - 3/8		33.4mm
For Single Port Design (Female Flare) - 1/2		35.4mm
For Single Port Design (Female S300 Pillar) - 1/4		21.5mm
For Single Port Design (Female S300 Pillar) - 3/8		27.1mm
For Single Port Design (Female S300 Pillar) - 1/2		31.3mm

## 5.00 Order Information

Part Number for Scheme for Sensor with Cable version								
Model	***	*	*	*	*	**	_*	Description
MPT-750-P								Pressure Sensing Only
MPT-750-T								Pressure and Temperature Sensing
Range	030							0-30 psig
	100							0-100 psig
	ZZZ							Custom Range
Configuration	S							Single Port
	F							Flow Through
Size		2						1/4"
		3						3/8"
		4						1/2"
		6						3/4" (Not available in single port design)
		8						1" (Not available in single port design)
Fluid Connection			0					20 mm length Tube stub
			1					Female Flare
			2					Female Pillar
Electrical Connection	Pressure and Temperature Sensor MPT-750-T only			F				8 wire cable (Power, 2 passive analog o/p, RS-485 connection)
	Pressure Sensor MPT-750-P only			G				8 wire cable (Power, 1 active analog 4-20 mA o/p, 2 digital o/ps, RS-485 connection)
				H				8 wire cable (Power, 1 analog 0-10 V DC o/p, 2 digital o/ps, RS-485 connection)
				I				6 wire cable (Power, 1 active analog 4-20 mA o/p and RS-485 connection)
				J				6 wire cable (Power, 1 analog 0-10 V DC o/p and RS-485 connection)
Cable Length					01			1 meter
					03			3 meter
					ZZ			Custom length
Ordering Extention (Standard and Custom options)							-S01	Standard Version
							-XXX	For any custom options, factory will assign 3 digit unique ID in place of XXX

## 5.00 Order Information

Part Number for Scheme for Sensor with Connector version								
Model	***	*	*	*	*	**	_***	Description
MPT-751-P								Pressure Sensing Only
MPT-751-T								Pressure and Temperature Sensing
Range	100							0-100 psig
Configuration		S						Single Port
		F						Flow Through
Size			2					1/4"
			3					3/8"
			4					1/2"
			6					3/4" (Not available in single port design)
			8					1" (Not available in single port design)
Fluid Connection				0				20 mm length Tube stub
				1				Female Flare
				2				Female Pillar
Electrical Connection	Pressure and Temperature Sensor MPT-751-T only				A			12 PIN HR-30 Series Hirose Connector (Power, 2 x passive 4-20 mA analog output, 2 x digital o/ps, RS-485 connection)
	Pressure Sensor MPT-751-P only				B			12 PIN HR-30 Series Hirose Connector (Power, 1 x active 4-20 mA analog output, 1 x digital o/ps, RS-485 connection)
					C			12 PIN HR-30 Series Hirose Connector (Power, 1 x 0-10 V DC analog output, 1 x digital o/ps, RS-485 connection)
					D			6 PIN HR-30 Series Hirose Connector (Power, 1 active analog 4-20 mA o/p and RS-485 connection)
					E			6 PIN HR-30 Series Hirose Connector (Power, 1 analog 0-10 V DC o/p and RS-485 connection)
Reserved						XX		Reserved
Ordering Extention (Standard and Custom options)							-S01	Standard Version
							-XXX	For any custom options, factory will assign 3 digit unique ID in place of XXX

## 6.00 Troubleshooting

If you suspect the MPT Pressure Sensor is not sending an output signal, use the following steps to identify the problem.

To troubleshoot MPT Pressure Sensor, use a multimeter to measure the output signal. Connect the multimeter in series with the transducer to measure current output or directly to measure voltage output. This method effectively isolates issues between the transducer and the on-site data acquisition system. By monitoring the output signal, you can determine if the transducer itself is malfunctioning or if the problem lies within the data acquisition system.

## 7.00 Warranty

### 7.01 Period of Warranty

Malema Sensors warrants its Products will meet their written specifications when used in accordance with their applicable instructions and within the limits stated in the operating manuals and/or product data sheets for a period of one year from shipment of the Products. Malema Sensors makes no other warranty, expressed or implied. Malema disclaims the warranties of merchantability or fitness for a particular purpose. The express warranty provided herein and the data, specifications and descriptions of Malema Sensors Products appearing in Malema Sensors user manuals may not be altered except by express written agreement signed by an officer of Malema Sensors. Representations, oral or written, which are inconsistent with this warranty or such publications are not authorized and if given, should not be relied upon.

Buyer shall report any claimed defect in writing to Malema Sensors immediately upon discovery and in any event, within the warranty period. If Malema Sensors on receipt of the alleged defective product determines that the defect is due to misuse or modification owing to failure to comply with instructions and/or applicable limits stated in the operating manuals and/or product data sheets or for whatever other reasons (including intentional damage), Malema Sensors shall have the right to impose such repair and other transportation charges as incurred.

### 7.02 Repair

Where there are manufacturers' defects, Malema Sensors shall, at its sole option, repair the products and/or equipment or furnish replacement equipment or parts thereof, at the original delivery point. Malema Sensors shall not be liable for costs of removal, reinstallation, or gaining access.

### 7.03 Validity of Warranty

If Buyer or other third parties repair, replace, or adjust equipment or parts without Malema Sensors' prior written approval, Malema Sensors shall be relieved of any further obligation to Buyer under this section with respect to such equipment.

No equipment furnished by Malema Sensors shall be deemed to be defective by reason of normal wear and tear, failure to resist erosive or corrosive action of any fluid or gas (unless otherwise specified in Quotations), Buyer's failure to properly store, install, operate, or maintain the equipment in accordance with good industry practices or specific recommendations of Malema Sensors or in accordance with operating manuals and/or product data sheets limits, or Buyer's failure to provide complete and accurate information to Malema Sensors concerning the operational application of the equipment.

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