



# UPT7200

## Pressure and Temperature Combo Sensor

High Accuracy, Low Profile, Digital Output

### Pressure and Temperature Combined Transducers

The UPT7200 pressure and temperature combo transducer from the UltraStable MEMS line of TE MEAS sets a new product performance standard for demanding thermal management systems of the industrial market. It mainly focuses on Data Center applications. It could be extended to Green Energy and Water management systems accordingly, this combo sensor is suitable for measurement of liquid or gas pressure, even for difficult media such as contaminated water, steam and corrosive fluids. The transducer pressure cavity is constructed of 316L stainless steel and there are no internal O-rings or organics exposed to the pressure media. Having excellent durability, it is available with a variety of leak-proof, all metal pressure connections. The digital temperature sensing element located in the front of the fitting, can sense the media temperature in real time with high accuracy and quick response time, The UPT7200 is designed with TE latest IS2450 ASIC, which features high reliability and low power consumption, currently its standard pressure ranges from 0 to 50, up to 150psi (10Bar). Additional configurations not listed are either available or possible. Please inquire for further information

### Features

- Hermetic Pressure Ports
- Compact Mechanical Design
- 0.1%span Pressure Accuracy
- 0.2°C Temperature Accuracy
- $\pm 0.25\%$ /span/year Long Term Stability
- 0.5%span TEB for gauge type
- 0.75%span TEB for absolute type
- RS485 and I<sup>2</sup>C Output
- IP67
- UL Certification

### Applications

- Data Center Thermal Management
- Liquid Cooling System
- ESS/BESS Thermal Management
- Water Management System
- Other Industrial Applications

### Product Highlights

Latest generation ASIC from TE, high performance, high reliability;

RS485 and I<sup>2</sup>C digital output;

Pressure and Temperature output at single communication interface;

Multiple pressure fittings: M8, M10, G1/4, etc., flexible to custom design for specific applications.

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### Standard Pressure Ranges

Range (psi)	Range (Bar)	Gauge	Absolute
0 to 50	0 to 3.5	•	•
0 to 100	0 to 7	•	•
0 to 150	0 to 10	•	•

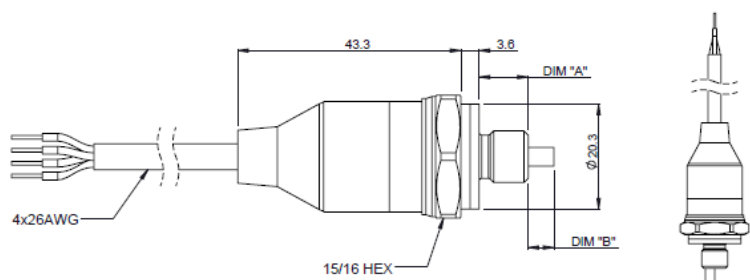
Intermediate ranges available upon request.

### Certifications

CE Compliance Test and Standards
IEC 61000-4-2 Electrostatic Discharge Immunity (4kV contact / 8kV air discharge, discharge rate>10s)
IEC 61000-4-3 Radiated, Radio-Frequency Electromagnetic Field Immunity (3V/m, 1kHz 80% modulation, 80M-1GHz)
IEC 61000-4-4 Electrical Fast Transient / Burst Immunity (Level 2, 1kV each line, capacitance coupling)
IEC 61000-4-6 Immunity to Conducted Disturb. Induced by Radio Freq. (Level 2, 3V rms, 150K~80MHz, 2s dwell, clamp injection)
IEC 61000-4-8 Power Frequency Magnetic Field (Pulse magnetic field immunity, 30A/m peak)
UL 61010
Industrial measurement equipment, UL category: PICQ 2/8

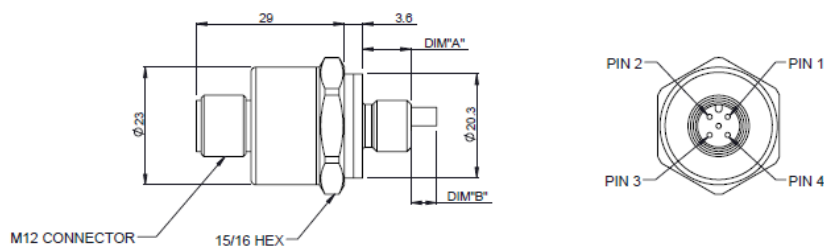
### Dimensions

#### CABLE OUTPUT



WIRE SEQUENCE		
	RS485	I <sup>2</sup> C
RED	VCC	VCC
BLACK	GND	GND
GREEN	Signal A	SCL
BLUE	Signal B	SDA

#### M12 CONNECTOR OUTPUT



PIN SEQUENCE		
	RS485	I <sup>2</sup> C
PIN 1	VCC	VCC
PIN 2	Signal A	SCL
PIN 3	GND	GND
PIN 4	Signal B	SDA

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### Specifications

Parameters	Min	Typical	Max	Units	Notes
SUPPLY VOLTAGE FOR RS485		5		V <sub>DC</sub>	
SUPPLY VOLTAGE FOR I2C		3.3		V <sub>DC</sub>	
OUTPUT AT 0%FS PRESSURE		1x10 <sup>6</sup>		Count	
OUTPUT AT 100%FS PRESSURE		1.5 x10 <sup>7</sup>		Count	
PRESSURE ACCURACY (COMBINED LINEARITY, HYSTERESIS & REPEATABILITY)	-0.1		0.1	%SPAN	2
TEMPERATURE ACCURACY	-0.2		0.2	°C	3
PRESSURE TOTAL ERROR BAND (G TYPE)	-0.5		0.5	%SPAN	4
PRESSURE TOTAL ERROR BAND (A TYPE)	-0.75		0.75	%SPAN	4
PRESSURE COMPENSATED TEMPERATURE	0		65	°C	
OPERATING TEMPERATURE	-20		85	°C	
STORAGE TEMPERATURE	-20		85	°C	
INSULATION RESISTANCE (500VDC)	100M			OHM	5
DIELECTRIC STRENGTH (500VAC, 1 MIN)			5	mA	5
CURRENT CONSUMPTION (RS485)			35	mA	
CURRENT CONSUMPTION (I2C)			5	mA	
START-UP TIME FOR RS485		60		ms	
START-UP TIME FOR I2C		20		ms	
SAMPLE RATE FOR RS485			10	Hz	
SAMPLE RATE FOR I2C			25	Hz	
ADDRESS FOR RS485		0x01			6
ADDRESS FOR I2C (PRESSURE)		0x74			7 bits address
ADDRESS FOR I2C (TEMPERATURE)		0x49			7 bits address
BAUD FOR RS485		19200		bps	7
SCL FREQUENCY FOR I2C			400K	Hz	
REVERSE POWER POLARITY PROTECTED		YES			
RoHS & REACH		YES			
LONG TERM STABILITY (ZERO, SPAN)	-0.25		0.25	%SPAN/ YEAR	
PRESSURE OVERLOAD			3X	RATED	8
PRESSURE BURST			4X	RATED	9
PRESSURE CYCLE	1M			CYCLES	10
TEMPERATURE CYCLE	7			YEARS	
MEDIA, PRESSURE PORT		FLUIDS COMPATIBLE WITH 316L ST STL			
MECHANICAL VIBRATION		20G, 10~2000Hz MIL-STD-810C, METHOD 514.2, CURVE L			
MECHANICAL SHOCK		HALF-SINE, PEAK: 50g, 11ms MIL-STD-202G, METHOD 213B, COND A			
IP RATING		IP67 (IEC60529)			11

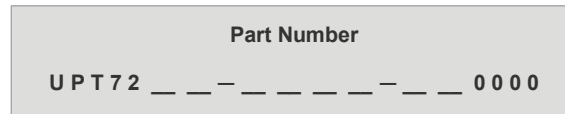
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## NOTES:

1. UNLESS OTHER SPECIFIED, ALL PARAMETERS ARE MEASURED AT 25 °C, 5VDC FOR RS485, 3.3VDC FOR I2C.
2. BEST FIT STRAIGHT LINE.  $ACCURACY = \sqrt[3]{LINEARITY^2 + HYSTERESIS^2 + REPEATABILITY^2}$
3. TEMPERATURE ACCURACY IN 0~65° C RANGE.
4. TEB INCLUDES ALL ACCURACY ERRORS, THERMAL ERRORS, SPAN AND ZERO TOLERANCES OVER THE COMPENSATED RANGE.
5. BETWEEN SENSOR BODY TO ANY PINS OF CONNECTOR.
6. 8 BITS ADDRESS, DEFAULT 0x01, CAN BE CHANGED FROM 0x01 TO 0x64.
7. DEFAULT 19200, CAN BE CHANGED FROM 2400 TO 115200.
8. THE MAXIMUM PRESSURE THAT CAN BE APPLIED WITHOUT CHANGING THE TRANSDUCER'S PERFORMANCE OR ACCURACY.
9. THE MAXIMUM PRESSURE THAT CAN BE APPLIED TO A TRANSDUCER WITHOUT RUPTURE OF EITHER THE SENSING ELEMENT OR TRANSDUCER.
10. TEST FROM ATM TO FULL PRESSURE.
11. IP RATING NOT INCLUDING CABLE TERMINAL.
12. REFER TO PRESSURE PORT LISTING NOTES FOR INSTALLATION RECOMMENDATIONS.
13. THIS PRODUCT CAN BE CONFIGURED FOR CUSTOM OEM REQUIREMENTS.
14. TRANSDUCERS CAN BE INSTALLED BY EITHER SPANNER OR DEEP SOCKET. TORQUE VALUES PROVIDED ARE FOR REFERENCE: ACTUAL TORQUE DEPENDS UPON MATING PORT MATERIAL, SURFACE FINISH, LUBRICATION AND SEALING MECHANISM. TRANSDUCER CALIBRATION AND/OR ZERO MAY SHIFT IF PART IS OVER-TORQUED DURING INSTALLATION. CHECK FOR A ZERO SHIFT AFTER INSTALLING.

## Ordering Information



### Output type

Code	Output Signal	Supply Voltage
A	RS 485	5±0.25 V
J	I <sup>2</sup> C Standard	3.3±0.3 V

### Port material

Code	Type
W	316L ST STL

### Cable

Code	Type	Note
2	4 FEET CABLE	FOR RS 485 ONLY
N	2 METER CABLE	FOR RS 485 ONLY
Q	3 METER CABLE	FOR RS 485 ONLY
4	0.15 METER CABLE	FOR I <sup>2</sup> C ONLY
5	0.5 METER CABLE	FOR I <sup>2</sup> C ONLY
M	1 METER CABLE	FOR I <sup>2</sup> C ONLY
D	M12 CONNECTOR	FOR I2C OR RS485

### Pressure Port

Code	Port	Dim "A"	Dim "B"	Tightening torque (N*m) See note 12
G	G1/4, BS5380, MALE	11.0	5	30
H	M8x1.0, ISO 6149-2, MALE	9.5	5	8
Q	M10x1.0, ISO 6149-2, MALE	9.5	5	15
X	G1/4, BS5380, MALE	11.0	15*	30
Y	M8x1.0, ISO 6149-2, MALE	9.5	15*	8
Z	M10x1.0, ISO 6149-2, MALE	9.5	15*	15

\* LENGTHENED TEMPERATURE PROBE  
\*\* T.F.F.T: TURNS FROM FINGER TIGHT

### Pressure Range

Code	PSI	Code	BAR
	050P		3.5B
	100P		007B
	150P		010B

### Pressure type

Code	Type
G	Gauge
A	Absolute