

PTE7300 SERIES

HERMETIC DIGITAL PRESSURE SENSOR & TEMPERATURE SENSOR

The PTE7300 pressure & temperature sensor is the ideal solution for customers with challenging measuring requirements for general applications in the mid and high pressure ranges. Utilizing Sensata’s automotive leading Microfused Strain Gauge (MSG) with best-in-class accuracy, the PTE7300 features a wide range of ports and provides an I²C digital output of pressure and temperature. Key characteristics include low power consumption for battery operation, fast response time, increased sensor diagnostics, and sensor communication integrity check using CRC (cyclic redundancy check). The CRC on the communication is additional to the memory integrity check (also CRC), and allows users to 100% validate the sensor output validity, which can be considered as an additional safety feature of the sensor. The PTE7300 is available in a fully hermetic IP69K waterproof package specifically developed for wet environments.



Features

- Measuring range from 0-16 bar to 0-400 bar (0-230 to 0-5800 psi)
- High accuracy
- Pressure and temperature digital output
- Low power consumption and fast response time
- Good electromagnetic noise resistance
- Enhanced data integrity on both the internal chip memory, and the sensor communication bus
- I²C bus, allowing for multiple I²C devices on the same bus
- Fully hermetic IP69K sensor, or module design
- Stainless steel design with hermetic port
- Storage and operating media temperature -40-125°C; Operating ambient temp. range -40-100°C
- Snubber option for dampening of pressure spikes due to hammer and cavitation
- REACH/RoHS/CE compliant⁽¹⁾
- NSF61 / WRAS / (drinking water certifications)⁽²⁾

SPECIFICATIONS

Electrical

Pressure Ranges	0-16 bar to 0-400 bar (0-230 psi to 0-5800 psi)
Pressure Reference	Gauge (Module) and Sealed Gauge (fully hermetic sensor)
Supply Voltage	2.7VDC to 5.5VDC
Digital Interface	I ² C with CRC (memory integrity, and data transmission)
Device Address	0xDA (including CRC) 0x6C (excluding CRC)
Operating Current In Sleep Mode	6.5 uA (typical)
Operating Current In Active Mode	3.7mA typical (4mA maximum)
Available Data	Pressure (int16) Bridge temperature (int16) Status (int16) Device serial (int32)
Resolution	12 bit default
Response Time (12 bit)	< 1 ms
Probe Configurations	On-demand, single cycle
EOC	Available in single cycle mode, through the STATUS register using the I ² C interface

Recommended pull-up resistors	1kOhm to 10kOhm, depending on cable length
External Capacitive Load for I2C Bus Line	400 pF max (depends on the cable length)
ESD	±4KV Contact; ±8KV Air
Radiated Immunity	80-1000MHz 3V/m 1400-2000MHz 3V/m 2000-2700MHz 1V/m
Conducted Immunity	0.15-80MHz 3Vrms
Magnetic Immunity	3 A/m for 5 minutes

Physical

Proof Pressure⁽³⁾	2.5X full scale pressure
Burst Pressure⁽³⁾	5X full scale pressure
Vibration	IEC 60068-2-6 with 2.0mm displacement, Sensor: 30g (10...2000Hz); Module: 20g (10...2000Hz)
Mechanical Shock	IEC 60068-2-27, 50g min
Drop (any Axis)	1m
Water Hammer	1.6X full scale pressure for 100k cycles, 1.3xFS for 200k cycles
Ingress Protection	IP00 (Module), IP69K (fully hermetic sensor)
Media Compatibility	Fluids and Gases compatible with 17-4PH stainless steel

Performance

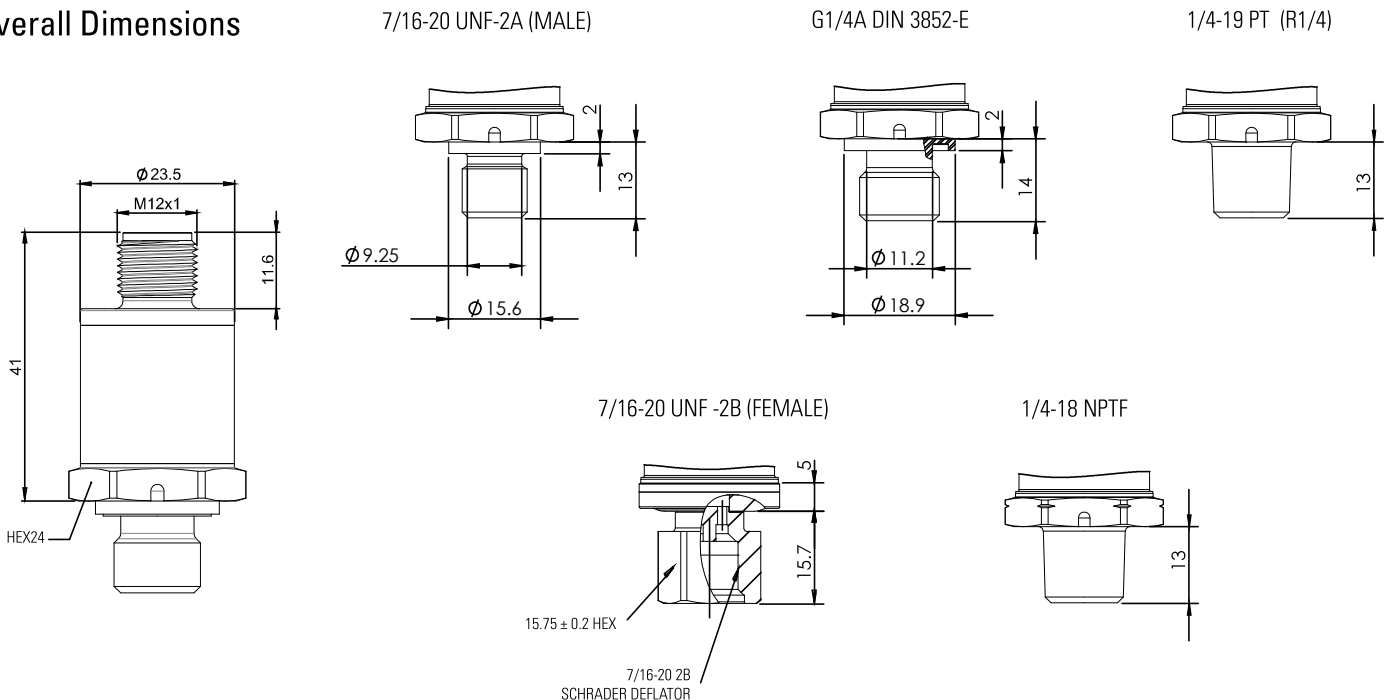
Pressure (Best Fit Straight)⁽⁴⁾	+/-0.5%FS @25°C
Pressure (Total Error Band)⁽⁵⁾	+/-1.5%FS @-20° to 85°C
Operating Endurance⁽⁶⁾	>10M cycles
Temperature Accuracy	+/- 8°C
Operating Ambient Temperature	-40° to +100°C
Operating Media Temperature	-40° to +125°C
Storage Temperature	-40° to +125°C



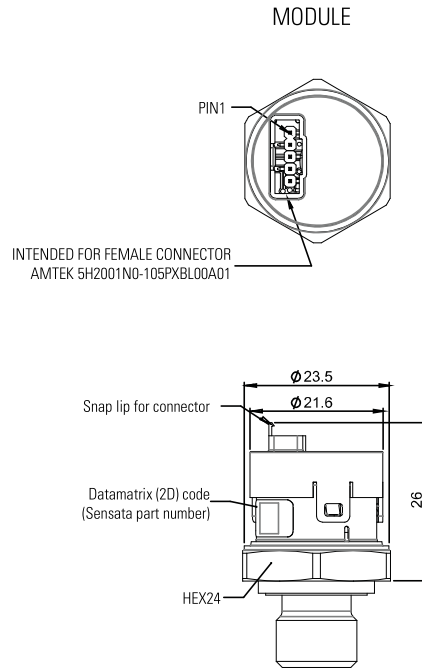
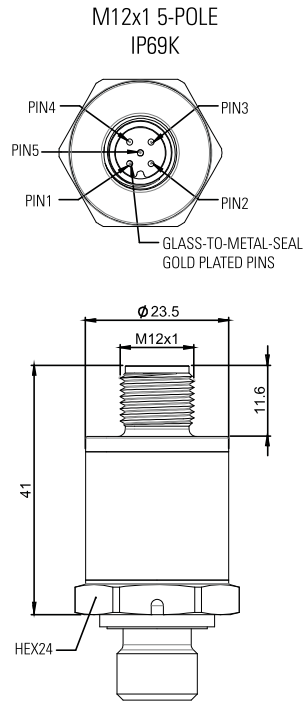
DIMENSIONS

All dimensions are in millimeters

Overall Dimensions



Electrical Connector



Pin Number	Description
1	(EOC/ALARM)
2	VSUPPLY
3	GND
4	SDA
5	SDC

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1	(EOC/ALARM)
2	VSUPPLY
3	GND
4	SDA
5	SDC



ORDERING OPTIONS

Example : PTE7300-14AM-1A016SN

PTE7300 with G1/4A thread with external FKM o-ring seal, M12 hermetic connector, I²C and EOC electrical output, 16bar full scale pressure, sealed gage, with no snubber.

PTE7300 - XX* A M - 1 A 016 S N

Family PTE7300

Pressure Port
A: G1/4A DIN 3852-E
B: 1/4-19PT (R1/4)
C: 7/16-20 UNF-2A (MALE)
D: 1/4-18NPT
E: 7/16-20 UNF-2B (FEMALE)

Electrical Connector
M: M12 5-pin glass-to-metal-seal (sensor only)
N: 5x1 2mm pitch pin to header (module only)

External Sealing
0: No sealing ring
1: FKM (Viton) sealing ring (only for G1/4A pressure port)
2: HNBR sealing ring (only for 7/16-20 UNF-2A MALE pressure port)

Output Type
A: I²C+ EOC

Pressure Range
016: 0-16bar
050: 0-50bar
100: 0-100bar
200: 0-200bar
250: 0-250bar
350: 0-350bar
400: 0-400bar
600: 0-600bar

Pressure Reference
S: Sealed gauge (M12 5-pin only)
B: Gauge (module only)

Snubber
N: No snubber
S: Snubber with 0.5 damping hole⁽⁷⁾



AGENCY APPROVALS & CERTIFICATIONS ⁽¹⁾⁽²⁾



GENERAL NOTES

- ⁽¹⁾ Only full sensor is CE compliant (not module)
- ⁽²⁾ Drinking water approvals pending
- ⁽³⁾ Full-span (not full-scale) is Pmax - Pmin
- ⁽⁴⁾ Best fit straight line accuracy includes errors from non-linearity, non-repeatability, and hysteresis
- ⁽⁵⁾ Total error band accuracy includes errors from non-linearity, non-repeatability, hysteresis, zero offset, full span offset, and thermal effects
- ⁽⁶⁾ Temperature is indirectly measured at the sensing element and is for reference only
- ⁽⁷⁾ Snubber not covered in drinking water safe approvals and certifications



WARNINGS



RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE

- The product's side panels may be hot, allow the product to cool before touching
- Follow proper mounting instructions including torque values
- Do not allow liquids or foreign objects to enter this product

Failure to follow these instructions can result in serious injury, or equipment damage.



HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power before installing or working with this equipment
- Verify all connections and replace all covers before turning on power

Failure to follow these instructions can result in death or serious injury.

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