



Pressure Sensor Modules with Embedded USB DAQ



Models:
ATX4K-MOD5
ATX4K-MOD7
ATX4K-MOD12
ATX4K-MOD5-LR
ATX4K-MOD7-LR
ATX4K-MOD12-LR
ATX4K-MOD10-MB
ATX4K-MOD14-MB
ATX4K-MOD24-MB

- **0.25" H₂O to 30"+ H₂O Pressure Ranges Available**
- **0.25% Accurate Transducers (0.1% with 5-pt calibration)**
 - **Absolute Reference Sensors (15psi or 30psi)**
 - **Available Temperature Calibrations**
- **Embedded USB 2.0 Data Acquisition (1MHz Bandwidth)**
- **Single or Multi-Bank Modules for Combination Ranges**
 - **4 External Channel Voltage Inputs (2 per bank)**
 - **2-Wire Thermocouple Input(s)**
 - **TTL Input Trigger**
- **Internal 110-220VAC 50/60Hz Autoswitching Power Supply**
 - **Rack Mountable (2U)**

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Aeroprobe Corporation reserves the right to change module specifications at
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General Specifications and Operation

Standard Models

Number of Sensors:

Each module can contain up to two independent banks of sensors, each with different range pressure sensors. Each module contains a sensor for each port of the probe, a sensor for a velocity probe (Pt port), an absolute sensor for the direct measurement of the reference pressure, and an internal module thermocouple. The internal thermocouple is only enabled when the unit has been calibrated for temperature (see Custom Options). Two BNC type connectors are included for the input of auxiliary voltages (i.e. from an external thermocouple). A third BNC connector is provided to interface with an optional TTL trigger.

(ATX4K-MOD5) 5 sensors, total sensor, reference sensor, 2 external channels, 1 TTL trigger input. Specify Low-Range option (LR) for 0.25 or 0.4" H2O ranges.

(ATX4K-MOD7) 7 sensors, total sensor, reference sensor, 2 external channels, 1 TTL trigger input. Specify Low-Range option (LR) for 0.25 or 0.4" H2O ranges.

(ATX4K-MOD12) 12 sensors, total sensor, reference sensor, 2 external channels, 1 TTL trigger input. Specify Low-Range option (LR) for 0.25 or 0.4" H2O ranges.

(ATX4K-MOD10) Two banks installed. Each bank contains 5 sensors, total sensor, reference sensor, and 2 external channels. 1 TTL trigger input. Specify Low-Range option (LR) for 0.25 or 0.4" H2O ranges.

(ATX4K-MOD14) Two banks installed. Each bank contains 7 sensors, total sensor, reference sensor, and 2 external channels. 1 TTL trigger input. Specify Low-Range option (LR) for 0.25 or 0.4" H2O ranges.

(ATX4K-MOD24) Two banks installed. Each bank contains 12 sensors, total sensor, reference sensor, and 2 external channels. 1 TTL trigger input. Specify Low-Range option (LR) for 0.25 or 0.4" H2O ranges.

Standard Pressure Ranges:

$\pm 0.25''$ H2O (± 62.2 Pa)*, $\pm 0.4''$ H2O (± 99.5 Pa)*, $\pm 1.0''$ H2O (± 0.249 kPa), $\pm 2.5''$ H2O (± 0.622 kPa), $\pm 4.0''$ H2O (± 0.995 kPa), $\pm 5''$ H2O (± 1.24 kPa), $\pm 10''$ (± 2.49 kPa), $\pm 20''$ H2O (± 4.98 kPa) available. 15psi (103 kPa) absolute reference sensor standard, 30 psi (207 kPa) optional*.

* System option, see below

Modules will specify ranges as follows: **002W** for $\pm 0.25''$ H2O, **004W** for $\pm 0.4''$ H2O, **010W** for $\pm 1''$ H2O, **025W** for $\pm 2.5''$ H2O, **040W** for $\pm 4''$ H2O, **050W** for $\pm 5''$ H2O, **100W** for $\pm 10''$ H2O, **200W** for $\pm 20''$ H2O, **300W** for $\pm 30''$ H2O

Output Voltage:

1-5 V standard output, corresponding to the sensed pressure. The output voltage is single-ended, so that the analog signals of the sensors are referenced to the power ground.

Custom Options

Low-Pressure Range Option (LR):

To order $\pm 0.25''$ H₂O or $\pm 0.4''$ H₂O pressure ranges specify this option when ordering

Reference Sensor Option (Ref-30):

30psi (207 kPa) absolute instead of the 15psi (103 kPa) absolute sensor.

Temperature Calibration Option:

The module can be calibrated across the operating temperature range of the sensors. This is useful if the sensor module will experience temperature changes during the period of acquisition. An internal thermocouple will be installed inside the module when this option is specified.

External Thermocouple Option:

Unit can support an external thermocouple. This option is useful for customers with thermocouples embedded into their probes. Any two-wire type J, K, T, E, R, S, N, B thermocouple is supported. For proper function and accuracy, the thermocouple should be provided and calibrated by Aeroprobe at the time of purchase of the module.

Other Options:

Other custom options may be available. Contact the Aeroprobe Corporation for more details.

1.1 Module Connectors and Switches

The AT Pressure Sensor Modules have various power, pneumatic and signal connectors, as shown below.

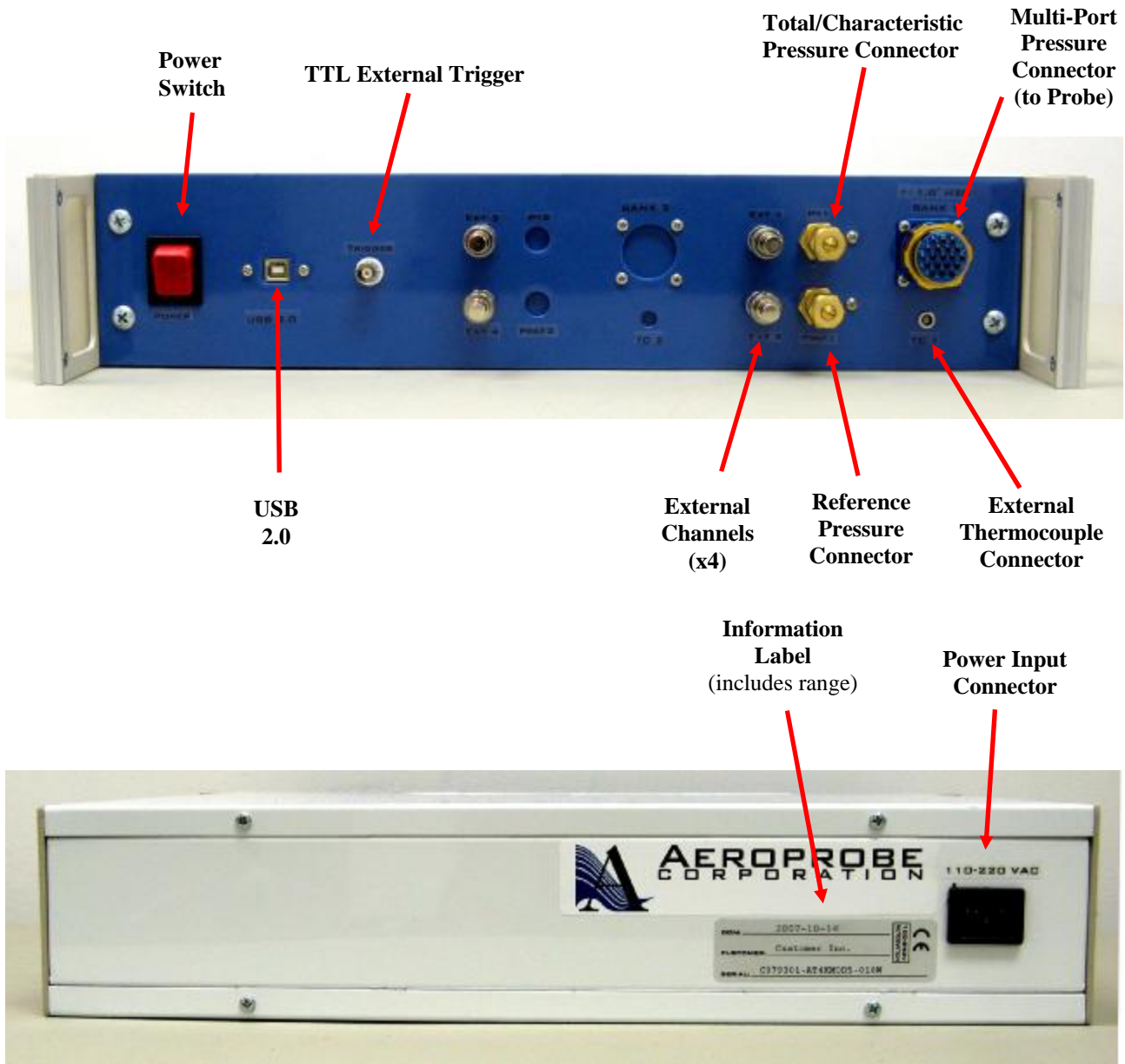


Figure 1: ATX4K-MOD5, ATX4K-MOD7, ATX4K-MOD12 Pressure Sensor Module Connectors and Switches

Specifications

Module Specifications

<u>Characteristic</u>	<u>Specification</u>
Size:	12" x 8" x 4" (30.5 cm x 20.3 cm x 10.2 cm), L x D x H
Weight:	6.5 lbs (2.95 kg), approx.
Electrical Connections:	1 x 37-pin D-Type Connector, Standard 3-Prong Power Receptacle, 4 x BNC-Type External Channel connectors, 1 x BNC-Type Trigger Connection
Pneumatic Connections:	19-Port Quick Disconnect, 0.063" (1.6 mm) O.D., 2 x Swagelok-Type Fittings for 1/4" Tubing
Power:	Input Power is 120V/240V, Power Supply is Autoswitching.
External Channel Input Voltage:	±10V maximum

Sensor Specifications

<u>Characteristic</u>	<u>Specification</u>
Accuracy:	±0.25% F.S.O.*
Stability:	±10mV/yr.
Warmup Thermal Effects (Zero):	±10mV
Operating Temperature	-25°C to 85°C
Compensated Range:	5°C to 50°C
Overpressure:	Proof/Burst (100"/200", 0.25" to 1.0") (200"/300, 2.5" to 10") (300" Proof / 500" Burst, 20") (500" Proof / 800" Burst, 30") (5psi Proof / 10psi Burst, 1psi)(15psi Proof / 30psi Burst, 5psi)
Pressure Range:	±0.25" WC to ±40 PSI, FSP (Custom & Uni-Directional Ranges Available)
Media:	Limited to Gases that Will Not Attack Polyphenylene Sulfide, Polyetherimide, Silicon, Fluorosilicone or Silicone RTV. Liquids Not Supported.
Operating Humidity:	0-95% RH Non-Condensing
Output Signal:	1-5 VDC (Standard)

*Includes non-linearity, hysteresis and non-repeatability at a fixed temperature. Accuracy in Aeroprobe modules is typically better (±0.1% or less), because units are calibrated for non-linearity.

1.2 Reference Sensor Specifications

Characteristic	Specification
Measurement Type	Absolute
Signal Conditioning	Amplified
Pressure Range	0-15 psi (0-30psi optional)
Proof and Burst Pressure	60.0 psi
Supply Voltage	7.0 Vdc min., 12.0 Vdc typ., 24.0 Vdc max.
Compensated	YES
Output Calibration	YES
Termination	PCB (internal to module)
Typical Sensitivity	0.333 V/psi
Full Scale Span	5.0 Vdc typ.
Null Offset	1.0 Vdc typ.
Accuracy (Max. Linearity, Hysteresis)	± 0.5 % Span
Compensated Temperature Range	5 °C to 50 °C [41 °F to 122 °F]
Operating Temperature Range	-25 °C to 85 °C [-13 °F to 185 °F]
Media Compatibility	DRY GASES ONLY: Media must be compatible with epoxy based adhesive.
Span Shift over Temperature	± 1.0% Span
Storage Temperature Range	-40 °C to 125 °C [-40 °F to 257 °F]

Thermocouple Input Specifications

TC type	Temperature range (°C)	Accuracy (±°C)	Noise typical (±°C)
J	-200 to + 760	1.7	0.2
K	-200 to + 1200	1.8	0.2
T	-200 to + 400	1.8	0.2
E	-270 to + 650	1.7	0.2
R	-50 to + 1768	4.8	1.5
S	-50 to + 1768	4.7	1.5
N	-270 to + 1300	2.7	0.3
B	+300 to + 1400	3.0	1.0