Additel 780
Series Pressure Controller

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New Precision Accuracy Models with 1-Year Uncertainty to 0.01% of Reading

- **Pressure ranges from vacuum to 3,000 psi (200 bar)**
- **Removable interchangeable intelligent sensors**
- **Precision accuracy models to 0.01% of reading**
- **Standalone solution to 1,000 psi (70 bar), no gas bottle required when used with the Electric Pump**
- **Standard model accuracy of 0.02% of full scale**
- **External pressure modules to 3,000 psi (200 bar)**
- **WiFi enabled communications**
- **Fully temperature compensated accuracy over 0°C to 50°C**
- **HART Communication and Profibus PA**
- **Large 7" color touch screen display**
- **Control stability of 0.003%FS**
- **Built-in barometer**
- **Easy-to-use icon based user interface**

OVERVIEW

For years, we've provided the most durable, accurate, quality pressure calibration products for field applications. The Additel 780 series controller incorporates the same durability, accuracy, and quality into a new bench top controller packed with features and functionality that is remarkably easy to use. The Additel 780 series offers two base ranges: to 1,000 psi (70 bar) and to 3,000 psi (200 bar). The base range establishes the maximum controlling range of the controller. Each configuration includes a control sensor which is preselected to the sensor range best suited for your application. External and internal sensors can be used which allows for expanded range and accuracy capability in the future.

There are also two controller types that can be selected: the Additel 780S is the standard controller option without any measurement capability. The Additel 780 has expanded functionality including electrical measurement and HART and Profibus PA communication.

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MODULAR DESIGN

Each unit comes with one Intelligent Pressure Module configured to the many range offerings provided. Standard accuracy sensors (ADT161-CPXXX) are silicone pressure sensors with a 1 year accuracy of 0.02% FS. The precision accuracy models improve the 1 year accuracy specification to 0.01% of reading from 100% to 30% of range. Each sensor has been specially aged, tested and screened before assembly. After assembly each sensor is temperature compensated over the range of 0°C to 50°C. The Additel 780 series allows for one internal pressure sensor and one external pressure sensor. The modular design of this unit provides for interchangeability of both the internal and external sensors with other Intelligent Pressure Modules.

In addition to the Intelligent Pressure Modules, the Additel 780 series has a built in barometric sensor. This allows for switching between gauge pressures to absolute pressures.

STANDALONE SOLUTION

Typical pressure controllers will require a nitrogen bottle for the gas supply which make it difficult to move the controller around without having to move or connect to another bottle. The Additel 780 series is unique in that with the optional electric pump, you can generate pressures to 1,000 psi (70 bar) without the need of a gas bottle.

PROCESS FUNCTIONALITY (excl ADT780S versions)

The 780 Series Pressure Controller is considered to handle a very wide range of applications which may normally require a pressure calibrator. Built-in capability, includes current and voltage measurement capability, 24 volt loop power, HART® and Profibus PA communication, switch measurement capability, and much more.

MEASUREMENT SPECIFICATIONS

Specification	ADT780-1K	ADT780-3K
Pressure range	-14.5 to 1,000 psi (-0.95 to 70 bar)	-14.5 to 3,000 psi (-0.95 to 200 bar)[1]
Control stability	0.003% FS (stability based on % FS of control sensor range)	
Precision (includes 1 year stability)	See pressure range table	
Media	Clean gas	
Over-range indication	103% to 120% (based on sensor)	
Resolution	4, 5, 6, or 7 digits (user selectable)[2]	
Pressure type	Gauge, Absolute	
Warm up time	15 minutes	
Measurement units	Pa, hPa, kPa, MPa, bar, mbar, psi, mmHg@0°C,cmHg@0°C, mHg@0°C, inHg@0°C, inH$_2$O@4°C, mmH$_2$O@4°C, cmH$_2$O@4°C, mH$_2$O@4°C, mmH$_2$O@20°C, cmH$_2$O@20°C, mH$_2$O@20°C, kg/m^2, kg/cm^2, mtorr, torr, atm, lb/ft^2, tsi, user selectable	
Minimum control pressure[3]	0.0001 psi	0.001 psi

[1] HP gas supply required to reach 3,000 psi (200 bar).
[2] 7 digit resolution for precision model only.
[3] Dependent on pressure module.

BAROMETRIC MEASUREMENT SPECIFICATION

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Sensor	Gauge	Absolute
Standard Sensors	N/A	40 Pa[1]
Precision Sensors	3 Pa[2]	N/A

Barometer range (60~110)kPa, the accuracy is 40 Pa (11 Pa is optional)
[1] 40 Pa uncertainty (k=2) includes calibration uncertainty, linearity, and long term stability (<30 Pa per year). Barometer range of 60 to 120 kPa.
[2] Combined linearity, hysteresis, and repeatability. Add 3 Pa when used in gauge mode. When using the precision sensors with the ADT780 controller in gauge mode, regular zeroing will realign the barometric reading to provide the most accurate result.

ELECTRICAL MEASURE SPECIFICATIONS[1]

Specification	Range	Resolution	Accuracy
Volts DC	-30 to 30 V	0.1 mV	±0.01% rdg + 1.5 mV
	-300 to 300 mV	1 µV	±0.01% rdg + 15 µV
Current DC	-30 to 30 mA	0.1 µA	±0.01% rdg + 1.5 µA
Switch test	If the switch has detected voltage, the range is from 3 – 24 V		
DC 24V output	24 V ± 0.24 V, max 30 mA		

[1] Not available in ADT780S versions

PHYSICAL SPECIFICATIONS

Specification	ADT780-1K & ADT780-3K
Power	100 to 240 V, 50/60 Hz
Pressure ports	G1/8 F
Storage temperature	-20°C to 70°C
Operating environment	0-90% RH non-condensing
Display	7 inch (17.8 cm) color, touch screen display
Weight	33 lbs (15 kg)
Dimensions (DWH)	16.5 x 17.3 x 5.2 inch (419 x 440 x 132 mm)
Mounting	Standard desktop, optional rack mount kit
Shock	4G
Vibration	1G 10Hz~500Hz

OTHER SPECIFICATIONS

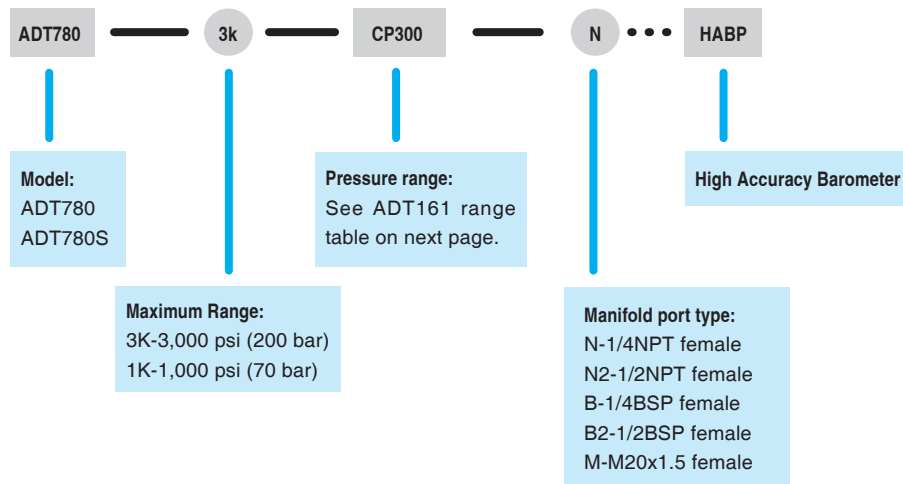|	
WiFi specifications	802.11 b, g, and n
Vent	Front panel vent and safety release button (only for 780S)
Communications	RS232, USB, LAN, WIFI
Stability indicator	User selectable
Operating modes	Control, measure, and vent
Display modes	Controller – show pressure indication and control
	Calibrator – shows pressure indication, control, and electrical measurement (excl ADT780S)
Localization	English, Chinese (simplified), German, Spanish, French, Italian, Portuguese, Russian, Japanese
Conformity	CE
Calibration certification	ISO 17025 accredited certificate of calibration with data included
Warranty	1 year

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STANDARD ACCESSORIES

ADT127-X External Manifold	1 pc	
Manifold connection hose	1 pc	
Power adapter	1 pc	
9022 Test leads (except 780S)	2 sets (4 pc)	
9020 Short circuit cable (except 780S)	1 set (2 pc)	
9060 Pressure module connection cable	1 pc	
Adapter set (adapters to fit the ADT78X port to male fittings)	1 set (2 pcs G1/8M to G1/4M, 2 pcs G1/8M to Festo, release valve)	
CD Manual	1 pc	
ISO 17025 accredited certificate	1 pc	
O-rings	2 types	
Vacuum/Vent tubing	2 pc	

OPTIONAL ACCESSORIES

ADT161	Pressure modules (see module information)	
ADT121-X	External pneumatic pressure manifold, 3,000 psi (200 bar), four hand-tight quick connectors	
ADT780-1K-EPUMP	1,000 psi (70 bar) electrical pump	
9050	RS232 to USB adapter	
9050-EXT	RS 232 (DB9/M) extension cable, 9 feet	
ADT100-FLT-1K	Liquid trap	
9912-780	Shipment case for the ADT780 and ADT780S Controller	
9530 Additel/ACal	Automated calibration software, Task and asset management	
9245-780	Rack mount kit	
9245-EPUMP	Rack mount kit	

ADT780 ORDERING INFORMATION (Controller without E-pump)

Model Number

ADT780 — 3k — CP300 — N ••• HABP

Model:
ADT780
ADT780S

Maximum Range:
3K-3,000 psi (200 bar)
1K-1,000 psi (70 bar)

Pressure range:
See ADT161 range table on next page.

Manifold port type:
N-1/4NPT female
N2-1/2NPT female
B-1/4BSP female
B2-1/2BSP female
M-M20x1.5 female

High Accuracy Barometer

Specifications for ADT780 Internal/External Sensors

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P/N	Pressure Range		Media	Accuracy[2]	Pressure Rating		Suggested Controller Compatibility	Internal/External Use
	psia	bar.a			Burst	Over Pressure		
Precision Sensors[1]								
AP15R	0 to 15	0 to 1	G	0.01% FS	2x	1.2x	ADT780-1K only	Both
AP30R	0 to 30	0 to 2	G	0.01% rdg or 0.003% FS whichever is greater	2x	1.2x	ADT780-1K only	Both
AP50R	0 to 50	0 to 3.5	G	0.01% rdg or 0.003% FS whichever is greater	2x	1.2x	ADT780-1K only	Both
AP100R	0 to 115	0 to 8	G,L	0.01% rdg or 0.003% FS whichever is greater	2x	1.2x	ADT780-1K only	Both
AP300R	0 to 315	0 to 21	G,L	0.01% rdg or 0.003% FS whichever is greater	2x	1.2x	Both	Both
AP500R	0 to 515	0 to 36	G,L	0.01% rdg or 0.003% FS whichever is greater	2x	1.2x	Both	Both
AP1KR	0 to 1,015	0 to 71	G,L	0.01% rdg or 0.003% FS whichever is greater	2x	1.2x	Both	Both
AP2KR	0 to 2,015	0 to 141	G	0.01% rdg or 0.003% FS whichever is greater	3x	1.1x	ADT780-3K only	Both
AP3KR	0 to 3,015	0 to 201	G	0.01% rdg or 0.003% FS whichever is greater	3x	1.1x	ADT780-3K only	Both

P/N	Pressure Range		Media	Accuracy	Pressure Rating		Suggested Controller Compatibility	Internal/External Use
	psig	bar.g			Burst	Over Pressure		
Standard Pressure Sensors								
CP10	±10	±0.7	G	0.02% FS	3x	1.2x	ADT780-1K only	Both
CP15	±15	±1.0	G	0.02% FS	3x	1.2x	ADT780-1K only	Both
CP30	-15 to 30	-1 to 2.0	G	0.02% FS	3x	1.2x	ADT780-1K only	Both
CP50	-15 to 50	-1 to 3.5	G	0.02% FS	3x	1.2x	ADT780-1K only	Both
CP100	-15 to 100	-1 to 7.0	G,L	0.02% FS	3x	1.2x	ADT780-1K only	Both
CP300	-15 to 300	-1 to 20	G,L	0.02% FS	3x	1.2x	Both	Both
CP500	-15 to 500	-1 to 35	G,L	0.02% FS	3x	1.2x	Both	Both
CP600	-15 to 600	-1 to 40	G,L	0.02% FS	3x	1.2x	Both	Both
CP1K	-15 to 1,000	-1 to 70	G,L	0.02% FS	3x	1.2x	Both	Both
CP2K	-15 to 2,000	-1 to 140	G,L	0.02% FS	3x	1.2x	ADT780-3K only	Both
CP3K	-15 to 3,000	-1 to 200	G,L	0.02% FS	3x	1.2x	ADT780-3K only	Both
CP5K	-15 to 5,000	-1 to 350	G,L	0.02% FS	3x	1.2x	N/A	External
CP10K	-15 to 10,000	-1 to 700	G,L	0.02% FS	2x	1.2x	N/A	External

[1] Contact Additel for other range options.
[2] Accuracy includes calibration uncertainty, linearity and long-term stability.

**Low pressure sensors (ADT161-XX-DPX) available for low pressure and differential pressure measurement. Also available for low pressure control (gauge mode only). Ranges from ±1 inH_2O (2.5 mbar) to 300 inH_2O (700 mbar).

Electric Pump

![Additel logo]

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Additel 780-1K-EPUMP

- **Generates Vacuum to 1,000 psi (70 bar)**
- **Built-in filter and liquid trap**

■ **1,000 psi (70 bar) Electric Pump Specifications**

Pressure range	-13.5 to 1,080 psi (-0.95 to 75 bar)
Weight	69.6 lbs (31.6 kg)
Size(WHD)	17.3 X 9.3 X 21.7 inch (440 X 235X 550 mm)
Power	100 to 240 V
Media	Air
Volume	150 mL
Outlet port	G1/8 F
Storage temperature	-20°C to 70°C
Operating environment	0-90% RH non-condensing
Mounting	Standard desktop, optional rack mount
Control operation	2 LED displays with pressure limit settings
Typical max pressure time	Approx 2 min with ADT780 Controller