



Pressure Manifolds

Additel 12X Series

The 12X series pressure manifolds are designed for expanding pressure test ports during pressure calibration. The Additel 121 pressure manifold is used for pneumatic pressure calibration up to 3,000 psi (200bar), while the Additel 123 manifold is compatible to hydraulic pressure applications up to 15,000 psi (1,000 bar). A filter is built-in with the 121 pneumatic pressure manifold to prevent contamination introduced by devices under test. There are four hand-tight quick connectors pre-installed on each manifold. Additel 12X series pressure manifolds allow you to connect without the use of wrenches or Teflon tape which increases your productivity when using calibration pumps, pressure controllers, dead weight testers, or piston gauges.

121 series Pressure Manifolds Pneumatic, -15 psi to 3,000 psi (-1 to 200 bar)



Model	Description
ADT121-N	1/4NPT male hose to four 1/4NPT female hand-tight quick connectors
ADT121-N2	1/2NPT male hose to four 1/2NPT female hand-tight quick connectors
ADT121-M	M20x1.5 male hose to four M20x1.5 female hand-tight quick connectors
ADT121-B	1/4BSP male hose to four 1/4BSP female hand-tight quick connectors
ADT121-B2	1/2BSP male hose to four 1/2BSP female hand-tight quick connectors

123 series Pressure Manifolds Hydraulic, -15 to 15,000 psi (-1 to 1,000 bar)



Model	Description
ADT123-N	1/4NPT male hose to four 1/4NPT female hand-tight quick connectors
ADT123-N2	1/2NPT male hose to four 1/2NPT female hand-tight quick connectors
ADT123-M	M20x1.5 male hose to four M20x1.5 female hand-tight quick connectors
ADT123-B	1/4BSP male hose to four 1/4BSP female hand-tight quick connectors
ADT123-B2	1/2BSP male hose to four 1/2BSP female hand-tight quick connectors

127 series Pressure Manifolds Pneumatic, -15 to 3,500 psi (-1 to 250 bar)



Model	Description
ADT127-N	1/4NPT male hose to three 1/4NPT female hand-tight quick connectors
ADT127-N2	1/2NPT male hose to three 1/2NPT female hand-tight quick connectors
ADT127-M	M20x1.5 male hose to three M20x1.5 female hand-tight quick connectors
ADT127-B	1/4BSP male hose to three 1/4BSP female hand-tight quick connectors
ADT127-B2	1/2BSP male hose to three 1/2BSP female hand-tight quick connectors

Note: A test hose is included with every Additel 12X pressure manifold.

SPECIFICATIONS



Additel 780 with ADT160A Pressure Module

Precision Quartz Sensors ^[1] - Absolute Pressure						
P/N	Pressure Range		Media	Accuracy	Pressure Rating	
	psia	bar.a			Burst	Over Pressure
AP45Q	0 to 45	2.0	G	0.005% rdg + 0.005% FS	3x	1.2x
AP100Q	0 to 100	7.0	G	0.005% rdg + 0.005% FS	3x	1.2x
AP400Q	0 to 400	28	G	0.005% rdg + 0.005% FS	3x	1.2x
AP500Q	0 to 500	35	G	0.005% rdg + 0.005% FS	3x	1.03x
AP1KQ	0 to 1,000	70	G	0.005% rdg + 0.005% FS	3x	1.1x
AP2KQ	0 to 2,000	140	G	0.005% rdg + 0.005% FS	3x	1.1x
AP3KQ	0 to 3,000	200	G	0.005% rdg + 0.005% FS	3x	1.1x

[1] Contact Additel for other range options.

Compound Pressure						
P/N	Pressure Range		Media	Accuracy	Pressure Rating	
	psig	bar.g			Burst	Over Pressure
CP10	±10	±0.7	G	0.02% FS	3x	1.2x
CP15	±15	±1.0	G	0.02% FS	3x	1.2x
CP30	-15 to 30	-1 to 2.0	G	0.02% FS	3x	1.2x
CP50	-15 to 50	-1 to 3.5	G	0.02% FS	3x	1.2x
CP100	-15 to 100	-1 to 7.0	G,L	0.02% FS	3x	1.2x
CP300	-15 to 300	-1 to 20	G,L	0.02% FS	3x	1.2x
CP500	-15 to 500	-1 to 35	G,L	0.02% FS	3x	1.2x
CP600	-15 to 600	-1 to 40	G,L	0.02% FS	3x	1.2x
CP1K	-15 to 1,000	-1 to 70	G,L	0.02% FS	3x	1.2x
CP2K	-15 to 2000	-1 to 140	G,L	0.02% FS	3x	1.2x
CP3K	-15 to 3,000	-1 to 200	G,L	0.02% FS	3x	1.2x
CP5K	-15 to 5000	-1 to 350	G,L	0.02% FS	3x	1.2x
CP10K	-15 to 10,000	-1 to 700	G,L	0.02% FS	2x	1.2x

Absolute Pressure

P/N	Pressure Range		Media	Accuracy(%FS)	Burst Pressure
	(psi)	(bar)			
AP5	5	0.35	G	0.1	3×
AP10	10	0.7	G	0.1	3×
AP15	15	1.0	G	0.1	3×
AP30	30	2.0	G	0.1	3×
AP50	50	3.5	G	0.1	3×
AP100	100	7.0	G , L	0.05 (0.1)	3×
AP300	300	20	G , L	0.05 (0.1)	3×
AP500	500	35	G , L	0.05 (0.1)	3×
AP1K	1,000	70	G , L	0.05 (0.1)	3×
AP3K	3,000	200	G , L	0.05 (0.1)	3×
AP5K	5,000	350	G , L	0.05 (0.1)	3×



Additel 223A with ADT160A Pressure Module

ORDERING INFORMATION

Model Number

ADT160A — 02 — GP300

Model

Accuracy:

01-0.005%rdg+0.005% of full scale
 02-0.02% of full scale
 05-0.05% of full scale
 10-0.1% of full scale

Pressure range P/N:

See pressure range table

Accessories included

NIST Traceable Calibration Certificate

Optional Accessories

Model number	Description	Picture
9060	Pressure module connection cable	

SPECIFICATIONS

	Standard Accuracy			Precision Accuracy	
	CPXXX	DPXXX	GPXXX	AP3KQ AP1KQ	AP100Q
Temperature compensation	-10°C to 50°C (14°F to 122°F)			0°C to 50°C (32°F to 122°F)	
Operating temperature	-10°C to 50°C (14°F to 122°F)			0°C to 50°C (32°F to 122°F)	
Storage temperature	-20°C to 70°C (-4°F to 158°F)			-20°C to 70°C (-4°F to 158°F)	
Relative humidity	95% RH			95% RH	
Pressure connections (for external use only)	1/4NPT, 1/2NPT, 1/4BSP, 1/2BPS, M20x15			1/4NPT, 1/2NPT, 1/4BSP, 1/2BSP, M20x15	
Enclosure (for external use only)	SS enclosure			SS enclosure	
Dimensions (Dia x H)	33 mm x 123 mm (1.3" x 4.84")			44 mm x 220mm (1.7" x 8.7")	60 mm x 190 mm (2.4" x 7.5")
Weight	0.4 kg (0.99 lb)			0.8 kg (1.8 lb)	1.2 kg (2.6 lb)
Warranty	1 Year			1 Year	1 Year



Application Note

Understanding Accuracy Specifications for Digital Pressure Sensors – Percentage of Full Scale Versus Percentage of Reading

Specifications for digital pressure gauges can sometimes seem confusing or overwhelming, especially, if you are unfamiliar with the terminology. Some pressure sensors will specify accuracy as a percent of full scale (FS) while others provide the specification as a percent of reading. So why are there different ways of specifying the accuracy of pressure sensors and is percent of reading more accurate than percent of full scale or vice versa? This brief technical note will discuss the two differences and answer these questions.

Percentage of Reading Accuracy

Figure 1 - Percent reading accuracy example

Full scale: 0 to 100 psi

Accuracy: 20 to 100% FS: 0.1% of reading

0 to 20% FS: 0.02% of FS

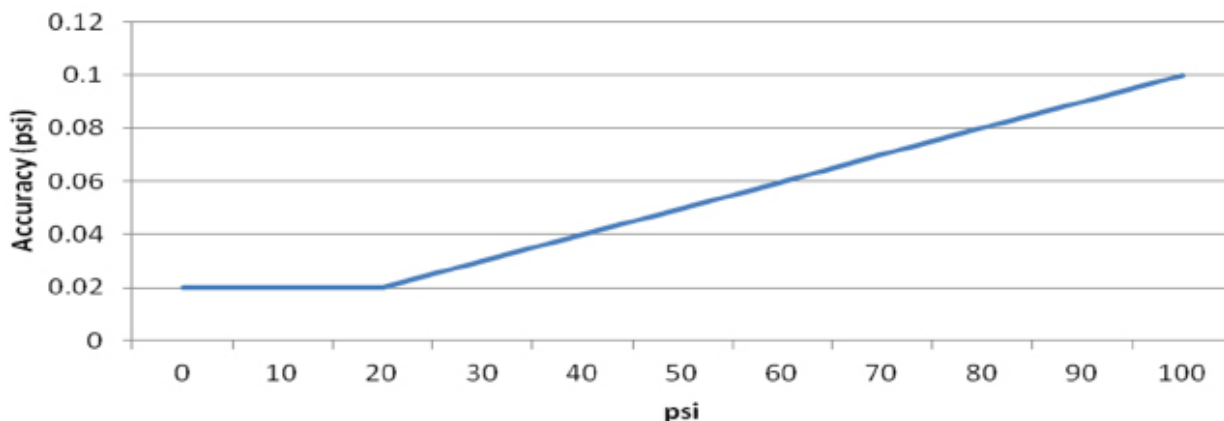
psi	Accuracy (psi)	
0	0.02	0.02%FS
10	0.02	
20	0.02	
30	0.03	
40	0.04	0.1% of Reading
50	0.05	
60	0.06	
70	0.07	
80	0.08	
90	0.09	
100	0.10	

Accuracy as a percentage of reading is accomplished by multiplying the accuracy percentage by the pressure reading. Thus, the lower the pressure measurement, the better the accuracy. Instruments that have a percent reading specification are accompanied with a floor specification. The floor specification takes into account uncertainties such as resolution and measurement noise which may be negligible at higher pressures but are of much more significance at lower pressures.

For example, an accuracy specification may read 0.1% of reading for 20 to 100% of range and 0.02% of full scale below 20% of the range. The 0.02% of full scale specification is considered the floor specification. To understand the accuracy of the sensor, the user is then required to know where the floor spec is applicable and the full scale of the sensor.

This method of specification is often used because it aligns well with the typical performance of pressure gauges. Typically, the closer you measure to barometric pressure the better the performance of the gauge. Figures 1 and the graph below show an example specification for a 100 psi gauge and its accuracy in psi.

Accuracy 0.1% of Reading





Percentage of Full Scale Accuracy

psi	Accuracy (psi)
0	0.05
10	0.05
20	0.05
30	0.05
40	0.05
50	0.05
60	0.05
70	0.05
80	0.05
90	0.05
100	0.05

0.05%FS

Accuracy as a percentage of full scale is calculated by multiplying the accuracy percentage by the full scale pressure of the gauge. This is obviously a more simple method of specification and is most commonly used in industry because it is easy to calculate and interpret. Denoting the accuracy as percent full scale is a more conservative way of specifying the pressure sensor because typically the sensor doesn't perform the same over its full range. It usually will perform more accurately as you approach barometric pressure. This type of specification is most common for industrial gauges which make it easier to compare one gauge versus another. Figure 2 is an example specification for a 100 psi gauge and its accuracy in psi.

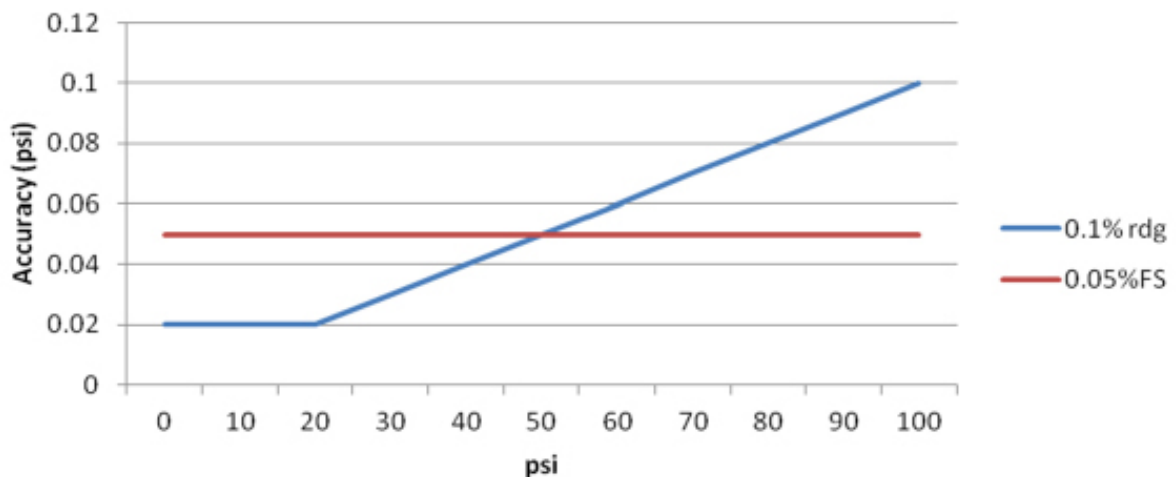
A Comparison of Percent of Full Scale and Percent of Reading Accuracies

psi	Accuracy (psi)	
	0.1% of Reading	0.05% of FS
0	0.02	0.05
10	0.02	0.05
20	0.02	0.05
30	0.03	0.05
40	0.04	0.05
50	0.05	0.05
60	0.06	0.05
70	0.07	0.05
80	0.08	0.05
90	0.09	0.05
100	0.10	0.05

So you may ask, "Which is more accurate?" The answer is that it depends on the pressure being measured. In the two examples given, the gauge specified at 0.1% of reading is more accurate as you measure lower pressures in its range. However, as you move above 50% of the range, the gauge specified at 0.05% of full scale becomes more accurate than the 0.1% of reading gauge. This can be seen clearly in the chart (left) and graph (below) where the two gauges are compared in terms of psi accuracy. To properly compare these, two gauges you should convert the accuracy to pressure units, such as psi or bar. Then they can be properly matched one against another in like units of measure.

In conclusion, one method of specification is not better than another, it is just different. Given this difference it becomes important to know how to interpret the different specifications types and be able to compare one versus another.

Accuracy Comparison 0.1% Rdg to 0.05%FS



Additel 761

Automated Pressure Calibrators



ORDERING INFORMATION

Model Number



Pressure range:
See pressure range table.

Pressure port type on External Pressure Manifold:
N - 1/4NPT female
N2 - 1/2NPT female
B - 1/4BSP female
B2 - 1/2BSP female
M - M20X1.5 female



Accessories (included)		
External Pressure Manifold (ADT106) (Except 761-LLP)	1 pc	
9818 110V/220V external Power adapter	1 pc	
9722 Chargeable Li-ion battery	1 pc	
9022 Test Leads for calibrator	2 sets (4 pcs)	
9020 Short circuit cable	1 set (2 pcs)	
9907 Carrying case for 761 calibrator and accessory	1 pc	
9060 Pressure module connection cable	1 pc	
9240 DP gauge holder, rubber (Only for ADT761-LLP)	1 pc	
ADT100-761 (Except 761-LLP)	1 pc	
O-rings(Except 761-LLP)	20 pcs	
Manual	1 pc	
Allen wrench	1 set	
ADT100-761Hose (Except 761-LLP: 2 pcs)	1 pcs	
NIST traceable calibration certificate	1 pc	

* Additel/Land software could be downloaded for free at www.additel.com

Optional Accessories		
Model Number	Description	Picture
ADT100-761-N4	Hose Test Kit, 5 feet flexible hose, 0.156" (Ø4mm) tube to 1/4NPT hand-tight quick connector	
ADT100-761-B4	Hose Test Kit, 5 feet flexible hose, 0.156" (Ø4mm) tube to 1/4BSP hand-tight quick connector	
ADT106-N	External Pressure Manifold (with two 1/4NPT hand-tight quick connectors)	
ADT106-B	External Pressure Manifold (with two 1/4BSP hand-tight quick connectors)	
ADT106-M	External Pressure Manifold (with two M20X1.5 hand-tight quick connectors)	
ADT160A	Pressure modules (please check Additel 160A datasheet)	
9050	USB to RS232 (DB9/M) Adapter	
9060	Pressure module connection cable	
9510	Additel/Cal task management software	
ADT100-761Hose	ADT761 hose, 5 feet	

Additel Pressure Gauge Selection Guide



Feature	Series	ADT672 Series Digital Pressure Calibrator	ADT681 Series Digital Pressure Gauge	ADT680 Series Digital Pressure Gauge
Gauge Pressure		•	•	•
Compound Pressure		•	•	•
Absolute Pressure		•	•	
Differential Pressure		•	•	
Accuracy Classes		0.02% & 0.05%FS 15K & 20K psi: 0.05%FS > 20K psi: 0.1%FS	0.02%, 0.05%, 0.1%, & 0.2%FS & 0.1%RD 15K & 20K psi: 0.05%, 0.1%, 0.2%FS & 0.1%RD >20K psi: 0.1% & 0.2%FS	0.05%, 0.1%, & 0.25%FS > 20K psi: 0.1% & 0.25%FS
Digital Display		•	•	•
Analog Display (Fan-Shaped Indication)			•	
Fully Temperature Compensation from -10 C to 50 C		•	•	•
Resolution				
6-Digit Resolution		•		
5-Digit Resolution		•	•	•
Selectable Pressure Units		11	11	19
Backlight		•	•	•
Over Pressure Indication		•	•	•
IS Certification (optional – not available for panel mount)			•	
IP67 Certification				•
Panel Mount (optional) Communication			•	
Wireless				680W only
Data Logging		•	Optional	680W only
Min/Max		•	•	•
Built-in Leak Test		•		•
HART Communication		•		
Measure mA and V		•		
24V Loop Power		•		
Switch Test		•		
NIST-Traceable Certificate of Calibration		•	•	•
Power		Rechargeable battery	9V battery (120/220V adapter is optional)	2AA batteries

Series Pressure	Pressure Range		Media	ADT672 Series Digital Pressure Calibrator	ADT681 Series Digital Pressure Gauge	ADT680 Series Digital Pressure Gauge
	psi	bar				
Gauge						
V15	-15 to 0	-1 to 0	G	•	•	•
GP5	0 to 5	0 to 0.35	G	•	•	
GP10	0 to 10	0 to 0.7	G	•	•	
GP15	0 to 15	0 to 1	G, L	•	•	•
GP30	0 to 30	0 to 2	G, L	•	•	•
GP50	0 to 50	0 to 3.5	G, L	•	•	
GP100	0 to 100	0 to 7	G, L	•	•	•
GP300	0 to 300	0 to 10	G, L	•	•	•
GP500	0 to 500	0 to 35	G, L	•	•	•



Series Pressure	Pressure Range		Media	ADT672 Series Digital Pressure Calibrator	ADT681 Series Digital Pressure Gauge	ADT680 Series Digital Pressure Gauge
	psi	bar				
GP600	0 to 600	0 to 40	G, L	•	•	
GP1K	0 to 1K	0 to 70	G, L	•	•	•
GP2K	0 to 2K	0 to 140	G, L	•	•	
GP3K	0 to 3K	0 to 200	G, L	•	•	•
GP5K	0 to 5K	0 to 350	G, L	•	•	•
GP10K	0 to 10K	0 to 700	G, L	•	•	•
GP15K	0 to 15K	0 to 1K	G, L	•	•	•
GP20K	0 to 20K	0 to 1.4K	G, L	•	•	•
GP25K	0 to 25K	0 to 1.6K	G, L	•	•	•
GP30K	0 to 30K	0 to 2K	G, L	•	•	•
GP36K	0 to 36K	0 to 2.5K	G, L	•	•	•
GP40K	0 to 40K	0 to 2.8K	G, L	•	•	•
Compound						
CP2	±2	±0.16	G	•	•	
CP5	±5	±0.35	G	•	•	
CP10	±10	±0.7	G	•	•	
CP15	±15	±1	G	•	•	•
CP30	-15 to 30	-1 to 2	G	•	•	•
CP100	-15 to 100	-1 to 7	G, L	•	•	
CP300	-15 to 300	-1 to 20	G, L	•	•	
Absolute						
AP5	5	0.35	G	•	•	
AP10	10	0.7	G	•	•	
AP15	15	1	G	•	•	
AP30	30	2	G	•	•	
AP50	50	3.5	G	•	•	
AP100	100	7	G, L	•	•	
AP300	300	20	G, L	•	•	
AP500	500	35	G, L	•	•	
AP1K	1K	70	G, L	•	•	
AP3K	3K	200	G, L	•	•	
AP5K	5K	350	G, L	•	•	
Differential						
	inH ₂ O	mbar				
DP1	±1	±2.5	G	•	•	
DP2	±2	±5	G	•	•	
DP5	±5	±10	G	•	•	
DP10	±10	±25	G	•	•	
DP20	±20	±50	G	•	•	
DP30	±30	±75	G	•	•	
DP50	±50	±160	G	•	•	
DP150	±150	±350	G	•	•	
DP300	±300	±700	G	•	•	