

# PPC4 Pressure Controller -pneumatic



- **Covers the absolute range of 1 kPa (10mbar) to 10 MPa (100 bar) and gauge equivalent including very low differential pressures**
- **Measurement uncertainty from  $\pm 0.010\%$  to  $0.008\%$  of reading**
- **Control precision to  $\pm 0.0004\%$  of Q-RPT span, default  $\pm 0.005\%$  of AutoRanged range**
- **Real time calculation and display of delivered pressure measurement uncertainty**
- **USB and RS232 interfaces included. IEEE-488.2 optional**
- **Choice of local User Interface (UI) to best fit application – TFT QVGA display with “point and click” navigation for benchtop user; economical “no frills” version for computer controlled installations**

## Specifications

<b>Power requirements:</b>	85 to 264 VAC 50/60 Hz, 75 W max consumption
<b>Operating temperature range:</b>	15 to 35 °C
<b>Storage temperature range:</b>	- 20 to 70 °C
<b>Vibration:</b>	Meets MIL-T-28800D
<b>Weight:</b>	16.6 kg
<b>Dimensions (H x W x D)</b>	
PPC4:	19 cm x 35 cm x 41 cm
PPC4-ui:	19 cm x 35 cm x 45 cm
<b>Communication Ports:</b>	RS232 (COM1), RS232 (COM2), USB (front panel)
Optional port 1:	IEEE-488.2
Optional ports 2:	2nd USB, TCP/IP
<b>Pressure ranges:</b>	Vacuum to 10 Mpa (100 bar)
<b>Operation medium:</b>	Any clean, dry, non-corrosive gas
<b>Supply pressure:</b>	Maximum desired set pressure + 70 kPa (0.7 bar)
<b>Exhaust pressure:</b>	Atmosphere, vacuum for gauge pressure under 35 kPa (0.35 bar) and absolute equivalent
<b>Pressure connections:</b>	
TEST (+), TEST (-):	1/8 in. NPT F
SUPPLY:	1/8 in. NPT F
EXHAUST:	1/4 in. NPT F
VENT;	10-32 UNF
ATM:	10-32 UNF
<b>Pressure limits</b>	
Maximum working test pressure:	Hi Q-RPT maximum
Maximum test pressure without damage:	115 % Hi Q-RPT maximum



PPC4 basic  
Economical “no frills” version for  
computer controlled installations



PPC4-ui  
TFT-QVGA display with “point and click”  
navigation for benchtop user

## Pressure measurement

### RPTs and Ranges

Q-RPT Designator	SI Version		US Version	
	Maximum Range [bar] Absolute	Maximum Range [kPa] Gauge	Maximum Range [psi] Absolute	Maximum Range [psi] Gauge
<b>A10M<sup>1</sup></b>	100	10000	1500	1500
<b>A7M<sup>1</sup></b>	70	7000	1000	1000
<b>A3.5M<sup>1</sup></b>	35	3500	500	500
<b>A2M<sup>1</sup></b>	20	2000	300	300
<b>A1.4M<sup>1</sup></b>	14	1400	200	200
<b>A700K<sup>1</sup></b>	7	700	100	100
<b>A350K<sup>1</sup></b>	3.5	250	50	35
<b>A200K<sup>1</sup></b>	2	100	30	15
<b>A160K<sup>1</sup></b>	1.6	60	23	8
<b>A100K<sup>1</sup></b>	1.1	10	16	1.5
<b>G200K<sup>2</sup></b>	-	200	-	30
<b>G100K<sup>2</sup></b>	-	100	-	15
<b>G15K<sup>2</sup></b>	-	15	-	2.2
<b>BG15K<sup>3</sup></b>	-	15	-	2.2
<b>BA100K<sup>4</sup></b>	1.1 (min 0.7)	-	16 (10.2 min)	-

1. All Axxxx RPTs support "gauge" and "negative gauge" measurement modes.
2. All Gxxxx RPTs are "gauge" mode only.
3. BG15K is bidirectional gauge from - 15 to + 15 kPa (-150 mbar / 0 / +150 mbar).
4. BA100K is a barometric range whose low point is 70 kPa absolute (700 mbar).

**Warm up time:** 30 minute temperature stabilization recommended for best performance from cold power up

**Resolution:** To 1 ppm, user adjustable

**Compensated temperature range:** 5 to 35 °C

**Acceleration affect:** ± 0.008 % /g maximum, worst axis  
Allows operation at ± 20° from reference plane without significant effect

	Full Scale Standard Class	Standard Class	Premium Class
<b>Precision<sup>1</sup>:</b>	± 0.010 % of AutoRanged span	± 0.008 % of reading <sup>5</sup>	± 0.005 % of reading <sup>5</sup>
<b>Predicted Stability<sup>2</sup>:</b>	± 0.005 % of reading	± 0.005 % of reading	± 0.005 % of reading
<b>Measurement uncertainty<sup>3</sup>:</b>	± 0.015 % of AutoRanged span	± 0.010 % of reading <sup>5</sup>	± 0.008 % of reading <sup>5</sup>
<b>Delivered Pressure Uncertainty<sup>4</sup>:</b>	± 0.016 % of AutoRanged span	± 0.011 % of reading <sup>5</sup>	± 0.009 % of reading <sup>5</sup>

1. Combined linearity, hysteresis, repeatability.
2. Predicted Q-RPT measurement stability limit (k=2) over one year assuming regular use of AutoZero function. AutoZero occurs automatically in gauge mode whenever vented, by comparison with barometric reference in absolute mode. Absolute mode predicted one year stability without AutoZ is ± (0.005 % Q-RPT span + 0.005 % of reading).
3. Maximum deviation of the Q-RPT indication from the true value of applied pressure including precision, predicted one year stability limit, temperature effect and calibration uncertainty, combined and expanded (k=2) following the ISO "Guide to the Expression of Uncertainty in Measurement."
4. Maximum deviation of the PPC4 controlled pressure from the true value including measurement uncertainty and default dynamic control hold limit.
5. % of reading applies to 30 to 100 % of Q-RPT span. Under 30 % of Q-RPT span, the value is a constant which is the % of reading value times 30 %.

## Pressure Control

### Modes and ready indication:

**Static:** Sets pressure to target within hold limit and shuts off control in a closed test volume. Pressure is "ready" when inside hold limit and stability test is met.

**Dynamic:** Sets pressure within hold limit and continuously adjusts pressure to remain at target value. Pressure is "ready" when inside hold limit.

Control parameters: hold limit, stability limit (values can be customized)

HI Q-RPT span	0-2 MPa [0-20bar]	3.5-7 MPa [35- 70 bar]	10 MPa [100 bar]
<b>Control precision</b>	±0.0004% of Q-RPT span or ±0.00004% of HI Q-RPT span, whichever is greater or ±0.0008% of Q-RPT span if active Q-RPT is external.		
<b>Lowest dynamic controllable pressure (gauge)</b>	Zero set by automated venting. Lowest point above or below zero limited only by Q-RPT resolution and control precision.		
<b>Lowest dynamic controllable pressure (absolute, negative gauge)</b>	2 kPa	3 kPa	5 kPa
<b>Ultimate pressure (absolute, negative gauge)</b>	Typically < 50 mPa (0.008 psi) absolute depending on vacuum source and test volume configuration.		4 kPa
<b>Typical pressure setting ready time (0.005% hold limit, 50 cc test volume)</b>	15 to 30 s	15 to 30 s	15 to 35 s
<b>Slew time (ATM to FS with 50 cc test volume)</b>	30 s	25 s	25 s
<b>Typical test volume</b>	0 to 1000 cc		0 to 500 cc

## Ordering Informations

1. Define the maximum controlled pressure required up to 10 Mpa (to 100 bar).
2. Select the HI Q-RPT or utility sensor for this range:
  - a. Premium Q-RPT
  - b. Standard Q-RPT
  - c. Utility sensor
3. Select a LO Q-RPT if needed:
  - a. Premium Q-RPT
  - b. Standard Q-RPT
4. Define the controller: *i.e. PPC4 A7M/A700KS (PPC4-Controller 70 bar with an Q-RPT of 7 bar*

### Standard Version

5. Select Options:
  - a. SI Units
  - b. CE mark
  - c. Special calibration