

Quartzonix™ Pressure Standard

Model 970

FEATURES

- Ranges: Barometric and 0-15 through 0-500 psia (0-103 kPa through 0-3447 kPa)
- Better than $\pm 0.01\%$ FS Accuracy
- Long term stability better than 0.01% FS per 6 months
- RS-485/RS-232 interface
- Pressure output in choice of engineering units
- Available with Oil-filled Capillary Tube for Water Level Measurement

APPLICATIONS

- Meteorological and barometric reference
- Low cost, high accuracy pressure standard
- Pressure calibration equipment
- Storage tank/liquid level determination



Model 970 Intelligent Quartzonix™ Pressure Standards incorporate proven high accuracy vibrating quartz beam technology with low power miniature digital electronics to achieve a fully compensated 0.01% FS pressure measurement. Quartzonix™ pressure standards use a patented monolithic quartz structure and vibrating beam to measure pressure-induced stress. The beam's frequency of vibration changes by pressure induced stress that is applied to the beam via a miniature metal bellows. The bellows isolates the quartz sensing element from the applied gas, thereby making the sensor insensitive to gas density. The Intelligent Quartzonix™ has a resolution of up to .00007% FS, and drift rates of less than 0.01% FS over a 6-month period.

The Model 970 uses a multi drop, 9600 baud ASCII character RS-485 type interface, allowing a network of up to 31 transducers on the same bus. The 970 can also be configured by the user for RS-232 communication. The measurement units and the update rate are both user-programmable. The 970 is capable of up to 12 readings per second. The extremely low power consumption design with a programmable sleep mode makes the Intelligent Quartzonix™ ideal for remote battery powered applications.

Pressure Systems, Inc.

Presented By : A-Tech Instruments Ltd.

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Model 970

Specifications

Parameter	970	Units	Comments
PNEUMATICS			
Pressure Ranges	11-16 (76-110) 15 (103) 23 (159) 30 (207) 45 (310) 65 (448) 100 (689) 200 (1379) 300 (2068) 500 (3447)	psia (kPa)	Barometric only
Proof Pressure ¹	1.5	x FS	
Burst Pressure ²	2.0	x FS	
Pressure Media	Media compatible with 316SS, nickel and solder		
Pressure Fitting	1/8" compression		
PERFORMANCE			
Resolution / Repeatability	±0.00007 to ±0.0018	% FS	user programmable
Update Rate	12	updates/sec	maximum, user programmable
Static Accuracy ³	±0.01	% FS	
Maximum Deviation over Temperature	±0.015	% FS	over specified temperature range
Thermal Hysteresis ⁴	±0.005	% FS	over specified temperature range
Long Term Drift	±0.01	% FS	6 months, maximum
ELECTRICAL			
Input Voltage	5 to 12	VDC	22 mA maximum (4.0 mA sleep mode)
Electrical Connection	10 pin circular connection		intermateability dimensions in accordance with MIL-C-26482 (Ref MS3113)
Turn on Time	300	m sec	
ENVIRONMENTAL / PHYSICAL			
Calibrated Temp Range	0 to 60 (-20 to 70 optional)	°C	
Acceleration Sensitivity	±0.004	%FS/g	worst axis
Vibration Sensitivity	±0.001	%FS/g	20g peak, 10 Hz - 2 kHz
Dimensions	4.25 x 1.25 dia (10.8 x 3.18 dia)	inches (cm)	
Maximum Shock	200	g/10mS	½ sine
Weight	8.3 (235)	oz (gms)	

Notes:

- 1 Maximum applied pressure without causing a calibration shift.
- 2 Maximum applied pressure without causing permanent damage to quartz sensing element.
- 3 Calibration conformance to a primary pressure standard after calibration.
- 4 Maximum error at 25°C after exercising 970 to either operating temperature extreme.

Specifications subject to change without notice.

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Operation	Command String	Notes
USER CONFIGURATION		
Set pressure units	\$<node add.>SU n<CR>	where n=1,2,3,or 4 for psia, kPa, hPa, inHg
Save defaults	\$<node add.>SD<CR>	Saves users defined settings
Clear defaults	\$<node add.>SC<CR>	Restores factory settings
Recalibration, zero offset only	\$<node add.>CS<applied pressure><CR>	Adjust for zero drift
Recalibration, offset and span	\$<node add.>CL<low pressure><CR> \$<node add.>CH<high pressure><CR>	Two point offset and span adjustment
Clear recalibration	\$<node add.>CC<CR>	Restores factory set calibration
IDENTITY		
Ask for type and pressure range	\$<node add.>TT<CR>	Returns Model, range and firmware version
Ask for serial number	\$<node add.>TS<CR>	Returns S/N, sensor no. calibration number
Status request	\$<node add.>ST<CR>	Returns system status and details of any sub-system faults
MEASUREMENT		
Single pressure reading	\$<node add.>MR<CR>	Returns a single pressure reading
Continuous pressure reading	\$<node add.>MC<CR>	Returns a pressure reading stream
Stop cont. pressure reading	\$<node add> Any character	Stops pressure reading stream
Request pressure units	\$<node add.>MU<CR>	Returns the set pressure unit
Temperature measurement	\$<node add.>MT<CR>	Returns internal temperature
Go into low power (LP) mode	\$<node add.>LP<CR>	Shuts down sensor
Restore normal operation	Any above command	Wakes up unit from LP mode

Model 970 Ordering/Part Number Information

Ordering Information:
 PN: 970A-AAAA121EFF

Model 970 Intelligent Pressure Standard, $\pm 0.01\%$ FS Accuracy, 1/8" compression fitting, 10 pin circular

AAAA = Pressure Range

BARO,	Barometric 11-16 psia (76-110 kPa)	0065,	65 psia (448 kPa)
0015,	15 psia (103 kPa)	0100,	100 psia (689 kPa)
0023,	23 psia (159 kPa)	0200,	200 psia (1379 kPa)
0030,	30 psia (207 kPa)	0300,	300 psia (2068 kPa)
0045,	45 psia (310 kPa)	0500,	500 psia (3447 kPa)

B = Pressure Fitting

1, 1/8" compression fitting

C = Electrical Termination

2, 10 pin circular

D = Pressure Calibration

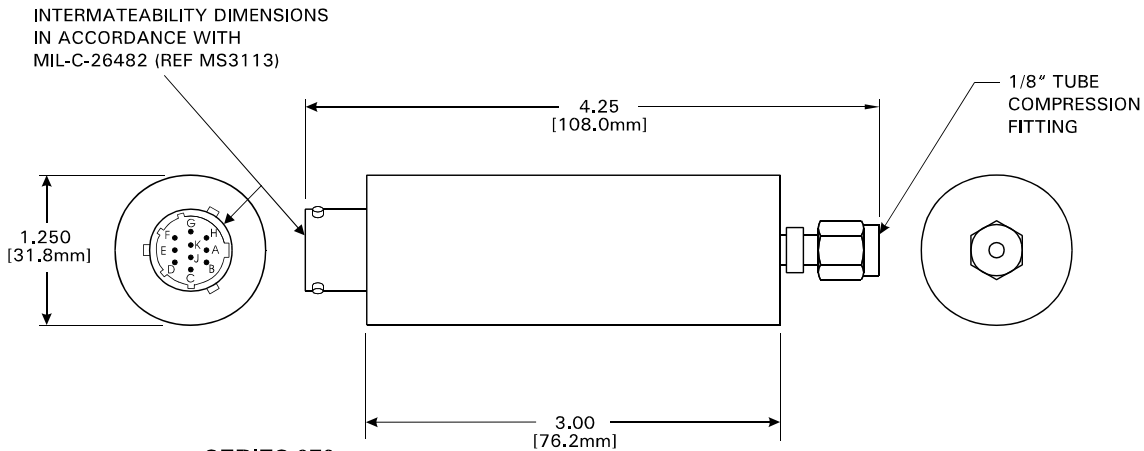
1, Standard

E = Calibrated Temperature Range

1, 0 to 60°C
 2, -20 to 70°C

FF = Specials

00, Standard
 10, Oil-filled capillary tube



PIN NO.	RS485	RS232
A	GND	GND
B	V+	V+
C	(NOT USED)	(NOT USED)
D	NON INV. DRIVER	NO CONNECT (1)
E	INV. DRIVER	Tx OUTPUT
F	INV. RECEIVER	NO CONNECT (2)
G	NON INV. RECEIVER	Rx INPUT
H	MODE SELECT (3)	MODE SELECT (3)
J	(NOT USED)	(NOT USED)
K	(NOT USED)	(NOT USED)

NOTES:

- (1) UNUSED RS232 DRIVER
- (2) UNUSED RS232 RECEIVER
- (3) LEAVE FLOATING OR
 CONNECT TO V+ FOR RS485 MODE.
 CONNECT TO GND FOR RS232 MODE.