

Pressure and Temperature Modules for PTE, ST-2H calibrators.

Ranges for the PM digital indicator

Accuracy

HQS-1:	0,06 % (0,07 %) or 0,1 % F.S.
HQS-2:	0,025 %, 0,05 % or 0,1 % F.S.
HQS-RT:	±0,15 K or ±0,2 K
HQS-TC1:	≥ ±0,3 K

Features

- Local calibration firmware
- Quick-Select modules for PTE and ST-2H
- Fixed mounted on PM

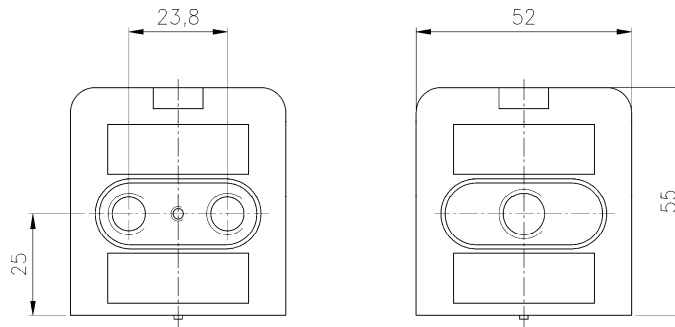
Ranges

0 ... 0,6 mbar to 0 ... 700 bar
 0 ... 0,25 in. H₂O to 0 ... 10.000 psi
 -200 °C to 850 °C for resistance thermometers
 -250 °C to 1820 °C for thermocouples



Technical specification	HQS-1	HQS-2	HQS-RT1 or HQS-RT2	HQS-TC1
Measuring principle	Capacitive sensor with micromachined diaphragm	Piezoresistive sensor, > 500 bar thinfilm sensor	Measurement of resistance of Pt-100, Pt-1000, Ni-120 and Cu-10 probes	Voltage generated by thermocouples with internal or external reference
Overpressure limits	-1 bar/3,45 bar	5-times < 0,4 bar 2-times ≥ 0,4 ≤ 60 bar 1,5-times > 60 bar	Depending on sensitive element	
Measurement type	Differential pressure	Compound, gauge, vacuum and absolute pressure	Resistance, Temperature	Voltage, Temperature
Accuracy	0,06 % (0,07 % < 2,5 mbar) or 0,1 % F.S.	0,025 % ^{1) 2)} , 0,05 % ¹⁾ or 0,1 % F.S. ¹⁾ not for range > 500 bar ²⁾ not for range < 0,6 bar	Pt-100: ±0,15 K (-200 ... 550 °C) ±0,2 K (550 ... 850 °C)	Thermocouple Type J: ±0,7 K (-210 ... -151 °C) ±0,3 K (-151 ... 1200 °C)
Process connection	1/8 NPT, G 1/8 female, (optional with flushing port)		Plug Type TA4F	Plug Type SMP
Material wetted parts	Silicon, Glass, Aluminum, Stainless steel	Stainless steel 316 (1.4401) (ranges < 0,6 bar 316 (1.4401) and Silicon), optional cleaned for Oxygen	Depending on sensitive element	
Approvals	Intrinsically safe according to FM (not for CE version and PM), CE (not for FM and PM)		Intrinsically safe according to FM (not for CE version and PM)	
Ranges of Pressure HQS-1 [mbar] HQS-2 [bar] Gauge, absolute Vacuum Compound	0,6 1 2,5 4 6 10 25 40 60 100 250 400 600 ±,25 ±0,6 ±1 ±2,5 ±4 ±6 ±10 ±16 ±25 ±60 ±100 ±160 ±250 0,25 0,4 0,6 1 1,6 2,5 4 6 10 16 25 40 60 100 160 250 400 500 600 700 -0,25 -0,4 -0,6 -1 ±0,25 ±0,4 ±0,6 ±1 -1/2 -1/4 psi or other engineering units on request			
Ranges of Temperature Input range	HQS-RT1 0 ... 400 Ω	HQS-RT2 0 ... 4000 Ω	HQS-TC1 -10 ... 100 mV	
Probe/Temperature range	Pt-100 -200 ... 850 °C Ni-120 -80 ... 260 °C Cu-10 -70 ... 150 °C	Pt-1000 -184 ... 275 °C	J -210 ... 1200 °C K -240 ... 999 °C T -250 ... 400 °C E -250 ... 400 °C	R -50 ... 1768 °C S -50 ... 1768 °C B 100 ... 1820 °C N -250 ... 1300 °C
Operation temperature Extended operation temperature Storage temperature	0 ... 49 °C -7 ... 49 °C (only for HQS-2) -10 ... 70 °C			
Temperature influence (module)	±0,07 % / 10 K from -7 ... 49 °C (ref. 20 °C), optional for HQS-2 enhanced temperature performance without any additional error due to temperature over the compensated range			
Warm up time	5 minutes to rated accuracy, 30 minutes to complete stability			
Material housing	ABS-plastic			
CE-mark/EMC	Emission according EN 50011 (1995) Immunity according EN 50082-2 (1995) (not for FM)		In development	
Protection acc. EN 60529/IEC 529	IP45, when installed in PTE base unit, special protection cases available			
Weight [kg]	approx. 0,3			

General dimensions [mm]



Order information

Pressure module

Rev. B

Type	Sensor type	Accuracy	Wetted parts	Pressure type	Range		Engineering unit	Process connection
					HQS(F)-1 In mbar	HQS(F)-2 In bar		
For use with PTE and ST-2H: (HQS) Standard (HQSC) Standard (CE) (HQSF) FM ap- proved (non CE)	(1) Capacitive	(B) 0,1 %	(A) Non- isolated (HQS-1 and HQS-2 < 0,6 bar) (I) Isolated stainless steel 316 (1.4401) ¹⁾ (standard ≥ 0,6 bar) (O) Isolated stainless steel 316 (1.4401), for Oxygen service ¹⁾	(D) Differential (only HQS-1)	0,6 1 2,5 4 6 10 25 40 60 100 250 400 600	0,25 0,4 0,6 1 1,6 2,5 4 6 10 16 25 40 60	(MBAR) (HQS-1 or HQS-2) (BAR) (HQS-2)	(A) 1/8 NPT female (B) 1/8 NPT female with flush port (only isolated sensors) (C) G 1/8 female (only HQS-2) (D) G 1/8 female with flush port (only isolated sensors)
	(2) Piezoresistive (ranges > 500 bar thinfilm)	(C) Sensor type 1 0,06/0,07 % ³⁾ Sensor type 2 0,05 % ¹⁾		(G) Gauge (only HQS-2)	4 6 10 25 40 60 100 250 400 600	1 1,6 2,5 4 6 10 16 25 40 60		
		(D) Sensor type 2 0,025 % ^{1) 2)}		(A) Absolute (only HQS-2)	10 25 40 60 100 250 400 600	2,5 4 6 10 16 25 40 60		
		(F) Sensor type 2 0,1 % ⁴⁾		(V) Vacuum (only HQS-2)	100 250 400 600	16 25 40 60		
		(G) Sensor type 2 0,05 % ^{1) 4)}		(C) Compound (only HQS-2)	±0,25 ±0,4 ±0,6 ±1 ±2,5 ±4 ±6 ±10 ±16 ±25 ±60 ±100 ±160 ±250	100 160 250 400 500 600 700 -0,25 -0,4 -0,6 -1 -1/2 -1/4 ±0,25 ±0,4 ±0,6 ±1		
		(H) Sensor type 2 0,025 % ^{1) 2) 4)}						
		¹⁾ not for ranges above 500 bar						
		²⁾ not for ranges below 0,6 bar						
		³⁾ max. accuracy for all ranges < 2,5 mbar 0,07 %						
		⁴⁾ enhanced temperature performance -7 ... 49 °C						
For use with PM: (PPM) Standard (fix mounted)			¹⁾ only HQS-2				psi or others on request	

How to order pressure module

Type	Sensor type	Accuracy	Wetted parts	Pressure type	Range	Engineering unit	Pressure connection
HQSC	2	C	I	G	60	BAR	A

Temperature module

Type	Sensor type	Range	Temperature probe	Options
(HQS) Standard	(RT1)	0 ... 400 Ω	Pt-100, Ni-120, Cu-10	(TA4F) Connector TA4F for RT-modules
(HQSF) FM approved	(RT2)	0 ... 4000 Ω	Pt-1000	(CAL) Software for calibration of RT-modules
(PPM) Standard for PM	(TC1) ¹⁾	-10 ... 100 mV	J, K, T, E, R, S, B, N	(SMP) Connector SMP (state type of thermocouple)

¹⁾ not for digital indicator PM

RTD-Probes Pt-100 (DIN Class A)

Model	Description
PT1	diameter 3 mm, length 300 mm, handle and 1,5 meter coiled cable
PT2	diameter 6 mm, length 300 mm, handle and 1,5 meter coiled cable
PT5	diameter 3 mm, length 150 mm, handle and 1,5 meter coiled cable
PT6	diameter 6 mm, length 150 mm, handle and 1,5 meter coiled cable
PT3	diameter 3 mm, length 300 mm, 3 meter standard cable
PT4	diameter 6 mm, length 300 mm, 3 meter standard cable
TA4F	TA4F mating connector for use with own RTD-probes

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