VORTORQ®

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Data sheet

VTMH530

Hydrogen Pressure Sensor

FEATURES

- Heavy Industrial CE Tested
- Integral Pressure Cavity，No leakage
- Reverse Polarity Protection on Input
- Short Circuit Protection on Output
- Up to ±0.25% Accuracy
- Up to ±1% Total Error Band
- Compact Outline
- -40°C to +120°C Operating Temperature
- Weatherproof

SPECIFICTIONS

- Safe and reliable overall structural design
- AISI 316L(1.4404) stainless steel material
- No oil-filled cavities are used to ensure no leakage
- No welding diaphragm is used to enhance over pressure resistance
- Total error band ±1%
- Design for prevent hydrogen embrittlement and permeation
- One body design, no welding diaphragm is used to enhance over pressure resistance

APPLICATIONS

- PEM fuel cells
- Hydrogen refueling station, hydrogen storage
- Hydrogen fuel vehicles
- Backup power
- Test bench
- Train brakes

Standard Pressure Specification

Measurement method	Pressure range (Psi)	Pressure range (Bar)	Gage	Sealed	Absolute	Compound	
Micro-fused glass pressure sensor	0 to 150	0 to 10	*				
	0 to 250	0 to 16	*				
	0 to 500	0 to 35	*			*	
	0 to 1000	0 to 70	*			*	
	0 to 1500	0 to 100	*			*	
	0 to 2250	0 to 150	*			*	
	0 to 3000	0 to 200	*			*	
	0 to 5000	0 to 350	*			*	
	0 to 7500	0 to 500	*			*	
	0 to 10000	0 to 700	*			*	

Intermediate ranges available upon request. Ambient Temperature: 25°C (unless otherwise specified)

Performance Specification

Ambient Temperature: 25°C (unless otherwise specified)					
Parameter	**Min**	**Typ**	**Max**	**Unit**	**Remarks**
Accuracy (including nonlinearity, Hysteresis, repeatability)	-0.5	±0.5	0.5	%F.S. BFSL	@ 25°C
Insulation (signal wire to shell)	100			MΩ	@250VDC
Pressure cycle life	$1X10^7$			Zero to full scale pressure cycle	
Overload pressure	1.5X		20k psi	Rated	
Failure pressure	3X		20k psi	Rated	
Long term stability (year)		±0.25		%F.S	
Comprehensive accuracy	-2	±1	2	%F.S	Compensation temperature range
Compensation temperature range	-20		85	°C	
Operating temperature range	-40		120	°C	
Storage temperature range	-55		+130	°C	
Load (R_L)	RL > 100k			Ω	Voltage output
Load (R_L)	< (Supply voltage -9V) / 0.02A			Ω	Voltage output
Power consumption current			10	mA	Voltage output
Response time (10% to 90%)	<2ms (Voltage output); <3ms (Current output)				

Wetted parts material, process connection	AISI 316L(1.4404)	
Wetted parts material, membrane	AISI 316L(1.4404) Gold plated 15 um	
Diaphragm material	SST3316L	
Shock	50g, 11msec Half Sine Shock per MIL-STD-202G, Method 213B, Condition A	
Vibration	±20g, MIL-STD-810C, Procedure 514.2-2, Curve L	
ATEX I M1 Ex ia I Ma		
Note	For the application in Ex zone you have to respect the conditions mentioned in the CE-ATEX Type Examination Certificate, under the subsidiary brand Parson.	
Detection range	0~0.01Mpa to 0~250Mpa （Gauge pressure of absolute pressure）	
Overload pressure	2x full scale or 300Mpa (Take the smaller value)	
Output Signal	4~20mADC, 0~5 VDC, 0~5VDC, 0~10VDC, 0.5~4.5VDC, RS485 Modbus-RTU， IIC, Hart	
Excitation Voltage	13~30VDC or 5V	
Medium temperature	-30~+85℃	
Ambient temperature	-20~+85℃	
Accuracy	0.5%F.S., 0.25%F.S., 0.1%F.S.,	
Measurement medium	Various liquids, gases, or vapors compatible with 316 or 304 stainless steel	
Process connection	M20x1.5，M12x1， G1/4, G1/2 etc.	

For custom configurations, consult factory.

Notes

Compensated Temperature: The temperature range over which the product will produce an output proportional to pressure within the specified performance limits.

Operating Temperature: The temperature range over which the product will produce an output proportional to pressure but may not remainwithin the specified performance limits.

Storage Temperature: The temperature range over which the product can be stored safely in occasions without pressure applied or power nput and remains rated performance. Beyond this temperature range may cause permanent damage to the product.

All configurations are built with supply voltage reverse and output short-circuit protections.

CE Compliance (For reference only)

EN 55022 Emissions Class A & B

IEC 61000-4-2 Electrostatic Discharge Immunity (8kV contact/15kV air)

IEC 61000-4-3 Radiated, Radio-Frequency Electromagnetic Field Immunity (10V/m, 80M-1GHz)

IEC 61000-4-4 Electrical Fast Transient Immunity (1kV)

IEC 61000-4-5 Surge Immunity (V+ to V-: ±2KV/42Ω; L to Case: ±1KV/12Ω; V- to V0: ±1KV/42Ω)

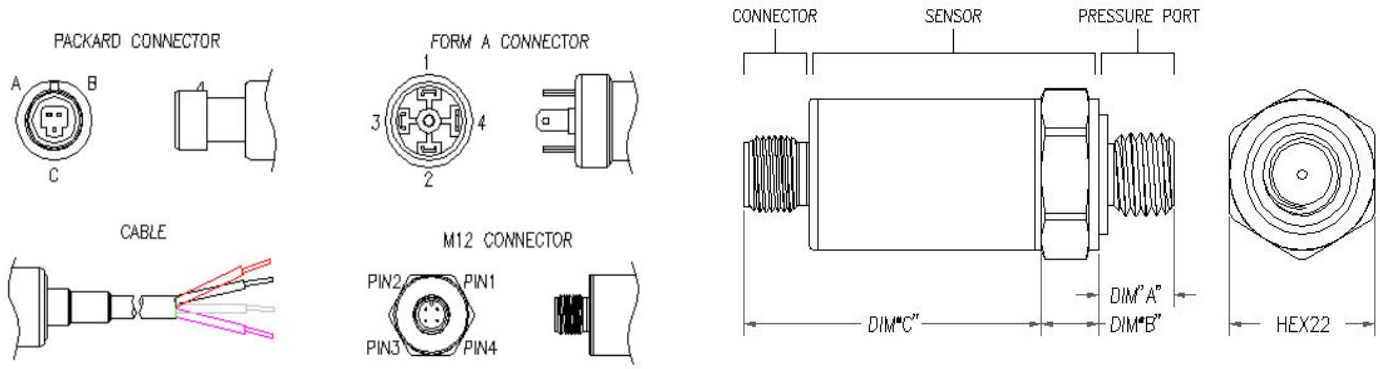
IEC 61000-4-6 Immunity to Conducted Disturbances Induced by Radio Frequency

Fields (150K~80MHz, 10V level for voltage output models, 3V level for current output model)

IEC 61000-4-9 Pulse Magnetic Field Immunity (100A/m peak)

For all CE coFPliance tests, max allowed output deviation ±1.5 %F.S.

Dimension [mm]



Code	Connector type	Dimension C (Max)
1	Cable 3 FT	1.97 [50.0]
2	Cable 10 FT	1.97 [50.0]
3	Packed connector	2.10 [53.5]
4	M12	1.85 [47.9]
5	FORM A	2.05 [52.0]

Protection Grade	
Connector	**Grade**
PACKARD CONNECTOR	IP66
CABLE	IP67
M12 CONNECTOR	IP67
FORM A CONNECTOR	IP65

Pressure connection type			
Code	**Connector**	**DIM "A"**	**DIM "B"**
1	G1/4 JIS B2351	0.472 [12.00]	0.3 [8.0]
2	M20 x 1.5 mm ISO 6149-2	0.661 [16.8]	0.3 [8.0]
3	1/4-18 NPT	0.600 [15.24]	0.3 [8.0]
4	7/16-20UNF FEMALE SAE J513 STRAIGHT THREAD WITH INTEGRAL VALVE DEPRESSOR	0.687[17.5]	0.3 [8.0]
5	M14 x 1.5 mm ISO 6149-2	0.472[12.0]	0.3 [8.0]

6	1/8-27 NPT	0.390[9.91]	0.3 [8.0]
7	M12 x 1.5 mm ISO 6149-2	0.472[12.0]	0.3 [8.0]
8	M10 x 1.0 mm ISO 6149-2	0.374[9.5]	0.3 [8.0]
9	G1/4 DIN 3852 FORM E GASKET DIN3869-14 NBR	0.472 [12.00]	0.3 [8.0

Output

Code	Output	Supply
1	0.5 - 4.5V	5 ± 0.25V
	RATIOMETRIC	PROTECTED to 16V
2	1 - 5V	8 - 36V
3	4 - 20mA	9 - 36V
4	0 - 5V	8 - 36V
5	0 - 10V	13 - 36V
6	1 - 6V	8 - 36V
7	0.5 - 4.5V	7.5- 36V
8	I^2C	3.3V or 5V

WIRING DEFINATION

Current output wiring				
Connector	**Supply+**	**Output+**	**PINS**	**P REF VENT**
Packard A	A	B	C	Hole Through Connector
Packard B	B	A	C	
Big Hessman	1	2	3,4	
M12 Waterproof aerial plug	1	2	3,4	
Cable	Red	Black		Pipe In Cable

Voltage output wiring					
Connector	**Supply+**	**Output+**	**Ground**	**PINS**	**P REF VENT**
Packard A	A	C	B		Hole Through Connector
Packard B	B	C	A		
Big Hessman	1	3	2	4	
M12 Waterproof aerial plug	1	3	2	4	
Cable	Red	White	Black		Pipe In Cable

CONNECTOR

Connector type			
Connector	**Description**	**MATING HOUSING P/N**	**MATING TERMINAL PIN**

Packard	3-PIN METRI-PACK 150	12078090	12103881, QTY 3
M12	BINDER SERIES 713, 09 3431 77 04 OR EQUIV	4-POS FEMALE CONNECTOR	
FORM A	OMAL ARB03S or ARB03R	OMAL AHB6733 3+PE	

Note: Transmitter of gage pressure type requires vent to atmosphere on the pressure reference side. This is accomplished via cable from the transmitter (the end of the cable should be terminated to clean and dry area) or through the customer mating connector/cable assembly which has internal vent path. Suggested vented M12 mating connector P/N MB12FWAFF04ST-4 and MB12FWAFF04ST-3. Set for 0.157~0.236" and 0.236" ~0.315" diameter cable respectively.

ORDER INFORMATION

VTMH530	3	4	1	0	0	9	500M	G
Type	Output	Connector	Pressure interface material	Snubber	Label	Pressure connection	Pressure range	Mode
VTMH530	1:0.5 - 4.5V RATIOMETRIC	1: CABLE	1:N/A	0: No Snubber	0: No Lable (OEM)	1: G1/4 JIS B2351 2: M20 x 1.5 3: 1/4-18 NPT 4: 7/16-20UNF FEMALE SAE 5: M14 x 1.5 6: 1/8-27 NPT 7:M12 x 1.5 8: M10 x 1.0 9: G1/4 DIN 3852 A: G3/8 JIS B2351 X：Customer Special	M: Pa B:Bar P: PSI K: Kpa	G: Gauge
	2: 1 - 5V	2: PACKARD A	2:N/A	1: With Snubber	1: Adhesive Label			C: Compound
	3: 4 - 20mA	3: PACKARD B	3:N/A		2: Laser Marking			
	4: 0 - 5V	4: M12	4 *SST316L Integral Screw					
	5: 0 - 10V	5: FORM A						
	6: 1- 6V							
	7: 0.5 - 4.5V							
	X: Customized							