



1/2 INCH [13 MM] OD TRANSDUCER, DIGITAL ASIC HYBRID DHD203-XX-YYY

Part Number Coding: AAA BBB - XX - YYY
 Family Options Pressure Temperature

FEATURES AND BENEFITS

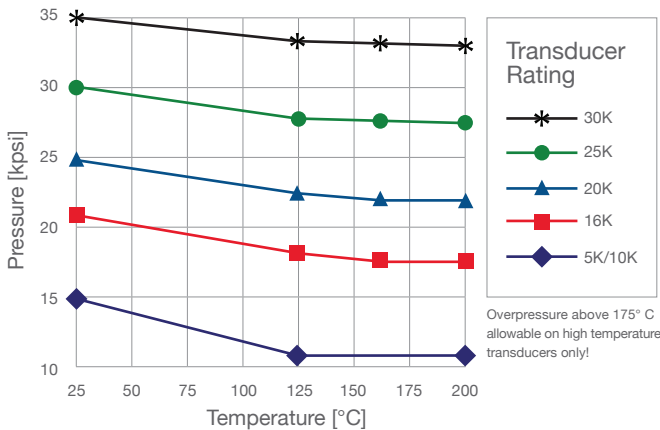
- Pressure range: 0 - 30,000 psi [0 to 2415 bar]
- Drift at Max temperature and max pressure: 0.1% F.S. / year
- Operating temperature range: -15° to 200°C
- NIST Traceable calibration
- Fully digital I2C output for easy integration with existing circuitry

MECHANICAL SPECIFICATIONS

- Proof Pressure. 35,000 psi (2415 bar)
- Overpressure without sensor damage Varies with temperature; see plot below
- Fluid Filled Non-toxic engineered sebacate or mineral oil; depends on temperature
- Mechanical Shock / Vibration See Quartzdyne document [E20-032](#)
- Weight ~3 oz. [85g]

OVERPRESSURE LIMITS

For Quartzdyne® Pressure Transducers



ELECTRICAL CONNECTIONS

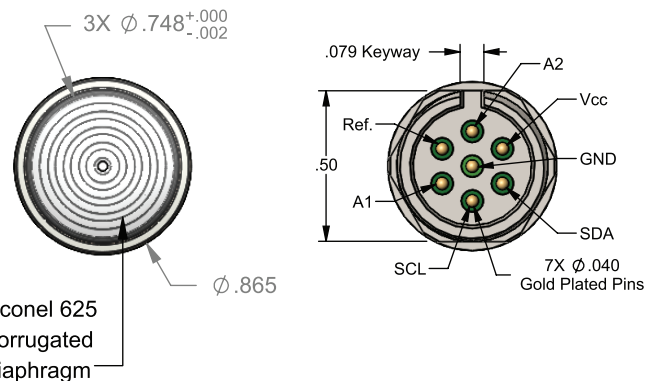
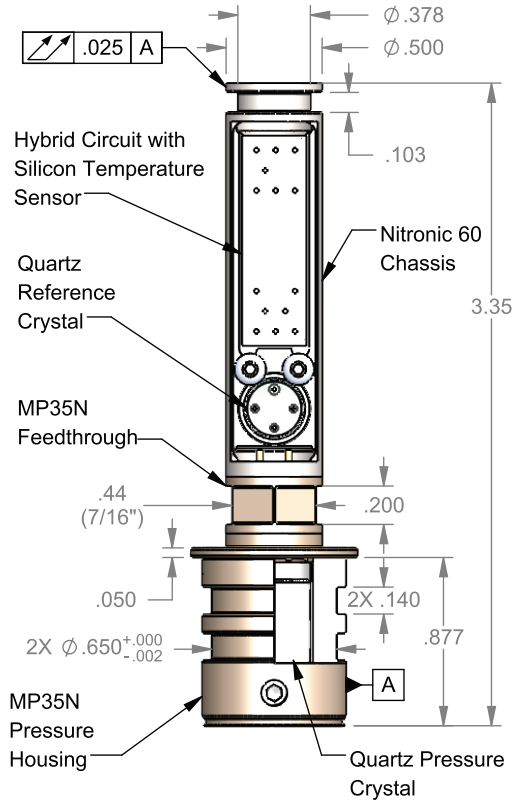
Output: Digital I²C

Wire: 28 AWG Solid Core Wire, TFE ET (Ø0.027" [0.69mm]) 14in flying leads

Color	Description	Color	Description
Blue	VCC (5.5V DC max)	Slate	SLC (Clock)
Green	SDA (Data)	Yellow	A1 (Address 1)
White w/ Black Stripe	Ground	Purple	A2 (Address 2)

TOOL DESIGN CONSIDERATIONS

1. Precautions must be taken to protect the circuit, chassis and reference crystal from external pressure by adding a pressure vessel or tubing.
2. The output connector is not recommended for downhole use. If needed, a corresponding connector and cable is available for purchase.
3. Special care should be taken to protect the wires passing through the chassis, by maintaining the wire bundle, or protecting with tubing to prevent damage.
4. Standard tolerance if not noted for dimensions with 3 decimal places (.XXX) is +/- .005. If there are only two decimal places are noted (.XX) the tolerance is +/- .01.



PRESSURE PERFORMANCE

Attribute / Sensor Type	DHD203
Pressure range (psia bar)	0 to 30,000 0 to 2,070
Calibration temperature range (°C)	25 - 177
Accuracy (% FS)	0.1
Achievable resolution (psi x sec)	<0.5
Repeatability (%FS)	0.1
Nominal sensitivity (counts / psi)	1300-1700
Nominal counts Range	6x10 ⁶ to 6x10 ⁷
Response time to FS Step (for 99.5% FS)	< 1 sec
Gravity / Orientation Effect	Negligible
Acceleration Sensitivity (psi / g - any axis)	< 0.02
Drift at Max. Pressure and Temperature (% FS / year) ⁴	0.1 % F.S

Notes

- Units calibrated with a bellows meets accuracy specification from 200 psi to FS. Accuracy is the combined effects of repeatability, hysteresis, and corrected linearity over the calibrated temperature range. Stated accuracy does not include the deadweight tester error, which is 0.01% of reading. Some transducers require 4th and 5th order coefficients to satisfy accuracy specifications.
- Resolution scales inversely with gate time (sample interval). Achievable Resolution (psi)=(Resolution (psi x sec))/(Gate time (sec)). Max gate time is 2.2 sec. Min gate time is 0.001sec.

ABSOLUTE MAXIMUM ELECTRICAL RATINGS

Parameters	DHB203
Supply Voltage	-0.5 V to 6.2 V @ 50 mA max
SDA, SCL	-0.5 V to Vcc+0.5V @ 20 mA max
A1	-0.5 V to Vcc+0.5V @ 20 mA max
Storage Temperature	-40°C to 225°C
Mean time to failure	>1 year @225°C, >5 years @ 200 °C
ESD	± 4kV (MIL-STD-883)

Notes

- Absolute Maximum Ratings are value limits beyond which permanent damage to the device may occur and/or its useful life reduced. Device performance is not guaranteed above recommended operating conditions, Quartzdyne does not recommend operating the device in this region. CAUTION: Improperly wired devices can be damaged, always use current-limited power supplies for protection.
- Extrapolated from powered and un-powered circuit life tests. See www.quartzdyne.com for test methods and results.
- Peak Inrush current is the maximum current drawing during transducer startup.
- Supply ripple above max can increase signal jitter, decreasing transducer resolution.
- Pressure and temperature frequency ranges may vary by transducer.

For transducer interface instructions, please consult our [Digital Manual](#)

O-RINGS AND BACK-UP

Description	QD PN	Parker PN	Groove Diameter	Groove Width
Back O-ring	D21201-012	2-012	0.378 + / - .004	0.1 + / - .010
Front O-ring	D21868-016	2-016	0.65 +.000 / -.002	0.14 + / - 0.005
Back-up	D22509-01			

ELECTRICAL CHARACTERISTICS

Recommended Conditions	DHB203		
Operating Temperature	-15°C to 200°C		
Supply Voltage (VCC)	2.7 VDC to 5.5 VDC		
Operating Specifications	Min	Typ	Max
Operating Current (ICC) 25°C	2.5 mA	4.0 mA	6.0 mA
Operating Current (ICC) @ Tmax	2.75 mA	4.75 mA	6.5 mA
Start-Up Time		0.15 sec	0.350 sec
Peak Inrush Current @25°C 3			7 mA
Peak InRush Current @ Tmax 3			7.5 mA
Supply Voltage Sensitivity			0.150 Hz/V
Supply Ripple (1 kHz-200 kHz) 4			200 mVpp
Pressure Frequency 5	10 kHz		100 kHz
Temperature Frequency 520 kHz			100 kHz
Mean time to failure	>1 year @225°C, >5 years @ 200°C		
Detailed Specifications	http://www.quartzdyne.com/spec/DigitalTransSpec.pdf		
Frequency Counter			
Counter Type	Dual Period Counter		
Gating Mode	Continuous (zero dead time between samples)		
Gate Time	0.001 seconds to 2.3 seconds (determined by query rate)		
Serial Interface	I2C Compatible		
VIL (SCL, SDA)	-0.5V to VCC x 0.3		
VIH (SCL, SDA)	VCC x 0.7 to VCC + 0.5V		
Output Type	Open Drain with 2-20 kΩ pull-up resistor supplied by host controller		
Clock Frequency (SCL)	100 kHz max		
Address Interface	Multi-function pin A1 pulled up to VCC		