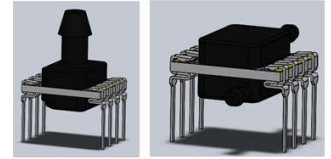


The MCT-LL 4D Series
Liquid Level Digital Output
Digital Temperature & Pressure Outputs
I²C & SPI Protocols



DESCRIPTION

Advanced Sensors Multi Chip Technology Liquid Level (MCT-LL) Digital Output Series utilizes a unique two-piece pressure port design and advanced Dimethyl Silicone elastomer that ensures the highest level of isolation of the sensor and electronics from the liquid media. With AVSensors advanced mixed signal ASIC (Application Specific Integrated Circuit) and RTV bonded silicon MEMS gage sensor a14bit digital pressure and 11 bit digital temperature output in SPI and I²C protocols for measuring liquids in open and closed containers can easily be measured. The designs superior performance provides 1% Total Error across a wide temperature range of 0 to 85 °C. With all the advanced features, the MCT-4LL D series is the ideal choice for measuring container height for many applications.

APPLICATIONS

- Open Vessel Liquid Level Measurements
- Pressurized Vessel Level Measurements
- Mildly Corrosive Liquid Level Measurements

FEATURES

- Unique Two Piece Port Design
- Digital Temperature & Pressure Output
- Low Power Option
- 3.3 & 5.0Vdc Supply Voltages
- Advanced Silicone Elastomers for Superior Isolation
- Low Overall Errors, 1%TEB
- I2C & SPI Outputs
- Custom Outputs and Ranges Available

SPECIFICATIONS

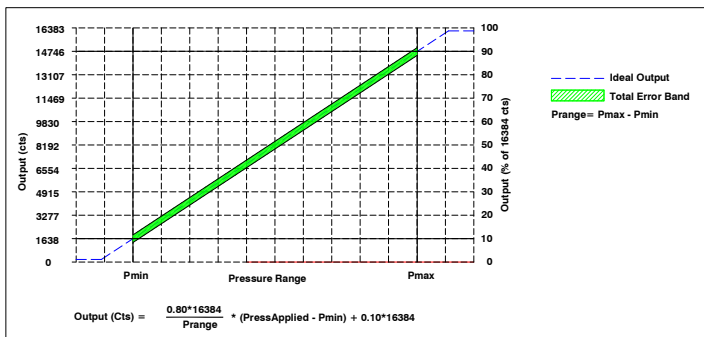
	Symbol	Min	Typical	Max	Unit	Note
Performance Specifications						
Supply Voltage		2.7V	3.3	5.50	V	
Current Consumption				3	mA	
Standby Current			0.5		µA	-L Option
Pressure Resolution				14	bits	
Temperature Resolution				11	bits	
Output (Type 1) at Pmin			1638		cts	
Output (Type 1) at Pmax			14746		cts	
Output (Type 2) at Pmin			819		cts	
Output (Type 2) at Pmax			15564		cts	
Pressure Accuracy		-0.25		0.25	%FSS	2
Total Error Band	TEB	-1.00		1.00	%FSS	3
Temperature Accuracy			1.5		°C	
Long Term Stability			±0.4		%FSS	
Conversion Time			1.0		mS	4
Power On to Valid Data				<10	mS	5
Weight				3	grams	
Compensated Temperature			-0 to 85		°C	6
Operating Temperature			-40 to 125		°C	6

SPECIFICATIONS	Symbol	Min	Typical	Max	Unit	Note
Absolute Maximum Conditions						10
Supply Voltage		-5.0		6	V	
Storage Temperature		-40		125	°C	6
Package Integrity, Common Mode				300	psi	7
Proof Pressure				3x		8
Burst Pressure				5x		9
Media Compatibility		CDA, Non Ionic, Non Corrosive Gases				
Wetted Materials		Ceramic, RTV, Epoxy, Silicon, Gold, Aluminum, LCP				

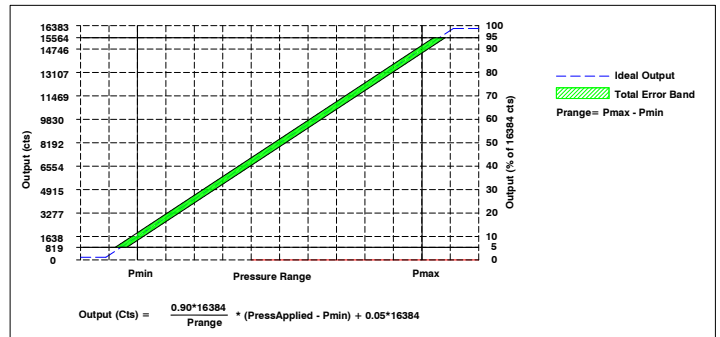
Reference Conditions: Vsupply: 3.30Vdc or 5.00, Ta=25 °C, Positive Pressure Port A

1. All specification at reference conditions unless otherwise noted.
2. Maximum deviation from a Best Fit Straight Line through Pmin and Pmax measured at 25 °C. Errors included Pressure Non Linearity, Pressure Hysteresis and Repeatability.
3. Maximum deviation from the Ideal Transfer Function expressed as a percentage of the %FSS over the compensated temperature range. Includes calibration errors (Offset & Span), temperature errors (Offset & Span), pressure non-linearity, pressure and thermal hysteresis.
4. The time for the output register to be updated with new data.
5. The time for the output register to have valid data after a power on reset.
6. Compensated, operating and storage temperatures for mBar/inH2O ranges are 0 °C to 60 °C, -10 °C to 85 °C, and -20 °C to 105 °C respectively.
7. Maximum pressure the sensor package can withstand without rupture.
8. Maximum pressure without degrading sensor's performance specifications.
9. Maximum pressure the silicon diaphragm can withstand without rupture.
10. Exceeding Absolute Maximum Specification may damage the device. Extended exposure beyond the operating conditions may affect device reliability.

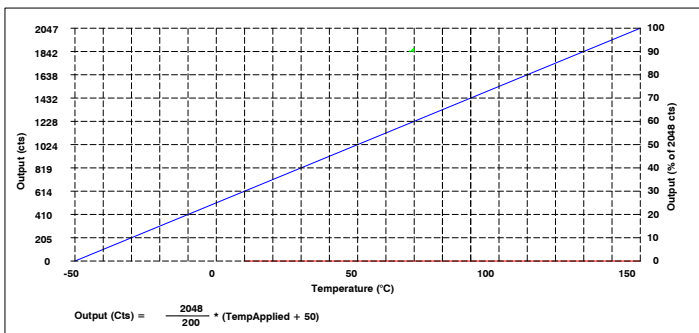
PRESSURE AND TEMPERATURE TRANSFER FUNCTIONS



Type 1, 10-90%, Pressure Transfer Function



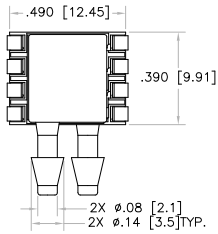
Type 2, 5-95%, Pressure Transfer Function



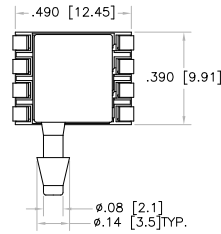
Temperature Transfer Function

MECHANICAL DIMENSIONS in [mm]

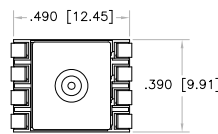
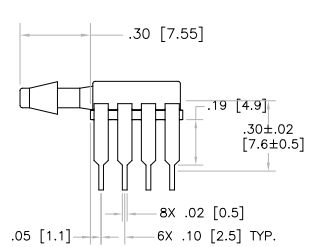
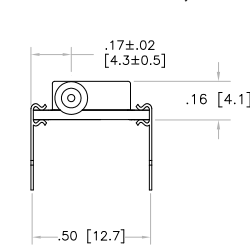
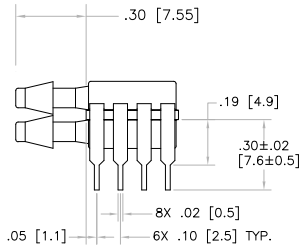
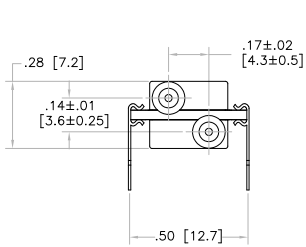
DUAL IN LINE, THRU HOLE



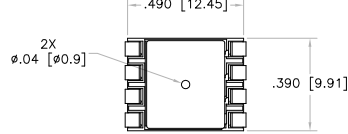
HORIZONTAL BARB, DUAL



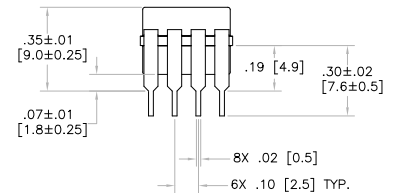
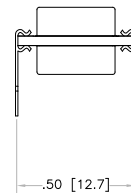
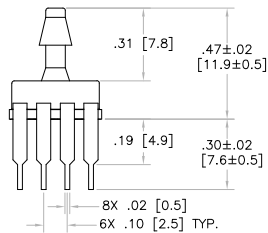
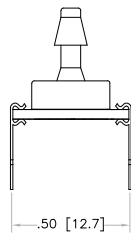
HORIZONTAL BARB, TOP



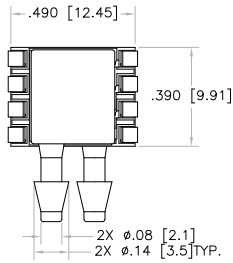
VERTICAL BARB, TOP



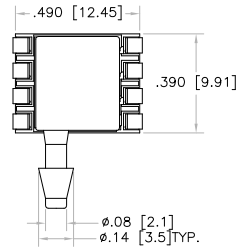
VERTICAL HOLE, DUAL



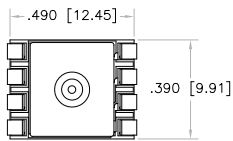
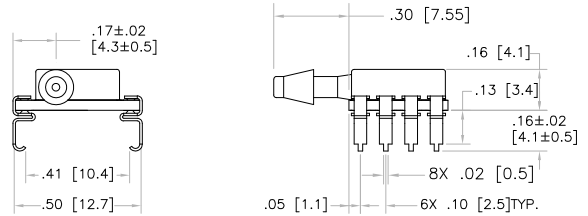
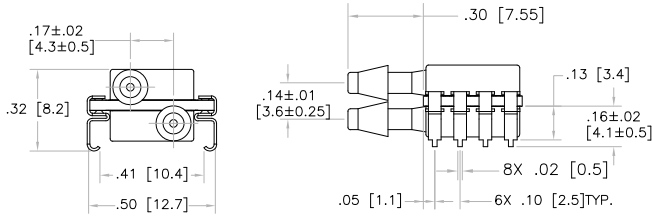
DUAL IN LINE, J LEAD SMT



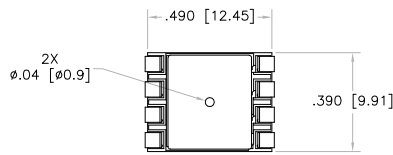
HORIZONTAL BARB, DUAL



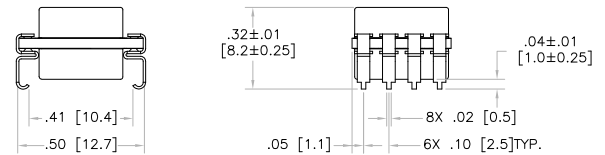
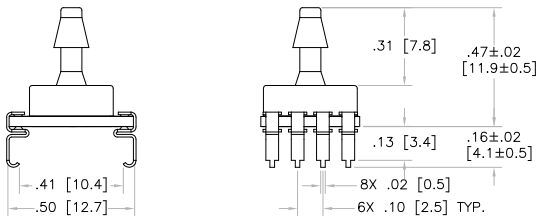
HORIZONTAL BARB, TOP



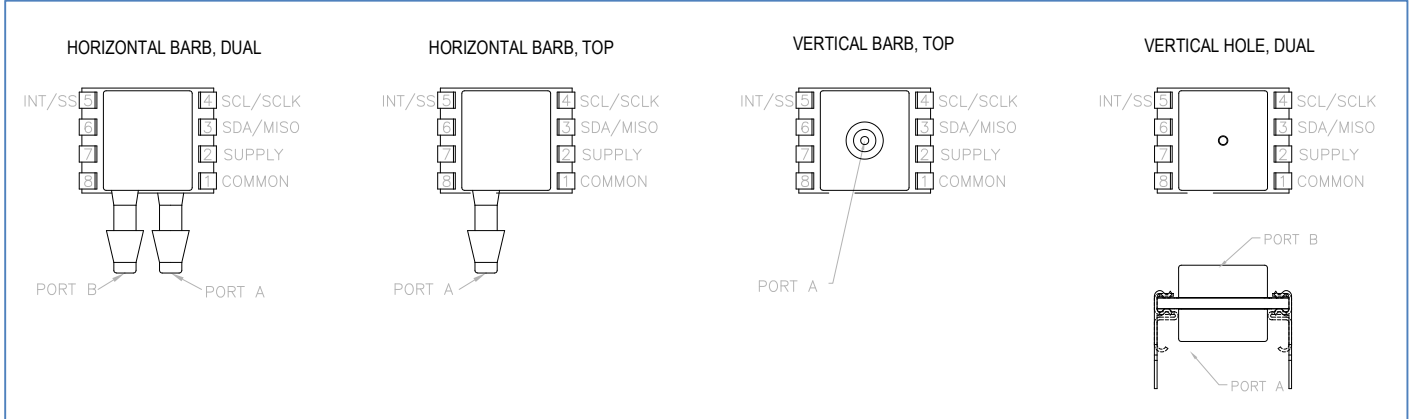
VERTICAL BARB, TOP



VERTICAL HOLE, DUAL



PORT DESIGNATION



PART NUMBERING FOR ORDERS

Series	Port Type	Package Style	Pressure Range	Pressure Units	Pressure Type (Range Availability) [Package Availability]	Calibrated Voltage	Output Type	Digital Protocol	Options
MCT-LL 4D	VHD=Vertical Hole, Dual	J= J lead SMT	025 050 100	cm=mmH 20Bar	G= Gage (All Ranges) [All Port Types]	3=3.3Vdc 5=5.0Vdc	Type1= 10 -90% of Cts (14 Bits) Type2= 5 -95% of Cts (14 Bits)	I1=I2C, 0x28H I2=I2C, 0x38H I3=I2C, 0x48H [All Packages] S1=SPI [All Packages]	-L Low Power -G Gel Coat
	HBD=Horizontal Barb, Dual	T= DIL Thru Hole	250 500 4						
	VBT=Vertical Barb, Top	S=SIL	010 020 050	l=inH20					
	HBO=Horizontal Barb, Opposing		100 200						
	HBT=Horizontal Barb, Top								

Part Number Example: **MCT-4D VBTJ010IB31S1**

Vertical Barbed Top Port, J Leaded SMT Package, 0 to 10inH20 Range, 3.3Vdc Supply, SPI Protocol, Pmin= 0, Pmax=+ 10inH20

WARRANTY

Pressure sensors have a limited one-year warranty to the original purchaser. AVSensors will repair or replace, at its option, without charge those items it finds defective. This is the buyers sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall AVSensors be liable for consequential, special, or indirect damages. This warranty does not apply to units that have been modified, misused, neglected or installed where the application exceeds published ratings. Specifications may change without notice. The information supplied is believed to be accurate and reliable as of this printing, however, we assume no responsibility for its use.