



## U86B

### Urea Dosing

#### SPECIFICATIONS

- ◆ Mountable with O-ring seal
- ◆ Stainless Steel wetted surfaces
- ◆ Amplified
- ◆ ASIC calibrated
- ◆ Absolute, sealed gage
- ◆ Cable option
- ◆ Analog output
- ◆ SENT Output Optional (contact factory for details)

The U86B is an automotive designed 16mm media isolated, piezoresistive silicon pressure sensor packaged in a 316L stainless steel housing and is designed for O-ring mounting. The sensing package utilizes silicone oil to transfer pressure from the 316L stainless steel diaphragm to the sensing element. The U86B is designed for high performance, low pressure applications. A custom ASIC is used for temperature compensation, offset correction, and provides an amplified output of 0.5 to 4.5V. CE approved and manufactured to TS16949 standard, this model may also come with a cable if desired. For a similar sensor without plastic housing, refer to the 86A or for a plastic threaded fitting, refer to the LM pressure transducer.

#### FEATURES

- ◆ Mountable O-ring with seal
- ◆  $\pm 0.5\%$  Accuracy
- ◆  $\pm 2.0$  Total Error Band
- ◆ Cable option
- ◆ Freeze Protection Available

#### APPLICATIONS

- ◆ Urea level
- ◆ Urea pressure
- ◆ Air brakes
- ◆ Corrosive fluid measurement for E&V applications
- ◆ Automotive

## STANDARD RANGES

Range	psiA, psiG, psiS	Range	BarA, barG, BarS
0 to 050	*	0 to 005	*
0 to 100	*	0 to 010	*
0 to 150	*	0 to 012	*
0 to 200	*	0 to 013	*

Other pressure ranges available, please contact factory

## PERFORMANCE SPECIFICATIONS

**Supply Voltage: 5V**

**Ambient Temperature: 25°C after 10 sec warm-up (unless otherwise specified)**

PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Supply Voltage	4.75	5.00	5.25	V	
Supply Current			12.5	mA DC	
Ratiometric Output	0.5		4.5	V	1, 5
Accuracy (combined linearity, hysteresis & repeatability)	-0.5		0.5	%Span	2
Total Error Band	-2.0		2.0	%Span	3
Compensated Temperature	-7		+105	°C	
Operating Temperature	-40		+105	°C	
Storage Temperature	-40		+125	°C	
Insulation Resistance (500V <sub>DC</sub> )	10			MΩ	4
Reverse Voltage			18	V	
Overvoltage Protection			18	V	
Short Circuit Protection		Continuous			
Output Noise @ 1kHz		13		mV	
Response Time (10% to 90%)		1.0		ms	
Long Term Stability	-0.15		0.15	%Span/Year	
Output Load		47		kΩ	
Diagnostics Ability			Included		

### Notes

1. Ratiometric to supply voltage, pressure transfer function at 5V Voltage Supply, see Chart A
2. Best Fit Straight Line
3. TEB includes all accuracy errors, thermal errors, span and zero tolerance over the compensated range
4. Between sensor body to any pins of connector
5. This product can be configured for custom OEM requirements, contact factory for different transfer functions and output clipping. See Chart B

**ENVIRONMENTAL SPECIFICATIONS**

PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Pressure Overload			2X	Rated	6
Pressure Burst			3X	Rated	7
Pressure Cycle	1M			Cycles	
Material	Port: 316/316L ST STL Sealing: FKM Fluoroelastomer 70 (O-Ring) Housing: PA66 + 30%GF				
Freezing Protecting		Optional			9

**Notes**

6. The maximum pressure that can be applied without changing the transducer’s performance or accuracy.
7. The maximum pressure that can be applied to a transducer without rupture of either the sensing element or transducer.
8. Transducers can be installed by M4X0.7 Torx washer head screws (qty 2) with 2.2Nm torque (values provided are for reference). Actual torque depends upon on mating support material, surface flatness and different screws. Transducer housing may crack if over-torqued when installing
9. Medium dead volume that exceeds 350mm<sup>3</sup> max in manifold (excluding sensor) may damage the sensor during frozen condition

**Agency Approvals**

EMC Performance Criteria: Output Change < ±1.5% of FS @RT

ESD

ISO 10605

8kV Contact / 15kV Air

Immunity Radiated Field

ISO 11452-2

Level V, 140V/m, 200MHz-3.2GHz

BCI

ISO 11452-4

d = 150mm, d = 450mm, d = 750mm

Frequency Range: 1MHz-400MHz

Modulation CW, AM

Severity Level V (200mA)

**SENT Only**

Magnetic Field Test

ISO 11452-8

15Hz to 150kHz, Level 4

Emission Conducted. Voltage Mode/Current Probe

CISPR 25

Frequency Range: 150kHz – 108MHz, Class 5

Emission Radiated

CISPR 25

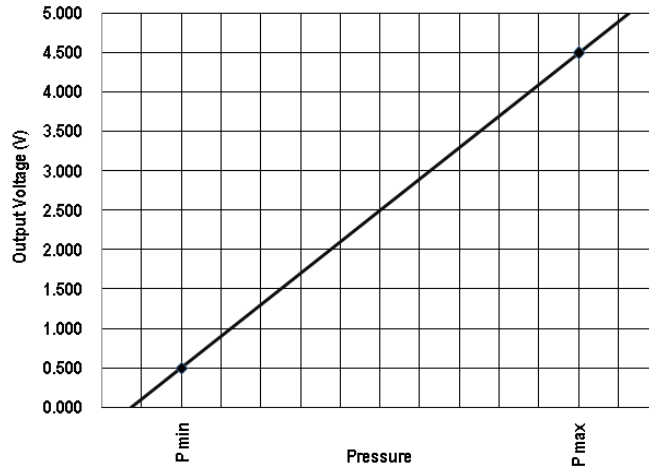
Frequency Range: 150kHz - 2.5GHz, Class 5

Output Interface

SENT (SAE J2716, 2010)

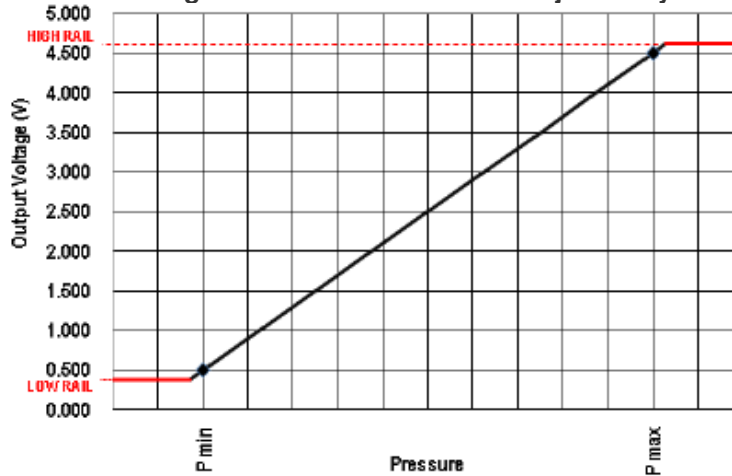
**CHARTS**

**Chart A: Pressure Transfer Function, Supply = 5V**

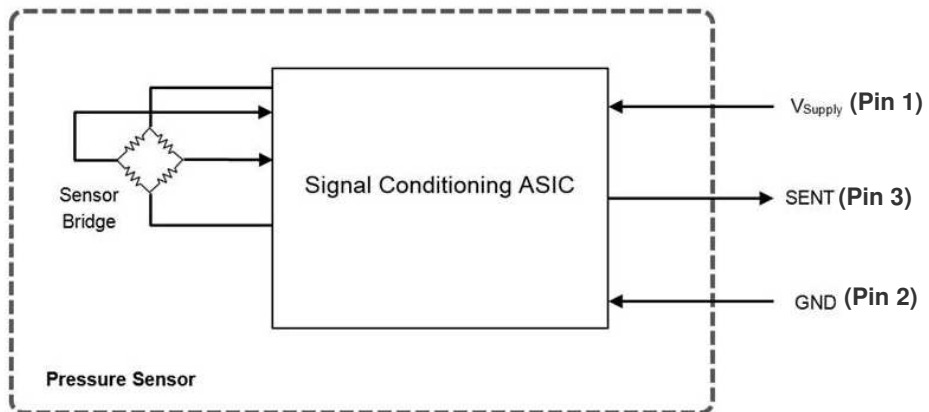


$$\text{Output Voltage} = \frac{80\% \times \text{Supply V}}{P_{\text{max}} - P_{\text{min}}} \times (\text{Pressure Applied} - P_{\text{min}}) + 10\% \times \text{Supply V}$$

**Chart B: OEM Custom Calibration. High/Low Rail values can be adjusted by Circuit**

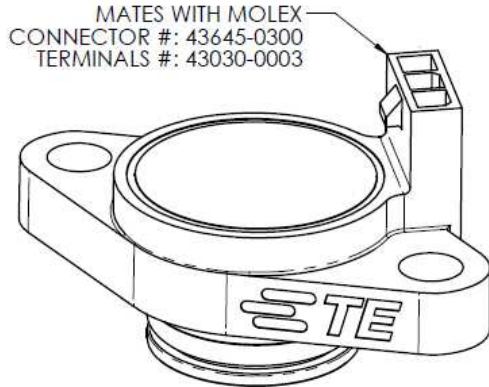


**SENT Functional Block Diagram**



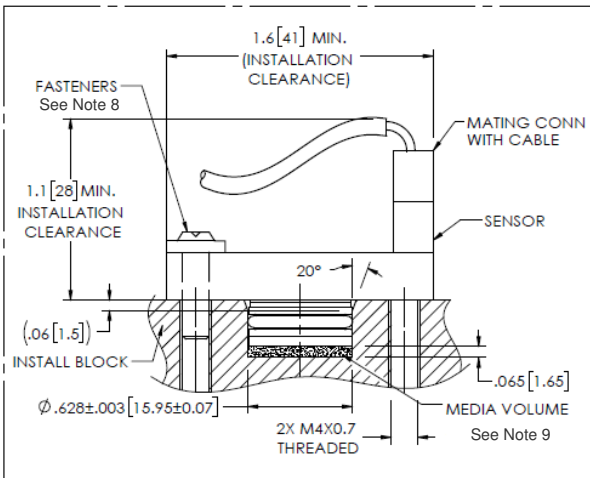
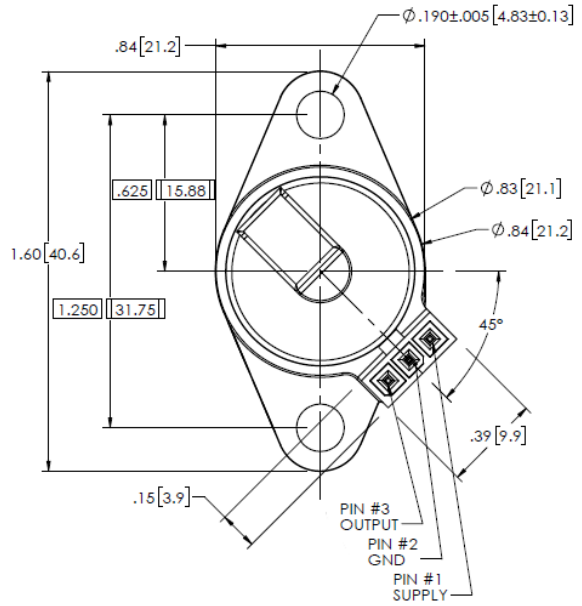
**DIMENSIONS**

Dimensions are in inches [mm]

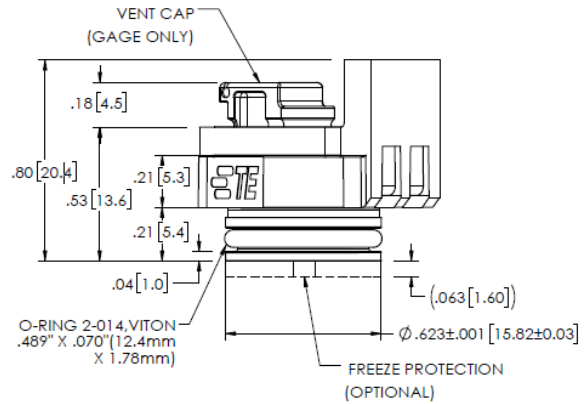


MATES WITH MOLEX  
CONNECTOR #: 43645-0300  
TERMINALS #: 43030-0003

Non-Vent Cap/Non-Freeze option shown

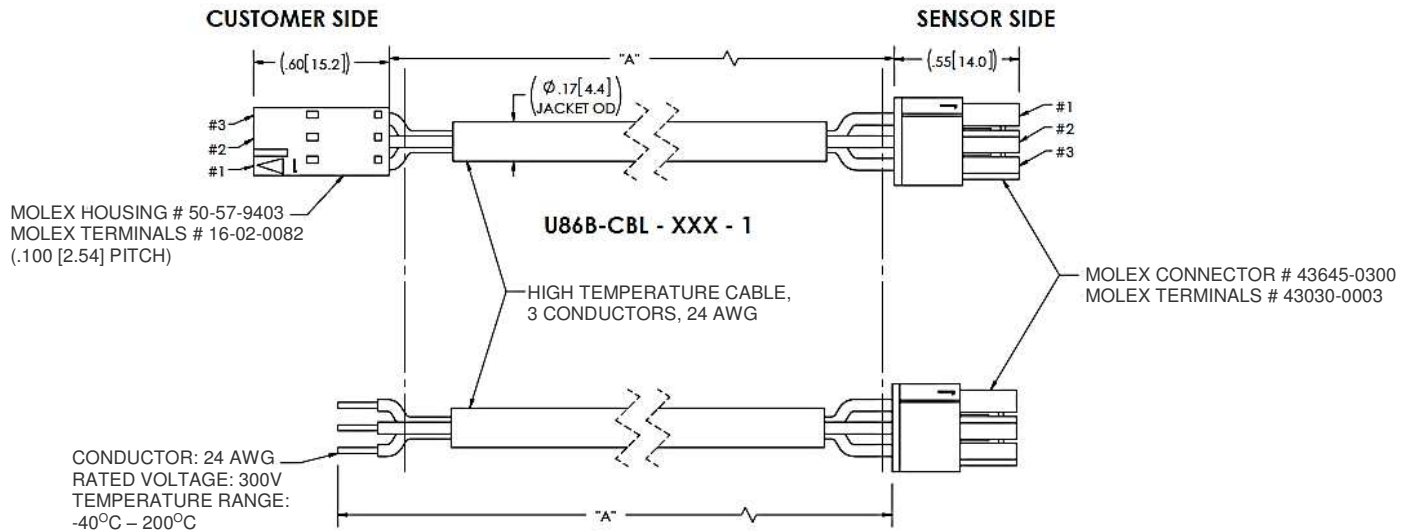


**RECOMMENDED INSTALL INFORMATION**



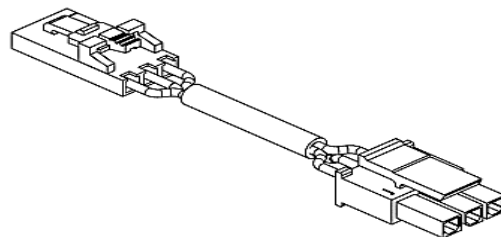
## CABLE DIMENSIONS

See "Cable Ordering Information" matrix for cable length options



**U86B-CBL - XXX - 0**

Customer & Sensor Side		
Pos No	Color	Function
1	Red	Supply
2	Black	GND
3	Blue	Output



**ORDERING INFORMATION**

<b>U86B</b>	—	<b>100P</b>	<b>A</b>	<b>2</b>	—	<b>F</b>	<b>1</b>	<b>A</b>
<b>Model Name</b>								
<b>Pressure Range</b>								
050P	100P	150P	200P					
005B	010B	012B	013B					
<b>Pressure Type</b>								
A = Absolute			G = Gage		S = Sealed Gage			
<b>Output Ratiometric</b>								
1 = 0.5V@0.0 barG/A/S			2 = 0.5@-0.5 barG/S					
3 = 0.5V@-1.0 barG/S								
<b>Freeze Protection</b>								
N = None			F = Freeze					
<b>Connector</b>								
1 = Molex								
<b>Output Type</b>								
A = Analog								

SENT Output available; contact factory for details.

**CABLE ORDERING INFORMATION**

<b>U86B</b>	—	<b>CBL</b>	—	<b>010</b>	—	<b>0</b>
<b>Model Name</b>						
<b>CBL</b>						
<b>Cable Length*</b>						
005 = 5 [127]		010 = 10 [254]				
020 = 20 [508]						
<b>Connector</b>						
0 = No Connector			1 = Molex Connector #50579403			

\*Cable lengths are inches [mm]

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