



LEVEL MONITOR

SUBMERSIBLE PRESSURE TRANSDUCER

TYPICAL APPLICATION

For use with any of MPE's Station Controllers or other pump controllers that require a 4-20mA level input.

**MADE IN
THE U.S.A.**

DESCRIPTION

The Level Monitor provides a rugged and cost-effective means to measure liquid level for water and wastewater pumping applications.

When submersed in liquid, the Level Monitor converts the pressure exerted by the liquid into a 4-20mA analog signal that represents liquid level. The vent tube in the cable transmits atmospheric pressure down the cable to the reference side of pressure sensor, to correct for changes in atmospheric conditions.

A stainless steel diaphragm and silicone oil fill is provided to isolate and protect the pressure sensor from the liquid being measured.

The weight of the Level Monitor acts to reduce its movement when placed in a moving liquid. A Strength Cord in the cable provides ample support for its weight. In applications where strong currents are present, the 1/2" NPT fitting on top may be used to mount the Level Monitor in a fixed position. Also, the 3.75" diameter of the Level Monitor enclosure allows it to fit inside a Stilling Well made from a 4" PVC pipe.

A two stage surge suppressor circuit using both an MOV and TVS provide high voltage transient protection for the transducer circuitry.

The Transducer Vent Bellows (TVB1) is provided with the Level Monitor and is to be connected to the end of the vent tube to prevent moisture from entering the vent tube.

The Kellems Grip (K-Grip) is provided with the Level Monitor allowing a field installation of the cable that is kink free.

The Level Monitor may be ordered with various lengths of cable, and with one of three pressures ranges 5, 10, or 15 psi (11.5, 23.1, or 34.6 Feet).



SPECIFICATIONS

Enclosure Material:	316 Stainless Steel
Enclosure Diameter:	3.75"
Cable Jacket Material:	Polyurethane
Cable Diameter:	0.270 inch
Wire Size:	20 AWG
Vent Tube Diameter:	0.060 inch
Operating Voltage:	13 - 29 VDC
Output Signal:	4 - 20 mA, two wire
Operating Temp:	+32 to +140 °F
Accuracy:	± 0.5 % full scale
Weight (with 40 feet cable):	6.0 lbs
Additional Cable Weight:	0.34 lbs per 10 Feet

ORDERING INFORMATION

Part Number: LM - A - B

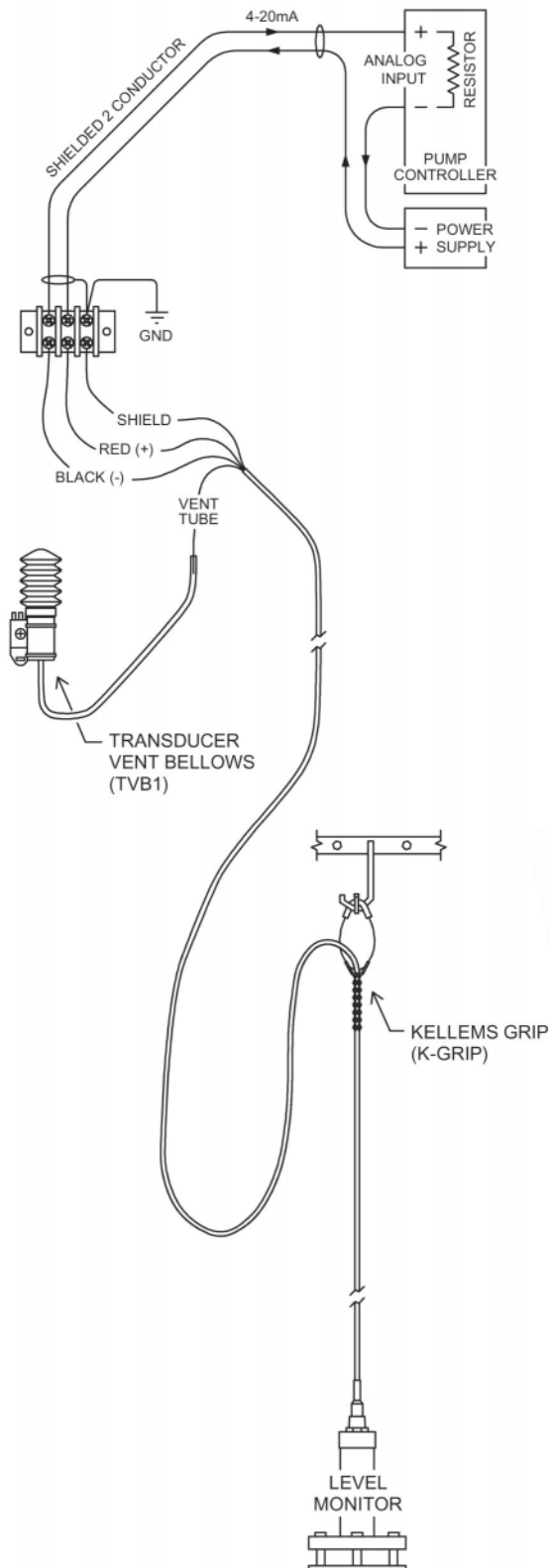
Pressure Range (psi): _____
5, 10, or 15

Cable Length (feet): _____
40 feet is standard for 5 & 10 psi range
60 feet is standard for 15 psi range

Provided with Level Monitor:
Transducer Vent Bellow (TVB1)
Kellems Grip (K-GRIP)

LEVEL MONITOR

CONNECTION DIAGRAM



TRANSUCER VENT BELLOWS (TVB1)

Provided With Level Monitor



KELLEMS GRIP (K-GRIP)

Provided With Level Monitor



TRANSDUCER VENT BELLOWS

TYPICAL APPLICATION

For use with all of MPE's Submersible Pressure Transducers that Require the Protection of their Vent Tube from Moisture Entry.

**MADE IN
THE U.S.A.**

DESCRIPTION

The Transducer Vent Bellows (TVB1) provides maintenance free protection for a submersible transducer vent tube against the entry of moisture. The bellows allows normal atmospheric pressure changes to be transmitted to the transducer element without letting moisture latent air into the vent tube. A small rubber hose connects the TVB1 unit to the vent tube of the submersible transducer.

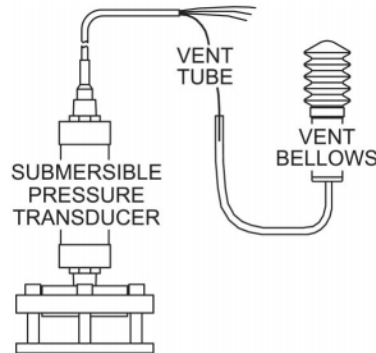
Some submersible pressure transducers come with a desiccant container for attaching to the vent tube. The desiccant is present to help prevent moisture in the air from entering the vent tube.

Desiccant type devices must be periodically replaced or serviced to remain effective. Other submersible pressure transducers come with a small ceramic like vent filter attached to the vent tube. The ceramic filter devices block water as a liquid from entering the vent tube, but they do not block water vapor.

Without adequate protection of the vent tube, moisture from warm air will enter the vent tube and migrate down to the transducer body. As the transducer body is typically cooler than the warm air, the water vapor in the warm air may condense into liquid. The use of a TVB1 is the most effective method for preventing moisture intrusion into the submersible transducer.

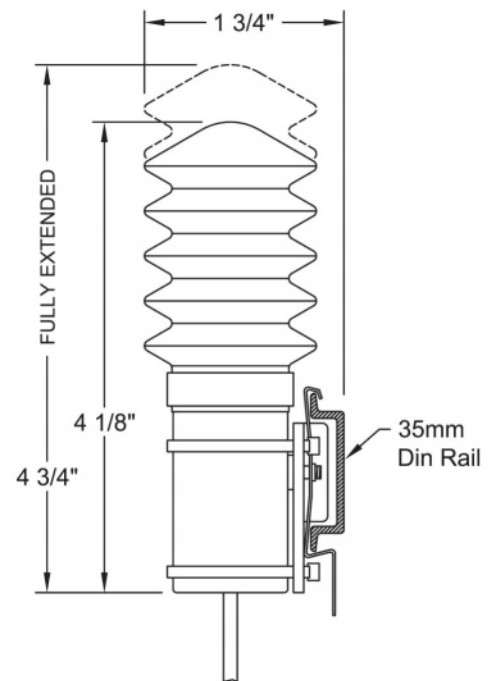
Warning:

Transducer operation without protection will allow moisture in the air to migrate down the transducer's vent tube and condense inside the transducer, causing it to malfunction.



Note:

Adequate space must be left above the bellows for expansion. See below.



SPECIFICATIONS

Bellows Material:	Silicone
Tube Material:	Clear Polycarbonate
Dinrail Mounting Clip:	35mm O.D.
For use with Vent Tube Diameter:	0.060 inch
Operating Temp:	+32°F to +140°F

ORDERING INFORMATION

Part Number: TVB1



Kellems Grip

TYPICAL APPLICATION

For use with all of MPE's Level Monitor Submersible Pressure Transducers.



DESCRIPTION

The Kellems Grip (K-Grip) for use with the M.P. Electronics Level Monitor Submersible Transducer perfectly fits the transducer cable, allowing a field installation that is professional, and problem free.

Use of the K-Grip ensures that the Level Monitor cable will be properly supported during the installation process so that the cable does not become damaged. Once properly installed, the K-Grip will ensure that the vent tube within the cable does not become crimped.

The use of the K-Grip is the most effective method for preventing damage to the transducer cable.

SPECIFICATIONS

K-Grip Material:	Stainless Steel
Cable Grip Diameter:	.230 to .310 inches
Single Eye	
Closed Mesh	
Single Weave	

ORDERING INFORMATION

Part Number: K- Grip



TRANSDUCER SURGE ARRESTER

DESCRIPTION

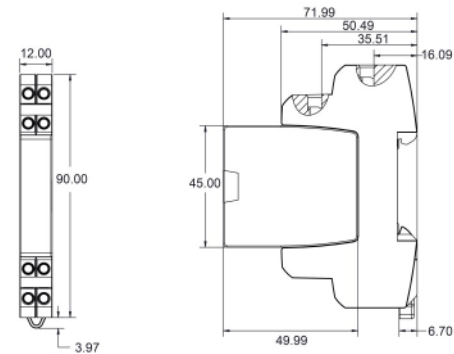
The Transducer Surge Arrester (LM SURGE) is a Din-Rail mounted Surge Protection device, providing effective protection of the 4-20mA loop while taking only minimal space within the control panel.

The LM Surge product can protect two 4-20mA signals, one signal protected via pins 1,1' and 2,2' and a second signal protected by pins 3,3' and 4,4'. The LM Surge product can be used in both standard and intrinsically safe applications. The LM Surge product is not an Intrinsically Safe Barrier, but has been designed to provide surge protection for Zone 2 intrinsically safe applications.

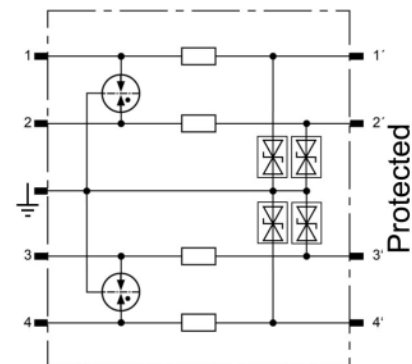
The LM SURGE Arrester has a removable protection module, that can be easily removed and replaced. The functionally-optimized design contains "make before break" terminals that assure continuity of the 4-20mA signal in both the protected and unprotected state.



DIMENSIONS



ELECTRICAL DIAGRAM



SPECIFICATIONS

Degree of Protection:	IP20
UL Rating:	UL497B
ATEX Approvals:	DEKRA 12ATEX0254 X: II 3 G Ex nA IIC T4 Gc
IECEx Approvals:	DEKRA 11ATEX0089 X: II 3 G Ex nA
Test Standards:	IEC 61643-21, EN61643-21, UL497B
IEC61643-21 Test Category:	D1, C2, C3
SIL Classification:	SIL2, SIL3
Nominal Voltage (U _N):	24V
Max. Continuous Operating DC Voltage (U _C):	33V
Grounding:	Via Din-Rail
Series Impedance per line:	1.8 Ohms
Capacitance, line to line:	≤5 nF
Operating Temp:	-40°C to +80°C
Conductors (Flexible):	14 - 28 AWG
Dinrail Mounting Clip:	35mm
Terminal Torque:	3.5 Lb-In

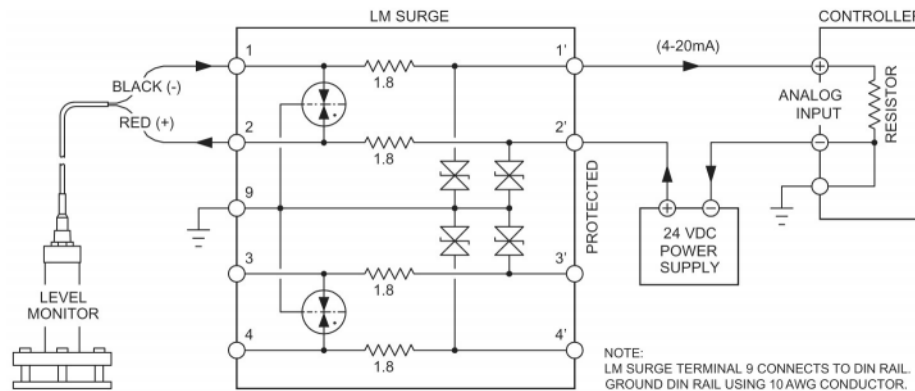
ORDERING INFORMATION

Part Number: LM SURGE

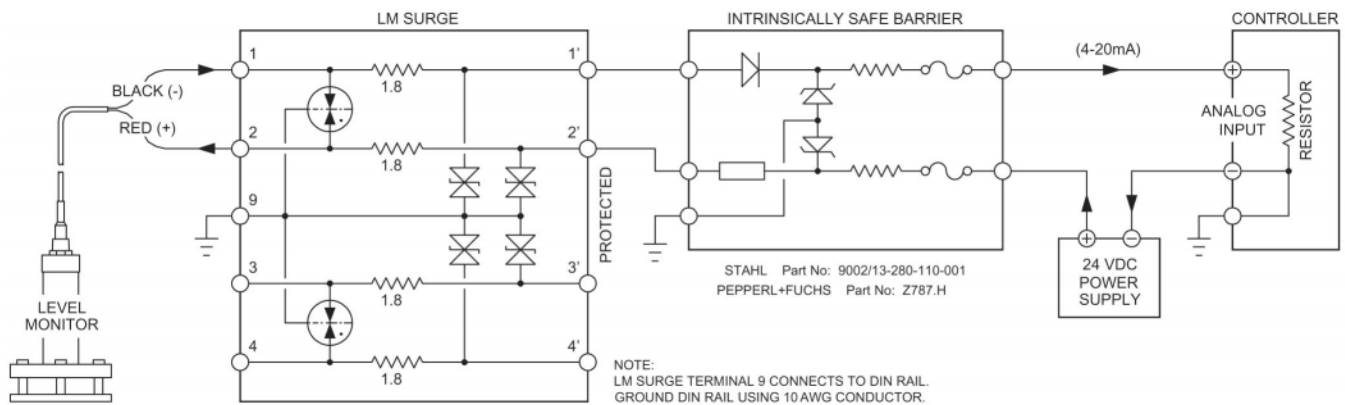


TRANSDUCER SURGE ARRESTER CONNECTION DIAGRAMS

Typical Application



Intrinsically Safe Application



Notes for Using the LM Surge in an Intrinsically Safe Application:

1. Grounding to terminate to an equipotential bonding point. The cross section of the ground conductor from the LM Surge device to the equipotential bonding point must be 6 mm^2 or 10 AWG.
2. LM Surge and I.S. Barrier must be mounted in the non-hazardous location.
3. Entity parameters for the Submersible Pressure Transducer must be compatible with the entity parameters of the I.S. Barrier.
4. Ex Rating for the LM Surge product is II 3G ExnA IIC T4 Gc. Equipment in this category is intended for use in areas (other than mines) which explosive atmospheres by gases or vapors are unlikely to occur, or if they do, are likely to do so infrequently and for a short time only. The LM Surge is rated for Zone 2 application.