PMT pressure SENSORS

MODEL 575 SERIES
Intrinsically Safe Submersible Level Transmitters
Installation and Operating Instructions

C US

AMETEK®

K796423 REV G 9/2015

ISO 9001:2008 CERTIFIED

www.ametekusg.com

DESCRIPTION:

The Model 575 is used in general water/wastewater applications. The transmitter is offered in a standard non-clogging snub nose end, flush diaphragm or protected flush diaphragm with flange base for sewage or sludge type media. The 575 series is CSA approved for intrinsically safe operation when used with an approved safety barrier.

The sensor is designed to provide the convenience of direct submergence in many types of liquids for quick, accurate and reliable measurement. With stainless steel isolation diaphragm (standard) and all 316 stainless steel housing, these solid state instruments provide long lasting service with virtually no maintenance.

The 575 Series transmitters indicate the level of liquid by continuously measuring hydrostatic pressure via its sensing element, an ion implanted silicon semiconductor chip with integral Wheatstone bridge circuit. The pressure measurement is transmitted by a 4-20 mA output signal. This design, with isolation diaphragm for media compatibility, provides for excellent linearity and repeatability, low hysteresis and long term stability with a precision accuracy at ±0.25% FS (BFSL) typical.

The transmitter is easy to install. Simply lower the unit into a tank or vessel. All electronics are mounted in the submersible 316 stainless steel housing and full potting is also provided as an option. A special cable support bracket is also available to provide extra stability when used with longer cable lengths or when used in an agitated liquid. Optional steel support cable is also available for use with the support bracket.

The transmitters are available calibrated for any span needed from 0-6 psi (0-13.8 ft of water, 0-.4 bar, 0-4.2 meters of water) to 300 psi (0-692 ft of water, 0-20 bar, 0-211 meters of water). The transducer is offered as a standard 2 wire, 4-20 mA device.

To complete your liquid measurement and control system, consider the Model DDMC meter/controller or the complete Levelmate III system.

The 575 transducer is manufactured in the United States under ISO 9001:2008 and meets ARRA.

FEATURES:

- Low cost measurement solution, easy installation and precision accuracy
- Rugged 316 stainless steel construction and wetted materials resists the corrosive effects of caustic medias with excellent environmental protection, designed for continuous submersion
- 2 wire, 4 to 20 mA output
- Reverse polarity and surge protected with additional lightning and surge protectors as well as EMI protection options
- CSA approved for intrinsically safe operation in hazardous areas in Canada and U.S.
- Full potting option and desiccant available to minimize moisture effects

APPLICATIONS:

- Inventory tank measurement
- Ponds, rivers and lakes
- Lift stations and slurries or sludge
- Water/ Water wells
- Landfills
- Pump control

Model 575 Series Submersible Level Transmitters

SPECIFICATIONS

Feet of Water: 0/14, 0/35, 0/69, 0/138, 0/230, 0/345, 0/460, 0/690

Meters of Water: 0/4, 0/10, 0/21, 0/42, 0/70, 0/105, 0/140, 0/210

Bar: 0/0.4, 0/1, 0/2, 0/4, 0/7, 0/10, 0/14, 0/20

PSI: 0/6, 0/15, 0/30, 0/60, 0/100, 0/150, 0/200, 0/300

Output: 4 to 20 mA, 2 wire, current limited to 30 mA DC

Power Supply: 12 to 40 VDC with reverse polarity surge protection; limited to 28 VDC for CSA I.S.

Loop Resistance: 1400 ohms maximum at 40 volts

Temperature Range:

General Ambient Operating: -25 to 180°F (-32 to 82°C)**

*** CSA intrinsically safe when connected per AMETEK drawing BK750535. Temperature code T3C ambient high temperature limit (Tamb) = 104°F (40°C) max.*

If submerged in a liquid that has frozen, damage will result

Storage: -40° to 180°F (-40°C to 82°C)

Overrange Effect: ±0.15% full scale at 200% of maximum range

Overrange Limit: 200% of maximum range

Accuracy: ±0.25% full scale, BFSL (including linearity, hysteresis and repeatability); ±0.50% full scale (6 psi range only)

Zero Offset: ±0.50% full scale set at 77°F (25°C)

Span: ±0.50% full scale set at 77°F (25°C)

Temperature Effects: (15 psi and above)

Compensated: 23° to 130°F (-5°C to 55°C); maximum ±1% URL output change for ±25°C temperature change within compensated range when calibrated at 25°C

Consult factory for lower or alternate pressure ranges.

Power Supply Effect: ±0.005% full scale per volt

Construction:

Diaphragm: 316 stainless steel 575 S and M models, HASTELLOY C standard on 575F and 575PB

Housing Type: 316 stainless steel

Nut/Washer Type: 316 stainless steel

Cable Grommet: Viton standard

Housing O Ring: Viton standard

Please contact factory for other cable and grommet materials.

Cable Jacket: Polyurethane (standard)

Media Compatibility: Reference materials of construction

Electrical Connection: Attached 20 gauge polyurethane shielded cable (standard); unspliced lengths available up to 5000 ft. (1662 m)

Consult control drawing or contact the factory for cable length limits for Intrinsically Safe (I.S.) use.

Weight: 1 lb. (454 g) model 575S; 1 lb. 3 oz. (539 g) model 57P with standard base

Approvals: Meets CSA requirements for intrinsically safe operation in hazardous locations as designated by Class I, Div 1, Groups A, B, C & D and Class II, Groups E, F & G. Temperature Code T3C (when used with approved barrier)

C US

Snub Nose: Nylon 6/6 or optional 316 stainless steel; removable to a 1/2" female NPT process connection

Calibration:

NOTE: Units are calibrated 4-20 mA over standard full scale range unless otherwise specified

Examples:

Model 575SB0015NLS will be calibrated as 4 mA = 0 psi, 20 mA = 15 psi or 4-20 mA over 0-34.6 ft. of water

For a special calibration select the appropriate standard pressure range and indicate the special calibration as follows:

Model 575SB0015NLS: Calibrate 0-10 psi or calibrate 0-23 ft. of water

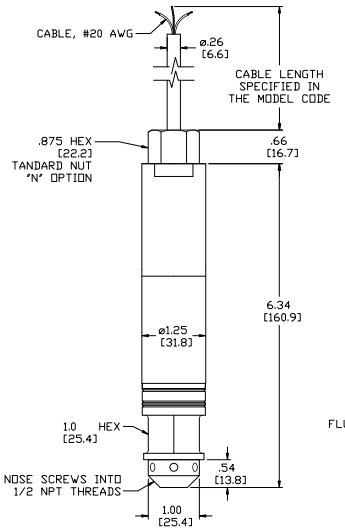
Options and Accessories

- Heavy base for model 57PB, see code “J” under diaphragm material on model code page
- 57PB heavy base field conversion kit
- Allows user to convert standard 57PB to heavy base unit without affecting calibration – order kit part # K680029
- Stainless steel support cable for use with “R” support bracket units. 1/16" diameter cable, order by feet, required part # K515183

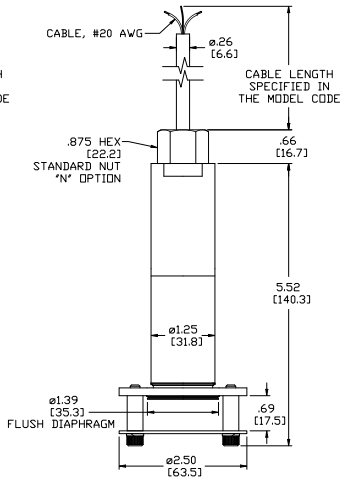
See the back page for additional options and accessories.

Model 575 Series
Submersible Level Transmitters

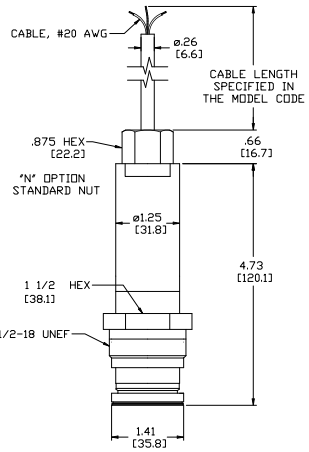
575SB or 575MB
Standard 1/2 NPT



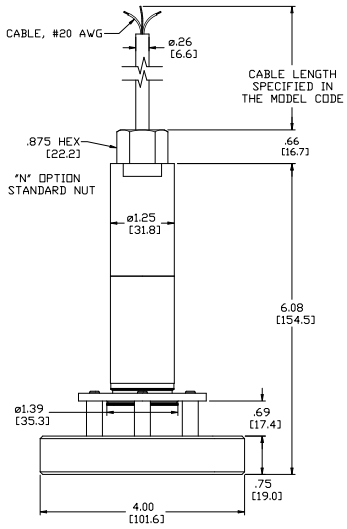
575PB Protected Flush Diaphragm
1/16" Thick Plate



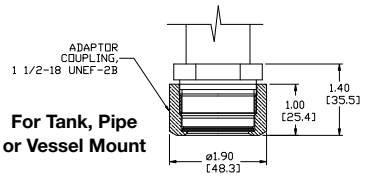
575FB
Flush Diaphragm



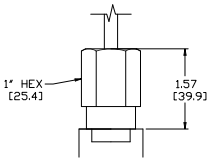
575PB Protected Flush Diaphragm With 3/4" Plate (J Option)



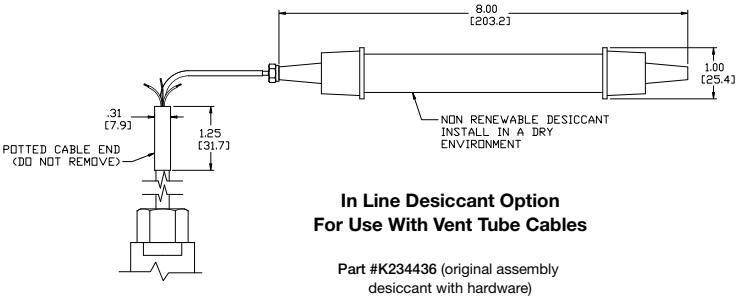
INCHES (MM)



For Tank, Pipe or Vessel Mount



Optional Conduit Adapter

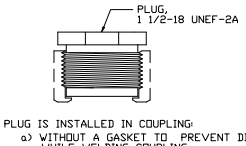


Transmitter With Desiccant

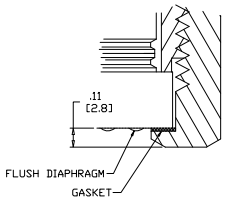
In Line Desiccant Option
For Use With Vent Tube Cables

Part #K234436 (original assembly desiccant with hardware)

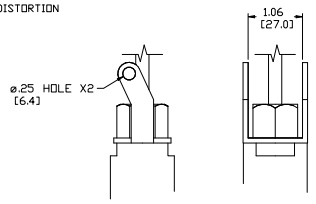
Part #K234446 (replacement cartridge ONLY – requires some assembly of parts from original assembly)



PLUG IS INSTALLED IN COUPLING:
a) WITHOUT A GASKET TO PREVENT DISTORTION WHILE WELDING COUPLING
b) WITH A GASKET TO SEAL COUPLING



For Tank, Pipe or Vessel Mount



Optional Cable Support Bracket With Nut and Cable

Model Numbering:

575 level transmitter

575 Series submersible level transmitter

Sensing port

S Nylon snub nose (standard)
M Stainless steel snub nose
F Flushmount
P Protected flush

Input/Output*

B 12 to 40 VDC / 4 to 20 mA

Pressure ranges** **Reference equivalents**

PSI	BAR		
0006	0.4B	0-13.8 ft. water	0-4.2 meters water
0015	001B	0-34.6 ft. water	0-10.5 meters water
0030	002B	0-69.2 ft. water	0-21.1 meters water
0060	004B	0-138 ft. water	0-42.2 meters water
0100	007B	0-230 ft. water	0-70.3 meters water
0150	010B	0-345 ft. water	0-105.4 meters water
0200	014B	0-460 ft. water	0-140.6 meters water
0300	020B	0-690 ft. water	0-211 meters water

Electrical connection

N Polyurethane cable w/ nut (standard)
R Polyurethane cable w/ nut and cable support bracket
C Polyurethane cable w/ conduit adapter
D Polyurethane 22AWG cable w/ vent tube (K515072), potted w/ standard nut
E Polyurethane cable w/ EMI protection and nut
F Polyurethane cable w/ EMI protection, nut and cable support bracket
G Polyurethane cable w/ EMI protection, conduit adapter
J Polyurethane 22AWG cable w/ vent tube (K515072), potted w/ standard nut and cable support bracket
S Teflon cable w/ nut and cable support bracket
T Teflon cable w/ nut
V Teflon cable w/ conduit adapter

Diaphragm material

H Hastelloy C (standard for 575F and 575PB)
L 316 stainless steel (standard)
M Monel (consult factory)

Fill fluid

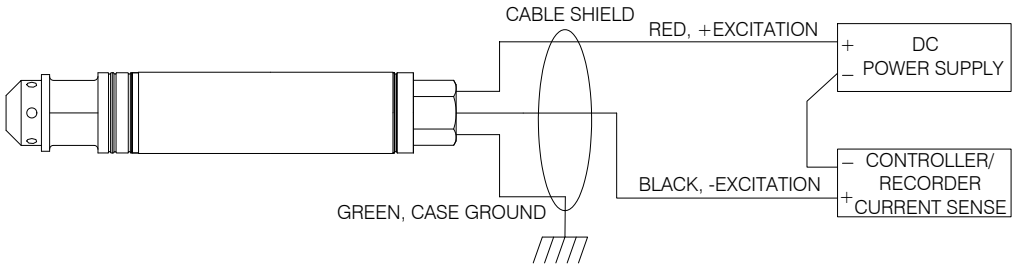
S Silicone oil
M Mineral oil

Cable length (specify in feet)* *Enter as separate line item*

K515076 Polyurethane (standard)
K515075 Teflon
K515072 Polyurethane w/ vent tube

575	S	B	0015	N	L	S	(100 feet of cable – K515076)

* *Please contact the factory for availability of different input / output options*
** *Calibrated ranges can be specified after the model code; the specific range should be between the upper and lower ranges in the category selected*
*** *Note: Unspliced lengths available up to 5000 feet (1662m)*
Please contact factory for other options



AMETEK DWG: K750535 INTRINSICALLY SAFE SYSTEM

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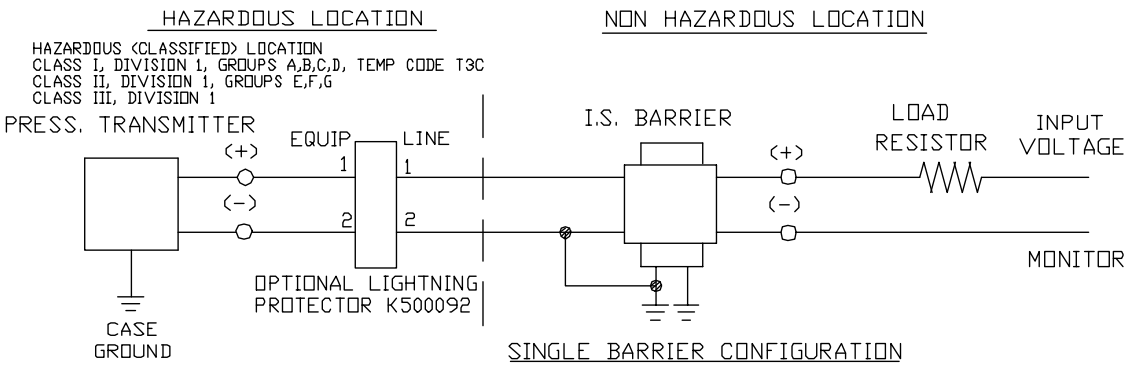
LIMITS OF ACCEPTABLE WORKMANSHIP ARE DEFINED IN MS-645-A.

BASIC INSTALLATION CIRCUIT DIAGRAM (4-20mA OUTPUT ONLY)



SINGLE BARRIER CONFIGURATION

BARRIERS FOR CERTIFIED SYSTEM

MANUFACTURER	MODEL NO.	PUBLICATION NO.
STAHL	9001/01-280-100-10	RST-49
MTL	728+	PS700-10
MTL	708	PS700-10
PEPPERL & FUCHS	Z728	1996/7 CATALOG

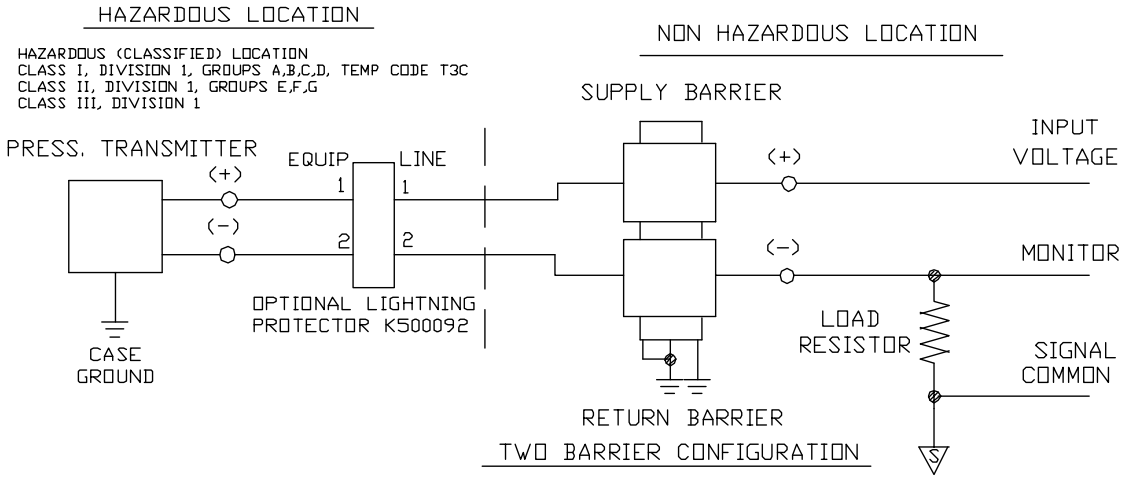
SYSTEM OR LOOP INSTALLATION

1) BARRIERS MUST BE CSA CERTIFIED FOR INSTALLATION IN CANADA OR NRTL APPROVED FOR INSTALLATION IN U.S. AND MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2) MAXIMUM NON-HAZARDOUS AREA VOLTAGE MUST NOT EXCEED 250V.
3) INSTALL IN ACCORDANCE WITH CANADIAN ELECTRICAL CODE, PART I, FOR INSTALLATION IN CANADA.
4) INSTALL IN ACCORDANCE WITH NEC (ANSI/NFPA 70) AND ANSI/ISA RP12.06.01 FOR INSTALLATION IN U.S.
5) MAXIMUM CABLE LENGTH FOR THE TABULATED BARRIERS IS 3500 FT, WHEN THE LMA912 LIGHTNING PROTECTOR IS USED, OR 3700 FT WITHOUT THE LIGHTNING PROTECTOR.

ENTITY PARAMETERS INSTALLATION

6) ENTITY PARAMETERS: Vmax=28V, Imax=100mA, Ci=52nF OR 55nF (WHEN USED WITH ONE LMA912 LIGHTNING PROTECTOR), Li=2.5uH
7) BARRIERS MUST BE CSA CERTIFIED FOR INSTALLATION IN CANADA, OR NRTL APPROVED FOR INSTALLATION IN U.S., AND MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
8) MAXIMUM NON-HAZARDOUS AREA VOLTAGE MUST NOT EXCEED 250V.
9) INSTALL IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE C22.1, PART I FOR INSTALLATION IN CANADA.
10) INSTALL IN ACCORDANCE WITH THE NEC (ANSI/NFPA 70) AND ANSI/ISA RP12.06.01 FOR INSTALLATION IN U.S.
11) BARRIER PARAMETERS MUST MEET THE FOLLOWING REQUIREMENTS:
Voc $\leq$ Vmax, Isc $\leq$ Imax, Ca $\geq$ Ci + Ccable, La $\geq$ Li + Lcable
12) ONE DUAL-CHANNEL OR TWO SINGLE-CHANNEL BARRIERS MAY BE USED WHERE BOTH CHANNELS HAVE BEEN CERTIFIED FOR USE TOGETHER WITH COMBINED ENTITY PARAMETERS. THE FOLLOWING CONDITIONS MUST BE SATIFIED:
Voc $\leq$ Vmax, Isc $\leq$ Imax, Ca $\geq$ Ci + Ccable, La $\geq$ Li + Lcable

AMETEK DWG: K750535 INTRINSICALLY SAFE SYSTEM



BARRIERS FOR CERTIFIED SYSTEM

MANUFACTURER	MODEL NO.	PUBLICATION NO.
STAHL	9002/13-280-093-00	RST-49
STAHL	9001/51-280-091-14 (REPEATER)	RST-49
PEPPERL & FUCHS	Z787	1996/7 CATALOG
MTL	787 OR 787S (SUPPLY & RETURN)	PS700-10

NOTES:
1) Tamb=40°C MAX
WARNING 2) SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY, AND IS NOT PERMITTED.
WARNING 3) DISCONNECT POWER BEFORE SERVICING.
4) STANDARD CABLE PARAMETERS:
Ccable=23pF/FT, Lcable=0.111uH/FT MAX
5) INSTALL OPTIONAL LIGHTNING PROTECTOR, K500092, IN ENCLOSURE SUITABLE FOR THE ENVIRONMENT.

PMT pressure SENSORS

User Manual

Transmitter Installation

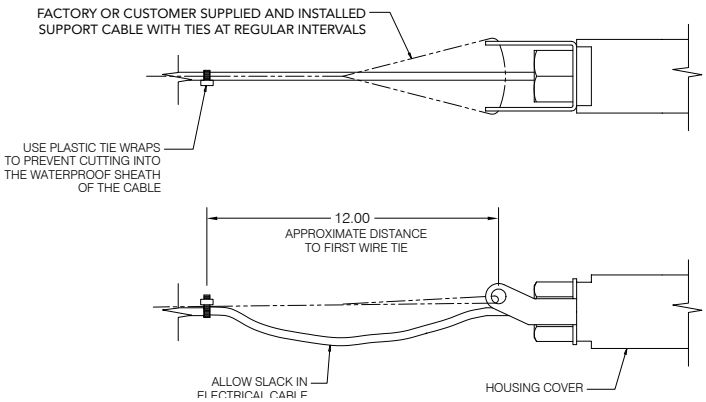
CAUTION: Remove power before installing or servicing. To install the Model 575 Transmitter, connect the surface end of the cable to the Ametek Model DDMC Meter Controller or other power source and indicator. Suspend the transmitter into a well or tank supported only by its attached shielded electronic cable. Insure that the opening in the well or tank cover is large enough for possible future removal of the transmitter.

Additional support to the transmitter is available with an optional factory installed cable support. The optional cable support is recommended when using longer lengths of cable or when suspending the transmitter into agitated liquids. The cable support provides strain relief for the excess stress found under these circumstances. See diagram of Model 575 Transmitter with cable support using factory or customer supplied and installed support cable.

CAUTION - The cable grommet and support are specially installed by factory-trained personnel to insure watertightness. Any adjustment or removal of these items may destroy the watertight feature thus exposing the transmitter to water seepage, an electrical short and transmitter failure. Any adjustment or removal of the cable grommet or cable support voids the warranty.

CAUTION - Waterproof cable should not be kinked or nicked as this would allow water into the electronics housing. Permanent damage will result. (Never cut or splice the waterproof cable). The surface end of the cable is used as the system's atmospheric reference, this end should not be sealed. Vent to dry temperature stable environment.

Model 575 with Cable Support



Surge Or Lightning Protection

Surge or lightning protectors are available as optional items and are strongly recommended for protection from secondary surges or lightning strikes. The units are easy to install, are maintenance-free and respond in less than one nanosecond. Install in accordance with the instructions:

1. Lightning protection devices should be placed as close to the instrument as possible and wired in accordance with National Electric Code in an approved watertight enclosure.
2. If the distance between the meter and transmitter, or the meter and recorder is less than 100 feet, only 1 protector per line may be used.
3. Use No. 10 AWG ground wire or better from protector to earth ground.
4. Provide a separate ground for each run of shielded cable or metal conduit.
5. Keep the ground wire less than 1 foot long and tie to a suitable ground rod or metal frame ground. Surge capability is only as good as the grounding method. All ground connections must be installed.
6. Install all protectors in weathertight enclosures.
7. Run signal lines shielded and away from power lines.
8. Wire according to the Electrical Code.
9. When used for an intrinsically safe installation, only one LMA912 should be installed in the hazardous location. Do not substitute protector types.

CAUTION - This or any installation cannot protect against a direct lightning strike, or secondary strikes of sufficient magnitude. Ametek cannot accept liability for damage due to lightning or secondary surges.

Service & Accessories

FACTORY SERVICE

Factory service is available by contacting the Customer Service Department. Supply the following information:

1) Instrument Model Number and Serial Number as shown on the Instrument Data Tag.
2) Description of problem being experienced.
3) Description and location of the installation.

For service: TEL: (215) 355-6900
FAX: (215) 354-1804

PARTS / ORDERING

When ordering replacement parts, supply the following information:

1) Part description and part number.
2) Quantity of each item required.
3) Shipping instructions and address.

Mail, Telephone, Fax or Email Orders to:

AMETEK U.S. GAUGE, PMT PRODUCTS

820 Pennsylvania Blvd., Feasterville, PA 19053

TEL: (215) 355-6900

FAX: (215) 354-1800

EMAIL: mctpmt.sales@ametek.com

ACCESSORIES / PARTS

Part Number	Description
LMA 912	30 VDC SURGE/LIGHTNING PROTECTOR Protects the excitation and signal lines between an Ametek Model DMC Meter Controller, or other power source and indicator, and the Model 575 4-20mA output transmitter.
K680025	Protected flush calibration fitting test kit. For use on For use on 575PB or 575FB series only.

Warranty Policy

AMETEK ["Seller"] warrants for a period of one year from the date of shipment and that all products manufactured by the seller are free from defects of material and workmanship when used within the service, range, and purpose for which they were manufactured. Seller will, at its option, repair, replace, or refund the purchase price of parts found by Seller to be defective in material or workmanship provided that written notice of such defect requesting instructions for repair, replacement, or refund is received by Seller at the address below within the warranty period and provided that any instructions thereafter given by Seller are complied with.

This warranty shall not apply (i) to the performance of any system of which Seller's products are a component part, (ii) to deterioration by corrosion or any cause of failure other than defect of material or workmanship, or (iii) to any of Seller's products or parts thereof which have been tampered with or altered or repaired by anyone except Seller or someone authorized by Seller, or subjected to misuse, neglect, abuse or improper use or misapplication such as breakage by negligence, accident, vandalism, the elements, shock, vibration, or exposure to any other service, range, or environment of greater severity than that for which the products were designed.

SELLER MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF FITNESS OR OF MERCHANTABILITY WITH RESPECT TO ITS PRODUCTS, OR ANY PART THEREOF, OTHER THAN AS EXPRESSLY SET FORTH ABOVE. NOR SHALL SELLER HAVE INCURRED ANY OTHER OBLIGATIONS OR LIABILITIES OR BE LIABLE FOR ANY ANTICIPATED OR LOST PROFITS, INCIDENTAL DAMAGES, CONSEQUENTIAL DAMAGES, TIME CHARGES, OR ANY OTHER LOSSES INCURRED IN CONNECTION WITH THE PURCHASE, INSTALLATION, REPAIR, OR OPERATION OF ITS PRODUCTS (INCLUDING ANY PARTS REPAIRED OR REPLACED).

This warranty does not extend to anyone other than the original Buyer from Seller.

PMT pressure SENSORS

User Manual

OPTIONS AND ACCESSORIES

Display Meters, Surge Protectors, Junction Boxes and Desiccants

DISPLAY METERS AND SYSTEMS

Model DDMC Digital Meter/Controller

Dual display meter provides power to the sensor with alarm and 4-20 mA analog output options. Standard panel mount housing or a NEMA 4X weathertight housing for field mounting is available. The weathertight housing also provides internal mounting locations for lightning and surge protectors.

LEVEL MATE™ III Level Measurement System

The complete LEVEL MATE III system includes a level sensor (various models are available), cable and a meter/controller all packaged in a NEMA 4X enclosure. Everything is factory programmed for easy installation and the LEVEL MATE III has an extended 2-year warranty.

Inside view of the NEMA 4X enclosure showing the desiccant and optional surge protectors. Unit is factory wired so that the user needs to connect power and sensor only.

JUNCTION BOXES

Model SBJ100 with Reusable Desiccant

These boxes are used on long cable runs and provide quicker access to atmospheric reference. SBJ100 provides a clean, dry enclosure with an internal, reusable desiccant canister.

Back view of SBJ100 junction box that shows the reusable desiccant canister.

DESICCANTS

An initial desiccant is supplied with the SBJ100 and the LEVEL MATE III enclosure. The desiccant canister is reusable with visible color change when the time comes to replace the desiccant.

Disposable in-line cartridges are also available for use with sensors with a separate vent tube only.

NOTE: the in-line cartridges will not fit in the SBJ100 junction box.

LIGHTENING AND SECONDARY SURGE PROTECTORS

Lightning protection units are available to help protect systems and components from lightning and secondary surges. These LP units are available in both 30 VDC (LMA912) for 24 VDC supply on excitation/signal lines and analog meter output lines to protect the meter and/or the transmitter as well as 115 VAC (LMA918) and 230 VAC (LMA919) to protect the meter on AC power input lines.

AMETEK®

On-line order fax: +1 215-354-1802 or e-mail: mctpmt.sales@ametek.com

Sales/Technical Support: +1 215-355-6900 | 820 Pennsylvania Blvd | Feasterville PA 19053 U.S.A.

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