PMT pressure SENSORS

IDT User Manual
K796503
EDO 9-23-111 Rev F

Installation and Operating Instructions for the Model IDT - For Hazardous Area Applications

INTRINSICALLY SAFE PRESSURE AND LEVEL TRANSMITTERS

Model IDT
Pressure Transducer

Model IDT
Submersible Level
Transducer

AMETEK®

PMT pressure SENSORS

User Manual

INTRINSICALLY SAFE PRESSURE AND LEVEL TRANSMITTERS

Model IDT - I.S. Pressure Transmitter

CONTENTS

DESCRIPTION

The Model IDT intrinsically safe pressure transmitters are specifically designed for use in hazardous area pressure measurement applications.

Intrinsically safe approvals for the IDT includes FM US and FM Canada (cFMus), DEKRA, ATEX and IECEx for worldwide users' pressure measurement requirements.* The IDT offers premium performance and versatility of use for many applications including upstream oil and gas, general industrial end users, and OEMs.

The IDT offers precision accuracy at +/-0.2% FS (BFSL) typical. The design incorporates a stainless steel isolation diaphragm and 316 stainless steel construction for use with most media types.

The IDT is offered in pressure ranges from full vacuum to 5000 psig and 15 psia through 300 psia. The transducer also accepts both regulated and unregulated excitation voltages and provides output signals such as 1-5 VDC, 1-6 VDC, 0-5 VDC, 0.5 to 4.5VDC and 4-20 mA.

The IDT transducer is manufactured in the United States and meets ARRA.

* This unit also has DEKRA JPEx approval for the HM2, BN1 and M01 electrical connections.

FEATURES:

- Rugged Design for tough applications.
- 316 Stainless Steel Construction and Wetted Materials- Resists the corrosive effects of caustic medias or wash downs and is compatible with a variety of media.
- Digitally Compensated- Low total accuracy errors for interchangeability and high precision measurements.
- Multiple pressure port options- Ease of installation and attachment with no adapters required.
- 0.2% Typical Accuracy- Offers superior accuracy to competitive models and can be used on critical applications.
- Factory Calibrated for Pressure and Temperature-No need for field calibration. Plug and Play reliability.
- Wide Pressure Ranges and Types (PSIG,PSIA,PSIS, Compound)- Can be used in a variety of applications.
- RFI/EMI Protection-For use in high noise environments
- Reverse Polarity Protection- Installation safety and not damaged by reverse wiring.
- Custom Designs Available- OEM oriented to special needs. Please call 215-674-1234 or Email: mctpmt.sales@ametek.com
- Numerous Electrical Outputs and Connections- Allows quick hook-up and use with standard process equipment, conventional receivers, and compatible with microprocessors.
- Low Power Voltage Output- Allows for battery operation and longer life.

AMETEK PMT Products

205 Keith Valley Road

Horsham, PA 19044

U.S.A.

Tel: 215-674-1234

Email: mctpmt.sales@ametek.com

PMT pressure SENSORS

User Manual

INTRINSICALLY SAFE PRESSURE AND LEVEL TRANSMITTERS

Model IDT - I.S. Pressure Transmitter

WARRANTY

AMETEK PMT Products warrants that the Products and Services shall be free from all defects in design and workmanship and fit for the particular purposes for which they are intended, and in strict accordance with the specifications, drawings, designs or other requirements (including performance specifications) approved by Ametek for a period of one (1) year from the date of shipment unless otherwise noted.

GENERAL

The Model IDT Intrinsically Safe industrial and submersible pressure transmitters are specifically designed for use in hazardous area pressure measurement applications.

Intrinsically safe approvals include FM NORTH AMERICA, DEKRA ATEX and IECEx worldwide, and DEKRA JPEx (HM2, BN1 and M01 connectors) for Japan.

All transmitters should be installed, maintained and operated in compliance with all NEC and other applicable codes Any modifications to the AMETEK transmitter will void the warranty and IS rating.

FACTORY ASSISTANCE

AMETEK PMT Products

205 Keith Valley Road

Horsham, PA 19044

U.S.A.

Tel: 215-674-1234

Email: mctpmt.sales@ametek.com

Please provide the following information:

- Instrument Model Number
- Sensing Element Model Number and Length
- Original Purchase Order Number
- Material being measured
- Temperature
- Pressure
- Agitation
- Brief description of the problem
- Checkout procedures that have failed

Model IDT - I.S. Pressure Transmitter

Specification				
Pressure Ranges (Consult Factory for Non Standard Ranges)	VACUUM Up to 5000 psi PSIG,PSIA Available	0 – 1 PSI	0 – 3 PSI	0 - 6 PSI
Accuracy @25°C Including Linearity (BFSL) Hysteresis & Repeatability	±0.2% FS TYP, ±0.25% FS MAX	±1.0% FS MAX	±0.5% fs MAX	±0.5% FS MAX
1 Yr. Stability	< 0.25% FS	< 1.0% FS	<1.0% fs	< 0.5% FS
Load Limitation	10K Ohms MIN (All Voltage Outputs) 600 OHMS MAX (4-20MA)			
Input/Output	11-28VDc/4-20mA, 9-15VDC/1-6VDC, 8-15VDC/1-5VDC, 8-15VDC/0.5-4.5VDC, 8-15VDC/0-5VDC			
Pressure Response Time (Voltage)	<15mSEC			
Power On Response Time (Voltage)	<100mSEC			
Power (Voltage)	45mW @ 9VDC INPUT, TYPICAL			
Total Error Band (Includes Temperature Effects, Zero & Span Set)	±1% FS	±2.5% FS MAX	±2.5% fs MAX	±1.5% FS MAX
Vibration	10G, 55 – 2000 Hz			
Shock	30G			
EMC	10 V/m PER EN61326-1			
Process Wetted Material	316 Stainless Steel			
Electrical Housing Material	316 Stainless Steel			

AGENCY APPROVALS:

(FOR ELECTRICAL CONNECTORS “PT4,”PT5”, “PT6”, “CV1”, “CV2”, “CV3”. “CV5”, “CV6”)

U.S/CANADA	ATEX/IECEx	ENTITY PARAMETERS	
CLASS I, DIV 1, GROUPS A,B,C,D	II 1G Ex ia IIC Ga	mA:	Voltage:
CLASS II, DIV 1, GROUPS E,F,G; CLASS III		Ui = 28Vdc	Ui = 15Vdc
CLASS I, DIV 1, ZONE 0; AEx/Ex IIC	T4, -40°C <= Ta <= 80°C	Ii = 100mA	Ii = 148mA
T4, -40°C <= Ta <= 80°C	T6, -40°C <= Ta <= 60°C	Pi = 0.7W	Pi = 0.7W
T6, -40°C <= Ta <= 60°C	IP65 (PT4-PT6), IP68 (CV series)	Ci = 45nF	Ci = 97nF
IP65, Type 4X (PT4-PT6), IP68, TYPE 6P (CV series)	ATEX DEKRA 19ATEX0120X	Li = 2.5uH	Li = 2.5uH
FM19US0213X, US FM19CA0109X, Canada	IECEx DEK 19.0081X		
FM/IS CONTROL DWG BK750542 (4-20mA) OR	ATEX/IECEx CONTROL DWG BK750544 (4-20mA) OR		
BK750543 (VOLTAGE)	BK750545 (VOLTAGE)		
CLASS I, DIV 2, GROUPS A,B,C,D	II 3G Ex nA Gc		
CLASS II, DIV 2, GROUPS F,G; CLASS III			
Zone 2 AEx/Ex nA IIC			
T4, -40°C <= Ta <= 80°C	T4, -40°C <= Ta <= 80°C		
T6, -40°C <= Ta <= 60°C	T6, -40°C <= Ta <= 60°C		
IP65, Type 4X (PT4-PT6), IP68, TYPE 6P (CV series)	IP65 (PT4-PT6), IP68 (CV series)		
FM19US0213X, US FM19CA0109X, Canada	ATEX DEKRA 20ATEX0016X IECEx DEK 19.0081X		

AGENCY APPROVALS (CONT'D):

(FOR ELECTRICAL CONNECTORS "BN1" & "M01")

U.S/CANADA	ATEX/IECEx	ENTITY PARAMETERS
CLASS I, DIV 1, GROUPS A,B,C,D	II 1G Ex ia IIC Ga	mA:
CLASS II, DIV 1, GROUPS E,F,G; CLASS III	T4, -11°C <= Ta <= 80°C (MINERAL OIL)	Ui = 28Vdc
CLASS I, DIV 1, ZONE 0; AEx/Ex IIC	ATEX DEKRA 19ATEX0120X	Ii = 100mA
T4, -11°C <= Ta <= 80°C (MINERAL OIL)	IECEx DEK 19.0081X	Pi = 0.7W
FM19US0213X, US FM19CA0109X, Canada	JPEx: DEK 23.0057	Ci = 45nF
FM/IS CONTROL DWG BK750542 (4-20mA)	ATEX/IECEx CONTROL DWG BK750544	Li = 2.5uH

(FOR ELECTRICAL CONNECTORS "PT1 THROUGH PT3", "CS1", "NV1 THROUGH NV9", "NVA")

U.S/CANADA	ATEX/IECEx	ENTITY PARAMETERS	
CLASS I, DIV 1, GROUPS A,B,C,D	II 1G Ex ia IIC Ga	mA:	Voltage:
CLASS II, DIV 1, GROUPS E,F,G; CLASS III	T4, -40°C <= Ta <= 80°C		
CLASS I, DIV 1, ZONE 0; AEx/Ex IIC	T6, -40°C <= Ta <= 60°C	Ui = 28Vdc	Ui = 15Vdc
T4, -40°C <= Ta <= 80°C	IP65 (PT1,PT2,PT3), IP60 (CS1), IP68 (NV Series except "NVB")	Ii = 100mA	Ii = 148mA
T6, -40°C <= Ta <= 60°C	ATEX DEKRA 19ATEX0120X	Pi = 0.7W	Pi = 0.7W
IP65, TYPE 4X (PT1,PT2,PT3), IP60, Type 5 (CS1), IP68, Type 6P (NV Series except "NVB")	IECEx DEK 19.0081X	Ci = 45nF	Ci = 97nF
FM19US0213X, US FM19CA0109X, Canada	ATEX/IECEx CONTROL DWG BK750544 (4-20mA) OR BK750545 (VOLTAGE)	Li = 2.5uH	Li = 2.5uH
FM/IS CONTROL DWG BK750542 (4-20mA) or BK750543 (VOLTAGE)			

(FOR ELECTRICAL CONNECTOR "NVB")

U.S/CANADA	ATEX/IECEx	ENTITY PARAMETERS	
CLASS I, DIV 1, GROUPS A,B,C,D	II 1G Ex ia IIC Ga	mA:	Voltage
CLASS I, DIV 1, ZONE 0; AEx/Ex IIC	T4, -25°C <= Ta <= 65°C	Ui = 28Vdc	Ui = 15Vdc
T4, -25°C <= Ta <= 65°C	T6, -25°C <= Ta <= 60°C	Ii = 100mA	Ii = 148mA
T6, -25°C <= Ta <= 60°C	IPX8	Pi = 0.7W	Pi = 0.7W
IPX8, TYPE 6P	ATEX DEKRA 19ATEX0120X	Ci = 45nF	Ci = 97nF
FM19US0213X, US FM19CA0109X, Canada	IECEx DEK 19.0081X	Li = 2.5uH	Li = 2.5uH
FM/IS CONTROL DWG BK750542 (4-20mA) OR BK750543 (VOLTAGE)	ATEX/IECEx CONTROL DWG BK750544 (4-20mA) OR BK750545 (VOLTAGE)		

(FOR ELECTRICAL CONNECTOR "HM2")

U.S/CANADA	ATEX/IECEx	ENTITY PARAMETERS	
CLASS I, DIV 1, GROUPS A,B,C,D	II 1G Ex ia IIC Ga	mA:	Voltage:
CLASS II, DIV 1, GROUPS E,F,G; CLASS III	T4, -40°C <= Ta <= 80°C	Ui = 28Vdc	Ui = 15Vdc
CLASS I, DIV 1, ZONE 0; AEx/Ex IIC	T6, -40°C <= Ta <= 60°C	Ii = 100mA	Ii = 148mA
T4, -40°C <= Ta <= 80°C	IP67	Pi = 0.7W	Pi = 0.7W
T6, -40°C <= Ta <= 60°C	ATEX DEKRA 19ATEX0120X	Ci = 45nF	Ci = 97nF
IP67, TYPE 4X	IECEx DEK 19.0081X	Li = 2.5uH	Li = 2.5uH
FM19US0213X, US FM19CA0109X, Canada	JPEx DEK 23.0057 (4/20mA)		
FM/IS CONTROL DWG BK750542 (4-20mA) OR BK750543 (VOLTAGE)	JPEx DEK 23.0058 (VOLTAGE) ATEX/IECEx CONTROL DWG BK750544 (4-20mA) OR BK750545 (VOLTAGE)		
CLASS I, DIV 2, GROUPS A,B,C,D CLASS II, DIV 2, GROUPS F,G; CLASS III Zone 2 AEx/Ex nA IIC T4, -40°C <= Ta <= 80°C T6, -40°C <= Ta <= 60°C IP67, TYPE 4X FM19US0213X, US FM19CA0109X, Canada	II 3G Ex nA Gc T4, -40°C <= Ta <= 80°C T6, -40°C <= Ta <= 60°C IP67 ATEX DEKRA 20ATEX0016X IECEx DEK 19.0081X		

Model IDT - I.S. Pressure Transmitter

WIRING DIAGRAM

Common For DIN Connectors

Voltage	
Connector Pin	**Function**
1	+V In
2	-V In
3	V Out
GND	Ground

Current	
Connector Pin	**Function**
1	+V In
2	-V In
GND	Ground

6 Pin Connector Only

Pin Outs	
B	+9V
C	Analog In
D	AGND
E	Case GND

Common For all Cable Options

Voltage	
Color	**Function**
Red	+V In
Black	-V In
White	V Out
Green/Shield	Ground

Current	
Color	**Function**
Red	+V In
Black	-V In
Green/Shield	Ground

Proprietary Flush BN1 Connector Only

CURRENT	
CONNECTOR PIN	FUNCTION
A	+Vin
B	-Vin
E	GROUND

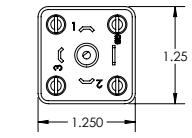
Proprietary M01 Connector

CURRENT	
CONNECTOR PIN	FUNCTION
1	+Vin
3	-Vin
2 (GND)	GROUND

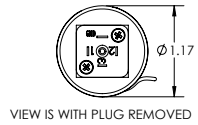
Note: See Control Drawings for Hazardous Area Installation

Model IDT - I.S. Pressure Transmitter

ELECTRICAL CONNECTION OPTIONS



VIEW IS WITH PLUG REMOVED



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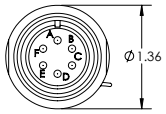
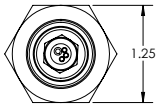
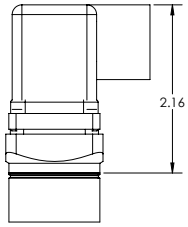
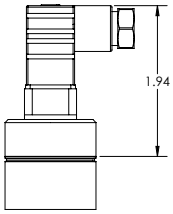


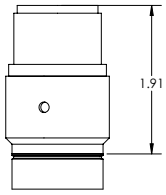




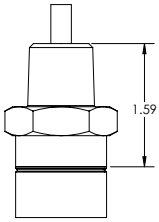
DIN 43 650 FORM A
(MATING CONNECTOR
SUPPLIED)



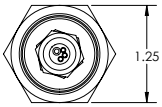
DIN 43 650 FORM C
(MATING CONNECTOR
SUPPLIED)

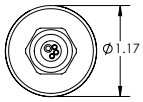


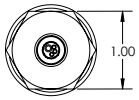
6 PIN CONNECTOR
(NO MATING CONNECTOR)

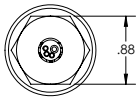


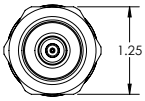
1/2-14 NPT WITH CABLE
(SEE MODEL CODE
FOR LENGTHS)

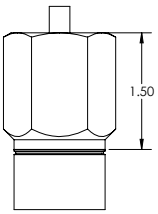




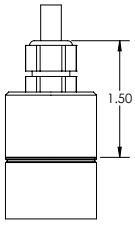




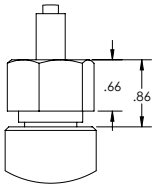




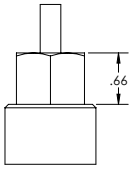
3/4-14 NPT FEMALE &
BRASS STRAIN RELIEF
WITH CABLE
(SEE MODEL CODE
FOR LENGTHS)



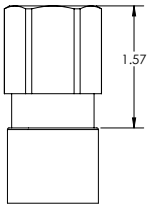
BRASS STRAIN RELIEF
WITH CABLE
(SEE MODEL CODE
FOR LENGTHS)



SUBMERSIBLE WITH CABLE
NVB CONNECTOR

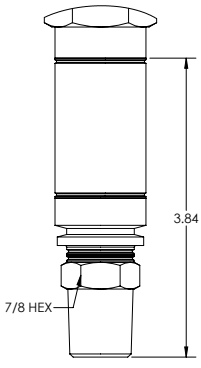


SUBMERSIBLE WITH CABLE
STYLE 1- 24AWG CABLE
STYLE 2- 22AWG CABLE

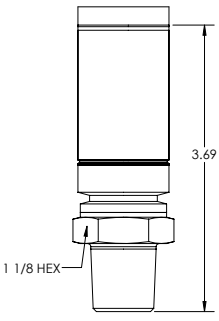


SUBMERSIBLE 1/2NPT CONDUIT
WITH CABLE
STYLE 1- 24AWG CABLE
STYLE 2- 22AWG CABLE

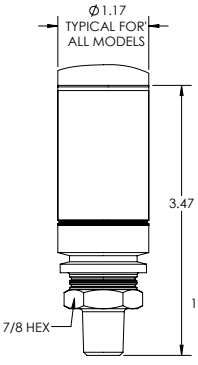
PROCESS CONNECTION OPTIONS



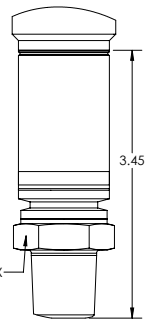
1/2-14 NPT MALE
LOW PRESSURE



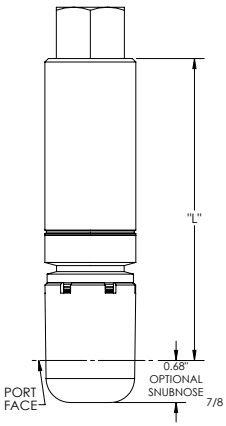
1/2-14 NPT MALE
HIGH PRESSURE



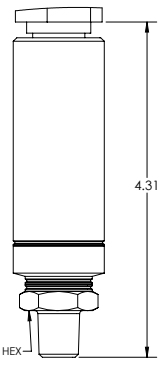
1/4-18 NPT MALE
LOW PRESSURE



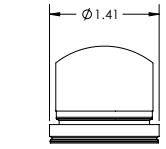
1/4-18 NPT MALE
HIGH PRESSURE



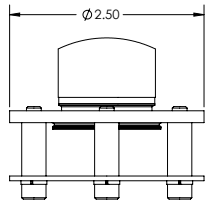
SUBMERSIBLE
WITH OPTIONAL
NYLON SNUBNOSE
L = 3.94 (CONSTRUCTION TYPE B)
L = 4.20 (CONSTRUCTION TYPE T)



1/4-18 NPT MALE
LOW PRESSURE
NVB CONNECTOR



FLUSH DIAPHRAGM
(SUBMERSIBLE VERSION ONLY)



PROTECTED FLUSH DIAPHRAGM
(SUBMERSIBLE VERSION ONLY)

Model IDT - I.S. Pressure Transmitter

MODEL NUMBERING

Transmitter Type

D Digitally compensated pressure transmitter for hazardous use

Protection Type and Temperature code

D2 Division 2, Zone 2, potted electronics

D3 Division 2, Zone 2, conformal coated electronics

IP Division 1, Zone 0, Intrinsically safe, potted electronics

IC Division 1, Zone 0, Intrinsically safe, conformal coated electronics

NE No protection

Electrical Input/output

B 11-28Vdc/4-20mA[1]

C 9-15Vdc/1-6Vdc

D 8-15Vdc/1-5Vdc

E 8-15Vdc/0.5-4.5Vdc

F 8-15Vdc/0-5Vdc

Construction Type

B Backside applied pressure

T Topside applied pressure

Electrical Connector FM Approved Submersible • Division and Zone Safety Approval • Ingress Protection IP/Type

NV1 Submersible transmitter with Viton grommet, polyurethane cable • Div 1, Zone 0 • IP68 ,Type 6P

NV2 Submersible transmitter with Viton grommet, vent tube, polyurethane cable • Div 1, Zone 0 • IP68 ,Type 6P

NV3 Submersible transmitter with Viton grommet, vent tube, polyolefin cable • Div 1, Zone 0 • IP68 ,Type 6P

NV4 Submersible transmitter with Viton grommet, vent tube, polyurethane cable,support bracket • Div 1, Zone 0 • IP68 ,Type 6P

NV5 Submersible transmitter with Viton grommet, vent tube, Teflon cable • Div 1, Zone 0 • IP68 ,Type 6P

NV6 Submersible transmitter with Viton grommet, Teflon cable • Div 1, Zone 0 • IP68 ,Type 6P

NV7 Submersible transmitter with Viton grommet, polyurethane cable, support bracket • Div 1, Zone 0 • IP68 ,Type 6P

NV8 Submersible transmitter with Viton grommet, vent tube, polyolefin cable, support bracket • Div 1, Zone 0 • IP68 ,Type 6P

NV9 Submersible transmitter with Viton grommet, vent tube, Teflon cable, supoport bracket • Div 1, Zone 0 • IP68 ,Type 6P

NVA Submersible transmitter with Viton grommet, Teflon cable, support bracket • Div 1, Zone 0 • IP68 ,Type 6P

NVB Submersible transmitter with Kalrez – 0040 grommet, Teflon cable • Div 1, Zone 0 • IPX8, Type 6P

CV1 Submersible transmitter with Viton grommet, polyurethane cable,1/2"NPT female conduit adapter • Div 1, Zone 0 Div 2, Zone 2 • IP68 ,Type 6P

CV2 Submersible transmitter with Viton grommet, vent tube, polyurethane cable, 1/2"NPT female conduit adapter • Div 1, Zone 0 Div 2, Zone 2 • IP68 ,Type 6P

CV3 Submersible transmitter with Viton grommet, vent tube, polyolefin cable, 1/2"NPT female conduit adapter • Div 1, Zone 0 Div 2, Zone 2 • IP68 ,Type 6P

CV5 Submersible transmitter with Viton grommet, vent tube, Teflon cable, 1/2"NPT, female conduit adapter • Div 1, Zone 0 Div 2, Zone 2 • IP68 ,Type 6P

CV6 Submersible transmitter with Viton grommet, Teflon cable, 1/2"NPT female conduit adapter • Div 1, Zone 0 Div 2, Zone 2 • IP68,Type 6P

Continued on Next Page

D	XX	X	X	XXX

Model IDT - I.S. Pressure Transmitter

MODEL NUMBERING (CONTINUED)

Electrical Connector FM Approved Industrial • Division and Zone Safety Approval • Protection IP/Type

BN1	Proprietary Bayonet Style (Bendix) right angle connector • 4220mA output only
CS1	6 pin connector • Div 1, Zone 0 • IP60
M01	Proprietary M12 Style right angle connector • 4-20mA output only
HM2	1/2 NPT male with 24AWG cable • Div 1, Zone 0 Div 2, Zone 2 • IP67, Type 4X
PT1	24AWG cable with PVC jacket • Div 1, Zone 0 • IP65, Type 4X
PT2	22AWG cable with PVC jacket • Div 1, Zone 0 • IP65, Type 4X
PT3	22AWG cable with Teflon jacket • Div 1, Zone 0 • IP65, Type 4X
PT4	24AWG cable with PVC jacket, 3/4" NPT female conduit adapter • Div 1, Zone 0 Div 2, Zone 2 • IP65, Type 4X
PT5	22AWG cable with Teflon jacket, 3/4" NPT female conduit adapter • Div 1, Zone 0 Div 2, Zone 2 • IP65, Type 4X
PT6	22AWG cable with PVC jacket, 3/4" NPT female conduit adapter • Div 1, Zone 0 Div 2, Zone 2 • IP65, Type 4X

Non FM Approved Industrial Model Style

DAM	DIN 43 650-A plus mate • No approval • N/A
DAN	DIN 43 650-A, no mate • No approval • N/A
DCM	DIN 43 650-C, plus mate • No approval • N/A
DCN	DIN 43 650-C, no mate • No approval • N/A

Cable Length

AA	None
AB	18"
AC	24"
AD	36"
AE	48"
AF	60"
AZ	Specify inches as separate line item on order
BA	5'
BB	10'
BC	20'
BD	30'
BE	40'
BF	50'
BG	100'
BZ	Specify feet as separate line item on order

ANSI Seal 12.27.01

D	Dual seal per ANSI 12.27.01 - not evaluated by FM
N	None, seal not approved per ANSI 12.27.01 - not evaluated by FM
S	Single seal per ANSI 12,27,01 - not evaluated by FM

Continued on Next Page

D	XX	X	X	XXX	XX	X

Model IDT - I.S. Pressure Transmitter

MODEL NUMBERING (CONTINUED)

Process Connection

01	1/4 NPT male
02	1/4 NPT male with nylon snubnose (submersible model)
03	1/4 NPT male with stn stl snubnose (submersible model)
04	1/2 NPT male
05	1/2 NPT female
06	1/2 NPT female with nylon snubnose (submersible model)
07	Flush diaphragm
08	Protected flush diaphragm
09	Proprietary flush diaphragm
07-99	Other optional process connectors

Isolation Fill

F	Fluorolube
M	Mineral oil
S	Silicone
A-Z	Additional fills

Diaphragm Material and Thickness

H1	Hastelloy, 0.001 thick
H2	Hastelloy, 0.002 thick
M1	Monel, 0.001 thick
M2	Monel, 0.002 thick
S1	Stainless steel, 0.001 thick
S2	Stainless steel, 0.002 thick
A1-Z2	Additional diaphragms and thicknesses

Pressure Type

A	Absolute
C	Compound (minus pressure to full scale)
E	Compound equal (minus pressure equals full scale)
G	Gage
V	Vacuum (0 to VAC (-14.7 to full scale))
S	Static (sealed sensor, no atmospheric reference)
A-Z	Other pressure types

Pressure Range

xxxxx	0-5000 psi: Standard psi ranges 1, 3, 6, 15, 30, 60, 100, 150, 200, 300, 500, 1000, 2000, 3000, 5000
Bxxxx	0-344 bar: Standard bar ranges 0.07, 0.20, 0.40, 1, 2, 4, 6, 10, 13.5, 20, 30, 60, 100, 120, 200, 340

Non Safety Related Options

X001-X999	Additional Ametek options, or customer requested options

D	XX	X	X	XXX	XX	X	XX	X	XX	X	XXXXX	XXXX

Safety/Approval Fields — *Non Safety /Approval Fields*

Model IDT - I.S. Industrial Pressure Transmitter

TABLE #1

Electrical Connector	FM Approved Industrial Model Style	Division and Zone Safety Approval	Ingress Protection IP / Type	Ambient Temp. Range Protection Type IC, D3 Coated Electronics T4 Temperature Code	Ambient Temp. Range Protection Type IP, D2 Potted Electronics T6 Temperature Code	Process Temperature Limits	Compensated Temperature Range
CS1	6 pin connector (Sealed Ranges Only - PSIS or PSIA)	Div 1, Zone 0	IP60	-40°C <= Ta <= 80°C	-40°C <= Ta <= 60°C	-40°C to 100°C	-25°C to 75°C
HM2	1/2 NPT male with 24AWG cable	Div 1, Zone 0 Div 2, Zone 2	IP67, Type 4X	-40°C <= Ta <= 80°C	-40°C <= Ta <= 60°C	-40°C to 100°C	-25°C to 75°C
PT1	24AWG cable with PVC jacket	Div 1, Zone 0	IP65, Type 4X	-40°C <= Ta <= 80°C	-40°C <= Ta <= 60°C	-40°C to 100°C	-25°C to 75°C
PT2	22AWG cable with PVC jacket	Div 1, Zone 0	IP65, Type 4X	-40°C <= Ta <= 80°C	-40°C <= Ta <= 60°C	-40°C to 100°C	-25°C to 75°C
PT3	22AWG cable with Teflon jacket	Div 1, Zone 0	IP65, Type 4X	-40°C <= Ta <= 80°C	-40°C <= Ta <= 60°C	-40°C to 100°C	-25°C to 75°C
PT4	24AWG cable with PVC jacket, 3/4" NPT female conduit adapter	Div 1, Zone 0 Div 2, Zone 2	IP65, Type 4X	-40°C <= Ta <= 80°C	-40°C <= Ta <= 60°C	-40°C to 100°C	-25°C to 75°C
PT5	22AWG cable with Teflon jacket, 3/4" NPT female conduit adapter	Div 1, Zone 0 Div 2, Zone 2	IP65, Type 4X	-40°C <= Ta <= 80°C	-40°C <= Ta <= 60°C	-40°C to 100°C	-25°C to 75°C
PT6	22AWG cable with PVC jacket, 3/4" NPT female conduit adapter	Div 1, Zone 0 Div 2, Zone 2	IP65, Type 4X	-40°C <= Ta <= 80°C	-40°C <= Ta <= 60°C	-40°C to 100°C	-25°C to 75°C
BN1	Bendex Connector	Div 1, Zone 0		-11°C <= Ta <= 80°C		-11°C to 100°C	-11°C to 75°C
M01	M12 Connector	Div 1, Zone 0		-11°C <= Ta <= 80°C		-11°C to 100°C	-11°C to 75°C
	Non FM Approved Industial Model Style			**Ambient Temp. Range Coated Electronics**	**Ambient Temp. Range Potted Electronics**	**Process Temperature Limits**	**Compensated Temperature Range**
DAM	DIN 43 650-A plus mate	No approval	N/A	-40°C <= Ta <= 80°C	-40°C <= Ta <= 80°C	-40°C to 100°C	-25°C to 75°C
DAN	DIN 43 650-A, no mate	No approval	N/A	-40°C <= Ta <= 80°C	-40°C <= Ta <= 80°C	-40°C to 100°C	-25°C to 75°C
DCM	DIN 43 650-C, plus mate	No approval	N/A	-40°C <= Ta <= 80°C	-40°C <= Ta <= 80°C	-40°C to 100°C	-25°C to 75°C
DCN	DIN 43 650-C, no mate	No approval	N/A	-40°C <= Ta <= 80°C	-40°C <= Ta <= 80°C	-40°C to 100°C	-25°C to 75°C

Standard Pressure Ranges	Overpressure	Burst Pressure
PSI: 1, 3, 6, 15, 30, 60, 100, 150, 200,300, 500, 1000,2000, 3000, 5000	2X	3X
BAR: 0.07, 0.2, 0.4, 1, 1,2,4,6,10,13.5,20,30,60,100,120,200,340	2X	3X

Model IDT - I.S. Submersible Level Transmitter

TABLE #2

Electrical Connector	FM Approved Industrial Model Style	Division and Zone Safety Approval	Ingress Protection IP/Type	Ambient Temp. Range Protection Type IC, D3 Coated Electronics T4 Temperature Code	Ambient Temp. Range Protection Type IP, D2 Potted Electronics T6 Temperature Code	Compensated Temperature Range
NV1	Submersible transmitter with Viton grommet, polyurethane cable	Div 1, Zone 0	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C
NV2	Submersible transmitter with Viton grommet, vent tube, polyurethane cable	Div 1, Zone 0	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C
NV3	Submersible transmitter with Viton grommet, vent tube, polyolefin cable	Div 1, Zone 0	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C
NV4	Submersible transmitter with Viton grommet, vent tube, polyurethane cable,support bracket	Div 1, Zone 0	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C
NV5	Submersible transmitter with Viton grommet, vent tube, Teflon cable	Div 1, Zone 0	IP68 ,Type 6P	-40°C <= Ta <= 80°C	-40°C <= Ta <= 60°C	-5°C to 55°C
NV6	Submersible transmitter with Viton grommet, Teflon cable	Div 1, Zone 0	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C
NV7	Submersible transmitter with Viton grommet, polyurethane cable, support bracket	Div 1, Zone 0	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C
NV8	Submersible transmitter with Viton grommet, vent tube, polyolefin cable, support bracket	Div 1, Zone 0	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C
NV9	Submersible transmitter with Viton grommet, vent tube, Teflon cable, supoport bracket	Div 1, Zone 0	IP68 ,Type 6P	-40°C <= Ta <= 80°C	-40°C <= Ta <= 60°C	-5°C to 55°C
NVA	Submersible transmitter with Viton grommet, Teflon cable, support bracket	Div 1, Zone 0	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C
NVB	Submersible transmitter with Kalrez-0040 grommet, vent tube, Teflon cable	Div 1, Zone 0	IPX8 ,Type 6P	-25°C <= Ta <= 65°C	-25°C <= Ta <= 60°C	-5°C to 55°C
CV1	Submersible transmitter with Viton grommet, polyurethane cable,1/2"NPT female conduit adapter	Div 1, Zone 0 Div 2, Zone 2	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C
CV2	Submersible transmitter with Viton grommet, vent tube, polyurethane cable, 1/2"NPT female conduit adapter	Div 1, Zone 0 Div 2, Zone 2	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C
CV3	Submersible transmitter with Viton grommet, vent tube, polyolefin cable, 1/2"NPT female conduit adapter	Div 1, Zone 0 Div 2, Zone 2	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C
CV5	Submersible transmitter with Viton grommet, vent tube, Teflon cable, 1/2"NPT, female conduit adapter	Div 1, Zone 0 Div 2, Zone 2	IP68 ,Type 6P	-40°C <= Ta <= 80°C	-40°C <= Ta <= 60°C	-5°C to 55°C
CV6	Submersible transmitter with Viton grommet, Teflon cable, 1/2"NPT female conduit adapter	Div 1, Zone 0 Div 2, Zone 2	IP68 ,Type 6P	-25°C <= Ta <= 80°C	-25°C <= Ta <= 60°C	-5°C to 55°C

Standard Pressure Ranges	Overpressure	Burst Pressure
PSI: 1, 3, 6, 15, 30, 60, 100, 150, 200,300	2X or 450 psi which ever is less	3X or 450 psi which ever is less
BAR: 0.07, 0.2,0.4,1,2,4,6,10,13,5,20	2X or 450 psi(31 BAR) which ever is less	3X or 450 psi(31 BAR) which ever is less
Note: When used in submersion applications, the maximum operating pressure, overpressure and burst pressure are limited by the cable seal grommet. Non submersible pressures up to 5000 psi (344 BAR) can be specified.		
Do not subject unit to freezing water, or damage may result. For unspecified pressure ranges, errors are based on turndown of the next higher range. Affected specifications include 1 year stability and total error band. Example: 9 PSI range is (15 PSI sensor ÷ 9 PSI range). X 1% = 1.67% total error band.		

Model IDT - I.S. Submersible Level Transmitter

INSTALLATION

WARNING: Remove power before installing or servicing.

To install the Model IDT Submersible Transmitter, connect the surface end of the cable to a power supply and controller. 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 IDT Submersible Transmitter with cable support using customer supplied and installed support cable.

Caution -The cable grommet and support are specially installed by factory-trained personnel to insure water-tightness. 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 linked or nicked. This may 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.

Models that are supplied with cable vent tube come with a desiccant. Install per the instructions that come with the desiccant tube kit.

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. Use No. 10 AWG ground wire or better from protector to earth ground.
3. Provide a separate ground for each run of shielded cable or metal conduit.
4. 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.
5. Install all protectors in weather-tight enclosures.
6. Run signal lines shielded and away from power lines.
7. Wire according to for Electrical Code.
8. When used for an intrinsically safe installation, only one LMA912 should be installed in the hazardous location. Do not substitute protector types.
9. Models supplied with a cable that has a vent tube are typically supplied with a desiccant canister. When the color changes from blue to pink it should be replaced. It is the customer's responsiibility to assure the vent tube is terminated properly to avoid moisture intrusion.

Spare Desiccant Part numbers:

K234436: 8" Desiccant tube(round) kit with metal fittings, flow restrictor and polyurethane tube.

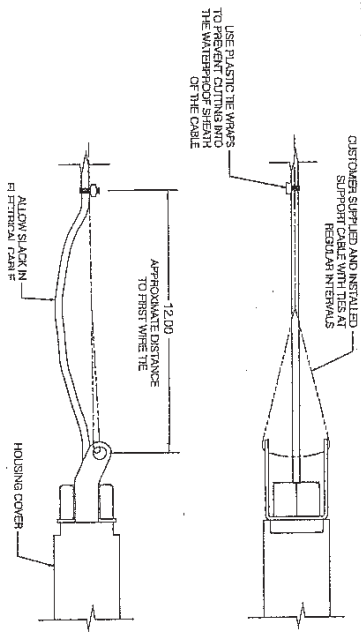
K234446: 8" Desiccant tube(round) only

Part number K234432 is an optional(rectangular) aluminum reusable canister generally used in junction boxes for models without cables using a vent tube. All cables, with or without a vent tube provide an atmospheric reference. When the color changes from blue to pink, dry outside in the warm sun or in an oven per the instructions.

Consult the control drawings in this manual for information on the hookup.

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.

CABLE SUPPORT OPTION



Model IDT - I.S. Pressure Transmitter

HAZARDOUS LOCATION APPROVAL

SUPPLEMENTAL INSTALLATION AND OPERATING INSTRUCTIONS

General:

This section contains installation instructions for potentially explosive atmosphere applications. The IDT is approved for use in hazardous locations only when properly installed. Control drawings detailing installations can be found following this section of the manual. Always install to Local Codes / Requirements / Directives as Mandated by the Authority having jurisdiction.

For Division 1, Zone 0 installations, the use of an approved barrier/entity as indicated in the Control drawings must be followed to avoid ignition capable sparks.

For Division 2, Zone 2 installations, metal conduit must be used to protect the wiring from causing ignition capable sparks.

Submersible units are supplied with an extra product label. Attach label adjacent to the equipment.

Device Description:

The Model IDT is a Pressure Transmitter/Transducer that measures process pressure and outputs either a 4/20mA

WARNING:

⚠ Before installing, check the sensor model selected for compatibility to the process media in contact with the sensor and wetted parts.

⚠ Misuse of this product may cause explosion and personal injury. These instructions must be thoroughly read and understood before unit is installed. See the product nameplate information for specific agency certifications applicable to your product.

⚠ Explosion hazard - Substitution of components may impair suitability for use in hazardous locations.

⚠ Applicable installation codes require that the equipment installed within hazardous locations be earthed. WARNING! -To prevent risk of ignition-capable earth currents in intrinsically safe installations, the equipment shall not be earthed at both the enclosure and the earth conductor of the integral cable or installer's cable. In intrinsically safe installations where the equipment is earthed by virtue of its mechanical mounting, the earth conductor of the cable shall be left unterminated. In intrinsically safe installations where mechanical mounting of the equipment renders the equipment isolated from earth, the earth conductor of the cable shall be terminated to earth.

AVERTISSEMENT:

⚠ Avant l'installation, vérifier le modèle de l'appareil sélectionné pour la compatibilité avec le fluide du procédé en contact avec le capteur et les parties mouillées.

⚠ Utilisation abusive de ce produit peut causer une explosion et des blessures. Ces instructions doivent être soigneusement lues et comprises avant l'appareil est installée. Voir l'information sur la plaque signalétique du produit pour les certifications d'agence spécifiques applicables.

⚠ Risque d'explosion - Substitution de l'appareil peut nuire à l'aptitude à l'utilisation dans des endroits dangereux.

⚠ Les codes d'installation applicables exigent que l'équipement installé dans des zones dangereuses soit mis à la terre. AVERTISSEMENT! - Pour éviter tout risque de courants de terre pouvant provoquer une inflammation dans les installations à sécurité intrinsèque, l'équipement ne doit pas être mis à la terre à la fois dans l'enceinte et dans le conducteur de terre du cable intégré ou du cable de l'installateur. Dans les installations à sécurité intrinsèque où l'équipement est mis à la terre en raison de son montage mécanique, le conducteur de terre du câble ne doit pas être interrompu. Dans les installations à sécurité intrinsèque où le montage mecanique de l'équipement rend l'équipement isolé de la terre, le conducteur de terre du câble doit être raccordé à la terre.

Model IDT - I.S. Pressure Transmitter

HAZARDOUS LOCATION APPROVAL

SUPPLEMENTAL INSTALLATION AND OPERATING INSTRUCTIONS

Specific Conditions of Use

1. The maximum permitted operating temperature of the Ametek IDT series Pressure Transducers is 80°C for the conformal coated versions and 60°C for the potted versions. To avoid the effects of process temperature and other thermal effects care shall be taken to ensure that the "Electronics Temperature" does not exceed the maximum of 80°C for the conformal coated versions and 60°C for the potted versions.
2. The models with the non-metalic parts near the cable entry will need to be protected from exposure to UV radiation.
3. Model option CS1 connector needs to be properly sealed for IP6X protection to be valid.
4. For model option d=BN1 cannon plug type KPT08P-10-6S shall be used.
5. For model option d=M01 binder plug type 99-0436-14-05 shall be used.
6. For model option NVB, the maximum permitted operating temperature of the Ametek IDT series is 65˚C for the conformal coated versions and 60˚C for the potted versions. To avoid the effects of process temperature and other thermal effects care shall be taken to ensure that the “Electronics Temperature” does not exceed the maximum of 65˚C for the conformal coated versions and 60˚C for the potted versions.

Conditions d’utilisation spécifique

1. Le température maximale admissible de fonctionnement des transducteurs de pression série Ametek IDT est de 80°C pour les versions à revêtement conforme et 60°C pour les versions en potted. Pour éviter les effets de la température du processus et autres soins des effets thermiques doivent être prises pour se assurer que la “Température de l’électronique” ne dépasse pas le maximum de 80°C pour les versions à revêtement conforme et 60°C pour les versions en poted.
2. Les modèles avec les parties non-métalliques à proximité de l’entrée de câble devront être protégés contre l’exposition au rayonnement UV.
3. L’ option connecteur modèle CS1 doit être correctement scellé pour la protection IP6X pour être valide.
4. Pour l’option modèle d=BN01 bouchon de canon type KPT08P-10-6S doit être utilize.
5. Pour l’option modèle d=M01 bouchon de liant type 99-0436-14-05 doit être utilize.
6. Pour l’óption modèle NVB le température manimale admissible de fonctionnement des transducteurs de pression séries Ametek IDT est do 65˚C pour les versions à revêntement conforme et 60˚C pour les versions en potted. Pour éviter les effets de la température du processus et autres soins des effets thermiques doivent être prises pour se assurer que la “Temperature de l’électroniquene” ne depasses pas le maximum de 65˚C pour les versions à revêtement conforme et 60˚C pour les versions en poted.

REVISION HISTORY				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE (VERSION OF 1/20/15)	7/10/15	RR
	B	UPDATED ADDRESS	2/21/17	JHM
	C	ADDED NOTES 4 & 5, EDO 11-19-106	2/5/19	RR
	D	REMOVED T5, EDO 2-21-111	7/1/21	JHM
	E	ADDED NVB, EDO 2-22-122	6/9/22	RR

11-28Vdc INPUT/4-20mA OUTPUT

HAZARDOUS (CLASSIFIED AREA)
FM-US/FM-CANADA

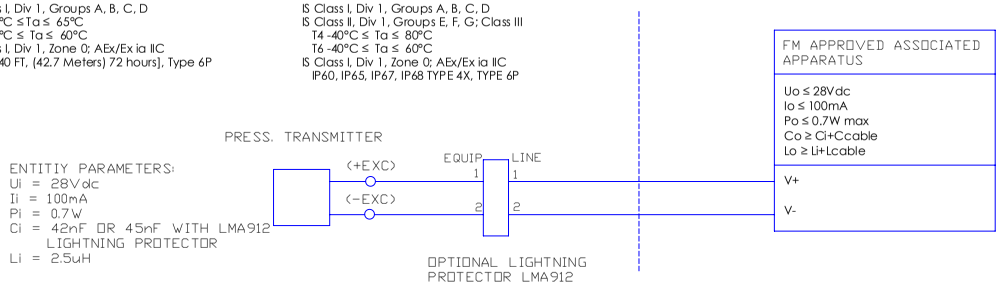
Electrical Connector "NVB"

IS Class I, Div 1, Groups A, B, C, D
T4 -25°C ≤ Ta ≤ 65°C
T4 -25°C ≤ Ta ≤ 60°C
IS Class I, Div 1, Zone 0; AEx/Ex ia IIC
IP X8 [140 FT, (42.7 Meters) 72 hours], Type 6P

All Electrical Connectors except "NVB"

IS Class I, Div 1, Groups A, B, C, D
IS Class II, Div 1, Groups E, F, G; Class III
T4 -40°C ≤ Ta ≤ 80°C
T6 -40°C ≤ Ta ≤ 60°C
IS Class I, Div 1, Zone 0; AEx/Ex ia IIC
IP60, IP65, IP67, IP68 TYPE 4X, TYPE 6P

NON HAZARDOUS LOCATION



NOTE: APPARATUS HAS LINEAR OUTPUT

NOTES:
1) THE INSTALLATION SHALL COMPLY WITH THE RELEVENT REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) AND THE CANADIAN ELECTRICAL CODE (C22.1) AS APPLICABLE.
2) NO REVISION TO DRAWING WITHOUT PRIOR FM APPROVAL.
3) CONTROL EQUIPMENT CONNECTED TO ASSOCIATED APPARATUS MUST NOT GENERATE MORE THAN 250 Vrms OR Vdc.
4) ASSOCIATED APPARATUS MANUFACTURER'S INSTALLATION DRAWING MUST BE FOLLOWED WHEN INSTALLING THIS EQUIPMENT.
5) DUST-TIGHT BOUNDRY SEAL MUST BE USED WHEN INSTALLED IN CLASS II AND CLASS III ENVIRONMENTS.
6) WARNING-SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
7) UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE, ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
8) THE ASSOCIATED APPARATUS MUST BE A RESISTIVLEY LIMITED, SINGLE OR MULTIPLE CHANNEL FMCuS BARRIER, HAVING PARAMETERS LESS THAN THOSE QUOTED, AND FOR WHICH THE OUTPUT AND THE COMBINATIONS OF OUTPUTS IS NON-IGNITION CAPABLE FOR THE CLASS, DIVISION AND GROUP OF USE.
9) UNLESS OTHERWISE KNOWN, A CABLE CAPACITANCE OF 60pf/ft (197pf/M) AND 0.2 uH/ft (0.66uH/M) CAN BE USED TO CALCULATE THE CABLE PARAMETERS.

SPECIAL CONDITIONS OF USE

1) THE MAXIMUM PERMITTED OPERATING TEMPERATURE OF THE AMETEK iDT SERIES PRESSURE TRANSDUCERS ARE 80°C (T4) (EXCEPT FOR ELECTRICAL CONNECTOR "NVB" WHICH IS 65°C) FOR THE CONFORMAL COATED VERSIONS, AND 60°C (T6) FOR THE POTTED VERSIONS. TO AVOID THE EFFECTS OF PROCESS TEMPERATURE AND OTHER THERMAL EFFECTS, CARE SHOULD BE TAKEN TO ENSURE THAT THE "ELECTRONICS TEMPERATURE" DOES NOT EXCEED THE MAXIMUM OF 80°C (T4) (EXCEPT FOR ELECTRICAL CONNECTOR "NVB" WHICH IS 65°C). FOR THE CONFORMAL COATED VERSIONS AND 60°C (T6) FOR THE POTTED VERSIONS.
2) MODELS WITH NON METALLIC PARTS NEAR THE CABLE ENTRY WILL NEED TO BE PROTECTED FROM EXPOSURE TO UV RADIATION.
3) MODEL OPTION "CS1" CONNECTOR NEEDS TO BE PROPERLY SEALED FOR IP6X PROTECTION TO BE VALID.
4) FOR MODEL OPTION d=BN01 CANNON PLUG TYPE KPT08P-10-6S SHALL BE USED.
5) FOR MODEL OPTION d=M01 BINDER PLUG TYPE 99-0436-14-05 SHALL BE USED.

REVISIONS TO THIS DOCUMENT REQUIRE AGENCY NOTIFICATION. REFER TO DOCUMENT EN201-17.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON 2 DEC. PL. ±.01, 3 DEC. PL. ±.005, ANGLES ±1°

MATERIAL

FINISH

		DATE
DRAWN	TDH	6/9/22
CHECKED	RR	6/9/22
APPROVED	RR	6/9/22
SUPERCEDES		
USED ON		
NEXT ASS'Y		
E-FILE	K750542_E.dwg	

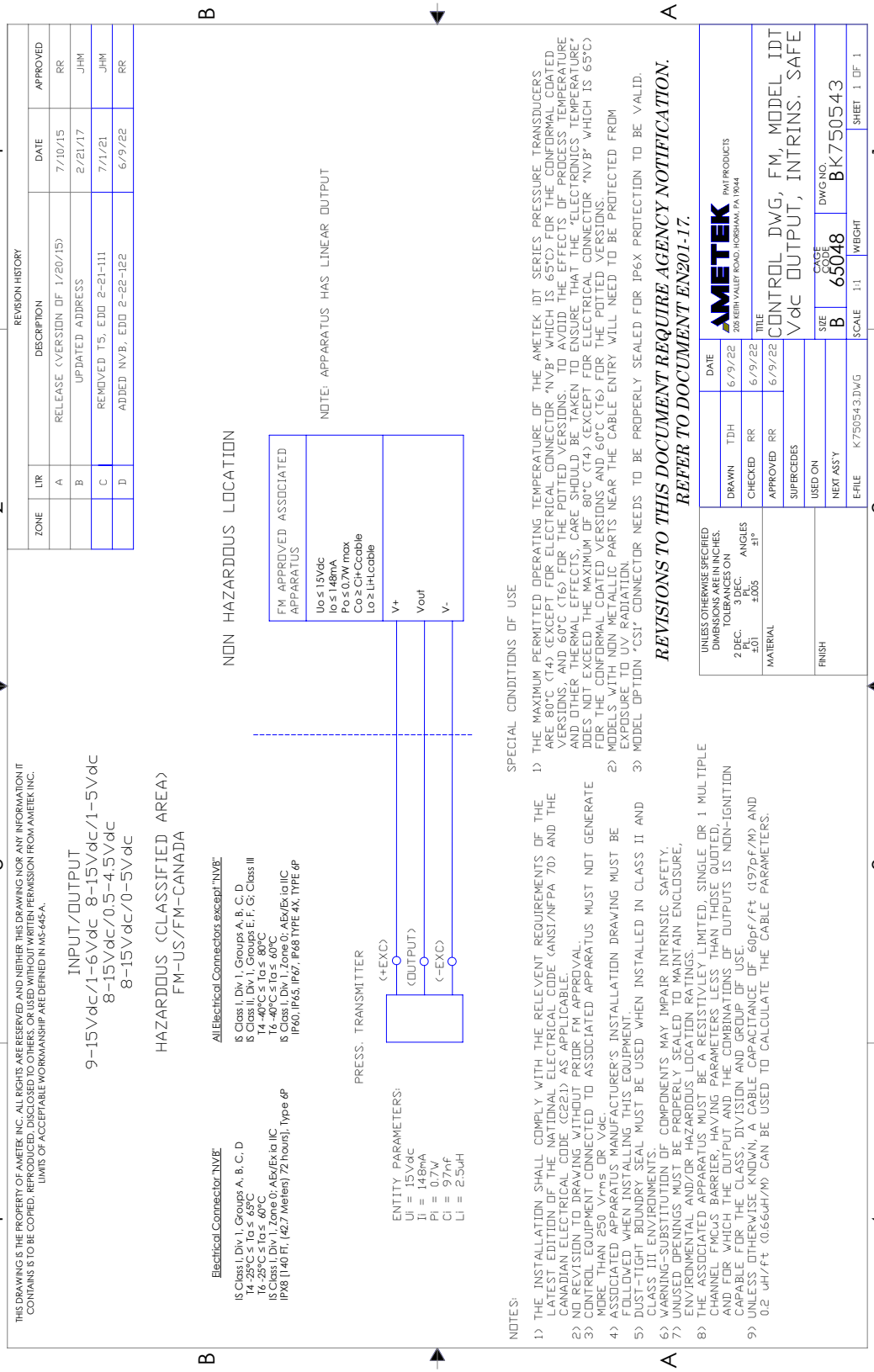
AMETEK PMT PRODUCTS
205 KEITH VALLEY ROAD, HORSHAM, PA 19044

TITLE: CONTROL DWG, FM, MODEL IDT 4-20 mA, INTRINSICALLY SAFE

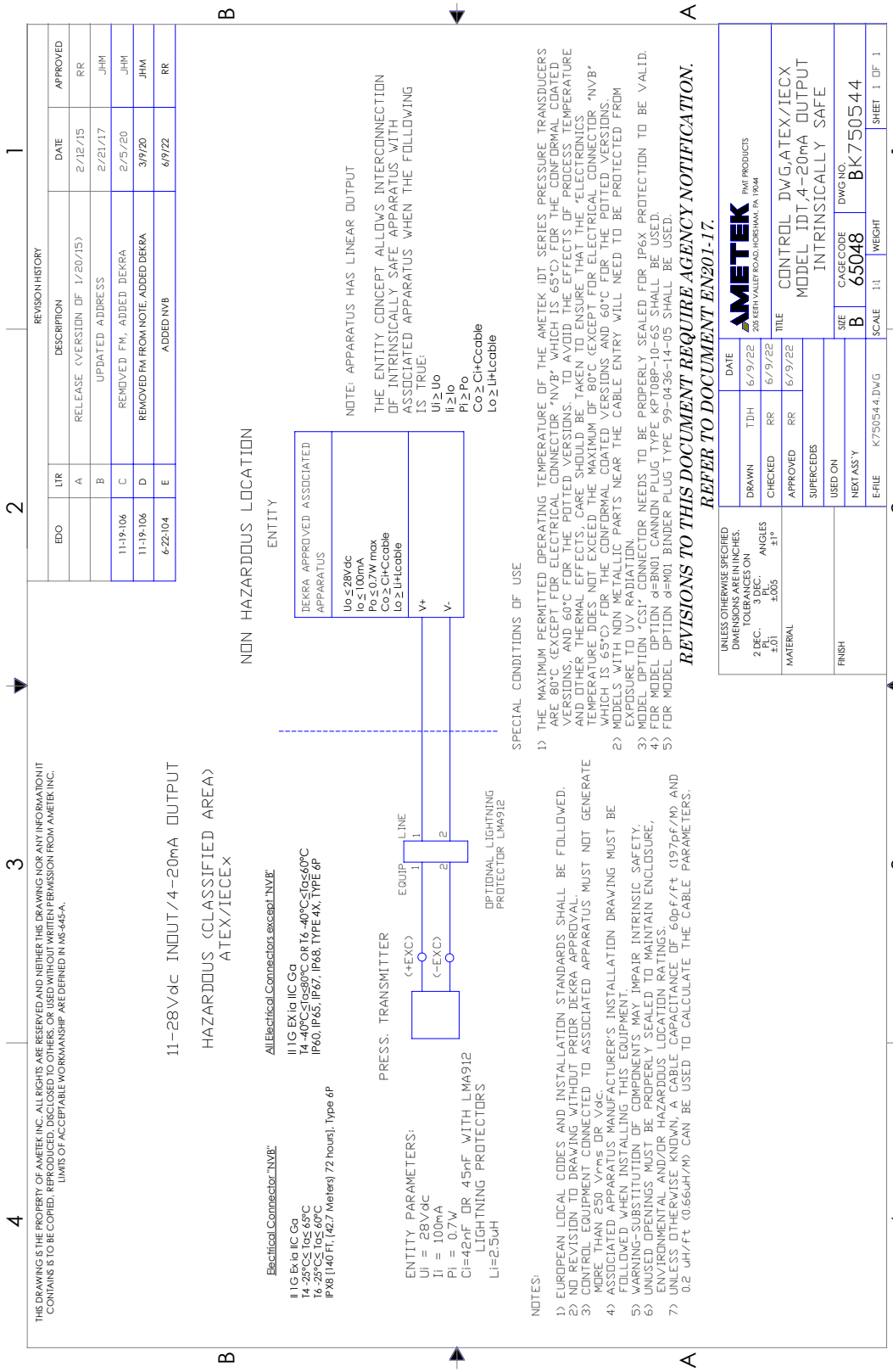
SIZE	CAGE CODE	DWG NO.
B	65048	BK750542

SCALE 1:1 | WEIGHT | SHEET 1 OF 1

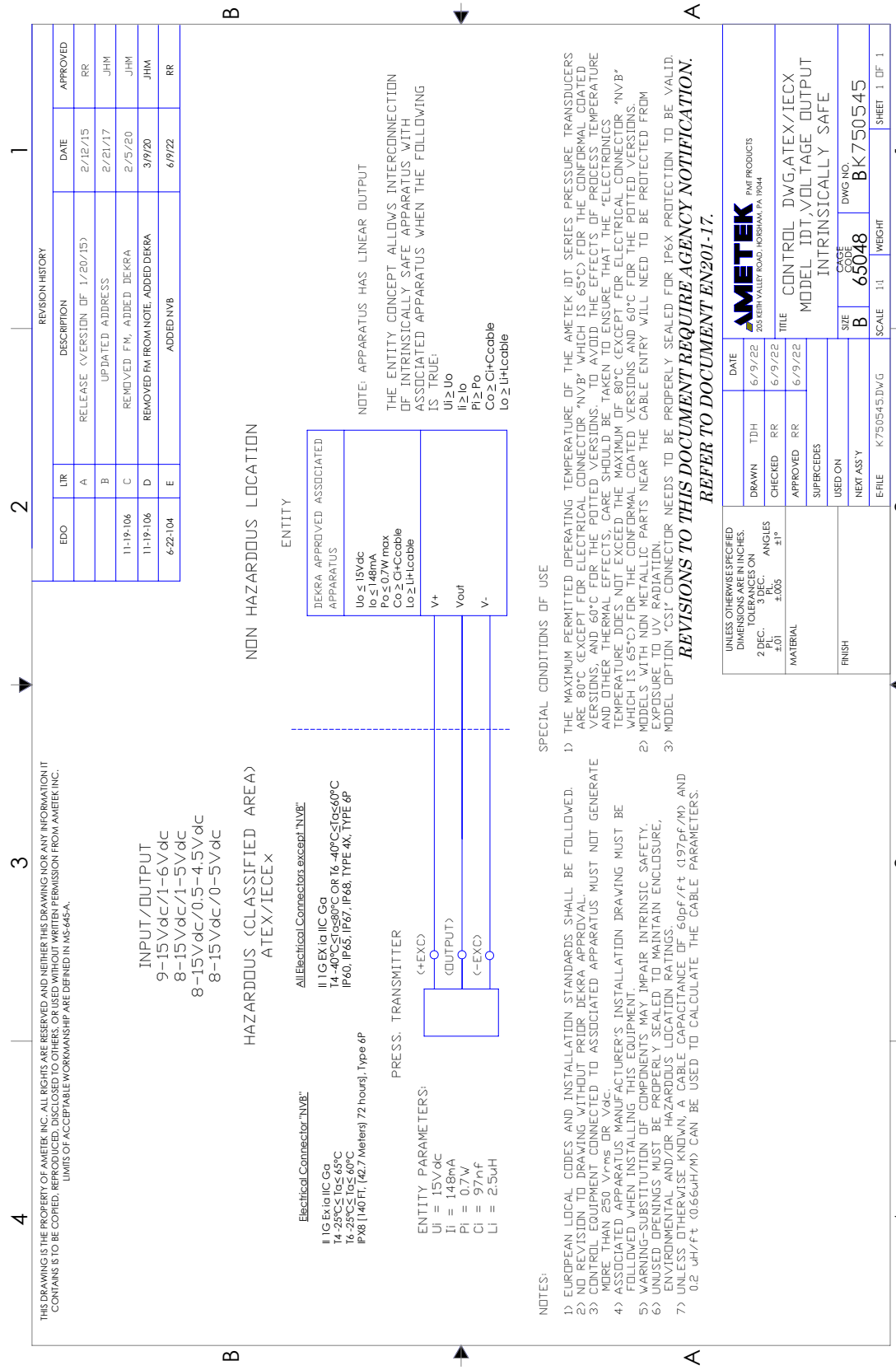
CONTROL DRAWINGS



CONTROL DRAWINGS



CONTROL DRAWINGS



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