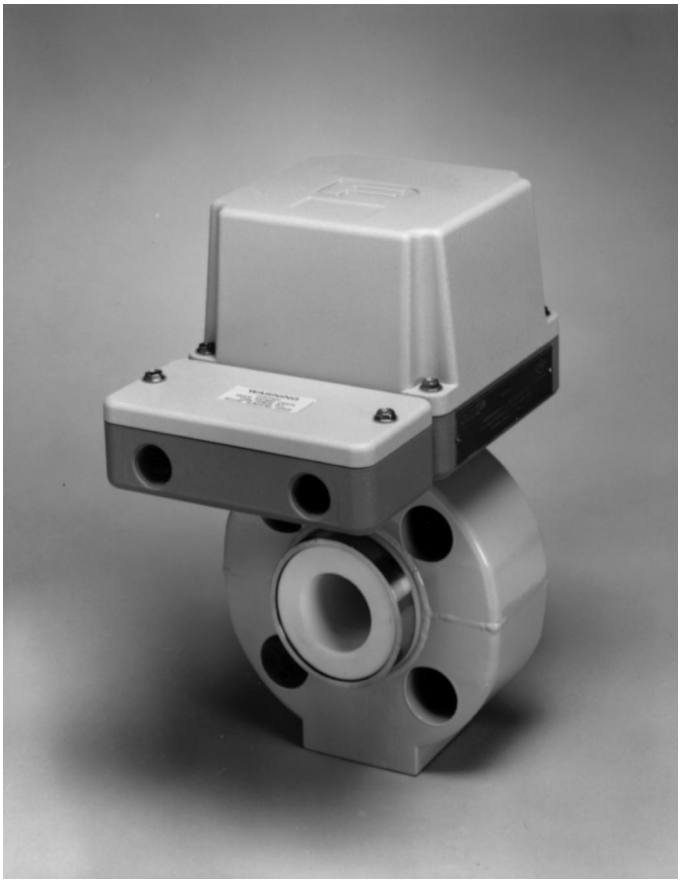
Specification

Magnetic Flowmeters
K-MAG®
Series 10D1476S

- Wafer design body mounts between ANSI Class 150 or 300 flanges, DIN flanges or BS flanges.
- High accuracy: ±0.5% of rate, or ±0.25% of rate with special calibration.
- Handles liquids with conductivities down to 5 µS/cm, except 1/25" size.
- No additional pressure loss when meter tube and pipe diameter are equal.
- Smallest size in the industry; 1/25" (1mm).
- Volumetric flow rate measurement independent of fluid viscosity, density and temperature.
- Separate customer connection box isolates electronics compartment from environment.
- Self-test function to confirm proper operation of the electronics aids in trouble-shooting.
- Internal zero return circuit provides positive zero output signal from external dry contact.



Magnetic Flowmeters
Series 10D1476S
K-MAG®

K-MAG MAGNETIC FLOWMETER
Series 10D1476

The Series 10D1476 Magnetic Flowmeter is a pulsed dc-type volumetric liquid flow rate detector. It utilizes conductive liquid to generate an induced voltage when flowing through a magnetic field. The amplitude of the voltage is directly proportional to the flow rate of the metered liquid. A characterized nonuniform magnetic field design significantly reduces sensitively to flow profile effects.

The meter's magnet coils are powered by a magnet driver unit. This unique method of magnet coil drive, as utilized in the Series 10D1476 provides total zero point stability. The standard electronics is the remote mounted microprocessor-based 50XM1000N converter (see Specification 50XM1000N).

SIZE		CAL-FACTOR	FLOW RANGE: 0 TO VALUE			
			MINIMUM		USABLE MAXIMUM	
MM	INCH	GPM*	GPM	LPM	GPM	LPM
1	1/25	0.161	0.014	0.03	0.18	0.60
3	1/10	1.073	0.096	0.40	1.20	4.00
4	5/32	2.147	0.192	0.80	2.40	8.00
6	1/4	5.367	0.480	2.00	6.00	20.0
10	3/8	12.08	1.08	4.50	13.5	45.0
15	1/2	26.84	2.40	10.0	30.0	100.0
25	1	53.67	4.80	20.0	60.0	200.0
40	1-1/2	161.0	14.4	60.0	180.0	600.0
				m^3/h		m^3/h
50	2	268.4	24.0	6.0	300.0	60.0
80	3	805.1	72.0	18.0	900.0	180.0
100	4	1073.0	96.0	24.0	1200.0	240.0

Flow Velocity (ft/s) = (Operating GPM x 33.3/cal-factor)
Usable Maximum is 1.12 x Cal-factor

TABLE 1.

Engineering Specifications

Minimum Liquid Conductivity: 5µS/cm sizes 1/10 through 4". 20µS/cm for size 1/25".

Electrical Power Requirements: 120 Vac, ±10%, 50/60 Hz ±5%.

Optional Power: 220 Vac, ±10%, 50/60 Hz ±5% or 240 Vac ±10%, 50/60 Hz ±5%, 24 Vdc ±10%. For other power requirement consult factory.

Power Consumption: Less than 30 VA with 50XM1000N converter.

Pressure Limits: At 38°C (100°F)

Sizes 1/25" thru 3" 5.10 Mpa (740 psi)
Size 4" 2.00 Mpa (285 psi)

Vacuum Limits: Full vacuum at 180°C (356°F)

Temperature Limits:

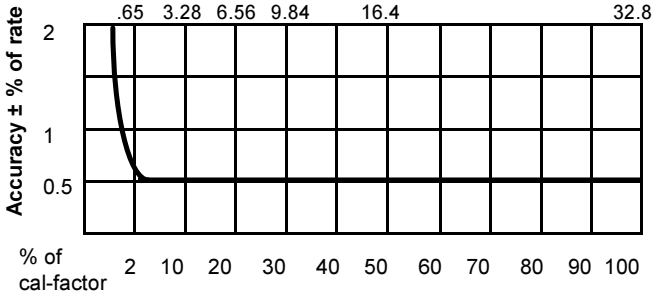
Process Liquid: 180°C (356°F) maximum.
Ambient: -40 to +65°C (-40 to +150°F)

Notes: 1. Differences in temperature between ceramic and provess or cleaning fluid in excess of 50°C (122°F) are to be avoided. Refer to Instruction Bulletin 10D1476 or consult factory for details.

2. Signal converter must be remote mounted when the combined process and ambient temperatures exceed 102°C (248°F) for 50XM1000 converters.

System Accuracy with the 50XM1000 Converter:
Range (span) can be set between 2% and 112% of cal factor.

Size 4 inch magmeter with 50XM1000 signal converter
Cal-Factor: 1055.9 gpm at 33.3 ft/s
Flow Velocity in ft/s



Frequency Output:
Flow >2% of range setting: ±5% of rate
Flow <2% or range setting: ±0.1% of capacity
Current Output:
Frequency Output +0.1% of range setting

Span: Factory set for full scale output signal as specified between minimum and maximum ranges shown in Table 1. can be changed in the field without the need for calibration.

Sizing Suggestion: For best performance, the magnetic flowmeter should be sized so that maximum flowrates are between 10 and 40% of the usable maximum flow ranges shown in Table 1. Velocities for slurries should be high enough to keep the solids in suspension and low enough to minimize wear on the liner.

Ambient Temperature Effect: Less than 0.1% full scale per 10°C (18°F) temperature change.

Standard Output: Analog current is 4-20 mAdc into 0-750 ohm load.

Optional Contact Ouput: Active 24 Vdc scaled frequency or 0-4 kHz.

Isolation: Input and output signals are fully isolated.

Signal Cut-off: Output signal will drop to 0% when the input signal drops 1-10% of span

Radio Frequency Interference Protection: Equivalent to SAMA Class 2 - abc - 0.1% (10 V/m -20 to 1000 MHz).

Zero Return: Provides constant zero output signal during empty pipe and other conditions when false flow signals are possible. Activated by external non-powered contact.

Smoothing: Full scale reponse time 0 to 99 sec. for 50SM1000N converter.

Enclosure Environmental Classification: NEMA 4X (IEC 529 IP65) suitable for indoor or outdoor installation. Optional submergence in water up to 9 meters (30 feet) for up to 48 hours.

Safety Classification: FM listed as non-incendive Cl I, Div. 2, Gps A, B, C &D: Electrodes Int. Safe Cl I, Div. 1, Gps A, B, C &D; Dust-Ignition-proof Cl. II, Div. 1, Gps E, F & G - outdoor hazardous locations.

Electrode: Platinum

Meter Tube: Ceramic 99.5% Alumina.

Housing: Electronics: Die Cast Aluminum
Flowmeter: Welded Cast Steel

Outline & Mounting Dimensions:
See Figures 1 & 2.

Electrical Connections: 1/2" NPT

Paint: Epoxy.

Ordering Information

Specify Model 10D1476 and flowmeter size (usually same as pipe size).
Type and class of flange being used.
Integral or remote mounting converter.
Power source.
Output signal and maximum flow rate.
Liquid or slurry (by name, concentration, and operating temperature and pressure).
Environmental temperature (maximum) and hazardous classification.

TABLE 2. METER WEIGHT

Meter Size		Meter Weight	
mm	inch	lb/(kg)	
1	1/25	9.5	(4.3)
3	1/10	9.5	(4.3)
4	5/32	9.5	(4.3)
6	1/4	9.5	(4.3)
10	3/8	9.5	(4.3)
15	1/2	9.5	(4.3)
25	1	11.5	(5.2)
40	1-1/2	16.5	(7.5)
50	2	12	(5.9)
80	3	21	(9.5)
100	4	32	(14.5)

Model Number Designation for the 10D1476

10D1476 _

Design Level ..... S
Liner Material - Ceramic ..... H
Meter Size - inches (mm)

1/25	(1)	36
1/10	(3)	01
5/32	(4)	02
1/4	(6)	03
3/8	(10)	06
1/2	(15)	07
1	(25)	09
1-1/2	(40)	11
2	(50)	12
3	(80)	14
4	(100)	15

Pressure Rating
- ANSI Class 150 ..... P
- ■ ANSI Class 300 ..... Q
- Not Required X

Electrode Material - Platinum ..... M
Electrode Type - Flush 2
Flange Material
- Flangeless Design w/self adhesive tag 8
- Flangeless Design w/riveted SST tag 9

Safety Classification
- General Purpose ..... A
- FM Approved - Non-incendive for Cl I, Div. 2, Gp A, B, C, D:
  Dust Ignition-proof Cl II, Div. 1, Gp E, F & G:
  Suitable for CL III, Div. 1; Outdoor Hazardous Locations ..... K

Power Requirements
- Remote Converter w/separate model * ..... Y

Enclosure Classification
- NEMA 4X 1
- Accidental Submersion, 33 ft./H_2O/48 h) 5
- Rough Service Design 8

Temperature Range
- Maximum Process 180°C (356°F) 3

Output Signal ..... A
Output Options 1

** See Converter Specifications for output options*

Model Number Designation for the 10D1476

10D1476 — — — — — — — — — — — — — — — — — —

Communication Mode 1
Coil Drive Frequency
- 7-1/2 Hz (60 Hz line frequency), Standard 1
- 15 Hz (60 Hz) 2
- 15 Hz with 24 Vdc Power 3
- 6-1/4 Hz (50 Hz) 4
- 12-1/2 Hz (50 Hz) 5
- 12-1/2 Hz with 24 Vdc Power 7

Additional Options
- None 2

Mounting Hardware Kit
- With Klinger SIL Gaskets C
- With Gylon 350 Gaskets ..... D
- Not Required (specify this when tri-clover adapters are chosen) X

Converter
- Required 1
- Not required (Primary only) 2

■ Not available for size 4" (100mm)

Equipment Description

The magnetic flowmeter shall be of the low frequency electromagnetic induction type and shall produce a DC pulse signal directly proportional and linear to the liquid flowrate. The meter shall be designed for operation on 120 Vac ±10%, 60 Hz ±5% with a power consumption of less than 23 watts. The magnetic flowmeter shall be Bailey-Fischer & Porter Series 10D1476G. Complete zero stability shall be an inherent characteristic of the meter system. There shall be no need for on-site zero adjustments.

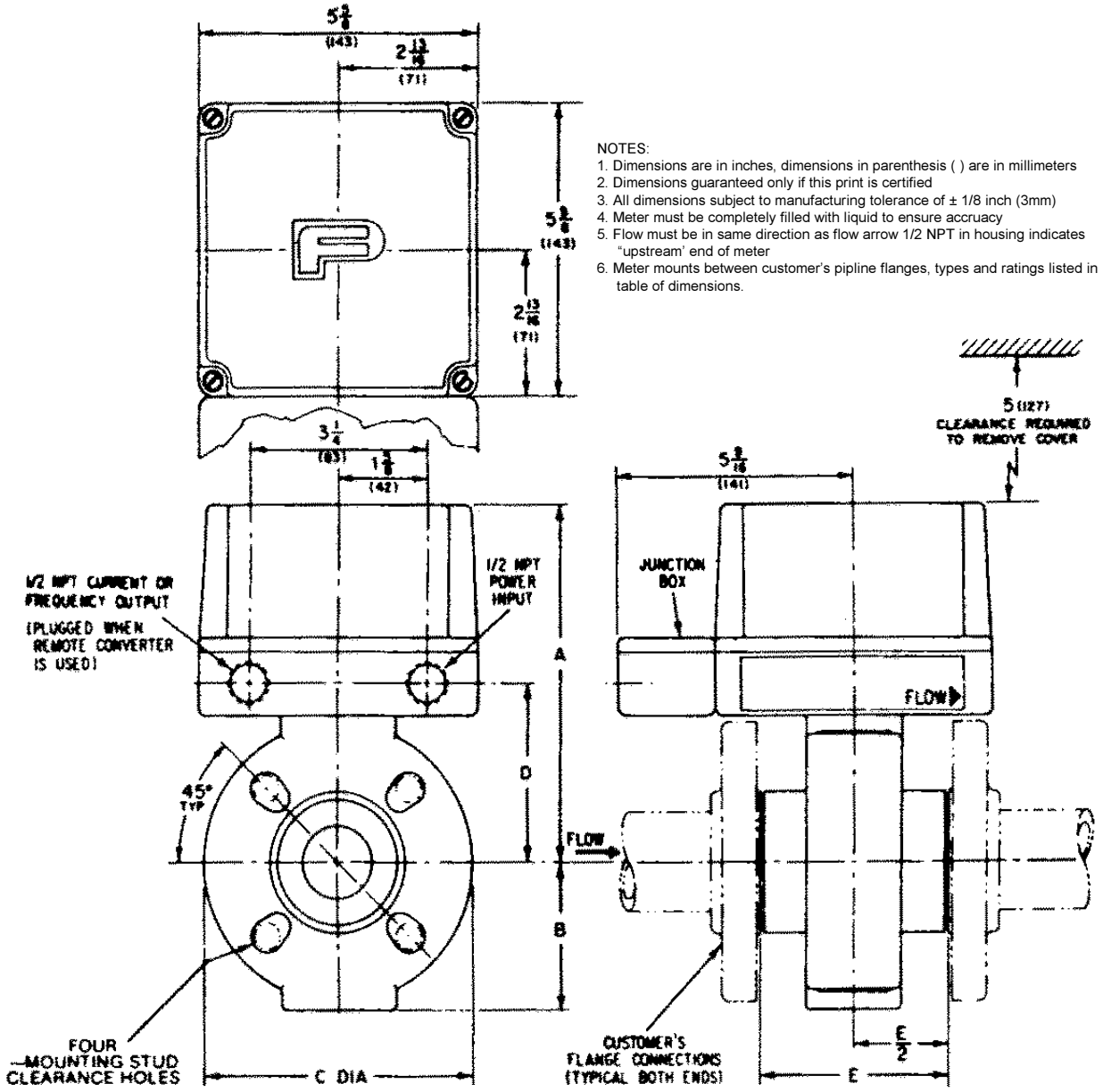
The metering tube shall be ceramic (99.5% alumina). The metering tube and magnet coils shall be housed within a carbon steel housing. The meter body shall be of the flangeless design suitable for mounting between either ANSI Class 150 or ANSI Class 300 flanges. The electrode shall be platinum.

The electronics portion of the magnetic flowmeter shall include both a magnet driver to power the magnet coils and a signal converter. The signal converter shall be integral or remote mounted as required. It shall have a continuously adjustable range circuit between 0.67 and 33 feet per second. There shall not be a need to change circuit components or linkages to change range settings. The converter shall include a simple internal self test function to confirm proper operation of the converter.

The meter shall be hydraulically calibrated in a facility traceable to the National Institute of Science and Technology. The standard accuracy of the magmeter system shall be ±0.5% of rate with the M2 converter.

The meter housing shall be NEMA 4X as standard with an option for accidental submergence in up to 33 feet of water for up to 48 hours.

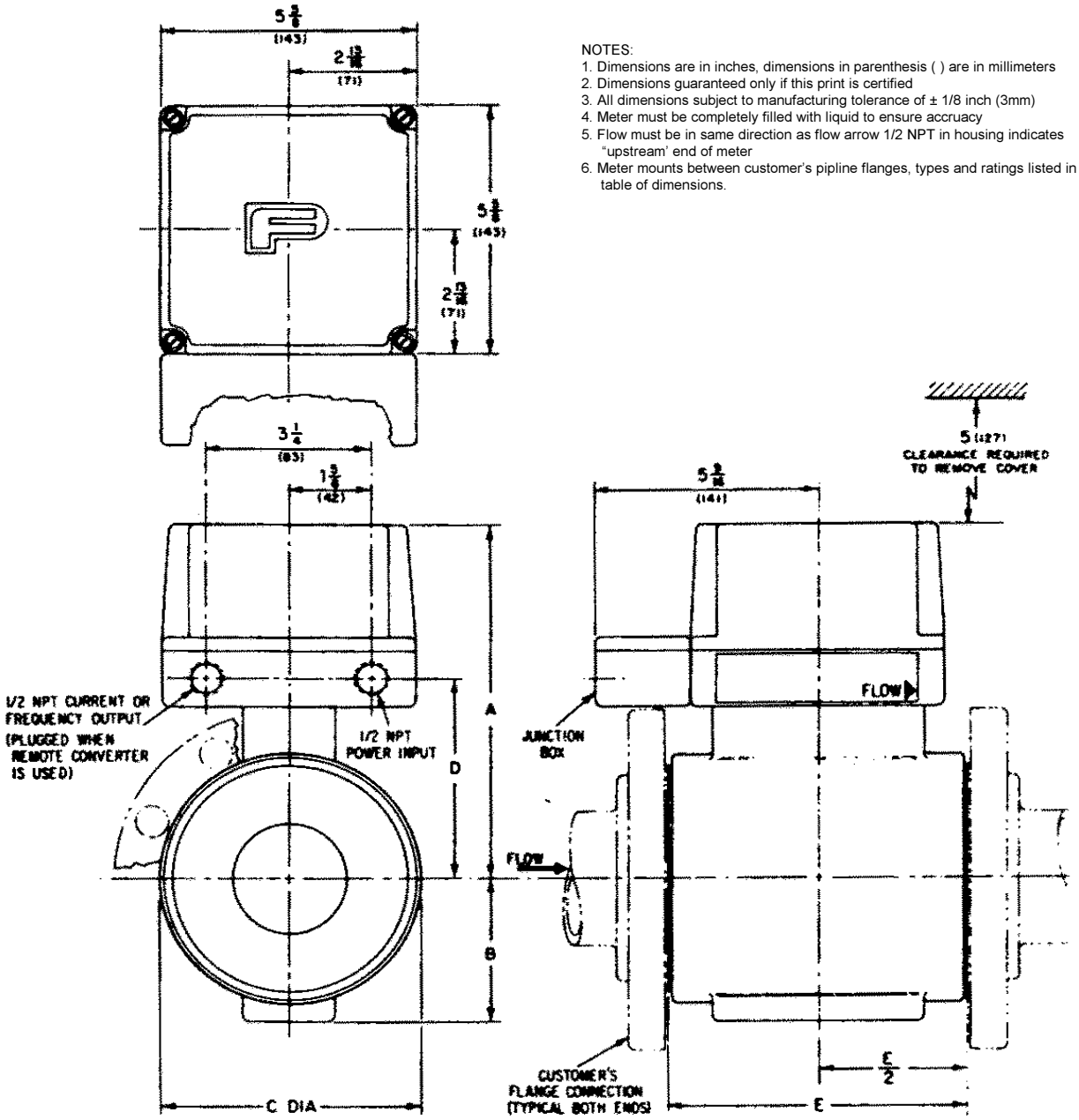
Outline Dimensions



NOTES:
1. Dimensions are in inches, dimensions in parenthesis ( ) are in millimeters
2. Dimensions guaranteed only if this print is certified
3. All dimensions subject to manufacturing tolerance of ± 1/8 inch (3mm)
4. Meter must be completely filled with liquid to ensure accruacy
5. Flow must be in same direction as flow arrow 1/2 NPT in housing indicates "upstream' end of meter
6. Meter mounts between customer's pipline flanges, types and ratings listed in table of dimensions.

METER SIZE		FLANGE SIZE		CUSTOMER FLANGE TYPE AND RATING	A		B		C DIA		D		E	
INCH	MM	INCH	MM		INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
1-1/25	1	1/2	15											
1/10	3	1/2	15		6-1/4	159	2-1/32	52	3-3/4	95	2-9/16	65	2-11/16	68
5/32	4	1/2	15		6-1/4	159	2-1/32	52	3-3/4	95	2-9/16	65	2-11/16	68
1/4	6	1/2	15	ANSI CLASS150 ANSI CLASS 300 BS 10 TBL D,E,F DIN PN 10, 16, 25, 8, 40	6-1/4	159	2-1/32	52	3-3/4	95	2-9/16	65	2-11/16	68
3/8	10	1/2	15		6-1/4	159	2-1/32	52	3-3/4	95	2-9/16	65	2-11/16	68
½	15	1/2	15		6-1/4	159	2-1/32	52	3-3/4	95	2-9/16	65	2-11/16	68
1	25	1	25		6-13/16	173	2-19/32	66	4-7/8	124	3-1/8	79	3-9/16	90
1-1/2	40	1-1/2	40		7-1/2	191	3-9/32	83	6-1/8	156	3-13/16	97	4-1/16	103

Outline Dimensions



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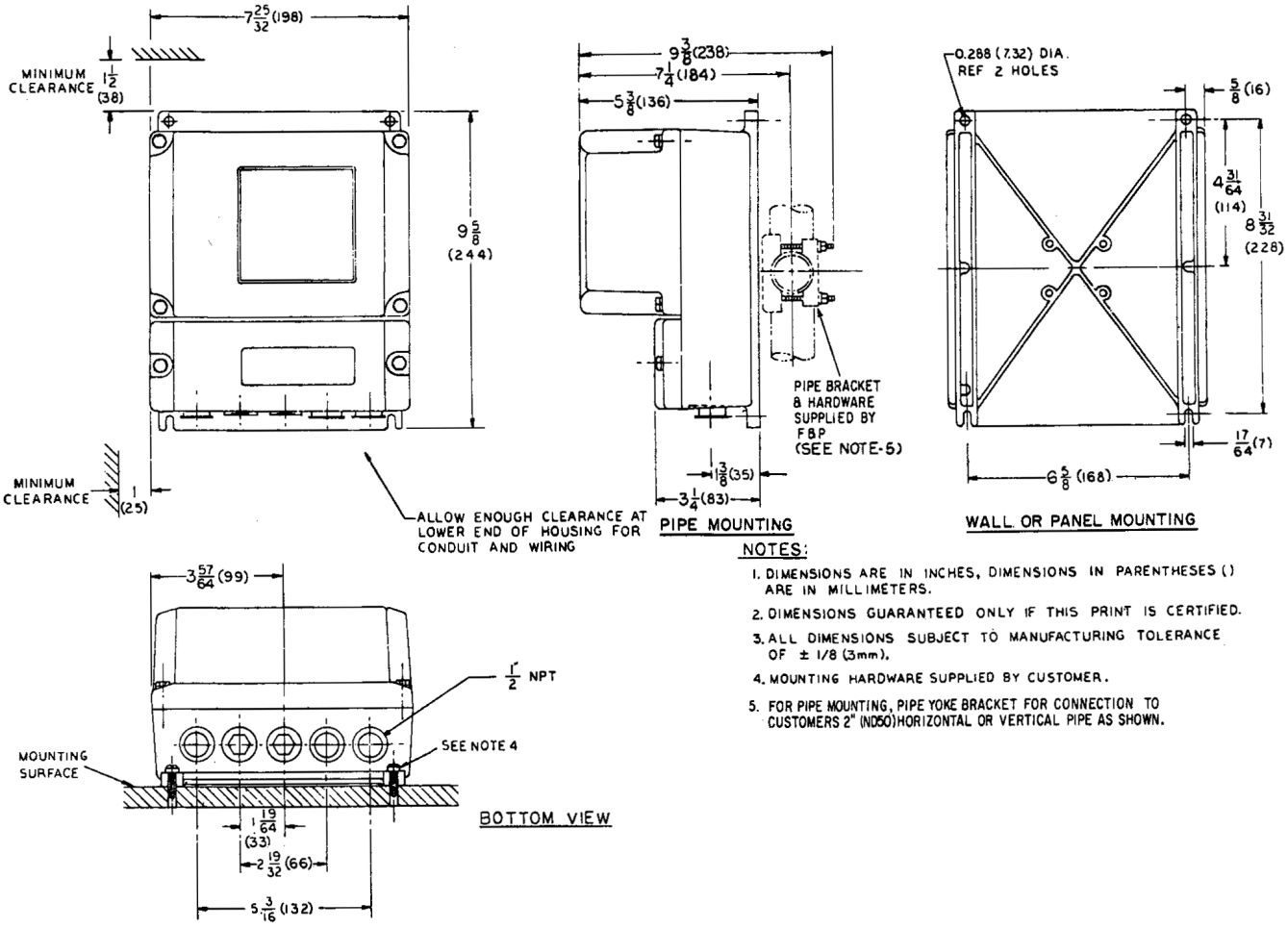
METER AND FLANGE SIZES		CUSTOMER FLANGE TYPE AND RATING	A		B		C DIA		D		E	
INCH	MM		INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
2	50	ANSI CLASS 150 ANSI CLASS 300 BS 10 TBL D,E,F DIN PN 16 & 40	8	203	2-7/16	62	3-7/8	98	4-5/16	110	4-9/16	116
3	80		8-11/16	221	3-3/16	81	5-1/8	130	4-31/32	126	6-5/32	156
4	100	ANSI 150 BS 10 TBL D &E DIN PN 16	9-3/8	236	3-11/16	94	6-3/8	162	5-11/16	144	7-1/2	190

Outline Dimensions of Remote Mounted Signal Converter



NOTES:

1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN PARENTHESES ( ) ARE IN MILLIMETERS.
2. DIMENSIONS GUARANTEED ONLY IF THIS PRINT IS CERTIFIED.
3. ALL DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCE OF ± 1/8 (3mm).
4. MOUNTING HARDWARE SUPPLIED BY CUSTOMER.
5. FOR PIPE MOUNTING, PIPE YOKE BRACKET FOR CONNECTION TO CUSTOMERS 2" (ND50) HORIZONTAL OR VERTICAL PIPE AS SHOWN.

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