

## DESCRIPTION

The Enhanced Model TA2 Thermal Mass Flow Meter provides reliable mass measurement for air and gas flow applications. The powerful, yet easy to use, electronics are contained in a compact flameproof enclosure. The TA2 is available with both insertion probes as well as flow body design for smaller pipe sizes. The TA2 offers excellent performance at an exceptional value.

## FEATURES

- Direct mass flow measurement of air and gases.
- No need for temperature/pressure correction.
- High turndown ratio 100:1.
- Excellent low flow sensitivity.
- Low pressure drop.
- NIST traceable calibrations.
- Flow, temperature and totalized flow available over HART<sup>®</sup>.
- Advanced diagnostics check condition of probe, electronics, and wiring.
- Rotatable plug-in display module provides display of flow rate, temperature, totalized flow, plus diagnostic messages.
- Process temperatures up to +200 °C (+400 °F).
- Pressure rating up to 103 bar (1500 psi) dependent upon process connections.
- Probe can be field replaced.
- Sensor is protected to prevent damage if inserted too far into pipe.
- Optional:
  - retractable probe assembly or valve with compression fitting
  - flow body for 1/2" to 4" pipe sizes
  - flow conditioning plate for flow bodies 1 1/2" and higher.
- Accepts both AC and DC power input.
- Optional pulse output plus second mA output which can be used for temperature or different flow range (passive output only).
- 2-line x 16-character backlit display with four pushbuttons for ease of configuration.
- Calibration for two different gases
- Language selections of English, German, French, Spanish and Russian.
- Rotatable housing.
- Suited for SIL 1 and SIL 2 loops (full FMEDA report available).



## For air and gases



TA2 with sensor with flow body

TA2 with insertion probe

## APPLICATIONS

- Combustion air
- Digester/Bio-gas
- Compressed air/gas
- Vent lines/flare headers
- Natural gas
- Hydrogen piping
- Aeration lines

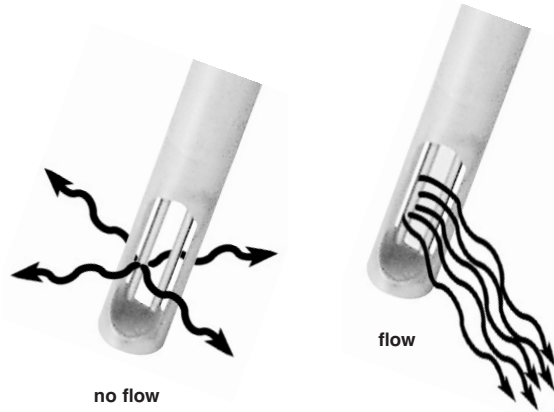
## AGENCY APPROVALS

Agency	Approval
ATEX	II 2 G Ex d IIC T6 Gb, flameproof enclosure II 1/2 G Ex d +ib / d [ib] IIC T4 Ga/Gb
cFMus <sup>①</sup>	
Russian Authorisation Standards <sup>①</sup>	
Other approvals are available, consult factory for more details	

<sup>①</sup> Consult factory for proper model numbers and classifications.

## PRINCIPLE OF OPERATION

Thermatel Model TA2 flow meter measures mass flow by detecting heat dissipation from a heated surface. The sensor contains two mass balanced elements with precision matched RTD's. The reference sensor measures the process temperature (up to +200 °C [+400 °F]); the second RTD measures the temperature of the heated sensor. The power to the heater is varied to maintain a constant temperature difference above the reference temperature. There is an inherent non-linear relationship between power and mass flow. The microprocessor in the TA2 compares the power against the calibration curve and converts the power requirements to the mass flow rate. Temperature is also measured to provide temperature compensation of the mass flow over the operating range of the instrument.



## ADDITIONAL FEATURES

### TEMPERATURE COMPENSATION

Thermal flow technology measures the mass flow rate without the need for pressure and temperature correction as required with most gas flow instruments that measure the flow rate at actual conditions. However, changing temperature will change the properties of the gas which effect convective heat transfer. The Model TA2 measures the temperature and automatically corrects the mass flow measurement for changes in gas properties over the entire temperature range of the instrument.

### TOTALIZER

Two 7-digit flow totalizers, one resettable and one non-resettable are provided. Flow units selectable in user's choice of engineering units. Totalizer data is electronically stored eliminating the need for backup batteries and provides maximum safeguard data in the event of a power interruption. The totalizer can be reset using the display module, HART or via PACTware™.

### SELECTABLE STP CONDITIONS (Normalised conditions)

The TA2 directly measures mass flow of the gas at Standard Temperature and Pressure (STP) conditions. Software permits the user to change STP conditions for their own requirements.

### DIAGNOSTICS

Diagnostics is an important aspect of the TA2. The Enhanced TA2 has additional diagnostics to check the operation and performance of the unit. Diagnostics includes probe status, a test of RTD drift with automatic recalibration, and overall performance.

In order to verify that the calibration and configuration match the original calibration conditions, the user can select a specific signal and compare the TA2 display value against the original calibration certificate.

### AREA COMPENSATION FOR PIPE SIZE

Insertion of the sensor into a pipe reduces the flow area, thus increasing the velocity for a given flow rate. The TA2 automatically compensates the flow measurement based on actual area of the pipe. The user simply enters the size or the area of the pipe, and the instrument automatically compensates the flow measurement for the probe blockage.

### AIR EQUIVALENCY

Using historic air-gas calibration data, an air equivalency calibration can be performed on select gases. Consult your Magnetrol contact for details and flow ranges.

### PROBE INSTALLATION

Probes can be provided with a variety of process connections, including threads, flanges, or installation through a compression fitting. The sensor will fit pipe sizes of 1 1/2" diameter or larger (2"/DN 50 minimum size with thread connection).

The sensor is protected to prevent damage due to "bottoming-out" if inserted too far into a pipe. When using an insertion probe with compression fitting, the user can adjust the position of the sensor in the pipe to obtain the optimum location. Typically, this will be with the bottom of the probe 25 mm (1.0") lower than the center line of the pipe.

### PULSE OUTPUT

The optional pulse output provides a pulse output equivalent to user selected units and multiplier factor. Both active (power from the TA2) or passive (external power supply) connections are provided to match the user's interface. This output can optionally be used as an alarm to indicate that the flow rate is above or below the desired set point.

### FACTORY CALIBRATION AND CONFIGURATION

Each TA2 is calibrated at the factory for the type of gas and the specified flow rate. The instrument is configured for the specific application information. The result is an instrument which can be installed and immediately be placed into operation without field setup.

### PORTABLE DISPLAY MODULE

A portable display module for configuration and diagnosis of multiple units is available (order code **089-5219-002**). This portable module plugs into the electronics in the same manner as the normal display and uses the same software menu. This module permits the user to reduce installation cost by having one display module with keypad for multiple TA2 units.

Usage of the display module requires that the housing cover be removed during use and thus may not be useable in hazardous areas. In these cases, the HART® option should be utilised.



Portable display module

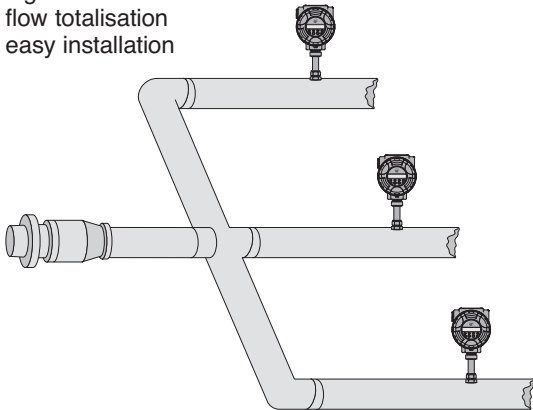
# APPLICATIONS

## COMPRESSED AIR/GASES

Measurement of mass flow in different gas lines to determine in plant usage for internal allocation.

### Advantages:

- direct mass flow
- high turndown rates
- flow totalisation
- easy installation

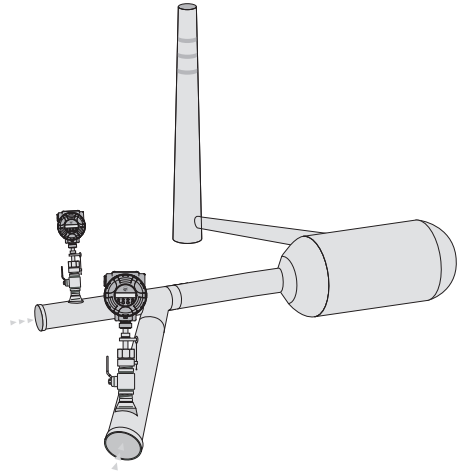


## FLARE LINES

Measurement of flow in different sections of flare line.

### Advantages:

- good low flow sensitivity
- high turndown
- easy removal if cleaning is required

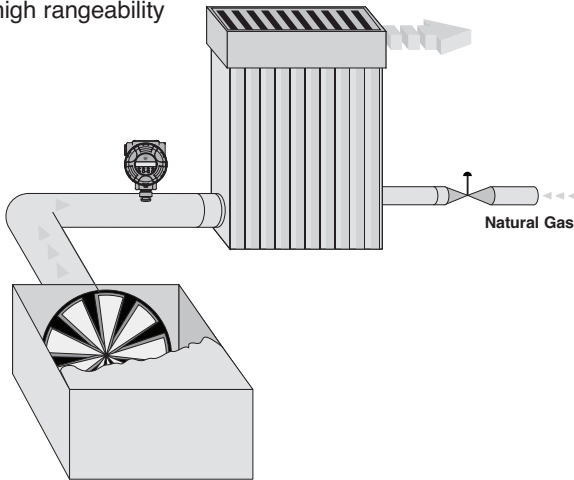


## BOILER COMBUSTION

The TA2 measures the inlet air flow to the boiler. This signal is sent to the DCS where it is used to trim the natural gas flow.

### Advantages:

- mass flow measurement
- repeatable flow signal
- high rangeability

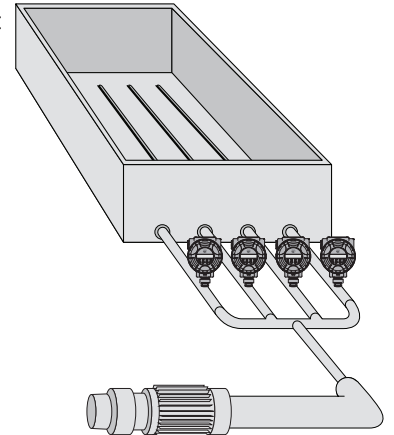


## AERATION AIR FLOW

Measurement and balance of the flow to each section of the aeration basin in waste water treatment plants.

### Advantages:

- low installation cost
- direct mass flow
- high reliability

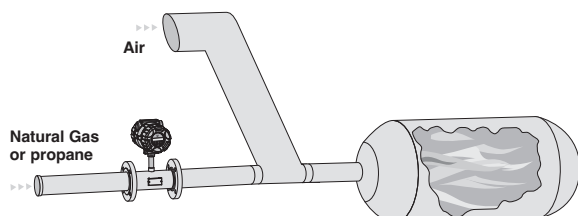


## NATURAL GAS FLOW

The Model TA2 efficiently measures the flow and totalised flow of fuel to furnaces, heaters, or boilers. This data may be used for internal allocation or to report emission rates.

### Advantages:

- direct mass flow in Nm<sup>3</sup>/h
- built in totalizer
- easy in setup and operation

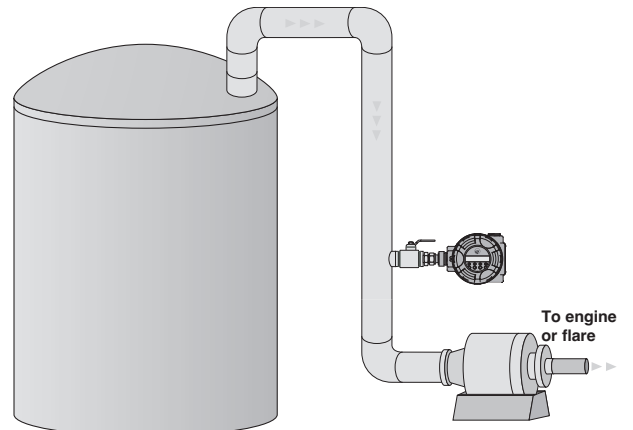


## DIGESTER GAS/BIO-GAS

The off gas from a digester contains a mixture of methane and carbon dioxide saturated with moisture. This is a difficult flow measurement due to low flow rate and low pressures.

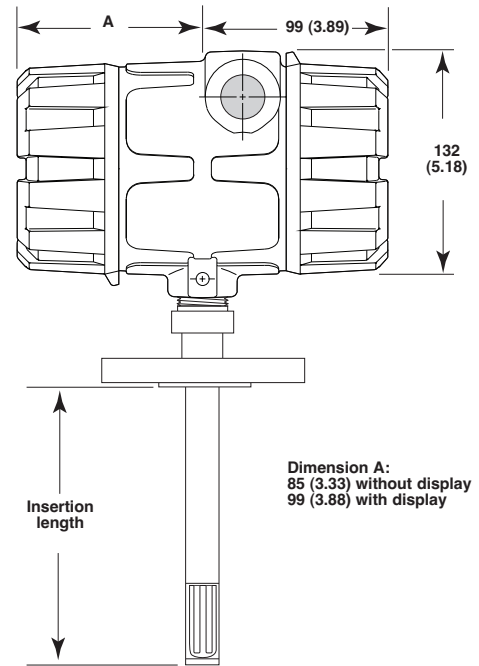
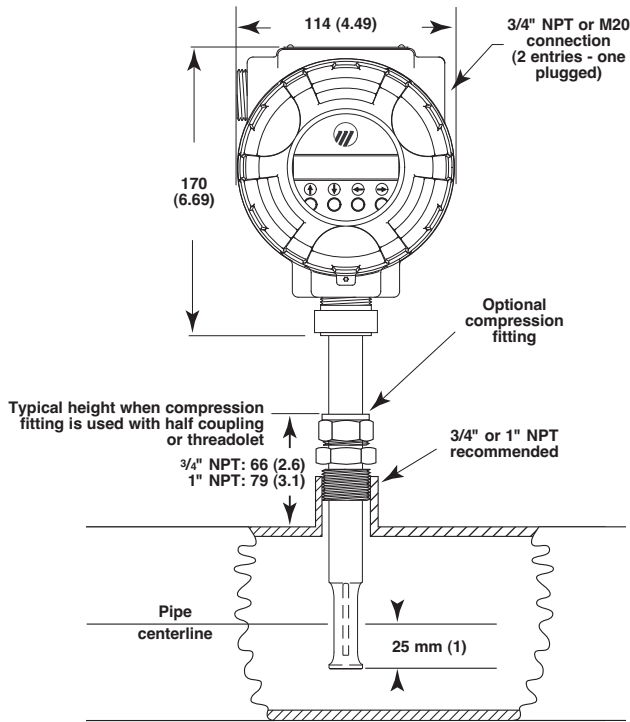
### Advantages:

- excellent low flow sensitivity
- high turndown rates
- provides measurement of flow and totalised flow

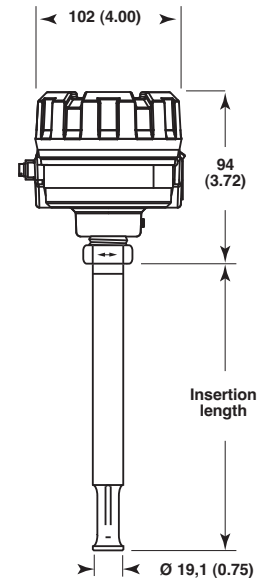
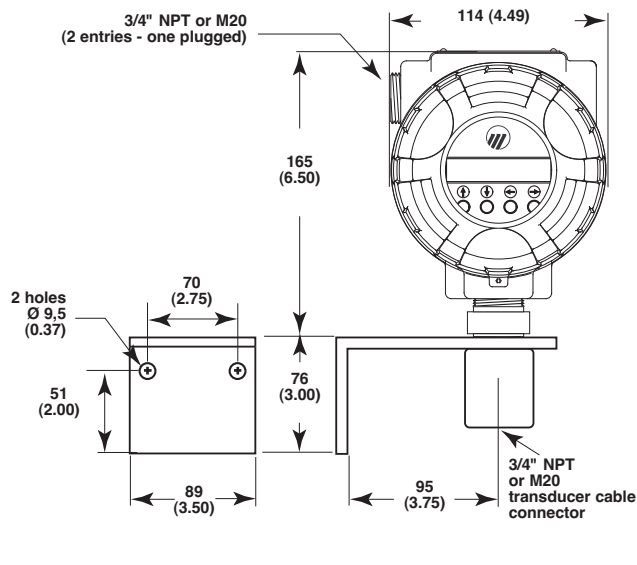


## DIMENSIONS IN mm (inches)

### Integral Mount TA2



### Remote Mount TA2



## SELECTION DATA

### A complete measuring system consists of:

1. Thermatel® TA2 mass flow electronics.  
Thermatel® TA2 mass flow meters require an application report for performing pre-calibration from factory. Ask your Magnetrol® contact for assistance when specifying a device.
2. Thermatel® TA2 mass flow insertion probe or Thermatel® TA2 mass flow sensor with flow body.
3. Connecting cable for remote mount Thermatel® TA2 mass flow meters.
4. Options:
  - MACTek Viator USB HART® interface: order code: **070-3004-002**
  - portable display module – order code: **089-5219-002** (for more details see page 2)
  - retractable probe assembly (RPA) – for order code see page 10
  - valve and compression fitting – order code: **089-5218-001** (for more details see page 10)
  - duct mounting bracket – order code: **089-7247-001** (for more details see page 12).
5. Free of charge: Magnetrol master C.D. with TA2 DTM (PACTware™) - order code: **090-BE59-200** (included in each order).

1. Order code for Thermatel® Enhanced Model TA2 mass flow meter

BASIC MODEL NUMBER

T A 2 - A	Thermatel® TA2 mass flow meter
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OUTPUT

1	4-20 mA with HART® communication
4	4-20 mA with HART® communication, Pulse/Alarm, second mA output

ACCESSORIES

0 0	Blind transmitter (can receive the plug-in display as future option)
B 0	Plug-in digital display and keypad

ACTUAL GAS CALIBRATION  
For TA2 with insertion probe

0	Special. Specify medium separately	5	Methane
1	Air	6	Digester gas
2	Nitrogen	7	Propane
3	Hydrogen	8	Oxygen
4	Natural gas		

For TA2 with sensor with flow body

A	Special. Specify medium separately	F	Methane
B	Air	G	Digester gas
C	Nitrogen	H	Propane
D	Hydrogen	J	Oxygen
E	Natural gas		

AIR EQUIVALENCY CALIBRATION

Air equivalency values are available for various gases, consult factory for gases and flow rates.

9	For TA2 with insertion probe
K	For TA2 with sensor with flow body

MOUNTING/APPROVAL

3	Integral, ATEX II 2 G Ex d IIC T6 Gb, flameproof enclosure
4	Remote <sup>①</sup> , ATEX II 2 G Ex d IIC T6 Gb, flameproof enclosure
E	Integral, ATEX II 1/2 G Ex d +ib / d [ib] IIC T4 Ga/Gb, flameproof enclosure
F	Remote <sup>①</sup> , ATEX II 1/2 G Ex d +ib / d [ib] IIC T4 Ga/Gb, flameproof enclosure

<sup>①</sup> Bracket for electronics and probe housing included  
For weatherproof, consult factory

HOUSING / CABLE ENTRY

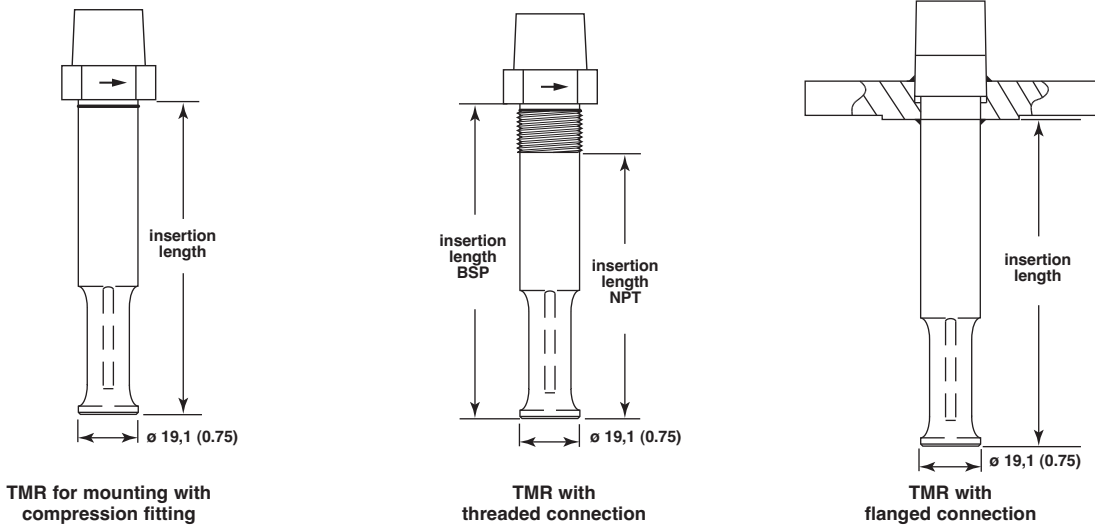
1	IP 66, Cast aluminium, M20 x 1,5 cable entry (2 entries - 1 plugged)
0	IP 66, Cast aluminium, 3/4" NPT cable entry (2 entries - 1 plugged)

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complete order code for Thermatel® Enhanced Model TA2 mass flow meter

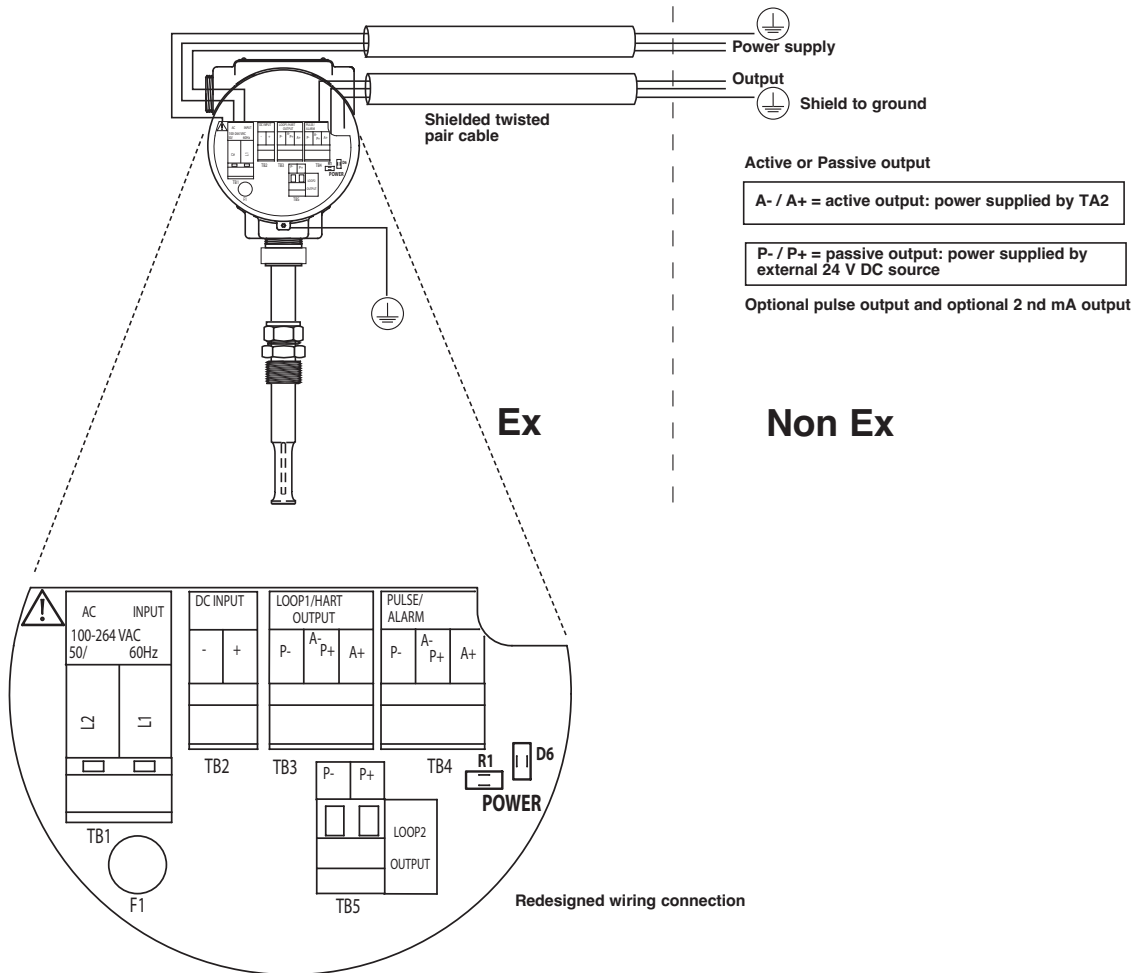
➔ X = product with a specific customer requirement

DIMENSIONS IN mm (inches)



When ordered separately:		
Process Conn. Size	Compression fitting in 316 (1.4401) stainless steel	
	Teflon ferrules Max. 6,90 bar (100 psi)	Stainless steel ferrules Max. 103 bar @ +20 °C (1500 psi @ +70 °F) Max. 94,8 bar @ +200 °C (1375 psi @ +400 °F)
1" NPT	order code: <b>011-4719-009</b>	order code: <b>011-4719-007</b>
3/4" NPT	order code: <b>011-4719-008</b>	order code: <b>011-4719-006</b>

ELECTRICAL WIRING



# SELECTION DATA

## 2. Order code for Thermatel® Enhanced Model TA2 mass flow insertion probe

### BASIC MODEL NUMBER

T M R	Thermatel® TA2 Mass Flow probe - 3/4" diameter
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### MATERIALS OF CONSTRUCTION

A	316/316L (1.4401/14404) stainless steel
B	Hastelloy® C (2.4819) - not available with 316 (1.4401) stainless steel compression fitting

### PROCESS CONNECTION

0 0 A	Designed for use with compression fitting – min. 11 cm insertion length Compression fitting not included
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#### Threaded with 316 (1.4401) stainless steel compression fitting included

0 3 A	3/4" NPT compression fitting with Teflon ferrules (max. 6,90 bar)
0 4 A	3/4" NPT compression fitting with stainless steel ferrules (max. 103 bar @ +20 °C, max. 94,8 bar @ +200 °C)
0 5 A	1" NPT compression fitting with Teflon ferrules (max. 6,90 bar)
0 6 A	1" NPT compression fitting with stainless steel ferrules (max. 103 bar @ +20 °C, max. 94,8 bar @ +200 °C)

#### Threaded

1 1 A	3/4" NPT - default selection in combination with a retractable probe assembly (RPA) see page 10
2 1 A	1" NPT
2 2 A	1" BSP (G 1")

#### ANSI flanges

2 3 A	1"	150 lbs ANSI RF
2 4 A	1"	300 lbs ANSI RF
3 3 A	1 1/2"	150 lbs ANSI RF
3 4 A	1 1/2"	300 lbs ANSI RF
4 3 A	2"	150 lbs ANSI RF
4 4 A	2"	300 lbs ANSI RF

#### EN (DIN) flanges

B B A	DN 25	PN 16/25/40	EN 1092-1 Type A
C B A	DN 40	PN 16/25/40	EN 1092-1 Type A
D A A	DN 50	PN 16	EN 1092-1 Type A
D B A	DN 50	PN 25/40	EN 1092-1 Type A

### INSERTION LENGTH - consider process connections

#### Min probe length

0 0 7	7 cm (2.6") fixed length - for NPT threaded and flanged
0 0 9	9 cm (3.5") fixed length - for BSP threaded

#### Selectable probe length - specify per cm (0.39") increment

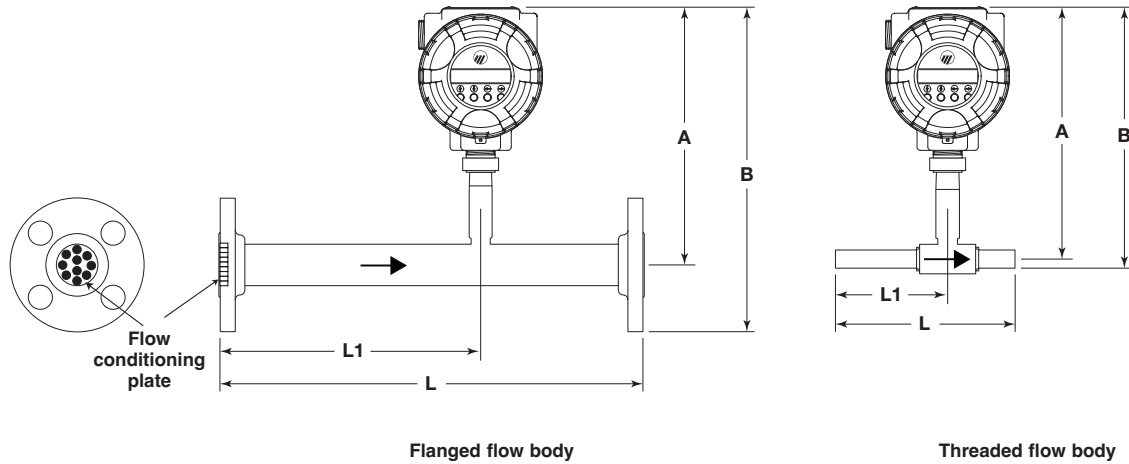
0 0 9	min. 9 cm (3.5")	- for NPT threaded and flanged
0 1 1	min. 11 cm (4.5")	- for BSP threaded and compression fitting
0 2 5	min. 25 cm (10")	- for use with RPA (Retractable Probe Assembly)
2 5 3	max. 253 cm (99.9")	- for all probe connections



**complete order code for Thermatel® Enhanced Model TA2 mass flow insertion probe**

→ X = product with a specific customer requirement

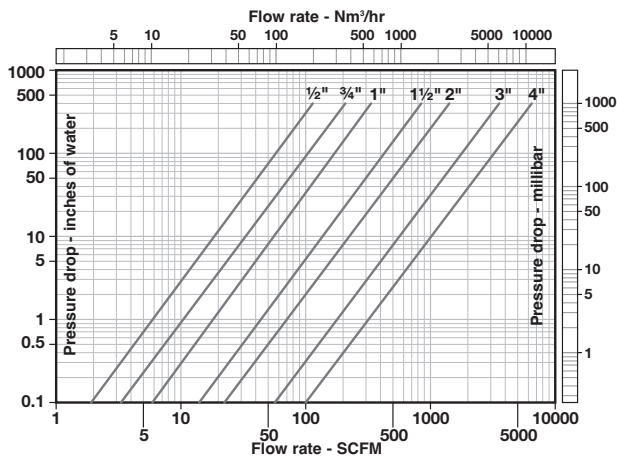
DIMENSIONS IN mm (inches)



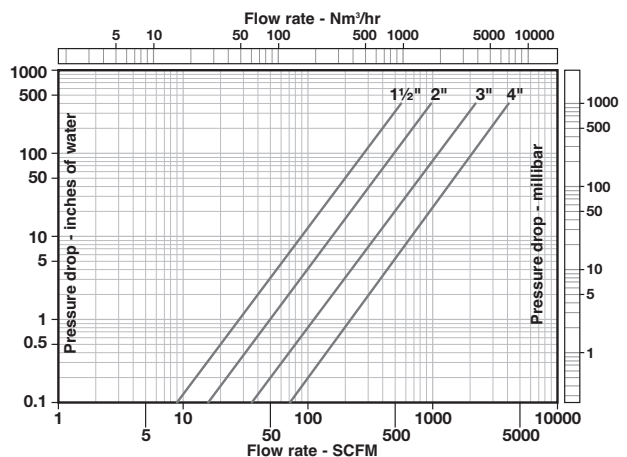
Code	Size	Length (L)		L1		Height to Centerline (A)	Overall Height (B)	
		With Flow Conditioning mm (inches)	Without Flow Conditioning mm (inches)	With Flow Conditioning mm (inches)	Without Flow Conditioning mm (inches)		NPT-F mm (inches)	Flange mm (inches)
0	1/2"	203 (8) <sup>①</sup>	—	127 (5) <sup>①</sup>	—	203 (8.0)	214 (8.4)	248 (9.7)
1	3/4"	286 (11.25) <sup>①</sup>	—	191 (7.5) <sup>①</sup>	—	203 (8.0)	217 (8.5)	251 (9.9)
2	1"	381 (15) <sup>①</sup>	—	254 (10) <sup>①</sup>	—	203 (8.0)	220 (8.7)	257 (10.1)
3	1 1/2"	495 (19.5)	191 (7.5)	305 (12)	95 (3.75)	211 (8.3)	235 (9.3)	274 (10.8)
4	2"	660 (26)	191 (7.5)	406 (16)	95 (3.75)	241 (9.5)	272 (10.7)	318 (12.5)
5	3"	991 (39)	254 (10)	610 (24)	127 (5)	241 (9.5)	N/A	337 (13.3)
6	4"	1321 (52)	305 (12)	914 (36)	152 (6)	241 (9.5)	N/A	356 (14.0)

<sup>①</sup> The upstream length in pipe sizes < 1 1/2" dia. is sufficient to create the flow conditioning effect without need for a flow conditioning plate.

Pressure drop



Pressure drop with conditioning plate



Pressure drop is based on air at +20 °C (+70 °F) and 1 atmosphere (density = 1,2 kg/m³ or 0.075 lb/ft³). For other gases, pressure or temperatures, estimate pressure drop by multiplying value from chart by actual density in kg/m³ (at operating conditions) divided by 1,2.



# SELECTION DATA

## 2. Order code for Thematel® Enhanced Model TA2 sensor with flow body

### BASIC MODEL NUMBER

T F T	Thematel® TA2 sensor with mass flow body
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### MATERIALS OF CONSTRUCTION

A	316/316L (1.4401/1.4404) stainless steel body and sensor
1	Carbon steel body / stainless steel sensor

### THREADED FLOW BODY - ø size and connection

0	1	1/2"	NPT
1	1	3/4"	NPT
2	1	1"	NPT
3	1	1 1/2"	NPT
4	1	2"	NPT

### FLANGED FLOW BODY - ø size and connection

0	3	1/2"	150 lbs ANSI RF
1	3	3/4"	150 lbs ANSI RF
2	3	1"	150 lbs ANSI RF
3	3	1 1/2"	150 lbs ANSI RF
4	3	2"	150 lbs ANSI RF
5	3	3"	150 lbs ANSI RF
6	3	4"	150 lbs ANSI RF

### FLOW CONDITIONING PLATE

A	None
B	Stainless steel flow conditioning plate - For flow body sizes ≥ 1 1/2"

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F
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**complete order code for Thematel® Enhanced Model TA2 sensor with flow body**

→ X = product with a specific customer requirement

### Flow body sizing

The following table is a general guide on flow sizing. Contact your Magnetrol contact for specific application information.

Code	Size	Max flow rate					
		Air, N <sub>2</sub> , O <sub>2</sub>	Natural Gas, Methane	Digester Gas	Propane	Hydrogen	CO <sub>2</sub> , Argon
0	1/2"	145 Nm <sup>3</sup> /h 85 SCFM	100 Nm <sup>3</sup> /h 60 SCFM	100 Nm <sup>3</sup> /h 60 SCFM	50 Nm <sup>3</sup> /h 30 SCFM	35 Nm <sup>3</sup> /h 20 SCFM	140 Nm <sup>3</sup> /h 80 SCFM
1	3/4"	275 Nm <sup>3</sup> /h 160 SCFM	195 Nm <sup>3</sup> /h 115 SCFM	195 Nm <sup>3</sup> /h 115 SCFM	95 Nm <sup>3</sup> /h 55 SCFM	70 Nm <sup>3</sup> /h 40 SCFM	250 Nm <sup>3</sup> /h 150 SCFM
2	1"	460 Nm <sup>3</sup> /h 270 SCFM	320 Nm <sup>3</sup> /h 190 SCFM	320 Nm <sup>3</sup> /h 190 SCFM	160 Nm <sup>3</sup> /h 95 SCFM	115 Nm <sup>3</sup> /h 65 SCFM	435 Nm <sup>3</sup> /h 255 SCFM
3	1 1/2"	1120 Nm <sup>3</sup> /h 660 SCFM	780 Nm <sup>3</sup> /h 460 SCFM	780 Nm <sup>3</sup> /h 460 SCFM	390 Nm <sup>3</sup> /h 230 SCFM	275 Nm <sup>3</sup> /h 160 SCFM	1060 Nm <sup>3</sup> /h 625 SCFM
4	2"	1640 Nm <sup>3</sup> /h 965 SCFM	1160 Nm <sup>3</sup> /h 680 SCFM	1160 Nm <sup>3</sup> /h 680 SCFM	600 Nm <sup>3</sup> /h 350 SCFM	450 Nm <sup>3</sup> /h 265 SCFM	1560 Nm <sup>3</sup> /h 920 SCFM
5	3"	4580 Nm <sup>3</sup> /h 2700 SCFM	3210 Nm <sup>3</sup> /h 1890 SCFM	3210 Nm <sup>3</sup> /h 1890 SCFM	1170 Nm <sup>3</sup> /h 690 SCFM	1230 Nm <sup>3</sup> /h 730 SCFM	4360 Nm <sup>3</sup> /h 2565 SCFM
6	4"	8260 Nm <sup>3</sup> /h 4860 SCFM	5780 Nm <sup>3</sup> /h 3400 SCFM	5780 Nm <sup>3</sup> /h 3400 SCFM	2090 Nm <sup>3</sup> /h 1230 SCFM	2225 Nm <sup>3</sup> /h 1310 SCFM	7845 Nm <sup>3</sup> /h 4620 SCFM

# SELECTION DATA

## 3. Order code for connecting cable remote mount ThermoTel® Enhanced Model TA2 mass flow meter

0 3 7 - 3 3 1 4	Connecting cable for non-hazardous area - 8 wire shielded instrument cable (max 60 m)
0 3 7 - 3 3 2 0	Connecting cable for non-hazardous area - 10 wire shielded instrument cable (max 150 m)
0 0 9 - 8 2 7 0	Connecting cable for ATEX flameproof enclosure - 8 wire shielded instrument cable (max 150 m)

CABLE LENGTH - specify per m (3.28 ft) increment

0 0 3	min 3 m (9.84 ft) length
0 6 0	max 60 m (196 ft) length (for 037-3314-xxx cable)
1 5 0	max 150 m (492 ft) length (for 037-3320-xxx and 009-8270-xxx cable)

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complete order code for connecting cable

## 4. Order code for retractable probe assembly (dimensions see back cover)

BASIC MODEL NUMBER

R P A	Retractable probe assembly
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DESIGN TYPE

E	Low pressure - up to 5,5 bar (80 psi)
F	High pressure - up to 300 lbs service

MATERIALS OF CONSTRUCTION

1	Carbon steel with 316 SST (1.4401) seal gland
4	316 SST (1.4401)

PROCESS CONNECTION

0	1 1/2" NPT	- not available for RPA-E1
1	1 1/2" - 150 lbs RF flange	
2	1 1/2" - 300 lbs RF flange	

BALL VALVE

0	No ball valve supplied	
1	Carbon steel ball valve	- select material code 1
2	Stainless steel ball valve	- select material code 4

PROBE LENGTH

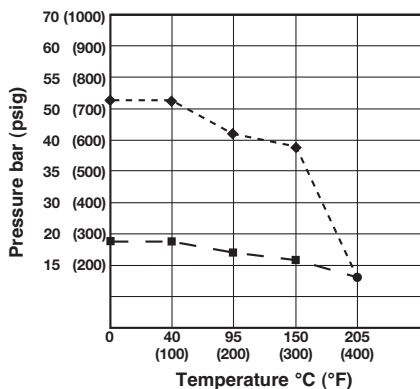
0 2 5	min 25 cm (9.84")
1 8 0	max 180 cm (70.87")

R	P	A					
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complete order code for retractable probe assembly

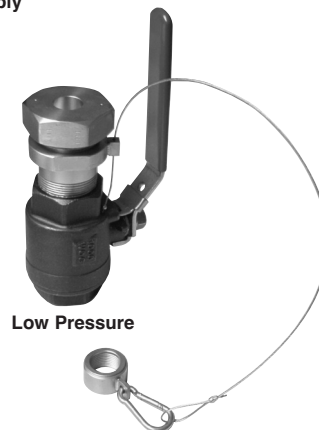
X = product with a specific customer requirement

High Pressure RPA



■ 150 lb. flange      ◆ Threaded or 300 lb. flange

Retractable probe assembly



Order code: 089-5218-001  
1" NPT ball valve in 316 SST  
with compression fitting (TFE ferrules)

# TRANSMITTER SPECIFICATIONS

## ELECTRONICS SPECIFICATIONS

Description		Specification
Power supply		11,6 – 30 V DC (11,6 V DC for integral electronics only) 100 – 264 V AC, 50-60 Hz
Power consumption		DC = 6,8 watts, AC = 7 VA typical, 11,9 VA maximum
Analog Output	Active	4-20 mA isolated (3,8 – 20,5 mA useable as per NAMUR NE 43) - max 1000 $\Omega$ loop resistance
	Passive	4-20 mA isolated (3,8 – 20,5 mA useable as per NAMUR NE 43) - max loop resistance depending power supply
Resolution	Analog	0,01 mA
	Display	0,01 Nm/s
Calibration		Pre-calibrated from factory - NIST traceable
Damping		Adjustable 0-15 s time constant
Diagnostic Alarm		Adjustable 3,6 mA, 22 mA or Hold last output
User Interface		4-button keypad and/or HART® communicator
Pulse Output		Active connection – 24 V DC Power, 150 mA Passive connection – 2,5 to 60 V DC Power, 1,5 A
Alarm Output		Active connection – 24 V DC Power, 100 mA Passive connection – 2,5 to 60 V DC Power, 1 A
Display		2-line x 16-character backlit LCD
Displayed values		Flow (eg. Nm <sup>3</sup> /h, NI/h) and/or mass flow (eg. kg/h) and/or temperature (°C/°F) and/or loop current (mA) and/or totalized flow (eg. Nm <sup>3</sup> /h, NI/h)
Menu Language		English, French, German, Spanish, Russian
Housing Material		IP 66, Aluminium A 356 (< 0,2 % copper) dual compartment
Approvals		ATEX II 2 G Ex d IIC T6 Gb, flameproof enclosure ATEX II 1/2 G Ex d +ib / d [ib] IIC T4 Ga/Gb, flameproof enclosure Other approvals are available, consult factory for more details
SIL (Safety Integrity Level)		Functional safety to SIL1 as 1oo1 / SIL2 as 1oo2 in accordance to IEC 61508 – SFF: 88,4 %. Full FMEDA report and declaration sheets available at request
Shock/Vibration Class		ANSI/ISA-S71.03 Class SA1 (Shock), ANSI/ISA-S71.03 Class VC2 (Vibration)
Net weight		3,3 kg (7.3 lbs) – electronics with 25 cm threaded probe

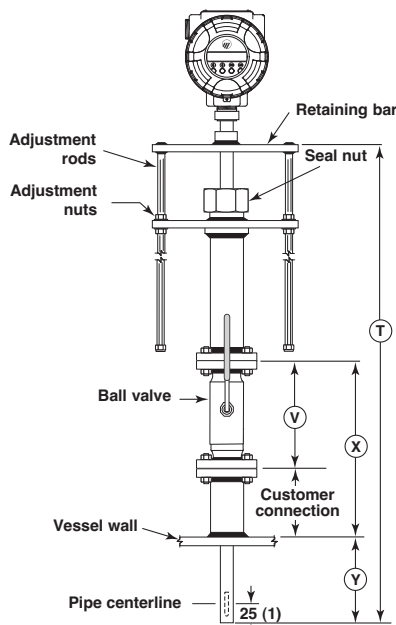
## PERFORMANCE

Description		Specification
Turn down ratio		100:1 typical (depending upon calibration)
Flow range	Max	0,05 - 250 Nm/s (10 - 50,000 SFPM) reference of air at STP conditions
	Min	0,05 - 2,5 Nm/s (10 - 500 SFPM) reference of air at STP conditions
Linearity		Included in flow accuracy
Accuracy	Flow	± 1 % of reading + 0,5 % of calibrated full scale
	Temperature	± 1 °C (2 °F)
Repeatability		± 0,5 % of reading
Response time		Time constant of 1 to 2 s
Remote electronics		Max 60 m or 150 m, depending on cable used - for longer lengths, consult factory
Ambient temperature		-40 °C to +80 °C (-40 °F to +176 °F) (ATEX up to +55 °C (+130 °F)) Display: -30 °C to +80 °C (-22 °F to +176 °F)
Operating temperature effect		± 0,04 % per °C
Humidity		0-99 %, non-condensing
Electromagnetic Compatibility		Meets CE requirements (EN 61326: 1997 + A1 + A2)

## PROBE SPECIFICATIONS

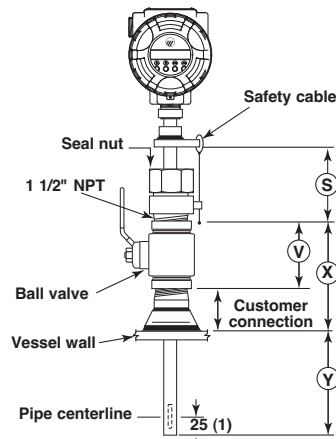
Description	Insertion probe	Sensor with flow body
Materials – wetted parts	316/316L (1.4401/1.4404) or Hastelloy® C (2.4819)	Sensor: 316/316L (1.4401/1.4404) Flow body: stainless steel or carbon steel
Mounting	Threaded, compression fitting, ANSI-EN (DIN) flanged or with Retractable probe assembly	Threaded or flanged
Probe length	From 7 cm up to 253 cm (2.6" up to 99.9")	Flow body sizes from 1/2" up to 4"
Max process temperature	Integral electronics: -45 °C up to +120 °C (-50 °F up to +250 °F) -45 °C up to +200 °C (-50 °F up to +400 °F) with 100 mm (4") longer probe serving as heat extension between the electronics and the compression fitting Remote electronics: -45 °C up to +200 °C (-50 °F up to +400 °F)	
Max pressure rating	103 bar @ +20 °C (1500 psi @ +70 °F) 94,8 bar @ +200 °C (1375 psi @ +400 °F) – direct insertion 75,9 bar @ +200 °C (1100 psi @ +400 °F) – with flow body	

DIMENSIONS IN mm (inches)



**Model RPA-F412-XXX**

minimum probe length:  $T = 2 (X + Y)$



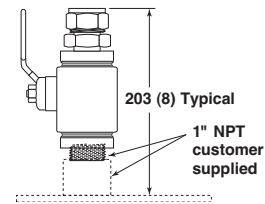
**Model RPA-E402-XXX**

minimum probe length:  $S + X + Y$

S Dimension	
Threaded connection	102 (4.00)
Flanged connection	127 (5.00)

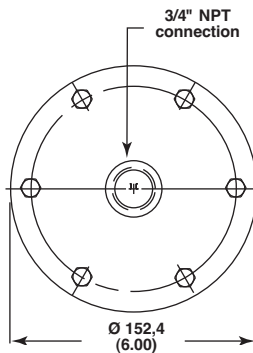
Ball Valve Dimensions*	
Size	V
1 1/2" NPT	112 (4.4)
1 1/2" 150# flange	165 (6.5)
1 1/2" 300# flange	191 (7.5)

\*Dimension of ball valve if supplied by the factory.



1" NPT ball valve in 316 SST with compression fitting (TFE ferrules)  
order code: **089-5218-001**

**Duct mounting bracket**



Duct mounting bracket with 3/4" NPT  
order code **089-7247-001** or  
**089-7247-002** (includes mounting hardware)

**QUALITY ASSURANCE - ISO 9001:2008**



THE QUALITY ASSURANCE SYSTEM IN PLACE AT MAGNETROL GUARANTEES THE HIGHEST LEVEL OF QUALITY DURING THE DESIGN, THE CONSTRUCTION AND THE SERVICE OF CONTROLS. OUR QUALITY ASSURANCE SYSTEM IS APPROVED AND CERTIFIED TO ISO 9001:2008 AND OUR TOTAL COMPANY IS COMMITTED TO PROVIDING FULL CUSTOMER SATISFACTION BOTH IN QUALITY PRODUCTS AND QUALITY SERVICE.

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UNDER RESERVE OF MODIFICATIONS

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