



Condition Sensing Devices Specifications

Bulletin Numbers 836P, 837T, 837RTD, 839E, 840E

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Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

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Solid-state Pressure Sensors

Bulletin 836P



- Microprocessor-based sensor with no moving parts for longer life and reduced downtime
- Corrosion-resistant 316L stainless steel housing features an IP67 enclosure rating to withstand harsh industrial conditions
- Operating pressure range of -15...+8000 psi (gauge) for display
- Operating pressure range of -15...+10,000 psi (gauge) for non-display
- Four-digit 14-segment digital display
- Independently programmable dual PNP N.O./N.C. outputs or 4...20 mA analog output with single PNP N.O./N.C. output
- Stainless steel sensing element
- Charting capability
- IO-Link 1.1

Applications


- Automotive industry
- Machine tool
- Injection molding machines
- Hydraulics
- Pneumatics
- Food and beverage
- Pharmaceuticals

Specifications

Attribute	Value
Certifications	cULus, safety (for example, Electr.safety overpressure, ...), USA, Canada CE conformity - Pressure equipment directive 97/23/EC EMC Directive 2004/108/EC/, EN 61326 emission (group 1, class B) and interference immunity (industrial application) RoHS conformity - 2011/65/EU
Environment Operating Conditions	
Ambient temperature range	-20...+80 °C (-4...+176 °F)
Media	-20...+85 °C (-4...+185 °F)
Storage temperature	-20...+80 °C (-4...+176 °F)
Vibration resistance	10 g (0.35 oz) (IEC 60068-2-6, under resonance)
Shock resistance	50 g (1.76 oz) (IEC 60068-2-27, mechanical)
Humidity	45...75% r. h.
Ingress protection	IP65 and IP67. The stated ingress protection (per IEC 60529) only applies when plugged in using mating connectors that have the appropriate ingress protection.
Overpressure limit	2 times. 1.7 times for the relative pressure measuring ranges 16 psi, 1000 psi, and 1500 psi
Electrical	
Power supply	15...35 V DC
Current consumption	Switching outputs with: Analog signal 4...20 mA; 70 mA; Without analog signal: 45 mA
Total current consumption	With IO-Link: Max 450 mA including switching current
Outputs	
Output type	2 x PNP, 1 PNP, and 4...20 mA analog
Zero offset adjustment	Maximum 3% of span
Output thresholds	OUT 1 and OUT 2 are individually adjustable
Output modes	Selectable - Normally open, normally closed, window, hysteresis
Output voltage	(Power supply -1V)
Output current	With IO-Link: OUT1 max 100 mA, OUT2 max 250 mA
Load	Analog signal 4...20 mA: ≤ 0.5 kΩ
Service life	100 million switching cycles
Settling time	Analog signal: 3 ms; Switching output: 20 ms with IO-Link
Accuracy Data	
Analog signal	≤ ±1.0% of span Including non-linearity, hysteresis, zero offset, and end value deviation (corresponds to measured error per IEC 61298-2). Calibrated in vertical mounting position with process connection facing downwards.
Non-linearity	≤ ±0.5% of span (BFSL, IEC 61298-2)
Long-term drift	≤ ±0.2% of span (IEC 61298-2)
Switching output	Switch point accuracy: ≤ ±1% of span; Adjustment accuracy: ≤ ±0.5% of span
Display	≤ ±1.0% of span ± 1 digit
Temperature error in rate temperature range	Typical: ≤ ±1.0% of span; Max: ≤ ±2.5% of span
Temperature coefficients in rated temperature range	Mean TC zero point: ≤ ±0.2% of span/10 K (typical); Mean TC span: ≤ ±0.1% of span/10 K (typical)

Attribute	Value
Reference Operation Conditions	
Operating temperature	15...25 °C (59...77 °F)
Atmospheric pressure	950...1050 mbar (13.78...15.23 psi)
Humidity	45...75% r. h.
Nominal position	Process connection lower mount (LM)
Electrical Safety	
Short-circuit protection	4...20 mA, Out 1/Out 2 vs. V-
Reverse polarity protection	V+ vs. V-
Insulation voltage	500V DC
Overvoltage protection	40V DC
Material	
Wetted Parts	
Process connection	Stainless steel 316 L
Pressure sensing elements	< 9.8 bar (142 psi): Stainless steel 316 L ≥ 9.8 bar (42 psi): Stainless steel 13-8 PH
Non-wetted Parts	
Housing	Stainless steel 304
Keyboard	TPE-E
Display window	Polycarbonate
Display head	Polycarbonate and ABS
Process Connection	
Thread	1/4 in. NPT convex 1/4 in. NPT concave G 1/4 in. BSPP convex G 1/4 in. BSPP concave G1/2 in. B SAE 7/16-20 UNF convex SAE 7/16-20 UNF concave 1.5 in. Tri-clamp sanitary 2 in. Tri-clamp sanitary

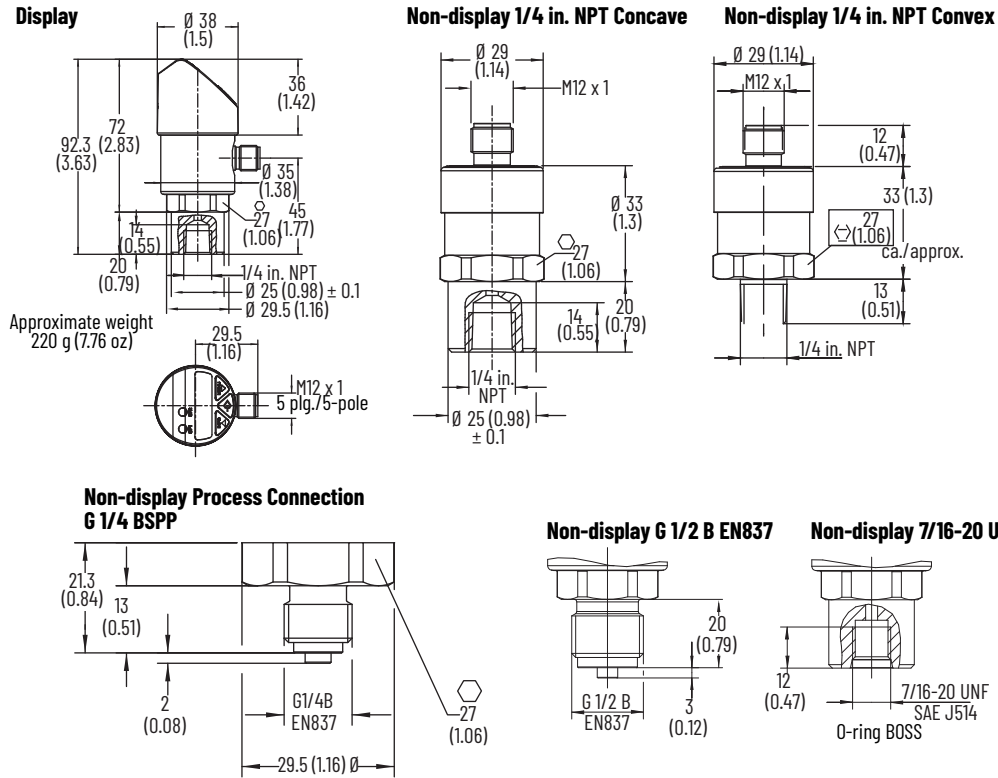
Product Selection

Model	Lower Pressure Range Bar (psi) ⁽¹⁾	Pressure Type ⁽²⁾	Process Connection ⁽¹⁾	Output Type	Cat. No.
Display model 	-1...+1 (-14.5...+14.5)	Gauge ⁽³⁾	1/4 in. NPT concave	2 x PNP	836P-D1NFGA14PP-D4 ⁽⁴⁾
				1 x PNP + 1 analog (4...20 mA)	836P-D1NFGA14PA-D4 ⁽⁴⁾
	-1...+10 (-14.5...+14.5)		1/4 in. NPT concave	1 x PNP + 1 analog (4...20 mA)	836P-D1NFGB14PA-D4 ⁽⁴⁾
			1/4 in. NPT convex	1 x PNP + 1 analog (4...20 mA)	836P-D1NMGB14PA-D4 ⁽⁴⁾
			G 1/4 in. BSPP convex	1 x PNP + 1 analog (4...20 mA)	836P-D1GMGB14PA-D4 ⁽⁴⁾
	0...1 (0...14.5)		1/4 in. NPT concave	2 x PNP	836P-D2NFGA14PP-D4 ⁽⁴⁾
				1 x PNP + 1 analog (4...20 mA)	836P-D2NFGA14PA-D4 ⁽⁴⁾
	0...2.5 (0...36.2)		1/4 in. NPT concave	2 x PNP	836P-D2NFGA36PP-D4 ⁽⁴⁾
				1 x PNP + 1 analog (4...20 mA)	836P-D2NFGA36PA-D4 ⁽⁴⁾
	0...25 (0...362)		1/4 in. NPT concave	2 x PNP	836P-D2NFGB36PP-D4 ⁽⁴⁾
				1 x PNP + 1 analog (4...20 mA)	836P-D2NFGB36PA-D4 ⁽⁴⁾
			1/4 in. NPT convex	1 x PNP + 1 analog (4...20 mA)	836P-D2NMGB36PA-D4 ⁽⁴⁾
			G 1/4 in. BSPP concave	1 x PNP + 1 analog (4...20 mA)	836P-D2GFB36PA-D4 ⁽⁴⁾
	0...100 (0...1450)		1/4 in. NPT concave	2 x PNP	836P-D2NFGC14PP-D4 ⁽⁴⁾
				1 x PNP + 1 analog (4...20 mA)	836P-D2NFGC14PA-D4 ⁽⁴⁾
	0...248 (0...3600)		1/4 in. NPT concave	2 x PNP	836P-D2NFGC36PP-D4 ⁽⁴⁾
				1 x PNP + 1 analog (4...20 mA)	836P-D2NFGC36PA-D4 ⁽⁴⁾
	0...400 (0...5800)		1/4 in. NPT concave	2 x PNP	836P-D2NFGC58PP-D4 ⁽⁴⁾
1 x PNP + 1 analog (4...20 mA)		836P-D2NFGC58PA-D4 ⁽⁴⁾			
SAE 7/16-20 UNF concave		2 x PNP		836P-D2SFGC58PP-D4 ⁽⁴⁾	
Non-display	-1.01...+10 (-30 in. Hg...+145)	Gauge	1/4 in. NPT convex	Analog (4...20 mA)	836P-N3NMGB14A-D4
			1/4 in. NPT concave		836P-N3NFGB14A-D4
	0...1 (0...14.5)		1/4 in. NPT convex		836P-N2NMGA14A-D4
	0...2 (0...30)		1/4 in. NPT convex		836P-N2NMGA30A-D4
	0...6.89 (0...100)		1/4 in. NPT concave		836P-N2NFGA30A-D4
			1/4 in. NPT convex		836P-N2NMGB10A-D4
	0...10 (0...145) xx		1/4 in. NPT concave		836P-N2NFGB10A-D4
			1/4 in. NPT convex		836P-N2NMGB14A-D4
	0...34 (0...500) xx		1/4 in. NPT concave		836P-N2NFGB14A-D4
	0...68 (0...1000) xx				836P-N2NMGB50A-D4
	0...206 (0...3000) xx		1/4 in. NPT convex		836P-N2NMGC10A-D4
	0...344 (0...5000) xx				836P-N2NMGC30A-D4
			836P-N2NMGC50A-D4		

(1) For additional pressure ranges and process connections configurations, visit contact your local Allen-Bradley distributor or Rockwell Automation sales office.
 (2) Absolute and vacuum pressure models available.
 (3) Hygienic and flush mount models are also available in display versions.
 (4) IO-Link enabled.

Approximate Dimensions

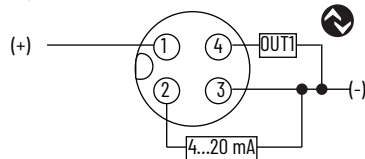
Dimensions are in mm (in.). Illustrations are not drawn to scale.



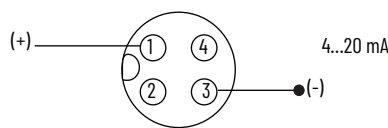
Wiring Diagrams

1 PNP x 4...20 mA Display

15...35V DC

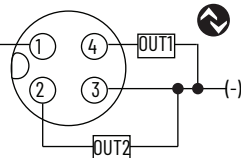


4...20 mA Non-display



2 PNP Display

15...35V DC (+)



Accessories

Description	Cat. No.	Description	Cat. No.	Description	Cat. No.
2 m (6.5 ft) 4-pin DC micro (straight)	889D-F4AC-2	IO-Link Master Module for POINT I/O™ 1734-4IOL	1734-4IOL	POINT I/O EtherNet/IP™ Adapter Module 1734 AENT (single Ethernet port) ⁽¹⁾	1734 AENT (single Ethernet port)
2 m (6.5 ft) 4-pin DC micro (right angle)	889D-R4AC-2	POINT I/O EtherNet/IP adapter	1734-AENTR(dual-port Ethernet) ⁽¹⁾	AarmorBlock® IO-Link Master	1732E-8IOLM12R

(1) Compatible only with Series B, firmware revision 5.012 or later.

Solid-state Temperature Sensors

Bulletin 837T, 837RTD



- Microprocessor-based sensor with no moving parts for longer life and reduced downtime
- Corrosion-resistant stainless steel housing to withstand harsh industrial conditions
- Operating temperature is $-40...+85\text{ }^{\circ}\text{C}$ ($-40...+185\text{ }^{\circ}\text{F}$)
- Four-digit 14-segment digital display
- Independently programmable dual PNP N.O./N.C. outputs or 4...20 mA analog output with single-PNP N.O./N.C. output
- Stainless steel probe

Applications

- Automotive industry
- Machine tool
- Hydraulics
- Batch temperature control
- Food and beverage
- Pharmaceuticals



Specifications

Attribute	Value (837T-D3, 837T-D4)
Certifications	CE conformity -EMC directive 2014/30/EU/, EN 61326 emission (group 1, class B), and interference immunity (industrial application). Roes conformity - 2011/65/EU
Environment: Operating Conditions	
Ambient temperature range ⁽¹⁾	$-20...+80\text{ }^{\circ}\text{C}$ ($-4...+176\text{ }^{\circ}\text{F}$)
Storage temperature ⁽¹⁾	$-20...+80\text{ }^{\circ}\text{C}$ ($-4...+176\text{ }^{\circ}\text{F}$)
Vibration resistance	Probe length $\leq 150\text{ mm}$ (5.91 in.): 6 g (0.21 oz) (IEC 60068-2-6, under resonance); Probe length $\geq 250\text{ mm}$ (9.84 in.): 2 g (0.07 oz) (IEC 60068-2-6, under resonance)
Operating pressure	150 bar (2175 psi) maximum; With high temperature model (compression fitting is included) 50 bar (725 psi) at $120\text{ }^{\circ}\text{C}$ ($248\text{ }^{\circ}\text{F}$) ⁽²⁾
Shock resistance	50 g (1.76 oz) (IEC 60068-2-27, mechanical)
Humidity	45...75% r. h.

Attribute	Value (837T-D3, 837T-D4)
Ingress Protection	IP65 and IP67. The stated ingress protection (per IEC 60529) only applies when plugged in with mating connectors that have the appropriate ingress protection.
Electrical	
Power supply	15...35 V DC
Current consumption	Switching outputs with: Analog signal 4...20 mA; 70 mA; without analog signal: 45 mA
Total current consumption	Maximum 450 mA including switching current
Outputs	
Output type	IO-Link - version 1.1 (pin 4). With the IO-Link option, switching output OUT 2 is always PNP.
Zero offset adjustment	Maximum 3% of span
Output thresholds	OUT 1 and OUT 2 are individually adjustable
Output modes	Selectable - Normally open, normally closed, window, hysteresis
Output voltage	(Power Supply -1V)
Output current	OUT1 maximum 100 mA, OUT2 maximum 250 mA
Load	Analog signal 4...20 mA: $\leq 0.5\text{ k}\Omega$
Service life	100 million switching cycles
Response time	$T05 < 5\text{ s}$ (per DIN EN 60751); $T09 < 10\text{ s}$ (per DIN EN 60751)
Accuracy Data	
Analog signal	$\leq \pm 0.5\%$ of span \pm temperature sensor error
Adjustment accuracy switching points	$\leq \pm 0.5\%$ of span
Scaling analog signal	0...25% of span; Full scale: 75...100% of span
Switching output	$\leq \pm 0.8\%$ of span \pm temperature sensor error
Display	$\leq \pm 0.8\%$ of span \pm temperature sensor error ± 1 digit
Temperature error ⁽³⁾	$\pm 0.15\text{ K} + 0.002\text{ t}^{(4)}$ for Celsius per EN 60751 $(\pm 1.8 * (0.15 + 0.002 (t - 32)/1.8))$ for Fahrenheit
Reference Operation Conditions	
Temperature	15...25 $^{\circ}\text{C}$ (59...77 $^{\circ}\text{F}$)
Atmospheric pressure	950...1050 mbar (13.78...15.23 psi)
Humidity	45...75% r. h.
Nominal position	Process connection lower mount (LM)
Power supply	24V DC
Electrical Safety	
Short-circuit protection	4...20 mA, Out 1/Out 2 vs. V-
Reverse polarity protection	V+ vs. V-
Insulation voltage	500V DC
Overvoltage protection	40V DC
Material	
Wetted parts	
Temperature sensor	Stainless steel 316Ti
Non-wetted parts	
Housing	Stainless steel 304
Keyboard	TPE-E
Display window	Polycarbonate
Display head	Personal computer + ABS-blend

- (1) At high medium or ambient temperature, helps confirm (by suitable measures) that the instrument case temperature does not exceed $80\text{ }^{\circ}\text{C}$ ($176\text{ }^{\circ}\text{F}$) in continuous operation. The temperature is a measured hexagon of the process connection. At medium temperatures [above $80\text{ }^{\circ}\text{C}$ ($176\text{ }^{\circ}\text{F}$)], the thread must not be immersed into the medium. The permissible ambient temperature is limited to $-20...+40\text{ }^{\circ}\text{C}$ ($-4...+104\text{ }^{\circ}\text{F}$) at the high temperature option.
- (2) High temperature models are only available in 100 mm (3.94 in.) or greater probe lengths. It includes compression fitting that is approximately 55 mm (2.16 in.).
- (3) The mounting situation (immersion depth, sensor length, operating conditions) determines the accuracy. This situation is especially the case for large temperature gradients between the environment and the medium.
- (4) Absolute value of temperature.

Product Selection

Description	Process Connection	Probe Length [mm (in.)]	Temperature Range °C (°F)	Cat. No.	
				2 x PNP Output	1 PNP + 1 Analog 4...20 mA
Display model 	1/4 in. NPT convex	25 (0.98)	-20...+80 (-4...+178)	837T-D3N14A25PP-D4	837T-D3N14A25PA-D4
		50 (1.96)		837T-D3N14A50PP-D4	837T-D3N14A50PA-D4
		100 (3.93)		837T-D3N14B10PP-D4	837T-D3N14B10PA-D4
		150 (5.9)		837T-D3N14B15PP-D4	837T-D3N14B15PA-D4
		250 (9.84)		837T-D3N14B25PP-D4	837T-D3N14B25PA-D4
		350 (13.7)		837T-D3N14B35PP-D4	837T-D3N14B35PA-D4
IO-Link with D4		100 (3.93)	0...150 (32...302)	837T-D1N14B10PP-D4	837T-D1N14B10PA-D4
		150 (5.9)		837T-D1N14B15PP-D4	837T-D1N14B15PA-D4
Display model 	1/2 in. NPT convex	25 (0.98)		837T-D3N12A25PP-D4	837T-D3N12A25PA-D4
		50 (1.96)		837T-D3N12A50PP-D4	837T-D3N12A50PA-D4
		100 (3.93)		837T-D3N12B10PP-D4	837T-D3N12B10PA-D4
		150 (5.9)		837T-D3N12B15PP-D4	837T-D3N12B15PA-D4
		250 (9.84)		837T-D3N12B25PP-D4	837T-D3N12B25PA-D4
IO-Link with D4		100 (3.93)	0...150 (32...302)	837T-D1N12B10PP-D4	837T-D1N12B10PA-D4
		150 (5.9)		837T-D1N12B15PP-D4	837T-D1N12B15PA-D4
Description	Process Connection	Probe Length [mm (in.)]	Temperature Range °C (°F)	Output Type	Cat. No.
Non-display model ⁽¹⁾	1/4 in. NPT convex	25 (0.98)	Standard -50...+150 (-58...+302)	1 analog 4...20 mA	837T-N1N14A25A-D4
		50 (1.96)			837T-N1N14A50A-D4
		100 (3.93)			837T-N1N14B10A-D4
		150 (5.9)			837T-N1N14B15A-D4
		250 (9.84)			837T-N1N14B25A-D4
		300 (11.81)			837T-N1N14B30A-D4
		350 (13.7)			837T-N1N14B35A-D4
		400 (15.75)			837T-N1N14B40A-D4
		25 (0.98)			Extended range -50...+250 (-58...+482)
		50 (1.96)	837T-N2N14A50A-D4		
		100 (3.93)	837T-N2N14B10A-D4		
		150 (5.9)	837T-N2N14B15A-D4		
		250 (9.84)	837T-N2N14B25A-D4		
		300 (11.81)	837T-N2N14B30A-D4		
		350 (13.7)	837T-N2N14B35A-D4		
		400 (15.75)	837T-N2N14B40A-D4		

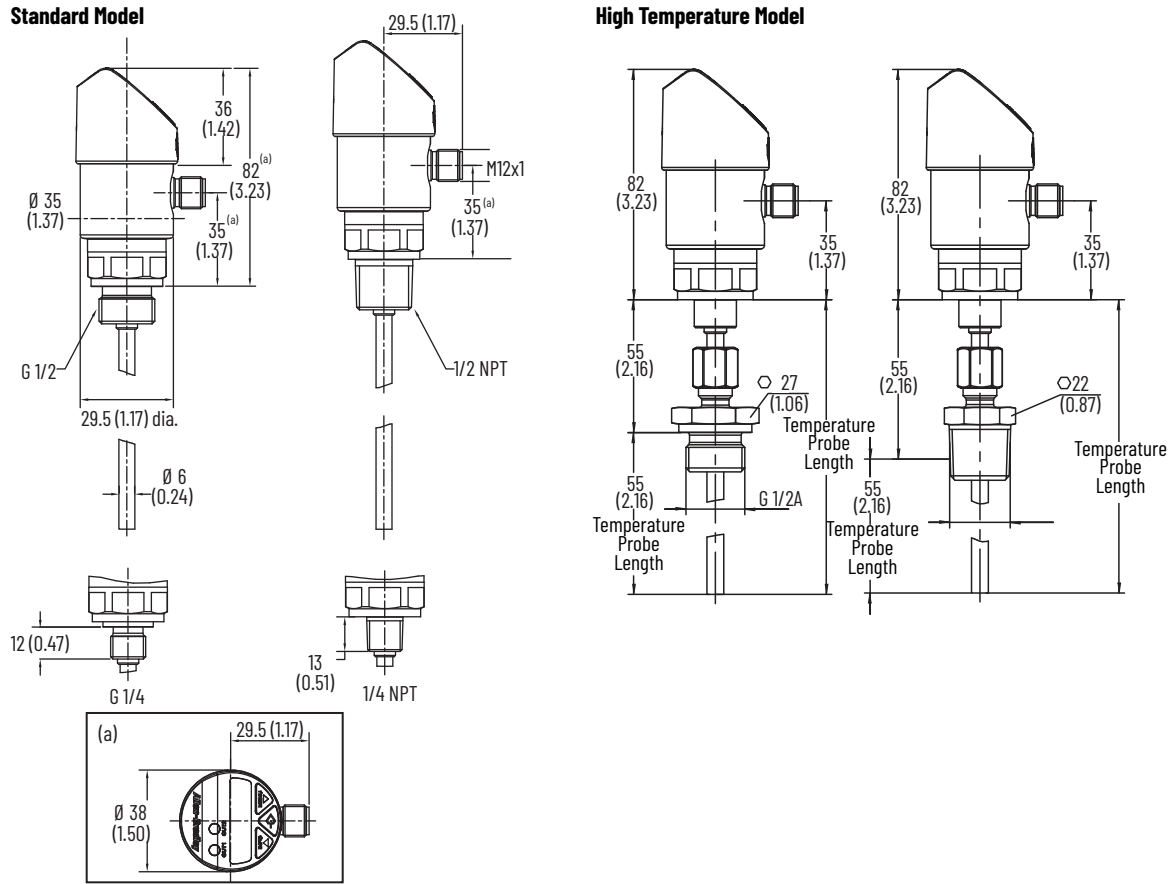
(1) For hygienic models, contact your local Allen-Bradley distributor or Rockwell Automation sales office.

Product Selection (continued)

Description	Process Connection	Probe Length [mm (in.)]	Temperature Range °C (°F)	Output Type	Cat. No.				
RTD	1/4 in. NPT convex	28 (1.1)	Standard -30...+130 (-22...+266)	PT1000 resistance output	837RTD-N1N14A28P1-D4				
		30 (1.18)			837RTD-N1N14A30P1-D4				
		40 (1.57)			837RTD-N1N14A40P1-D4				
		50 (1.97)			837RTD-N1N14A50P1-D4				
		60 (2.36)			837RTD-N1N14A60P1-D4				
		65 (2.56)			837RTD-N1N14A65P1-D4				
		28 (1.1)	Extended range -50...+200 (-58...+392)		837RTD-N2N14A28P1-D4				
		30 (1.18)			837RTD-N2N14A30P1-D4				
		40 (1.57)			837RTD-N2N14A40P1-D4				
		50 (1.97)			837RTD-N2N14A50P1-D4				
		60 (2.36)			837RTD-N2N14A60P1-D4				
		65 (2.56)			837RTD-N2N14A65P1-D4				
		RTD			1/4 in. NPT convex	28 (1.1)	Standard -30...+130 (-22...+266)	PT100 resistance output	837RTD-N1N14A28P2-D4
						30 (1.18)			837RTD-N1N14A30P2-D4
40 (1.57)	837RTD-N1N14A40P2-D4								
50 (1.97)	837RTD-N1N14A50P2-D4								
60 (2.36)	837RTD-N1N14A60P2-D4								
65 (2.56)	837RTD-N1N14A65P2-D4								
28 (1.1)	Extended range -50...+200 (-58...+392)		837RTD-N2N14A28P2-D4						
30 (1.18)			837RTD-N2N14A30P2-D4						
40 (1.57)			837RTD-N2N14A40P2-D4						
50 (1.97)			837RTD-N2N14A50P2-D4						
60 (2.36)			837RTD-N2N14A60P2-D4						
65 (2.56)			837RTD-N2N14A65P2-D4						

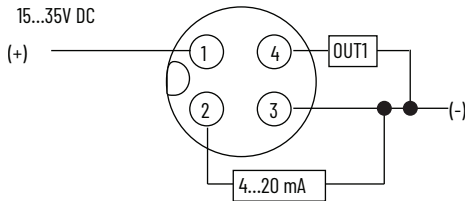
Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

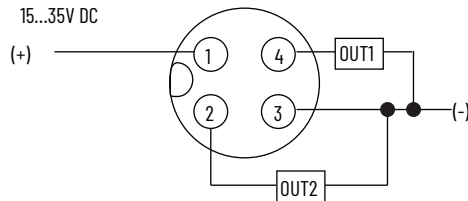


Wiring Diagrams

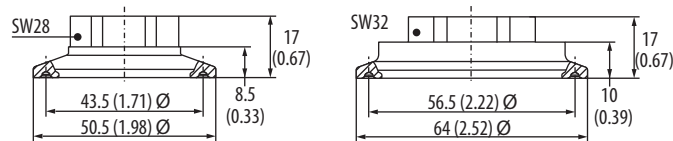
1 PNP x 4...20 mA
15...35V DC



2 PNP
15...35V DC



Approximate Dimensions - Adapters



(1) Additional cable lengths are available. Shielded cables can be used to help protect analog signal quality in an electrically noisy environment. See publication [889-TD002](#).

Accessories

Recommended Cordsets	Cat. No.
2 m (6.5 ft) 4-pin DC micro (straight) ⁽¹⁾	889D-F4AC-2
2 m (6.5 ft) 4-pin DC micro (right angle) ⁽¹⁾	889D-R4AC-2

Solid-state Flow Switches

Bulletin 839E



- Microprocessor-based sensor with no moving parts for longer life and reduced downtime
- Corrosion-resistant 316L stainless steel housing features an IP66 enclosure rating to withstand harsh industrial conditions
- Flow rates of liquid media (calorimetric measuring principle) in the range of 0.03...3 m/s (0.1...9.84 ft/s)
- Four-digit, 14-segment digital display
- Dual N.O./N.C. programmable PNP outputs or 4...20 mA analog output with single PNP output
- Stainless steel probe

Applications

- Food and beverage
- Pharmaceuticals
- Water/wastewater
- Hydraulics

Specifications

Attribute	Value
Environmental	
Certifications	cULus Listed and CE Marked for all applicable directives
Operating	Liquids: 0.03...3 m/s (0.1...9.84 ft/s) Mass flow as a relative value 0...100%
Temperature, media	-20...+85 °C (-4...+185 °F)
Electrical	
Supply voltage	18...30V DC
Supply current	< 100 mA
Load current	250 mA, min
Output	
Output	Dual PNP N.O./N.C. or 4...20 mA analog with single PNP N.O./N.C.
Temperature accuracy	2 °K (3.6 °F)
Temperature repeatability	1 °K (1.8 °F)
Mechanical	
Housing material	316 stainless steel
Enclosure type rating	IP66
Switch cycles, min	> 10,000,000

Accuracy Data

Measuring Range m/s (f/s)	Repeatability	Influence of Medium Temperature ⁽¹⁾	Influence of Ambient Temperature
0.03...0.5 (0.1...1.6)	2%	0.05%/°K	0.04%/°K
0.03...1 (0.1...3.28)	3%	0.10%/°K	0.05%/°K
0.03...2 (0.1...6.56)	5%	0.15%/°K	0.10%/°K
0.03...3 (0.1...9.84)	10%	0.20%/°K	0.30%/°K

- (1) The values indicated apply to only the device itself without taking the temperature-dependent change of the thermo-physical properties of the medium into account. For this reason, we recommend you commission the device at the process temperature and set the switch points (learn function).

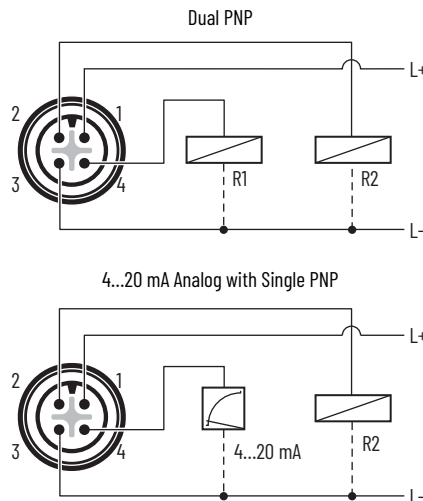
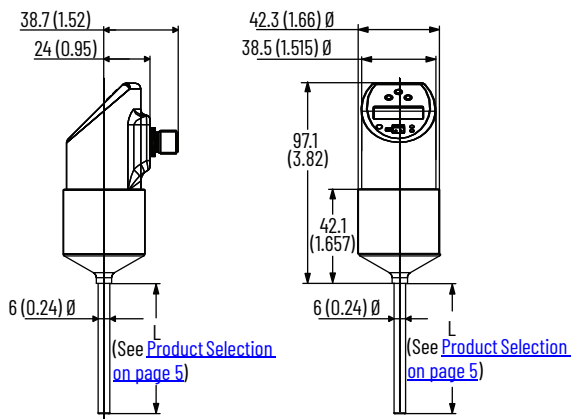
Product Selection

Description	Measuring Range	Response Time	Probe Length [mm (in.)]	Cat. No.	
				Dual PNP Output	4...20 mA Analog Output w/Single PNP Output ⁽¹⁾
Process Connection					
1/4 in. NPT convex	Liquids 0.03...3 m/s (0.1...9.84 ft/s) Mass flow as a relative value 0...100%	6...12 s	30 (1.18)	839E-DA1BA1A3-D4	839E-DC1BA1A3D4
1/2 in. NPT convex			100 (3.93)	839E-DA1BA1A2-D4	839E-DC1BA1A2D4
			30 (1.18)	839E-DA1BA2A3D4	839E-DC1BA2A3D4
G1/4 BSPP			100 (3.96)	839E-DA1BA2A2D4	839E-DC1BA2A2D4
			30 (1.18)	839E-DA1BA3A3D4	839E-DC1BA3A3D4
G1/2 BSPP			100 (3.96)	839E-DA1BA3A2D4	839E-DC1BA3A2D4
			30 (1.18)	839E-DA1BA4A3D4	839E-DC1BA4A3D4
				100 (3.96)	839E-DA1BA4A2D4

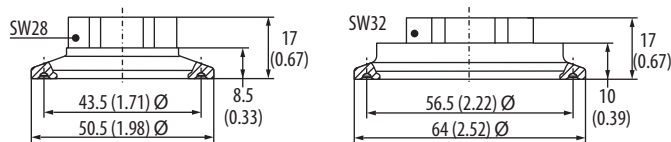
(1) Analog output version can be configured to output dual PNP N.O./N.C.

Approximate Dimensions Wiring Diagram

Dimensions are in mm (in.). Illustrations are not drawn to scale.



Approximate Dimensions—Adapters



(1) Additional cable lengths are available. Shielded cables can be used to help protect analog signal quality in an electrically noisy environment. See publication [889-TD002](#).

Accessories

Recommended Cordsets	Cat. No.
2 m (6.5 ft) 4-pin DC micro (straight) ⁽¹⁾	889D-F4AC-2
2 m (6.5 ft) 4-pin DC micro (right angle) ⁽¹⁾	889D-R4AC-2
Configuration kit (includes converter cable and ReadWin 2000 software)	836E-NSR

Level Sensors

Bulletin 840E



- Liquid level sensor used in tanks, containers, and pipelines
- On-site control using external status indicator display
- Microprocessor-based sensor with no moving parts for longer life and reduced downtime
- Corrosion-resistant 316L stainless steel housing features IP66/IP67 rating for DC type and IP65 for AC type enclosure for various industrial conditions
- DC PNP version with M12 connector
- AC version with NPT 1/2 in. valve connector
- 316L stainless steel sensing element

Applications

- Liquid level monitoring
- Tanks, containers, and pipelines
- Filtering systems
- Coolant and lubricant tanks
- Pump protector

Specifications

Environmental	
Certifications	CE Marked for all applicable directives, cCSAus certified
Temperature, ambient	-40...+70 °C (-40...+158 °F)
Temperature, storage	-40...+85 °C (-40...+185 °F)
Temperature, media	-40...+100° (-40...+212°)
Output	
Repeatability	±0.5 mm (±0.02 in.)
Settling time	< 2 s
Switching delay	0.5 s when covering; 1.0 s when free
Resolution	< 0.5 mm (0.02 in.)
Maximum error	13.0 ±1 mm (0.51 ± 0.04 in.)
Hysteresis	3.0 ± 0.5 mm (0.12 ± 0.02 in.)
Mechanical	
Housing material	316 L stainless steel
Operating Conditions	
Process pressure	-14.5...+580 psi
Media	Liquid
Density	> 0.7 SGU
Viscosity	-14.5...+580 psi
Gas content	Liquid
Solids content	> 0.7 SGU

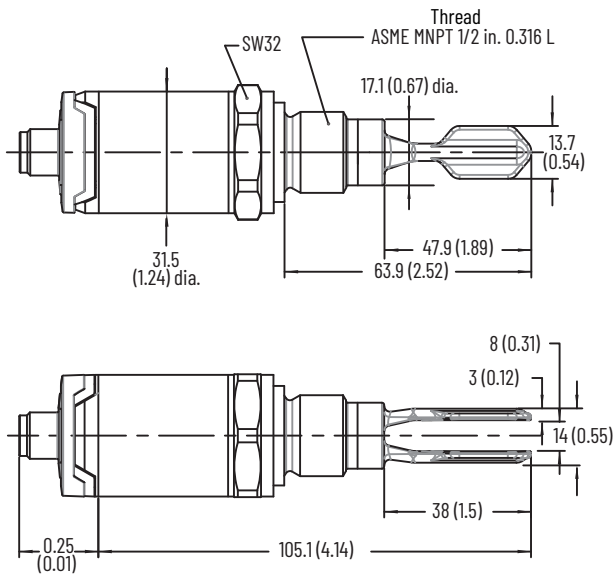
Product Selection

Power Supply	Process Connection	Operating Voltage	Power Consumption	Current Consumption	Cat. No.
					DC-PNP
DC-PNP with M12 connector	3/4 in. NPT convex	10...35V DC	< 825 mW	< 825 mW	840E-TB1B1A1D4
	3/4 in. NPT convex				840E-TB1B2A1D4
	G 1/2 in. convex				840E-TB1B3A1D4
AC with NPT 1/2 valve connector	3/4 in. NPT convex	19...253V AC	< 819 mW	< 819 mW	840E-TB2B1A1E4
	3/4 in. NPT convex				840E-TB2B2A1E4
	G 1/2 in. convex				840E-TB2B3A1E4

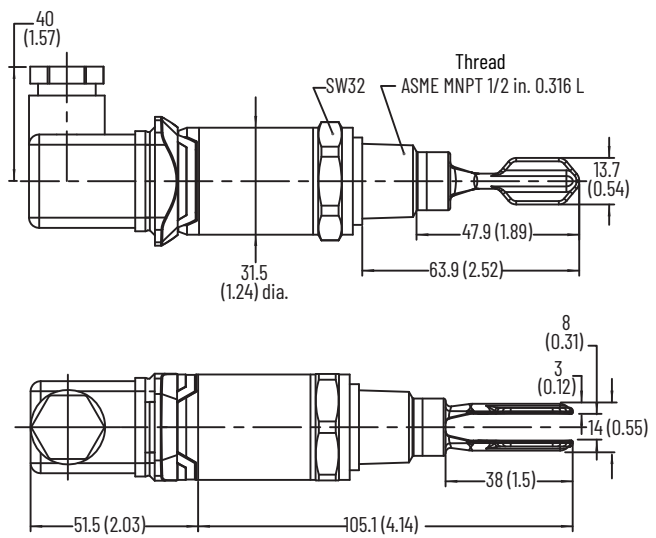
Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

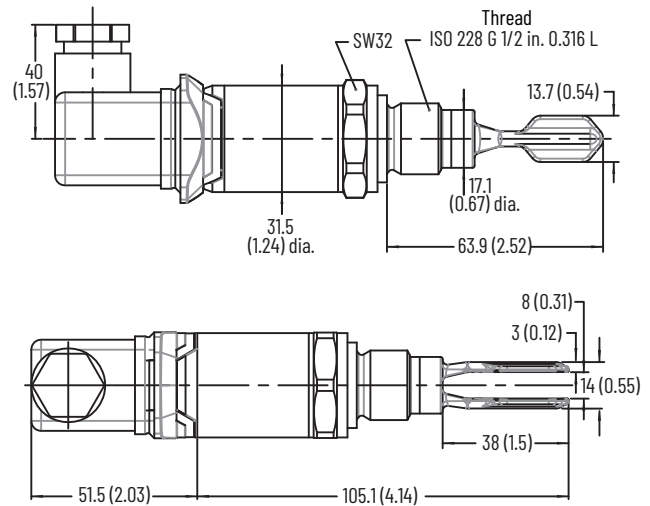
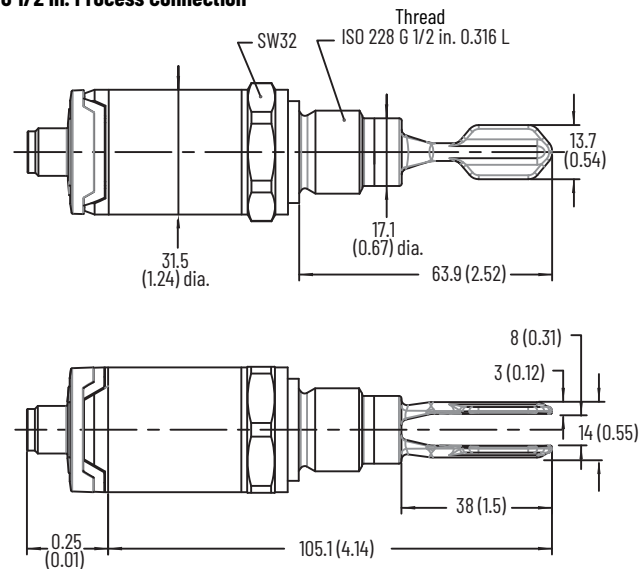
1/2 in. NPT Process Connection



1/2 in. NPT Valve Connector

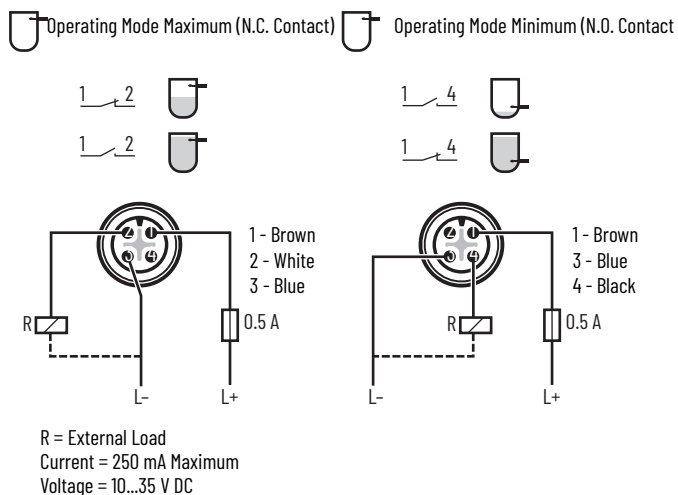


G 1/2 in. Process Connection

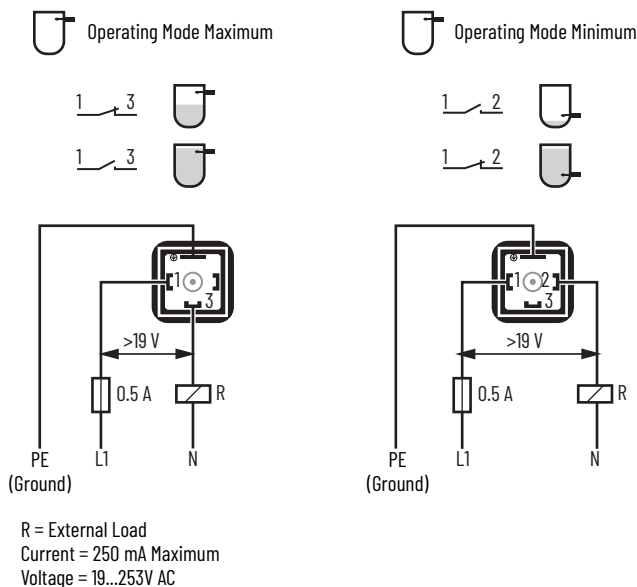


Wiring Diagrams

DC – PNP Version with M12 Connector



AC Version with Valve Connector 1/2 in. NPT



Accessories

Recommended Cordsets	Cat. No.
2 m (6.5 ft) 4-pin DC micro (straight) ⁽¹⁾	889D-F4AC-2
2 m (6.5 ft) 4-pin DC micro (right angle) ⁽¹⁾	889D-R4AC-2

(1) Additional cable lengths are available. Shielded cables can be used to help protect analog signal quality in an electrically noisy environment. See publication [889-TD002](#).

Notes:

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
EtherNet/IP Network Devices User Manual, ENET-UM006	Describes how to configure and use EtherNet/IP devices to communicate on the EtherNet/IP network.
Ethernet Reference Manual, ENET-RM002	Describes basic Ethernet concepts, infrastructure components, and infrastructure features.
System Security Design Guidelines Reference Manual, SECURE-RM001	Provides guidance on how to conduct security assessments, implement Rockwell Automation products in a secure system, harden the control system, manage user access, and dispose of equipment.
Industrial Components Preventive Maintenance, Enclosures, and Contact Ratings Specifications, publication IC-TD002	Provides a quick reference tool for Allen-Bradley industrial automation controls and assemblies.
Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication SGI-1.1	Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications .	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at rok.auto/literature.

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, and product notification updates.	rok.auto/support
Knowledgebase	Access Knowledgebase articles.	rok.auto/knowledgebase
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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