

Honeywell
THE POWER OF **CONNECTED**

ENRAF SERVO GAUGE 854 ATG

Setting the standard in gauging.



Technical Specifications

Data Communication	
Honeywell Bi-phase mark (Pos 2 = E and I)	
Baud rate	1200 / 2400 bps
Isolation voltage	> 1,500 V
Lightning protection	Full galvanic separation via isolating transformers
Protocol	Standard Honeywell fieldbus (Serial, ASCII, GPU protocol)
Common mode rejection	> 150 dB
Cabling	Two wires, twisted pair, $R_{max} = 200 \Omega$ / line, $C_{max} = 1 \text{ }^{\circ}\text{F}$; Cable length: 10 km (6 mi) or more ^{*6}
RS-232C GPU protocol (Pos 2 = R)	
Baud rate	1200 / 2400 / 4800 / 9600 / 19200 bps
Isolation voltage	> 600 V
Lightning protection	Opto-isolators
Protocol	Serial ASCII GPU protocol
Cabling	3-wire RS-232; max cable length: 15 m (50 ft)
RS-485 GPU protocol (Pos 2 = S)	
Baud rate	1200 / 2400 / 4800 / 9600 / 19200 bps
Isolation voltage	> 600 V
Lightning protection	Opto-isolators
Protocol	Serial ASCII GPU protocol
Cabling	3-wire EIA-485; max cable length: 1200 m (4000 ft)
RS-232C Std. Modbus (Pos 2 = V)	
Baud rate	1200 / 2400 / 4800 / 9600 / 19200 bps
Isolation voltage	> 600 V
Lightning protection	Opto-isolators
Protocol	Std Modbus (refer to protocol manual for details)
Cabling	3-wire RS-232; max cable length: 15 m (50 ft)
RS-485 Std. Modbus (Pos 2 = W)	
Baud rate	1200 / 2400 / 4800 / 9600 / 19200 bps
Isolation voltage	> 600 V
Lightning protection	Opto-isolators
Protocol	Std Modbus (refer to protocol manual for details)
Cabling	3-wire EIA-485; max cable length: 1200 m (4000 ft)
Foundation™ Fieldbus (Pos 2 = O)	
Baud rate	31.25 kbps
Isolation voltage	> 1500 V
Lightning protection	Opto-isolators
Protocol	FF (refer to protocol manual for details)
Cabling	Refer FF specifications
Communication with TSI (Pos 2 = I)	
Cabling	2-wire, intrinsically safe ($R_{max} = 5\Omega$ (loop) / line, $C_{max} = 1.27^{\circ}\text{F}$)
Communication with Portable Honeywell Terminal	
Protocol	Infra-red, serial
Options	
Alarm relay outputs	2 x SPDT, galvanically isolated, $V_{max} = 50 V_{ac}$ or $30 V_{dc}$, $I_{max} = 3 \text{ A}$; Pos 16 = W
Density measurement	With density PROMS (Pos 15 = D) and density displacer (Pos 22 = E or F)
Analog level output	4 - 20 mA (accuracy $\pm 0.1\%$ full scale); Pos 4 = V, W, X or Y
Temperature input and HART devices	Spot RTD; 3 wire; Pos 4 = B, U or Y; VITO probes for average temperature and/or water measurement, HART® devices; Pos 4 = C, J, W, X or Y
Cable entries	Adapters available to fit other sizes cable glands

Continued...

Notes:

HART® is a registered trademark of the HART Communications Foundation.
Foundation™ Fieldbus is a trademark of the Fieldbus Foundation.

*1 Under reference conditions

*2 Minimum product density between layers:
100 kg/m³ (6.25 lb/ft³)

*3 (optional) with a density displacer and calibrated for density measurement

*4 With VITO temperature probe or spot (Pt100)

*5 Servo ATG can be used in safety rated loops using alarm relays and/or analog output. Please refer to Safety Manual.

*6 Distances of more than 10 km possible depending on amount of field instruments and cabling topology.

*7 In extreme environments the accuracy could be affected depending on the thermal expansion coefficient of the wetted parts.

Technical Specifications (continued)

Measuring Specifications	
Measuring range	
Standard	27 m (88 ft) Pos 12 = 2, A, B, C or D
Extended	37 m (121 ft) Pos 12 = 3, K, L, M or N; 35 m (115 ft) (with measuring wire up to 150 m (492 ft)) Pos 12 = 9; For longer ranges, please contact factory
Measuring accuracy level	(27 m / 88 ft): $< \pm 0.4 \text{ mm } (\pm 0.016")^{*1}$; (37 m / 121 ft): $< \pm 0.7 \text{ mm } (\pm 0.028")^{*1}$
Measuring accuracy interface	$< \pm 2 \text{ mm } (\pm 0.08")^{*2}$
Measuring accuracy servo density	$< \pm 3 \text{ kg/m}^3 (\pm 0.19 \text{ lb/ft}^3)$
Measuring accuracy temperature	$< \pm 0.1 \text{ }^\circ\text{C } (\pm 0.18 \text{ }^\circ\text{F})^{*1,*4}$
Sensitivity	$\leq 0.1 \text{ mm } (\pm 0.004")^{*1}$
Repeatability	$\leq 0.1 \text{ mm } (\pm 0.004")^{*1}$
Mechanical	
Flange	See 'Identification Code' Pos 8-10
Dimensions	See 'Dimensional Drawing'
Weight	
Medium pressure version	16 kg (35 lb)
Chemical version	21 kg (46 lb)
High pressure version	26 kg (57 lb)
Cable entries	4 x 3/4" NPT threaded (2* I.S. + 2* non-I.S.)
Process	
Operating pressure	
M and C versions	Up to 6 bar / 0.6 MPa (90 psi); Pos 8
H version	Up to 40 bar / 4 MPa (600 psi) (up to 25 bar / 2.5 MPa in acc. to PED); Pos 8
Temperature	
Max. process temperature	+200 °C (+392 °F), drum housing has to be kept below +65 °C (+149 °F) ^{*7}
Min. process temperature	-200 °C (-328 °F), drum housing has to be kept above -40 °C (-40 °F) ^{*7}
Process Wetted Materials	
Drum compartment	Cast aluminum Int. reg. AA A356 EN1706 AC- AlSi7Mg0.3 ; Pos 8 = M Stainless steel ASTM A351, CF-8M, G-X6 CrNiMo 18 10 (1.4408); Pos 8 = H or C
Measuring drum, drum shaft	Stainless steel (1.4401) EN10088 AISI 316
Measuring wire	See 'Identification Code'; Pos 12
Magnet cap	Stainless steel (1.4401) EN10088 AISI 316
O-rings	Drum cover Silicone/FEP; others FPN (Viton*); Special O-ring (Perlas*) available for demanding chemical applications (such as Ammonia), part nr. S0854969
Enclosure Materials	
Servo comp. and cover	All types cast aluminum Int. reg. AA A356 EN1706 AC- AlSi7Mg0.3
Finish aluminum parts	Conforms to MIL-DTL-5541F
Environmental Safety	
Ambient temperature	-40 °C to +65 °C (-40 °F to +149 °F)
Storage temperature	-50 °C to +70 °C (-58 °F to +158 °F)
Protection class	IP66 / IP67 according to EN 60529 (NEMA 4X)
Safety	Explosion proof <ul style="list-style-type: none"> - II 1/2 G Ex d IIB T6 Ga/Gb or Ex de IIB T6 Ga/Gb or Ex d [ia Ga] IIB T6 Ga/Gb or Ex de [ia Ga] IIB T6 Ga/Gb; acc. to ATEX KEMA - Ex d IIB T6 Ga/Gb or Ex de IIB T6 Ga/Gb or Ex d [ia Ga] IIB T6 Ga/Gb or Ex de [ia Ga] IIB T6 Ga/Gb; acc. to IECEx KEMA - II 1/2 G Ex de [ia Ga] IIB T6 Ga/Gb, acc. to Kosha certificate; - Class I, Division 1, Group C & D; acc. to FM - Class I, Group C & D acc. to CSA certificate - Ex d IIB T6 Ga/Gb or Ex de IIB T6 Ga/Gb or Ex d [ia Ga] IIB T6 Ga/Gb or Ex de [ia Ga] IIB T6 Ga/Gb; acc. to INMETRO TÜV Consult factory for other approvals and updates
Electrical	
Power supply	110/130/220 V _{ac} (-20% to +10%), 230 V _{ac} ($\pm 15\%$), 65 V _{ac} (-20% to +10%), also suitable for 240 V _{ac} (-20% to +10%) if Pos 14 = K
Frequency variations	50/60 Hz ($\pm 10\%$)
Power rating	25 V _{Amax} , I _{max} = 2 A (startup current)
Functional Safety	
Configuration	TÜV certified for SIL 2 (single configuration) and SIL 3 (redundant configuration)

Identification Code

Pos 1 Type of Gauge

- U** No W&M approval required, with drum calibration report
- X** W&M type approved up to 27 m (88 ft) with OIML R85 calibration report and sealing facilities (only if Pos 22 = A, B or E) ^{*6,*7}
- P** W&M type approved up to 37 m (121 ft) with OIML R85 calibration report and sealing facilities (only if Pos 22 = A, B or E) ^{*5,*6,*7}

Pos 2 Data Transmission

- E** Honeywell Fieldbus Bi-phase Mark (BPM) GPU protocol
- I** Bi-phase Mark (BPM) + I.S. output for tank side indicator 977
- R** RS-232C GPU protocol (only when Pos 4 = B, C, J, U or Z)
- S** RS-485 GPU protocol (only when Pos 4 = B, C, J, U or Z)
- V** RS-232C standard Modbus (only when Pos 4 = B, C, J, U or Z)
- W** RS-485 standard Modbus (only when Pos 4 = B, C, J, U or Z)
- O** Foundation Fieldbus + BPM

Pos 3 Display

- A** 2 lines x 16 characters LCD

Pos 4 I/O Options

- Z** No I/O options
- B** Spot temp. converter Pt-100 (Ex ia)
- C** VITO temp. and/or water sensor
- J** VITO temp. and/or water sensor + HART device(s)
- U** Spot temp. converter Pt-100 (Ex ia) + HART device(s)
- V** 4-20 mA level output
- W** 4-20 mA level output + VITO temp. and/or water probe
- X** 4-20 mA level output + VITO temp. probe
- Y** 4-20 mA level output + Spot temp. converter Pt-100 (Ex ia) + VITO temp. and/or water probe + HART device(s)

Pos 5, 6, 7 Product Designation

- 8** **5** **4** Servo Gauge ATG

Pos 8, 9, 10 Pressure, Drum Compartment & Flange

- | | | | |
|----------|----------|----------|---|
| M | 2 | 1 | 2" Class 150 FF, Flanges acc. ASME B16.5, (Ra=3.2-6.3 μm), AL ¹ |
| M | 2 | 2 | DN50, PN 6, Flanges acc. EN 1092-4, (Ra=3.2-12.5 μm), AL ¹ |
| C | 1 | 1 | 2" Class 150 RF, Flanges acc. ASME B16.5, (Ra=3.2-6.3 μm), AISI 316 ^{*1} |
| C | 1 | 2 | DN50, PN 6, Flanges acc. EN 1092-1, (Ra=3.2-12.5 μm), AISI 316 ^{*1} |
| C | 1 | 3 | 2" Class 150 FF, Flanges acc. ASME B16.5, (Ra=3.2-6.3 μm), AISI 316 ^{*1} |
| H | 5 | 2 | 2" Class 300 RF, Flanges acc. ASME B16.5, (Ra=3.2-6.3 μm), AISI 316 ^{*2} |
| H | 5 | 3 | DN50, PN 40, Flanges acc. EN 1092-1, (Ra=3.2-12.5 μm), AISI 316 ^{*2} |

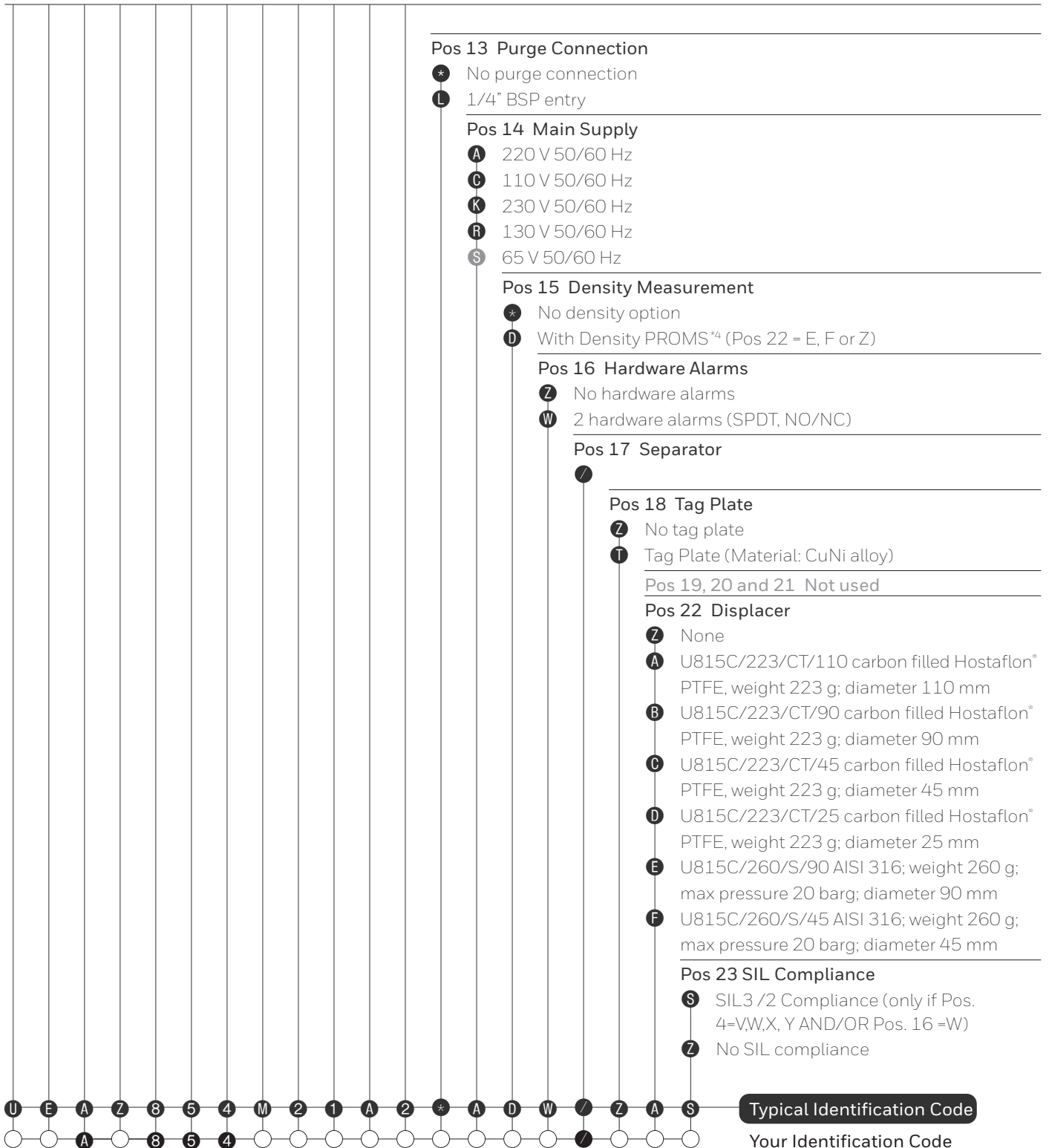
Pos 11 Safety Approvals

- | | | |
|----------|--------------|--------|
| A | ATEX / IECEx | Global |
| C | CSA | Canada |
| F | FM | USA |
| I | INMETRO | Brazil |
| K | Kosha | Korea |

Pos 12 Measuring Range & Wire Material

- | | | |
|----------|----------------|--|
| 2 | 27 m (88 ft) | AISI 316 |
| A | 27 m (88 ft) | Hastelloy C22 |
| B | 27 m (88 ft) | Tantalum |
| C | 27 m (88 ft) | Invar |
| D | 27 m (88 ft) | Pt / Ir (80% / 20%) only available in US |
| 3 | 37 m (121 ft) | AISI 316 |
| K | 37 m (121 ft) | Hastelloy C22 |
| L | 37 m (121 ft) | Tantalum |
| M | 37 m (121 ft) | Invar |
| N | 37 m (121 ft) | Pt / Ir (80% / 20%) only available in US |
| 9 | 150 m (492 ft) | AISI 316 ^{*3} |

Identification Code (continued)



Notes:

Blue positions: Normal delivery

Orange positions: For lead time please consult factory or contact your local sales office

¹ Maximum operating pressure is 600 kPa

² Maximum operating pressure is 4 MPa

³ Measuring range is limited to 35 m for ± 1 mm accuracy

⁴ Density displacer required (Pos. 22 = E or F)

⁵ Contact factory for longer measuring ranges

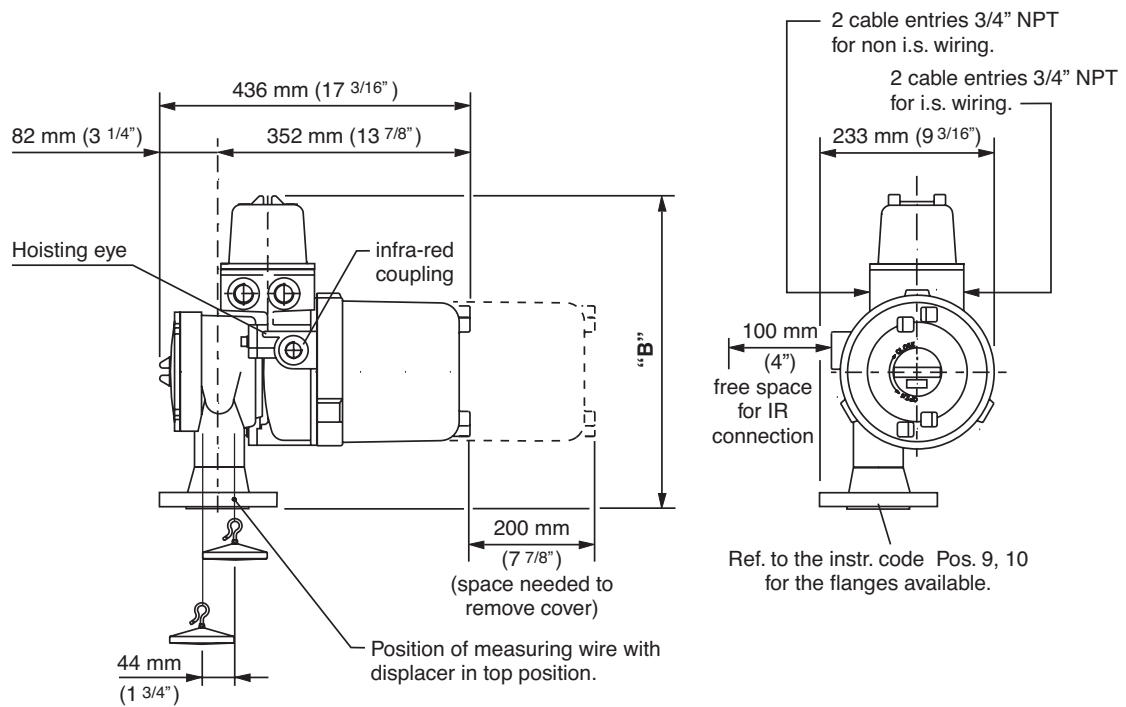
⁶ For witnessed verification specify authority. For more information please contact factory. Additional costs not included.

⁷ Displacer diameter should be selected on basis of (legal) accuracy requirements, operational density range and installation conditions.

From the company that pioneered development of modern tank gauges, Honeywell's 854 Automatic Tank Gauge has become an industry standard all over the world. The gauge is multi-functional: besides liquid level, it integrates density and (free) water interface level measurement with the highest accuracy available in the marketplace. Reliable, versatile and accurate, it meets all international standards, and with its Servo Auto Test feature you can use it in overflow protection loops to prevent spillage. A unique, simple software add-on can be loaded on any servo 854 to add diagnostics and allow it to be used in SIL rated loops. With these diagnostics, the safety proof-test interval can be extended to 5 years. Together with a design featuring minimum moving parts and a modular construction for easy maintenance, it helps you drive down operational costs.

Global Experience. Locally Applied.

Dimensional Drawing



	"B"
M and C versions	427 mm (16 13/16")
H versions	449 mm (17 11/16")

All technical specifications are subject to change without notice.

For More Information

To learn more about Honeywell's Enraf® solutions, visit www.honeywellenraf.com or contact your Honeywell account manager.

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