



## **Cut costs, not repeatability.**

Honeywell's 854 XTG servo gauge is a high performance alternative to other tank level measurement technologies such as radar tank level gauges. It offers a gauging solution for a large variety of applications up to 6 bar pressure ratings. XTG servo gauges are TUV certified for SIL 2 and SIL 3 rated safety instrumented systems, and are suitable for deployment as an independent overfill prevention system conform to API 2350 and other major safety recommendations. Honeywell servo gauges are certified as per OIML R85 2008 and are fully compliant for custody transfer applications. Honeywell's XTG servo gauges are multifunction gauges measuring product level, interface level and density measurement. This ensures easy use of servo gauges in existing tank farms with limited opening on tank top.

**Global Experience. Locally Applied.**



## Technical Specifications

Measuring Specifications	
Measuring range - standard	27 m (88 ft)
Measuring range - extended	37 m (121 ft)
Measuring range - special	35 m (115 ft) with measuring wire up to 150 m (492 ft), refer to 'Identification Code'. For longer ranges please contact factory
Measuring accuracy level	(27 m / 88 ft) : $< \pm 0.4 \text{ mm } (\pm 0.016")$ <sup>*1</sup> ; (37 m / 121 ft): $< \pm 0.7 \text{ mm } (\pm 0.028")$ <sup>*1</sup>
Measuring accuracy interface	$< \pm 2 \text{ mm } (\pm 0.08")$ <sup>*2</sup>
Measuring accuracy servo density	$< \pm 3 \text{ kg/m}^3 (\pm 0.19 \text{ lb/ft}^3)$ <sup>*3</sup>
Measuring accuracy temperature	$< \pm 0.1 \text{ }^\circ\text{C } (\pm 0.18 \text{ }^\circ\text{F})$ <sup>*1 *4</sup>
Sensitivity	0.1 mm ( $\pm 0.004")$ <sup>*1</sup>
Repeatability	0.1 mm ( $\pm 0.004")$ <sup>*1</sup>
Mechanical	
Flange	2" class 150#, FF, Flange acc. ASME 16.5, Ra = 3.2 — 6.3 $\mu\text{m}$ , comparable to DN 50 PN40, Aluminum
Dimensions	See 'Dimensional Drawing'
Weight	16 kg (35 lb)
Cable entries	4 x $\frac{3}{4}"$ NPT threaded (2* I.S. + 2* non-I.S.)
Process	
Operating pressure	Up to 6 bar / 0.6 MPa (87 psi)
Maximum process temperature	+200 $^\circ\text{C}$ (+392 $^\circ\text{F}$ ), drum housing has to be kept below +65 $^\circ\text{C}$ (+149 $^\circ\text{F}$ ) <sup>*7</sup>
Minimum process temperature	-200 $^\circ\text{C}$ (-328 $^\circ\text{F}$ ), drum housing has to be kept above -40 $^\circ\text{C}$ (-40 $^\circ\text{F}$ ) <sup>*7</sup>
Process Wetted Material	
Drum compartment (incl. magnet cover)	Cast aluminum Int. reg. AA A356 EN1706 AC-AISI7Mg0.3
Measuring drum, drum shaft	Stainless steel (1.4401) EN10088 AISI 316
Measuring wire	Refer to selections in 'Identification Code'
Measuring displacer	Refer to selections in 'Identification Code'
O-rings	Drum cover Silicone/FEP
Enclosure Materials	
Servo comp. and cover	Cast aluminum Int. reg. AA A356 EN1706 AC-AISI7Mg0.3
Finish aluminum parts	Conforms to MIL-DTL-5541F
Environmental Safety	
Ambient temperature	-40 $^\circ\text{C}$ to +65 $^\circ\text{C}$ (-40 $^\circ\text{F}$ to +149 $^\circ\text{F}$ )
Storage temperature	-50 $^\circ\text{C}$ to +70 $^\circ\text{C}$ (-58 $^\circ\text{F}$ to +158 $^\circ\text{F}$ )
Protection class	IP66 / IP67 according to EN 60529 (NEMA 4X)
Safety	<ul style="list-style-type: none"> <li>- II 1/2 G Ex d IIB T6 Ga/Gb or Ex d [ia Ga] IIB T6 Ga/Gb; acc. to ATEX KEMA</li> <li>- Ex d IIB T6 Ga/Gb or Ex d [ia Ga] IIB T6 Ga/Gb; acc. to IECEx KEMA</li> <li>- Class I, Division 1, Groups C &amp; D; acc. to FM</li> <li>- Class I, Groups C &amp; D acc. to CSA certificate</li> <li>- Ex d IIB T6 Ga/Gb or Ex d [ia Ga] IIB T6 Ga/Gb; acc. to INMETRO TUV</li> </ul>
Other approvals and updates	Consult Factory for other approvals and updates on approvals
Functional Safety	
Configuration	TUV certified for SIL 2 (single configuration) and SIL 3 (redundant configuration) <sup>*5</sup>
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 230 $V_{ac}$ is selected, refer to Identification Code Pos 14
Frequency variations	50/60 Hz ( $\pm 10\%$ )
Power rating	25 VA max, $I_{max} = 2 \text{ A}$ (startup current)

## Technical Specifications (continued)

Data Communication	
<b>Honeywell Bi-phase mark</b>	
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, $C_{max} = 1 \mu F$ ; cable length: 10 km (6 mi) or more <sup>16</sup>
<b>RS-232C GPU protocol</b>	
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)
<b>RS-485 GPU protocol</b>	
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)
<b>RS-232C Std. Modbus</b>	
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)
<b>RS-485 Std. Modbus</b>	
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)
<b>Communication with TSI</b>	
Cabling	2-wire, intrinsically safe ( $R_{max} = 5 \Omega$ (loop) / line, $C_{max} = 1.27 \mu F$ )
<b>Communication with Portable Honeywell Terminal</b>	
Protocol	Infra-red, serial
<b>Options</b>	
Alarm relay outputs	2 x SPDT, galvanically isolated, $V_{max} = 50 V_{ac}$ or $30 V_{dc}$ , $I_{max} = 3 A$
Density measurement	With density PROMS and density displacer
Analog level output	4 - 20 mA (accuracy $\pm 0.1\%$ full scale)
Temperature input and HART devices	Spot RTD; 3 wire; VITO probes for average temperature and/or water measurement, HART® devices;
Cable entries	Adapters available to fit other sizes of cable glands

### Notes:

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

<sup>1</sup> Under reference conditions.

<sup>2</sup> Minimum product density between layers:  $100 \text{ kg/m}^3$  (6.25 lb/ft<sup>3</sup>)

<sup>3</sup> (optional) with a density displacer and calibrated for density measurement.

<sup>4</sup> With VITO temperature probe or spot (Pt100).

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

<sup>6</sup> Distances of more than 10 km possible depending on amount of field instruments and cabling topology.

<sup>7</sup> In extreme process environments the accuracy could be affected depending on the thermal expansion coefficient of the wetted parts.

## Identification Code

### Pos 1 W&M Approved

- U No W&M approval required with drum calibration report
- X W&M type approved upto 27 m (88 ft) with OIML R85 report and sealing facilities (only if Pos 22 = A, B or E) <sup>\*5, \*6</sup>
- P W&M type approved upto 37 m (121 ft) with OIML R85 report and sealing facilities (only if Pos 22 = A, B or E) <sup>\*4, \*5, \*6</sup>

### Pos 2 Data Transmission

- E Bi-phase Mark protocol
- I Bi-phase Mark protocol + 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)

### Pos 3 Display

- B Without Display

### Pos 4 I/O Options

- Z None
- B Spot temp. convertor Pt-100 (Ex ia)
- C VITO temp. and/or water sensor
- J VITO temp. and/or water sensor + HART device(s)
- U Spot temp. convertor Pt-100 (Ex ia) + HART device(s) (not if Pos 2 = I)
- 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

### Pos 5, 6, 7 Product Designation

- 8 5 4 Servo Gauge

### Pos 8 Pressure

- B 2 1 2" Class 150 FF, Flanges acc. ASME B16.5, Ra = 3.2-6.3  $\mu\text{m}$ , AL <sup>-1</sup>

### Pos 11 Safety Approval

- A ATEX / IECEx Global
- C CSA Canada
- F FM USA
- I INMETRO Brazil

### 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 / 20% Iridium <sup>\*7</sup>
- 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 / 20% Iridium <sup>\*7</sup>
- 9 150 m (492 ft) AISI 316 <sup>\*2</sup>

### Pos 13 Purge Connection

- \* Option not available

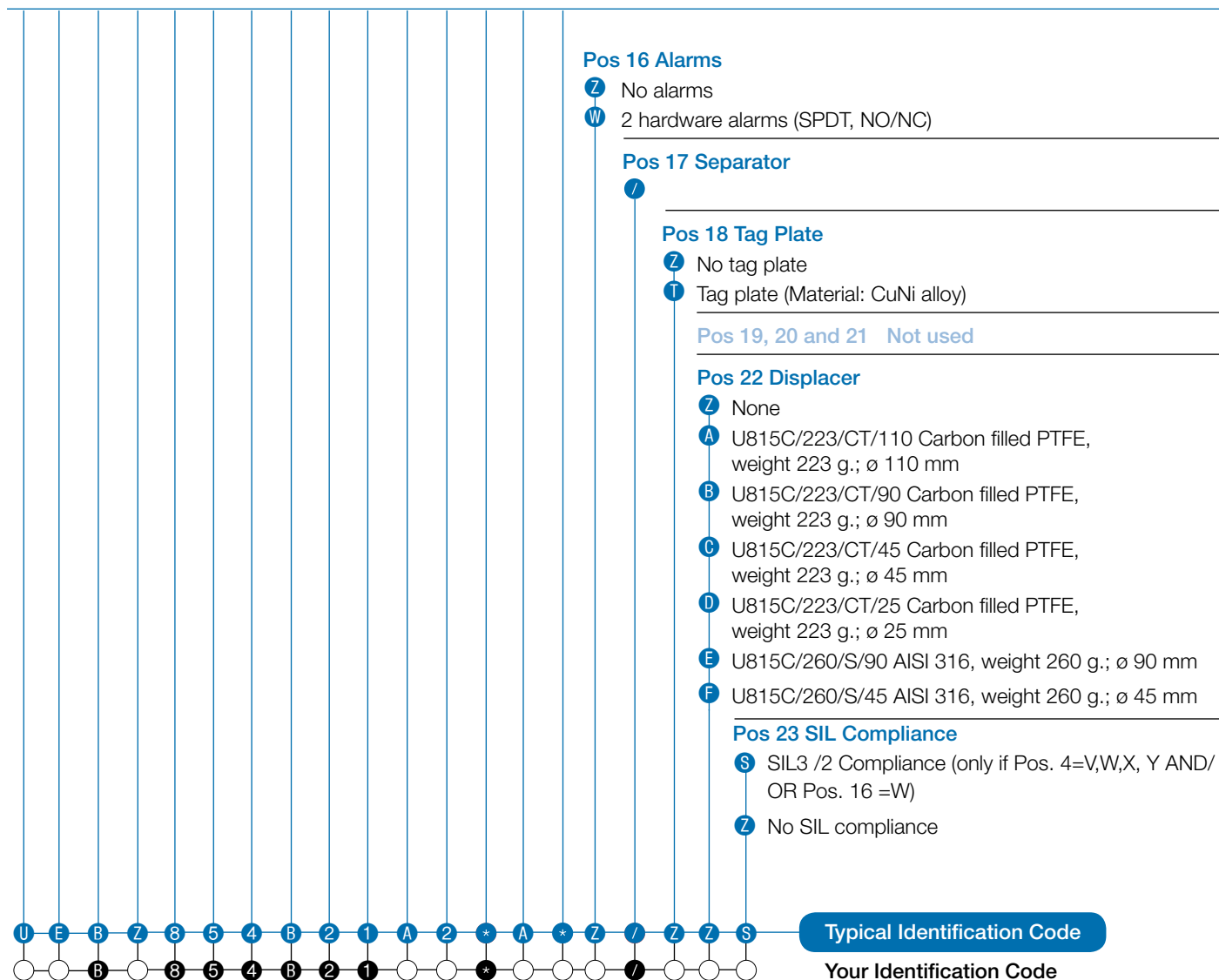
### Pos 14 Main Supply

- A 220 V 50/60 Hz
- C 110 V 50/60 Hz
- K 230 V 50/60 Hz
- R 130 V 50/60 Hz
- S 65 V 50/60 Hz

### Pos 15 Density Measurement

- \* Option not used
- D With Density PROMS (Pos 22 = E, F or Z) <sup>\*3</sup>

## Identification Code (Continued)



### Notes:

Blue positions: Normal delivery.

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

<sup>1</sup> Maximum operating pressure is 600 kPa.

<sup>2</sup> Measuring range is limited to 35 m for ± 1 mm accuracy.

<sup>3</sup> Special density displacer required.

<sup>4</sup> Contact factory for longer measuring ranges.

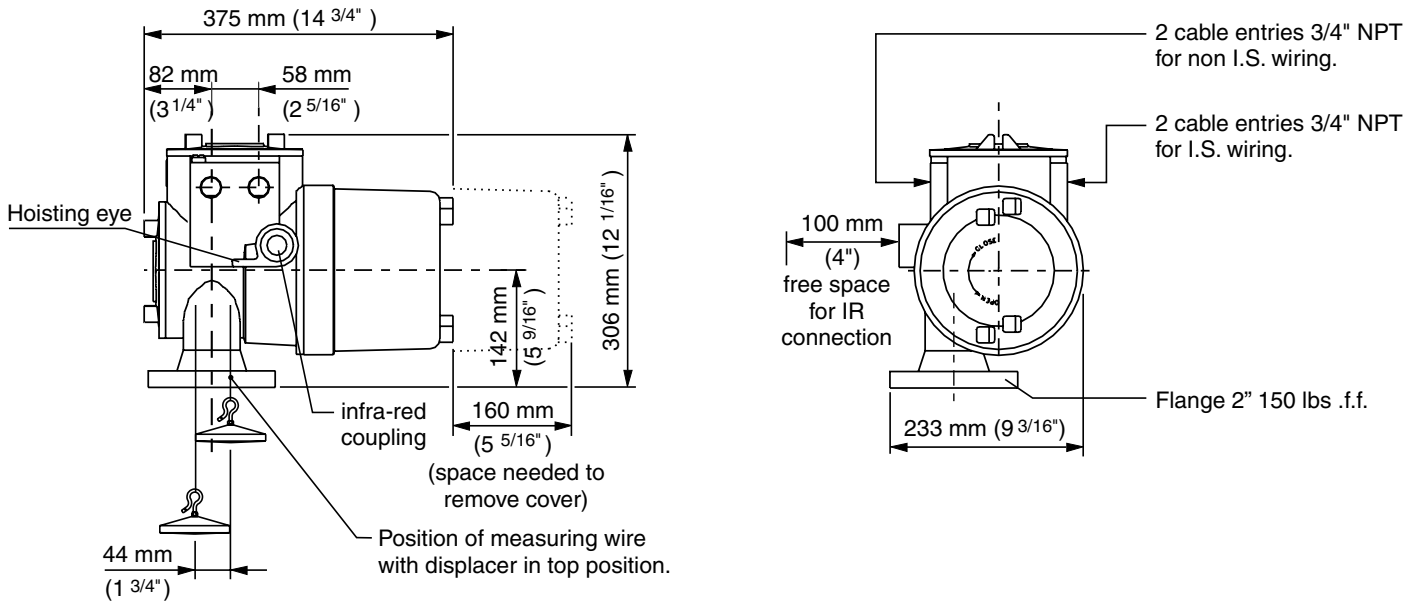
<sup>5</sup> For witnessed verification specify authority, for more information please contact factory.

<sup>6</sup> Displacer diameter should be selected on basis of (legal) accuracy requirements, operational density range and installation conditions.

<sup>7</sup> Consult Factory

## Dimensional Drawing

Dimensions are in mm (inches)



All technical specifications are subject to change without notice.

### For More Information

To learn more about Honeywell solutions, visit [www.honeywellprocess.com](http://www.honeywellprocess.com) or contact your Honeywell account manager.

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