Enraf Servo Gauge 854 ATG

Setting the standard in gauging.

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 overfill 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.

Technical Specifications

### Measuring Specifications

#### Measuring range

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>27 m (88 ft)</td>
<td>Pos 12 = 2, A, B, C or D</td>
</tr>
<tr>
<td>Extended</td>
<td>37 m (121 ft)</td>
<td>Pos 12 = 3, K, L, M or N; 35 m (115 ft) with measuring wire up to 150 m (492 ft)</td>
</tr>
</tbody>
</table>

#### Measuring accuracy level

- 27 m / 88 ft: < ± 0.4 mm (± 0.016")
- 37 m / 121 ft: < ± 0.7 mm (± 0.028")

#### Measuring accuracy interface

< ± 2 mm (± 0.08")

#### Measuring accuracy servo density

< ± 0.1 °C (± 0.18 °F)

#### Measuring accuracy temperature

< ± 0.1 °C (± 0.18 °F)

#### Sensitivity

≤ 0.1 mm (± 0.004")

#### Repeatability

≤ 0.1 mm (± 0.004")

### Mechanical

#### Flange

See ‘Identification Code’ Pos 8-10

#### Dimensions

See ‘Dimensional Drawing’

### Weight

<table>
<thead>
<tr>
<th>Version</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium pressure</td>
<td>16 kg (35 lb)</td>
</tr>
<tr>
<td>Chemical</td>
<td>21 kg (46 lb)</td>
</tr>
<tr>
<td>High pressure</td>
<td>26 kg (57 lb)</td>
</tr>
</tbody>
</table>

#### Cable entries

4 x ¾" 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)
- Min. process temperature: -200 °C (-328 °F), drum housing has to be kept above -40 °C (-40 °F)

### Process Wetted Materials

- Drum compartment: Cast aluminum Int. reg. AA A356 EN1706 AC-AISI7Mg0.3; 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-AISI7Mg0.3
- 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
  - 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 or Ex de [ia Ga] IIB T6 Ga/Gb; acc. to ATEX KEMA
  - Ex d IIIB T6 Ga/Gb or Ex de IIIB 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 IIIB T6 Ga/Gb or Ex de IIIB 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 Vac (-20% to +10%), 230 Vac (±15%), 65 Vac (-20% to +10%), also suitable for 240 Vac (-20% to +10%) if Pos 14 = K
- Frequency variations: 50/60 Hz (±10%)
- Power rating: 25 VAmax, Imax = 2 A (startup current)

### Functional Safety

- Configuration: TÜV certified for SIL 2 (single configuration) and SIL 3 (redundant configuration)
## Technical Specifications (continued)

### Data Communication

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Honeywell Bi-phase mark (Pos 2 = E and I)</strong></td>
<td>Baud rate: 1200 / 2400 bps, Isolation voltage: &gt; 1,500 V, Lightning protection: Full galvanic separation via isolating transformers, Protocol: Standard Honeywell fieldbus (Serial, ASCII, GPU protocol), Common mode rejection: &gt; 150 dB, Cabling: Two wires, twisted pair, Rmax = 200 Ω / line, Cmax = 1 μF; Cable length: 10 km (6 m) or more</td>
</tr>
<tr>
<td><strong>Communication with TSI (Pos 2 = I)</strong></td>
<td>Cabling: 2-wire, intrinsically safe (Rmax = 5Ω (loop) / line, Cmax = 1.27μF)</td>
</tr>
<tr>
<td><strong>Communication with Portable Honeywell Terminal</strong></td>
<td>Protocol: Intra-red, serial</td>
</tr>
</tbody>
</table>

### Options

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<tr>
<td>Alarm relay outputs</td>
<td>2 x SPDT, galvanically isolated, Vmax = 50 V, or 30 V, Imax = 3 A; Pos 16 = W</td>
</tr>
<tr>
<td>Density measurement</td>
<td>With density PROMS (Pos 15 = D) and density displacer (Pos 22 = E or F)</td>
</tr>
<tr>
<td>Analog level output</td>
<td>4 - 20 mA (accuracy ± 0.1% full scale); Pos 4 = V, W, X or Y</td>
</tr>
<tr>
<td>Temperature input and HART devices</td>
<td>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</td>
</tr>
<tr>
<td>Cable entries</td>
<td>Adapters available to fit other sizes cable glands</td>
</tr>
</tbody>
</table>

### Notes:

- HART® is a registered trademark of the HART Communications Foundation.
- Foundation™ Fieldbus is a trademark of the Fieldbus Foundation.
- Under reference conditions
- * Minimum product density between layers: 100 kg/m² (6.25 lb/ft²)
- *1 Optional with a density displacer and calibrated for density measurement
- *2 With VITO temperature probe or spot (Pt100)
- *3 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.
### Identification Code

#### Pos 1  Type of Gauge
1. No W&M approval required, with drum calibration report
2. 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) \(^*6, *7\)
3. 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
1. Honeywell Fieldbus Bi-phase Mark (BPM) GPU protocol
2. Bi-phase Mark (BPM) + I.S. output for tank side indicator 977
3. RS-232C GPU protocol (only when Pos 4 = B, C, J, U or Z)
4. RS-485 GPU protocol (only when Pos 4 = B, C, J, U or Z)
5. RS-232C standard Modbus (only when Pos 4 = B, C, J, U or Z)
6. RS-485 standard Modbus (only when Pos 4 = B, C, J, U or Z)
7. Foundation Fieldbus + BPM

#### Pos 3  Display
1. 2 lines x 16 characters LCD

#### Pos 4  I/O Options
1. No I/O options
2. Spot temp. convertor Pt-100 (Ex ia)
3. VITO temp. and/or water sensor
4. VITO temp. and/or water sensor + HART device(s)
5. Spot temp. convertor Pt-100 (Ex ia) + HART device(s)
6. 4-20 mA level output
7. 4-20 mA level output + VITO temp. and/or water probe
8. 4-20 mA level output + VITO temp. probe
9. 4-20 mA level output + Spot temp. convertor Pt-100 (Ex ia) + VITO temp. and/or water probe + HART device(s)

#### Pos 5, 6, 7  Product Designation
1. Servo Gauge ATG

#### Pos 8, 9, 10  Pressure, Drum Compartment & Flange
1. 2” Class 150 FF, Flanges acc. ASME B16.5, (Ra=3.2-6.3 μm), AL\(^*1\)
2. DN50, PN 6, Flanges acc. EN 1092-4, (Ra=3.2-12.5 μm), AL\(^*1\)
3. 2” Class 150 RF, Flanges acc. ASME B16.5, (Ra=3.2-6.3 μm), AISI 316 \(^*1\)
4. DN50, PN 6, Flanges acc. EN 1092-1, (Ra=3.2-12.5 μm), AISI 316 \(^*1\)
5. 2” Class 150 FF, Flanges acc. ASME B16.5, (Ra=3.2-6.3 μm), AISI 316 \(^*1\)
6. 2” Class 300 RF, Flanges acc. ASME B16.5, (Ra=3.2-6.3 μm), AISI 316 \(^*1\)
7. DN50, PN 40, Flanges acc. EN 1092-1, (Ra=3.2-12.5 μm), AISI 316 \(^*2\)

#### Pos 11  Safety Approvals
1. ATEX / IECEx  Europe
2. CSA  Canada
3. FM  USA
4. INMETRO  Brazil
5. Kosha  Korea

#### Pos 12  Measuring Range & Wire Material
1. 27 m (88 ft)  AISI 316
2. 27 m (88 ft)  Hastelloy C22
3. 27 m (88 ft)  Invar
4. 27 m (88 ft)  Pt / Ir (80% / 20%) only available in US
5. 37 m (121 ft)  AISI 316
6. 37 m (121 ft)  Hastelloy C22
7. 37 m (121 ft)  Invar
8. 37 m (121 ft)  Pt / Ir (80% / 20%) only available in US
9. 150 m (492 ft)  AISI 316 \(^*3\)

\(^*1\) Only available in Europe
\(^*2\) Only available in USA
\(^*3\) Available in USA, Canada and Mexico only

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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.
All technical specifications are subject to change without notice.

For More Information
To learn more about Honeywell solutions, visit www.honeywellprocess.com or contact your Honeywell account manager.

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