



A compact, intelligent and reliable Advanced Tank Gauge.

As tank gauging has evolved, the series 854 ATG servo level gauge has become an industrial standard all over the world. Very reliable, versatile and accurate automatic tank gauge with a minimum of moving parts, meeting all international standards, regulations and recommendations. The multi-functional instrument is modularly constructed. The servo 854 is equipped with a Servo Auto Test feature which further increases the safety integrity of the servo and increases the diagnostic coverage. That means that the Servo can be used in overfill protection loops to prevent spillage. What is unique about this SIL-2 solution is the fact that all installed servo 854 worldwide can be simply loaded with a software add-on that allows it to be used in SIL-2 safety rated loops. The increased diagnostics in the gauge will detect failures inside the gauge or in the application and report this to higher level systems for further action. With the added diagnostics, the safety proof-test interval can be extended to 5 years. This will significantly bring down the operational cost compared to other solutions that require a proof test to be carried out every year. The 854 Servo level gauge has a SFF (Safe Failure Fraction) > 90% which allows it to be used in SIL-2 safety loops. If used in redundant configuration, the servo 854 ATG can be used in SIL-3 rated loops.

Technical specifications

Measuring specifications

Measuring range	: Standard 27 m (88 ft) Optional 37 m (121 ft) 35 m (115 ft) (with measuring wire up to 150 m (492 ft))
Measuring accuracy level	: $\leq \pm 0.4$ mm (± 0.016 ") ¹⁾
Measuring accuracy interface	: $\leq \pm 2$ mm (± 0.08 ") ²⁾
Measuring accuracy density	: $\leq \pm 3$ kg/m ³ (± 0.19 lb/ft ³) ³⁾
Measuring accuracy temp.	: ± 0.1 °C (± 0.18 °F) ^{1) 4)}
Sensitivity	: ± 0.1 mm (± 0.004 ") ¹⁾
Repeatability	: ± 0.1 mm (± 0.004 ") ¹⁾
Wave integration time	: Programmable, three setpoints, between 0.5 s and 10 s

Mechanical

Flange	: See 'Identification code', Pos 9, 10
Dimensions	: See back page
Weight	: Medium pressure version 16 kg (35 lb) Chemical version 21 kg (46 lb) High pressure version 26 kg (57 lb)
Cable entries	: 4 pcs ¾" NPT threaded

Environmental

Operating pressure	: M and C version : up to 6 bar / 0.6 MPa (90 psi) H version : up to 40 bar / 4 MPa (600 psi) (up to 25 bar / 2.5 MPa in acc. to PED)
Ambient temperature	: -40 °C to +65 °C (-40 °F to +149 °F)
Protection class	: IP 65 according to EN 60529 (NEMA 4)
Safety	: Explosion proof - II 1/2 G Ex d IIB T6 Ga/Gb or II 1/2G Ex de IIB T6 Ga/Gb or II 1/2 G Ex d [ia Ga] IIB T6 Ga/Gb or II 1/2G Ex de [ia Ga] IIB T6 Ga/Gb; acc. to KEMA 01ATEX2092 X, certified by KEMA, Netherlands - Ex d [ia Ga] IIB T6 Ga/Gb or Ex de [ia Ga] IIB T6 Ga/Gb; acc. to IECEx KEM 10.0007X, certified by KEMA, Netherlands - Class I, Division 1, Groups B, C & D acc. to ANSI/NFPA no. 70, certified by Factory Mutual Research USA (FM no.: 3Q2A9.AX)
Housing servo comp. & cover	: All types cast aluminum Int. reg. AA A356 EN1706 AC-AISi7Mg0.3
Drum compartment	: M version cast aluminum Int. reg. AA A356 EN1706 AC-AISi7Mg0.3 C & H version stainless steel ASTM A351, CF-8M, G-X6 CrNiMo 18 10 (1.4408)
Finish aluminum parts	: Chromatized according to MIL-C-5541C
Measuring drum, drum shaft	: Stainless steel (1.4401) EN10088 \equiv AISI 316
Measuring wire	: See 'Identification code', Pos 12
Magnet cap	: Stainless steel (1.3953)
O-rings	: Drum cover Silicone / FEP (others NBR 70)

Electrical

Power supply	: 110/130/220 V (+10% to -20%) and 230 V ($\pm 15\%$), optional 65 V (+10% to -20%), also suitable for 240 V (+10% to -20%)
Frequency variations	: 50 Hz to 60 Hz ($\pm 10\%$)
Power rating	: 25 VA, $I_{\max} = 2$ A

Transmission

Type	: Serial, ASCII coded, Bi-Phase Mark modulated (BPM)
Isolating voltage	: > 1,500 V
Lightning protection	: Full galvanic separation via isolating transformers
Protocol	: Standard Enraf fieldbus (GPU protocol)
Common mode rejection	: > 150 dB
Cabling	: Two conductors, twisted pair, $R_{\max} = 200$ Ω / line, $C_{\max} = 1$ μ F
Transmission to	
Portable Enraf Terminal (PET)	: Infra-red, serial

Options

Alarm relay outputs	: 2x SPDT, galvanically isolated, $V_{\max} = 50$ Vac or 75 Vdc, $I_{\max} = 3$ A
Density measurement	: See 'Identification code', Pos 15 (with density displacer)
Analog level output	: 4 - 20 mA (accuracy $\pm 0.1\%$ full scale)
Input boards	: Spot RTD, VITO probes for average temperature and/or water measurement, HART® devices
Data transmission	: Standard Modbus via RS-232C, RS-485 or Foundation Fieldbus® i.s. output for Tank Side Indicator (TSI)
Cable entries	: Adapters available to fit other sizes cable glands

HART® is a trademark of the HART Communications Foundation.

Foundation Fieldbus® is a trademark of the Fieldbus Foundation.

¹⁾ Under reference conditions

²⁾ Difference product density 100 kg/m³ (6.25 lb/ft³)

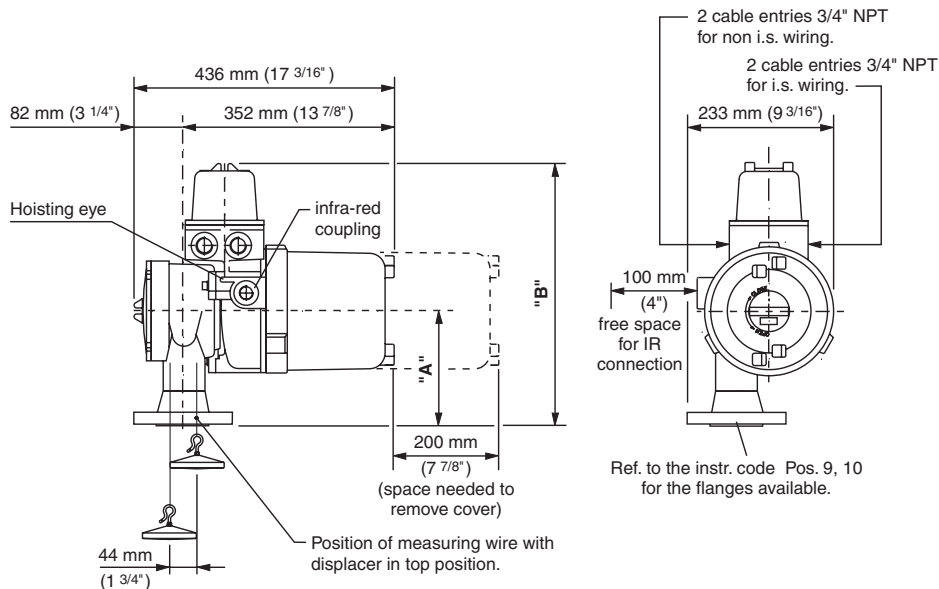
³⁾ (optional) with a density displacer and calibrated for density measurement

⁴⁾ With VITO temperature probe

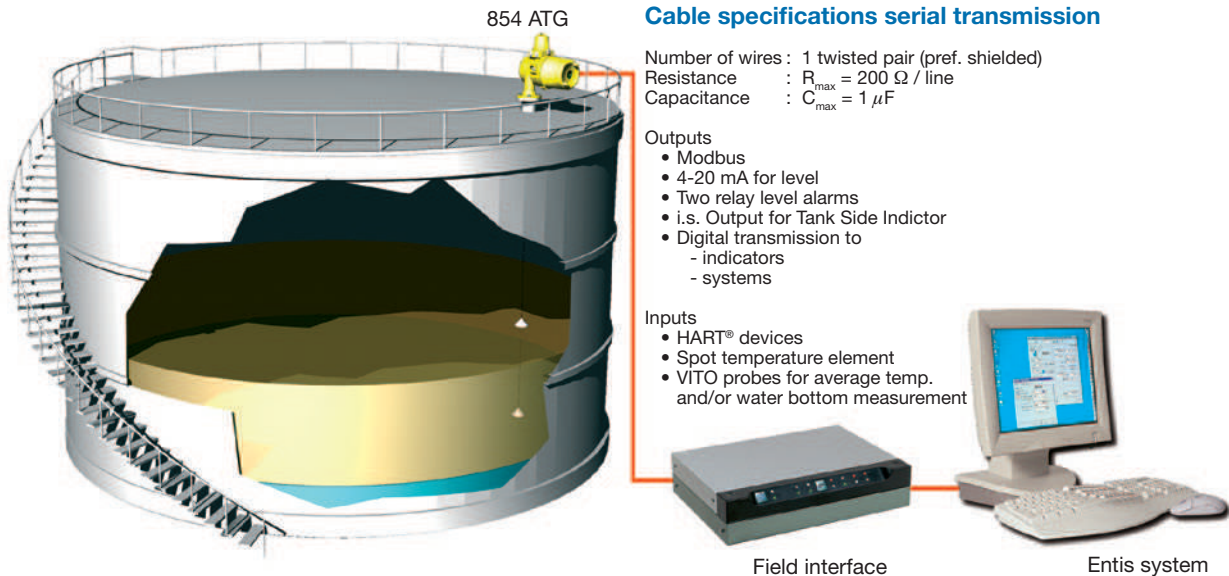
Identification code

Pos 1 W&M approved																				
U	No approval required				P	With local W&M approval from 27 upto 37 m. (121 ft.)														
X	With local W&M approval upto 27 m. (88 ft.)																			
Pos 2 Data transmission																				
E	Enraf Bi-phase mark protocol (standard)																			
I	i.s. Output for Tank Side Indicator (TSI) and Enraf Bi-Phase Mark (BPM) protocol																			
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																			
B	Saab TRL-2																			
Pos 3 Display																				
A	With display																			
Pos 4 I/O options																				
B	Spot temperature Pt100				W	Analog level output + VITO temperature and/or water probe														
C	VITO temperature and/or water probe																			
J	VITO temp. and/or water probe + HART device(s)				X	Analog level output + VITO temperature probe														
U	Spot temperature Pt100 + HART device(s)				Y	Analog level output + spot temperature Pt 100 + VITO temp. and/or water probe + HART device(s)														
V	Analog level output				Z	None														
Pos 5, 6, 7 Instrument designation																				
8	5	4	Servo gauge ATG																	
Pos 8 Pressure version																				
C	Up to 6 bar 0.6 MPa (90 psi) if Pos 9, 10 = 11, 12 or 13																			
M	Up to 6 bar 0.6 MPa (90 psi) if Pos 9, 10 = 21 or 22																			
H	Up to 40 bar 4 MPa (600 psi) if Pos 9, 10 = 51, 52, 53 or 54 (25 bar according PED)																			
Pos 9, 10 Drum compartment & flange																				
		mat. *)	flange	acc. to	finish	compatible with	acc. to													
1	1	ss	2" 150 lbs rf	ANSI B16.5	turning, Ra = 3.2 - 12.5 µm	DN50, PN20 rf	ISO 7005-1													
1	2	ss	NW50 ND6 form D	DIN 2501 DIN 2526	turning, Rz = max. 40 µm	DN50, PN6 rf	ISO 7005-1													
1	3	ss	2" 150 lbs ff	ANSI B16.5	turning, Ra = 3.2 - 12.5 µm	DN50, PN20 ff	ISO 7005-1													
2	1	Al	2" 150 lbs ff	ANSI B16.5	turning, Ra = 3.2 - 12.5 µm	DN50, PN20 ff	ISO 7005-1													
2	2	Al	NW50 ND6 form B	DIN 2501 DIN 2526	turning, Rz = 40 - 160 µm	DN50, PN6 ff	ISO 7005-1													
5	1	ss	2" 300 lbs rf	ANSI B16.5	turning, Ra = 3.2 - 12.5 µm	DN50, PN50 rf	ISO 7005-1													
5	2	ss	2" 300 lbs rf	ANSI B16.5	turning, Ra = 3.2 - 6.3 µm	DN50, PN50 rf	ISO 7005-1													
5	3	ss	NW50 ND40 form C	DIN 2501 DIN 2526	turning, Rz = 40 - 160 µm	DN50, PN40 rf	ISO 7005-1													
5	4	ss	NW50 ND40 form E	DIN 2501 DIN 2526	turning, Rz = max. 16 µm	DN50, PN40 rf	ISO 7005-1) see also technical specifications													
Pos 11 Safety approvals																				
A	ATEX / IECEx Europe				I	INMETRO Brazil														
C	CSA Canada					For other approvals please contact your nearest Enraf office														
F	FM USA																			
Pos 12 Measuring range & wire material																				
2	27 m (88 ft) AISI 316				K	37 m (121 ft) Hastelloy C22														
A	27 m (88 ft) Hastelloy C22				L	37 m (121 ft) Tantalum														
B	27 m (88 ft) Tantalum				M	37 m (121 ft) Invar														
C	27 m (88 ft) Invar				N	37 m (121 ft) Platinum / 20% Iridium														
D	27 m (88 ft) Platinum / 20% Iridium				9	35 m (115 ft) AISI 316 with 150 m (492 ft) wire length														
3	37 m (121 ft) AISI 316																			
Pos 13 Purge connection																				
*	Option not used				L	1/4" BSP entry														
Pos 14 Mains supply																				
A	220 V 50/60 Hz				R	130 V 50/60 Hz														
C	110 V 50/60 Hz				S	65 V 50/60 Hz														
K	230 V 50/60 Hz																			
Pos 15 Density measurement																				
D	With servo density measurement				*	Option not used														
Pos 16 Alarms																				
W	With 2 programmable SPDT alarms				Z	No alarms														
U	E	A	Z	8	5	4	M	2	1	A	2	*	A	*	Z	Typical identification code				
		A		8	5	4											Your identification code			

Dimensional drawing



	"A"	"B"
M and C version	184 mm (7 1/4")	427 mm (16 13/16")
H version	206 mm (8 1/8")	449 mm (17 11/16")



For More Information

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

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