



## **A compact, intelligent and reliable Advanced Tank Gauge**

As tank gauging has evolved, the series 854ATG 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. A true test of its quality is the dependability and low warranty record that the ATG has maintained for many years. The multi-functional instrument is modularly constructed. The option slots for additional features allow connecting to a wide range of other instruments e.g. temperature-, pressure-, interface measurement and more. Obviously the connectivity to various field busses and tank inventory or host systems can easily be accomplished. Simple configuration and diagnostics are possible through a hand held device or via configuration software.

## 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 ( $\pm 0.016$ ") <sup>1)</sup>
Measuring accuracy interface	: $\leq \pm 2$ mm ( $\pm 0.08$ ") <sup>2)</sup>
Measuring accuracy density	: $\leq \pm 3$ kg/m <sup>3</sup> ( $\pm 0.19$ lb/ft <sup>3</sup> ) <sup>3)</sup>
Measuring accuracy temp.	: $\pm 0.1$ °C ( $\pm 0.18$ °F) <sup>1) 4)</sup>
Sensitivity	: $\pm 0.1$ mm ( $\pm 0.004$ ") <sup>1)</sup>
Repeatability	: $\pm 0.1$ mm ( $\pm 0.004$ ") <sup>1)</sup>
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 EEx d IIB T6 or EEx de IIB T6 or EEx d [ia/ib] IIB T6 or EEx de [ia/ib] IIB T6 according to ATEX - Class I, Division 1, Groups B, C and D, in acc. to ANSI / NFPA 70 (FM, USA)

## Materials

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	: Chromatinized according to MIL-C-5541C
Measuring drum, drum shaft	: Stainless steel (1.4401) EN10088 $\cong$ 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, $R_{\max} = 200$ $\Omega$ / line, $C_{\max} = 1$ $\mu$ 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.

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

<sup>2)</sup> Difference product density 100 kg/m<sup>3</sup> (6.25 lb/ft<sup>3</sup>)

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

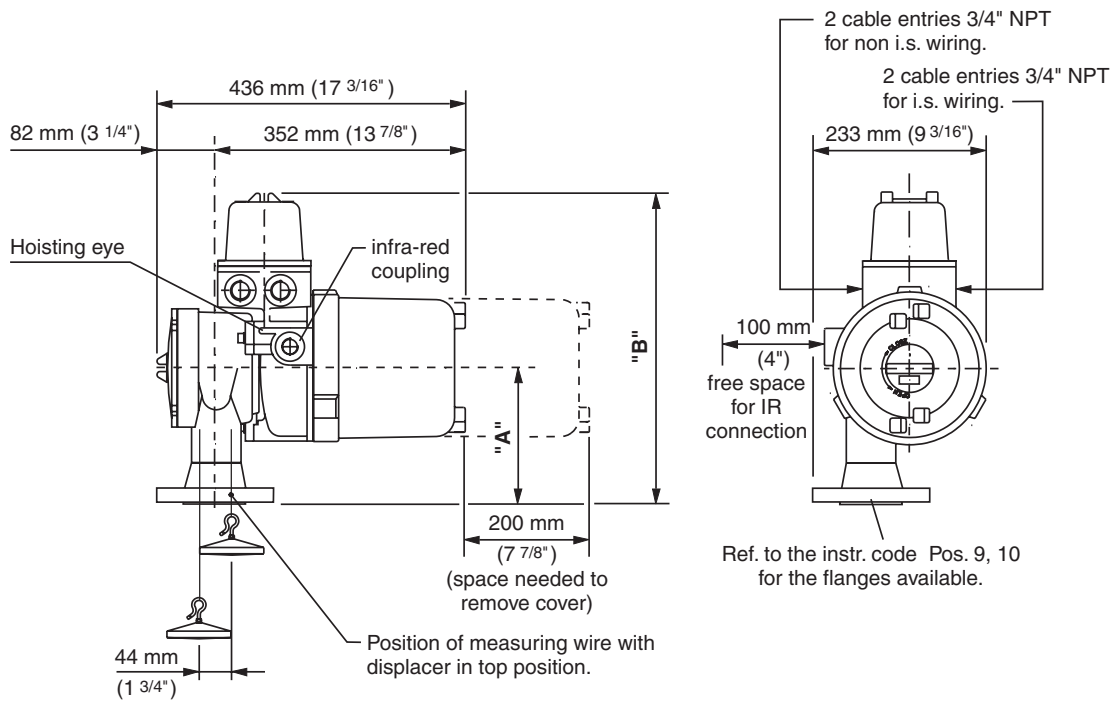
<sup>4)</sup> With VITO temperature probe

<b>Pos 1 Application</b>									
U General purpose					X W&M certified				
<b>Pos 2 Data transmission</b>									
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>Pos 3 Display</b>									
A With display									
<b>Pos 4 I/O options</b>									
B Spot temperature Pt100					W Analog level output + VITO temperature and/or water probe				
C VITO temperature and/or water probe					X Analog level output + VITO temperature probe				
J VITO temp. and/or water probe + HART device(s)					Y Analog level output + spot temperature Pt 100 + VITO temp. and/or water probe + HART device(s)				
U Spot temperature Pt100 + HART device(s)					Z None				
V Analog level output									
<b>Pos 5, 6, 7 Instrument designation</b>									
8 5 4 Servo gauge ATG									
<b>Pos 8 Pressure version</b>									
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)									
<b>Pos 9, 10 Drum compartment &amp; flange</b>									
		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	
<b>Pos 11 Safety approvals</b>									
A ATEX Europe					For other approvals please contact your nearest Enraf office				
C CSA Canada									
F FM USA									
<b>Pos 12 Measuring range &amp; wire material</b>									
2 27 m (88 ft) AISI 316					K 37 m (121 ft) Hasteloy C22				
A 27 m (88 ft) Hasteloy 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									
<b>Pos 13 Purge connection</b>									
* Option not used					L 1/4" BSP entry				
<b>Pos 14 Mains supply</b>									
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									
<b>Pos 15 Density measurement</b>									
D With servo density measurement					* Option not used				
<b>Pos 16 Alarms</b>									
W With 2 programmable SPDT alarms					Z No alarms				

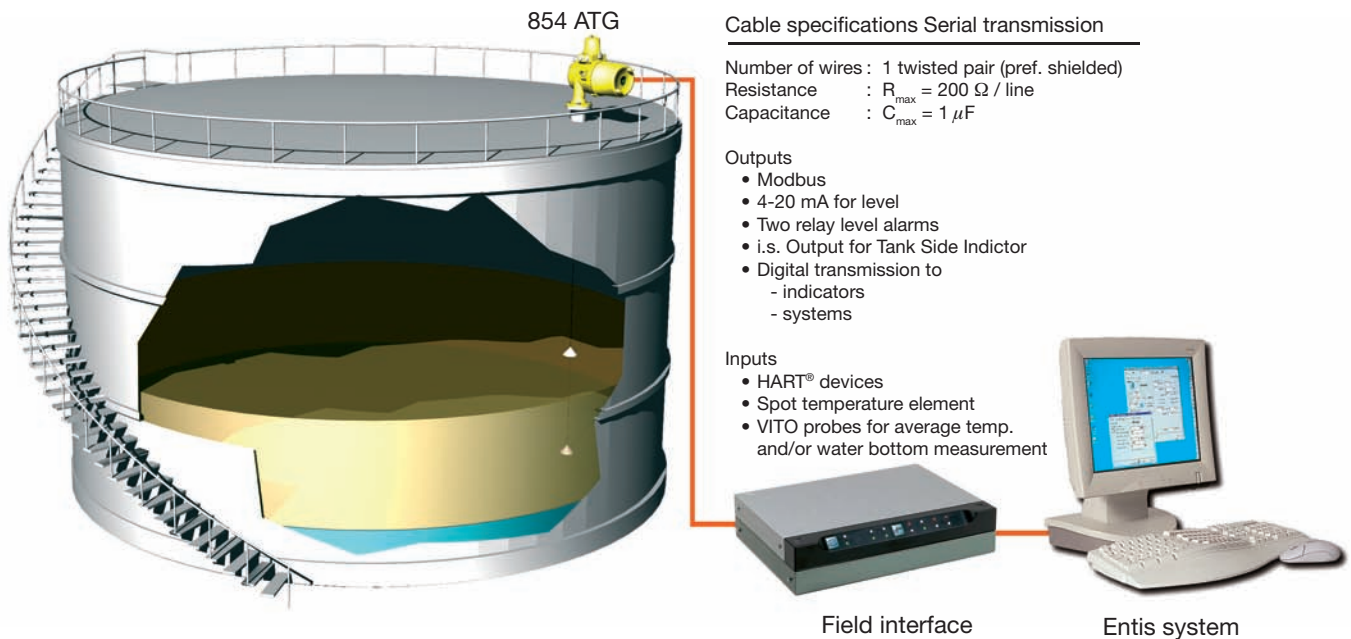
U E A Z 8 5 4 M 2 1 A 2 \* A \* Z Typical identification code

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")



854 ATG

### Cable specifications Serial transmission

Number of wires : 1 twisted pair (pref. shielded)  
 Resistance :  $R_{max} = 200 \Omega / \text{line}$   
 Capacitance :  $C_{max} = 1 \mu\text{F}$

### Outputs

- Modbus
- 4-20 mA for level
- Two relay level alarms
- i.s. Output for Tank Side Indicator
- Digital transmission to
  - indicators
  - systems

### Inputs

- HART® devices
- Spot temperature element
- VITO probes for average temp. and/or water bottom measurement

Field interface

Entis system

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