



Product sheet

977 Tank Side Indicator

the economical, easy to read and accessible display unit

benefits

Plug & Play

Intrinsically safe

Easy to install

Promotes safety

Allows testing at ground level

PIN-code protected

The compact 977 Tank Side Indicator (TSI) is a digital display unit providing a safe and convenient way to read gauge data at ground level from the industry standard Enraf level gauges.

The TSI is plug and play, easy to install and mountable in a variety of ways, for example on a wall or railing. No additional power supply is required, a two-wire connection to the level gauge I.S. output is sufficient.

Designed specially to bring at ground level a wide range of tank gauging data, it saves time and helps to promote safety by eliminating unnecessary tank climbing. The TSI features an easy to read display that provides immediate access to accurate and real time readings on product level, temperature and gauge status.

An optional keyboard allows the user to scroll through extended screen formats for more detailed information on product density, interface levels, pressure, gas temperature and other important tank data. For servo gauges several gauge commands such as density or interface dip, repeatability test, driving displacer up/down etc. can be issued.

Unauthorized use of the TSI keyboard is protected by a PIN-code access system.

The TSI is intrinsically safe and certified for use in hazardous areas.



WE THINK TANK

Technical specifications

Display	
Type	: LCD, 2 lines, 16 alpha numeric characters per line
Mechanical	
Dimensions (w x h x d)	: 160 mm x 160 mm x 90 mm (6 5/16" x 6 5/16" x 3 9/16")
Weight	: 2.15 kg (4.7 lb)
Cable entry	: PG 16
Environmental	
Ambient temperature	: -20 °C to +65 °C (-4 °F to +149 °F)
Protection class	: IP 65, according to IEC 529 (NEMA 4)
Safety	: Explosion proof <ul style="list-style-type: none"> - EEx ib IIB T4 according to CENELEC - Class I, Division 1, Groups B, C and D, according to ANSI NFPA 70 (FM, USA)
Materials	
Housing	: Coated aluminum
Electrical	
Power supply	: Intrinsically safe from Enraf level gauge
Transmission	
Type	: Superimposed on supply lines (FSK based on Bell 202 modem standard) i.s. transmission option for TSI is required in Enraf level gauge
Cabling (i.s.)	: One twisted pair shielded, $R_{max} = 5 \Omega / \text{line}$, $C_{max} = 1,27 \mu\text{F}$, $L_{max} = 800 \mu\text{H}$
Options	
Keyboard	: 4 key touch panel
Mounting brackets	: For railing 1½", 2" and 3"
Cable gland	: PG 16
Cable entry	: Adapters available to fit other size cable gland <ul style="list-style-type: none"> - M20 x 1,5 - 3/4" NPT

Indicator functions

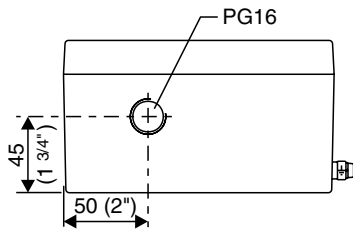
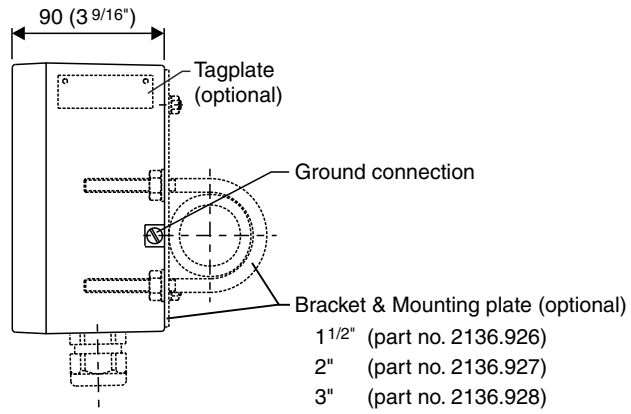
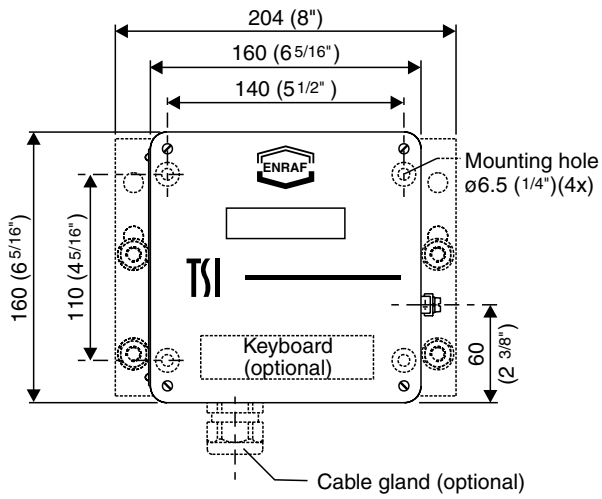
When enabled in Enraf level gauge output		TSI standard	TSI with keyboard
Level (mm, ft,in, /16)	standard	■	■
Product temperature (°C, °F)		■	■
Gauge status		■	■
Level alarm status (--,HH,HA,LL,LA)		■	■
Displacer status (-, ↑, ↓)		■	■
Operational status (test mode, dip mode, etc.)		■	■
Limit switch status (-, C)		■	■
Gauge commands (test, interface measurement, calibrate, etc.)	selectable		■
Gas temperature (°C, °F, incl. status info)			■
Servo or HIMS density (kg /m³, °API, lb/ft³ incl. status info)			■
Pressure P1 (Pa, kPa, psi, incl. status info)			■
Pressure P3 (Pa, kPa, psi, incl. status info)			■
Water level (mm, ft,in, /16)			■

Identification code

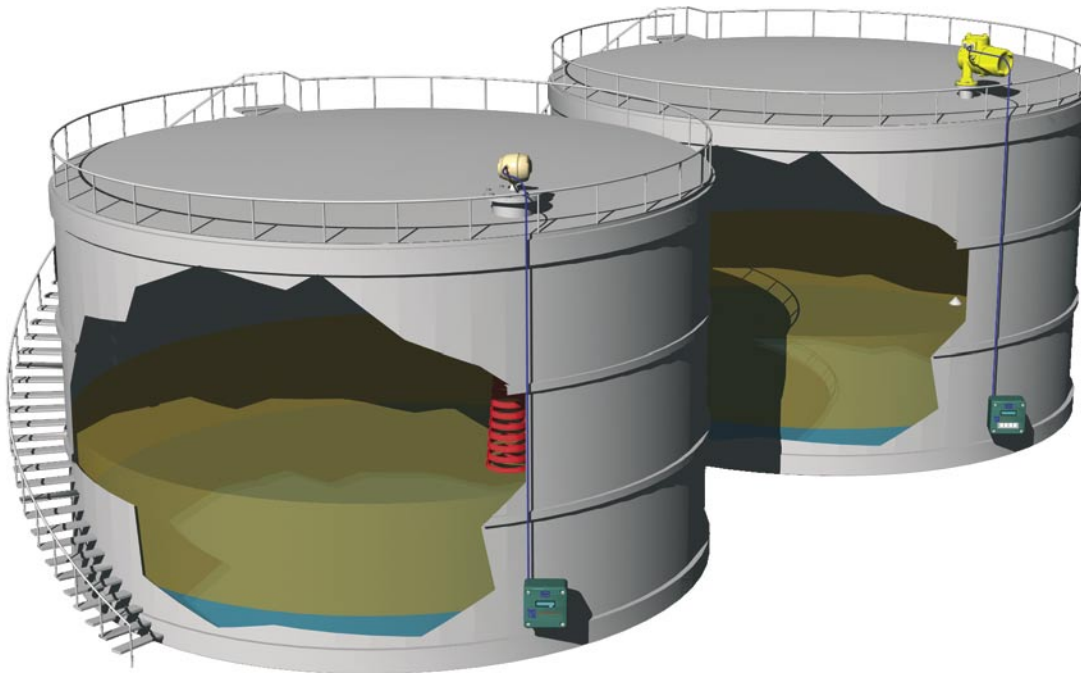
Pos 1 Application			
U	General purpose		
X	With sealing facilities		
Pos 2 Option not used			
*			
Pos 3 Option not used			
*			
Pos 4 Version			
A	Standard		
B	Including keyboard		
Pos 5, 6, 7 Instrument designation			
9	7	7	Tank Side Indicator
Pos 8 Mounting arrangement			
S	Wall mounting		
A	Mounting on railing with 1½" bracket		
B	Mounting on railing with 2" bracket		
C	Mounting on railing with 3" bracket		
Pos 9 Cable entry			
S	PG16 threaded	(standard in housing)	
G	M20 x 1,5	(via adapter)	
N	3/4" NPT	(via adapter)	
Pos 10 Safety approvals			
N	None		
F	FM	USA	
Y	CENELEC	Europe	

U	*	*	A	9	7	7	S	S	Y	Typical identification code
---	---	---	---	---	---	---	---	---	---	------------------------------------

*	*	9	7	7							Your identification code
---	---	---	---	---	--	--	--	--	--	--	---------------------------------



Dimensions in mm (")



We at Enraf are committed to excellence.

Enraf B.V.

Röntgenweg 1, 2624 BD Delft
P.O. Box 812, 2600 AV Delft, The Netherlands
Tel.: +31 (0)15 269 86 00, Fax: +31 (0)15 261 95 74
Email: info@enraf.nl, http://www.enraf.com

China: Enraf B.V. (Shanghai Rep. Office)

18G, International Shipping & Finance Center
720 Pudong Avenue, Shanghai 200120
Tel.: +86 21 50367000, Fax: +86 21 50367111

France: ENRAF S.a.r.l.

ZAC les Beaudottes, 15 rue Paul Langevin
93270 SEVRAN
Tel.: +33 (0)1 49 36 20 80, Fax: +33 (0)1 43 85 26 48

Germany: Enraf GmbH

Obere Dammstrasse 10, 42653 Solingen
Postfach 101023, 42648 Solingen
Tel.: +49 (0)212 58 750, Fax: +49 (0)212 58 7549

Russia: Enraf B.V. (Moscow Rep. Office)

21, Dostoevskogo street
103030 Moscow
Tel. / Fax: +7 (0)95 788 0713
Tel. / Fax: +7 (0)95 788 0691

Singapore: Enraf Singapore Pte Ltd

Lam Soon Industrial Building
63 Hillview Avenue, # 07- 04, Singapore 669569
Tel.: +65 676 94 857, Fax: +65 683 67 496

United Kingdom: Enraf Ltd.

Unit D2, Melville Court, Spilsby Road
Harold Hill, Romford, Essex RM3 8SB
Tel.: +44 (0)1708 346 333, Fax: +44 (0)1708 370 670

USA: ENRAF Inc.

4333 West Sam Houston Parkway North, Suite 190
Houston, TX 77043
Tel.: +1 832 467 3422, Fax: +1 832 467 3441

Information in this publication is subject to change without notice.

® Enraf is a registered trademark © Enraf B.V. The Netherlands



WE THINK TANK