

Field Display & Interface

Tank inventory anywhere in your tank farm

Enraf's Field Display & Interface Unit (FDI) is a versatile, EEX approved instrument. It provides W & M accepted tank inventory information, in the field where it is needed. The instrument offers five modes for uninterrupted data availability:

Stand alone

The indicator listens to the communication between the field instruments and the remote system, updating its display each time the corresponding gauge transmits its data

Optional fall back mode

As with the stand alone mode, the indicator listens to the field/system communication. When the communication fails, the FDI automatically takes over. When the transmission returns to normal, the FDI reverts to the stand alone mode

Master mode

The indicator interrogates and directly reads the connected field instrument.

Master display scan mode

The indicator works as a stand alone indicator displaying the requested display format from the gauge.

HTG level gauge mode

The instrument can be used as a self supporting processing unit for a Hydrostatic Tank Gauging system (HTG).

Enraf provides the FDI with an internal processor bus allowing the addition of extra options and increasing the functionality.

- Temperature Processing Unit (TPU-2)
For spot temperature measurement
- Multiple Processing Unit (MPU)
For average temperature measurement and analog 4-20 mA level output
- Hart processing Unit (HPU)
For Hart protocol pressure transmitters and average temperature measurement
- hOneywell Processing Unit (OPU)
For Honeywell DE protocol pressure transmitters and average temperature measurement
- HART processing Spot Unit (HSU)
For HART protocol pressure transmitters and spot temperature measurement
- On standard Processing Unit (SPU)
Hard wired alarm contacts and/or fall back relay

The FDI incorporates an optical infra red



connector for communication with the Portable Enraf Terminal (PET) for configuration and verification.

The FDI allows several display formats.

- Level and temperature (HIMS or HTG)
- Average vapor / product temperature
- Density (HIMS or HTG)
- Pressure (Transmitter P1, P2, P3)
- Analog level output
- Interface (water) level

The FDI can be configured for metric or English/American dimensions. Because of an integral magnetically operated reed contact in the FDI, an operator can readily test functions by holding a magnet at the display window.

Ground level display



Benefits

- Provides field information
- No tank climbing
- Password protected
- Expandable modular design
- For legal measurements
- Lightning protected



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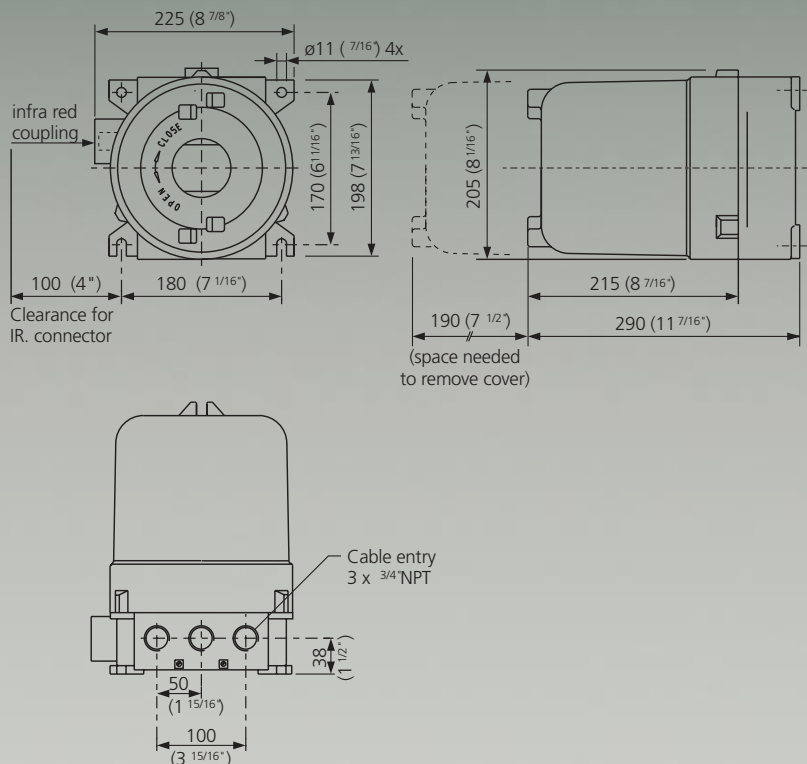
Display	
Type	: LCD contrast adjustable 2 lines, 16 alphanumeric characters per line
Decimal separator	: period "." or comma "," selectable
Mechanical	
Dimensions (w x h x d)	: 208 mm x 198 mm x 300 mm (8.2" x 7.8" x 11.9")
Weight	: 12 kg (26 lb)
Cable entries	: 3 pcs ¾" NPT threaded (Ex d glands or sealed conduit may be required)
Environmental	
Ambient temperature	: - 40 °C to + 85 °C (- 40 °F to + 180 °F)
Protection class	: IP 67 / NEMA 6P
Safety	: Explosion proof - EEx d IIB T% acc. to CENELEC - Class I, Division 1, Groups B, C and D, in acc. to NFPA 70 (FM, USA)
Temperature circuits	: Intrinsically safe - EEx ia/ib IIB T5 acc to CENELEC - Class I, Division 1, Groups B*, C and D, in acc. to NFPA 70 (FM, USA) *pending on temp. board
Materials	
Housing	: Cast Aluminum Int. reg. AA A356 G.Al.Si.7Mg wa (3.2371.61) DIN 1725
Finish	: Chromatized
O-rings	: Cover Silicone / FEP (other NBR 70)
Electrical	
Power supply	: 110/130/220/240 V (+ 10 % to - 20 %), optional 65 V (+ 10 % to - 20 %)
Frequency variations	: 45 Hz to 65 Hz
Power rating	: 25 VA, I _{max} = 2 A (20 VA for FM)
Isolating voltage	: > 1.500 V
Lightning protection	: Full galvanic separation via isolating transformers
Transmission	
Type	: Serial, Bi-Phase Mark modulated (BPM), Enraf GPU protocol
Baud rate	: Selectable 1200 baud or 2400 baud
Cabling	: Two conductors, twisted pair, R _{max} = 200 Ω / line, C _{max} < 1 µF
Communication with PET **	: Infra-red, serial
Operational modes	
Five off	: I Indicator mode (stand alone) F Indicator and fall back mode M Master mode D Master display scan mode (stand alone) H HTG level mode
Options	
Alarm relay output	: 2 x SPDT, galvanically isolated, V _{max} = 240 V, I _{max} = 3 A (CSA 0.6 A), 500 VA, non inductive load
Fall back relay	: Adjustable transmission time out 0 - 29,5 min, self polling, restarts on gauge restart
Level output	: 4 - 20 mA (accuracy ± 0.1% full scale)
Input boards for	: Spot RTD's, average thermometers, digital transmitters (HART- or Honeywell DE protocol)
Cable entries	: Adapters available to fit other size cable glands
Test tool	: Magnetic test tool
LCD	: With back-light

Indicator functions			
When enabled in gauge output			
Displayed data	User selectable	Level and temperature Average gas temperature Average product temperature Density Pressure Analog level output Interface (water) level	In master display mode " " " " In HTG mode, water probe and XPU-2 required

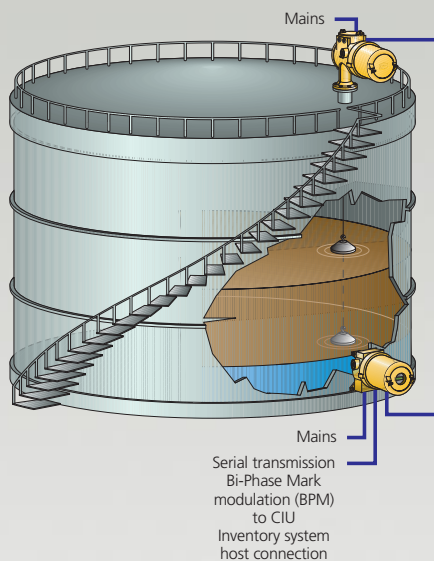
** PET = Portable Enraf Terminal

Pos 1Application									
U	General purpose								
X	With sealing facilities								
Pos 2Data transmission									
E	Serial transmission, Bi-Phase Mark modulated (BPM)								
Pos 3I/O options									
A	4 - 20 mA level output								
D	Spot temperature converter Pt900 (Ex ia) + (pressure) transmitter HART protocol								
E	Spot temperature converter (Ex ia)								
F	Spot temperature converter (Ex ia) + (pressure) transmitter HART protocol								
G	Average temperature MIR interface + (pressure) transmitter HART protocol								
H	Average temperature MIT interface + (pressure) transmitter HART protocol								
K	Average temperature MIR interface + (pressure) transmitter Honeywell DE protocol								
L	Average temperature MIT interface + (pressure) transmitter Honeywell DE protocol								
M	Average temperature MIR interface								
N	Average temperature MIR interface + 4 - 20 mA level output								
O	Average temperature MIT interface								
P	Average temperature MIT interface + 4 - 20 mA level output								
Z	None								
Pos 4Alarm relay and fall-back relay									
F	With alarm relay and fall-back relay								
Z	Without alarm relay and fall-back relay								
Pos 5, 6, 7Instrument designation									
8	7	7							
Pos 8Power supply									
A	220 V 50/60 Hz								
C	110 V 50/60 Hz								
K	240 V 50/60 Hz								
R	130 V 50/60 Hz								
S	65 V 50/60 Hz								
Pos 8Application									
S	Hybrid Inventory Management System (HIMS), when pos. 3 = F, G, H, K or L								
T	Hydrostatic Tank Gauging (HTG), when pos. 3 = F, G, H, K or L								
Z	Basic indicator								
Pos 10Safety approvals									
F	FM	USA	when Pos 3 = A, E, F, G, H, K, L, M, N, O, P, Z						
L	CSA	Canada	when Pos 3 = M, N, O, P, Z						
N	None								
Y	CENELEC	Europe							
Typical identification code									
U	E	Z	Z	8	7	7	A	Z	Y
	E			8	7	7			
Your identification code									

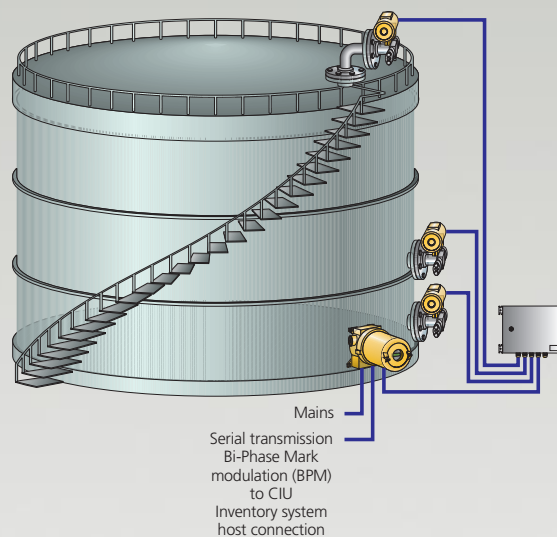
Indicator functions continued			
When enabled in gauge output			
Dimensions	User selectable	Level and interface level Temperature Density Pressure	mm, ft, in, /16 °C, °F kg/m³, °API. lb/ft³ Pa, kPa, psi
Test functions	With test magnet	Display test Scroll all display formats	



FDI at the foot of the tank



FDI with HTG system



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