

Product sheet

SmartRadar FlexLine

The smart idea for optimised tank measurement

Benefits

Minimal installation requirements
for nozzles $\geq 6"$

Unequaled accuracy under all
circumstances

FlexConn architecture to
enable adaptation for future
circumstances

Field proven planar antennae
for reliable and accurate level
measurements

Installation close to the tank shell

The Enraf SmartRadar FlexLine establishes new levels of precision and flexibility in tank inventory management. By combining wholly new software algorithms with Enraf's internationally acclaimed planar antennae technology, SmartRadar FlexLine ensures the levels of precision demanded for custody transfer accuracy.

In the most challenging circumstances, like dome roofs and on bad stilling wells, the SmartRadar Flexline maintains its ultra-high performance level. The Enhanced Performance Signal processing makes it in many cases possible to provide an accurate level reading even when a free space antenna is installed close to the tank shell. This could mean there is no need for a costly stilling well.

SmartRadar FlexLine performs where other radar systems fail: obstruction effects, tank wall effects, nearby effects, near-bottom effects, mismatch effects, large slot effects on stilling wells and changes in temperature and thermal expansion conditions are all of no consequence. Maintaining certified accuracy innage levels as low as 10 cm and ullage distances of 30 cm means the creation of a tank operating volume that is larger than with any other radar gauge available on the market.

True operating flexibility however is not the result of measuring accuracy alone: it is assured through the wide availability of antennae that take into account the requirements of the installation and customers' needs, together with the provision of a broad set of communications protocols that match existing tank gauging systems and offer a comprehensive range of I/O options.

With compliance to API, OIML, IEC Ex, ATEX, CSA and FM, SmartRadar FlexLine is a customer orientated building block enabling end-users to upgrade and optimise their existing tank gauging systems and plan for all future eventualities.



Measuring specifications

Measuring range	: upto 75 m (246 ft)
Instrument accuracy	: Xtreme Precision SmartRadar ± 0.4 mm (0.016") * : High Precision SmartRadar ± 1 mm (0.04") * : Advanced Precision SmartRadar ± 3 mm (0.12") *
Measuring resolution	: 0.1 mm (0.001 ft)

Principles

Measuring principle	: FMCW / Synthesized Pulse Reflectometer
Signal processing	: Enhanced Performance Signal processing (EPS)
Operating frequency	: Xband (9.538 GHz to 10.561 GHz) R&TTE, FCC compliant

Mechanical

Dimensions	: See drawing opposite
Weight	: 10 kg excluding antenna and separator
Cable entries	: 3/4" NPT or M20

Environmental

Ambient temperature	: -40 °C to +65 °C (-40 °F to +149 °F)
Storage temperature	: -50 °C to +75 °C (-58 °F to +167 °F)
Protection class	: IP66 / IP67 according to EN 60529 (NEMA 4X)
Safety	: Explosionproof <ul style="list-style-type: none">- ATEX II 1/2 G Ex d IIB T6 or Ex d [ia] IIB T6 or Ex de IIB T6 or Ex de [ia] IIB T6- IEC Ex Zone 0/1 Ex d IIB T6 or Ex d [ia] IIB T6 or Ex de IIB T6 or Ex de [ia] IIB T6- Class I, Division 1, Groups C and D, acc. to ANSI / NFPA 70 (FM, CSA)

Materials

Instrument unit housing	: Aluminum alloy according to EN1706
Instrument unit finish	: Hard anodising according to MIL A8625-E Type III
O-rings	: NBR 70

Electrical

Power supply	: autoselect 65 Vac to 240 Vac (+10 % to -15 %) 50 / 60 Hz autoselect 24 Vdc to 65 Vdc (+10 % to -15 %)
Power rating	: Typical 15 W max. 23 W with options

Safety & approvals

ATEX, CE, IECEx, OIML, CB Scheme, FM, CSA, FCC, API, NMI, TÜV certified Overfill Protection

Options / communications

5 module slots available, for all type of interface solutions see Module sheets

Note:

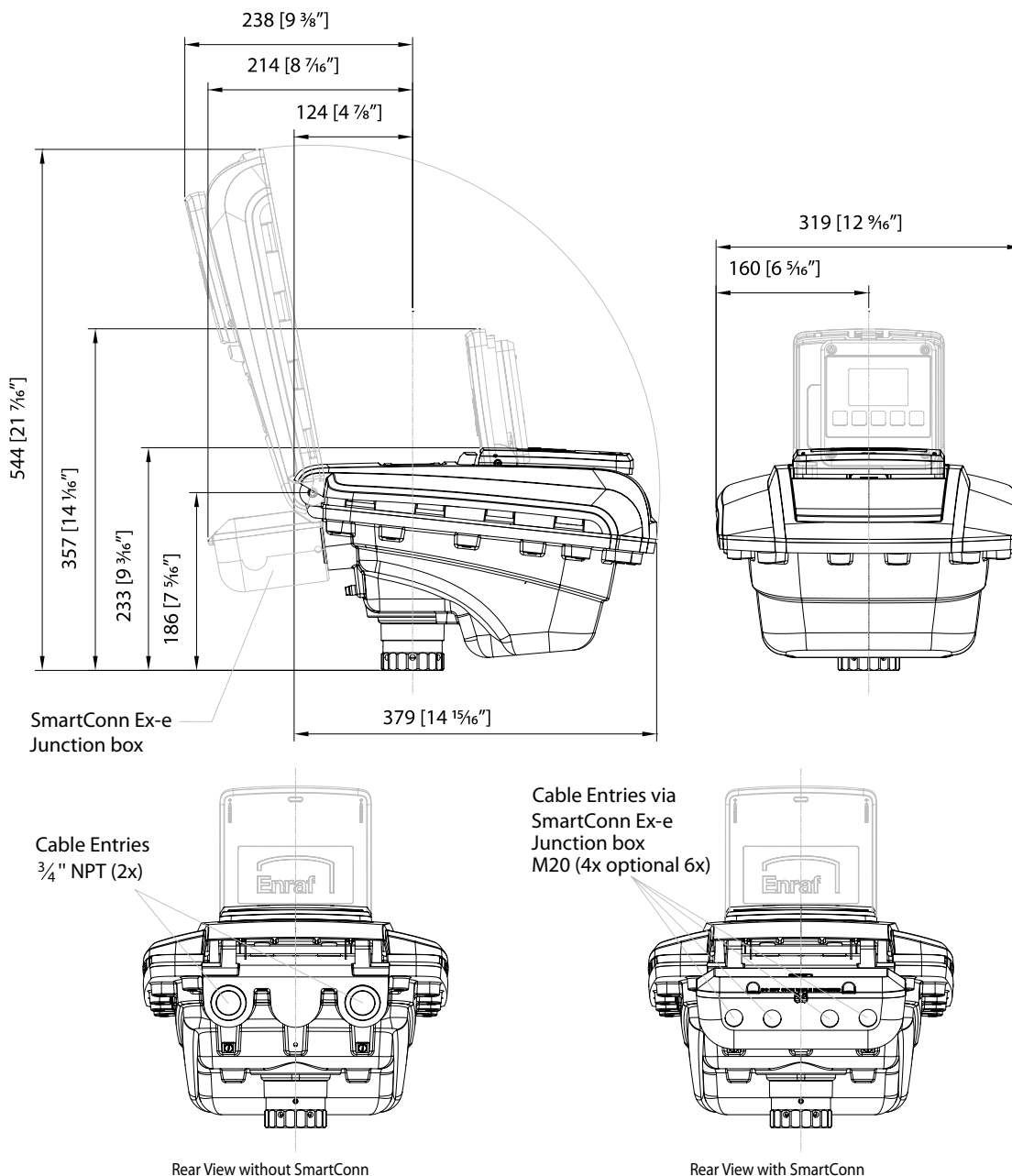
*) Under reference conditions

Identification code

Pos 1 Device selection																
R	SmartRadar FlexLine															
Pos 2 Type of gauge																
X	SmartRadar Xtreme Performance, with local W&M approval and verification (specify National Metrology Institute)															
Y	SmartRadar Xtreme Performance, with local W&M approval with OIML R85 test report															
H	SmartRadar High Performance, for custody transfer acc. to OIML R85, API 3.1B and ISO 4266-1															
I	SmartRadar High Performance, for custody transfer acc. to OIML R85 with OIML R85 test report															
A	SmartRadar Advanced Performance, for inventory control acc. to API 3.1B and ISO 4266-1															
U	SmartRadar Advanced Performance, for inventory control acc. to API 3.1B with individual Enraf test report															
Pos 3 Display			No. of terminals													
			i.s. non i.s.													
I	Including integrated SmartView display															
V	With IS terminal for connecting remote SmartView		4													
B	With integrated SmartView display and IS terminal for connecting remote SmartView		4													
Z	No display															
Pos 4 Data transmission *																
B	Bi-phase Mark, GPU		2													
G	GPU, EIA-232		3													
W	GPU, EIA-485		3													
Pos 5 I/O Options *																
-	None															
V	VITO temp. and/or water sensor interface		2													
Q	HART input for HART communications		2													
R	HART input for HART communications + density calculations		2													
C	Hardware alarms (SPDT) contact outputs (2x) 125 Vac, 0,5 A (110 Vdc, 0,3A)		4													
N	Hardware alarms (SPDT) contact outputs (2x) 250 Vac, 3 A (40 Vdc, 3A)		4													
O	Hardware alarms (SPDT) contact outputs (4x)		8													
Pos 6, 7, 8 Additional Data transmission and/or I/O Options *																
			Total: * *													
			maximum sum of i.e. terminals is 10													
			maximum sum of non-i.s. terminals is 15													
Pos 9 Safety approvals																
A	ATEX / IEC Ex															
F	FM (only if pos. 10=C)															
C	CSA (only if pos. 10=C)															
Pos 10 Cable entries																
S	Ex-e terminal compartment with 4 cable entries (4xM20) (only if Pos 9 = A)															
E	Ex-e terminal compartment extended to 6 cable entries (6xM20) (only if Pos 9 = A)															
C	2x 3/4" NPT															
Pos 11, 12, 13 Antenna version																
F	0	8	8" PAT, Free space													
W	0	6	6" x 12" WALP, Free space													
T	0	6	6" x 12" Hinged WALP, Free space (only if Pos 2 = A or U)													
F	0	6	6" PAT, Free space (only if Pos 2 = A or U)													
D	0	4	RoD, Free space (only if Pos 2 = A or U)													
S	0	6	6" PAT, Stilling well													
S	0	8	8" PAT, Stilling well													
S	1	0	10" PAT, Stilling well													
S	1	2	12" PAT, Stilling well													
H	0	4	4" Horn, High pressure													
Pos 14, 15 Stem length / Application type																
x	x	0 mm (only if Pos 11 = D)														
0	5	50 mm (Not if Pos 11 = D, H, W or T)														
3	0	300 mm (Not if Pos 11 = D or H)														
5	0	500 mm (Not if Pos 11 = D or H)														
8	0	800 mm (Not if Pos 11 = D or H)														
B	1	Installation on 6" 300 lbs nozzle with 4" Schedule 10 stilling well (only if Pos 11 = H)														
B	4	Installation on 4" 300 lbs full bore ball valve (only if Pos 11 = H)														
N	1	Installation on 6" 300 lbs nozzle with 4" Schedule 10 stilling well including 1" full bore ball valve (only if Pos 11 = H)														
N	4	Installation on 4" 300 lbs Schedule 40 nozzle including 1" full bore ball valve (only if Pos 11 = H)														
R	X	I	B	V	-	-	-	A	S	F	0	8	3	0	Typical identification code	
R															Your identification code	

*) Add terminal count per choice

Dimensional drawing



Dimensions in mm/ inches

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