



Reflex VG Series FMCW Radar



A radar signal is generated via an antenna and transmitted down the vessel or tank which is then reflected by the target surface and received back at the antenna.

FMCW: Frequency Modulated Continuous Wave

FMCW radar uses a high frequency signal, nominal 26Ghz which increases linearly during the measurement (frequency sweep) . The signal is emitted, reflected from the target surface and received at a time-delayed frequency.

The difference in this frequency is calculated from the actual transmit frequency and the receive frequency and this difference is directly proportional to the distance measured.

Advantages of FMCW principle compared to Pulse Radar:

- ◆ Better reflection separation
- ◆ Reliable noise reduction
- ◆ Smaller beam angle
- ◆ Fewer disturbing reflections
- ◆ Smaller antenna diameter for same measuring range

THE ADVANTAGES OF FMCW RADAR

NON-CONTACT LEVEL MEASUREMENT

SUITABLE FOR AGGRESSIVE MEDIA

MEASURES LIQUIDS, SOLIDS, POWDERS, GRANULES

RANGE UP TO 80 METRES (OPTION FOR 100m)

HIGH ACCURACY OPTIONS AVAILABLE (1mm)

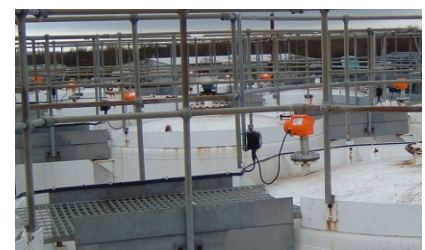
VESSEL MAPPING REMOVES SPURIOUS SIGNALS

TBF MODE AVAILABLE FOR LOW DIELECTRIC PRODUCTS

UNAFFECTED BY PRESSURE, TEMPERATURE, VISCOSITY, FOAM OR DUST

AVAILABLE WITH HORN WAVE GUIDE, WAVE STICK OR DROP ANTENNA

MULTIPLE ATEX OPTIONS FOR EExia INTRINSICALLY SAFE & EExd FLAMEPROOF HOUSINGS





Reflex VG Series Two & Four Wire FMCW Radar

The Reflex VG Series of FMCW Radar products are unaffected by pressure, temperature, viscosity, vacuum, foam, dust or changes in dielectric constant. They can measure virtually any product in either Direct or TBF mode utilising either Horn, Wave Guide, Wave Stick or Drop antenna.

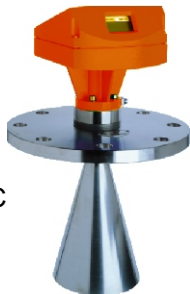
The unique Tank Bottom Following (TBF) mode in all the VG Series enables products with dielectric constants as low as 1.5 to be measured. For process vessels with complex internal structures the unique Empty Tank Spectrum (ETS) can be utilised to damp out all unwanted reflections from pipes, heating coils and agitators.

Where high precision is required the VG502 can measure to an accuracy of 1mm. For the measurement of solids the VG series succeeds where other Radar products have failed. The FMCW VG Series is the answer to your level measuring requirements whether you use either the low cost two wire VG50 or VG51, ideal replacement for Displacers, Capacitive and Hydrostatic transmitters, or the more sophisticated VG5XX and VG7 for the more difficult applications.

TWO WIRE FMCW RADAR

VG50 HORN - Range 20m

- ◆ EExia two wire
- ◆ HART
- ◆ Steam
- ◆ Foam
- ◆ Agitation
- ◆ Temperature up to 250°C
- ◆ Pressure up to 64 Bar
- ◆ Viscous liquids
- ◆ Dielectric greater than 2



VG51 WAVE STICK - Range 20m

- ◆ EExia two wire
- ◆ HART
- ◆ Small nozzle
- ◆ Corrosive liquids
- ◆ Clean liquids
- ◆ Temperature up to 150°C
- ◆ Pressure up to 16 Bar
- ◆ Dielectric greater than 4



TWO / FOUR WIRE FMCW RADAR

VG6 DROP - Range 80m

- ◆ Solids only
- ◆ EExd \ EExia two wire
- ◆ HART
- ◆ Polypropylene antenna
- ◆ Steam & Foam
- ◆ Agitation
- ◆ Temperature up to 200°C
- ◆ Pressure up to 16 Bar
- ◆ Viscose liquids
- ◆ Dielectric greater than 2



VG510 WAVE STICK - Range 20m

- ◆ EExd four wire
- ◆ HART
- ◆ Profibus
- ◆ Foundation Fieldbus
- ◆ Small Nozzle
- ◆ Corrosive Liquids
- ◆ Clean Liquids
- ◆ Temperature up to 150°C
- ◆ Pressure up to 16 Bar
- ◆ Dielectric greater than 4



HIGH ACCURACY FMCW

VG502 HORN - Range 35m

- ◆ Liquids
- ◆ EExd four wire
- ◆ HART
- ◆ Profibus
- ◆ Foundation Fieldbus
- ◆ Temperature up to 250°C
- ◆ Pressure up to 64 Bar
- ◆ Viscous liquids
- ◆ Dielectric greater than 2
- ◆ 1mm Accuracy



VG7 HORN - Range 80m

- ◆ Liquids and solids
- ◆ EExd / EExia two wire
- ◆ HART 4-20mA output
- ◆ Dielectric greater than 2
- ◆ Temperature up to 200°C
- ◆ Pressure up to 40 Bar
- ◆ Viscous liquids
- ◆ Dielectric greater than 2
- ◆ 3mm Accuracy





RADAR Product Selector

MODEL	VG6006	VG600G	VG600P	VG600S	VG600T
Antenna	DN80	DN100	DROP	DROP	DROP
Connection Min	1	1½"	1½"	1½"	1½"
Range Max Mtrs	80	80	80	80	80
Application	Solids	Solids	Solids	Solids	Solids
Measuring	Level	Level	Level	Level	Level
	Distance	Distance	Distance	Distance	Distance
	Volume	Volume	Volume	Volume	Volume
Operating. Mode	Direct	Direct	Direct	Direct	Direct
Solids Accuracy	10mm	10mm	10mm	10mm	10mm
Liquids Accuracy					
Min Dielectric	1.5	1.5	1.5	1.5	1.5
Repeatability	5mm	5mm	5mm	5mm	5mm
Maximum Pressure (bar)	40	40	16	16	16
Maximum temperature (°C)	200	200	150	100	100
Power supply 24V DC	Yes	Yes	Yes	Yes	Yes
2-Wire Device	Yes	Yes	Yes	Yes	Yes
100~220VAC 4 wire unit	No	No	No	No	No
Output 4-20mA	Yes	Yes	Yes	Yes	Yes
HART	Yes	Yes	Yes	Yes	Yes
PACTWARE	Yes	Yes	Yes	Yes	Yes
RS485	No	No	No	No	No
Profibus PA	Optional	Optional	Optional	Optional	Optional
Fieldbus	Optional	Optional	Optional	Optional	Optional
ATEX options EExia	Yes	Yes	Yes	Yes	Yes
ATEX options EExd	Yes	Yes	Yes	Yes	Yes
HMI Display	Yes	Yes	Yes	Yes	Yes



**VG6X SERIES
DROP ANTENNA**



**VG6 SERIES
HORN ANTENNA**

MODEL	VG7004	VG7005	VG7003	VG50	VG51	VG502
Antenna	DN40	DN50	DN80	Horn	Wavestick	Horn
Connection Min	1½"	1½"	1½"	3" Flange	1½"	8" Flange
Range Max Mtrs	40	40	40	20	20	35
Application	Liquids	Liquids	Liqu/Sol	Liquids	Liquids	Liquids
Measuring	Level	Level	Level	Level	Level	Level
	Distance	Distance	Distance	Distance	Distance	Distance
	Volume	Volume	Volume	Volume	Volume	Volume
Operating. Mode	Direct/TBF	Direct/TBF	Direct/TBF	Direct/TBF	Direct/TBF	Direct/TBF
Solids Accuracy			10mm			
Liquids Accuracy	3mm	3mm	3mm	0.30%	0.30%	1mm
Min Dielectric	1.5	1.5	1.5	2	4	2
Repeatability	1mm	1mm	1mm	1mm	1mm	1mm
Maximum Pressure (bar)	40	40	40	64	16	64
Maximum temperature (°C)	200	200	200	250	150	250
Power supply 24V DC	Yes	Yes	Yes	Yes	Yes	No
2-Wire Device	Yes	Yes	Yes	Yes	Yes	No
100~220VAC 4 wire unit	No	No	No	No	No	Yes
Output 4-20mA	Yes	Yes	Yes	Yes	Yes	Yes
HART	Yes	Yes	Yes	Yes	Yes	Yes
PACTWARE	Yes	Yes	No	No	No	Yes
RS485	No	No	No	No	No	Yes
Profibus PA	Optional	Optional	Optional	Optional	Optional	Optional
Fieldbus	Optional	Optional	Optional	Optional	Optional	Optional
ATEX options EExia	Yes	Yes	Yes	Yes	Yes	No
ATEX options EExd	Yes	Yes	Yes	Yes	Yes	Yes
HMI Display	Yes	Yes	Yes	Yes	Yes	Yes



**VG6XX SERIES
HORN ANTENNA**



**VG7X SERIES
HORN ANTENNA**