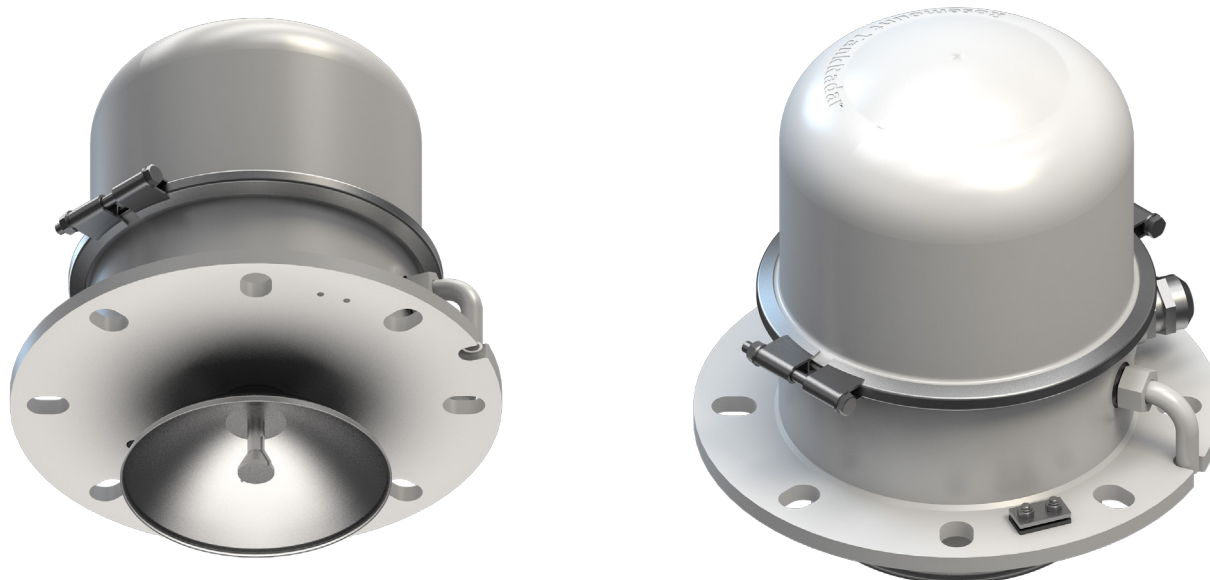


Rosemount TGU 68

Tank Radar Gauge, Parabolic Antenna



Rosemount TGU 68 Tank Radar Gauge, Parabolic Antenna is a marine non-contacting radar level gauge that is integrated in the Rosemount Cargo Monitoring System (CMS). It is designed to be used in harsh conditions on tankers and offshore installations, and has a superior robustness and accuracy under all tank conditions.

The Rosemount TGU 68 Tank Radar Gauge, Parabolic Antenna comes in two versions. The TGU 68C is the best choice for measuring ullage on tankers and marine applications, and the TGU 68S is ideal for offshore market needs. The TGU 68C can optionally be installed with a hinged heat protection for use on heated cargoes.

TGU 68 can have up to three independent measurement channels in the same unit.

- 26 GHz FMCW tank radar gauge, with advanced signal processing, high bandwidth and optimized parabolic antenna
- Accurate and reliable measurement that keeps you operating under adverse conditions in tank
- For tankers and offshore installations with 35 m measurement range
- Robust, withstands harsh conditions on deck
- Easy to install, light weight and narrow beam
- Optional integrated vapor pressure sensor with optional test valve
- Optional level redundancy measurements
- Optional independent high level and overflow alarm measurements

Description

TGU 68

The Rosemount TGU 68 Tank Radar Gauge, Parabolic Antenna, is suited for installation on general tanks with a tank height of up to 35 meter. The unit is equipped with a parabolic antenna, and is mounted on an 8" deck socket.

The gauge is intrinsically safe and operates based on 26 GHz FMCW radar technology. The advanced signal processing, the high bandwidth and the optimized parabolic antenna gives a superior robustness in measurement. The TGU 68 keeps operating under the most difficult conditions in the tank and on the deck.

The narrow beam of $\pm 2^\circ$ makes it easy to install on tanks.

TGU 68C

The TGU 68C is the ideal choice for measuring ullage on tankers and marine applications, from the smallest up to the largest tanks.

TGU 68S

The TGU 68S fits the offshore market needs with the demand for more options in installation, test and certification.

Connections

One digital bus connection to the Rosemount SCU 51 Supply and Communication Unit in the control room per level measurement channel.

Optional digital bus connections to:

- Rosemount TMU 51/53 Temperature Measuring Units
- Rosemount TGD 51 Tank Gauge Display

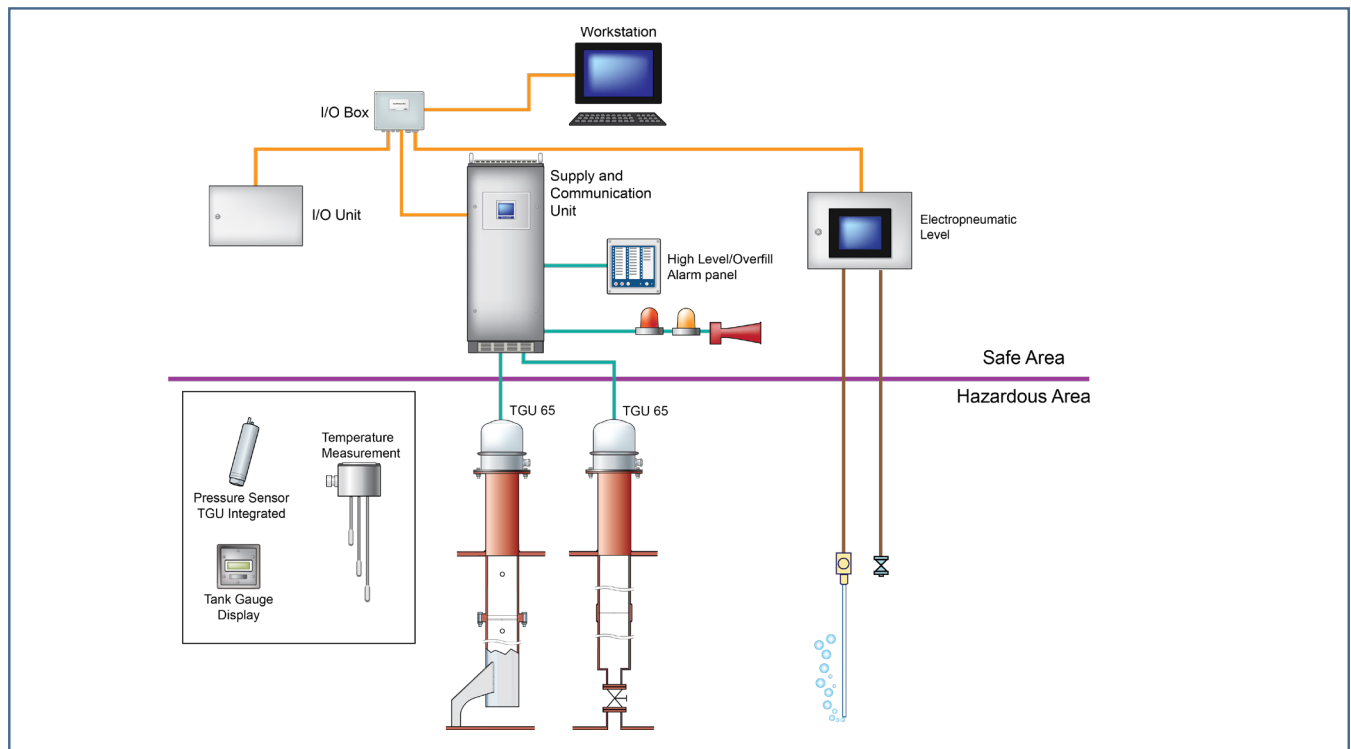
Vapor Pressure Option

An optional vapor pressure sensor can be mounted as an integrated part inside the TGU 68. The vapor pressure sensor provides the relative pressure inside the tank. An optional extension with an integrated test valve ensures that the tank integrity is not compromised during test and replacement of the pressure sensor.

Redundancy and High Level/Overfill Options

The gauge is as standard equipped for level measurements, but is prepared for optional redundant level or independent high level or overfill alarm measurements.

Rosemount Cargo Monitoring System

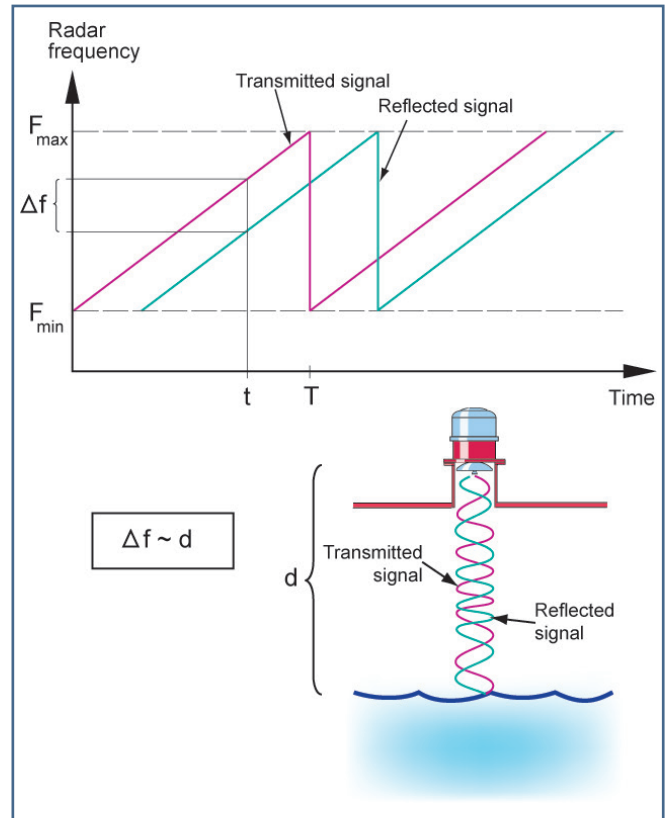


Radar Principles

The FMCW radar used in Rosemount CMS emits radar waves continuously at a known range of frequencies. The transmitted radar frequency is increased over a time creating a sweep. The reflected signals is then mixed with the transmitted signals creating a low frequency signal that is proportional to the product level. The signals are digitally processed and presents a very accurate reading of the distance to the product level.

The main advantages for using radar for tank gauging are:

- Radar waves are extremely robust to any conditions in the tank
- Radar waves are generally not affected by the atmosphere above the product in the tank
- The only part located inside the tank is the antenna without any moving parts
- High reliability
- High accuracy
- With Rosemount CMS, the Tank Gauge Electronics can easily be serviced and replaced during closed tank conditions.

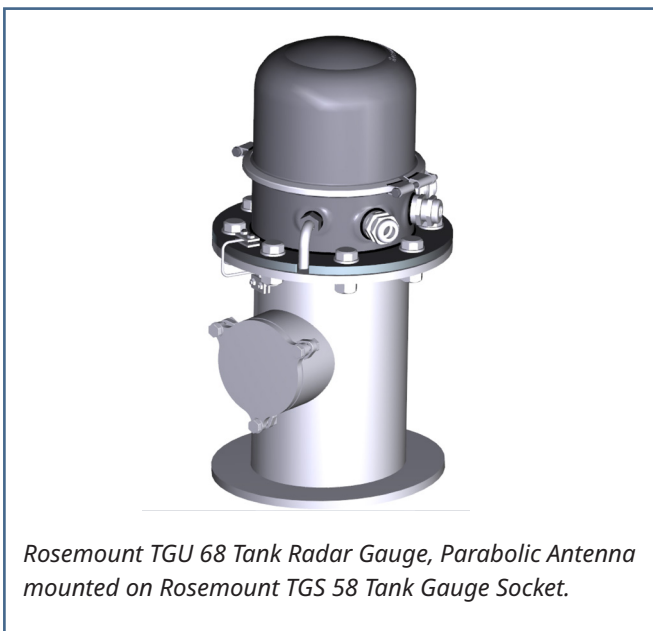


Deck Socket

The TGU 68C and TGU 68S is as standard mounted on a TGS 58 Tank Gauge Socket with a service opening for easy cleaning of the antenna. The TGS 58 Tank Gauge Socket is normally supplied by yard.

As an alternative mounting method, a TGS 68 Hinged Heat Protection can be used for heated cargoes such as Bitumen.

The TGS 58 Tank Gauge Socket and the TGS 68 Hinged Heat Protection are presented in separate product data sheets.




Rosemount TGU 68 Tank Radar Gauge, Parabolic Antenna mounted on Rosemount TGS 58 Tank Gauge Socket.



Rosemount TGU 68 Tank Radar Gauge, Parabolic Antenna mounted on Rosemount TGS 68 Hinged Heat Protection.

Technical Specification

TGU 68	
General Specification	
Antenna type	Parabolic antenna
Measuring range	0 to 35 m
Instrument accuracy	±2 mm (±3σ Conformance)
FMCW centre frequency	26 GHz
Half power beam width	±2° (lobe angle from antenna axis) ¹
Operating temperature in tank ²	- 40° to +100° C
Operating pressure in tank	-100 to +500 mbar
Electrical Specification	
Cable to control room	Up to 3 cables with two or three twisted pairs with common shield. Max length approximately 400 m
Number of cable inlets	1 to 3
Cable diameters	6 to 21 mm
Field bus	Proprietary intrinsically safe
Microwave output power	<1mW
Mechanical Specification	
Flange	Suitable for mounting on JIS 5K-200, DN200, ASME 8"
Weight	17 kg (35 lbs.)
Material facing tank atmosphere	Stainless steel 316L, PTFE, Fluorsilicon (standard)
Material facing deck	Stainless steel 316L
Deck socket ³	350 mm with service opening 500 mm with service opening Heat insulating hinged socket (Bitumen and heated cargoes)
Environment Specification	
Ingress protection	IP 66/67
Ambient temperature ⁴	- 40° to +70° C
Humidity	0 - 100% relative humidity

TGU 68		
Vapor Pressure Option		
Operating range	-100 to 900 mbar	
Instrument accuracy	±3 mbar	
Material facing tank atmosphere	Stainless steel 316L and Alloy C276	
Approvals		
Marine type approvals	ABS, BV, CCS, DNV-GL, KR, LR, NK, RINA	
Explosion protection	Intrinsically safe:	ATEX:  II 1G Ex ia IIC T4 Ga IECEX: Ex ia IIC T4 Ga INMETRO: Ex ia IIC T4 Ga

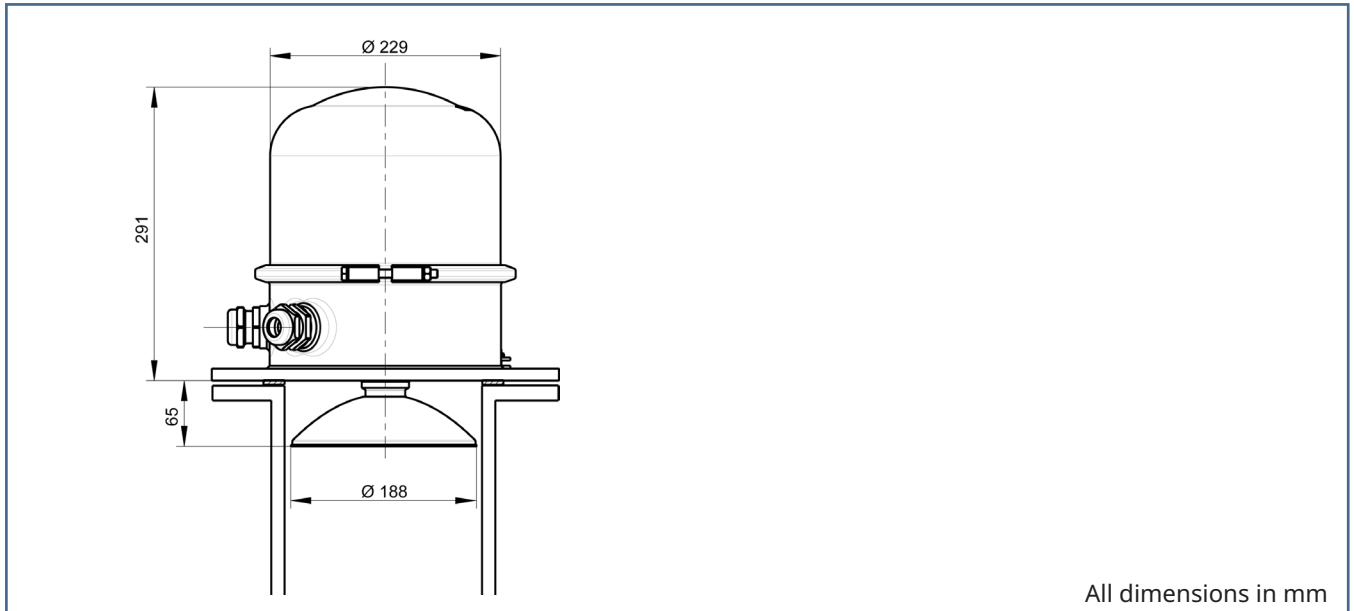
- 1) For details see Reference Manual.
- 2) Operating temperature in tank Increased to +260° C when mounted on TGS 6810
- 3) Normally yard supply
- 4) Ambient temperature maximum decreased to +60°C when mounted on TGS 6810

Ordering Information

Ordering Information		TGU 68C	TGU 68S	Comments
Flange				
	Housing, flange JIS 200A / EN DN200	√	√	
	Housing, flange ASME B16.5 8"		√	
Gasket Material				
	O-ring, fluorsilicone	√	√	
Vapor Pressure Sensor				
	Vapor Pressure Sensor, -100 to 900mBar	√	√	Option
	Vapor Pressure Sensor Test Valve	√	√	Option
Measuring Channels				
	Tank Gauge Electronics box 26 GHz, 1 channel	√	√	
	Tank Gauge Electronics box 26 GHz, 2 channels	√	√	
	Tank Gauge Electronics box 26 GHz, 3 channels	√	√	
Hazardous Locations Certification				
	ATEX, IECEx Intrinsic Safety TGU 68	√	√	
	INMETRO, Intrinsic Safety TGU 68		√	
Cable Glands				
	Cable gland M20	√	√	Option 1-3 glands
	Cable gland M25	√	√	Option 1-3 glands
	Cable gland M32	√	√	Option 1-3 glands
	Special		√	Option 1-3 glands
Optional Items				
	Protective hose for Cable Gland	√	√	Option
	Flange JIS 5K 40A for Protective hose	√	√	Option
	Flange JIS 5K 50A for Protective hose	√	√	Option
	Flange PN10 DN40 for Protective hose	√	√	Option
	Bolt Kit (Gauge socket)	√	√	Option
	Gasket (Gauge socket)	√	√	Option
	Metal label (TAG plate)		√	Option
	Calibration certificate		√	Option
	Material traceability certification acc. to EN 10204.3		√	Option

√ = Available

Dimensional Drawings



About Emerson's Marine Solutions

Emerson is a world-leading provider of marine solutions with engineering excellence, decades of industry experience and global presence supporting any ship anywhere. All marine systems and solutions are designed especially for the harsh marine environments, engineered and manufactured in-house by our skilled teams of marine engineers. Emerson is well-known in the industry and has more than 50 years' experience with a large installed base and covers well-known marine brands such as Rosemount, Micro Motion and Damcos. Supporting marine customers from a global network of sales and service hubs along the maritime highway.

To learn more about Emerson's marine solutions, visit **[Emerson.com/marine](https://emerson.com/marine)**

To contact Emerson's marine experts, visit **[Emerson.com/marinecontacts](https://emerson.com/marinecontacts)**

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