



# “Multi-function Tank Gauge” MTG™ Product Line

## The MTG™ Multi-function Tank Gauge

The MTG™ Product Line is engineered to be used with multiple tank types, physical installation conditions, product or service application, data requirements, and metrology accuracies.



- **MTG™ “Multi-function Tank Gauge” (MTG™-3012) - The most accurate Volume tank gauge on the market.** The MTG™ 3012 provides the following data: Mass, Level, Multi-point spot temperature, Average product temperature, Multi-Strata density, Average product density, Free Water, Entrained Water, Vapor Pressure, Vapor Temperature, Flow rate by Volume, Flow rate by mass, and optional Atmospheric pressure, Atmospheric Temperature, and Leak Detection. The MTG™ 3012 is configured with 4 to 12 sensor sections within a 2” diameter probe. The Multi-processor transmitter card supports 1,000 strapping points and provides volumetric calculations to API, ISO, or GOST standards. One tank entry, One electrical connection, bottom referenced, self calibrating, self diagnostic, and No Moving Parts. Tank heights from 8’ to 70’ (2.4m to 21.3m), 2” pipe diameter.



- **NEW MTG<sup>2</sup>™ Redundant “Multi-function Tank Gauge” (MTG<sup>2</sup>™-3024)** The MTG<sup>2</sup>-3024 Redundant Multi-function Tank Gauge consists of two independent MTG™ 3012’s within one probe. The MTG™ 3012’s consist of two independent transmitters, each supporting a separate and independent array of sensors within the same physical probe. Configured with 8 to 18 sensor sections in a 2” diameter probe or configured with 8 to 24 sensor sections in a 3” diameter probe (depending upon tank height). Each transmitter supports 1,000 strapping points and provides volumetric calculations to API, ISO, or GOST standards. The MTG<sup>2</sup>™ 3024 - Two independent tank gauges, One tank entry, One electrical connection, Bottom referenced, Self calibrating, Self diagnostic, No Moving Parts, and full data Redundancy. Tank heights from 8’ to 70’ (2.4m to 21.3m) using 2” diameter pipe, tank heights from 70’ to 150’ (21.3m to 45.72) using 3” diameter pipe, for taller tank heights see MTG™-L.

NOTE: Three (3) Standard configurations; A) Equally spaced sensors forming two independent gauges and a third “Virtual Tank Gauge” composed from all sensors data for ultimate accuracy available (Software required). B) Paired sensors spaced equally (each on a separate sensor array) forming independent redundant gauges. C) An MTG™ 3012 and an independent High Level Alarm Transmitter, i.e., Sensors located at tank bottom, vapor space, High-high and High levels.

- **NEW MTP™ “Multi-function Tank Probe” (MTG™-3025)**  
The MTP provides Multi-point spot temperature, Average density, and Water. Designed for use with Level Instruments (Radar, Servo, etc.) for Volumetric custody transfer applications under API 3.6 “Hybrid Method”. Normally these applications require multiple instruments, multiple tank openings, and multiple wiring & conduit runs to provide the measured data. The MTP™3025 provides Multi-point spot temperature, Average density, and percentage of free and entrained water from one tank top flange opening and one electrical connection, in addition to the level instrument. MTP™ will integrate with most level (Servo, Radar, etc.) tank gauges on the market.

- **HTP™ “Hydrostatic Tank Probe” (GSI-3050)** Is a Hydrostatic Tank Gauge design for applications requiring Mass (Weight) measurement (Chemicals, etc.). The HTP™3050 provides Mass, Spot temperature, and Average density. The HTP™3050 eliminates the high installation cost and poor design of early HTG systems. The HTP™ is a top mounted probe with 3 or 4 sensor sections, No moving parts, Bottom referenced, and only one electrical connection. The HTP™ requires No Hot Taps, calibration valves, heat trace, and multiple instrument integration. **Hydrostatic measurement done correctly!**
- **MTG-L™ 3012 “Multi-function Tank Gauge - Long”** provides all of the functionality of the MTG™ 3012: Mass, Level, Multi-point spot temperature, Average product temperature, Multi-Strata density, Average product density, Free Water, Entrained Water, Vapor Pressure, Vapor Temperature, Flow rate by Volume, Flow rate by Mass, and Optional Atmospheric pressure, Atmospheric temperature, and leak detection. Configured with 12 to 60 sensor sections in a 3” to 4” probe diameter depending upon tank height. Multiple transmitter cards are used to gather sensor information, each transmitter card then passes the raw data to a MTG-L CPU. The MTG-L CPU has a dedicated program to map sensor data from numerous transmitter cards, process this data, and provide all volumetric calculations to API, ISO, or GOST standards. One tank entry, One electrical connection, bottom referenced, self calibrating, self diagnostic, and No Moving Parts. Tank heights from 70’ to 265’ (21.3m to 81m), 3” to 4” pipe diameter.
- **MTG-D™ 3012 “Leak Detection Option”** - A hardware and software option has been designed for the MTG™3012. It provides leak detection for static tank testing. The original MTG™ 3000 had gone through third party testing and tested to an accuracy of 1.10 gallons per hour over a 72 hour period. The MTG™ 3012 with the leak detection option has been tested to 0.90 gallons per hour over a 24 hour period and 0.49 gallons per hour over a 72 hour period, thus, providing Tank tightness indication.
- **MTG-S™ 3012 “Multi-function Tank Gauge - Sanitary”** - For food & beverage industries and pharmaceutical applications. MTG-S™ uses the standard MTG™3012 configuration with 316L SS wetted components and an optional wash down system for use within sanitary liquid products. Tank heights from 8’ to 70’ (2.4m to 21.3m), 2” pipe diameter plus optional wash down hardware.
- **MTG-H™ 3012 “Multi-function Tank Gauge - High Pressure”** - For spherical tank applications requiring Inventory or Process Accuracy. MTG-H™3012 provides: Mass, Level, Multi-point spot temperature, Average product temperature, Multi-Strata density, Average product density, Free Water, Flow rate by Volume, Flow rate by Mass, Vapor Pressure, Vapor Temperature, Atmospheric pressure, and Atmospheric temperature. One tank entry, One electrical connection, self calibrating and self diagnostic. The MTG-H™ is top referenced with a tripod bottom assembly. Tank heights from 8’ to 70’ (2.4m to 21.3m), 3” pipe diameter. **NOTE: The MTG-H™3024 is the Redundant version, offering two separate and independent gauges within one probe assembly. Highly recommended for spherical tank applications.**
- **MTG-P™ 3001 “Multi-function Tank Gauge - Production”** for lower accuracy process applications requiring Mass, Level, Temperature, Density, and Water measurement. The current MTG-P™ uses the rigid pipe construction while on-going R & D completes testing of a flexible cable version with bottom anchor and microprocessor based transducers.

NOTE: All MTG™ configurations listed are Patented or are Patent Pending (Domestic and International).

# MTG™ 3012 Series

All Calculations are Performed in the Transmitter Head (1,000 Strapping points and by API, ISO, or GOST standards)

When installed at same reference point as manual hand line and sampling (within the gauge well), MTG™ provides a means of direct comparison for Level, Temp., Density, & Water measurement.

Third Overfill Alarm  
Tank Over Pressure  
Tank Under Pressure - Vacuum  
Hydrocarbon Emissions Data

Four...Eleven Overfill Alarms  
(Each pressure sensor)

**Multi-point Spot Temperature**  
Temperature Stratification  
Spot Temperature Alarms  
Energy - When to heat

**Average Product Temperature**

**Multi-Strata Density**  
Density Stratification  
Quality Assurance  
Tank blending  
Energy - When to blend

**Average / Reference True Product Density**

**Entrained Water**  
Including emulsified water  
Including water pockets  
Water outside of sample area  
When to use De-emulsifiers  
When is water settled

**Free Water**

**NO MOVING PARTS**

**Self calibrating and Self diagnostic**

**Only one instrument to maintain**

**MTG™ is Intrinsically Safe (I.S.)**

**Only one connection - Power/Signal**

**Atmospheric Pressure & Temperature**

**Only one tank opening required**

**MODBUS RTU over IEEE RS 485**

**Vapor Pressure & Temperature**

**Only one instrument to integrate**  
**Level**

The Span measured by the last crossed sensor  
**Pressure & Temperature**

**Density Strata**

Reference density for level & water calculation

**Pressure & Temperature**

**Density Strata**

**Pressure & Temperature**

**Density Strata**

**Pressure & Temperature**

**Density Strata**

**Pressure & Temperature**

**Density Strata**

**Pressure & Temperature**

**Density Strata**

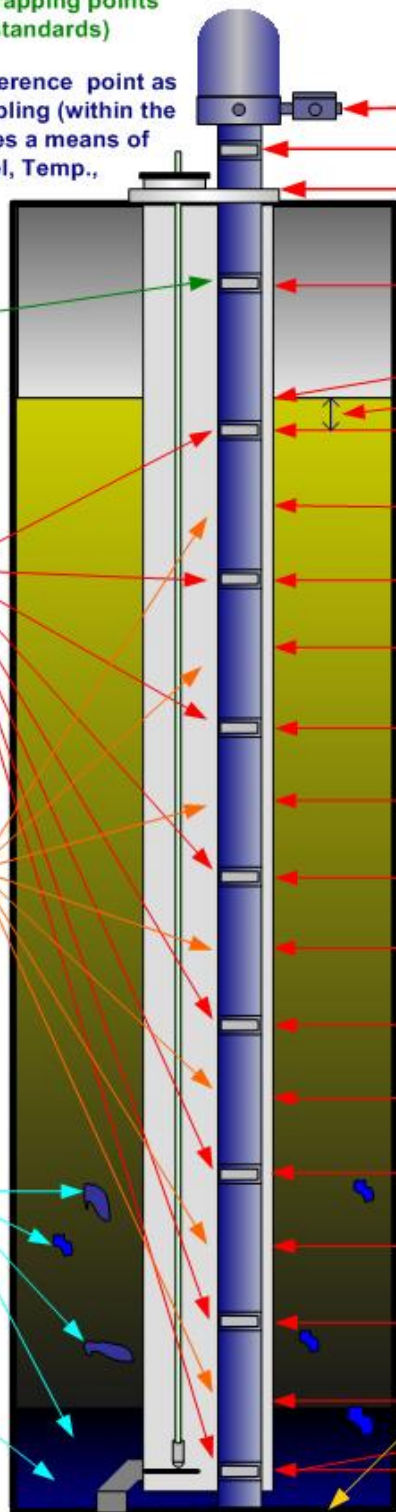
**Pressure & Temperature**

**Leak Detection Option Available**

**Density Strata**

**Mass "Weight in Vacuum"**

**Pressure & Temperature**

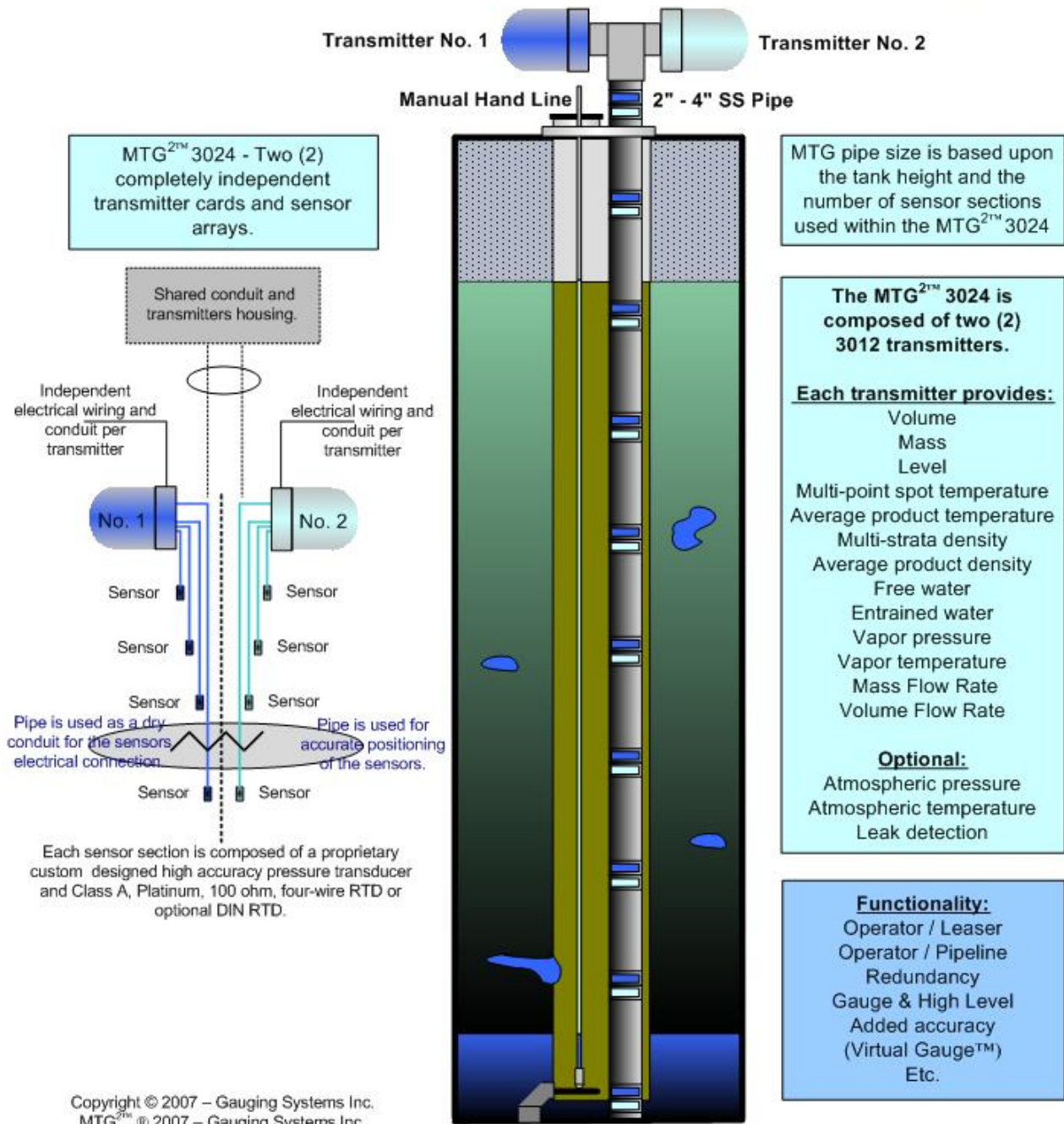


**The world's most accurate Volumetric Tank Gauge, plus a whole lot more...**


MTG 3012 Patent Pending / Copyright © 2006 - Gauging Systems Inc., Sugar Land, Texas



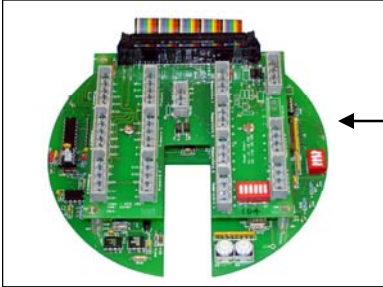
# MTG<sup>2™</sup> 3024 “Redundant Multi-function Tank Gauge”



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 MTG<sup>2™</sup> © 2007 – Gauging Systems Inc.

	<b>MTG<sup>2™</sup> 3024</b>		
	<b>“Redundant Multi-function Tank Gauge”</b>		
Gauging Systems Inc. Sugar Land, Texas, USA	SIZE	FSCM NO	DWG NO
			<b>070812-JH004</b>
	SCALE	1 : 1	SHEET 1 OF 1

## MTG™ Probe Options and Spare parts:



MTG™ 3000 Transmitter Card Set (Spare Parts)  
 3000 CPU Board  
 3000 Connector Board



MTG™ 3012 Transmitter Card Set  
 3012 CPU Board  
 3012 Voltage Sensor Board  
 3012 Current Sensor Board



MTG™ 3000 Pressure Sensor - Range  
 MTG™ 3012 Pressure Sensor - Range  
 Voltage  
 Current  
 Digital

MTG™ Sensor Housings - 2", 3", or 4" / 304, 316, 316L,  
 Hastelloy C

Atmosphere / Vapor (Two hole)  
 Upper D Housing  
 Lower Housing  
 Bottom Housing

Redundant Sensor Housings (Optional)  
 Vapor Housing  
 Bottom Housing



Top flange  
 Split flange - ATG & Gauge Hatch; 6", 8", 10", 12"  
 Flange - ATG Only; 4" - 12"  
 API Man way - ATG & Gauge Hatch; 20", 24"  
 Gauge Hatch Cover Assembly (contact GSI)



MTG™ Bottom (Feet / Anchor / Cup)  
 Pipe Foot (Standard)  
 Magnetic Anchor Foot (for cone bottom tanks)  
 UMDH Sensor Pad (for coated bottom tanks)  
 UMDH Pipe Pad (for coated bottom tanks)  
 Weighted Anchor Foot (for highly agitated tanks)  
 Tank Floor Cup (requires in tank installation)



Locking Collar - Used with unstable tank bottoms for top reference measurement.

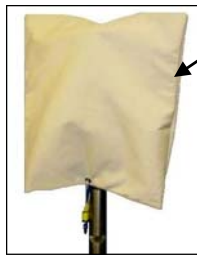
## MTG™ Gauge Accessories:



MTG™ Sensor Covers (Supplied with MTG)  
MTG™ Top Flange Cover (Supplied with MTG)



MTG™ Surge / Ground Protector Kit (Optional)  
Desiccant Packs for transmitter housing (Optional)



MTG™ O-Rings and Paste Kit (12 section probe kit)



MTG™ Weather / Security Hood (Optional)  
Pad Lock  
Electronic Lock (I.S.) - Radio Remote Reading



MTG™ IK Installation Kit (Required to Install MTG™ )



Communications between the MTG and host field device must be in compliance with GSI's control drawing; a) a set of I.S. barriers designed for use with the MTG, and b) the proper ground.

Interface Options: See individual bulletins on these products.

ISB Box - Intrinsically Safe Barrier Box (NEMA 7 or NEMA 4x) for housing of I.S. Barriers and RS 485 line booster.

E/IFI "Enhanced Intelligent Field Interface" - Acts as a I.S. Barrier housing, data concentrator, local display, protocol converter, topology converter, and custom programmable device.

CIM "Communications Interface Module" - Basically the same as the CIM, but also has custom communications port modules.



Portable Density and Temperature Meter. Allows to the quick and accurate reading of density and temperature from within multiple liquid strata for quick initial calibration of the MTG™ without the need of Laboratory samples or Densitometers.

Gauge Well Covers - 4", 6", 8", 10", 12" (Mesa Rubber Co.) for use on slotted gauge wells on pan roof tanks to prevent Hydro-carbon emission loss.

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