

MCG 1500SFI

Smart Flash Infrared Servo Gauge

Terminal operations managers, tank farm automation engineers, custody transfer & compliance officers, and EPCs need ultra-accurate custody transfer measurement, safe and easy calibration in hazardous environments, seamless system integration with new or legacy systems, and regulatory compliance. For them, the MCG 1500SFI servo gauge offers up to ± 0.4 mm accuracy, density and BS&W measurement, explosion-proof safety. Its proven servo-displacement technology enables precise level, interface, and density detection even in challenging products such as LPG, LNG, and heavy crudes. It also supports ground-level calibration and multiple communications protocols eliminating tank-top access requirements, improving operator safety, and reducing technician time. Unlike competitive products, the 1500SFI features a compact, brushless design with minimal moving parts for superior reliability, infrared handheld calibration without opening the housing in an explosive atmosphere, field-upgradeable electronics, the best level accuracy method in the market, and retrofit compatibility providing a reliable, versatile, and cost-effective solution for both new projects and brownfield upgrades.



Key Features

Custody-Grade Precision Provides ± 0.4 mm accuracy with ± 0.1 mm sensitivity, ensuring audit-ready billing and highly reliable reconciliation across custody-transfer operations.	Extreme Temperature Range Operates from -40 °C electronics to $+315$ °C product temperature, enabling use with cryogenic liquids, hot asphalt, molten sulfur, and severe-service applications.	High-Pressure Capability Supports atmospheric, 150 psi, and 300 psi ratings, allowing safe, compliant use in LPG, LNG, bullets, spheres, and pressurized process vessels.
Flexible System Integration Offers Modbus, HART, Foundation Fieldbus, Profibus, WirelessHART, and Tankway for seamless retrofit compatibility and simplified project engineering.	Explosion-Proof Safety Features UL, ATEX, and CE explosion-proof certification with gas-tight construction for safe operation in global Class I hazardous areas.	Low-Maintenance Design Brushless servo mechanism and minimal moving parts reduce mechanical wear, lowering downtime and extending long-term measurement performance.

Typical Applications



CUSTODY TRANSFER

Ensures fair trade and accurate reconciliation by providing ± 0.4 mm measurement precision for billing, inventory control, and fiscal reporting.



DENSITY MEASUREMENT

Measures fluid density using calibrated displacement, supporting regulatory compliance and product-quality verification across custody and process operations.



BS&W INTERFACE GAUGING

Detects product, water, and sediment interfaces with high sensitivity to prevent contamination and maintain product integrity.



PRESSURIZED LPG/LNG TANKS

Optional 150 psi and 300 psi designs allow safe, accurate gauging in pressurized liquid-gas applications, including bullets and spheres.



CRYOGENIC SERVICE

Handles extremely low-temperature products such as LNG and ethylene while maintaining stable servo-displacement performance.



HIGH VALUE LIQUIDS

Servos perform best in light products, refined fuels, & high-value fluids by providing mechanical stability and accurate displacement-based measurement.

Benefits



Revenue Protection

± 0.4 mm accuracy eliminates custody uncertainties and reduces financial discrepancies by ensuring precise, defensible tank-level data.



Operator Safety

Infrared ground-level calibration removes the need for tank-top access, reducing exposure to hazardous atmospheres and improving technician safety.



Lower Maintenance

Brushless, low-friction servo mechanics and coated components minimize wear, decreasing service requirements and extending equipment life.



Seamless Upgrades

Multi-protocol emulation and field-upgradeable electronics enable drop-in replacement of older gauges without costly rewiring or system disruption.



Compliance Assurance

Complete custody parameters, including density and BS&W, support strict regulatory requirements and ensure audit-ready operational documentation.



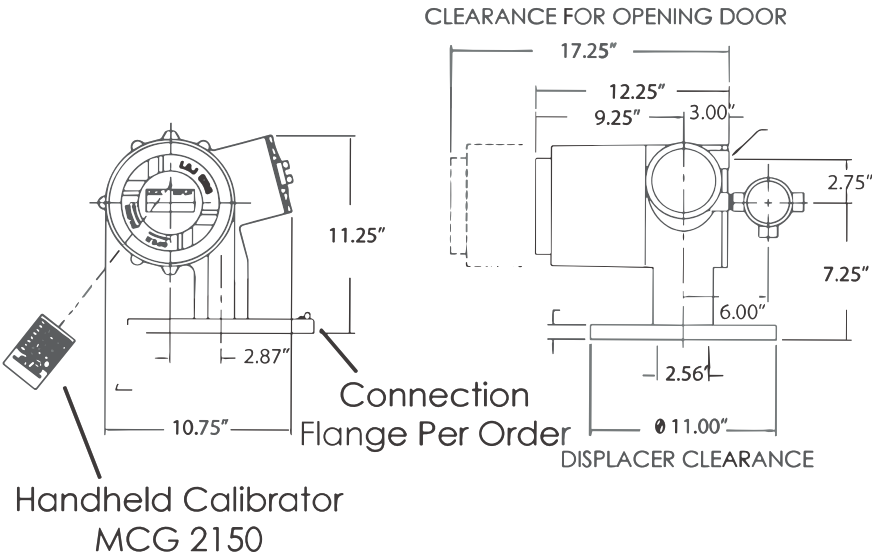
Global Deployment

UL, ATEX, and CE approvals allow installation across international hazardous-area classifications without additional certification delays or engineering work.

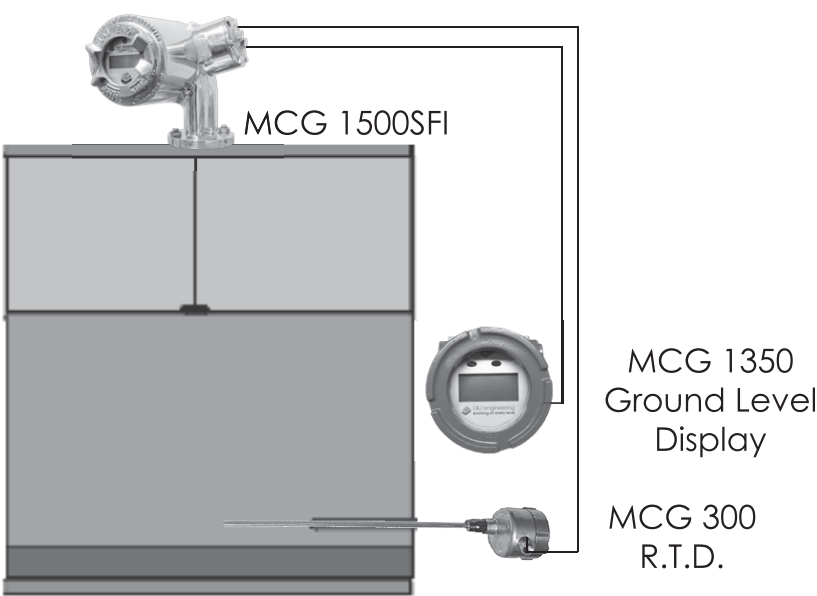
Technical Specifications & Key Features

Accuracy:	Up to ±0.4 mm (±0.016 in)
Sensitivity:	±0.1 mm (±0.004 in) sensitivity
Technology:	Servo displacement with Smart Flash Infrared calibration (no tank entry required)
Measuring Range:	0–75 ft (22 m) standard, up to 150 ft (46 m) optional
Temperature Accuracy / Resolution:	±0.5 °F (±0.3 °C) / 0.1 °F (0.06 °C)
Density Accuracy:	±5 kg/m³ for custody-grade density and BS&W measurement
Display:	4-line × 20-character LCD (local or optional ground-level display)
Communication:	L&J Tankway standard; optional Modbus, HART, Foundation Fieldbus, Profibus, Wireless HART, and legacy system emulation
Baud Rate:	Selectable 300–9600
Field Wiring:	4-wire Tankway (supports up to 128 field devices per data highway)
Power Consumption:	200 mA @ 110 VAC
Lightning Protection:	Comprehensive surge protection
Control Options:	Valve & pump control, discrete inputs/outputs, up to 4 relay dry contacts
Operating Temperature:	0–75 ft (22 m) standard, up to 150 ft (46 m) optional
Temperature Accuracy / Resolution:	– Drum Chamber: –40 °F to +600 °F (–40 °C to +315 °C) – Electronics Chamber: –40 °F to +185 °F (–40 °C to +85 °C)
Pressure Rating:	Atmospheric 25 psi standard; optional 150 psi and 300 psi versions for LPG/LNG and high-pressure tanks
Construction:	Aluminum (25 lb / 11.4 kg) or Stainless Steel housing
Mounting:	2" NPT or ANSI 150#/300# flange
Certifications / Safety Approvals:	UL/C-UL Explosion-Proof (Class I, Div. 1, Groups C & D; Group B optional), CENELEC / ATEX II 1/2 G EEx d IIB T6, CE compliant

Dimensions



Typical System Layout



MCG 1500SFI Smart Flash Infrared Servo Gauge

Includes: Explosion Proof Housing, Infrared Remote Capabilities, Smart Flash Technology, Local Graphical LCD Display

MCG 2150 Remote Calibrator

(One Required)

Model Number Selection

The model number will consist of a base number MCG 1500F followed by 10 digit letters. These digits will represent 6 option tables:

MCG 1500F - AB - CD - EF - GH - IJ

AB • HOUSING/FLANGE	
02	150 #, ANSI 2" RF, S.S. Flange - 316 S.S. housing
03	300 #, ANSI 2" RF, S.S. Flange - 316 S.S. housing
05	150 #, ANSI 4" RF, S.S. Flange - 316 S.S. housing
06	300 #, ANSI 4" RF, S.S. Flange - 316 S.S. housing
08	150 #, ANSI 6" RF, S.S. Flange - 316 S.S. housing
09	300 #, ANSI 6" RF, S.S. Flange - 316 S.S. housing
10	150 #, ANSI 6" FF, Al. Flange - Aluminum housing
11	150 #, ANSI 2" FF, Al. Flange - Aluminum housing
12	150 #, ANSI 2" RF,C.S. Flange - Aluminum housing
13	150 #, ANSI 4" FF, Al. Flange - Aluminum housing
14	150 #, ANSI 4" RF,C.S. Flange - Aluminum housing
15	150 #, ANSI 4" FF,C.S. Flange - Aluminum housing
16	150 #, ANSI 6" RF,C.S. Flange - Aluminum housing
18	150 #, ANSI 8" RF,C.S. Flange - Aluminum housing
19	150 #, ANSI 10"RF,C.S Flange - Aluminum housing
22	150 #, ANSI 8" RF,S.S. Flange - 316 S.S. housing
23	300 #, ANSI 8" RF,S.S. Flange - 316 S.S. housing
24	150 #, ANSI 3" FF, Al. Flange - Aluminum housing
26	150 #, ANSI 8" FF, Al. Flange - Aluminum housing
28	150 #, ANSI 6" RF,C.S. Flange - 316 S.S. housing
29	300 #, ANSI 6" RF,C.S. Flange - 316 S.S. housing
30	150 #, ANSI 8" RF,C.S. Flange - 316 S.S. housing
31	300 #, ANSI 8" RF,C.S. Flange - 316 S.S. housing
32	150 #, ANSI 10" RF,S.S. Flange - 316 S.S. housing
33	300 #, ANSI 10" RF,S.S. Flange - 316 S.S. housing
43	300 #, ANSI 3" RF,S.S. Flange - 316 S.S. housing
44	150 #, ANSI 3" RF,C.S. Flange - Aluminum housing
45	150 #, ANSI 3" RF,S.S. Flange - 316 S.S. housing
56	150 #, ANSI 6" RF,C.S. Flange - Al. Anodized housing
58	150 #, ANSI 8" RF,C.S. Flange - Al. Anodized housing

C • DENSITY/BS&W	
0	Level Only
1	Level and BS&W
2	Level and Density (Single Point Calculation)
3	Level, BS&W, and Density
4	Site Specific (Modes)

D • ANALOG INPUT	
0	No Analog Input
1	Spot Temperature*
2	Average Temperature**
3	4-20mA Input, (Non-Isolated)
4	4-20mA Input, Spot Temperature*
5	4-20mA Input, Dual Spot Temperatures*
6	4-20mA Input, Average Temperature**
7	Dual 4-20mA Inputs, Average Temperature**
8	2 Additional Discrete Inputs
9	2 Additional Discrete Inputs, Spot Temperature**
A	4-20mA Input, 3 Spot Temperatures*

EF • CONTACT OUTPUTS/HEATER*	
00	None
01	2 Dry Contacts
02	4 Dry Contacts
03	6 Dry Contacts
20	Heater
21	Heater, 2 Dry Contacts
22	Heater, 4 Dry Contacts
23	Heater, 6 Dry Contacts

*Units with Heater have no approvals

GH • SIGNAL OUTPUTS	
01	None
02	L&J Tankway
03	4-20 mA Analog Out
04	L&J Tankway, Dual 4-20 mA, Level & Temperature
05	Dual 4-20 mA, Level & Temperature
06	GPE 31422, 31423
07	Varec 4-Wire
08	Varec Matrix
09	L&J Tankway, 4-20 mA Out
10	RS-232 Output
11	Modbus on RS-485 (2-Wire)
14	Modbus on RS-485 (4-Wire)
15	Modbus on RS-485 (2-Wire), 4-20mA Out
16	Modbus on L&J Tankway
18	Profibus DP
22	Enraf BiPhase Mark
23	Dual 4-20 mA Out, Level and BS & W
24	Dual 4-20 mA Out, Level and Density
25	HART
30	Modbus on L&J Tankway, 4-20mA Out
31	Ti-Way Interface
32	Dual 4-20mA, Whessoe Protocol
40	ENRAF Interface and 4-20mA Out
41	Allen Bradley TCP/IP Output
44	Saab TRL/2
45	Foundation Fieldbus
46	RGL
48	WirelessHART

IJ • POWER SUPPLY	
08	110 VAC (50-60 Cycle)
09	24 VDC
10	48 VDC
12	220 VAC
13	48 VAC
14	24 VAC
30	220 VAC/ATEX/CENELEC
31	220 VAC/ATEX/CENELEC/W&M
48	65 VAC

* RTD Probe must be ordered separately.
**Requires MCG 2350 Average Temperature Assembly and Average Temperature bulb (ordered separately).

Summary

With over a century of tank gauging expertise, Cognesense delivers precision and reliability with the MCG 1500SFI Smart Flash Infrared Servo Gauge. This servo system sets the standard for custody-grade accuracy (± 0.4 mm), density and BS&W measurement, and interface detection, while its brushless, compact design minimizes maintenance. Certified for hazardous areas and compatible with multiple protocols, the 1500SFI ensures safe, efficient, and audit-ready custody transfer, seamless system integration, retrofit flexibility, and reduced lifecycle costs—making it a trusted solution for terminals, refineries, and industrial storage worldwide.

info@cognesense.com
Tel: (708) 236-6000
5911 Butterfield Road Hillside, Illinois 60162 USA

This document is for information purposes only. All designs subject to change. Certified dimensions, specifications, and performance data available upon request