



+/- 1/8" Accuracy

0-85' Range

No mechanical parts

Quality electronics provide high accuracy and reliability

The L&J Engineering Model MCG 1000 Direct Digital Level Gauge

The new MCG 1000SSI takes full advantage of the latest advances in large scale integration (LSI) and high density surface mount technology. A high integration application specific logic chip with microprocessor core and on-chip peripherals is the key to the SSI (Super Smart Infrared) design. On-chip RAM and ROM, multiple clock, DMA channels, and serial/parallel ports provide the MCG 1000SSI with more processing power than many of the full sized computers of just a few short years ago. A wireless, infrared remote calibrator (I/R) now programs all functions of the MCG 1000SSI on-site without ever removing the gauge cover. This hand-held remote calibrator allows interactive programming and reprogramming with initialization data. The compact single board design simplifies maintenance and reduces spare parts stocks, while the increased processing power adds features.

The new MCG 1000SSI has all of the standard temperature, analog, pulse, and discrete I/O capabilities. It also features programmed zero and span for analog ins and outs, increased diagnostics, operator programmable engineering units, and simple plug-in interface modules for protocol emulations.

As with all L&J field equipment, the MCG 1000SSI is equipped with comprehensive lightning and surge protection in an external conduit completely separate from the electronics housing. All boards are coated with a protective sealant to provide reliability even in extremely adverse operation conditions. With no mechanical parts, and quality state-of-the-art electronics, the MCG 1000SSI provides high accuracy and reliability with extremely low maintenance.

The MCG 1000SSI is made up of a sensor array and float. Magnets in a free moving float provide a magnetic field which trips discrete switches in the sensor array. The levels of those switches are sent back to the CPU for processing and display. The internal mount floats ride on the product outside of the sensor housing, while the external mount float is placed in a small externally mounted float chamber (stand pipe). The floats are weighted to float on specific products or interfaces (BS&W, product, etc.) to provide for multiple level measurements.

Applications

Internal or External Installation

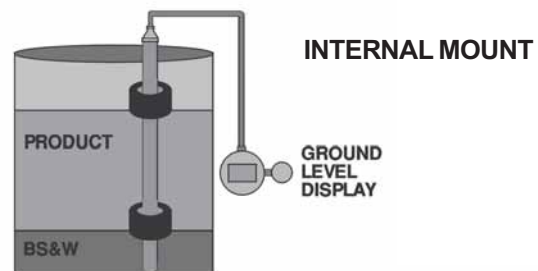
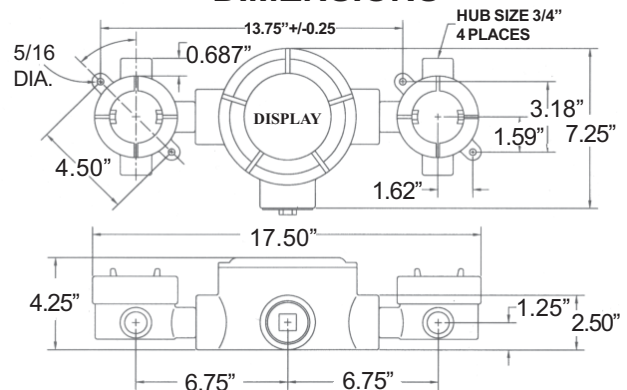
Remote Use

SPECIFICATIONS

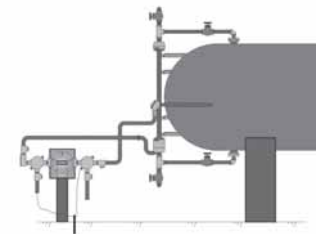
Accuracy:	+/- 1/8" (+/- 1/16" optional)
Range:	0-85'
Calibration:	Feet, inches, 1/8", .01 ft.; metric
Gauging Mediums:	Product Level, (BS&W optional)
Ground Reading Display:	2 line x 16 character back lit display
Display Enclosure Rating:	Exp. Proof, CL I, Div. 1, Group C&D
Sensor Boards:	Encapsulated in epoxy resin Intrinsically Safe
Temperature Probe:	Single point (Pt or Cu) Up to 14 points (Pt or Cu) using Temperature Average accessory
Internal Mount Only:	Up to 3 spot probes can be mounted to sensor housing for temperature averaging
SCADA Options:	2 Analog (4-20mA, 10-50mA inputs) 2 Analog (4-20mA, 10-50mA outputs) 2 Pulses (From Turbine Flow Meters) 8 Discrete Inputs 8 Discrete Outputs
Probe Housing Mounting:	Inside tank-sensor boards in housing, float outside Outside tank-sensor boards outside, float in housing
Float Material:	Nytrophyl, Nylon, or Stainless Steel
Float & Pipe Sizes:	304 Stainless Steel, Sch 40 pipe
Internal Mount:	1.5" pipe, float 4.0" OD x 1.5"H 2.0" pipe, float 4.75" OD x 1.5"H
External Mount:	2.0" pipe, float 1.75" OD x 6"H Nytrophyl 2.0" pipe, float 1.75" OD x 11" H Nylon Hi pressure.
Calibration:	Soft MCG 2150 Remote Hand Held
Power Sources:	L&J Tankway, 110V AC, 220V AC or 24V DC, 48V DC MCG 5000 Solar Power Field Comm
Approvals:	UL Listed

*All designs subject to change. Certified dimensions
and specifications available upon request.*

DIMENSIONS



EXTERNAL MOUNT



INFORMATION REQUIRED TO ORDER:

***MCG 1000 - AB - CD - EF - GH - IJ**

TANK HEIGHT _____
MOUNTING/FLOATS _____
SIGNAL OUTPUTS _____
ANALOG/TEMPERATURE _____
POWER SUPPLY/CONTROL POINTS _____

* ORDER MCG 1001 FOR 1/16" ACCURACY

MCG 1000SS DIRECT DIGITAL LEVEL GAUGE

Includes: Basic Gauge with Single (1/8"(3.2 mm)) Accuracy, Local Readout (2 line, 16 character) Capable of Displaying Two Items (Level & Temperature, or Volume or BS & W), 2 Discretes Basic, Intrinsically Safe Barrier, Explosion Proof Housing

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Sensors - Each Sensor Board is 28" (71.1 cm).
Standard Accuracy +/- 1/8" (3.2 mm), Resolution = 1/4" (6.4 mm) .

MODEL NUMBER SELECTION:

The model number will have a base number, **MCG 1000S** (for the MCG 1000SS) or **MCG 1000I** (for the MCG 1000SSI), followed by 10 digits. These digits will represent 5 option tables.

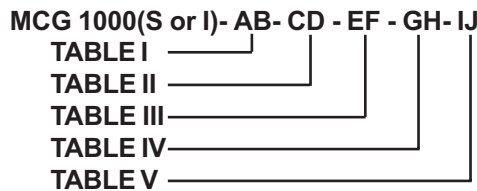


TABLE I - TANK HEIGHT

AB		21 -	46.67 - 48.99 ft. tank	(14.3 - 14.9 m)
00 -	None	22 -	49.00 - 51.33 ft. tank	(15.0 - 15.7 m)
01 -	0 - 2.33 ft. tank	23 -	51.34 - 53.66 ft. tank	(15.8 - 16.4 m)
02 -	2.34 - 4.66 ft. tank	24 -	53.67 - 55.99 ft. tank	(16.5 - 17.1 m)
03 -	4.67 - 6.99 ft. tank	25 -	56.00 - 58.33 ft. tank	(17.2 - 17.8 m)
04 -	7.00 - 9.33 ft. tank	26 -	58.34 - 60.66 ft. tank	(17.9 - 18.5 m)
05 -	9.34 - 11.66 ft. tank	27 -	60.67 - 62.99 ft. tank	(18.6 - 19.2 m)
06 -	11.67 - 13.99 ft. tank	28 -	63.00 - 65.33 ft. tank	(19.3 - 19.9 m)
07 -	14.00 - 16.33 ft. tank	29 -	65.34 - 67.66 ft. tank	(20.0 - 20.6 m)
08 -	16.34 - 18.66 ft. tank	30 -	67.67 - 69.99 ft. tank	(20.7 - 21.3 m)
09 -	18.67 - 20.99 ft. tank	31 -	70.00 - 72.33 ft. tank	(21.4 - 22.0 m)
10 -	21.00 - 23.33 ft. tank	32 -	72.34 - 74.66 ft. tank	(22.1 - 22.7 m)
11 -	23.34 - 25.66 ft. tank	33 -	74.67 - 76.99 ft. tank	(22.8 - 23.4 m)
12 -	25.67 - 27.99 ft. tank	34 -	77.00 - 79.33 ft. tank	(23.6 - 24.2 m)
13 -	28.00 - 30.33 ft. tank	35 -	79.34 - 81.66 ft. tank	(24.3 - 24.9 m)
14 -	30.34 - 32.66 ft. tank	36 -	81.67 - 83.99 ft. tank	(25.0 - 25.6 m)
15 -	32.67 - 34.99 ft. tank	37 -	84.00 - 86.33 ft. tank	(25.7 - 26.3 m)
16 -	35.00 - 37.33 ft. tank	38 -	86.34 - 88.66 ft. tank	(26.4 - 27.0 m)
17 -	37.34 - 39.66 ft. tank	39 -	88.67 - 90.99 ft. tank	(27.1 - 27.7 m)
18 -	39.67 - 41.99 ft. tank	40 -	91.00 - 93.33 ft. tank	(27.8 - 28.4 m)
19 -	42.00 - 42.33 ft. tank	41 -	93.34 - 95.66 ft. tank	(28.3 - 29.1 m)
20 -	44.34 - 46.66 ft. tank	XX -	Other - Specify on Order	

TABLE II - MOUNTING / FLOATS

First digit to reference pipe size only,
pipe supplied by customer.

C

- 1 - 1-1/2" 304 or 316 S.S. Pipe
- 2 - 2" 304 or 316 S.S. Pipe
- 3 - 2-1/2" 304 or 316 S.S. Pipe

Second digit refers to Probe Housing Mounting
(Internal - Inside Tank, External - Outside Tank)

D

- 1 - External S.S Float
- 2 - External nityrophyl float
- 3 - External nylon float
- 4 - Internal S.S. float
- 5 - Internal nityrophyl float
- 6 - Internal nylon float
- 7 - External S.S. float with ziploc
- 8 - External nityrophyl float with ziploc
- 9 - External nylon float with ziploc

TABLE IV - ANALOG / TEMPERATURE

GH

- 00 - None
- 02 - Average Temperature (Copper)***
- 03 -(Reserved)
- 05 - 4-20mA Input (non-isolated)
- 06 - 4-20mA, with Average Temperature (Copper)***
- 11 - Spot Temperature (Copper)**
- 14 - Spot Temperature (Copper)** with Barriers
- 17 - 4-20mA, with Spot Temperature (Copper)**
- 21 - Spot Temperature (Platinum)***
- 22 - Average Temperature (Platinum)**
- 23 -(Reserved)
- 24 - Spot Temperature (Platinum)** with Barriers
- 26 - 4-20mA, with Average Temperature (Platinum)***
- 27 - 4-20mA, with Spot Temperature (Platinum)**
- 36 - 4-20mA, with Average Temperature (Copper)***, with Barriers
- 37 - 4-20mA, with Spot Temperature (Copper)**, with Barriers
- 46 - 4-20mA, with Average Temperature (Platinum)***, with Barriers
- 47 - 4-20mA, with Spot Temperature (Platinum)**, with Barriers

** RTD Probe must be ordered separately.

*** Requires MCG 2350 Average Temperature Assembly and Average Temperature bulb (ordered separately).

TABLE III - SIGNAL OUTPUTS

EF

- 00 - None
- 02 - L&J Tankway
- 04 - 4-20mA Output
- 06 - L&J Tankway/Dual 4-20mA (Level & Temp)
- 08 - Dual 4-20mA Out (Level & Temp)
- 10 - GPE 31422,31423
- 12 - Varec 4 Wire
- 14 - Varec Matrix
- 16 - L&J Tankway / 4-20mA Out (Level)
- 18 - RS-232 24VDC
- 20 - L&J Tankway / Serial Output
- 22 - 4-20mA Out / Serial Output
- 24 - RS-485 Output
- 26 - RGL/NMC Interface
- 28 - Honeywell CLM Mod Buss on L&J Tankway
- 30 - Honeywell Mod Bus/485 Highway
- 32 - Enraf
- 34 - Varec (HART Mod Buss) 4100MFT

TABLE V - POWER SUPPLY / CONTROL POINTS

I

- 0 - 48 VDC Standard L&J Tankway
- 1 - 24 VDC
- 2 - 110 VAC
- 3 - 220 VAC
- 4 - 48 VAC
- 5 - Solar Ready

J

- 0 - No Control Points
- 1 - 1 Pum or Valve; 2 discrete in / 2 discrete out
- 2 - 2 Pumps or Valves; 4 discrete ins / 4 discrete outs
- 3 - 4 Pumps or Valves; 8 discrete ins / 8 discrete outs
- 4 - 4 Alarm Contacts w/ 2 discrete ins / 2 discrete outs
- 5 - 4 Alarm Contacts w/ 4 discrete ins / 4 discrete out
- 6 - 4 Alarm Contacts w/ 8 discrete ins / 8 discrete outs
- 7 - 2 Alarm Contacts
- 8 - 4 Alarm Contacts

MCG 1001SS DIRECT DIGITAL LEVEL GAUGE

Includes: Basic Gauge with Single (1/16" (1.6 mm)) Accuracy, Local Readout (2 line, 16 character) Capable of Displaying Two Items (Level & Temperature, or Volume or BS & W), 2 Discrettes Basic, Intrinsically Safe Barrier, Explosion Proof Housing

MCG 1001SSI DIRECT DIGITAL LEVEL GAUGE

Includes: Basic Gauge with Single (1/16" (1.6 mm)) Accuracy, Local Readout (2 line, 16 character) Capable of Displaying Two Items (Level & Temperature, or Volume or BS & W), 2 Discrettes Basic, Intrinsically Safe Barrier, Infrared Programming, Explosion Proof Housing

Sensors - Each Sensor Board is 28" (71.1 cm).
Standard Accuracy +/- 1/16" (1.6 mm), Resolution = 1/8" (3.2 mm) .

MODEL NUMBER SELECTION:

The model number will have a base number, **MCG 1001S** (for the MCG 1001SS) or **MCG 1001I** (for the MCG 1001SSI), followed by 10 digits. These digits will represent 5 option tables.

MCG 1001 (S) or (I) - AB - CD - EF - GH - IJ

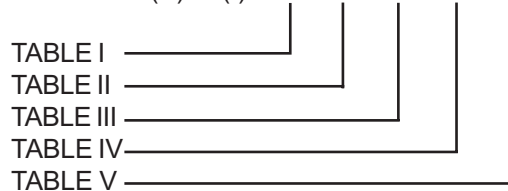


TABLE I - TANK HEIGHT

AB					
00	- None			21	- 46.67 - 48.99 ft. tank (14.3 - 14.9 m)
01	- 0 - 2.33 ft. tank (0 - .71 m)			22	- 49.00 - 51.33 ft. tank (15.0 - 15.7 m)
02	- 2.34 - 4.66 ft. tank (.71 - 1.4 m)			23	- 51.34 - 53.66 ft. tank (15.8 - 16.4 m)
03	- 4.67 - 6.99 ft. tank (1.5 - 2.1 m)			24	- 53.67 - 55.99 ft. tank (16.5 - 17.1 m)
04	- 7.00 - 9.33 ft. tank (2.2 - 2.8 m)			25	- 56.00 - 58.33 ft. tank (17.2 - 17.8 m)
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06	- 11.67 - 13.99 ft. tank (3.6 - 4.2 m)			27	- 60.67 - 62.99 ft. tank (18.6 - 19.2 m)
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08	- 16.34 - 18.66 ft. tank (5.0 - 5.7 m)			29	- 65.34 - 67.66 ft. tank (20.0 - 20.6 m)
09	- 18.67 - 20.99 ft. tank (5.8 - 6.4 m)			30	- 67.67 - 69.99 ft. tank (20.7 - 21.3 m)
10	- 21.00 - 23.33 ft. tank (6.5 - 7.1 m)			31	- 70.00 - 72.33 ft. tank (21.4 - 22.0 m)
11	- 23.34 - 25.66 ft. tank (7.2 - 7.8 m)			32	- 72.34 - 74.66 ft. tank (22.1 - 22.7 m)
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13	- 28.00 - 30.33 ft. tank (8.6 - 9.2 m)			34	- 77.00 - 79.33 ft. tank (23.6 - 24.2 m)
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- 1 - 1-1/2" 304 or 316 S.S. Pipe
- 2 - 2" 304 or 316 S.S. Pipe
- 3 - 2-1/2" 304 or 316 S.S. Pipe

Second digit refers to Probe Mounting and type of float to be provided. (1-3 are donut shaped floats used with probes mounted inside the tank. 5-9 are bullet shaped floats used with probes on stand pipes external to the tank.)

D

- 1 - Donut shaped S.S. float
- 2 - Donut shaped nitrophyl float
- 3 - Donut shaped nylon float
- 4 - Bullet shaped S.S. float
- 5 - Bullet shaped nitrophyl float
- 6 - Bullet shaped nylon float
- 7 - Bullet shaped with ziploc
- 8 - Bullet shaped nitrophyl float with ziploc
- 9 - Bullet shaped nylon float with ziploc

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- 14 - Spot Temperature (Copper)** with Barriers
- 17 - 4-20mA, with Spot Temperature (Copper)**
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- 22 - Average Temperature (Platinum)**
- 23 - (Reserved)
- 24 - Spot Temperature (Platinum)** with Barriers
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