



- Absolute Optical Encoding for Level Detection**
- Level, Temperature and Optional Discrete/Analog I/O**
- Infrared Calibration via Local Display**
- Advanced Flash Memory Technology**
- No Batteries or Eproms**
- Low Power**

The L&J Engineering MCG 2000SFI Smart Flash Infrared Transmitter

Innovative

L&J Engineering, the company with the first Absolute Optical Encoder has raised the bar on the competition once again with the MCG 2000SFI (Smart Flash Infrared series) Transmitter. Using the L&J WinGauge™ gauging system or the WinFlash™ application program on a laptop, transmitters can be easily diagnosed or configured over the standard communication bus or via the local display. In addition, new or updated programs can be downloaded to any MCG 2000SFI transmitter into its on-board flash memory “on the fly” to incorporate communication protocol changes and additional functionality.

Compact, Yet Powerful

L&J has uniquely designed the MCG 2000SFI Smart Flash Infrared Transmitter to require only one PC board! The elimination of unnecessary mechanical parts coupled with the latest in microprocessor technology, communicates level, spot or average temperature, controls pumps and valves, four analog inputs and two analog outputs and enables field calibration at the unit or a remote ground level display or via the communication bus in the control room.

Patented Technology

L&J utilizes the patented “In-line” absolute, optical encoder. Infrared emitters and detectors convert the mechanical shaft position into a digital signal. No wires or brushes are used; virtually eliminating the possibility of wear. To further simplify the mechanics, a machined gear train is used to couple the gauge shaft to the encoder disks. This configuration is completely unaffected by power failures. When power is restored, the transmitter will accurately reflect the current level; even if it has changed. No additional calibration is required.

Versatility

The MCG 2000SFI is engineered to mount easily to all popular models of mechanical gauges. In addition to the entire Shand & Jurs series of tape gauges, mounting kits for many competitors’ models are available. Special conversion kits, for non-standard units, are available, upon request. Emulation modules have been developed for all major protocols. These newly-designed intelligent modules incorporate both the proper electrical and protocol information. Each have a resident microprocessor and memory and can be replaced on-site, without replacing the P.C. Board. This facilitates the transition from one data highway to another.

Applications

Converts mechanical level measurements into electronic data

Transmits process data such as temperature (spot or average), pressure and alarms

Installed in bulk liquid storage vessels for the Petroleum, Petrochemical, Chemical, Pharmaceutical, Food & Beverage and Water Treatment Industries

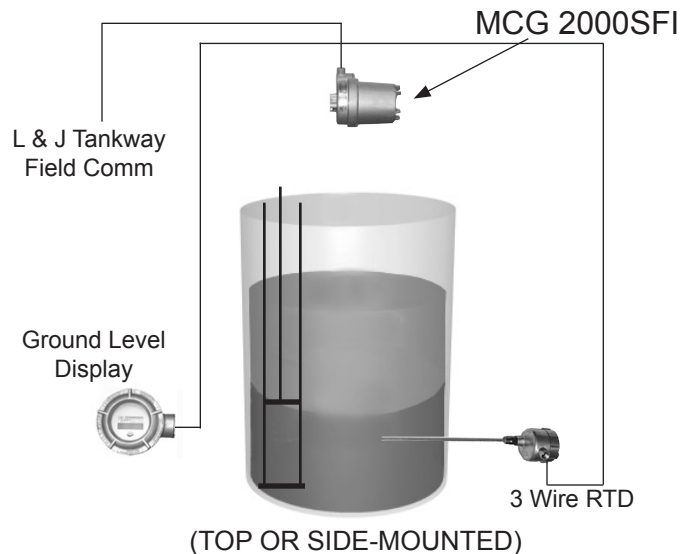
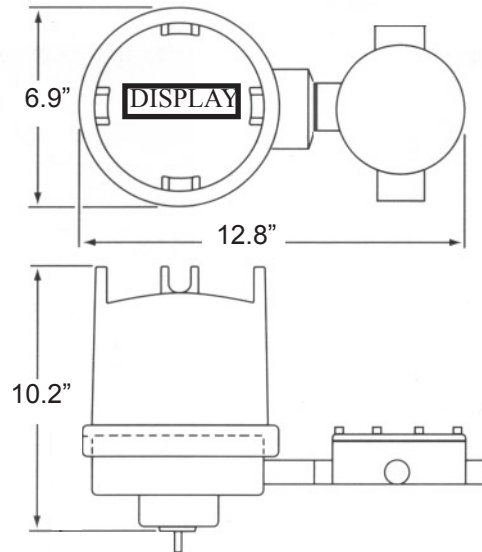
SPECIFICATIONS

Accuracy: (Over Full Range)	1/16th" (1.6mm) Std. 1/32nd" (0.8mm) Opt.
Range:	0-96 Feet (0-29M)
Shaft Rotation:	Selectable - Clockwise or Counterclockwise
Digital Conversion:	Absolute Optical Encoding
Calibration:	Feet and 1/16th" Feet and 1/32", Millimeter
Power Consumption:	0.7W - Back light off 35V DC, 20mA (Tankway)
Power Options:	24/48/65/110/220 VAC, 24/35-60 VDC
Temperature	
Inputs:	Platinum or Copper
Sensing:	Spot 3-Wire RTD (1-2), Average Temp. (Opt.)*
Accuracy:	0.5° F (0.3° C)
Resolution:	0.1° F (0.06° C)
Baud Rate:	300-9600 Selectable
Lightning Protection:	Comprehensive Surge Protection
Control Option:	2 Points (Valves and/or pumps)
I/O Option:	(2) 4-20mA Outputs (4) 4-20mA Inputs (4) Programmable Dry Contacts (6) CAM Switches
Field Wires:	4-Field Wires, L&J Tankway 20AWG Minimum
Protocol:	Plug in modules to emulate all protocols including L&J Tankway, Modbus, Profibus, Hart, Enraf, Varec and other protocols
Safety Approvals:	Explosion Proof/*Intrinsically Safe Class I, Div. 1, Groups C&D UL, CSA (SS/SSI) Australia SAA (SS) CENELEC/ATEX II 2G, EEx d IIB T6 ABS Approved

***Requires MCG 2350 accessory**

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

DIMENSIONS



INFORMATION REQUIRED TO ORDER:

MCG 2000 (F) - AB - CD - EF - GH - IJ

COUPLING / MATERIAL _____

TEMP. / INPUTS _____

SWITCHES _____

OUTPUT _____

CONTROL POINTS/POWER _____

MCG 2000SFI TRANSMITTER

Includes: Online Program Updates (Flash Memory), Wireless Infrared Programming, 2 Discretes for Independent HI Alarms, Lightning Protection, Digital Output Using 4-Wire Data Highway, Absolute Optical Encoding, Local Display

MCG 2150 HANDHELD INFRARED CALIBRATOR (One Required)

MCG 2151 SFI PROGRAMMER

MODEL NUMBER SELECTION:

The model number will have a base number, **MCG 2000F** followed by 10 digits. These digits will represent 5 option tables.

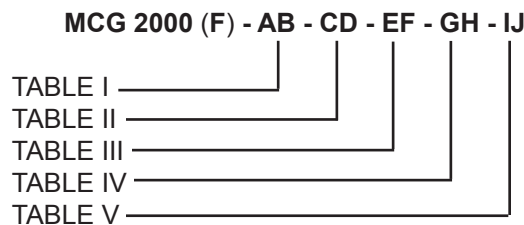


TABLE I - ENCODER TYPE / COUPLING

- A**
- 0 - Standard encoder with UL or CSA approval
 - 1 - Standard encoder with ATEX approval
 - 2 - Metric encoder with UL or CSA approval
 - 3 - Metric encoder with ATEX approval
 - 9 - No encoder
- B**
- 1 - Varec
 - 2 - S&J (92020, 92021, 92030)
 - 3 - S&J (92006, 92153, 92154)
 - 4 - S&J (8000, 2935)
 - 5 - Protectoseal
 - 6 - Varec (9504) No Housing
 - 7 - Varec - (1600, 1800, 1900) No Housing
 - 8 - Special
 - 9 - GPE No Housing
 - A - GSI 2500

TABLE II - INPUTS AND TEMPERATURE

- CD**
00 - None
02 - Average Temperature*
05 - 4-20mA Input (non-isolated)
10 - GPE 31422, 31423, TP 600
11 - Spot Temperature
14 - Spot Temperature w/ Barriers
17 - 4-20mA with Spot Temperature
36 - 4-20mA with Average Temperature*

*Calibration Type (Pl or Cu) is software-selectable in this model. The default is Platinum.
 Requires MCG 2350 Average Temperature and a MCG 350/351 Average Temperature bulb (Ordered Separately)

TABLE III - SWITCHES

- EF**
00 - None
01 - Two CAM Switches
02 - Three CAM Switches
03 - Four CAM Switches
04 - Five CAM Switches
05 - Six CAM Switches
11 - Two CAM Switches (DPDT)
12 - Three CAM Switches (TPDT)
20 - 2 Relays, 1 Amp @ 125 VAC (alarm relay) (Hi & HiHi only)
21 - 4 Relays, 1 Amp @ 125 VAC (alarm relay) (Lo, LoLo, Hi, HiHi)

TABLE IV - OUTPUT

- GH**
00 - L&J Tankway
01 - 4-20mA Output
02 - L&J Tankway and 4-20mA Output
03 - L&J Tankway and Ground Level Display*
04 - Parallel Output
06 - Dual 4-20mA, Level & Temp
07 - L&J Tankway and Parallel
08 - Varec 1800, 1900 (4-Wire, 1/2 Duplex)
09 - Varec 1600, (20 Wire Matrix)
10 - GPE 31422, 31423 Protocols
11 - Modbus on L&J Tankway
12 - RGL/NMC Interface
13 - 4-20mA Output and Ground Level Display*
14 - Modbus on RS-485 (2-wire)
15 - Enraf Interface
16 - HART
17 - HART, and 4-20mA Output

TABLE IV - OUTPUT (Continued)

- GH**
20 - 4-20mA Output and Modbus on 485 Highway
24 - Ground Level Display, Not Output*
29 - Ti-Way Protocol
31 - Ti-Way Output, 4-20mA Output
34 - Modbus on RS-485 (4-wire)
36 - GPE 31422, 31423, Dual 4-20mA Output
40 - GSI Protocol (RS485)
42 - Profibus
44 - Wireless, Ground Level Display
45 - Wireless, Modbus
46 - Saab TRL/2
47 - Wireless (Explosion Proof)
48 - Wireless (Non-Explosion Proof)
49 - Fieldbus
XX - Special Protocols and emulations available

TABLE V- CONTROL POINTS/POWER

- I**
0 - 48 VDC Standard L&J Tankway
1 - 24 VDC
2 - 48 VAC
3 - 110 VAC
4 - 220 VAC
5 - 65 VAC
6 - Solar Power
- J**
0 - None (2 Discrete Inputs, Standard)
1 - One Pump or Valve (2 Relays, 2 Discrete Inputs & 2 Discrete Outputs)
2 - Two Points (1 Pump/1 Valve; or 2 Pumps or 2 Valves) (4 Relays, 4 Discrete Inputs)
3 - Four Points (8 Relays, 8 Discrete Inputs)

Note: For ease of installation, the following may be desired:

- MCG 2100 Field Calibrator
- MCG 2150 Hand-Held Calibrator
- MCG 2151 PDA