Graphite™ Series Strain Gage Module

Red Lion Automation Series

▶▶▶ Strain Gage Module

The GMSG plug-in modules expand the functionality of our Graphite series HMI operator interface panels with PID control of load cells, pressure and torque transducers.

Expanding Graphite HMI functionality to include strain gage inputs is easy with GMSG plug-in modules. GMSG modules include full-featured single loop PID controllers designed to accept low level signals from a wide variety of bridge-type transducers. Optional second strain gage inputs are available to provide math capabilities between input channels for customized programs. Available with a user-selectable analog output and solid state or relay outputs, the GMSG module can perform virtually any combination of time-proportioning or linear output control operations.

APPLICATIONS

- Factory Automation
- Manufacturing
- Plastic Extrusion
- Food Processing

PRODUCT HIGHLIGHTS

- Full PID Control Functionality
- Load Cell, Pressure and Torque Bridge Inputs
- Extended Operating Temperature
- Multiple Output Options
- Digital Rate, Batch Totalizer and Peak/ Valley Recording

FEATURES & BENEFITS

- Dual Strain Gage Inputs (Model Dependent)
  - Monitor and control load cells, pressure and torque transducers
- Three Solid-State or Three Relay Outputs
  - Easily control processes that include weight, pressure and tensioning
- Up-To Seven Soft Alarms Can Trigger Discrete Outputs
  - Trigger outputs for precision operation
- User Selectable Analog Output
  - Software defined (0-10 VDC, 0-20 mA, or 4-20 mA)
- -40° to 70°C Operating Temperature
  - Reliably works in harsh environmental conditions
- Control Modes Include:
  - On/Off, P, PI, or PID control

industrial automation

CE

Strain Gage Module Specifications

POWER
GMSG1 Max Power: 5.6 W (supplied by Graphite host device)

COMMUNICATION PROPERTIES

SELECTABLE INPUT RANGE	ACCURACY *18 TO 28°C 10 TO 75% RH	ACCURACY *0 TO 50°C 0 TO 85% RH	ACCURACY *-40 TO 70°C 0 TO 85% RH
±20.000 mVDC	0.02% of reading +3 µV	0.07% of reading +4 µV	0.09% of reading +5 µV
±33.000 mVDC	0.02% of reading +5 µV	0.07% of reading +7 µV	0.09% of reading +9 µV
±200.00 mVDC	0.02% of reading +30 µV	0.07% of reading +40 µV	0.09% of reading +50 µV

* After 20 minute warm-up. Accuracy includes the temperature coefficient.
Connection Type:
- 4-wire bridge (differential)
- 2-wire (single-ended)

Sample Time: 50 msec (20 readings per second)
Common Mode Range (with respect to input common): 0 to +5 VDC
Common Mode Rejection: > 100 dB, DC to 120 Hz
Temperature Coefficient (ratio metric): 20 ppm/°C max.
Step Response Time: 200 msec max. to within 99% of final process value
Input Impedance: 100 MΩ
Max Continuous Overload: 30 V
PV Range: -30,000 to 30,000
Effective Resolution: 16-bit

BRIDGE EXCITATIONS
Software selectable:
- 5 VDC, ±2%, 65 mA max.
- 10 VDC, ±2%, 125 mA max. combined (excitation 1 plus excitation 2).

Temperature coefficient (ratio metric): 20 ppm/°C max.
Max. four 350Ω bridges per module.

DISCRETE OUTPUTS
Available as (3) Solid State NFET, or (3) Form A relay.
Solid State Output:
- Type: Switched DC, N Channel open drain MOSFET
- Current Rating: 1 A max
- VDS ON: 0.3 V @ 1 A
- VDS MAX: 30 VDC
- Offstate Leakage Current: 0.5 mA max

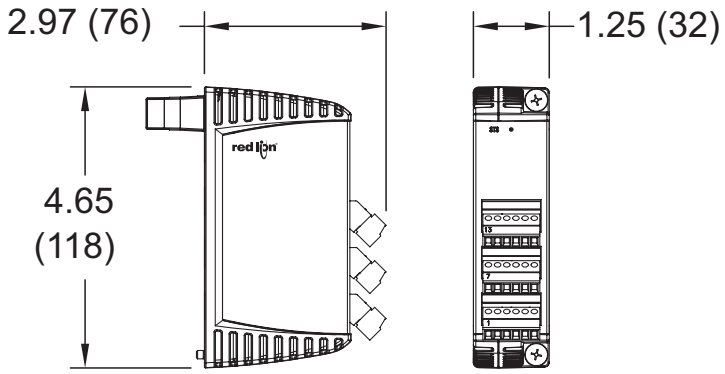
Form A Relay Output:
- Type: N.O.
- Current Rating: 3 Amps @ 125 VAC
- 1/10 HP @ 125 VAC
- Life Expectancy: 200,000 cycles at maximum load rating. (Decreasing load, increasing cycle time, and use of surge suppression such as RC snubbers increases life expectancy.)

CONTROL MODES
Control: On/Off, P, PI, or PID
Output: Time proportioning or linear
Cycle Time: Programmable from 0.0 to 60.0 sec
Auto-Tune: When selected, sets proportional band, integral time, derivative time values, and output dampening time
Input Fault Response: Upscale

ALARMS
Modes: Manual
- Absolute High Acting Absolute Low Acting
- Deviation High Acting Deviation Low Acting
- Inside Band Acting Outside Band Acting

Reset Action: Programmable; automatic or latched
Standby Mode: Programmable; enable or disable
Hysteresis: Programmable
Input Fault Response: Upscale

DIMENSIONS *In inches (mm)*



ANALOG DC OUTPUT
Software programmable for 0-10 VDC, 0-20 mA, or 4-20 mA
Resolution:
- Voltage: 500 µV
- Current: 1 µA

Accuracy:
- 0.1% of full scale (18° to 28°C)
- 0.2% of full scale (-40° to 70°C)

Update Time: 0.0 to 60.0 sec
Compliance (for current output only): 500 Ω max.
Minimum load (voltage output only): 10 KΩ min.
Output is software selectable for either 10 V or 20 mA. The output range may be field calibrated to yield approximate 10% overrange and a small underrange (negative) signal.

CERTIFICATIONS AND COMPLIANCES
CE Approved
- EN 61326-1 to Industrial Locations
- IEC/EN 61010-1
- RoHS Compliant

ENVIRONMENTAL
Operating Temperature Range: -40° to +70°C
Storage Temperature Range: -40° to +85°C
Operating and Storage Humidity: 85% max relative humidity, non-condensing, from 0° to +50°C
Altitude: Up to 2000 meters

ORDERING GUIDE

PART NUMBER	DESCRIPTION
GMSG10R0	Graphite Module, Single Loop, One Strain Gage Input, Relay Outputs, and Analog Output
GMSG10S0	Graphite Module, Single Loop, One Strain Gage Input, Solid State Outputs, and Analog Output
GMSG11R0	Graphite Module, Single Loop, Two Strain Gage Inputs, Relay Outputs, and Analog Output
GMSG11S0	Graphite Module, Single Loop, Two Strain Gage Inputs, Solid State Outputs, and Analog Output

www.redlion.net

Connect. Monitor. Control.

Americas
sales@redlion.net

Asia-Pacific
asia@redlion.net

Europe
Middle East
Africa
europe@redlion.net

+1 (717) 767-6511

As the global experts in communication, monitoring and control for industrial automation and networking, Red Lion has been delivering innovative solutions for over forty years. Our award-winning technology enables companies worldwide to gain real-time data visibility that drives productivity. Product brands include Red Lion, N-Tron and Sixnet. With headquarters in York, Pennsylvania, the company has offices across the Americas, Asia-Pacific and Europe. For more information, please visit www.redlion.net. Red Lion is a Spectris company.