Graphite® HMIs

Rugged Operator Panels with Modular I/O

The Graphite® operator panels are the industry's first rugged HMI touchscreens to combine I/O modules with protocol conversion, data logging, web-based monitoring and IEC 61131 control capabilities.

Available in nine different sizes ranging from 7" to 15", Graphite HMIs feature sleek full-color touchscreens in a streamlined, compact footprint for easy installation. Rugged cast-aluminum construction supports outdoor and indoor display with wide operating temperatures and high shock/vibration tolerances that enable organizations to connect, monitor and control processes regardless of environment. Unify disparate devices by converting up to 20 industrial protocols simultaneously from a built-in library of over 300 supported drivers. In addition, select from a wide variety of module and expansion options to seamlessly extend capabilities and address varying requirements.

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Industry Applications

- Factory automation
- Oil & gas
- Power & utilities
- Maritime
- Water/wastewater
- Plastic extrusion
- Data acquisition
- Industrial Internet of Things (IIOT)

Product Highlights

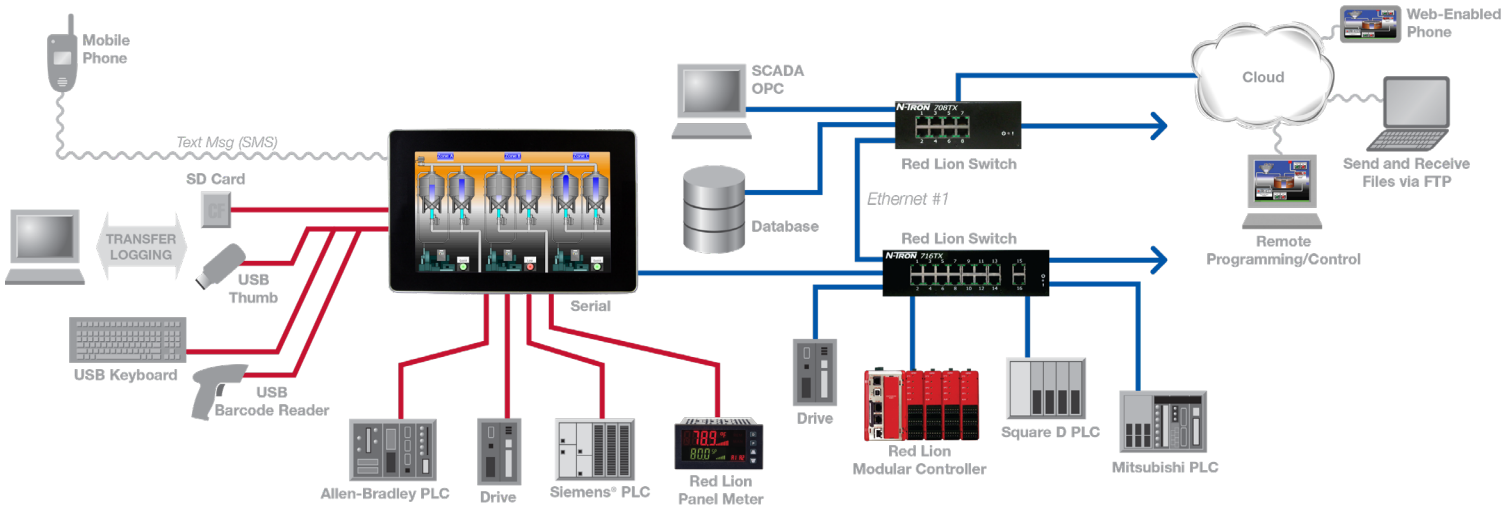
- Protocol conversion of over 300+ drivers
- Built-in web server for remote access
- Real-time data logging to SD Card or via FTP
- Rugged construction for extreme protection
- Wide operating temperature range
- Outdoor sunlight-readable models
- Scalable modules and expansion options
- IEC 61131 control capabilities with Crimson® control

Graphite Features and Benefits

Features & Benefits

- Sleek Full-Color HMI Touchscreens
  - 7" to 15" models with narrow tablet-style bezels
  - Outdoor sunlight-readable and widescreen models
- Versatile Module and Expansion Options
  - Choose from a mix of I/O, PID control or communication to populate up to 8 local module slots*
  - Use Crimson Control module for enhanced IEC 61131 logic control programming
  - Connect Graphite Expansion Racks to easily scale
  - Extend even further with E3 I/O™ high-density modules
- Rugged Environmental Specifications
  - Wide -20° to 60°C T_{AMB} HMI operating temperature
  - High shock and vibration tolerance
  - CE, UL Listed, UL Hazardous, PESO, ATEX/UKEX/ IECEx and ABS approvals
- Industry-Leading Protocol Conversion
  - Communicate with over 300 industrial protocols
  - Support up to 20 simultaneous protocols
  - Convert between serial, USB and Ethernet devices
  - Manage multi-vendor environments with ease
- Powerful Integration Functionality
  - Intuitive Crimson 3.0 software for easy drag-and-drop configuration
  - Ethernet, USB and serial ports make communication simple
  - Built-in data logging enhances troubleshooting and helps meet regulatory requirements
  - Robust web server provides remote access and control to reduce costly site visits

* Model dependent



Graphite Specifications

Specifications

Power Requirements

Must use a Class 2 circuit according to National Electrical Code (NEC), NFPA-70 or Canadian Electrical Code (CEC), Part I, C22.1 or a Limited Power Supply (LPS) according to IEC/EN 60950-1 or Limited-energy circuit according to IEC/EN 61010-1.
Power connection via removable three position terminal block.
See Table for power ratings

Battery

Lithium coin cell. Typical lifetime of 6 years, nominal.
To maintain UL rating, replacement battery must be: Rayovac BR2032-BA or Panasonic BR2032.

LCD Display

See Table for detailed display specifications.

Touchscreen

Resistive analog

Memory

On Board User Memory: 256 Mbyte of non-volatile Flash memory.
Memory Card: SD slot accepts standard capacity.

Communication Capabilities

USB Device Port: Adheres to USB specification 2.0 (high speed, full speed) only using Type B connection. **USB DEVICE PORT IS FOR SYSTEM SET-UP AND DIAGNOSTICS AND IS NOT INTENDED FOR PERMANENT CONNECTION.**

USB Host Ports: Comply with Universal Serial Bus Specification Rev 2.0. Support data transfers at (high speed, full speed). Hardware over current protected (0.5 A max per port).
Serial Ports: Ports are individually isolated. Format and Baud Rates for each port are individually software programmable up to 115,200 baud.
PGM Port: RS232 port via RJ12.
COMMS Ports: RS422/485 port via RJ45, and RS232 port via RJ12.
DH485 TXEN: Transmit enable; open collector, V_{OH} = 15 VDC, V_{OL} = 0.5 V @ 25 mA max.
Port to Port Isolation: 1000 Vrms (G07: 500 Vrms) for 1 minute. Signal Isolation: 50 V.
Ethernet Port: 10 BASE-T / 100 BASE-TX
RJ45 jack is wired as a NIC (Network Interface Card).
Isolation from Ethernet network to Graphite operator interface: 1500 Vrms

Environmental Conditions

Operating Temperature Range: -20 to 60 °C T_{AMB}, or lowest range among equipment used in your Graphite system. Consult the user manual or www.redlion.net/OpTemp for further details.
Storage Temperature Range: -20 to 70 °C T_{AMB}
Vibration to IEC 68-2-6: Operational 5-500 Hz, 4 g
Shock to IEC 68-2-27: Operational 40 g (10 g, modules w/relays)
Operating and Storage Humidity: 0 to 85% max. RH non-condensing
Altitude: Up to 2000 meters
Installation Category II, Pollution Degree 2 as defined in IEC/EN 60664-1.

Power Input

10 to 30 VDC

Model	G07C			G07S			G09			G10C/R			G10S			G12C			G12S			G15		
Input Voltage (V)	10	24	30	10	24	30	10	24	30	10	24	30	10	24	30	10	24	30	10	24	30	10	24	30
Typical Power HMI only (W):	7	7	8	8	9	9	11	12	12	10	11	11	15	16	16	13	14	15	16	17	17	18	18	18
Maximum Power HMI only (W):	12	13	14	13	14	15	16	17	18	15	16	17	20	21	22	19	20	20	22	22	23	23	24	24
Available Power for Modules (W):	21			21			25			29			29			33			33			33		
Max Power HMI With Module(s) (W):	33	34	35	34	36	36	41	43	43	44	46	47	50	51	52	52	54	55	56	57	57	56	58	58

LCD Display

Model	G07C	G07S	G09	G10C	G10R	G10S	G12C	G12S	G15
Size	7 - inch	7 - inch	9 - inch	10 - inch	10 - inch	10 - inch	12 - inch	12 - inch	15 - inch
Colors	WVGA, 16 M	WVGA, 16 M	WVGA, 16 M	VGA, 16 M	SVGA, 16 M	VGA, 16 M	WXGA, 16 M	WXGA, 16 M	XGA, 16 M
Pixels	800 X 480	800 X 480	800 X 480	640 X 480	800 X 600	640 X 480	1280 X 800	1280 X 800	1024 X 768
Brightness	500 cd/m²	1000 cd/m²	400 cd/m²	450 cd/m²	400 cd/m²	2500 cd/m²	400 cd/m²	1600 cd/m²	400 cd/m²
Backlight (Hr Typ.) *	40,000	40,000	70,000	70,000	70,000	35,000	70,000	100,000	70,000
Backlight Type	LED	LED	LED	LED	LED	LED	LED	LED	LED

* Lifetime at room temperature (25°C)

Graphite Specifications Cont.

Certifications and Compliances

CE Approved
- EN 61326-1 Immunity to Industrial Locations
- Emission CISPR 11 Class A
- IEC/EN 61010-1
- RoHS Compliant

ATEX/UKEX Approved
- II 3 G Ex ic nA IIC T4 Gc
- II 3 D Ex tc IIIC T135°C Dc
- DEMKO 14 ATEX 1387X
  - EN 60079-0, -11, -15, -31
- UL23UKEX2879X

IECEx Approved
- Ex ic nA IIC T4 Gc
- Ex tc IIIC T135°C Dc
- IECEx UL 15.0035X
  - IEC 60079-0, -11, -15, -31

India PESO Approved:
- A/P/HQ/MH/104/7441 (P549599)

UL Listed: File #E302106
UL Hazardous: File #E317425
Type 4X Indoor / IP66 Enclosure rating (Face only) for all models
Type 4X Outdoor Enclosure rating (Face only) for GxxSxxxx models
IP20 Enclosure rating (Rear of unit)
ABS Type Approval for Shipboard Applications

Connections

High compression cage-clamp terminal block
Wire Strip Length: 0.3" (7.5 mm)
Wire Gauge Capacity: One 14 AWG (1.63 mm) solid, two 18 AWG (1.02 mm) or four 20 AWG (0.81 mm)

Construction

Cast aluminum enclosure with NEMA 4X/IP66 rating for indoor use only when correctly fitted with the gasket provided. These devices have only been evaluated for low risk of mechanical impact.

Mounting Requirements

Maximum panel thickness is 0.188" (4.78 mm) with removable foot, or 0.375" (9.53 mm) without foot. For NEMA 4X/IP66 sealing, a steel panel with a minimum thickness of 0.125" (3.17 mm) is recommended.
Maximum Mounting Screw Torque: 6.0 lbf inch (96 ozf inch) (0.68 Nm)

Weight

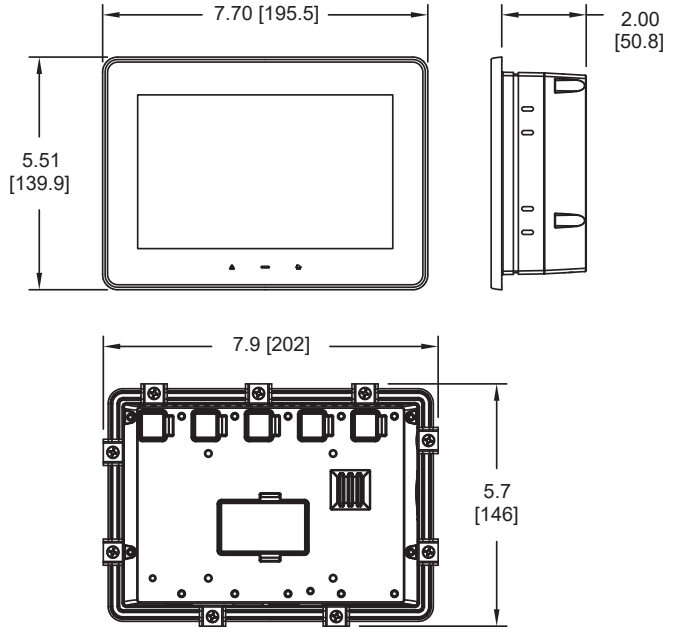
G07: 2.26 lb. (1.03 Kg)
G09: 3.39 lb. (1.54 Kg)
G10: 4.8 lb. (2.18 Kg)
G12: 5.06 lb. (2.29 Kg)
G15: 7.73 lb. (3.5 Kg)

Warranty

2 years on design and manufacturing defects.
Specifications are subject to change.
Visit www.redlion.net for more information.

Graphite Dimensions in Inches [mm]

G07



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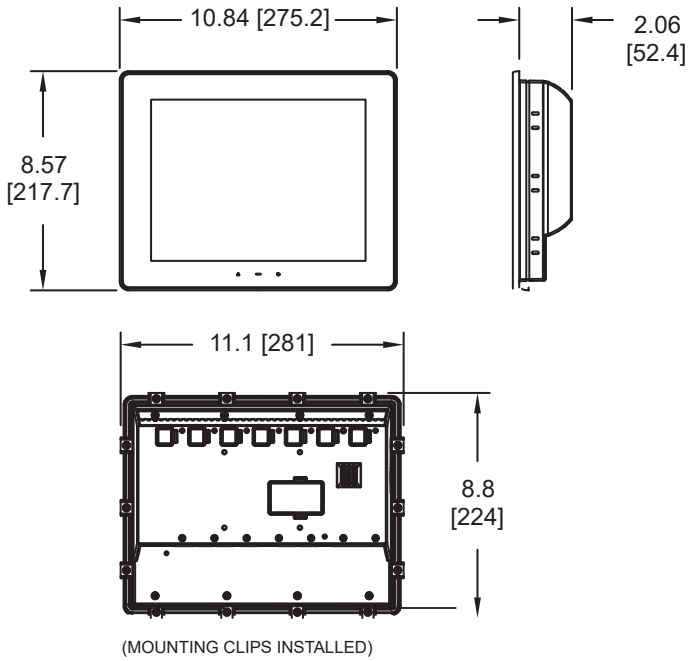
G10



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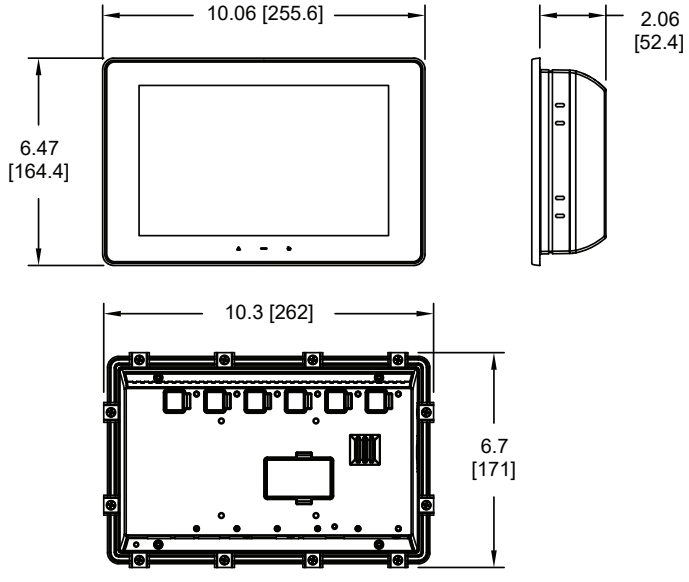
G09



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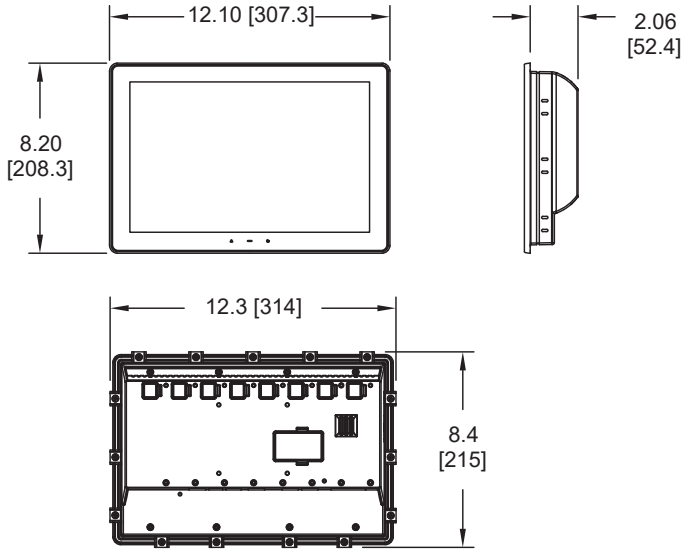
Graphite Dimensions in Inches [mm] **Cont.**

G12



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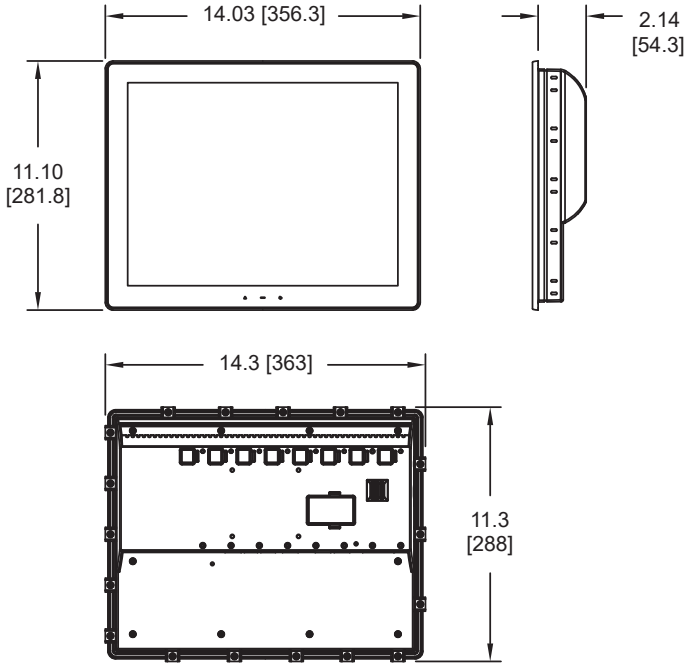
G15



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Graphite Ordering Guide

Graphite Operator Panels

Part Number	Description
G07C0000	7" Operator Interface Terminal for Indoor Use
G07S0000	7" Operator Interface Terminal for Outdoor Use
G09C0000	9" Operator Interface Terminal for Indoor Use
G09C1000	9" Operator Interface Terminal for Indoor Use with Aux. Ethernet port
G10C0000	10" Operator Interface Terminal for Indoor Use
G10C1000	10" Operator Interface Terminal for Indoor Use with Aux. Ethernet port
G10R0000	10" Operator Interface Terminal, High Resolution Display for Indoor Use
G10R1000	10" Operator Interface Terminal, High Resolution Display for Indoor Use with Aux. Ethernet port
G10S0000	10" Operator Interface Terminal for Outdoor Use
G10S1000	10" Operator Interface Terminal for Outdoor Use with Aux. Ethernet port
G12C0000	12" Operator Interface Terminal for Indoor Use
G12C1100	12" Operator Interface Terminal with Aux. Ethernet and dual RS485 ports
G12S1100	12" Operator Interface Terminal for Outdoor Use with Aux. Ethernet and dual RS485 ports
G15C0000	15" Operator Interface Terminal for Indoor Use
G15C1100	15" Operator Interface Terminal with Aux. Ethernet and dual RS485 ports

Crimson Control Module

Part Number	Description
GMCC0000	Graphite Module, enables IEC 61131 control capabilities via Crimson Controls

PID Control Modules

Part Number	Description
GMP1RA00*	Graphite Module, Single PID, Relay and Analog Outputs
GMP1RM00*	Graphite Module, Single PID, Relay Outputs, Heater Current Monitor
GMP1SA00	Graphite Module, Single PID, SSR and Analog Outputs
GMP1SM00	Graphite Module, Single PID, SSR Outputs, Heater Current Monitor
GMP2R000*	Graphite Module, Dual PID, Relay Outputs
GMP2RM00*	Graphite Module, Dual PID, Relay Outputs and Heater Current Monitor
GMP2S000	Graphite Module, Dual PID, SSR Outputs
GMP2SM00	Graphite Module, Dual PID, SSR Outputs and Heater Current Monitor

Data Acquisition Modules

Part Number	Description
GMDIOR00*	Graphite Module, Digital I/O, 8 Inputs and 6 Relays Outputs
GMDIOS00	Graphite Module, Digital I/O, 8 Inputs and 6 Solid State Outputs
GMUIN400	Graphite Module, 4 Universal Analog Inputs
GMOUT400	Graphite Module, 4 Analog Outputs
GMINI800	Graphite Module, 8 DC Current Inputs
GMINV800	Graphite Module, 8 DC Voltage Inputs
GMTC8000	Graphite Module, 8 Thermocouple Inputs
GMRTD600	Graphite Module, 6 RTD Inputs
GMSG10R0*	Graphite Module, 1 Strain Gage Input, Relay Output
GMSG10S0	Graphite Module, 1 Strain Gage Input, SSR Output
GMSG11R0*	Graphite Module, 2 Strain Gage Input, Relay Output
GMSG11SO	Graphite Module, 2 Strain Gage Input, SSR Output

Communication Modules

Part Number	Description
GMCAN000	Graphite Module, CAN Protocol Interface
GMJ19390	Graphite Module, J1939 Protocol Interface
GMDN0000	Graphite Module, DeviceNet Protocol Interface
GMPBDP00	Graphite Module, PROFIBUS DP Protocol Interface

Expansion Racks

Part Number	Description
GEXRACK1	Graphite Wide Expansion Rack for Modules
GEXRACK2	Graphite Standard Expansion Rack for Modules
CBLUSBM0	USB Tethering Cable, 0.5 M Metal Jacketed
CBLUSBM1	USB Tethering Cable, 1 M Metal Jacketed
CBLUSBM2	USB Tethering Cable, 2 M Metal Jacketed

* Non ATEX approved modules

Build the perfect HMI solution.

With up to eight available plug-and-play module slots and additional expansion rack options, Graphite HMIs provide a scalable all-in-one platform to help integrate complex multi-vendor environments. Employing modules to address PID control, data acquisition and communication, Graphite HMIs allow users to connect, monitor and control a wide array of equipment to meet specific application requirements. In addition, our Crimson Control module enables users to leverage industry-standard IEC 61131 programming languages such as Ladder Logic, Function Block, Structured Text and Instruction List to develop logic code much like a Programmable Logic Controller (PLC) or Remote Telemetry Unit (RTU) without the added expense.

RED LION®

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