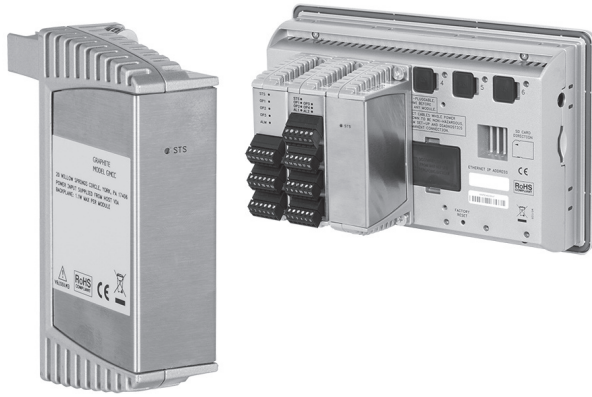


## Model GMCC - Graphite® Crimson® Control Module Installation Guide



- Enables control engine to function in Graphite HMIs
- Works with any existing Graphite HMI
- Control programs are configured in Crimson Control, which is now included in Crimson 3 software
- Module can be mounted in any open slot on Graphite HMI or expansion racks

**UL US LISTED** FOR USE IN HAZARDOUS LOCATIONS:  
 IND. CONT. EQ. E317425  
 Class I, Division 2, Groups A, B, C, and D  
 T4

**UL US LISTED**  
 IND. CONT. EQ.  
 E302106



**UK CA CE Ex** II 3 G Ex nA IIC T4 Gc  
 -40°C ≤ T<sub>AMB</sub> ≤ 75°C  
 DEMKO 14 ATEX 1387X  
 IECEx UL 15.0035X  
 UL22UKEX2574X

### GENERAL DESCRIPTION

The Graphite Crimson Control Module enables control capability in any Graphite HMI. Crimson Software provides the ability to write control programs using one of the following IEC 61131-3 languages - Ladder Diagram, Function Block Diagram, Structured Text and Instruction List. The Control Module must be physically installed in a slot on the back of the Graphite HMI or in a slot on the Expansion System, for these programs to be executed.

The modules connect and communicate via proprietary USB connection to the various Graphite devices. The Graphite devices, equipped with serial ports as well as Ethernet port(s), allow the system to share data with PCs, PLCs and SCADA systems. The maximum number of modules varies for each Graphite device, see specific model for details. Remove power from the host device before installing or replacing any modules.

### CONFIGURATION

The Graphite host can be programmed with Red Lion's Crimson 3.0 software. The software is an easy to use, graphical interface which provides a means of configuration and commissioning of

new systems, as well as routine module re-calibration. Embedded in Crimson 3.0 software platform is the control engine, Crimson Control which can be written in 4 programming languages including Ladder Logic, Function Block, Structured Text and/or Instruction List.

### SAFETY SUMMARY

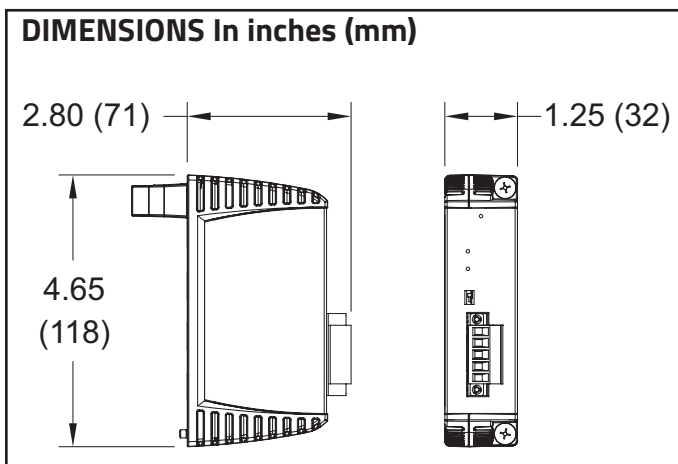
All safety related regulations, local codes and instructions that appear in this document or on equipment must be observed to ensure personal safety and to prevent damage to either the device or equipment connected to it.

Do not use these products to replace proper safety interlocking. No software-based device (or any other solid-state device) should ever be designed to be responsible for the maintenance of personnel safety or consequential equipment not equipped with safeguards. Red Lion disclaims any responsibility for damages, either direct or consequential, that result from the use of this equipment in a manner not specified.

**CAUTION: Risk of Danger.**  
 Read complete instructions prior to installation and operation of the unit.

**WARNING - EXPLOSION HAZARD -** Do not disconnect equipment unless power has been switched off or area is known to be non-hazardous.

**WARNING - EXPLOSION HAZARD -** Substitution of components may impair suitability for Class I, Division 2



### ORDERING INFORMATION

DESCRIPTION	PART NUMBER
Graphite Module, Crimson Control	GMCC0000

A listing of the entire Graphite family of products and accessories can be found at [www.redlion.net](http://www.redlion.net)

## SPECIFICATIONS

1. **POWER:** Power will be supplied by the Graphite host device. Some modules, depending on usage may consume high levels of power. This may limit the total number of modules that can be installed on a single Graphite host. Check the Graphite module and Graphite host data sheets for specific usage and power requirements.

**GMCC Max Power: 1.1 W**

2. **LEDS:**

STS - Status LED shows module condition.

3. **ENVIRONMENTAL CONDITIONS:**

Operating Temperature Range: -40 to +75 °C T<sub>AMB</sub>, or lowest range among equipment used in your Graphite system.  
Consult the user manual or [www.redlion.net/OpTemp](http://www.redlion.net/OpTemp) for further details.

Storage Temperature Range: -40 to +85 °C T<sub>AMB</sub>

Operating and Storage Humidity: 85% max relative humidity, non-condensing

Altitude: Up to 2000 meters

4. **CERTIFICATIONS AND COMPLIANCES:**

**CE Approved**

EN 61326-1 Immunity to Industrial Locations

IEC/EN 61010-1

RoHS Compliant

**ATEX Approved**

Ⓜ II 3 G Ex nA IIC T4 Gc

DEMKO 14 ATEX 1387X

EN 60079-0, -15

**IECEx Approved**

Ex nA IIC T4 Gc

IECEx UL 15.0035X

IEC 60079-0, -15

**UKEX Approved**

UL22UKEX2574X

**UL Listed:** File #E302106

**UL Hazardous:** File #E317425

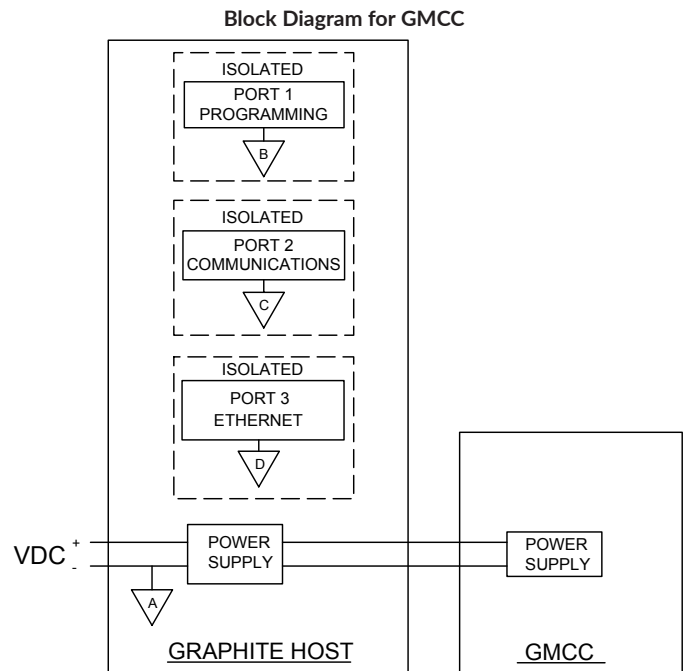
**ABS Type Approval for Shipboard Applications**

5. **CONSTRUCTION:** Case body is all metal construction.

6. **CONNECTIONS:** Removable wire clamp screw terminal block.

7. **MOUNTING:** Screws to host.

8. **WEIGHT:** 6.7 oz (189.9 g)



## EMC INSTALLATION GUIDELINES

Although Red Lion Controls products are designed with a high degree of immunity to Electromagnetic Interference (EMI), proper installation and wiring methods must be followed to ensure compatibility in each application. The type of the electrical noise, source or coupling method into a unit may be different for various installations. Cable length, routing, and shield termination are very important and can mean the difference between a successful or troublesome installation. Listed are some EMI guidelines for a successful installation in an industrial environment.

1. A unit should be mounted in a metal enclosure, which is properly connected to protective earth.
2. Use shielded cables for all Signal and Control inputs. The shield connection should be made as short as possible. The connection point for the shield depends somewhat upon the application. Listed below are the recommended methods of connecting the shield, in order of their effectiveness.
  - a. Connect the shield to earth ground (protective earth) at one end where the unit is mounted.
  - b. Connect the shield to earth ground at both ends of the cable, usually when the noise source frequency is over 1 MHz.
3. Never run Signal or Control cables in the same conduit or raceway with AC power lines, conductors, feeding motors, solenoids, SCR controls, and heaters, etc. The cables should be run through metal conduit that is properly grounded. This is especially useful in applications where cable runs are long and portable two-way radios are used in close proximity or if the installation is near a commercial radio transmitter. Also, Signal or Control cables within an enclosure should be routed as far away as possible from contactors, control relays,

transformers, and other noisy components.

4. Long cable runs are more susceptible to EMI pickup than short cable runs.
5. In extremely high EMI environments, the use of external EMI suppression devices such as Ferrite Suppression Cores for signal and control cables is effective. The following EMI suppression devices (or equivalent) are recommended: Fair-Rite part number 0443167251 (Red Lion #FCOR0000) Line Filters for input power cables: Schaffner # FN2010-1/07 (Red Lion #LFIL0000)
6. To protect relay contacts that control inductive loads and to minimize radiated and conducted noise (EMI), some type of contact protection network is normally installed across the load, the contacts or both. The most effective location is across the load.
  - a. Using a snubber, which is a resistor-capacitor (RC) network or metal oxide varistor (MOV) across an AC inductive load is very effective at reducing EMI and increasing relay contact life.
  - b. If a DC inductive load (such as a DC relay coil) is controlled by a transistor switch, care must be taken not to exceed the breakdown voltage of the transistor when the load is switched. One of the most effective ways is to place a diode across the inductive load. Most Red Lion products with solid state outputs have internal zener diode protection. However external diode protection at the load is always a good design practice to limit EMI. Although the use of a snubber or varistor could be used.  
Red Lion part numbers: Snubber: SNUB0000  
Varistor: ILS11500 or ILS23000
7. Care should be taken when connecting input and output

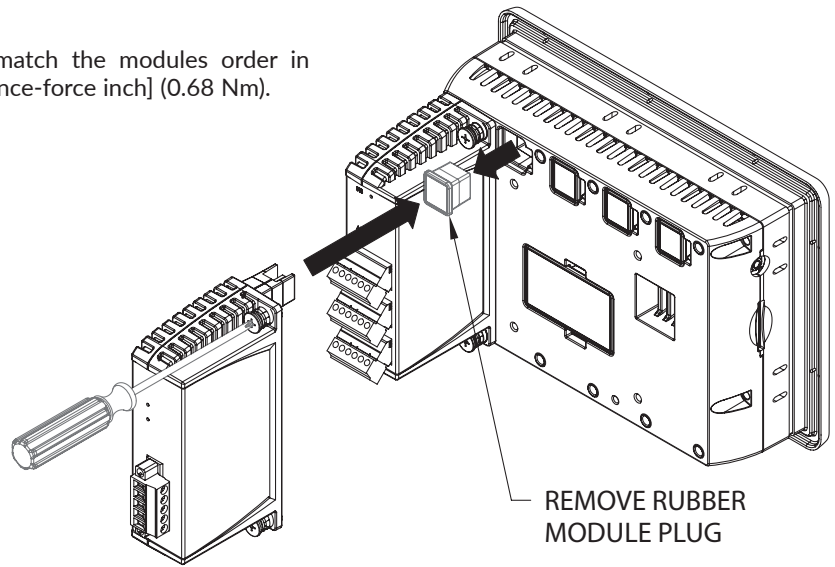
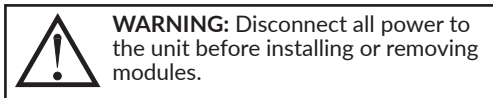
devices to the instrument. When a separate input and output common is provided, they should not be mixed. Therefore a sensor common should NOT be connected to an output common. This would cause EMI on the sensitive input

common, which could affect the instrument's operation.

Visit <http://www.redlion.net/emi> for more information on EMI guidelines, Safety and CE issues as they relate to Red Lion products.

## HARDWARE INSTALLATION

The physical order of all installed modules must match the modules order in Crimson. Torque screws to 6.0 pound-force inch [96 ounce-force inch] (0.68 Nm).



## COMMUNICATING WITH THE GMCC MODULE

### LEDs

#### STS - STATUS LED

The Status LED is a green/red LED that provides information regarding the state of the module. This includes indication of the various stages of the start-up routine (power-up), as well as any errors that may occur.

#### Startup Routine

LED	INDICATION
Green	Module performing normally.

#### Error States

LED	INDICATION
Flashing Green	Module has lost communication with the Host.

## FIRMWARE UPGRADE

The module's firmware is stored in flash memory so that software/hardware conflicts are avoided, and so features can be added in the future.

During a download, Crimson compares its own library of firmware files with those stored in the module. If they do not match, Crimson will download the necessary firmware.

## CONFIGURATION

Programming is done via Crimson 3 software, a Windows® compatible configuration interface. Please see the Crimson manual for more information.

## RED LION CONTROLS TECHNICAL SUPPORT

If for any reason you have trouble operating, connecting, or simply have questions concerning your new product, contact Red Lion's technical support.

Support: [support.redlion.net](http://support.redlion.net)  
 Website: [www.redlion.net](http://www.redlion.net)  
 Inside US: +1 (877) 432-9908  
 Outside US: +1 (717) 767-6511

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(b) The Company shall not be liable for a breach of the warranty set forth in paragraph (a) if (i) the defect is a result of Customer's failure to store, install, commission or maintain the Product according to specifications; (ii) Customer alters or repairs such Product without the prior written consent of Company.

(c) Subject to paragraph (b), with respect to any such Product during the Warranty Period, Company shall, in its sole discretion, either (i) repair or replace the Product; or (ii) credit or refund the price of Product provided that, if Company so requests, Customer shall, at Company's expense, return such Product to Company.

(d) **THE REMEDIES SET FORTH IN PARAGRAPH (c) SHALL BE THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDY AND COMPANY'S ENTIRE LIABILITY FOR ANY BREACH OF THE LIMITED WARRANTY SET FORTH IN PARAGRAPH (a).**

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