OPERATOR INTERFACE



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G3 OPERATOR INTERFACE TERMINALS

MODEL G303 - 3" DISPLAY





FOR USE IN HAZARDOUS LOCATIONS: Class I, Division 2, Groups A, B, C, and D Class II, Division 2, Groups F and G Class III, Division 2

GENERAL DESCRIPTION

The G303 Operator Interface Terminal combines unique capabilities normally expected from high-end units with a very affordable price. It is built around a high performance core with integrated functionality. This core allows the G303 to perform many of the normal features of the Paradigm range of Operator Interfaces while improving and adding new features.

The G303 is able to communicate with many different types of hardware using high-speed RS-232/422/485 communications ports and Ethernet 10 Base T/100 Base-TX communications. In addition, the G303 features USB for fast downloads of configuration files and access to trending and data logging. A CompactFlash socket is provided so that Flash cards can be used to collect your trending and data logging information as well as to store larger configuration files.

In addition to accessing and controlling of external resources, the G303 allows a user to easily view and enter information. The unit uses a Liquid Crystal Display (LCD) module, which is easily readable in both indoor and outdoor applications. Users can enter data through the front panel 32-button keypad that has user identifiable keys.

DIMENSIONS IN INCHES (MM)



- 3.2-INCH 128X64 PIXEL BACKLIGHT LCD, ABLE TO SUPPORT TEXT AND GRAPHICS
- □ CONFIGURED USING CRIMSON[®] SOFTWARE
- □ UP TO 5 RS-232/422/485 COMMUNICATIONS PORTS (3 ON BOARD, 2 ON OPTIONAL COMMUNICATIONS CARD)
- ETHERNET PORT TO NETWORK UNITS
- □ WEB-SERVE DATA & VISUALIZATION
- PROTOCOL CONVERSION
- □ EMAIL, SMS ALARMS/EVENTS
- □ USB PORT TO DOWNLOAD THE UNIT'S CONFIGURATION FROM A PC OR FOR DATA TRANSFERS TO A PC
- COMPACTFLASH® SOCKET TO INCREASE MEMORY CAPACITY
- OUTDOOR UNIT WITH UV RATED OVERLAY AVAILABLE

SPECIFICATIONS

- 1. POWER REQUIREMENTS:
- +24 VDC ±20% @ 9.5 W maximum.
- 2. BATTERY: Lithium coin cell. Typical lifetime of 10 years.
- 3. **DISPLAY**: 3.2" 128 x 64 pixel FSTN LCD with yellow LED backlight for text and graphics applications.
- 4. **32-KEY KEYPAD**: 8 user legendable keys, 5 navigational keys, 10+2 numeric keys, 4 dedicated keys, and 3 soft keys for on-screen menus.
- 5. MEMORY:
 - On Board User Memory: Non-volatile Flash memory.
 - **Memory Card**: CompactFlash Type II slot for Type I and Type II CompactFlash cards.
- 6. COMMUNICATIONS:
 - USB Port: USB 1.1. Type B connection.
 - Serial Ports: Three ports total. Two RS-232 and one RS-485/422. Each port is individually software programmable up to 115,200 baud.
 - DH485 TXEN: Transmit enable; open collector, V_{OH} = 15 VDC, V_{OL} = 0.5 V @ 25 mA max.
 - Ethernet Port: 10 BASE-T / 100 BASE-TX
- 7. ENVIRONMENTAL CONDITIONS:
 - **Operating Temperature Range**: 0 to 50°C
 - Storage Temperature Range: -30 to 70°C
 - **Operating and Storage Humidity**: 80% maximum relative humidity (noncondensing) from 0 to 50°C.
 - Vibration according to IEC 68-2-6: Operational 5 to 8 Hz, 0.8" (p-p), 8 to 500 Hz, in X, Y, Z direction, duration: 1 hour, 3 g.
 - Shock according to IEC 68-2-27: Operational 40 g, 9 msec in 3 directions. Altitude: Up to 2000 meters.
- 8. CERTIFICATIONS AND COMPLIANCES:
 - CE, UL Listed for use in Hazardous Locations, Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F and G; Class III, Division 2. See data sheet on web site for detailed information.
- 9. RATINGS: NEMA 4X/IP66
- 10. WEIGHT: 1.96 lbs (0.89 Kg)



ORDERING INFORMATION				
MODEL NO.	DESCRIPTION	PART NUMBER		
	Operator Interface for indoor applications only, textured finish with embossed keys	G303M000		
G303	Operator Interface for indoor or outdoor applications, glossy finish with UV rated overlay (keys are not embossed)	G303S000		

Accessories

OPTIONAL COMMUNICATION CARD



Red Lion offers optional communication cards for fieldbus communications. These communication cards will allow your G303 to communicate with many of the popular fieldbus protocols.

Red Lion is also offering a communications card for additional RS-232 and RS-422/485 communications. See the G3 Accessories section on page 37 for information about these cards.

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "G303 Port Pin Outs" for wiring information.









MODEL G306M/S - 5.7" DISPLAY



GENERAL DESCRIPTION

The G306M Operator Interface Terminal combines unique capabilities normally expected from high-end units with a very affordable price. It is built around a high performance core with integrated functionality.

The G306 is able to communicate with many different types of hardware using high-speed RS-232/422/485 communications ports and Ethernet 10 Base T/100 Base-TX communications. In addition, the G306 features USB for fast downloads of configuration files and access to trending and data logging. A CompactFlash socket is provided so that Flash cards can be used to collect your trending and data logging information as well as to store larger configuration files.

In addition to accessing and controlling of external resources, the G306 allows a user to easily view and enter information. The unit uses a Liquid Crystal Display (LCD) module, which is easily readable in both indoor and outdoor applications. Users can enter data through the touchscreen and/or front panel 5-button keypad.

DIMENSIONS IN INCHES (MM)



- □ 5.7-INCH FSTN MONOCHROME QVGA 320X240 PIXEL LCD WITH WHITE LED BACKLIGHT
- □ CONFIGURED USING CRIMSON[®] SOFTWARE
- □ UP TO 5 RS-232/422/485 COMMUNICATIONS PORTS (3 ON BOARD, 2 ON OPTIONAL COMMUNICATIONS CARD)
- ETHERNET PORT TO NETWORK UNITS
- WEB-SERVE DATA & VISUALIZATION
- PROTOCOL CONVERSION
- EMAIL, SMS ALARMS/EVENTS
- □ USB PORT TO DOWNLOAD THE UNIT'S CONFIGURATION FROM A PC OR FOR DATA TRANSFERS TO A PC
- COMPACTFLASH® SOCKET TO INCREASE MEMORY CAPACITY
- OUTDOOR UNIT WITH UV RATED OVERLAY AVAILABLE
- 5 BUTTON KEYPAD FOR ON-SCREEN MENUS
- □ RESISTIVE ANALOG TOUCHSCREEN

SPECIFICATIONS

- 1. POWER REQUIREMENTS:
- +24 VDC ±20% @ 14 W maximum.
- 2. BATTERY: Lithium coin cell. Typical lifetime of 10 years.
- 3. LCD DISPLAY: 5.7" 320 x 240 pixel FSTN LCD. 4. 5-KEY KEYPAD: for on-screen menus.
- 5. MEMORY:
 - MEMORY:
 - **On Board User Memory**: Non-volatile Flash memory. **Memory Card**: CompactFlash Type II slot for Type I and Type II
 - CompactFlash cards.
- 6. COMMUNICATIONS:
 - USB Port: USB 1.1. Type B connection.
 - Serial Ports: Three ports total. Two RS-232 and one RS-485/422. Each port is individually software programmable up to 115,200 baud.
 - DH485 TXEN: Transmit enable; open collector, $V_{OH} = 15$ VDC, $V_{OL} = 0.5$ V @ 25 mA max.
- Ethernet Port: 10 BASE-T / 100 BASE-TX
- 7. ENVIRONMENTAL CONDITIONS: Operating Temperature Range: 0 to 50°C
 - Storage Temperature Range: -20 to 70°C

Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C.

- Altitude: Up to 2000 meters.
- 8. CERTIFICATIONS AND COMPLIANCES:
- CE See data sheet on web site for detailed information.
- 9. **RATINGS:** NEMA 4X/IP66
- 10. WEIGHT: 3.0 lbs (1.36 Kg)



ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
G306M	Operator Interface for indoor applications, textured finish with embossed keys	G306M000
	Operator Interface for indoor or outdoor applications, glossy finish with UV rated overlay (keys are not embossed)	G306MS00

Accessories

OPTIONAL COMMUNICATION CARD



Red Lion offers optional communication cards for fieldbus communications. These communication cards will allow your G306M/S to communicate with many of the popular fieldbus protocols.

Red Lion is also offering a communications card for additional RS-232 and RS-422/485 communications. See the G3 Accessories section on page 37 for information about these cards.

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "G306M/S Port Pin Outs" for wiring information.









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MODEL G306A - 5.7" DISPLAY



CE



FOR USE IN HAZARDOUS LOCATIONS: Class I, Division 2, Groups A, B, C, and D Class II, Division 2, Groups F and G Class III, Division 2

GENERAL DESCRIPTION

The G306A Operator Interface Terminal combines unique capabilities normally expected from high-end units with a very affordable price. It is built around a high performance core with integrated functionality. This core allows the G306A to perform many of the normal features of the Paradigm range of Operator Interfaces while improving and adding new features.

The G306A is able to communicate with many different types of hardware using high-speed RS-232/422/485 communications ports and Ethernet 10 Base T/100 Base-TX communications. In addition, the G306A features USB for fast downloads of configuration files and access to trending and data logging. A CompactFlash socket is provided so that Flash cards can be used to collect your trending and data logging information as well as to store larger configuration files

In addition to accessing and controlling of external resources, the G306A allows a user to easily view and enter information. Users can enter data through the touchscreen and/or front panel 5-button keypad.

DIMENSIONS IN INCHES (MM)



- □ 5.7-INCH TFT ACTIVE MATRIX 256 COLOR QVGA 320X240 PIXEL LCD
- □ CONFIGURED USING CRIMSON[®] SOFTWARE
- UP TO 5 RS-232/422/485 COMMUNICATIONS PORTS (3 ON BOARD, 2 ON OPTIONAL COMMUNICATIONS CARD)
- ETHERNET PORT TO NETWORK UNITS
- □ WEB-SERVE DATA & VISUALIZATION
- PROTOCOL CONVERSION
- EMAIL, SMS ALARMS/EVENTS
- □ USB PORT TO DOWNLOAD THE UNIT'S CONFIGURATION FROM A PC OR FOR DATA TRANSFERS TO A PC
- □ COMPACTFLASH[®] SOCKET TO INCREASE MEMORY CAPACITY
- □ 5 BUTTON KEYPAD FOR ON-SCREEN MENUS
- □ RESISTIVE ANALOG TOUCHSCREEN

SPECIFICATIONS

- 1. POWER REQUIREMENTS:
- +24 VDC ±20% @ 14 W maximum.
- 2. BATTERY: Lithium coin cell. Typical lifetime of 10 years.
- 3. LCD DISPLAY: 5.7" 320 x 240 pixel TFT LCD. 4. 5-KEY KEYPAD: for on-screen menus.
- 5. MEMORY
 - On Board User Memory: Non-volatile Flash memory.
 - Memory Card: CompactFlash Type II slot for Type I and Type II CompactFlash cards.
- 6. COMMUNICATIONS:
 - USB Port: USB 1.1. Type B connection.
 - Serial Ports: Three ports total. Two RS-232 and one RS-485/422. Each port is individually software programmable up to 115,200 baud.
 - DH485 TXEN: Transmit enable; open collector, $V_{OH} = 15$ VDC, $V_{OL} = 0.5$ V @ 25 mA max.
 - Ethernet Port: 10 BASE-T / 100 BASE-TX
- 7. ENVIRONMENTAL CONDITIONS:
 - **Operating Temperature Range:** 0 to 50°C

Storage Temperature Range: -20 to 70°C

Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C.

- Vibration according to IEC 68-2-6: Operational 5 to 8 Hz, 0.8" (p-p), 8 to 500 Hz, in X, Y, Z direction, duration: 1 hour, 3 g.
- Shock according to IEC 68-2-27: Operational 40 g, 9 msec in 3 directions. Altitude: Up to 2000 meters.
- 8. CERTIFICATIONS AND COMPLIANCES:
 - CE, UL Listed for use in hazardous locations, Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F and G; Class III, Division 2. See data sheet on web site for detailed information.
- 9. RATINGS: NEMA 4X/IP66
- 10. WEIGHT: 3.0 lbs (1.36 Kg)



ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
G306A	Operator Interface for indoor applications, textured finish with embossed keys	G306A000

Accessories

OPTIONAL COMMUNICATION CARD



Red Lion offers optional communication cards for fieldbus communications. These communication cards will allow your G306A to communicate with many of the popular fieldbus protocols.

Red Lion is also offering a communications card for additional RS-232 and RS-422/485 communications. See the G3 Accessories section on page 37 for information about these cards.

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "G306A Port Pin Outs" for wiring information.









MODEL G308 - 7.7" DISPLAY



LABORATORY EQUIPMENT

FOR USE IN HAZARDOUS LOCATIONS: Class I, Division 2, Groups A, B, C, and D Class II, Division 2, Groups F and G Class III, Division 2

GENERAL DESCRIPTION

The G308 Operator Interface Terminal combines unique capabilities normally expected from high-end units with a very affordable price. It is built around a high performance core with integrated functionality. This core allows the G308 to perform many of the normal features of the Paradigm range of Operator Interfaces while improving and adding new features.

The G308 is able to communicate with many different types of hardware using high-speed RS-232/422/485 communications ports and Ethernet 10 Base T/100 Base-TX communications. In addition, the G308 features USB for fast downloads of configuration files and access to trending and data logging. A CompactFlash socket is provided so that Flash cards can be used to collect your trending and data logging information as well as to store larger configuration files.

In addition to accessing and controlling of external resources, the G308 allows a user to easily view and enter information. Users can enter data through the touchscreen or front panel 7-button keypad.

DIMENSIONS IN INCHES (MM)



- □ 7.7-INCH DSTN PASSIVE MATRIX 256 COLOR VGA 640X480 PIXEL LCD MODULE
- □ CONFIGURED USING CRIMSON[®] SOFTWARE
- □ UP TO 5 RS-232/422/485 COMMUNICATIONS PORTS (3 ON BOARD, 2 ON OPTIONAL COMMUNICATIONS CARD)
- ETHERNET PORT TO NETWORK UNITS
- WEB-SERVE DATA & VISUALIZATION
- PROTOCOL CONVERSION
- EMAIL, SMS ALARMS/EVENTS
- □ USB PORT TO DOWNLOAD THE UNIT'S CONFIGURATION FROM A PC OR FOR DATA TRANSFERS TO A PC
- COMPACTFLASH® SOCKET TO INCREASE MEMORY CAPACITY
- 7 BUTTON KEYPAD FOR ON-SCREEN MENUS
- □ RESISTIVE ANALOG TOUCHSCREEN

SPECIFICATIONS

- 1. POWER REQUIREMENTS:
- +24 VDC ±20% @ 24 W maximum.
- 2. BATTERY: Lithium coin cell. Typical lifetime of 10 years.
- 3. **DISPLAY**: 7.7" 640 x 480 pixel DSTN passive matrix. 4. **7-KEY KEYPAD**: for on-screen menus.
- 5. MEMORY:
 - On Board User Memory: Non-volatile Flash memory.
 - **Memory Card**: CompactFlash Type II slot for Type I and Type II CompactFlash cards.
- 6. COMMUNICATIONS:
 - USB Port: USB 1.1. Type B connection.
 - Serial Ports: Three ports total. Two RS-232 and one RS-485/422. Each port is individually software programmable up to 115,200 baud.
 - DH485 TXEN: Transmit enable; open collector, V_{OH} = 15 VDC, V_{OL} = 0.5 V @ 25 mA max.
 - Ethernet Port: 10 BASE-T / 100 BASE-TX
- 7. ENVIRONMENTAL CONDITIONS: Operating Temperature Range: 0 to 50°C
 - Storage Temperature Range: -20 to 60°C
 - Operating and Storage Humidity: 80% maximum relative humidity (non-

condensing) from 0 to 50°C.

- **Vibration according to IEC 68-2-6**: Operational 5 to 500 Hz, in X, Y, Z direction for 1.5 hours, 5 g's..
- **Shock according to IEC 68-2-27**: Operational 40 g, 9 msec in 3 directions. **Altitude**: Up to 2000 meters.
- 8. CERTIFICATIONS AND COMPLIANCES
 - CE, UL Listed for use in hazardous locations, Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F and G; Class III, Division 2. See data sheet on web site for detailed information.
- 9. **RATINGS:** NEMA 4X/IP66
- 10. WEIGHT: 3.84 lbs (1.74 Kg)



ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
G308	Operator Interface for indoor applications, textured finish with embossed keys	G308C000

Accessories

OPTIONAL COMMUNICATION CARD



Red Lion offers optional communication cards for fieldbus communications. These communication cards will allow your G308 to communicate with many of the popular fieldbus protocols.

Red Lion is also offering a communications card for additional RS-232 and RS-422/485 communications. See the G3 Accessories section on page 37 for information about these cards.

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "G308 Port Pin Outs" for wiring information.









MODEL G308A - 8.4" DISPLAY





FOR USE IN HAZARDOUS LOCATIONS: Class I, Division 2, Groups A, B, C, and D Class II, Division 2, Groups F and G Class III, Division 2

GENERAL DESCRIPTION

The G308 Operator Interface Terminal combines unique capabilities normally expected from high-end units with a very affordable price. It is built around a high performance core with integrated functionality. This core allows the G308 to perform many of the normal features of the Paradigm range of Operator Interfaces while improving and adding new features.

The G308 is able to communicate with many different types of hardware using high-speed RS-232/422/485 communications ports and Ethernet 10 Base T/100 Base-TX communications. In addition, the G308 features USB for fast downloads of configuration files and access to trending and data logging. A CompactFlash socket is provided so that Flash cards can be used to collect your trending and data logging information as well as to store larger configuration files.

In addition to accessing and controlling of external resources, the G308 allows a user to easily view and enter information. Users can enter data through the touchscreen or front panel 7-button keypad.

DIMENSIONS IN INCHES (MM)



- □ 8.4-INCH TFT ACTIVE MATRIX DISPLAY, 256 COLOR VGA 640X480 PIXEI S
- CONFIGURED USING CRIMSON® SOFTWARE
- □ UP TO 5 RS-232/422/485 COMMUNICATIONS PORTS (3 ON BOARD, 2 ON OPTIONAL COMMUNICATIONS CARD)
- ETHERNET PORT TO NETWORK UNITS
- □ WEB-SERVE DATA & VISUALIZATION
- PROTOCOL CONVERSION
- EMAIL, SMS ALARMS/EVENTS
- □ USB PORT TO DOWNLOAD THE UNIT'S CONFIGURATION FROM A PC OR FOR DATA TRANSFERS TO A PC
- COMPACTFLASH[®] SOCKET TO INCREASE MEMORY CAPACITY
- **7** BUTTON KEYPAD FOR ON-SCREEN MENUS
- RESISTIVE ANALOG TOUCHSCREEN

SPECIFICATIONS

- 1. POWER REQUIREMENTS:
- +24 VDC ±20% @ 24 W maximum.
- 2. BATTERY: Lithium coin cell. Typical lifetime of 10 years.
- 3. DISPLAY: 8.4" 640 x 480 pixel TFT active matrix. 4. 7-KEY KEYPAD: for on-screen menus.
- 5. MEMORY
 - On Board User Memory: Non-volatile Flash memory. Memory Card: CompactFlash Type II slot for Type I and Type II
- CompactFlash cards. 6. COMMUNICATIONS:
- USB Port: USB 1.1. Type B connection.
- Serial Ports: Three ports total. Two RS-232 and one RS-485/422. Each port is individually software programmable up to 115,200 baud.
 - DH485 TXEN: Transmit enable; open collector, $V_{OH} = 15$ VDC, $V_{OL} = 0.5$ V @ 25 mA max.
- Ethernet Port: 10 BASE-T / 100 BASE-TX
- 7. ENVIRONMENTAL CONDITIONS: Operating Temperature Range: 0 to 50°C
 - Storage Temperature Range: -20 to 60°C

 - Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C
 - Vibration according to IEC 68-2-6: Operational 10 to 55 Hz, in X, Y, Z direction for 1.5 hours, 1 g.
 - Shock according to IEC 68-2-27: Operational 30 g's, 9 msec in 3 directions.
 - Altitude: Up to 2000 meters.
- 8. CERTIFICATIONS AND COMPLIANCES:
- CE, UL Listed for use in hazardous locations, Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F and G; Class III, Division 2. See data sheet on web site for detailed information.
- 9. RATINGS: NEMA 4X/IP66
- 10. WEIGHT: 4.20 lbs (1.91 Kg)



ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
G308A	Operator Interface with TFT display for indoor applications, textured finish with embossed keys	G308A000

Accessories

OPTIONAL COMMUNICATION CARD



Red Lion offers optional communication cards for fieldbus communications. These communication cards will allow your G308A to communicate with many of the popular fieldbus protocols.

Red Lion is also offering a communications card for additional RS-232 and RS-422/485 communications. See the G3 Accessories section on page 37 for information about these cards.

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "G308A Port Pin Outs" for wiring information.









MODEL G310C/S - 10.4" DISPLAY





FOR USE IN HAZARDOUS LOCATIONS: Class I, Division 2, Groups A, B, C, and D Class II, Division 2, Groups F and G Class III, Division 2

GENERAL DESCRIPTION

The G310 Operator Interface Terminal combines unique capabilities normally expected from high-end units with a very affordable price. It is built around a high performance core with integrated functionality. This core allows the G310 to perform many of the normal features of the Paradigm range of Operator Interfaces while improving and adding new features.

The G310 is able to communicate with many different types of hardware using high-speed RS-232/422/485 communications ports and Ethernet 10 Base T/100 Base-TX communications. In addition, the G310 features USB for fast downloads of configuration files and access to trending and data logging. A CompactFlash socket is provided so that Flash cards can be used to collect your trending and data logging information as well as to store larger configuration files.

In addition to accessing and controlling of external resources, the G310 allows a user to easily view and enter information. An outdoor version is available for direct sunlight applications. Users can enter data through the touchscreen or front panel 8-button keypad.

DIMENSIONS IN INCHES (MM)



- □ 10.4-INCH TFT ACTIVE MATRIX DISPLAY, 256 COLOR VGA 640X480 PIXELS
- CONFIGURED USING CRIMSON® SOFTWARE
- □ UP TO 5 RS-232/422/485 COMMUNICATIONS PORTS (3 ON BOARD, 2 ON OPTIONAL COMMUNICATIONS CARD)
- ETHERNET PORT TO NETWORK UNITS
- □ WEB-SERVE DATA & VISUALIZATION
- PROTOCOL CONVERSION
- EMAIL, SMS ALARMS/EVENTS
- □ USB PORT TO DOWNLOAD THE UNIT'S CONFIGURATION FROM A PC OR FOR DATA TRANSFERS TO A PC
- □ COMPACTFLASH[®] SOCKET TO INCREASE MEMORY CAPACITY
- OUTDOOR UNIT WITH UV RATED OVERLAY AVAILABLE
- □ 8 BUTTON KEYPAD FOR ON-SCREEN MENUS
- □ RESISTIVE ANALOG TOUCHSCREEN

SPECIFICATIONS

- 1. POWER REQUIREMENTS:
- G310C: +24 VDC ±20% @ 33 W maximum.
- G310S: +24 VDC ±20% @ 25 W maximum.
- 2. BATTERY: Lithium coin cell. Typical lifetime of 10 years.
- 3. DISPLAY: 10.4" 640 x 480 pixel TFT active matrix.
- 4. 8-KEY KEYPAD: for on-screen menus.
- 5. MEMORY:
 - On Board User Memory: Non-volatile Flash memory.

Memory Card: CompactFlash Type II slot for Type I and Type II CompactFlash cards.

- 6. COMMUNICATIONS:
 - USB Port: USB 1.1. Type B connection. Serial Ports: Three ports total. Two RS-232 and one RS-485/422. Each port is individually software programmable up to 115,200 baud. DH485 TXEN: Transmit enable; open collector, $V_{OH} = 15$ VDC, $V_{OL} = 0.5$ V @ 25 mA max. Ethernet Port: 10 BASE-T / 100 BASE-TX
- 7. ENVIRONMENTAL CONDITIONS:
- **Operating Temperature Range**: 0 to 50°C
- Storage Temperature Range: -20 to 70°C
- **Operating and Storage Humidity**: 80% maximum relative humidity (noncondensing) from 0 to 50°C.
- Vibration according to IEC 68-2-6: Operational 10 to 55 Hz, in X, Y, Z direction for 1.5 hours, 1 g.

Shock according to IEC 68-2-27: Operational 30 g, 9 msec in 3 directions. Altitude: Up to 2000 meters.

8. CERTIFICATIONS AND COMPLIANCES:

- CE, UL Listed for use in hazardous locations, Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F and G; Class III, Division 2. See data sheet on web site for detailed information.
- 9. RATINGS: NEMA 4X/IP66
- 10. WEIGHT: 5.53 lbs (2.51 Kg)



ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
G310C	Operator Interface for indoor applications, textured finish with embossed keys	G310C000
G310S	Operator Interface for indoor or outdoor applications, glossy finish with UV rated overlay (keys are not embossed)	G310S000

Accessories

OPTIONAL COMMUNICATION CARD



Red Lion offers optional communication cards for fieldbus communications. These communication cards will allow your G310 to communicate with many of the popular fieldbus protocols.

Red Lion is also offering a communications card for additional RS-232 and RS-422/485 communications. See the G3 Accessories section on page 37 for information about these cards.

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "G310C/S Port Pin Outs" for wiring information.









MODEL G315 - 15" DISPLAY



CE

GENERAL DESCRIPTION

The G315C Operator Interface combines powerful features normally found only in PC-based HMIs, with the reliability of a dedicated operating system. It is built around a high performance core with integrated features, allowing it to provide SCADA-like functionality at a fraction of the cost.

The G315C is able to act as a multiple protocol converter using four highspeed RS-232/422/485 communications ports and an Ethernet 10/100 Base-TX port. The Ethernet port supports up to four protocols simultaneously, allowing dissimilar Ethernet based products to communicate with one another.

The G315C's USB port allows fast downloads of configuration files and access to trending and data logging. A CompactFlash socket is provided so that standard ComplactFlash cards can be used to collect your trending and data logging information as well as to store configuration files. The built-in web server allows processes to be controlled remotely.

The G315C's large, high-resolution display allows users to easily view and enter information. Data can be manipulated through the touchscreen and/or the 10-button keypad.

DIMENSIONS IN INCHES (MM) 2.8 (71.5) .28 16.00 (406.4) (7.1)(Mail Bas 0 (D) lO: 13.00 10 (330.2)lo: l0t 10 p lOt æ °**-**

- □ 15-INCH TFT ACTIVE MATRIX DISPLAY, 32K COLOR VGA 1024X768 PIXELS
- CONFIGURED USING CRIMSON® SOFTWARE
- □ UP TO 6 RS-232/422/485 COMMUNICATIONS PORTS (4 ON BOARD, 2 ON OPTIONAL COMMUNICATIONS CARD)
- □ ETHERNET PORT SUPPORTS MULITPLE PROTOCOLS SIMULTANEOUSLY
- PROTOCOL CONVERSION
- □ EMAIL, SMS ALARMS/EVENTS
- □ BUILT-IN WEB SERVER AND FTP SERVER/CLIENT
- □ USB PORT TO DOWNLOAD THE UNIT'S CONFIGURATION FROM A PC OR FOR DATA TRANSFERS TO A PC
- COMPACTFLASH® SOCKET TO INCREASE MEMORY CAPACITY
- 10 BUTTON KEYPAD FOR ON-SCREEN MENUS
- □ RESISTIVE ANALOG TOUCHSCREEN

SPECIFICATIONS

- 1. POWER REQUIREMENTS:
- +24 VDC ±20% @ 67 W maximum.
- 2. BATTERY: Lithium coin cell. Typical lifetime of 10 years.
- 3. **DISPLAY**: 15" 1024 x 768 pixel TFT active matrix.
- 4. 10-KEY KEYPAD: for on-screen menus.
- 5. MEMORY:
 - **On Board User Memory**: Non-volatile Flash memory. **Memory Card**: CompactFlash Type II slot for Type I and Type II CompactFlash cards.
- 6. COMMUNICATIONS:
 - USB Port: USB 1.1. Type B connection.
 - Serial Ports: Four ports total. Two RS-232 and two RS-485/422. Each port is individually software programmable up to 115,200 baud.
 - DH485 TXEN: Transmit enable; open collector, $V_{OH} = 15$ VDC, $V_{OL} = 0.5$ V @ 25 mA max.
- Ethernet Port: 10 BASE-T / 100 BASE-TX
- 7. ENVIRONMENTAL CONDITIONS:
 - **Operating Temperature Range**: 0 to 50°C

Storage Temperature Range: -20 to 70°C Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C.

- Altitude: Up to 2000 meters.
- 8. CERTIFICATIONS AND COMPLIANCES:
- CE
- See data sheet on web site for detailed information.
- 9. RATINGS: NEMA 4X/IP66
- 10. WEIGHT: 11.41 lbs (5.17 Kg)



ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
G315C	Operator Interface for indoor applications, textured finish with embossed keys	G315C000

Accessories

OPTIONAL COMMUNICATION CARD



Red Lion offers optional communication cards for fieldbus communications. These communication cards will allow your G315 to communicate with many of the popular fieldbus protocols.

Red Lion is also offering a communications card for additional RS-232 and RS-422/485 communications. See the G3 Accessories section on page 37 for information about these cards.

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "G315C Port Pin Outs" for wiring information.



CANopen





G3 KADET O/I TERMINALS

MODEL G304K - 4.3" DISPLAY



- □ BRIGHT 4.3-INCH TFT ACTIVE MATRIX 256 COLOR 480 x 272 PIXEL DISPLAY
- □ CONFIGURED USING CRIMSON® SOFTWARE
- TWO SERIAL COMMUNICATIONS PORTS (1 RS-232 AND 1 RS-232/422/485)
- □ RESISTIVE ANALOG TOUCHSCREEN
- PROTOCOL CONVERSION

CE



GENERAL DESCRIPTION

The 4.3-inch G3 Kadet was designed for applications in which available mounting space is at a premium. Though diminutive in size, the Kadet boasts a bright TFT display with full 256-color support. With a resolution of 480 x 272, the Kadet's 4.3-inch display has a higher resolution and better image clarity than most 6-inch HMIs.

The G3 Kadet offers two high-speed serial ports in the form of one RS-232 and one RS-232/422/485 ports. This allows the Kadet to simultaneously communicate with devices from different manufacturers, as well as to perform protocol conversion.

The G3 Kadet range of HMIs is programmed with Red Lion's free Crimson 2.0 software. Crimson 2.0 offers easy to use drag and drop communications configuration, while the embedded image library allows the programmer to create intuitive screens and prompts for the operator.

SPECIFICATIONS

- 1. POWER REQUIREMENTS:
- Supply Voltage:12-28 VDC, Class 2Maximum Power:3.6 W; Start up current may be as high as 700 mAFused:Fast-blow 800mA, 5x20mm
- 2. DISPLAY: 4.3" 480 x 272 pixel TFT active matrix.
- 3. **MEMORY**: 2MB of non-volatile flash memory.
- 4. COMMUNICATIONS: Serial Ports: Two Serial Ports total. One RS-232 port, one RS-232/422/485 Each port is individually software programmable up to 115,200 baud.
- 5. ENVIRONMENTAL CONDITIONS: Operating Temperature Range: 0 to 45°C
 Operating and Storage Humidity: 10-90% relative humidity (noncondensing) from 0 to 45°C.
- Vibration: Operational 10 to 25 Hz in X, Y, Z direction for 30 minutes, 2 g's. 6. CERTIFICATIONS AND COMPLIANCES:
- CE, UL Listed
- See data sheet on web site for detailed information.
- 7. RATINGS: NEMA 4/IP65
- 8. WEIGHT: 9.4 oz (270 g)

DIMENSIONS IN INCHES (MM)



DEVICE COMMUNICATIONS

Several adapters are available which allow direct connection via Red Lion communications cables. For a list of adapters and cables, please visit http://www.redlion.net/support/downloads.html.



ORDE	RING	NFORMATION	

MODEL NO.	DESCRIPTION	PART NUMBER
G304K	4.3" TFT Operator Interface	G304K000

Accessories

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "Device Communications" for wiring information.





MODEL G306K - 5.6" DISPLAY



- □ 5.6-INCH TFT ACTIVE MATRIX 256 COLOR QVGA 320 X 234 PIXEL DISPLAY
- □ CONFIGURED USING CRIMSON® SOFTWARE
- □ THREE SERIAL COMMUNICATIONS PORTS (1 RS-232 AND 2 RS-232/422/485 PORTS)
- ETHERNET PORT SUPPORTS MULITPLE PROTOCOLS SIMULTANEOUSLY
- COMPACTFLASH® SOCKET FOR LOADING DATABASE IN FIELD
- □ RESISTIVE ANALOG TOUCHSCREEN
- PROTOCOL CONVERSION

CE



GENERAL DESCRIPTION

The G306K is the perfect solution for applications that require the operator to monitor and control more than just a single device. With three serial ports and an Ethernet port, the 5.6" Kadet can connect to multiple serial and Ethernet devices simultaneously, including PLCs, motor drives, bar code scanners, etc.

The G306K performs the functions of a multiple protocol converter, using three high-speed RS-232/422/485 communications ports and a 10 Base-T Ethernet port. The Ethernet port supports up to four protocols simultaneously, allowing dissimilar Ethernet based products to communicate with one another.

The CompactFlash slot can be used to load the unit's configuration file, allowing configuration changes to be made and saved to the card for later transfer.

The G3 Kadet range of HMIs is programmed with Red Lion's free Crimson 2.0 software. Crimson 2.0 offers easy to use drag and drop communications configuration, while the embedded image library allows the programmer to create intuitive screens and prompts for the operator.

DIMENSIONS IN INCHES (MM)



SPECIFICATIONS

- 1. POWER REQUIREMENTS:
- Supply Voltage:12 24 VDC, Class 2Maximum Power:200 mA @ 24 VDC
 - Fast-blow 800mA, 5x20mm
- 2. BATTERY: Lithium coin cell. Typical lifetime of 10 years.
- 3. **DISPLAY**: 5.6" 320 x 234 pixel TFT active matrix.
- 4. MEMORY:

Fuse:

On Board User Memory: Non-volatile Flash memory.

Memory Card: CompactFlash Type II slot for Type I and Type II CompactFlash cards.

- COMMUNICATIONS: Serial Ports: Three Serial Ports total. One RS-232 port, two RS-232/422/485 Each port is individually software programmable up to 115,200 baud. Ethernet Port: 10 Mbps
- 6. ENVIRONMENTAL CONDITIONS: Operating Temperature Range: 0 to 45°C Operating and Storage Humidity: 10-90% relative humidity (noncondensing) from 0 to 45°C.
- Vibration: Operational 10 to 25 Hz in X, Y, Z direction for 30 minutes, 2 g's. 7. CERTIFICATIONS AND COMPLIANCES:
- CE, UL Listed
- See data sheet on web site for detailed information.
- 8. RATINGS: NEMA 4/IP65
- 9. WEIGHT: 30 oz (850 g)

DEVICE COMMUNICATIONS

Several adapters are available which allow direct connection via Red Lion communications cables. For a list of adapters and cables, please visit http://www.redlion.net/support/downloads.html.



ORDE	RING	INFORMATION	J	

MODEL NO.	DESCRIPTION	PART NUMBER	
G306K	5.6" TFT Operator Interface	G306K000	

Accessories

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "Device Communications" for wiring information.



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MODEL G308K - 8" DISPLAY



- □ 8-INCH TFT ACTIVE MATRIX 256 COLOR VGA 640 X 480 PIXEL DISPLAY
- □ CONFIGURED USING CRIMSON[®] SOFTWARE
- □ THREE SERIAL COMMUNICATIONS PORTS (1 RS-232 AND 2 RS-232/422/485 PORTS)
- ETHERNET PORT SUPPORTS MULITPLE PROTOCOLS SIMULTANEOUSLY
- COMPACTFLASH® SOCKET FOR LOADING DATABASE IN FIELD
- □ RESISTIVE ANALOG TOUCHSCREEN
- PROTOCOL CONVERSION

CE



GENERAL DESCRIPTION

The G308K is the perfect solution for applications that require the operator to monitor and control more than just a single device. With three serial ports and an Ethernet port, the 8" Kadet can connect to multiple serial and Ethernet devices simultaneously, including PLCs, motor drives, bar code scanners, etc.

The G308K performs the functions of a multiple protocol converter, using three high-speed RS-232/422/485 communications ports and a 10 Base-T Ethernet port. The Ethernet port supports up to four protocols simultaneously, allowing dissimilar Ethernet based products to communicate with one another.

The CompactFlash slot can be used to load the unit's configuration file, allowing configuration changes to be made and saved to the card for later transfer.

The G3 Kadet range of HMIs is programmed with Red Lion's free Crimson 2.0 software. Crimson 2.0 offers easy to use drag and drop communications configuration, while the embedded image library allows the programmer to create intuitive screens and prompts for the operator.

DIMENSIONS IN INCHES (MM)



SPECIFICATIONS

- 1. POWER REQUIREMENTS:
- Supply Voltage:24 VDC ± 5%, Class 2Maximum Power:440 mA @ 24 VDC
 - Fast-blow 800mA, 5x20mm
- 2. BATTERY: Lithium coin cell. Typical lifetime of 10 years.
- 3. **DISPLAY**: 8" 640 x 480 pixel TFT active matrix.
- 4. MEMORY:

Fuse:

On Board User Memory: Non-volatile Flash memory.

Memory Card: CompactFlash Type II slot for Type I and Type II CompactFlash cards.

- COMMUNICATIONS: Serial Ports: Three Serial Ports total. One RS-232 port, two RS-232/422/485 Each port is individually software programmable up to 115,200 baud. Ethernet Port: 10 Mbps
- 6. ENVIRONMENTAL CONDITIONS: Operating Temperature Range: 0 to 45°C Operating and Storage Humidity: 10-90% relative humidity (noncondensing) from 0 to 45°C.
- Vibration: Operational 10 to 25 Hz in X, Y, Z direction for 30 minutes, 2 g's. 7. CERTIFICATIONS AND COMPLIANCES:
 - CE, UL Listed
 - See data sheet on web site for detailed information.
- 8. RATINGS: NEMA 4/IP65
- 9. WEIGHT: 42.4 oz (1.2 g)

DEVICE COMMUNICATIONS

Several adapters are available which allow direct connection via Red Lion communications cables. For a list of adapters and cables, please visit http://www.redlion.net/support/downloads.html.



ORDERING I	NFORMATION	
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MODEL NO.	DESCRIPTION	PART NUMBER	
G308K	8" TFT Operator Interface	G308K000	

Accessories

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "Device Communications" for wiring information.





G3 ACCESSORIES

MODEL G3RS - ISOLATED SERIAL EXPANSION CARD



□ CONFIGURED USING CRIMSON[®] SOFTWARE

ISOLATED RS-232 AND RS-485 MULTIPLEXED PORTS CAPABLE OF COMMUNICATING WITH RS-232, RS-422, RS-485 AND DH485 DEVICES AT UP TO 115,200 BAUD

EASY INSTALLATION

GENERAL DESCRIPTION

The G3 proprietary expansion slot provides a high speed, parallel architecture that extends the functionality and flexibility of the G3 series HMI. This approach allows the G3 series to evolve concurrently with the latest advances in communications and standards, without sacrificing performance. This high bandwith channel has significantly greater throughput when compared to the traditional (external) serial gateway approach.

The G3RS option card is easily installed by removing the rear cover of your G3 operator interface, attaching the card using three screws and connecting a single cable. Adding this card gives the operator interface another RS-232 port and RS-422/485 port. It is built with isolation to protect equipment from potentially harmful ground loops, and provides high speed RS-232, RS-422, RS-485, and DH485 communications for many different types of hardware.

SPECIFICATIONS

- 1. **POWER REQUIREMENTS:** Power is supplied to the option card from the main board of your G3 operator interface.
- 2. COMMUNICATIONS:

Serial Ports: Format and Baud Rates for each port are individually software programmable up to 115,200 baud and are isolated to help prevent ground loops. The RS-422/485 and DH485 port via RJ45 and the RS-232 port via RJ12 share the same hardware.

DH485 TXEN: Transmit enable; open collector, $V_{OH} = 15$ VDC, $V_{OL} = 0.5$ VDC Isolation from G3RS Communication ports to G3 operator interface: 1000 VDC for 1 minute.

3. CERTIFICATIONS AND COMPLIANCES:

Refer to "Agency Approvals" section of Red Lion's website for agency certifications.

4. ENVIRONMENTAL CONDITIONS:

Operating Temperature Range: 0 to 50°C

Storage Temperature Range: -20 to 80°C

Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C.

Altitude: Up to 2000 meters.

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
G3RS	RS-232/485 option card for G3 operator interfaces with isolated high speed communications ports	G3RS0000

MODEL G3CN - CANOPEN/J1939 EXPANSION CARD



CANopen

□ CONFIGURED USING CRIMSON[®] SOFTWARE

- DIGITALLY ISOLATED CANopen PORT CAPABLE OF COMMUNICATING WITH ANY CANopen DEVICE
- EASY INSTALLATION

GENERAL DESCRIPTION

The G3 proprietary expansion slot provides a high speed, parallel architecture that extends the functionality and flexibility of the G3 series HMI. This approach allows the G3 series to evolve concurrently with the latest advances in communications and standards, without sacrificing performance. This high bandwidth channel has significantly greater throughput when compared to the traditional (external) serial gateway approach.

The G3CN option card is easily installed by removing the rear cover of your G3 operator interface, attaching the card using three screws and connecting a single cable. Adding this card gives the operator interface a CANopen communications port. It is built with digital isolation to protect the operator interface from the CANopen/J1939 bus and vice versa. It provides the ability to communicate to any high speed CANopen device. The G3CN option board has a termination resistor built-in, and is selectable through a jumper setting. A connector housing is provided to function as a strain relief for the wires that terminate into the five position connector. The connector is pluggable for easy removal of the G3 operator interface from the CANopen bus, without disturbing communications with other devices on the bus.

SPECIFICATIONS

- 1. **POWER REQUIREMENTS:** Power is supplied to the option card from the main board of your G3 operator interface.
- 2. COMMUNICATIONS:

CANopen Port: The CANopen port has format and baud rates that are software programmable up to 1M baud and are digitally isolated. This port may be configured for various CANopen protocols.

Isolation from G3CN Communication ports to G3 operator interface: 1000 VDC for 1 minute.

3. CERTIFICATIONS AND COMPLIANCES:

Refer to "Agency Approvals" section of Red Lion's website for agency certifications.

4. ENVIRONMENTAL CONDITIONS:

Operating Temperature Range: 0 to 50°C

- Storage Temperature Range: -20 to $80^\circ\mathrm{C}$
- Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C.

Altitude: Up to 2000 meters.

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
G3CN	CANopen option card for G3 operator interfaces with isolated high speed communications ports	G3CN0000

MODEL G3DN - DEVICENET EXPANSION CARD



- CONFIGURED USING CRIMSON® SOFTWARE
- DIGITALLY ISOLATED DeviceNet PORT CAPABLE OF COMMUNICATING WITH ANY DeviceNet MASTER

EASY INSTALLATION

GENERAL DESCRIPTION

The G3 proprietary expansion slot provides a high speed, parallel architecture that extends the functionality and flexibility of the G3 series HMI. This approach allows the G3 series to evolve concurrently with the latest advances in communications and standards, without sacrificing performance. This high bandwidth channel has significantly greater throughput when compared to the traditional (external) serial gateway approach.

The G3DN option card is easily installed by removing the rear cover of your G3 operator interface, attaching the card using three screws and connecting a single cable. Adding this card gives the operator interface a DeviceNet slave communications port. It is built with digital isolation to protect the operator interface from the DeviceNet bus and vice versa. It provides the ability to communicate to any DeviceNet master. A connector housing is provided to function as a strain relief for the wires that terminate into the five position connector. The connector is pluggable for easy removal of the G3 operator interface from the DeviceNet bus, without disturbing communications with other devices on the bus.

SPECIFICATIONS

1. **POWER REQUIREMENTS:** Power is supplied to the option card from the main board of your G3 operator interface.

2. COMMUNICATIONS:

DeviceNet Port: The DeviceNet port has format and baud rates that are software programmable up to 500K baud and are digitally isolated. This port may be configured for various DeviceNet protocols. Check www.redlion.net/g3 for currently supported protocols.

Isolation from G3DN Communication ports to G3 operator interface: 1000 VDC for 1 minute.

3. CERTIFICATIONS AND COMPLIANCES:

Refer to "Agency Approvals" section of Red Lion's website for agency certifications.

4. ENVIRONMENTAL CONDITIONS:

Operating Temperature Range: 0 to 50°C

Storage Temperature Range: -20 to 80°C

Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C.

Altitude: Up to 2000 meters.

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
G3DN	DeviceNet option card for G3 operator interfaces with isolated high speed communications ports	G3DN0000

MODEL G3PB - PROFIBUS EXPANSION CARD



PROFO BUSO

ADDS PROFIBUS DP CONNECTIVITY TO ANY G3 OPERATOR INTERFACE

EASY INSTALLATION

GENERAL DESCRIPTION

The G3 proprietary expansion slot provides a high speed, parallel architecture that extends the functionality and flexibility of the G3 series HMI. This approach allows the G3 series to evolve concurrently with the latest advances in communications and standards, without sacrificing performance. This high bandwidth channel has significantly greater throughput when compared to the traditional (external) serial gateway approach.

The G3PB option card adds PROFIBUS DP connectivity to any G3 series HMI. This allows a high speed exchange of blocks of data, at data rates up to 12 MBaud, between the hosting G3 and a Master PLC on a PROFIBUS network. The DP suffix refers to "Decentralized Periphery", which is used to describe distributed I/O devices connected via a fast serial data link with a central controller.

The card is easily installed by removing the rear cover of your G3 operator interface, attaching the card using three screws and connecting a single cable.

SPECIFICATIONS

- 1. **POWER REQUIREMENTS:** Power is supplied to the option card from the main board of your G3 operator interface.
- 2. COMMUNICATIONS:

PROFIBUS Port: FIELDBUS TYPE : PROFIBUS-DP EN 50 170, I. The PROFIBUS port has a format and baud rates that are software programmable up to 12M baud and are digitally isolated.

3. CERTIFICATIONS AND COMPLIANCES:

Refer to "Agency Approvals" section of Red Lion's website for agency certifications.

4. ENVIRONMENTAL CONDITIONS:

Operating Temperature Range: 0 to 50°C

Storage Temperature Range: -20 to 80°C

Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C.

Altitude: Up to 2000 meters.

ORDERING INFORMATION

MODEL NO. DESCRIPTION		PART NUMBER	
G3PB	PROFIBUS option card for G3 operator interfaces	G3PBDP00	

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www.redlion.net

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com

MODEL G3GSM - CELLULAR MODEM EXPANSION CARD



- GSM/GPRS CAPABILITY
- □ SMS TEXT MESSAGING
- E-MAIL AND FTP
- GLOBAL OPERATION
- CONFIGURED USING CRIMSON® SOFTWARE
- EASY INSTALLATION

GENERAL DESCRIPTION

The G3GSM option card allows the user to add GSM/GPRS cellular modem capability to their G3 operator interface terminal. GSM/GPRS is the most prevalent cellular technology in today's markets. GPRS can be used for services such as Wireless Application Protocol (WAP) access, Short Message Service (SMS), and for Internet communication services such as email and World Wide Web access. The G3GSM modem option card is quad-band, allowing it to work in frequencies across Americas, Europe and Asia. US and Canada work in the 850/1900 MHz bands, while Europe, Middle East, Africa and most of Asia work in the 900/1800 MHz GSM/GPRS frequencies.

The G3GSM requires the addition of a SIM (Subscriber Identity Module) card, which is inserted into the holder prior to installation of the G3GSM card. The SIM card securely stores the service-subscriber key (IMSI) used to identify a subscriber, and is used to connect to the network to obtain an IP address from the provider.

SPECIFICATIONS

1. **POWER REQUIREMENTS:** 24 VDC ± 20%; 0.25A max; 0.25A typical (independent from the host G3 power connection). Must use Class 2 or SELV rated power supply.

2. ANTENNA CONNECTOR:

- SMA Female connector requires:
 - 50 Ohm antenna with SMA male connector
 - Quad-band antenna (850/900/1800/1900 MHz) for global support. Dual-band (850/1900 MHz) antenna for US and Canada only
 - Dual band (900/1800 MHz) for Europe only

The antenna cable should be 50Ω impedance, RG178/U or RG174/U type and be able to connect to the RSMA (Male) jack bulkhead. The antenna could be horizontal, vertical or right angled. Longer antenna cable would equate to signal loss.

3. CERTIFICATIONS AND COMPLIANCES:

- Refer to "Agency Approvals" section of Red Lion's website for agency certifications.
- 4. ENVIRONMENTAL CONDITIONS:
 - Operating Temperature Range: 0 to 50°C
 - Storage Temperature Range: -20 to 80°C
 - Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C.
 - Altitude: Up to 2000 meters.

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
G3GSM	GSM/GPRS Modem Option Card for G3 operator interface	G3GSM000

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www.redlion.net

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com

DATA STATION PLUS SERIES

MODEL DSP



PROGRAMMABLE CONTROLLERS FOR USE IN HAZARDOUS LOCATIONS: Class I, Division 2, Groups A, B, C, and D

GENERAL DESCRIPTION

The Data Station Plus was designed to act as a nexus for industrial data collection and management. The unit offers multiple protocol conversion, data logging and remote machine access. With three built in serial ports and a 10 Base-T/100 Base-TX Ethernet port, the unit performs protocol conversion, allowing disparate devices to communicate seamlessly with one another. The Ethernet port supports up to four protocols simultaneously so even Ethernet to Ethernet protocols can be converted.

The CompactFlash card allows data to be collected and stored for later review. The files are stored in simple CSV file format allowing common applications, such as Microsoft Excel and Access, to view and manage the data. The free Websync utility provides a means to synchronize the files with a PC's hard drive for permanent storage. The CompactFlash card may also be used to load new configuration files into the Data Station.

The built-in web server allows log files to be retrieved manually, and also provides access to the unique web-based HMI". The web-based HMI is programmed just like Red Lion's G3 series of HMI. Any standard web browser such as Internet Explorer or Netscape may be used to monitor or control the HMI from a PC anywhere in the world.

The USB port may be used for blazing fast file downloads, or to mount the Data Station's CompactFlash card as an external drive to your PC. The Data Station's DIN rail mounting saves time and panel space and snaps easily onto standard top hat (T) profile DIN rail.



- CONVERTS NUMEROUS PROTOCOLS SIMULTANEOUSLY
- □ COMPACTFLASH[®] SLOT ALLOWS PROCESS DATA TO BE LOGGED DIRECTLY TO CSV FILES
- □ WEB-BASED HMI OFFERS BUILT-IN PC-BASED SCADA FUNCTIONALITY
- □ WEBSERVER PROVIDES WORLDWIDE ACCESS TO DATA LOGS AND WEB-BASED HMI
- □ EXTENSIVE BUILT-IN DRIVER LIST ALLOWS EASY DATA MAPPING TO PLCs, PCs, AND SCADA SYSTEMS
- □ 10 BASE-T/100BASE-TX ETHERNET PORT SUPPORTS FOUR SIMULTANEOUS PROTOCOLS
- □ INDEPENDENT SERIAL PORTS PROVIDE VIRTUALLY UNLIMITED INTEGRATION METHODS
- □ ALARM NOTIFICATIONS CAN BE SENT VIA EMAIL OR TEXT MESSAGES
- □ SUPPORTS UP TO NINE PROTOCOLS SIMULTANEOUSLY

CE

SPECIFICATIONS

1. **POWER**: 24 VDC ± 10% 200 mA min., without expansion card 1 Amp maximum with expansion card fitted 2. COMMUNICATIONS: USB/PG Port: USB 1.1. Device only using Type B connection. Serial Ports: Format and Baud Rates for each port are individually software programmable up to 115,200 baud. RS-232/PG Port: RS-232 port via RJ12 COMMS Ports: RS-422/485 port via RJ45, and RS-232 port via RJ12 DH485 TXEN: Transmit enable; open collector, V_{OH} = 15 VDC, V_{OL} = 0.5 V @ 25 mA max. Ethernet Port: 10 BASE-T / 100 BASE-TX RJ45 jack is wired as a NIC (Network Interface Card). 3. LEDs: STS - Status LED indicates condition of Data Station. TX/RX - Transmit/Receive LEDs show serial activity. Ethernet - Link and activity LEDs. CF - CompactFlash LED indicates card status and read/write activity 4. MEMORY: On-board User Memory: 4 Mbytes of non-volatile Flash memory. On-board SDRAM: DSPLE and DSPSX: 2 Mbytes DSPGT: 8 Mbytes Memory Card: CompactFlash Type II slot for Type I and Type II cards. Used for optional database storage only 5. REAL-TIME CLOCK: Typical accuracy is less than one min./month drift. Battery: Lithium Coin Cell. Typical lifetime of 10 years at 25 °C. 6. ENVIRONMENTAL CONDITIONS: Operating Temperature Range: 0 to 50°C Storage Temperature Range: -30 to +70°C Operating and Storage Humidity: 80% max relative humidity, non-condensing, from 0 to 50°C Vibration According to IEC 68-2-6: Operational 5 to 150 Hz, in X, Y, Z direction for 1.5 hours, 2 g's. Shock According to IEC 68-2-27: Operational 30 g, 11 msec in 3 directions. Altitude: Up to 2000 meters

- 7. **CERTIFICATIONS AND COMPLIANCES**: CE, UL Listed For use in Hazardous Locations: Class I, Division 2, Groups A, B, C, and D
- 8. WEIGHT: 15.1 oz (456.4 g)

DATA STATION PLUS PORT PIN OUTS



ORDERING INFORMATION

TYPE	MODEL NO.	DESCRIPTION	PART NUMBER
		Data Station with multiple protocol converter, Comms, Ethernet and expansion slot.	DSPLE000
Data Station Plus	DSP	Data Station with multiple protocol converter, data logger, web server with Virtual HMI up to QVGA (320 x 240) and expansion slot.	DSPSX000
		Data Station with multiple protocol converter, data logger, web server with web-based HMI up to VGA (640 x 480) size and expansion slot with increased SDRAM.	DSPGT000

Accessories

OPTIONAL COMMUNICATION CARD



Red Lion offers optional communication cards for fieldbus communications. These communication cards will allow your DSP to communicate with many of the popular fieldbus protocols.

Red Lion is also offering a communications card for additional RS-232 and RS-422/485 communications. See the DSP Accessories section on page 59 for information about these cards.

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "Data Station Port Pin Outs" for wiring information.









MODULAR CONTROLLER SERIES

MODEL CSMSTRV2



GENERAL DESCRIPTION

Red Lion's Modular Controller series offers a cost-effective solution to integrating multi-zone PID control, data acquisition and I/O into your PC, DCS or PLC control system. The Modular Controller product line has all the features of the Data Station Plus, while adding the ability to manage up to 32 zones of PID control for analog and digital I/O. With capabilities to handle high I/O counts between a minimum of 96 analog to a maximum of 224 digital I/O, the Modular Controller series is ideal for complex multi-zone applications, such as cold storage warehouses or other areas where large amounts of analog and digital I/O are needed. The Modular Controller supports up to 16 hot-swappable controller modules with automatic reprogramming, available with configurations ranging from analog input and output, digital I/O, PID control, strain gage and temperature input. Combined with enhanced communication, protocol conversion, and data logging capabilities with web-based HMI and remote alarm/text, Red Lion's Modular Controller offers 24/7 monitoring capabilities for process peace-of-mind.



- CONTROL AND MONITOR UP TO 256 I/O POINTS ANALOG OR DIGITAL
- CONTROL OF OTHER MODULES IN THE MODULAR CONTROLLER SERIES
- □ STORES MODULE CONFIGURATION INFORMATION, AND AUTOMATICALLY REPROGRAMS REPLACED MODULES
- EXTENSIVE BUILT-IN DRIVER LIST ALLOWS EASY DATA MAPPING TO PLCs, PCs, AND SCADA SYSTEMS
- □ INDEPENDENT SERIAL PORTS PROVIDE VIRTUALLY UNLIMITED INTEGRATION METHODS
- □ 10 BASE-T/100 BASE-TX ETHERNET CONNECTION PROVIDES NETWORKING CAPABILITY
- □ SUPPORTS UP TO 16 MODULAR CONTROLLER SERIES MODULES
- □ SUPPORTED BY CRIMSON SOFTWARE
- □ HOT SWAPPABLE MODULES
- □ MULTI-ZONE PID CONTROL
- DATA ACQUISITION FOR PC, PLC OR SCADA SYSTEMS

CE

SPECIFICATIONS

l.	POWER : 24 VDC \pm 10%
	400 mA min. (1 module)
	3 Amps max. (16 modules)
2.	COMMUNICATIONS:
	USB/PG Port: USB 1.1. Device only using Type B connection.
	Serial Ports: Format and Baud Rates for each port are individually software
	programmable up to 115,200 baud.
	RS-232/PG Port: RS-232 port via RJ12
	COMMS Ports: RS-422/485 port via RJ45, and RS-232 port via RJ12
	DH485 TXEN : Transmit enable; open collector, $V_{OH} = 15$ VDC,
	$V_{OL} = 0.5 \text{ V}$ @ 25 mA max.
	Ethernet Port: 10 BASE-T / 100 BASE-TX
	RJ45 jack is wired as a NIC (Network Interface Card).
3.	LEDs:
	STS – Status LED indicates condition of master.
	TX/RX – Transmit/Receive LEDs show serial activity.
	Ethernet – Link and activity LEDs.
1.	MEMORY:
	On-board User Memory: 4 Mbytes of non-volatile Flash memory.
	On-board SDRAM: 2 Mbytes
5.	ENVIRONMENTAL CONDITIONS:
	Operating Temperature Range: 0 to 50°C
	Storage Temperature Range: -30 to +70°C
	Operating and Storage Humidity: 80% max relative humidity,
	non-condensing, from 0 to 50°C
	Vibration According to IEC 68-2-6: Operational 5 to 150 Hz, in X, Y, Z
	direction for 1.5 hours, 2 g's.
	Shock According to IEC 68-2-27: Operational 25 g, 11 msec in 3 directions.
	Altitude: Up to 2000 meters
5.	CERTIFICATIONS AND COMPLIANCES:
	CE, UL Listed
7.	WEIGHT: 12.9oz (365.7g)

MASTER PORT PIN OUTS



ORDERING INFORMATION

TYPE	MODEL NO.	DESCRIPTION	PART NUMBER
Master Module	CSMSTR	Modular Controller Master, Comms, Ethernet	CSMSTRV2

Accessories

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "Master Port Pin Outs" for wiring information.



MODEL CSMSTRLE



GENERAL DESCRIPTION

The Model CSMSTRLE is a communications and control platform designed for use with Modular Controller Series slave modules. The CSMSTR uses a proprietary high speed serial protocol to communicate, via backplane connection, with up to 16 slave modules. Through the same connection, the Master also provides power to the modules.

When powered up, the CSMSTR automatically identifies and addresses connected slave modules. By storing the configuration information of all of the modules, the CSMSTR is able to automatically configure modules if they are replaced.

The Master provides high-speed RS-232/422/485 communication ports and an Ethernet port for connection to PCs, PLCs, and SCADA systems. An extensive list of master and slave protocol drivers are available to allow the CSMSTR to share and exchange variable data with external devices. The 10 Base-T/100 Base-TX Ethernet port can also be used to connect and share data with other devices at high speeds.

DIMENSIONS IN INCHES (MM)



- ADDS MULTIPLE PROTOCOL CONVERSION FUNCTIONALITY TO DATA ACQUISITION AND MULTI-ZONE PID CONTROL APPLICATIONS
- □ PERFORMS HIERARCHICAL CONTROL OF OTHER MODULES IN THE MODULAR CONTROLLER SERIES
- □ STORES MODULE CONFIGURATION INFORMATION, AND AUTOMATICALLY REPROGRAMS REPLACED MODULES
- EXTENSIVE BUILT-IN DRIVER LIST ALLOWS EASY DATA MAPPING TO PLCs, PCs, AND SCADA SYSTEMS
- INDEPENDENT SERIAL PORTS PROVIDE VIRTUALLY UNLIMITED INTEGRATION METHODS
- □ 10 BASE-T/100 BASE-TX ETHERNET CONNECTION PROVIDES NETWORKING CAPABILITY
- □ SUPPORTS UP TO 16 MODULAR CONTROLLER SERIES MODULES
- □ SUPPORTS UP TO NINE PROTOCOLS SIMULTANEOUSLY(with expansion card)

CE

SPECIFICATIONS

- 1. **POWER**: 24 VDC ± 10%
- 400 mA min. (1 module) 3.5 Amps max. (16 modules + Expansion Card) 2. COMMUNICATIONS:
 - USD/DCD + USD 1 1 D 1 1 1 1
 - **USB/PG Port**: USB 1.1. Device only using Type B connection. **Serial Ports**: Format and Baud Rates for each port are individually software
 - programmable up to 115,200 baud. **RS-232/PG Port**: RS-232 port via RJ12
 - KS-232/PG Port: KS-232 port via KJ12
 - **COMMS Ports**: RS-422/485 port via RJ45, and RS-232 port via RJ12 **DH485 TXEN**: Transmit enable; open collector, $V_{OH} = 15$ VDC,
 - $V_{OL} = 0.5 \text{ V}$ @ 25 mA max.
- Ethernet Port: 10 BASE-T / 100 BASE-TX RJ45 jack is wired as a NIC (Network Interface Card).
- 3. LEDs:
- STS Status LED indicates condition of master.
- TX/RX Transmit/Receive LEDs show serial activity.
- Ethernet Link and activity LEDs.

CF – CompactFlash LED indicates card status and read/write activity 4. **MEMORY**:

- On-board User Memory: 4 Mbytes of non-volatile Flash memory. On-board SDRAM: 2 Mbytes
- 5. **REAL-TIME CLOCK**: Typical accuracy is less than one minute per month drift.
- Battery: Lithium Coin Cell. Typical lifetime of 10 years at 25 °C. 6. ENVIRONMENTAL CONDITIONS:
- Operating Temperature Range: 0 to 50°C
 Storage Temperature Range: -30 to +70°C
 Operating and Storage Humidity: 80% max relative humidity, non-condensing, from 0 to 50°C
 Vibration According to IEC 68-2-6: Operational 5 to 150 Hz, in X, Y, Z direction for 1.5 hours, 2 g's.
 Shock According to IEC 68-2-27: Operational 25 g, 11 msec in 3 directions. Altitude: Up to 2000 meters
 CEPTIFICATIONS AND COMPLIANCES:
- 7. CERTIFICATIONS AND COMPLIANCES: CE, UL Listed
- 8. WEIGHT: 12.9oz (365.7g)

MASTER PORT PIN OUTS



ORDERING INFORMATION

TYPE	MODEL NO.	DESCRIPTION	PART NUMBER
Master Module	CSMSTR	Modular Controller Master with multiple protocol converter, Ethernet, and expansion slot.	CSMSTRLE

Accessories

OPTIONAL COMMUNICATION CARD



Red Lion offers optional communication cards for fieldbus communications. These communication cards will allow your CSMSTR to communicate with many of the popular fieldbus protocols.

Red Lion is also offering a communications card for additional RS-232 and RS-422/485 communications. See the CSMSTR Accessories section on page 59 for information about these cards.

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "Master Port Pin Outs" for wiring information.









MODEL CSMSTRSX & CSMSTRGT



GENERAL DESCRIPTION

The Model CSMSTR is a communications and control platform designed for use with Modular Controller Series slave modules. The CSMSTR uses a proprietary high speed serial protocol to communicate, via backplane connection, with up to 16 slave modules. Through the same connection, the Master also provides power to the modules.

When powered up, the CSMSTR automatically identifies and addresses connected slave modules. By storing the configuration information of all of the modules, the CSMSTR is able to automatically configure modules if they are replaced.

The Master provides high-speed RS-232/422/485 communication ports and an Ethernet port for connection to PCs, PLCs, and SCADA systems. An extensive list of master and slave protocol drivers are available to allow the CSMSTR to share and exchange variable data with external devices. The 10 Base-T/100 Base-TX Ethernet port can also be used to connect and share data with other devices at high speeds. The web-based HMI feature allows you to create and control an HMI from any networked PC. An onboard CompactFlash slot provides storage for the Master's built-in data logger.

The design of the Modular Controller Series high density packaging and DIN rail mounting saves time and panel space. The controller snaps easily onto standard top hat (T) profile DIN rail.



- PROVIDES ENHANCED FEATURES FOR DATA ACQUISITION OR MULTI-ZONE PID CONTROL APPLICATIONS
- □ WEBSERVER PROVIDES WORLDWIDE ACCESS TO DATA LOGS AND VIRTUAL HMI
- □ WEB-BASED HMI OFFERS BUILT-IN PC-BASED SCADA FUNCTIONALITY
- □ PERFORMS HIERARCHICAL CONTROL OF OTHER MODULES IN THE MODULAR CONTROLLER SERIES
- □ STORES MODULE CONFIGURATION INFORMATION, AND AUTOMATICALLY REPROGRAMS REPLACED MODULES
- EXTENSIVE BUILT-IN DRIVER LIST ALLOWS EASY DATA MAPPING TO PLCs, PCs, AND SCADA SYSTEMS
- □ INDEPENDENT SERIAL PORTS PROVIDE VIRTUALLY UNLIMITED INTEGRATION METHODS
- □ 10 BASE-T/100 BASE-TX ETHERNET CONNECTION PROVIDES NETWORKING CAPABILITY
- □ SUPPORTS UP TO 16 MODULAR CONTROLLER SERIES MODULES

CE

□ COMPACTFLASH[®] SLOT ALLOWS PROCESS DATA TO BE LOGGED DIRECTLY TO CSV FILES

SPECIFICATIONS

- 1. **POWER**: 24 VDC ± 10% 400 mA min. (1 module) 3.5 Amps max. (16 modules + Expansion Card) 2. COMMUNICATIONS: USB/PG Port: USB 1.1. Device only using Type B connection. Serial Ports: Format and Baud Rates for each port are individually software programmable up to 115,200 baud. RS-232/PG Port: RS-232 port via RJ12 COMMS Ports: RS-422/485 port via RJ45, and RS-232 port via RJ12 **DH485 TXEN**: Transmit enable; open collector, $V_{OH} = 15$ VDC, $V_{OI} = 0.5 V @ 25 mA max.$ Ethernet Port: 10 BASE-T / 100 BASE-TX RJ45 jack is wired as a NIC (Network Interface Card). 3 LEDs STS - Status LED indicates condition of master. TX/RX - Transmit/Receive LEDs show serial activity. Ethernet - Link and activity LEDs. CF - CompactFlash LED indicates card status and read/write activity 4. MEMORY: On-board User Memory: 4 Mbytes of non-volatile Flash memory. On-board SDRAM: CSMSTRSX: 2 Mbytes CSMSTRGT: 8 Mbytes Memory Card: CompactFlash Type II slot for Type I and Type II cards. 5. REAL-TIME CLOCK: Typical accuracy is less than one minute per month drift. Crimson 2.0's SNTP facility allows synchronization with external servers. Battery: Lithium Coin Cell. Typical lifetime of 10 years at 25 °C. 6. ENVIRONMENTAL CONDITIONS: Operating Temperature Range: 0 to 50°C Storage Temperature Range: -30 to +70°C Operating and Storage Humidity: 80% max relative humidity, non-condensing, from 0 to 50°C Vibration According to IEC 68-2-6: Operational 10 to 150 Hz, 0.075 mm
 - amplitude in X, Y, Z direction for 1.5 hours, 2 g's. Shock According to IEC 68-2-27: Operational 25 g, 11 msec in 3 directions.
- Altitude: Up to 2000 meters 7. CERTIFICATIONS AND COMPLIANCES: CE, UL Listed
- 8. WEIGHT: 15.1 oz (456.4 g)

MASTER PORT PIN OUTS



ORDERING INFORMATION

	-		
TYPE	MODEL NO.	DESCRIPTION	PART NUMBER
		Modular Controller Master with multiple protocol converter, data logger, web server with web-based HMI up to QVGA (320 x 240) size and expansion slot.	CSMSTRSX
Master Module	CSMSTR	Modular Controller Master with multiple protocol converter, data logger, web server with web-based HMI up to VGA (640 x 480) size and expansion slot with increased SDRAM.	CSMSTRGT

Accessories

OPTIONAL COMMUNICATION CARD



Red Lion offers optional communication cards for fieldbus communications. These communication cards will allow your CSMSTR to communicate with many of the popular fieldbus protocols.

Red Lion is also offering a communications card for additional RS-232 and RS-422/485 communications. See the CSMSTR Accessories section on page 59 for information about these cards.

CABLES AND DRIVERS

Red Lion has a wide range of cables and drivers for use with many different communication types. A list of these drivers and cables along with pin outs is available from Red Lion's website. New cables and drivers are added on a regular basis. If making your own cable, refer to the "Master Port Pin Outs" for wiring information.









www.redlion.net

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com

MODEL CSPID - SINGLE AND DUAL LOOP PID MODULES



GENERAL DESCRIPTION

The Model CSPID series modules are full featured PID controllers designed for use with the Modular Controller Series. The CSPID1 is a single loop controller, while the CSPID2 is a dual loop controller. The design of the system provides a true modular PID control platform for multi-zone control applications. The modules can accept a wide range of thermocouple, RTD, 0-10 V, 0/4-20 mA signals. With multiple discrete outputs, plus an optional analog output (CSPID1 only), the CSPID modules can perform virtually any combination of time-proportioning or linear control for heat, cool, or heat/cool applications. The discrete outputs may also be assigned to one of seven internal soft alarms. The CSPID1's optional linear output can be assigned to transmit virtually any internal variable.

The CSPID modules connect and communicate via a backplane connection to the CSMSTR Modular Controller Series Master. The CSMSTR, equipped with serial ports as well as an Ethernet port, allows the system to share data with PCs, PLCs, and SCADA systems. The Master supports any combination of up to 16 CS Series modules.

The modules can operate in On/Off, P, PI, or PID control mode, and use an on-demand Auto-Tune that establishes the tuning constants. The PID constants may be fine-tuned through the serial or Ethernet interface. The modules employ a unique overshoot suppression feature, which allows the quickest response without excessive overshoot. The modules can also be operated in manual mode, providing the operator with direct control of the output.



- □ DEDICATED SINGLE AND DUAL PID MODULES FOR THE MODULAR CONTROLLER SERIES
- □ HOT-SWAPPABLE REPLACEMENT REDUCES DOWNTIME
- □ AUTO ADDRESSING MINIMIZES CONFIGURATION TIME
- □ FULLY ISOLATED DESIGN PROVIDES RELIABLE OPERATION
- PID CONTROL WITH REDUCED OVERSHOOT
- □ UNIVERSAL INPUTS ACCEPT TC, RTD, 0-10 V and 0/4-20 mA SIGNALS
- □ ON DEMAND AUTO-TUNING OF PID SETTINGS
- DC ANALOG OUTPUT (OPTIONAL, CSPID1 ONLY)
- HEATER CURRENT INPUT (OPTIONAL) ENSURES DETECTION OF HEATER CIRCUIT FAILURE

CE

SPECIFICATIONS

- 1. **POWER**: Derived from system backplane. (CSPID1 draws 150 mA max. load on power input of MASTER, CSPID2 draws 125 mA max). Modules may be hot-swapped (Replaced while powered up).
- 2. LEDs*:

STS - Status LED shows module condition **OP1, OP2, OP3, OP4** - Indicate status of outputs 1, 2, 3, and 4 **ALM, or AL1** and **AL2** - Alarm LEDs are lit during any internal alarm condition

3. **MEMORY**: Non-volatile memory retains all programmable parameters.

4. INPUT:

GENERAL:

Sample Time: 67 msec (15 Hz)

Common Mode Rejection: >110 dB, 50/60 Hz

Normal Mode Rejection: >40 dB, 50/60 Hz

Temperature Coefficient: 0.01%/°C

Step Response Time: 200 msec typ., 250 msec max

- THERMOCOUPLE INPUTS:
 - Types: T, E, J, K, R, S, B, N, C
 - Input Impedance: 20 M Ω
 - Lead Resistance Effect: 0.25 $\mu V/\Omega$

Cold Junction Compensation: Less than $\pm 1^{\circ}$ C typical ($\pm 1.5^{\circ}$ C max) over 0 to 50 °C ambient temperature

Resolution: 0.1° RTD INPUTS:

Transi 2 an 2

Type: 2 or 3 wire Excitation: 150 μ A Lead Resistance: 15 Ω Max Resolution: 1 or 0.1°

PROCESS INPUT:

	INPUT RANGE	ACCURACY (18 TO 28 °C)	IMPEDANCE	MAX CONTINUOUS OVERLOAD	RESOLUTION
	10 V	0.1% span	1 M Ohm	50 V	16 bit
	20 mA	0.1% span	10 Ohm	100 mA	16 bit

5. COMMUNICATIONS: Provided by the CS Master

6. A/D CONVERTER: 16 bit resolution

7. DISCRETE OUTPUTS:

CSPID1: Outputs 1 and 2 available as Solid State NFET, Form A relay or Triac. Output 3 is a Form C relay.

CSPID2: Outputs 1 through 4 available as Form A relay, Solid State NFET, or Triac.

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. Form C Relay Output: Type: SPDT Current Rating: 5 Amps @ 125 VAC or 28 VDC (resistive load) 1/8 HP @ 125 VAC Life Expectancy: 100,000 cycles at maximum load rating. Triac: (CSPID1TA only) Type: Optically isolated, zero-crossing detection Rating: 120 VAC, Min: 20 VAC Max Load Current: 1.0 A across Operating Temperature Range Min Load Current: 5 mA Offstate Leakage Current: 1 mA Max Operating Frequency: 20 to 400 Hz Protection: Internal Transient Suppression, Fused Triac: (CSPID2T0 and CSPID2TM only) Type: Optically isolated, zero-crossing detection Rating: 120 VAC, Min: 20 VAC Max Load Current: 0.5A @ 25°C, 0.4A @ 50°C Min Load Current: 5 mA Offstate Leakage Current: 1 mA Max Operating Frequency: 20 to 500 Hz Protection: Internal Transient Suppression, Fused 8. CONTROL MODES: Control: On/Off, P, PI, or PID
 - Output: Time proportioning or linear (CSPID1 only)

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 Probe Break Action: Programmable response Sensor Fail Response: Upscale 9. 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 Sensor Fail Response: Upscale 10. ENVIRONMENTAL CONDITIONS: Operating Temperature Range: 0 to +50°C Storage Temperature Range: -40 to +85°C Operating and Storage Humidity: 85% max relative humidity, noncondensing, from 0 to +50°C Vibration According to IEC 68-2-6: 10 to 150 Hz, 0.075 mm amplitude in X, Y, Z direction 1 g. Shock According to IEC 68-2-27: Operational 25 g (10g relay), 11 msec in 3 directions 11. CERTIFICATIONS AND COMPLIANCES:

CE, UL Listed

12. WEIGHT: 7 oz (198.4 g)

BLOCK DIAGRAM



ORDERING INFORMATION

TYPE	MODEL NO.	DESCRIPTION	PART NUMBER
		Single Loop Module, Relay Outputs	CSPID1R0
		Single Loop Module, Relay Outputs, Analog Output	CSPID1RA
		Single Loop Module, Relay Outputs, Heater Current Input	CSPID1RM
Single Loop PID Control Modules	CSPID1	Single Loop Module, Solid State Outputs	CSPID1S0
		Single Loop Module, Solid State Outputs, Analog Output	CSPID1SA
		Single Loop Module, Solid State Outputs, Heater Current Input	CSPID1SM
		Single Loop Module, Triac Outputs, Analog Output	CSPID1TA
	CSPID2	Dual Loop Module, Relay Outputs	CSPID2R0
		Dual Loop Module, Relay Outputs, Heater Current Input	CSPID2RM
Dual Loop PID		Dual Loop Module, Solid State Outputs	CSPID2S0
Control Modules		Dual Loop Module, Solid State Outputs, Heater Current Input	CSPID2SM
		Dual Loop Module, Triac Outputs	CSPID2T0
		Dual Loop Module, Triac Outputs, Heater Current Input	CSPID2TM

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Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com

MODEL CSSG - STRAIN GAGE MODULE



GENERAL DESCRIPTION

The Model CSSG is a full featured single loop PID controller designed for use with the Modular Controller Series. The module accepts low level signals from a variety of bridge-type transducers, such as load cells, pressure transducers, torque transducers, etc. An optional second signal input is available, providing math capabilities between the two input channels (average, differential, etc.). Each input channel provides a software selectable 5 V or 10 V stable bridge excitation voltage, capable of driving up to four 350 Ω bridges (combined total per module). The inputs are software selectable for ± 20 mV, ± 33 mV, or ± 200 mV full scale. With solid state or relay outputs, plus an analog output, the CSSG module can perform virtually any combination of time-proportioning or linear control. The discrete outputs may also be assigned to transmit virtually any internal variable. In addition, digital tare (re-zero), batch totalizer, and peak/valley (max/min) are provided.

The CSSG modules are available with relays, or open drain MOSFET outputs. For applications requiring large loads to be controlled, several DIN rail mount relays are available.

Internal power management circuits allow the modules to be replaced while power is applied, which reduces downtime in the event of a relay failure. All configuration information is stored locally within each module, as well as in the Master, so replacement modules do not need to be configured.

The Modular Controller Series' high density packaging and DIN rail mounting saves time and panel space. The backplane connection provides power and communication to the module and snaps easily onto standard top hat (T) profile DIN rail.



□ HOT-SWAPPABLE REPLACEMENT REDUCES DOWNTIME

- □ AUTO ADDRESSING MINIMIZES CONFIGURATION TIME
- PID CONTROL WITH REDUCED OVERSHOOT
- □ LOAD CELL, PRESSURE AND TORQUE BRIDGE INPUTS
- SOFTWARE SELECTABLE LOW LEVEL INPUTS
- □ SOFTWARE SELECTABLE 5 VDC or 10 VDC BRIDGE EXCITATION
- DIGITAL TARE (re-zero), BATCH TOTALIZER, AND PEAK/VALLEY (max/min) RECORDING
- ON DEMAND AUTO-TUNING OF PID SETTINGS

DC ANALOG OUTPUT

CE

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SPECIFICATIONS

- POWER: Derived from system backplane. 250 mA max. load on power input of MASTER. Module may be hot-swapped (replaced while powered up). Modules per Master: A single Master can support up to 11 CSSG1 modules combined with any 5 other module types. For applications that require more than 11 CSSG1 modules, please contact technical support.
- 2. LEDs*:
 - STS Status LED shows module condition.
 - OP1, OP2, OP3 Indicate status of outputs 1, 2, and 3
 - ALM Alarm LED is lit during an internal alarm condition.

* Default configuration.

 MEMORY: Non-volatile memory retains all programmable parameters. The MASTER also stores the parameters in order to reprogram any modules that are replaced.

^{4.} INPUTS:

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

* After 20 minute warm-up. Accuracy over the 0 to 50°C range includes the temperature coefficient.

Connection Type:

- 4-wire bridge (differential)
- 2-wire (single-ended)

Sample Time: 67 msec (15 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
- 5. BRIDGE EXCITATIONS: Software selectable:

5 VDC + 20/ C5

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.
- 6. COMMUNICATIONS: Provided by the CS Master.

7. DISCRETE OUTPUTS:

Outputs 1 and 2 are available as Solid State NFET, or Form A relay. Output 3 is a Form C 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.)

Form C Relay Output: Type: SPDT

Current Rating: 5 Amps @ 125 VAC or 28 VDC (resistive load) 1/8 HP @ 125 VAC

Life Expectancy: 100,000 cycles at maximum load rating. (Decreasing load, increasing cycle time, and use of surge suppression such as RC snubbers increases life expectancy.)

8. 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

9. ALARMS:

Modes:

Manual

Absolute High ActingAbsolute Low ActingDeviation High ActingDeviation Low ActingInside Band ActingOutside Band Acting

Reset Action: Programmable; automatic or latched

Standby Mode: Programmable; enable or disable

Hysteresis: Programmable

Input Fault Response: Upscale

10. ÂNALOG DC OUTPUT:

Jumper Selectable/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 (0 to 50°C)

Update Time: 0.0 to 60.0 sec

Compliance (for current output only): 500 Ω max.

Minimum load (voltage output only): 10 K Ω min.

Output is independently jumper 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.

11. CERTIFICATIONS AND COMPLIANCES

CE, UL Listed

12. WEIGHT: 7 oz (198.4 g)



ORDERING INFORMATION

	TYPE	MODEL NO.	DESCRIPTION	PART NUMBER
	Strain Gage Control Modules	CSSG1	Single Loop, One SG Input, Relay Outputs, Analog Out	CSSG10RA
			Single Loop, One SG Input, Solid State Outputs, Analog Out	CSSG10SA
			Single Loop, Two SG Inputs, Relay Outputs, Analog Out	CSSG11RA
			Single Loop, Two SG Inputs, Solid State Outputs, Analog Out	CSSG11SA

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MODELS CSTC, CSRTD, CSINI AND CSINV -High Density Temp and Analog Input Modules



GENERAL DESCRIPTION

The Model CSTC, CSRTD, CSINI, and CSINV are 16-bit analog input modules designed for use with the Modular Controller Series. These modules provide a means of high-density signal measurement for data-acquisition applications. The CSTC module accepts a wide range of thermocouple types, while the CSRTD accepts various RTD inputs. The CSINI and CSINV accept 0/4-20 mA and ± 10 V process signals, respectively.

The modules connect and communicate via a backplane connection to the CSMSTR Modular Controller Series Master. The CSMSTR, equipped with serial ports as well as an Ethernet port, allows the system to share data with PCs, PLCs, and SCADA systems. The Master supports any combination of up to 16 CS series modules, allowing a total of 128 signals to be monitored via a single Master.

Internal power management circuits allow the modules to be replaced while power is applied, which reduces downtime. All configuration information is stored locally within the module, as well as in the Master, so replacement modules do not need to be configured.

The Modular Controller Series' high density packaging and DIN rail mounting saves time and panel space. The backplane connection provides power and communication to the module and snaps easily onto standard top hat (T) profile DIN rail.

DIMENSIONS IN INCHES (MM)

- □ MODELS AVAILABLE TO ACCEPT ±10 V, 0/4-20 mA, THERMOCOUPLE AND RTD INPUTS
- □ ±10 V AND 0/4-20 mA INPUT VERSIONS FULLY SCALABLE
- □ ±10 V AND 0/4-20 mA INPUT VERSIONS AVAILABLE WITH 100 POINT LINEARIZATION
- □ UNUSED INPUTS CAN BE DISABLED TO INCREASE OVERALL READING RATE
- □ IDEAL FOR DATA-ACQUISITION APPLICATIONS
- □ AUTO ADDRESSING MINIMIZES CONFIGURATION TIME
- □ CAN BE USED IN CONJUNCTION WITH ANY CS SERIES MODULES

CE

SPECIFICATIONS

GENERAL

- 1. **POWER**: Derived from system backplane. (75 mA load on power input of MASTER). Module may be hot-swapped (replaced while powered up).
- 2. LEDs:
 - STS Status LED shows module condition.

ALM - Alarm LED is lit during any internal alarm condition.

- MEMORY: Non-volatile memory retains all programmable parameters. MASTER also stores the parameters in order to reprogram modules that are replaced
- 4. **ISOLATION LEVEL**: 500 Vrms @ 50/60 Hz for 1 minute between the Signal Inputs and the CS Master Power Supply Input.
- 5. COMMUNICATIONS: Provided by the CS Master
- 6. CERTIFICATIONS AND COMPLIANCES:
- CE, UL Listed 7. **WEIGHT**: 6 oz (170.1 g)
- 7. WEIGHT. 0 02 (170.1 g)

CSTC8 SPECIFICATIONS

1. INPUTS: Channels: 8 single-ended Effective Resolution: Full 16-bit Sample Time: 50 msec - 400 msec, depending on number of enabled inputs. Common Mode Rejection: >110 dB, 50/60 Hz Normal Mode Rejection: >90 dB, 50/60 Hz Temperature Coefficient: 0.01%/°C Step Response Time: One scan time (to within 99% of final value) Types: T, E, J, K, R, S, B, N, C Slope & Offset: Provides sensor error correction Input Impedance: 20 M Ω Lead Resistance Effect: 0.25 $\mu V/\Omega$ Cold Junction Compensation: Less than ±1°C typical (±1.5°C max) over 0 to 50 °C ambient temperature Resolution: 0.1° 2. TEMPERATURE INDICATION ACCURACY: $\pm (0.3\% \text{ of span}, \pm 1^{\circ}\text{C})$.

3. **PROBE BREAK RESPONSE**: Upscale drive, Input Fault Alarm bit set high, ALM LED illuminates.

CSRTD6 SPECIFICATIONS

 RTD INPUTS: Channels: 6 single-ended Effective Resolution: Full 16-bit Sample Time: 67 msec - 400 msec, depending on enabled inputs. Common Mode Rejection: >110 dB, 50/60 Hz Normal Mode Rejection: >90 dB, 50/60 Hz Temperature Coefficient: 0.01%/°C

Step Response Time: One scan time (to within 99% of final value)

Type: 2 or 3 wire; 100 Ω platinum, Alpha = .00385 and .003919, and 120 Ω nickel, Alpha = .00672

Excitation: 150μA Lead Resistance: 15 Ω Max

Resolution: 0.1°

Slope & Offset: Provides sensor error correction

- 2. **TEMPERATURE INDICATION ACCURACY**: ± (0.1% of span) over 18 to 28°C environment, ± (0.2% of span) over 0 to 50°C environment.
- 3. **PROBE BREAK RESPONSE**: If channel is enabled: upscale drive, Input Fault Alarm bit set high, ALM LED illuminates.

CSINI8 SPECIFICATIONS

1. INPUTS:

Channels: 8 single-ended Ranges: 0-20 mA or 4-20 mA Effective Resolution: Full 16-bit Programmable Scaling: ±30,000 Linearizer: 100 Points (CSINI8L0 only) Sample Time: 50 msec - 400 msec, depending on number of enabled inputs. Common Mode Rejection: >110 dB, 50/60 Hz Normal Mode Rejection: >90 dB, 50/60 Hz Step Response Time: One scan time (to within 99% of final value) Input Impedance: 10 Ω

Max. Continuous Overload: 100 mA

- 2. ACCURACY: ±0.1% of span
- INPUT FAULT RESPONSE: Upscale Drive, Input Fault Alarm bit set high, ALM LED illuminates below -3 mA, and above 23 mA for 0-20 mA range; below +3 mA and above 23 mA for 4-20 mA signals.

CSINV8 SPECIFICATIONS

1. INPUTS:

Channels: 8 single-ended Ranges: 0-10 VDC or ± 10 VDC Effective Resolution: Full 16-bit Programmable Scaling: $\pm 30,000$ Linearizer: 100 Points (CSINV8L0 only) Sample Time: 50 msec - 400 msec, depending on number of enabled inputs. Common Mode Rejection: >110 dB, 50/60 Hz Normal Mode Rejection: >90 dB, 50/60 Hz Step Response Time: One scan time (to within 99% of final value) Input Impedance: 10 M Ω Max. Continuous Overload: 50 V ACCUIP ACYL 10 1% of more

- 2. ACCURACY: ±0.1% of span
- 3. **INPUT FAULT RESPONSE**: Upscale Drive, Input Fault Alarm bit set high, ALM LED illuminates below -10.4 VDC and above +10.4 VDC.



BLOCK DIAGRAM

ORDERING INFORMATION

TYPE	MODEL NO.	DESCRIPTION	PART NUMBER
Thermocouple Input Modules	CSTC	8 Channel Thermocouple Module	CSTC8000
Current Input Modules	CSINI	8 Channel 0(4)-20 mA Input Module	CSINI800
Current input modules		8 Channel 0(4)-20 mA Input Module, 100-Point Linearizer	CSINI8L0
Voltage Input Modules	CSINV	8 Channel ±10 V Input Module	CSINV800
voltage input modules		8 Channel ±10 V Input Module, 100-Point Linearizer	CSINV8L0
RTD Input Modules	CSRTD	6 Channel RTD Module	CSRTD600

MODEL CSDIO - DIGITAL INPUT/OUTPUT MODULES



GENERAL DESCRIPTION

The Model CSDIO series modules are digital I/O modules designed for use with the Modular Controller Series. The CSDIO14 offers eight inputs and six outputs that can be used to monitor contact or sensor inputs and actuate relays, solenoids, PLC inputs, etc.

The inputs accept standard DC inputs or contact closures, and are configured for Sink/Source signals via external switches. Additionally, each input has a switch selectable input filter that can be used to prevent contact bounce. Each input may also be software configured as a high-active or low-active input.

The modules are available with relay or NFET outputs that are capable of switching up to one amp each (NFET DC only). For applications requiring large loads to be controlled, several DIN rail mount relays are available.

The CSDIO modules connect and communicate via a backplane connection to the CSMSTR Modular Controller Series Master. The CSMSTR, equipped with serial ports as well as an Ethernet port, allows the system to share data with PCs, PLCs, and SCADA systems. The Master supports any combination of up to 16 CS Series modules.

Internal power management circuits allow the modules to be replaced while power is applied, which reduces downtime in the event of a relay failure. All configuration information is stored locally within each module, as well as in the Master, so replacement modules do not need to be configured. The Modular Controller Series' high density packaging and DIN rail mounting saves time and panel space. The backplane connection provides power and communication to the module and snaps easily onto standard top hat (T) profile DIN rail.



- □ ADDS REMOTE I/O CAPABILITY TO THE MODULAR CONTROLLER SERIES
- □ EIGHT INPUT, SIX OUTPUT DIGITAL MODULE
- □ INPUTS ISOLATED FROM OUTPUTS
- INPUTS INDEPENDENTLY SWITCH SELECTABLE FOR SINK OR SOURCE SIGNALS
- □ INPUTS INDEPENDENTLY CONFIGURABLE FOR HIGH OR LOW ACTIVE STATE
- □ INPUTS INDEPENDENTLY SWITCH SELECTABLE FOR HIGH OR LOW FREQUENCY SIGNALS
- RELAY OR NET OUTPUT MODELS AVAILABLE

CE

SPECIFICATIONS

- 1. **POWER**: Derived from system backplane. (CSDIO draws 170 mA max. load on power input of MASTER). Modules may be hot-swapped (replaced while powered up).
- 2. LEDs:
 - STS Status LED shows module condition.
 - IN1-IN8 LEDs are lit when associated input is active.
 - OP1-OP6 LEDs are lit when associated output is active.
 - ALM Alarm LED is lit when an internal alarm condition exists.
- MEMORY: Non-volatile memory retains all programmable parameters. MASTER also stores the parameters in order to reprogram modules that are replaced.
- 4. INPUTS: DIP switch selectable for sink or source
 - Maximum voltage: +30 VDC, reverse polarity protected
 - Off Voltage: < 1.2 Volts

On Voltage: > 3.8 Volts

Input Impedance: Source Mode 10K ohms; Sink Mode 20K ohms

- Input Frequency*:
 - Filter switch on: 50 Hz
 - Filter switch off: 300 Hz
- * Actual useable frequency limited by communication to external device.
- 5. OUTPUTS: Outputs available as FORM-A relay or Solid State NFET.

Form A Relay Output:

Type: N.O.

The following pairs of relays share the common terminal: 1&2, 3&4, 5&6 Current Rating by pair: 3 Amps @ 30 VDC / 125 VAC resistive 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.)

Solid State Output:

Type: Switched DC, N Channel open drain MOSFET

- Contact Rating: 1 ADC max
- VDS ON: < 0.2 V @ 1 A
- VDS MAX: 30 VDC
- Offstate Leakage Current: 0.5 µA max 6. LOGIC (BOOLEAN) MODE:
 - OGIC (BOOLEAN) MODE.
- Count Frequency: 200 Hz/input when input is directly connected (soft-wired) to the counter.

Logic Propagation Delay: 400 msecs. max.

- Timer Accuracy: 0.2%
- 7. ISOLATION LEVEL: 500 Vrms @ 50/60 Hz for 1 minute between the following: Inputs

Outputs CS Maat

- CS Master Power Supply Input 8. **COMMUNICATIONS**: Provided by the CS Master
- 9. CERTIFICATIONS AND COMPLIANCES:

CE. UL Listed

10. WEIGHT: 6.6 oz (187.1 g)

BLOCK DIAGRAM



ORDERING INFORMATION				
TYPE	MODEL NO.	DESCRIPTION	PART NUMBER	
Digital I/O Modules		Eight Inputs, Six Relay Outputs	CSDIO14R	
Digital I/O Modules	0001014	Eight Inputs, Six Solid State Outputs	CSDIO14S	

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com

MODEL CSOUT - 4-CHANNEL ANALOG OUTPUT MODULE



GENERAL DESCRIPTION

The model CSOUT is an analog output module designed for use with the Modular Controller Series. The module provides four isolated outputs that are independently programmable for output ranges of 0-5V, 0-10V, +/-10V, 0-20mA, or 4-20mA. Internal scaling is provided to accommodate virtually any application.

The modules connect and communicate via a backplane connection to the CSMSTR Modular Controller Series Master. The CSMSTR, equipped with serial ports as well as an Ethernet port, allows the system to share data with PCs, PLCs, and SCADA systems. The Master supports up to 16 CS Series modules (refer to the "Power" specifications).

Internal power management circuits allow the modules to be replaced while power is applied, which reduces downtime. All configuration information is stored locally within each module, as well as in the Master, so replacement modules do not need to be configured.

The Modular Controller Series' high density packaging and DIN rail mounting saves time and panel space. The backplane connection provides power and communication to the module and snaps easily onto standard top hat (T) profile DIN rail.



- □ HIGH DENSITY ANALOG OUTPUT MODULE FOR THE MODULAR CONTROLLER SERIES
- □ AVAILABLE OUTPUTS INCLUDE 0 to 5 VDC, 0 to 10 VDC, ±10 VDC, AND 0/4-20 mA DC
- □ OUTPUTS ARE ISOLATED FROM EACH OTHER AND FROM THE BACKPLANE
- OUTPUTS ARE SOFTWARE CONFIGURED AND FULLY SCALABLE
- □ AUTO ADDRESSING MINIMIZES CONFIGURATION TIME
- □ CAN BE USED IN CONJUNCTION WITH ANY CS SERIES MODULES

CE

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SPECIFICATIONS

1. **POWER**: Derived from system backplane. (CSOUT draws 180 mA max. load on power input of MASTER). Modules may be hot-swapped (replaced while powered up).

2. LEDs:

STS - Status LED shows module condition.

- ALM Alarm LED is lit when an internal alarm condition exists.
- MEMORY: Non-volatile memory retains all programmable parameters. MASTER also stores the parameters in order to reprogram modules that are replaced.
- 4. COMMUNICATIONS: Provided by the CS Master
- 5. OUTPUTS:
- Channels: 4 independent outputs

Response Time: 25 msec max. to within 99% of final value **Output Range**: software selectable

OUTPUT RANGE	ACCURACY * 18 to 28 °C 10 to 75% RH	ACCURACY * 0 to 50 °C 0 to 85% RH	COMPLIANCE	RESOLUTION
0 to 5 VDC	0.2% of span	0.4% of span	10K Ω min.	1/30,000
0 to 10 VDC	0.1% of span	0.2% of span	10K Ω min.	1/60,000
-10 to +10 VDC	0.1% of span	0.2% of span	10K Ω min.	1/60,000
0 to 20 mA	0.1% of span	0.2% of span	500 Ω max.	1/60,000
4 to 20 mA	0.1% of span	0.2% of span	500 Ω max.	1/48,000

* The accuracy is specified after 20 minutes warmup; in a non-condensing environment; and includes linearity errors.

6. ISOLATION LEVEL: The outputs are isolated from each other, and are isolated from the power supply. 500 V @ 50/60 Hz for 1 minute between any of the outputs and the CS Master power supply input.

7. ENVIRONMENTAL CONDITIONS: Operating Temperature Range: 0 to +50°C

Storage Temperature Range: -40 to +85°C

Operating and Storage Humidity: 85% max relative humidity, noncondensing, from 0 to +50°C

Vibration According to IEC 68-2-6: 10 to 150 Hz, 0.075 mm amplitude in X, Y, Z direction 1 g.

Shock According to IEC 68-2-27: Operational 25 g, 11 msec in 3 directions. Altitude: Up to 2000 meters

- 8. CERTIFICATIONS AND COMPLIANCES:
 - CE, UL Listed
- 9. **CONSTRUCTION**: Case body is burgundy high impact plastic. Installation Category I, Pollution Degree 2.
- 10. **CONNECTIONS**: Removable wire clamp screw terminal blocks. Wire Gage: 28-16 AWG terminal gage wire
- Torque: 1.96-2.23 inch/lbs (0.22-0.25 N-m)
- 11. **MOUNTING**: Snaps on to standard DIN style top hat (T) profile mounting rails according to EN50022 -35 x 7.5 and -35 x 15.
- 12. WEIGHT: 7 oz (198.4 g)

BLOCK DIAGRAM



ORDERING INFORMATION				
TYPE	MODEL NO.	DESCRIPTION	PART NUMBER	
Analog Output Module	CSOUT	4-Channel Analog Output Module	CSOUT400	

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com

DSP & MODULAR CONTROLLER ACCESSORIES

MODEL XCRS - ISOLATED SERIAL OPTION CARD



CONFIGURED USING CRIMSON SOFTWARE

- □ ISOLATED RS-232 AND RS-485 MULTIPLEXED PORTS CAPABLE OF COMMUNICATING WITH RS-232, RS-422, RS-485 AND DH485 DEVICES AT UP TO 115,200 BAUD
- □ EASY INSTALLATION

GENERAL DESCRIPTION

The XCRS option card adds an additional RS-232 and RS-422/485 port to the series. This isolated card protects user equipment from potentially harmful ground loops while providing high-speed RS-232, RS-422, RS-485, and DH485 communication options to the end user.

The XCRS communication card is easily installed by removing the blank expansion port cover of your Modular Controller or Data Station Plus, and plugging the XCRS card into the expansion port. Configuration is simple using Red Lion's free Crimson 2.0 software.

SPECIFICATIONS

- 1. **POWER REQUIREMENTS:** Power is supplied to the option card from the main board of the Modular Controller Master or Data Station Plus.
- 2. COMMUNICATIONS:

Serial Ports: Format and Baud Rates for each port are individually software programmable up to 115,200 baud and are isolated to help prevent ground loops. The RS-422/485 and DH485 port via RJ45 and the RS-232 port via RJ12 share the same hardware.

DH485 TXEN: Transmit enable; open collector, $V_{OH} = 15$ VDC, $V_{OL} = 0.5$ VDC Isolation from XCRS Communication ports to the Modular Controller Master or Data Station Plus: 1000 VDC for 1 minute.

- 3. CERTIFICATIONS AND COMPLIANCES: Refer to "Agency Approvals" section of Red Li
 - Refer to "Agency Approvals" section of Red Lion's website for agency certifications.
- 4. ENVIRONMENTAL CONDITIONS:

Operating Temperature Range: 0 to 50°C Storage Temperature Range: -20 to 80°C

- Operating and Storage Humidity: 80% maximum relative humidity (non-
- condensing) from 0 to 50°C.

Altitude: Up to 2000 meters.

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
XCRS	RS-232/485 option card for Modular Controller or Data Station Plus	XCRS0000

MODEL XCCN - CANOPEN/J1939 OPTION CARD





CONFIGURED USING CRIMSON SOFTWARE

- DIGITALLY ISOLATED CANopen PORT CAPABLE OF COMMUNICATING WITH ANY CANopen DEVICE
- EASY INSTALLATION

GENERAL DESCRIPTION

The XCCN option card adds a CANopen communication port to the series. This isolated card protects user equipment from potentially harmful ground loops while providing the ability to communicate to any high speed CANopen device. The XCCN option card has a termination resistor built-in, which is selectable via a jumper setting. Additionally, the XCCN connector is pluggable for easy removal of the Modular Controller Master or Data Station Plus from the CANopen bus without disturbing communications with other devices on the bus.

The XCCN communication card is easily installed by removing the blank expansion port cover of your Modular Controller or Data Station Plus, and plugging the XCCN card into the expansion port. Configuration is simple using Red Lion's free Crimson 2.0 software.

SPECIFICATIONS

1. **POWER REQUIREMENTS:** Power is supplied to the option card from the main board of the Modular Controller Master or Data Station Plus.

2. COMMUNICATIONS:

CANopen Port: The CANopen port has format and baud rates that are software programmable up to 1M baud and are digitally isolated. This port may be configured for various CANopen protocols. Check www.redlion.net for currently supported protocols.

Isolation from XCCN Communication ports to the Modular Controller Master or Data Station Plus:1000 VDC for 1 minute.

- 3. CERTIFICATIONS AND COMPLIANCES:
- Refer to "Agency Approvals" section of Red Lion's website for agency certifications.
- 4. ENVIRONMENTAL CONDITIONS:

Operating Temperature Range: 0 to 50°C

Storage Temperature Range: -20 to 80°C

Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C.

Altitude: Up to 2000 meters.

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
XCCN	CANopen option card for Modular Controller or Data Station Plus	XCCN0000

MODEL XCDN - DEVICENET OPTION CARD





CONFIGURED USING CRIMSON SOFTWARE

DIGITALLY ISOLATED DeviceNet PORT CAPABLE OF COMMUNICATING WITH ANY DeviceNet MASTER

EASY INSTALLATION

GENERAL DESCRIPTION

The XCDN option card adds a DeviceNet slave communication port to the series. This isolated card protects user equipment from potentially harmful ground loops while providing the ability to communicate to any high speed DeviceNet master. Additionally, the XCDN connector is pluggable for easy removal of the Modular Controller Master or Data Station Plus from the DeviceNet bus without disturbing communications with other devices on the bus.

The XCDN communication card is easily installed by removing the blank expansion port cover of your Modular Controller or Data Station Plus, and plugging the XCDN card into the expansion port. Configuration is simple using Red Lion's free Crimson 2.0 software.

SPECIFICATIONS

- 1. **POWER REQUIREMENTS:** Power is supplied to the option card from the main board of the Modular Controller Master or Data Station Plus.
- 2. COMMUNICATIONS:
- **DeviceNet Port**: The DeviceNet port has format and baud rates that are software programmable up to 500K baud and are digitally isolated. This port may be configured for various DeviceNet protocols. Check www.redlion.net for currently supported protocols.

Isolation from XCDN Communication ports Modular Controller Master or Data Station Plus: 1000 VDC for 1 minute.

- 3. CERTIFICATIONS AND COMPLIANCES:
- Refer to "Agency Approvals" section of Red Lion's website for agency certifications.

4. ENVIRONMENTAL CONDITIONS:

Operating Temperature Range: 0 to 50°C

Storage Temperature Range: -20 to 80°C

Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C.

Altitude: Up to 2000 meters.

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
XCDN	DeviceNet option card for Modular Controller or Data Station Plus	XCDN0000

MODEL XCPB - PROFIBUS OPTION CARD





CONFIGURED USING CRIMSON SOFTWARE

- □ ADDS PROFIBUS DP CONNECTIVITY TO THE DATA STATION PLUS AND MODULAR CONTROLLER SERIES
- PROFIBUS DP SLAVE PROTOCOL
- □ EASY INSTALLATION

GENERAL DESCRIPTION

The XCPB option card adds PROFIBUS DP connectivity to the series. This allows a high-speed exchange of blocks of data, at data rates up to 12MBaud, between the hosting Modular Controller or Data Station and a Master PLC or PC on a PROFIBUS network. The DP suffix refers to "Decentralized Periphery", which is used to describe distributed I/O devices connected via a fast serial data link with a central controller.

The XCPB communication card is easily installed by removing the blank expansion port cover of your Modular Controller or Data Station Plus, and plugging the XCPB card into the expansion port. Configuration is simple using Red Lion's free Crimson 2.0 software.

SPECIFICATIONS

- 1. **POWER REQUIREMENTS:** Power is supplied to the option card from the main board of the Modular Controller Master or Data Station Plus.
- 2. COMMUNICATIONS:
 - **PROFIBUS Port:** FIELDBUS Type : PROFIBUS-DP EN 50 170, I. The PROFIBUS port has autobaud detect up to 12M baud and is digitally isolated.
- 3. CERTIFICATIONS AND COMPLIANCES:
- Refer to "Agency Approvals" section of Red Lion's website for agency certifications.
- 4. ENVIRONMENTAL CONDITIONS:
 - Operating Temperature Range: 0 to 50°C
 - Storage Temperature Range: -20 to 80°C
 - Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C.

Altitude: Up to 2000 meters.

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
XCCN	CANopen option card for Modular Controller or Data Station Plus	XCCN0000

MODEL XCGSM - CELLULAR MODEM OPTION CARD



- CONFIGURED USING CRIMSON SOFTWARE
- INSTALLS INSIDE A DATA STATION PLUS OR MODULAR CONTROLLER
- INSTALLATION AND CONNECTION HARDWARE ARE INCLUDED WITH CARD

GENERAL DESCRIPTION

The XCGSM option card allows the user to add GSM/GPRS cellular modem capability to their Data Station Plus or Modular Controller. GSM/GPRS is the most prevalent cellular technology in today's markets. GPRS can be used for services such as Wireless Application Protocol (WAP) access, Short Message Service (SMS), and for Internet communication services such as email and World Wide Web access. The XCGSM modem option card is quad-band, allowing to to work in frequencies across Americas, Europe and Asia. US and Canada work in the 850/1900 MHz bands, while Europe, Middle East, Africa and most of Asia work in the 900/1800 MHz GSM/GPRS frequencies.

The XCGSM requires the addition of a SIM (Subscriber Identity Module) card, which is inserted into the holder prior to installation of the XCGSM card. The SIM card securely stores the service-subscriber key (IMSI) used to identify a subscriber, and is used to connect to the network to obtain an IP address from the provider.

The XCGSM communication card is easily installed by removing the blank expansion port cover of your Modular Controller or Data Station Plus, and plugging the XCGSM card into the expansion port. Configuration is simple using Red Lion's free Crimson 2.0 software.

SPECIFICATIONS

1. **POWER REQUIREMENTS:** Power is supplied to the option card from the main board of the Modular Controller Master or Data Station Plus.

2. ANTENNA CONNECTOR:

SMA Female connector requires:

50 Ohm antenna with SMA male connector Quad-band antenna (850/900/1800/1900 MHz) for global support.

Dual-band (850/1900 MHz) antenna for US and Canada only

Dual band (900/1800 MHz) for Europe only

The antenna cable should be 50Ω impedance, RG178/U or RG174/U type and be able to connect to the RSMA (Male) jack bulkhead. The antenna could be horizontal, vertical or right angled. Longer antenna cable would equate to signal loss.

3. CERTIFICATIONS AND COMPLIANCES:

Refer to "Agency Approvals" section of Red Lion's website for agency certifications.

4. ENVIRONMENTAL CONDITIONS:

Operating Temperature Range: 0 to 50°C

- Storage Temperature Range: -20 to 80°C Operating and Storage Humidity: 80% maximum relative humidity (non-
- condensing) from 0 to 50°C.

Altitude: Up to 2000 meters.

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
XCGSM	GSM/GPRS Modem Option Card for Modular Controller or Data Station Plus	XCGSM000

MESSAGE DISPLAYS

MODEL PFM - PLANT FLOOR MARQUEE



- □ TRI-COLOR DISPLAY PROVIDES INSTANT NOTICE OF IMPORTANT INFORMATION
- DISPLAYS INFORMATION FROM ANY G3 HMI, AND SX/GT MODELS OF THE DATA STATION AND MODULAR CONTROLLER
- □ GRAPHICAL DESIGN ALLOWS BARGRAPHS, CUSTOM SYMBOLS AND GRAPHICS
- □ FOUR SIZES FOR A WIDE RANGE OF APPLICATIONS
- □ RS-485 PORT SUPPORTS MULTIDROP
- □ AC POWERED (110 or 220 VAC, 50 / 60 HZ)

CE

GENERAL DESCRIPTION

DEPUNC INFORMATION

The PFM - Plant Floor Marquee series are multi-color LED displays designed to provide vital process and production information to personnel at a glance. The PFM must be used in tandem with Red Lion's G3 series of HMIs, Data Station Plus or Modular Controller series. This affords the PFM the unique ability to display information gathered by its host. The host devices can collect information from virtually any device equipped with a serial or Ethernet port.

Four different sizes are available - The smallest is suitable to provide data at the machine level, while the largest can be used to communicate information across an entire factory floor at distances up to 600 feet (182 meters) away.

The PFM displays are controlled via the RS-485 port of a G3 HMI, or Data Station Plus SX/GT models or Modular Controller Master modules. Acting as a slave to these products allows the PFM to display data from multiple industrial devices including PLCs, motor drives, barcode scanners, etc. The RS-485 connection allows the displays to be multi-dropped for applications requiring more than one display.

The PFMs are graphic-based (versus text-based), which allows the series to display items such as bargraphs and custom symbols and graphics. The 7.62 mm (0.3 inch) pitch LED design allows the use of a wide range of font styles and sizes to suit any application. The display is housed in an extruded aluminum and plastic housing designed for indoor use. Brackets are provided to allow the PFM to be mounted from an overhead support.

ORDERING INFORMATION			
MODEL NO.	DESCRIPTION	PART NUMBER	
	Tricolor display 16x80, 110V	PFM1608A	
	Tricolor display 16x80, 220V	PFM1608B	
	Tricolor display 24x120, 110V	PFM2412A	
DEM	Tricolor display 24x120, 220V	PFM2412B	
1 1 101	Tricolor display 32x120, 110V	PFM3212A	
	Tricolor display 32x120, 220V	PFM3212B	
	Tricolor display 64x120, 110V	PFM6412A	
	Tricolor display 64x120, 220V	PFM6412B	
CBL	Cable G3/DSP/MC TO PFM	CBLPFM00	

SPECIFICATIONS

1. POWER:

- PFM1608A: 105-115 VAC, 50/60 Hz @ 75 W max. PFM2412A: 105-115 VAC, 50/60 Hz @ 155 W max. PFM3212A: 105-115 VAC, 50/60 Hz @ 185 W max. PFM6412A: 105-115 VAC, 50/60 Hz @ 267 W max. PFM1608B: 210-230 VAC, 50/60 Hz @ 75 W max. PFM2412B: 210-230 VAC, 50/60 Hz @ 155 W max. PFM3212B: 210-230 VAC, 50/60 Hz @ 185 W max. PFM6412B: 210-230 VAC, 50/60 Hz @ 267 W max.
- 2. **DISPLAY**: 7.62 mm (0.3 inch) pitch LED (red/amber/green) Resolutions:
- PFM1608x: 16H x 80W PFM2412x: 24H x 120W PFM3212x: 32H x 120W PFM6412x: 64H x 120W Maximum Viewing Distance: PFM1608x: 150 ft (45.72 m) PFM2412x: 200 ft (60.96 m) PFM3212x: 450 ft (137.16 m) PFM6412x: 600 ft (182.88 m)
- COMMUNICATIONS: Connects to the host G3, Data Station or Modular Controller (SX or GT models only) via RS-485.
- 4. ENVIRONMENTAL CONDITIONS: Operating Temperature: 0 to 50°C. Storage Temperature: -10 to 60°C. Operating and Storage Humidity: 80% maximum relative humidity (non condensing from 0 to 50°C.
- 5. CERTIFICATIONS AND COMPLIANCES:
- Contact your Red Lion Controls distributor for more information. 6. **CONNECTOR**: IEC 320 C22 style; 5 ft. power cord included (US connector)
- 7. CONSTRUCTION: Extruded aluminum enclosure with ABS endcaps.
- 7. CONSTRUCTION. Extruded aluminum enclosure with ABS endcaps
- MOUNTING REQUIREMENTS: Suspend from overhead truss or other suitable structure. See "Mounting Instructions" for more info. Refer to local safety codes for additional requirements.
- 9. DIMENSIONS:

PFM1608x: 26" x 6.6" x 2.4" (660 x 168 x 61 mm) PFM2412x: 38.5" x 8.8" x 3.4" (978 x 224 x 86 mm) PFM3212x: 38.8" x 10.9" x 3.4" (986 x 277 x 86 mm) PFM6412x: 39.3" x 22.6" x 3.4" (998 x 572 x 86 mm)

10. WEIGHT:

PFM1608x: 6.8 lbs. (3.1 Kg) PFM2412x: 14.1 lbs. (6.4 Kg) PFM3212x: 17.0 lbs. (7.7 Kg) PFM6412x: 28.7 lbs. (13.0 Kg)

MODEL BFD - BIG FLEXIBLE DISPLAY



General Description

The BFD is a large (38.5" x 19") LED display (128 x 64 pixel resolution) which is driven from the RS-485 port of a G3. The BFD is built using 32 display boards in an 8 column by 4 row configuration. When used with a G303, the BFD will display the contents of the current G3 page. When used with larger G3s, the desired information is selected by using a "display primitive" on the current G3 page. Multiple BFDs can be driven from a single G3. The exact number is dependent upon the lengths of the individual wiring runs. Contact Red Lion Tech Support for more information.

The display is housed in a welded steel enclosure and the display window (0.118" thick red acrylic) is sealed to the enclosure using a gasket and bezel strips. The gasketed rear panel is bolted to the enclosure. The ventilation slots and internal fan are designed to provide adequate cooling in a normal industrial environment. The enclosure is designed to hang from an overhead support.

The BFD enclosure can be easily converted for indoor NEMA 4 operation using the optional BFD NEMA 4 conversion kit. The kit includes a sealed cover plate (to plug the vent hole), an external "cabinet cooler" (to replace the internal fan) and a DIN-rail mounted power supply to operate the "cabinet cooler".

Power to the BFD is provided by a universal AC input power supply. The AC power and the G3 RS-485 cable enter the enclosure thru separate conduit fittings. AC power connects to the power supply via a removable 3 position terminal block. The RS-485 signal connects to the communication board via either an RJ45 modular plug or a removable 2 position terminal block.

NEMA 4 SEALED

- □ LARGE 38.5" (977.9 mm) X 19" (482.6 mm) RED LED DISPLAY WITH 0.2" DIAMETER PIXELS; 128 X 64 DOT RESOLUTION
- □ DISPLAYS THE INFORMATION FROM ANY G3, DSP or MODULAR CONTROLLER TO THE PLANT FLOOR
- □ CONNECTS DIRECTLY TO THE RS-485 PORT OF A G3, DSP or MODULAR CONTROLLERFS
- □ FIELD REPLACEABLE DISPLAY BOARDS
- REPLACEABLE FAN FILTER
- □ FLEXIBLE 4 EYEBOLT MOUNTING
- UNIVERSAL AC POWER (100 240 VAC, 50 / 60 HZ)
- OPTIONAL NEMA 4 COOLING KIT AVAILABLE

SPECIFICATIONS

- 1. **POWER**: Universal AC input (100 240 VAC 50/60 Hz); 2.0 A @ 120 VAC; 1.0 A @ 240 VAC.
- DISPLAY: 128 x 64 resolution using 0.2" (5.08 mm) diameter red LED pixels. Overall display measures 38.5" (977.9 mm) x 19" (482.6 mm).
- 3. COMMUNICATIONS: Connects to the host G3 thru RS485 port via either RJ45 or a removable 2 position terminal block; 115,200 baud, 8 bit, 1 stop bit, no parity. The RS-232 ports (either the COMMs or PGM ports) may also be used with the appropriate RS-232 to RS-485 converter. Note that the RS-232 and RS-485 ports provided by the Expansion card are not currently supported. Isolation for communications: 2500 Vrms
- Isolation for common: 1000 VDC for 60 seconds.
- 4. ENVIRONMENTAL CONDITIONS: Operating Temperature : 0 - 50°C Storage Temperature : -10 - 60°C Operating and Storage Humidity: 80% maximum relative humidity (noncondensing) from 0 to 50°C Altitude: Up to 2000 meters
- CERTIFICATIONS AND COMPLIANCES: See data sheet on web site for detailed information.
- 6. WEIGHT: 117 lbs. (53.07 Kg)

ORDERING INFORMATION			
MODEL NO.	DESCRIPTION	PART NUMBER	
BED	Big Flexible Display	G3BFDM00	
	Big Flexible Display NEMA 4 Kit	G3BFDNEM	
CBL	10-foot RS485 cable for communications between G3 and G3BFD	CBLRLC04	

BFD with NEMA 4 Option (G3BFDNEM)



Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com

PROCESS CONTROLLERS

MODEL DLC - DUAL LOOP CONTROLLERS



GENERAL DESCRIPTION

The Model DLC, Dual Loop Controller, is a full featured, DIN rail mounted, dual input PID controller. The DLC is designed as a modular building block for multi-zone process control applications. The controller has two independent "A" & "B" input channels. Each channel's input can be configured to accept a wide range of thermocouple, RTD, 0-10 V, 0/4-20 mA, or resistive signals. Each channel can also be configured to extract the square root of the input in both process voltage or process current modes for applications such as flow measurement using a differential flow sensor.

Channel B can be assigned as a Remote Setpoint for Channel A. The two timeproportioning or DC Analog outputs can be programmed to control two independent processes. The two alarms per channel can be configured for various alarm modes, or provide a secondary control output for heat/cool applications.

The control and alarm outputs are N channel open drain MOSFETs capable of switching up to 1 Amp DC. For applications requiring larger loads or A/C loads, several DIN rail mount relays are available.

The controller operates in the PID Control Mode for both heating and cooling, with on-demand auto-tune, that establishes the tuning constants. The PID tuning constants may be fine-tuned through the serial interface. The controller employs a unique overshoot suppression feature, which allows the quickest response without excessive overshoot. The controller can be transferred to operate in the Manual Mode, providing the operator with direct control of the output, or the On/Off Control Mode with adjustable hysteresis.

The controller's high density packaging and DIN rail mounting saves time and panel space. The controller snaps easily onto standard top hat (T) profile DIN rails.

ALARMS

64

The DLC's two solid-state alarms can be configured independently for absolute high or low acting with balanced or unbalanced hysteresis. They can also be configured for deviation and band alarm. In these modes, the alarm trigger values track the setpoint value. Adjustable alarm trip delays can be used for delaying output response. The alarms can be programmed for Automatic or Latching operation. Latched alarms must be reset with a serial command. A standby feature suppresses the alarm during power-up until the temperature stabilizes outside the alarm region. The outputs can also be manually controlled with Modbus register or coil commands.

SETPOINT CONTROLLER OPTION

The Setpoint Controller option is suitable for time vs. temperature/process control applications. The controller allows a profile of up to 20 ramp/soak segments. Profile conformity is assured by using the Error Band Mode and Error Band parameter. The Profile Cycle Count allows the profile to run continuously or a fixed number of cycles. Power-on options automatically stop, abort, start, resume, or pause a running profile.

- □ MODULAR BUILDING BLOCK FOR MULTI-ZONE PROCESS CONTROL
- TWO INDEPENDENT PID CONTROL LOOPS
- PID CONTROL WITH REDUCED OVERSHOOT
- □ UNIVERSAL INPUTS ACCEPT TC, RTD, 0-10 V and 0/4-20 mA SIGNALS
- □ TWO DC ANALOG OUTPUTS (OPTIONAL)
- □ WINDOWS[®] CONFIGURATION SOFTWARE
- □ RS485 MODBUS™ PROTOCOL
- □ CHANNEL B CAN BE ASSIGNED AS A SECOND ANALOG INPUT TO CHANNEL A FOR REMOTE SETPOINT OPERATION
- SETPOINT CONTROLLER OPTION FOR TIME VS. TEMP./PROCESS (RAMP/SOAK) AND SPECIAL BATCH/RECIPE APPLICATIONS
- □ SQUARE ROOT EXTRACTION FOR FLOW SENSOR APPLICATIONS

COMMUNICATIONS

The RS-485 serial communications allows the DLC to be multi-dropped, with Baud rates up to 38400. The CBPRO007 programming cable converts the RS-232 port of a PC to RS-485 and is terminated with an RJ11 connector. The bi-directional capability of the CBPRO007 allows it to be used as a permanent interface cable as well as a programming cable.

ANALOG OUTPUT OPTION

The optional dual DC Analog Output (10 V or 20 mA) can be independently configured and scaled for control or re-transmission purposes. These outputs can be assigned to separate channels, or both outputs can be assigned to the same channel. Programmable output update time reduces valve or actuator activity.

DIMENSIONS IN INCHES (MM)

1.97

(50)

4.06 (103)

SPECIFICATIONS

1. POWER:

18 to 36 VDC, 13 W

- (4 W if +24 VDC Output excitation is unused) 24 VAC, ±10% 50/60 Hz, 15 VA (7 VA if +24 VDC Output excitation is unused) Must use a Class 2 or SELV rated power supply.
- 2. **+24 VDC OUTPUT POWER**: 24 VDC, +15%, -5%, 200 mA max
- 3. MEMORY: Non-volatile memory retains all programmable parameters.
- 4. INPUT:
 - Sample Time: 100 msec (9.5 Hz)

Failed Sensor Response: Open or shorted (RTD only) sensor coils indication, error code returned in Process Value
Common Mode Rejection: >110 dB, 50/60 Hz
Normal Mode Rejection: >40 dB, 50/60 Hz
Temperature Coefficient: 0.013%/°C
Overvoltage: 50 VDC max
Step Response Time: 300 msec typ., 400 msec max

5. THERMOCOUPLE INPUTS:

Types: T, E, J, K, R, S, B, N, C, linear mV

Input Impedance: 20 MΩ

Lead Resistance Effect: 0.25 $\mu V/\Omega$

Cold Junction Compensation: Less than $\pm 1^{\circ}$ C typical ($\pm 1.5^{\circ}$ C max) over 0 to 50°C ambient temperature range or less than $\pm 1.5^{\circ}$ C typical (2°C max) over -20 to 65°C maximum ambient temperature range.

Resolution: 1° or 0.1° for all types except linear mV (0.1 or 0.01 mV)

TYPE	MEASUREMENT	WIRE COLOR		
1175	RANGE	ANSI	BS 1843	
Т	-200 to +400°C -328 to +752°F	(+) Blue (-) Red	(+) White (-) Blue	
E	-200 to +750°C -328 to +1382°F	(+) Violet (-) Red	(+) Brown (-) Blue	
J	-200 to +760°C -328 to +1400°F	(+) White (-) Red	(+) Yellow (-) Blue	
к	-200 to +1250°C -328 to +2282°F	(+) Yellow (-) Red	(+) Brown (-) Blue	
R	0 to +1768°C +32 to +3214°F	No Standard	(+) White (-) Blue	
S	0 to +1768°C +32 to +3214°F	No Standard	(+) White (-) Blue	
В	+149 to +1820°C +300 to +3308°F	No Standard	No Standard	
N	-200 to +1300°C -328 to +2372°F	(+) Orange (-) Red	(+) Orange (-) Blue	
C W5/W6	0 to +2315°C +32 to +4199°F	No Standard	No Standard	
mV	-5 mV to 56 mV	N/A	N/A	

6. RTD INPUTS:

Type: 2 or 3 wire

Excitation: 150 µA

Lead Resistance: 15Ω max

Resolution: 1 or 0.1° for all types

TYPE	INPUT TYPE	RANGE
385	100 Ω platinum, Alpha = .00385	-200 to +600°C -328 to +1100°F
392	100 Ω platinum, Alpha = .003919	-200 to +600°C -328 to +1100°F
672	120 Ω nickel, Alpha = .00672	-80 to +215°C -112 to +419°F
ohms	Linear Resistance	0 to 320 Ω

7. PROCESS INPUT:

INPUT RANGE	ACCURACY * (18 to 28°C) (10 to 75% RH)	IMPEDANCE	MAX CONTINUOUS OVERLOAD	RESOLUTION
10 VDC (-1 to 11)	0.10% of reading +0.02 V	1 MΩ	50 V	1 mV
20 mA DC (-2 to 22)	0.10% of reading +0.03 mA	10 Ω	100 mA	1 µA

* Accuracies are expressed as ± percentages after 20 minute warm-up.

8. ISOLATION LEVEL: 500 V @ 50/60 Hz, for one minute (50 V working	<u>;</u>)
between the following groups:	
Ch A Input Ch B Input	
Control and Alarm Outputs RS485/Analog Output ¹	
Power Supply	
Note: RS485 and Analog Outputs are not internally isolated. Their common	IS
must not be connected together externally for proper unit function (i.e	.,
earth ground).	
9. SERIAL COMMUNICATIONS:	
Type: RS485; RTU and ASCII MODBUS modes	
Baud: 300, 600, 1200, 2400, 4800, 9600, 19200, and 38400	
Format: 7/8 bits, odd, even, and no parity	
Transmit Delay: Programmable: See Transmit Delay explanation.	
Transmit Enable (TXEN): (primarily for 20 mA loop converter) ope	n
collector $V_{OH} = 10$ VDC max, $V_{OI} = 0.5$ VDC @ 5 mA max current lim	it
10 A/D CONVERTER: 16 bit resolution	
11 CONTROL AND ALARM OUTPUTS	
Type: Non-isolated switched DC N Channel open drain MOSFET	
Current Rating: 1 A max	
$V_{\rm PCOV}$: 0.3 V @ 1.4	
Vno vny 30 VDC	
Offstate Leakage Current: 0.5 mA max	
12 MAIN CONTROL :	
Control: DID or On/Off	
Output: Time proportioning or DC Analog	
Cycle Time: Programmable	
Auto Tuno: When selected sets proportional hand integral time derivativ	
time values and output dampening time	C
Probe Break Action: Programmable	
12 ALADM: 1 or 2 alarma	
15. ALARIVI. 1 01 2 diditits Modes:	
Manual (through register/coil)	
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	
Sensor Fail Response: Unscale	
14 COOLINC: Software selectable (overrides Alarm 2)	
Control: PID or On/Off	
Output: Time proportioning or DC Analog	
Cycle Time: Programmable	
Proportional Cain Adjust: Programmable	
Heat/Cool Deadhand Overlan: Programmable	
15 ANALOG DC OUTPUTS: (ontional)	
Control or retransmission programmable undate rate from 0.1 sec. of	hr.
1 to 250 sec	

Step Response Time: 100 msec

OUTPUT RANGE**	ACCURACY * (18 to 28°C) (10 to 75% RH)	COMPLIANCE	RESOLUTION (TYPICAL)
0 to 10 V	0.10% of FS + 1/2 LSD	10 K Ω min	1/18000
0 to 20 mA	0.10% of FS + 1/2 LSD	500 Ω max	1/18000
4 to 20 mA	0.10% of FS + 1/2 LSD	500 Ω max	1/14400

16. ENVIRONMENTAL CONDITIONS:

Operating Temperature Range: -20 to +65°C

Storage Temperature Range: -40 to +85°C

Operating and Storage Humidity: 85% max relative humidity, noncondensing, from -20 to +65°C

Vibration according to IEC 68-2-6: Operational 5 to 150 Hz, in X, Y, Z direction, duration: 1.5 hours, 2 g's.

Shock according to IEC 68-2-27: Operational 30 g's, 11 msec in 3 directions. Altitude: Up to 2000 meters

 CERTIFICATIONS AND COMPLIANCES: See data sheet on web site for detailed information.

18. WEIGHT: 10.5 oz. (298 g.)

ORDERING INFORMATION			
MODEL NO.	DESCRIPTION	PART NUMBERS	
	Dual Loop Controller	DLC00001	
	Dual Loop Controller w/ 2 Analog Outputs	DLC01001	
	Dual Setpoint Controller w/ 2 Analog Outputs	DLC11001	
	Dual Loop Controller w/ DH-485	DLCD0001	
DLCD	Dual Loop Cont. w/ 2 Analog Outputs w/ DH-485	DLCD1001	
	Dual Loop Cont., w/ 5 Pin Male M12 connector	DLCN0001	
	Dual Loop Cont., w/ COMBICON screw flange conn.	DLCN0011	
	Dual Loop Cont., w/ 2 analog outputs, 5 Pin Male M12 connector	DLCN1001	
DECIN	Dual Loop Cont., w/ 2 analog outputs, COMBICON screw flange connector	DLCN1011	
	Dual Loop Setpoint Cont., w/ 2 analog outputs, 5 Pin Male M12 connector	DLCN1101	
	Dual Loop Setpoint Cont., w/ 2 analog outputs, COMBICON screw flange connector	DLCN1111	
SF	PC Configuration Software for Windows	SFDLC	
CBPRO	Programming Interface Cable	CBPRO007	
CBJ	Cable RJ11 to RJ11 (6 inch jumper)	CBJ11BD5	
DRR	RJ11 to Terminal Adapter	DRRJ11T6	
P89	Paradigm to RJ11 Cable	P893805Z	
See our RSRLYB, RLY6, and RLY7 literature for details on DIN rail mountable relays.			

ETHERNET SWITCH

MODEL SWITCH08 - 8 PORT



GENERAL DESCRIPTION

The SWITCH08 is an eight-port Ethernet switch designed to simplify network expansion, while improving the network's efficiency. Eight 10/100 Base-T ports, with auto negotiation of half or full duplex connections requires no setup, reducing installation time. The SWITCH08 also offers an auto-crossing feature, which allows connections to be made with any combination of standard or crossover Ethernet cables.

The SWITCH08 may be powered with two DC sources, allowing for redundancy in critical applications. A relay output provides a warning signal if the backup supply fails, ensuring continued operation when needed.

DIMENSIONS IN INCHES (MM)



- UNMANAGED SWITCH REQUIRES NO CONFIGURATION
- SUPPORTS 10/100 MDPS NETWORK
- AUTO HALF/FULL DUPLEX NEGOTIATION
- AUTO-CROSSING DETECTION SUPPORTS STANDARD AND CROSSOVER ETHERNET CABLES

CE



UL Recognized Component, File # E244362

SPECIFICATIONS

- 1. **POWER**: 24 VDC ±20 %, 4.8 W
- 2. RELAY OUTPUT: Single N.C. 24 VDC @ 100 mA max.
- 3. LEDs:
 - V1+ and V2+ On when proper voltage is present at respective terminal Link/Act On indicates link established; blinking indicates network activity on the port.
 - 100 On indicates 100 Mbps connection established; off indicates 10 Mbps connection.
- 4. ENVIRONMENTAL CONDITIONS: Operating Temperature Range: 0 to +55°C Storage Temperature Range: -20 to +70°C Operating and Storage Humidity: 30-95%, non-condensing Altitude: Up to 1500 meters
- 8. CERTIFICATIONS AND COMPLIANCES:
- 9. WEIGHT: 0.61 lbs. (0.27 Kg)

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
SWITCH	8-Port Ethernet Switch	SWITCH08