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Bulletin No. XCPB-X
Drawing No. LP0657
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MODEL XCPB - PROFIBUS OPTION CARD FOR DATA STATION PLUS AND MODULAR CONTROLLER

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

GENERAL DESCRIPTION

Both the Modular Controller Master (enhanced models) and Data Station Plus contain a proprietary expansion port which provides a high speed, parallel architecture that extends the functionality and flexibility of the platform. This approach allows these products 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 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.

SAFETY SUMMARY

All safety related regulations, local codes and instructions that appear in the literature or on equipment must be observed to ensure personal safety and to prevent damage to either the instrument or equipment connected to it. If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Do not use the controller to directly command motors, valves, or other actuators not equipped with safeguards. To do so can be potentially harmful to persons or equipment in the event of a fault to the controller.

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

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
XCPB	PROFIBUS option card for Modular Controller or Data Station Plus	XCPBDP00
SFCRM2	Crimson 2.0 with G3/Data Station Manual[1]	SFCRM200
SFCRM2	Crimson 2.0 with Modular Controller Manual[1]	SFCRM2MC

[1] Use these part numbers to purchase Crimson 2.0 on CD with a printed manual, USB cable and RS-232 cable. Otherwise, download free of charge from www.redlion.net.

CONTENTS OF PACKAGE

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- This hardware bulletin

GSD FILE

The GSD file and associated bitmap are part of the Crimson 2.0 installation. After installing Crimson 2.0, both files can be found on your PC's hard drive at C:\Program Files\Red Lion Controls\Crimson 2.0\Firmware, or on our website at http://www.redlion.net

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 main unit manual or "Agency Approvals" section of Red Lion's website for agency certifications.
   ELECTROMAGNETIC COMPATIBILITY
   Emissions and Immunity to EN 61326: Electrical Equipment for Measurement, Control and Laboratory use.
   Reference Modular Controller Master or Data Station Plus unit for EMC specifications
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.
5. **CONSTRUCTION:** Installation Category I, Pollution Degree 2.
6. **INSTALLATION REQUIREMENTS:** See "Installing the XCPB Option card" for more details.

INSTALLING THE XCPB OPTION CARD

Caution: The expansion and main circuit boards contain static sensitive components. Before handling the cards, discharge static charges from your body by touching a grounded bare metal object. Ideally, handle the cards at a static controlled clean workstation. Also, handle the cards by the edges only. Dirt, oil, or other contaminants that may contact the cards can adversely affect circuit operation.

Warning: Risk of Danger: Be sure to remove all power before removing the expansion port cover

1. Remove power from the unit
2. Insert a flat-bladed screwdriver into the slot at the top of the expansion port cover. Gently apply pressure on the screwdriver in an upward direction until the expansion port cover disengages from the unit as shown in Figure 1.
3. Verify that the option card knobs are in the "unlocked" position as shown in Figure 2.
4. Carefully insert the option card into the expansion port opening while aligning the card-edge connector on the option card with the main board's header, as shown in Figure 3. Once aligned, gently press on the front of the card until it is flush with the front of the case.
5. Turn the option card knobs to the locked position as shown in Figure 4.

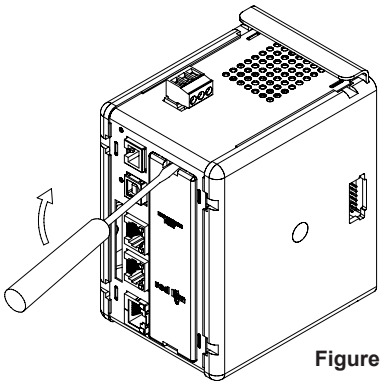

Figure 1

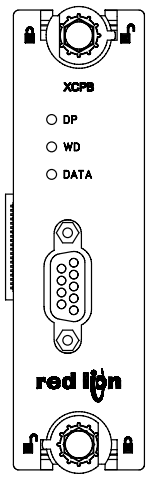

Figure 2

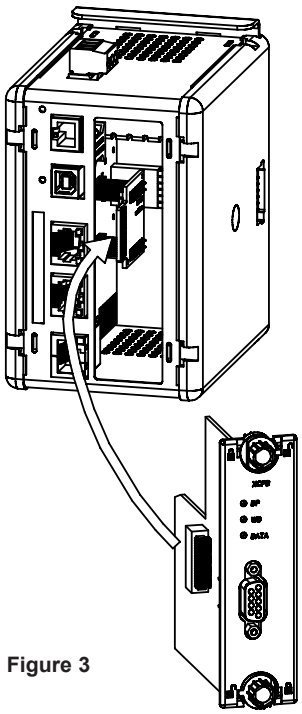

Figure 3

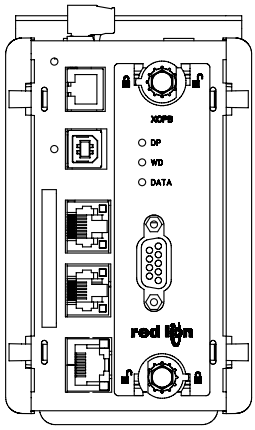

Figure 4

POWER SUPPLY REQUIREMENTS
NEW AND EXISTING INSTALLATIONS

The XCPB option card draws all of its power from the main board of the Modular Controller master or Data Station Plus. The specifications of the Modular Controller master or Data Station Plus account for the power needs of an option card.

COMMUNICATING WITH THE XCPB OPTION CARD
CONFIGURING THE XCPB OPTION CARD

To enable the option card, click on the left hand pane of the Communications window in Crimson 2.0 and highlight the icon that represents the master or Data Station Plus. In the right pane, click the Option Card Selection's Edit button to show the selection dialog, and choose the PROFIBUS option card from the list. The PROFIBUS option card will then appear in the left hand pane, installed in the tree of available ports. Additional information can be found in your Modular Controller or Data Station Plus hardware bulletin and the Crimson 2.0 user manual.

CONFIGURING THE DRIVER

To select a driver, click on the left hand pane of the Communications window and highlight the PROFIBUS Interface icon. In the right hand pane, click the Driver Selection Edit button to show the Driver Selection dialog and select the PROFIBUS DP driver from the list.

The Station Address of the PROFIBUS node is the only property that needs to be configured. This should be a unique address on the PROFIBUS Network in the range 0..126.

CONFIGURING THE DATA TAGS

A PROFIBUS master exchanges data with slaves as separate input and output blocks. Data transfer direction is described with respect to the PROFIBUS Network such that input data is transferred to the network, or written by the Modular Controller/Data Station Plus and output data is transferred from the network or read by the Modular Controller/Data Station Plus. This is important when it comes to configuring the data access for each tag mapped to a PROFIBUS data block.

MAPPING TAGS TO PROFIBUS

PROFIBUS data blocks have no concept or knowledge of data type or structure – they are described by a size in bytes. Crimson's tag-based approach to data allows for data of mixed type, bytes, 16-bit words, 32-bit words and 32-bit floating point numbers to be mapped into a single data block. To map a data tag to a PROFIBUS data block, click in the left hand pane of the Data Tags window, highlight the required Data Tag icon. In the right hand pane click the Data Mapping button and select the PROFIBUS device to show the Select Address for PROFIBUS DP dialog.

The Block Type defines whether the tag will be read from (Output Block) or written to (Input Block) the PROFIBUS network

The Data Offset is the byte address of the Data Tag within the Data Block

The Data Type is the actual size in bytes of the data that will be mapped into the Data Block.

CONFIGURING DATA ACCESS IN CRIMSON 2.0

As described, Data Tags are mapped to either an Input Block and are **Write only**, or an Output Block and are **Read Only**. The Access must be selected to reflect this.

SOFTWARE/UNIT OPERATION
LEDS

The card has 3 LEDs visible on the front of the option card that provide status information, described in Table 1.

DATA (Red)	WD (Green)	DP (Red)	DESCRIPTION
OFF	SLOW ALTERNATING FLASH		Baud Search
OFF	OFF	ON	Baud Control
OFF	SLOW FLASH	FAST FLASH	Waiting for Parameter Telegram
OFF	FAST FLASH	SLOW FLASH	Waiting for Configuration Telegram
ON	OFF	OFF	Data Exchange

CRIMSON SOFTWARE

Crimson 2.0 software is available as a free download from www.redlion.net or it can be purchased on a CD, see "Ordering Information" for part number. The latest version of the software is always available from the web site, and updating your copy is free.

TROUBLESHOOTING YOUR XCPB OPTION CARD

If for any reason you have trouble operating, connecting, or simply have questions concerning your new XCPB option card, contact Red Lion's technical support. For contact information, refer to the back page of this bulletin for phone and fax numbers.

EMAIL: techsupport@redlion.net
Web Site: http://www.redlion.net

LIMITED WARRANTY

The Company warrants the products it manufactures against defects in materials and workmanship for a period limited to two years from the date of shipment, provided the products have been stored, handled, installed, and used under proper conditions. The Company's liability under this limited warranty shall extend only to the repair or replacement of a defective product, at The Company's option. The Company disclaims all liability for any affirmation, promise or representation with respect to the products.

The customer agrees to hold Red Lion Controls harmless from, defend, and indemnify RLC against damages, claims, and expenses arising out of subsequent sales of RLC products or products containing components manufactured by RLC and based upon personal injuries, deaths, property damage, lost profits, and other matters which Buyer, its employees, or sub-contractors are or may be to any extent liable, including without limitation penalties imposed by the Consumer Product Safety Act (P.L. 92-573) and liability imposed upon any person pursuant to the Magnuson-Moss Warranty Act (P.L. 93-637), as now in effect or as amended hereafter.

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