



# Process Remote I/O (RIO) Communication Interface Module, Firmware Revision 2.3

Catalog Number 1757-ABRIO

## Introduction

This release note provides the following information for the 1757-ABRIO firmware revision 2.3:

### *Firmware and AbRioCfg Software Updates*

- Added the Ignore Under/Over Range option
- Corrected an anomaly with 1771-ASC and earlier revision 1771-ASB modules
- Added support to read/write raw block transfer tables

#### **TIP**

You do not need to install the updated AbRioCfg software provided to apply the firmware update but if you want to use the Ignore Underrange and Overrange Status Bits enhancement as described below you must install the updates to the AbRioCfg software.

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## Corrected Anomalies

The firmware revision 2.3 corrects an anomaly with ASC and earlier revision ASB modules. In Run mode, discrete inputs that were on would intermittently appear to be off in the ABRIO data table.

## Enhancements

The enhancements for the 1757-ABRIO firmware revision 2.3 include the following:

### *Ignore Under/Over Range Option*

- In earlier revisions, if the underrange or overrange status bits were set, the module would always convert the corresponding data value to a floating point not-a-number (NaN). In the ControlLogix environment, it is sometimes not desirable to process NaN.
- Prevents NAN if Under/Over Range bits are set.
- The number from the module is passed through (with normal scale and offset).

### *Access to Read/Write Raw Block Transfer Tables*

- Enables access to BT's up to 64 words, no scaling or offset, just raw word data.
- Enables the 1757-ABRIO to support Remote I/O devices such as a PanelView display.

## Ignore Underrange and Overrange Status Bits

The 1757-ABRIO firmware revision 2.3 and later supports an option to ignore underrange and overrange status bits. If you use this option, your ladder logic application should monitor the underrange and overrange bits returned by the I/O module. This option is global and applies to all the block transfer modules in the configuration. You cannot set it for individual modules.

To ignore underrange and overrange status bits, do the following:

1. In the AbrioCfg (2.3 and later) software, choose the Options menu and check Ignore Under/Over Range.
  2. Save the configuration.
  3. Download the configuration to the 1757-ABRIO module.
- If the option is set and the module performs a block transfer read and an underrange or overrange bit is set for a data value, the module will scale the value and not change the value to NaN.
  - If the option is not set, the module behaves as in previous versions. If an underrange or overrange bit is set for a data value, the module will convert the scaled value to NaN.

**IMPORTANT**

You cannot create a configuration with the option set and use it with an earlier version of AbRioCfg. Revision 2.3 and later of AbRioCfg will still read configurations created with earlier revisions of AbRioCfg.

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## Access to Raw Block Transfer Tables

Previous to firmware revision 2.3 the firmware for the 1757-ABRIO generic module limited mapped data to 32 words of block transfer read and write data. For some modules, access to as many as 64 words of block transfer read and block transfer write data is useful.

With firmware revision 2.3 and later, you can now access up to 64 words in the read/write raw block transfer tables by using MSG instructions. No scaling or offset is needed; use raw word data. This change makes it possible to exchange block transfer read and write data with modules other than I/O modules, such as a PanelView display.

**IMPORTANT**

You cannot map 64 words of block transfer read/write data tags for cyclic updates.

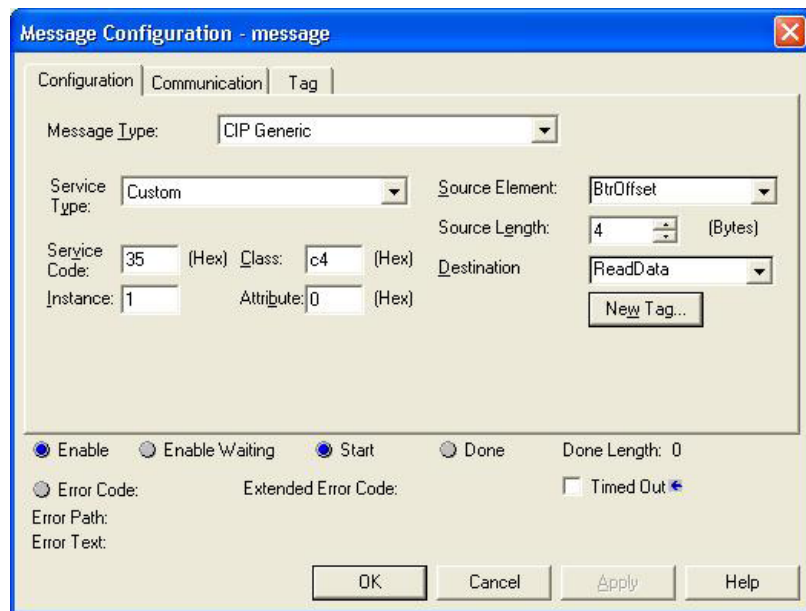
This option provides a way to access all 64 words of raw block transfer read/write data using MSG instructions. You should not map data if you're writing it with a MSG instruction. If you do, data would be written to the ABRIO from two places – from the mapped data and from the MSG instruction, and the data that the module wrote to the remote I/O network would just be from whoever got in last.

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Using unscheduled messages, you can access the raw block transfer data tables for the generic module to read block transfer read data from the module or to write block transfer write data to the module.

### *Read Block Transfer Read Data*

1. In RSLogix5000 software, create a MSG instruction.
2. For the Message Type, choose CIP Generic.
3. For the Service Type, choose Custom.



Use the following parameters:

MSG Parameter	Block Transfer Read
Service code (hex)	35
Class (hex)	C4
Instance	1
Attribute	NA

The Source element is a tag of type INT, size 2 which tells the module the location and size of the block transfer read data you want to obtain. The first word of this array is the offset of the data in the block transfer read data table, calculated as follows:

$$\text{offset} = 1024 * \text{rack} + (\text{I/O group} * 2 + \text{slot}) * 64 + \text{word offset in BTR}$$
 where the rack number is in decimal

#### EXAMPLE

The offset for the start of the block transfer read data for a module at rack 1, I/O group 7, slot 1 is  $\text{offset} = 1024 * 1 + (7 * 2 + 1) * 64 = 1984$

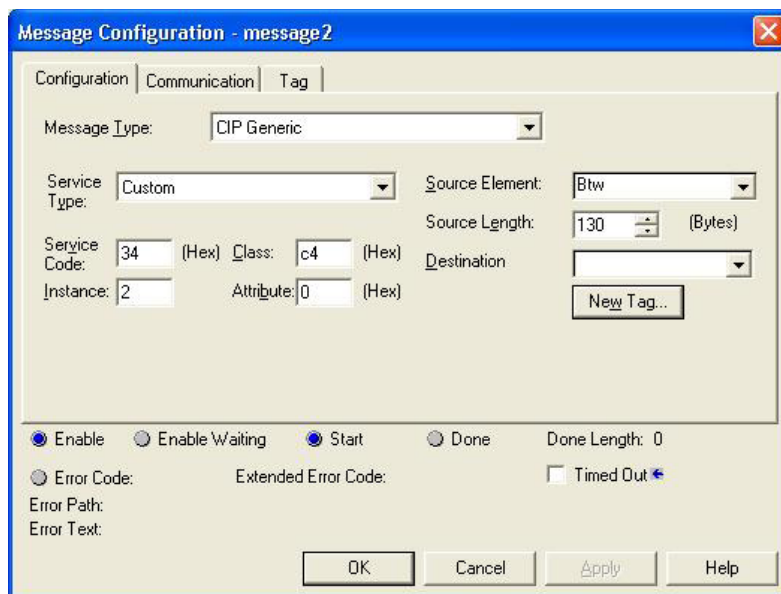
The second word of the two-word array is the number of words of block transfer data to read. The Source Length should be 4 (bytes). The Destination is an array of INTs where the block transfer read data will be stored.

### Write Block Transfer Write Data

1. In RSLogix 5000 software, create a MSG instruction.
2. For the Message Type, select CIP Generic.
3. For the Service Type, select Custom.

Use the following parameters:

MSG Parameter	Block Transfer Read
Service code (hex)	34
Class (hex)	C4
Instance	2
Attribute	NA



The Source element is an array tag of type INT which contains the offset in the block transfer write data table where the data is to be written, and the data itself.

The first word of this array is the offset of the data in the block transfer read data table, calculated as follows:

offset = 1024 \* rack + (I/O group \* 2 + slot) \* 64 + word offset in BTW  
 where the rack number is in decimal.

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**EXAMPLE**

The offset for the start of the block transfer write data for a module at rack 1, I/O group 7, slot 1 is

$$\text{offset} = 1024 * 1 + (7 * 2 + 1) * 64 = 1984$$

The rest of the array contains the data to be written. The Source length is  $2 + 2 * \text{number of words to write}$ .

To write 64 words of BTW data, the source length is  $2 + 2 * 64 = 130$ .

The Destination can be left blank.

If you are using this method to send block transfer write data to the module, make sure that the block transfer data for the module is not mapped to a numeric tag.

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## Previous Revisions

This section provides the following information:

- Describes the new features for Firmware 2.1 and 2.2
- Describes the 1757-ABRIO Remote I/O module
- Lists the RSLinx software requirements
- Provides update procedures for the module's firmware

## Firmware 2.2

This firmware revision is compatible with the new SRAM chip in the 1757-ABRIO module.

## Firmware 2.1

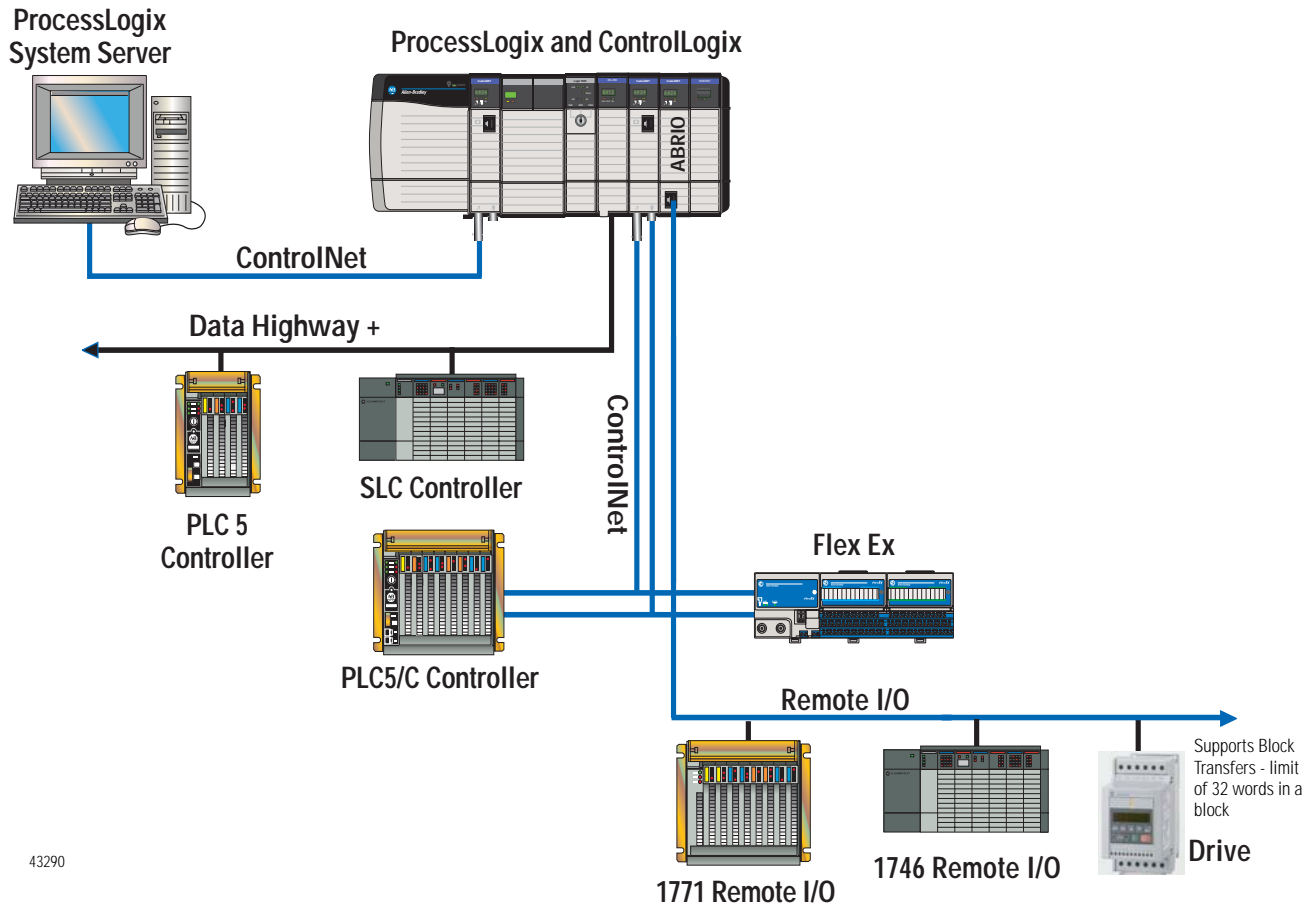
- Support for all block transfer modules through a generic module - you can communicate to any module that does block transferring
- Baud rate changes can be made online - you can change rates on the network to maximize communications and use to troubleshoot
- Racks can be added/deleted online - you can configure their network in sections if desired

Refer to publication 1757-UM007C for more details.

## Process Remote I/O (RIO) Communication Interface Module

The 1757-ABRIO module lets Rockwell Automation controllers communicate with Allen-Bradley Remote I/O. The module acts as an RIO scanner. The module facilitates connection to analog and discrete I/O devices as well as any block transfer modules.

### 1757-ABRIO Example Topology



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As an RIO scanner, the module:

- scans 1771 racks with rack numbers from 1 to 37 octal.
- supports baud rates of 57.6, 115.2 and 230.4 Kbaud.
- supports up to 32 adapters with any mix of full/partial racks.
- automatically manages and performs block transfers, update time can be defined for each block transfer.
- provides full diagnostic counters for alarms and maintenance.
- automatically performs scaling of raw analog data.
- supports scheduled connections to update digital data with a ControlLogix processor.

- implements a watchdog timer in the module's hardware.

If the firmware does not kick the watchdog within the time-out period the watchdog times out and places the module into the configured safe failure state.

- automatically provides fault/fail safe commands to I/O and controller.
- implements a jabber inhibit timer.

If the network transmitter is on longer than 150% of the longest network frame time, the transmitter is forced off and places the module into the configured safe failure state.

- supports firmware updates using NTools or ControlFlash.
- supports direct DDE/OPC data access.
- provides support for Rockwell Automation's 1770 HT1, HT8, HT16 HART interface products.
- provides HART command set for calibration and diagnostics.

## RSLinx Requirements

The AbRioCfg software program requires the RSLinx OEM software or above. You cannot use the RSLinx Lite software. To access the module using OPC or DDE, you must have RSLinx 2.31 software or above.

If you are using ProcessLogix software, refer to the ProcessLogix Installation and Upgrade Guide, publication 1757-IN951 to determine the appropriate RSLinx version for your release.

## Updating the 1757-ABRIO Firmware

The 1757-ABRIO module supports firmware upgrades using the Rockwell ControlFLASH or NTools (ProcessLogix) utilities. ControlLogix Systems use ControlFLASH software to update the module firmware. The firmware revision is displayed on the 1757-ABRIO 4-character display when you apply power to the module.

**For ProcessLogix users, if your 1757-ABRIO module revision is:**

- at or less than 1.2, use ControlFlash to update the module firmware.
- greater than 1.2, use NTools to update the module firmware.

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**IMPORTANT**

We ship the module with the latest firmware installed. You do not need to download firmware to the module when you receive it.

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## Using ControlFlash

Use the following procedure to update the module firmware by using ControlFLASH.

1. Insert the ABRIO CD.
2. Click Start > Run.
3. Enter this path or Browse to: D:(or your CD-ROM drive letter)\ControlFlash\setup.exe
4. Click OK.
5. At the Welcome to ControlFLASH Setup window: click Next.
6. Click Yes to accept the License Agreement.
7. Click Next to accept the default location.
8. At the Setup Complete window:
  - a. Uncheck the Yes, I want to view the README file checkbox.
  - b. Check the Yes, I want to launch ControlFLASH checkbox.
  - c. Click Finish.
9. At the Welcome to ControlFLASH window, click Next.
10. Click 1757-ABRIO and click Next.
11. Expand the RSLinx Tree window to the location of the 1757-ABRIO module you wish to upgrade.
12. Choose the module icon and click OK.
13. Confirm new revision for this update and click Next.
14. At the Summary window, click Finish.
15. Click Yes to confirm the upgrade.
16. Click OK.

If this update is successful, the Update Status window displays the following message in green:

Update Complete. Please verify this new firmware update before using the target device in its intended application.

17. Click OK and then click Cancel at the Welcome to ControlFLASH Setup window.
18. Click Yes to end the configuration session.

### *Using NTools with ProcessLogix Software*

On a ProcessLogix system, if the module firmware is at 1.2 or greater, use the following procedure to update the module firmware using NTools.

1. On the ProcessLogix server, click Start > Run.
2. Enter the text: ntools -c -u.
3. Click OK to launch the Network Tools application.
4. Click OK to acknowledge the warning about monitoring through Control Builder.
5. Click Resume to initiate network scan.
6. Choose the appropriate CNB or ENET icon.
7. In the chassis graphic, choose the module to be updated.
8. Click the firmware button and click Yes to acknowledge the warning.
9. Navigate to the directory: D:(or your CD-ROM drive letter)\abrio\Firmware\_NTools
10. Choose the appropriate .nvs file.
11. Click Open and click Yes to confirm.
12. Wait for the software install.

The Status field in the lower portion of the Network Tools window tracks the progress.

13. Click OK to acknowledge the load completes with no errors.

## Notes:

# Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using its products. At <http://support.rockwellautomation.com>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://support.rockwellautomation.com>.

## Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

## New Product Satisfaction Return

Rockwell tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned:

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

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