

ABB MEASUREMENT & ANALYTICS | 2107011MNAB

XIO Interface application guide

Contents

Co	ontent	s	
Lis	st of t	ables	3
Ac	lditio	nal inforr	mation3
1	XIO	Interface	e application4
	1.1	Overview	v4
	1.2	Principle	of operation4
		1.2.1	TCP/IP based connections (network layer)5
		1.2.2	XIO Interface – XIO Server communication (application layer)5
	1.3	XIO Inte	rface provisioning facilitated by Auto Discovery
	1.4	XIO Inte	rface provisioning in multi-XIO scenarios7
		1.4.1	Fewer than 10 XIOs required7
		1.4.2	More than 10 XIOs required7
	1.5	Supporte	ed XIO applications
	1.6	Applicati	on screens and configuration options9
		1.6.1	Communications (XIO Interface running on the RMC)9
		1.6.2	System (exported XIO app)10
		1.6.3	Remote communication applications (exported XIO apps)10
2	Start	up using	Auto Discovery (recommended)10
	2.1	Add the 2	XIO Interface on Communication Setup tab11
	2.2	Enable S	can15
	2.3	Verify ex	ported applications display in the navigation tree
	2.4	Configure	e the XIO security code17
3	Manı	al XIO I	nterface communication setup18
4	Oper	ation	
	4.1	Monitor o	overall communication with the XIO20
5	Trou	bleshoot	ing20
	5.1	Connecti	on indicator stays red or yellow
	5.2	Missing >	XIO applications from the navigation tree
	5.3	Commun	ication Status for writes displays: Request Not Accepted
	5.4	Commun	nication Status for reads displays: Connection Timeout
6	Refe	rence Inf	formation24
	6.1	XIO Inte	rface application screens
		6.1.1	XIO Interface Communications: Overview25
		6.1.2	XIO Interface Communications: Setup
		6.1.3	XIO Interface Communication: Status and Statistics
		6.1.4	XIO Interface Communications: Packet Log
		6.1.5	XIO Interface Communication: Write Stats
	6.2	Exported	l application screens: System application
		6.2.1	XIO Interface System: Station Setup
		6.2.2	XIO Interface System: Applications
		6.2.3	XIO Interface System: Resources

6.2.4	XIO Interface System: Registry4	13
-------	---------------------------------	----

List of tables

Table 0-1: Related documentation	3
Table 1-1: Totalflow applications supported on the XIO	9
Table 6-1: XIO Interface Overview screen parameter description	28
Table 6-2: XIO Interface Communications – Setup screen parameter description	31
Table 6-3: XIO Interface Communications – Statistics screen parameter description	34
Table 6-4: XIO Interface Communications – Write Stats screen parameter description	38
Table 6-5: Exported XIO System Application - Station Setup screen parameter description	40
Table 6-6: Exported XIO System Application - Applications screen parameter description	41
Table 6-7: Exported XIO System Application - Resources screen parameter description	42

Additional information

Additional free publications are available for download at <u>www.abb.com/upstream</u>.

Table 0-1: Related documentation

Documents	Document number
XIO user manual	2106424
Ethernet-Serial Passthrough application guide	2107010
Network communication guide	2107013
RMC user manual	2105552
XSeries ^{G5} user manual: XFC ^{G5} and XRC ^{G5}	2106026

1 XIO Interface application

This document describes the XIO Interface application used for communication with ABB Totalflow Extendible IOs (XIOs). The application may not be activated from the factory but, like all Totalflow applications, is available to be added as needed. Basic steps for initial application configuration and verification are provided. This document also provides detailed parameter and function description for the application screens in PCCU (version 7.68 or later).



IMPORTANT NOTE: The XIO Interface is an application designed to run on ABB Totalflow host remote controllers or flow computers that connect to XIOs for IO/COM expansion. For implementations that require more than 10 XIOs, the XIO Interface can also reside on another XIO. Unless a specific device is used as an example, this document will use the term "remote controller" or "controller" to refer to the device with the XIO Interface application instantiated.

1.1 Overview

The XIO Interface application manages TCP/IP-based communication with an XIO when devices are connected through a network:

- When communication is between a remote controller and the XIO, it allows the extension of the serial and I/O capacity for the devices through that XIO. An XIO Interface application instance running on the remote controller handles that XIO. An application instance is required for every XIO the controller communicates with.
- When the communication is between XIOs, one of the XIOs has the XIO Interface to communicate with the other XIO and acts as an intermediary device for a remote controller or flow computer. This applies to implementations requiring more XIOs than those supported by an individual controller. The XIO with the XIO Interface gathers the data for other XIOs and transfers it to the controller.

Applications running on the controller can control operation or obtain data from devices attached to the XIO I/Os (on TFIO modules) or XIO serial ports. The XIO Interface makes it possible for the controller to manage communication with these devices as if they were directly connected to its own serial ports or TFIO bus. When communication with the XIO is successfully established and maintained, the controller has full visibility of the exported applications running on the XIO.



IMPORTANT NOTE: The XIO Interface application runs only on ABB Totalflow products. It does not apply to third-party controllers. For connection of the XIO with a third-party controller, configure the XIO for Ethernet-Serial Passthrough or Modbus communication. See the link to the Ethernet-Serial Passthrough Application Guide in <u>Additional information</u> for details.

1.2 Principle of operation

The XIO Interface application supports communication between an ABB Totalflow remote controller and the XIO for automatic compatibility and to ensure a fully integrated solution. It provides several layers of functionality. At the network layer, it supports standard TCP/IP connections. At the higher layers, it manages the flow of packets containing requests from the controller and responses from the XIO.

The application monitors connection status health and statistics for read and write requests. These requests are issued by the controller to obtain data or control devices connected to the XIO. The following sections provide additional details for the major aspects of the XIO Interface application.



IMPORTANT NOTE: The following sections show the RMC as an example device communicating with a single XIO. The principle of operation is the same for XIO Interface application communication with multiple XIOs or just between a pair of XIOs. Note that communication with every XIO requires its own XIO Interface instance. The decision to instantiate the XIO interface application on a particular device (RMC, XIO, XSeries^{G5}) depends on the site requirements.

1.2.1 TCP/IP based connections (network layer)

The XIO Interface supports standard link and network layer protocols to establish communication with the XIO. The connections are TCP/IP based. Both the controller and XIO must have valid IP configurations and be connected to the same network for connection to take place. Using TCP as the protocol allows multiple logical connections over the same physical connection, typically Ethernet.

1.2.2 XIO Interface – XIO Server communication (application layer)

The main aspects of the controller-XIO communication are described in the following section. They provide background to understand the parameters displayed on the screens for monitoring and configuring. The sections below provide a high-level description only. Details on protocol or function implementation are beyond the scope of this document. Call technical support if you need additional information.

1.2.2.1 Client-server based

The figure below depicts a high-level view of the main components of a controller-XIO connection. The communication between the two devices is client-server based. The XIO Interface on the controller (the RMC shown on the left), performs the client role and connects with two server applications on the XIO (shown on the right). The servers on the XIO are applications instantiated by default and specifically designed to receive and grant connection requests from the XIO Interface.



IMPORTANT NOTE: The connections shown in the diagram are logical connections only. The physical connection is not shown. The controller and XIO can be directly connected or connected through a field network switch.

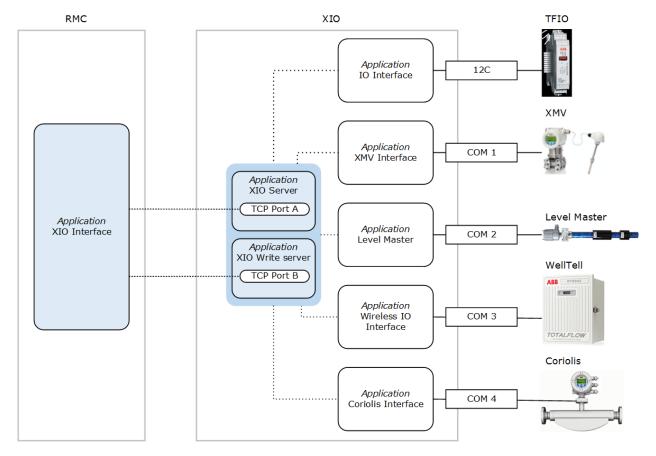


Figure 1-1: XIO Interface implementation (one XIO Interface instance for one XIO)

1.2.2.2 Client and Server functions

Measurement and control applications on the controller rely on the XIO Interface application to make data from remote devices available or to relay control messages to operate devices remotely. The I/O and communication applications on the XIO handle the communication to the attached devices locally. XIO servers process communication from the controller and pass it on to the respective I/O or communication applications.

The XIO Interface makes each of the remote I/O or communication applications visible from the controller. PCCU displays these applications as part of the navigation tree as if they were local to the controller. The XIO Interface displays only those applications that are exported (application export is user-configurable). The XIO supports the export of up to 16 applications, including its System application.



IMPORTANT NOTE: Refresh the remote controller's navigation tree to make sure the exported XIO applications display.

1.2.2.3 Server TCP ports on the XIO

The XIO reserves specific TCP ports on which the servers listen for communication requests from the XIO Interface. Two default values are provided from the factory.

The XIO Interface directs requests for connection to either port, based on the type of request. It establishes two connections: one with the XIO Server (using the read TCP port) and the other with the XIO Write Server (using the write TCP port).

All XIO devices have the same default TCP ports assigned to the servers. You can leave the defaults or use other ports not in use by other applications. Using default ports does not cause any conflict as connection requests specify both the unique IP address of the XIO and the TCP port. This unique IP/TCP combination makes the connection request unique on the network.

1.2.2.4 Reads and Writes

Once the TCP connections are established, the controller can begin to perform reads or writes to obtain data or control the applications and devices on the XIO. Remote controller applications using the communication applications on the XIO perform their normal operation as programmed.

The reads flow on the connection established with the XIO (read) server. The writes flow on the connection established with the XIO Write server. The separation of the flow of these two types of requests allows the XIO Interface to monitor, track statistics, and report events for each type separately. The XIO Interface also monitors communication status for reads and writes separately.

Reads are requests sent by the controller to obtain data from the remote applications/devices. For example, the controller can request new measurement values captured by a multivariable managed by the XMV Interface on the XIO. Reads take place every 1 second.

Writes are requests sent by the controller to configure or control remote application or device functions. For example, the controller can send a write request to change the state of an output channel on an XIO TFIO module connected to a valve actuator. Writes take place depending on the driving applications and their programming. Write requests are issued as needed.

The read and write connections remain established while both devices remain successfully connected to the network, powered on, and there are no connection parameters changes. Once the controller and XIO are configured and successfully connected, the XIO Interface does not need to establish a new connection each time the controller reads from or writes to the XIO. Keeping connections on reduces processing overhead, making communication more efficient.

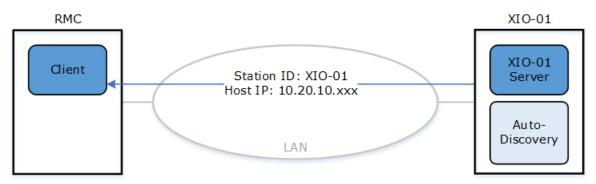
1.3 XIO Interface provisioning facilitated by Auto Discovery

The Auto Discovery feature is a service running on ABB Totalflow devices that allows them to detect, advertise services, and respond to each other to facilitate the provisioning of the XIO Interface. <u>Figure 1-2</u> below shows a simplified diagram of the role Auto Discovery plays on the XIO. In the example, an RMC and XIO are connected to a common network. The XIO advertises its services (XIO server), device ID, and other information such as its IP address on that network. The RMC detects this information and "learns" or processes the presence of the XIO. When configuring communications with the XIO, the XIO services options display on the RMC, making configuration easier and less error prone. Once the XIO and its service are discovered, the XIO Interface application can then target this detected XIO for connection request.



IMPORTANT NOTE: Note that Auto Discovery is supported for XSeries^{G5}, RMC and XIO. For simplicity here, it is only shown in the XIO_01. The RMC, or another Totalflow device on the same network, also has the capability to advertise its information when its Auto Discovery service is enabled. The XIO advertises those services that are active and enabled.

Figure 1-2: Auto Discovery role in provisioning the XIO Interface application



1.4 XIO Interface provisioning in multi-XIO scenarios

Each XIO Interface instance on the controller handles communication with a single XIO. The controller requires additional XIO Interface instances to connect to additional XIOs.

When configuring a controller to communicate with multiple XIOs, it is important to configure a unique name for each XIO Interface to be able to identify the XIO that the instance is associated with. You can change the application's default description to a name that provides easy identification of the XIO it connects with.



IMPORTANT NOTE: Changing the XIO ID or other configuration parameters on the XIO does not automatically update those same parameters on the XIO Interface. Changing the XIO ID, IP address, or reserved TCP ports will terminate existing connections with the XIO. To restore connection with a reconfigured XIO, manually update the connection parameters on the XIO Interface.

1.4.1 Fewer than 10 XIOs required

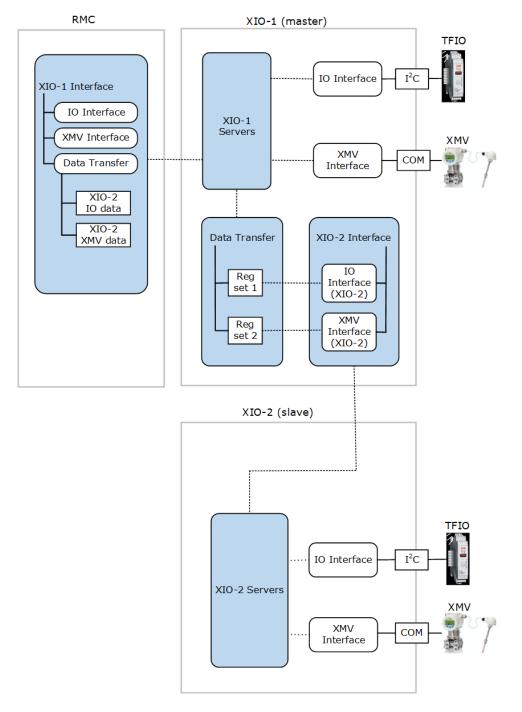
The number of XIOs required in the field depends on the specific needs of a site. ABB Totalflow controllers support a maximum of 10 XIOs for optimal performance. To support these XIOs, instantiate an XIO Interface for each. The number of applications managed by each XIO Interface depends on the maximum number of applications the XIO can export and the type of application. See section <u>1.5 Supported XIO applications</u>. For additional information on performance recommendations or large site planning, call ABB technical support.

1.4.2 More than 10 XIOs required

When the site requires more than 10 XIOs, ABB offers the Data Transfer application, which works in conjunction with the XIO Interface. The Data Transfer application allows the gathering of data from the excess XIOs and the transfer of that data to the top-level controller. This is possible by configuring the XIOs directly managed by the controller to act as conduits for the excess XIOs. The first XIOs are tier-1 XIOs (referred to as masters). The second are tier-2 XIOs (referred to as slaves). The master XIOs use the XIO Interface to communicate with the slave XIOs.

The data from the applications exported from the slave XIO is made available to the top-level controller. On the master XIO, users can manually define the specific registers and data to sync to the controller. On the top controller, users can program operations and indirect registers to sync data to any XIO in the network.

Figure 1-3 shows how to accomplish communications between XIOs in the tiered approach. The master (XIO-1) obtains the slave (XIO-2) data through the XIO Interface application (running on XIO-1). The slave (XIO-2) data is mapped to register sets on the master (XIO-1) Data Transfer application. The XIO-2 application data is available to the RMC through the exported XIO-1 Data Transfer application.





i

IMPORTANT NOTE: For configuration procedures and information on the Data Transfer application, click **Help** from PCCU to display the topic.

1.5 Supported XIO applications

The XIO supports a total of 254 applications. Not all these applications are exportable. The XIO can export up to 16 applications including the System application. Therefore, an XIO Interface on a remote controller can handle and display up to 16 applications. <u>Table 1-1</u> shows the applications supported by the XIO in detail.

Application	cation Exportable		Exportable	
Alarm System	No	Operations	No	
AGA3 Measurement	No	PID Controller	No	
Coriolis Interface	Multiple instances	Plunger Control	No	
Data Transfer	Single instance	Shutdown System	No	
Ethernet-Serial Passthrough	No	System	Always exported automatically. Single instance	
Gas Lift	No	Therms Master	Multiple instances	
Generic Communication App	No	Trend System	No	
Holding Registers	No	Wireless Remote IO	Multiple instances	
IO System	Single instance	XIO Server	Always exported automatically. Single instance	
LevelMaster	Multiple instances	XIO Write Server	No	
Liquid Coriolis Interface	Multiple instances	XIO Interface	Multiple instances	
		XMV Interface	Multiple instances	

For exportable applications, the XIO can export:

- Only one instance of the System application (always automatically exported)
- Only one instance of the I/O Interface application
- Only one instance of the Data Transfer application
- Multiple instances of the same type of serial communication application (XMV Interface, Wireless I/O Interface, Coriolis Interface, etc.)

For non-exportable applications:

- They can only run locally on the XIO.
- Remote controllers or flow computers cannot manage or use them.

For implementations requiring a large number of applications or XIOs, plan carefully. If you require more applications than those supported, consider using the XIO in Ethernet-Serial Passthrough mode (see link to the Ethernet-Serial Passthrough Application guide in <u>Additional information</u>) or use the Data Transfer Application. Note that with the Data Transfer app, it is possible for a top-level controller to interact with non-exported apps using indirect registers. This method is beyond the scope of this document. For an overview of this type of implementation, see section <u>1.4 XIO Interface provisioning in multi-XIO scenarios</u>). For details, see the Data Transfer application online help files. For complex scenarios call ABB technical support.

1.6 Application screens and configuration options

The XIO Interface application provides several options for communication setup and monitoring of the connection between the controller and the XIO. It also supports the management of applications running on the XIO by making all the remote application screens available on the remote controller. Most of these applications are the communication interfaces used to handle the different types of external devices that can connect to the XIO: multivariable measurement transmitters, Coriolis flow meters, liquid level measurement devices, etc.

The following is a list of the XIO Interface screens and what you can do in each of them. For details, see the procedures sections or the screen-specific help topic.

1.6.1 Communications (XIO Interface running on the RMC)

- Overview: Obtain quick visual view of RMC-XIO connection status. Monitor and reset main statistics related to read and write requests. See section <u>6.1.1 XIO Interface Communications:</u> <u>Overview</u>.
- Setup: Verify or configure the connection and authentication parameters required to establish and maintain RMC communication with the XIO. Obtain additional details on poll and connection status. See section <u>6.1.2 XIO Interface Communications: Setup</u>.

- Status and Statistics: Monitor several statistics, such as read or write counts, that help determine the performance or health of the communication between the RMC and the XIO. Use the information displayed to help troubleshoot communication errors or failure. See section <u>6.1.3 XIO Interface Communication: Status and Statistics</u>.
- Packet Log: Troubleshoot communication flow on the XIO Interface-XIO Server connections.
 Packet log is for advanced personnel and may be required by ABB tech support for analysis.
 See section <u>6.1.4 XIO Interface Communications: Packet Log</u>.
- Writes Stats: Monitor statistics specific to write requests per application. Use information to perform application-specific troubleshooting if errors are suspected. Statistics that are classified per application help to isolate issues for that application. See section <u>6.1.5 XIO</u> <u>Interface Communication: Write Stats</u>.

1.6.2 System (exported XIO app)

- Station Setup: View or update basic XIO station parameter configuration. See section <u>6.2.1</u> XIO Interface System: Station Setup.
- Applications: View the applications running on the XIO. See section <u>6.2.2 XIO Interface</u> <u>System: Applications</u>.
- Resources: Monitor XIO resource utilization such as CPU, memory usage. See section <u>6.2.3</u> XIO Interface System: Resources.
- Registry: View the XIO's embedded software components and versions. See section <u>6.2.4</u> XIO Interface System: Registry.

1.6.3 Remote communication applications (exported XIO apps)

Remote communication application screens display the exported applications currently activated on the XIO. The applications are not added on the controller but run on the XIO:

- Coriolis Interface
- Data Transfer
- I/O Interface
- LevelMaster
- Liquid Coriolis Interface
- Therms Master
- Wireless Remote I/O
- XMV Interface

The XIO Interface detects these applications and makes them available on the controller for configuring, monitoring, and troubleshooting communication with the devices (serial or I/O peripherals) connected to the XIO.



IMPORTANT NOTE: I/O System or communication application screen descriptions are not included in this document. They are documented separately, and help files are available when you click **Help** on those applications' screens.

2 Startup using Auto Discovery (recommended)

These procedures describe how to add and configure the XIO Interface application on a remote controller (the RMC is used as an example) to establish communication with an XIO for the first time. This communication requires that the XIO servers on the XIO are enabled. The XIO [Read] Server and XIO Write Server applications are configured and enabled from the factory. It is recommended to leave their configuration with default values.

Assumptions:

- The startup procedures in this section assume that the interfaces for both the XIO and the controller are configured with valid IP parameters and that the XIO has a unique Station ID. The Station ID helps identify each specific XIO when multiple XIOs connect to the same network.
- Both devices are connected to the same network.
- Auto Discovery is enabled on both devices (default).
- The XIO is fully configured, and local communications or IO applications are configured and set for export. For XIO configuration details, see the XIO User Manual.



IMPORTANT NOTE: If XIOs have security enabled (security passcode configured), make sure to configure the same security passcode on the XIO Interface Setup. The XIO Interface cannot access a secured XIO without the code.

2.1 Add the XIO Interface on Communication Setup tab

The XIO Interface is not instantiated on the RMC by default. This procedure uses the Communication Setup tab to add the application. This method is the preferred method to automate and minimize configuration. It benefits from the Auto Discovery feature which allows the controller to automatically discover XIO devices (and servers) and their required connection parameters on the network.



IMPORTANT NOTE: XIO Interface instances are assigned to the network port that connects the controller to the same network as the XIOs. A network port can handle multiple logical (TCP) connections on the same physical interface.

<u>Figure 2-1</u> shows an XIO detected from an RMC. The Remote Service list displays on the Add/Modify Communication devices and applications window. This window displays when adding an application from the RMC Communication Setup screen. When multiple XIOs are installed and connected to the same network as the RMC, the Remote Service field displays all detected XIOs.

Figure 2-1: RMC detects XIO Server as a remote service

Add/Modify Communication devices and applications					
	Application:	XIO Interface ~	·		
	Port:	Network	·		
	Protocol:	XIO Client ~	·		
	Remote Service:	None V Rescan]		
		None XIO Server (App# 3) [XIO_01] details about the risks of using Totalinow or MODBUS protocols over network connections.	ıt		
		OK Cancel]		

When the remote controller detects an XIO, it automatically determines its unique Station ID, IP configuration and XIO server TCP port information. These parameters are required to establish connection successfully.

In multi-XIO installations, the remote controller detects multiple remote services. Each advertised XIO server is detected as a remote service and is uniquely identified by the XIO Station ID. When selecting which XIO device the XIO Interface will connect with, make sure to select the correct XIO ID.

Auto Discovery only works when each device on the network has correct configuration. At first-time installation, be sure to configure valid and unique IP parameters and unique XIO IDs.

To add the XIO Interface:

- 1. Launch another instance of PCCU to connect to the RMC.
- 2. Click Entry.
- 3. On the navigation tree, select **Communications**, then select the **Services** tab.
- 4. Verify that Auto Discovery Service is enabled.
- 5. Select the **Communications Setup** tab.
- 6. Click **Add New Device/Application**. The Add/Modify Communications devices and applications window displays.
- 7. Configure the following (see Figure 2-2):
 - a. Select **XIO Interface** from the Application drop-down list.

- b. Select **Network** from the Port drop-down list.
- c. Leave the **XIO Client** (default) on the Protocol drop-down list.
- d. Click the **Remote Service** drop-down list. The list of detected XIOs in the field network displays: The XIO Server application displays with each associated XIO ID. In the example, a single XIO is identified as XIO Server [XIO_01]. Identify the correct XIO when multiple XIOs display.



IMPORTANT NOTE: Identify the correct XIO when multiple XIOs display. The App# assigned to the XIO Server application on the XIO also displays. It helps identify the specific instance when the application names are the same. In the example shown, the App# is 3 which is the slot number where the XIO Server is instantiated.

e. Locate and select the XIO from the list. The selected XIO displays in the Remote Service field.

Figure 2-2: Add the XIO Interface application and assign to detected XIO

Add/Modify Communication devices and applications				
Application:	XIO Interface	1		
Port:	Network	1		
Protocol:	XIO Client	1		
Remote Service:	None V Rescan			
\rightarrow	None XIO Server (App# 3) [XIO_01] details abo the risks of using Totalflow or MODBUS protocols over network connections.	ut		
	OK Cancel]		

8. Click **OK**. The communication port and application (XIO Interface) for communication with the XIO displays in the port list (<u>Figure 2-3</u>). Note that while the network port was selected in the previous configuration, the list does not display the port with a generic name of Network, but as an IP/TCP port combination (in the example, 192.168.1.248/9998). The IP address is that of the detected XIO, and the TCP port is the logical port that the XIO reserves to grant connection requests from the RMC XIO Interface client. The default XIO TCP port is 9998.

Et PCCU32 - [Entry]	- 🗆 X
Operate View Window Help	_ & ×
10 🛅 🔂 🕺 🖼 🚳 🛄	Seven 🧇
	Commission Colors
	Communication Setup Services Networking
Totalflow/TCP ■ ■ ■	Application Settings
Totalflow/USB	Port Description Application Settings
Totalflow/COM0:	COM0: Totalflow/COM0: Description: XIO Interface
	COM1: (Not Detected) (Unused) Protocol: XIO Client
ian in o System ian Display	COM2: (Not Detected) (Unused)
Trend System	
	9999 Totaflow/TCP Station ID: XIO_01 192.168.1.248/9998 XIO Interface
	152.160.1.246/3536 AIO Interface
	Port used by: XIO Interface
	< >>
	Add New Device/Application
	Delete Device/Application Port Settings Help: Click on any port parameter to display help on that topic
	View port settings View physical port
	Re-read device Send changes to device Close Help
Ready	#Polls: 34 #Errors: 0 Connected to RMC-100 Login: user v7.68 : 1397

Figure 2-3: XIO Interface instance XIO IP/TCP port assignment

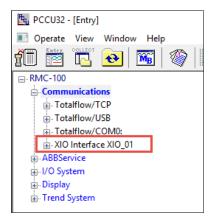
- 9. Verify the values of the additional configuration fields. The Application Settings section displays the generic description of the XIO Interface, default protocol, detected TCP parameters and XIO Station ID. These values are automatically populated when the XIO Interface was added.
- 10. For a multiple XIO installation, change the description field to a name that helps identify the XIO. A unique description that includes the XIO Station ID is easier to locate on the navigation tree than the generic default description (XIO Interface or XIO Interface-n).

Figure 2-4: User-defined XIO Interface instance name (description)

📴 PCCU32 - [Entry]	– 🗆 X
Operate View Window Help	_ & ×
	🤉 💑
 → RMC-100 → Communications ↔ Totalflow/TCP ↔ Totalflow/COM0: ↔ ABSErvice ↔ I/O System ↔ Display ↔ Trend System 	Communication Setup Services Networking Port Description COMIC: Totaflow/COMIC: COM1: Totaflow/USB Description: XIO Interface XIO_01 VISIT: Totaflow/USB Station/USB 999 Totaflow/ICP Station:/TCP 192.158.1.248/9938 XIO Interface XIO_01 Vice Vectors: Add New Device/Application Vicer based string describing this port @ Wew pot settings O leve physical port Reread device Send changes to device Close
Ready	#Polls: 34 #Errors: 0 Connected to RMC-100 Login: user v7.68 : 1397 d

11. Click **Send changes to device**. The XIO Interface application displays in the navigation tree (Figure 2-5).

Figure 2-5: XIO Interface instance on RMC navigation tree



- 12. If unable to see the XIO interface on the navigation tree, refresh the navigation tree or click **Close**. View or reconnect to verify that the navigation tree displays the XIO Interface application.
- On the communication setup tab, select the XIO Interface port from the list (Figure 2-6). Notice that the Application Settings section displays additional configuration parameters. The Timeouts & Delays section also displays.
- 14. The communication parameters are user-configurable, but default values can be used. Change the default configuration of these parameters if necessary.

Figure 2-6: Additional Application Settings for XIO Interface instance

🖳 PCCU32 - [Entry]	– 🗆 X
💽 Operate View Window Help	_ <i>5</i> ×
👘 🛅 🚾 💽 📧 🖤 🛄	seup 🧇
Communications Communications Totalflow/TCP Totalflow/COM0: XIO Interface XIO_01 ABSErvice V/O System Display Trend System	Image: Strip Image: Strip Communication Setup Services Networking Port Description COM0: Totaflow/COM0: COM2: (Vanued) UBS1: Totaflow/TCP 192:168.1.248/9998 XIO Interface XIO_01 Retries: 0 Vew port settings Image: Station ID: XIO Interface XIO_01 Response delay (ms): 0 Response delay (ms): 0 Response Timeout: Delete Device/Application Port Settings Help: Click on any port parameter to display help on th: topic Vew physical pot
Ready	#Polls: 63 #Errors: 0 Connected to RMC-100 Login: user v7.68 : 139

- 15. Click **Send changes to device** if Applications or Time/delays are updated.
- If you prefer to configure communication parameters on the XIO Interface instance screens:
 a. Select the XIO Interface instance on the navigation tree. (If you have configured a different instance name in the communication setup TCP/IP description field, select that name on the tree.) Then, select **Communications**. The Setup screen displays.
 - b. On the Setup screen, under the Advanced section (Figure 2-7), ensure the Keep Open Parameter is set to: **Keep Open**, and update the other parameters as required.

Eq. PCCU32 - [Entry]					- 🗆 ×
Operate View Window Help					_ <i>6</i> ×
fi 🛅 🚾 💽 🚳 🛄	🎗 🕺 🥺	I			
■ RMC-100	Setun Stati	us and Statistics Packet	Log Write State		
- Communications	Julie State	as and Statistics Tacket	Log Write Stats		
Totalflow/TCP		Description	Value		Notes
Totalflow/USB Totalflow/COM0:		Connection			
Generic Com App	208.0.25	Scan Enabled	Disabled		
Schence Com App	208.3.4	XIO IP Address	192.168.10.3	Must match IP Addre	ss on XIO
Communications	208.3.7	XIO Station ID	XIO_01	Must match Station I	D on XIO
XMV Interface XIO_01 COM2	208.3.6	XIO Security Code		Must match Security	Code Level 2 on XIO to allow write access
ia-I/O System	208.3.3	XIO Read Port #	9998	Must match 'XIO Serv	ver' port on XIO
Flow Measurement	208.3.5	XIO Write Port #	9997	Must match 'XIO Writ	e Server' port on XIO
⊕ A3-1					
⊞ A7-2		Advanced			
Holding Registers Alarm System	208.0.24	Keep Open	Keep Open		
Trend System	208.1.10	Response Delay	0	In milliseconds	
⊞- Plunger	208.1.3	Timeout	1000	In milliseconds	
	208.1.14	TOS Phase	200	In milliseconds	
	Re-read	Monitor Shov	v editable fields	Print Screen Save	Send Close Help XHelp W,
Ready					

Figure 2-7: XIO Interface communication setup

17. Enable the Scan function next.

2.2 **Enable Scan**

The scan function enables the ability to read from or write to the XIO. It is required for successful RMC-XIO communication.

To enable scan:

Select XIO Interface on the navigation tree (if you configured a different port name in the communication setup TCP/IP description field, select that name on the tree). The **Overview** 1. tab displays and provides the status of the connection between the RMC and the XIO. At first installation, the connection status is red because the RMC is not yet enabled to communicate with the XIO (Figure 2-8).

Figure 2-8: XIO Interface overview screen – default

PCCU32 - [Entry]		-	
Operate View Window Help			- 8 ×
1 🖾 🖾 💽 🚳	🗵 🔍 🧇		
© FMC-100 ⊖ Communications ⊖ Communications ⊕ Totaflow/CSB ⊕ Totaflow/CSB ← Communications ⊕ ABSErect ⊕ Depley ⊕ Trend System ⊕ Depley ⊕ Trend System	Connection: Scan Evabled Subprise Reset Number of Polis: Reset Submer of Errors: Scan Evabled Last Errors: Reset Last Errors: Last Errors: Last Errors: Last Errors: Last Errors: Last Errors: Last Errors: Scan Evabled Montor Secon Rewed Montor Secon Secon Rewed Montor		440 v7.68:1397

- Select Scan Enabled.
 Click Send.
- 4. Click **Re-read** to refresh the screen.

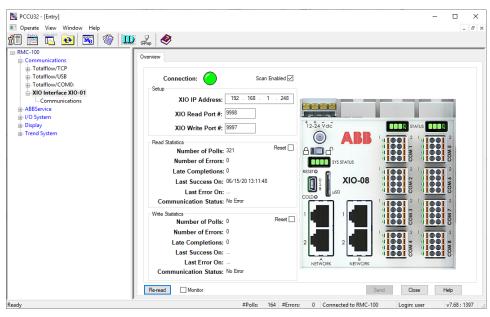


Figure 2-9: XIO Interface overview screen – Scan Enabled

- 5. Verify the status of the RMC-XIO connection:
 - a. The connection is successful if the Connection indicator is green (Figure 2-9). The Communication Status under the Read Statistics section should display: No Error.
 - b. The connection failed if the Connection indicator is red. The Communication Status under the Read Statistics section displays: Connection Timeout. If the connection indicator stays red (or yellow) for long, proceed to section <u>5 Troubleshooting</u>.
- 6. Add additional XIO Interface instances and enable scanning for additional XIOs if necessary.
- 7. Verify that exported applications display (see section <u>2.3 Verify exported applications display in the navigation tree</u>).

Once XIO Interface instances are added and scanning is enabled, no further configuration is necessary unless the XIO Station ID or IP configuration is updated later. The XIO Interface does not automatically update XIO connection parameters, so further communication with a reconfigured XIO would fail. When the XIO connection parameters are updated, make sure to update the same parameters on the XIO Interface.

2.3 Verify exported applications display in the navigation tree

When scan is enabled and successful, the XIO Interface application can start polling the XIO. The XIO Interface automatically determines the applications the XIO exported and displays those applications on the navigation tree. This procedure verifies that the exported applications are visible from the RMC.



IMPORTANT NOTE: In multi-XIO installations, each XIO Interface instance displays the applications exported by the XIO it is assigned to. Perform this procedure for each instance as necessary.

Verify exported applications under the XIO Interface:

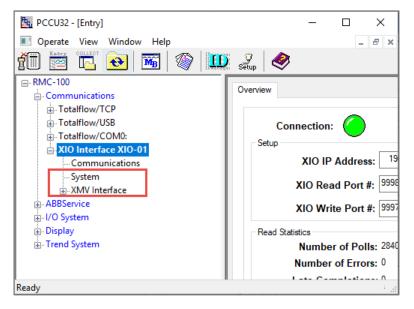
1. On the navigation tree, right click on the XIO Interface instance, then select **Refresh**.

Figure 2-10: Refresh XIO Interface instance from navigation tree

📴 PCCU32 - [Entry]	
Operate View Window Help	
📶 🛅 🚾 💽 🕷 🖡	🛄 🛃 🧇
	Quantinu
Communications	Overview
	Connection:
SIO Interface XIO-01	Setup
Commun Refresh	XIO IP Address
System Rename	
+ XMV Interrace	XIO Read Port #
ABBService	XIO Write Port #
	AIG WITE FOIL
🖶 Display	Read Statistics
	Number of Poll

- 2. On the navigation tree, expand the XIO Interface instance to display all its detected applications.
- 3. Verify that the exported XIO applications display under the XIO Interface instance.

Figure 2-11: Exported XIO applications displayed under an XIO Interface instance



4. If expected applications do not display, make sure those applications are configured for export on the XIO. Note that the XIO System application is automatically exported, but applications added by the user must be manually set for export. See section <u>5 Troubleshooting</u> if needed.

2.4 Configure the XIO security code

The XIO Interface application requires read and write privileges to work properly with the XIO. The correct XIO level 2 security code in the XIO Interface allows controller writes on the XIO, otherwise connection fails.



IMPORTANT NOTE: This procedure assumes that an XIO level 2 security code is configured on the XIO, and that the code was recorded for safe keeping. Once configured, the security code is not visible on the screen. Before proceeding, obtain the correct code. Note that the position of the security switch on the XIO does not remove the requirement for the XIO Interface App to be configured for level 2 access. An XIO may also have a level 1 security code configured. This level, however, allows only read privileges. An XIO interface configured with a level 1 security code will only be allowed to read XIO data.

To enter the XIO security code in the XIO Interface:

- 1. On the navigation tree, expand the **XIO Interface** and then select **Communications**. The **Setup** tab displays.
- 2. On the **Setup** tab, under the Connection section, locate the **XIO Security Code** value field.
- 3. Type the XIO level 2 security code. It should match the security code level 2 configured in the XIO.

Figure 2-12: Configure XIO level 2 security for each XIO Interface instance

Eq. PCCU32 - [Entry]					×	
Operate View Window Help					- 5	×
1 🖾 💽 🐼 🛄	🤰 🍠 🥏	r				
-RMC-100 -Communications Totalflow/TCP	Setup State	us and Statistics Packet L	og Write Stats			
Totalflow/USB		Description	Value		Notes	
Totalflow/COM0:		Connection				
Generic Com App	208.0.25	Scan Enabled	Enabled			
Scherce Com App	208.3.4	XIO IP Address	192.168.10.3		Must match IP Address on XIO	
Communications	208.3.7	XIO Station ID	XIO_01		Must match Station ID on XIO	
XMV Interface XIO_01 COM2	208.3.6	XIO Security Code	1212		Must match Security Code Level 2 on XIO to allow write access	
⊞-I/O System	208.3.3	XIO Read Port #	9998	1	Must match 'XIO Server' port on XIO	
Flow Measurement	208.3.5	XIO Write Port #	9997		Must match 'XIO Write Server' port on XIO	
⊞-A3-1						
⊞·A7-2		Advanced				
Holding Registers	208.0.24	Keep Open	Keep Open			
Alarm System	208.1.10	Response Delay	0		In milliseconds	
	208.1.3	Timeout	1000		In milliseconds	
⊞-Plunger	208.1.14	TOS Phase	200		In milliseconds	
	Re-read	Monitor Show	editable fields	Print	: Screen Save Send Close Help XHolp 💓	1
Ready			#Polls: 130	#Errors: 0 Conne	ected to RMC-100 Login: user v7.74 : 2209	

- 4. Click Send.
- 5. Click **Yes** to confirm. Note that the security code is no longer visible.
- 6. Monitor the connection, as described in section <u>4 Operation</u>.
- 7. Verify that there are no read/write errors. If errors occur or communication fails, see section <u>5</u> <u>Troubleshooting</u> or the Setup or Statistics screen descriptions.

3 Manual XIO Interface communication setup

Use this procedure if the XIO Interface application was added from the **Application/License Management** tab or if the assigned XIO has been reconfigured. If the XIO Interface instance has not been added yet, follow the procedure in section <u>2.1 Add the XIO Interface on Communication Setup</u> <u>tab</u>.

Communication setup parameters are not automatically detected when the XIO interface is added from the **Application/license Management** tab (first time installation) or when the XIO parameters are changed (after initial successful communication).

Always ensure that configured values on the XIO Interface match those on the XIO. Verify and obtain the communication parameters from the XIO to complete this procedure.



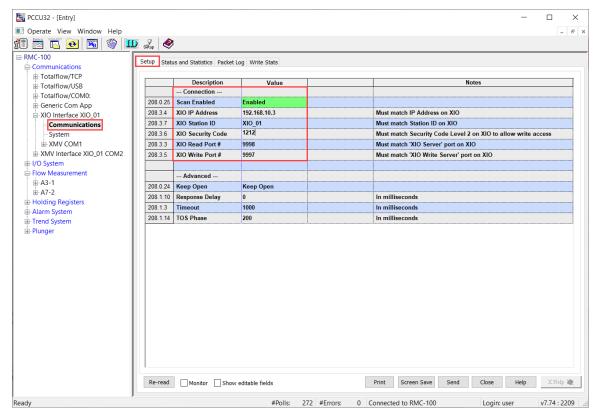
IMPORTANT NOTE: Changing the XIO IP address reinitializes the XIO Interface application. All data associated with the existing IP address is replaced by data associated with the new IP address. This data includes all the exported applications along with their data.

To set up communication:

- 1. On the Navigation tree, expand the XIO Interface, then select **Communications**. The Setup screen displays.
- 2. Under the Connection section:
 - a. From the **Scan Enabled** drop-down list, select **Enabled**.
 - b. Type the XIO IP address. Make sure the IP address is the address for the network connecting the RMC with the XIO. Depending on configuration, the XIO may have more than one IP address configured. Use the correct address.

- c. Type the XIO Station ID.
- d. Type the security code (level 2) if security is enabled on the XIO.
- e. Type the XIO Read and Write ports only if using bi-default values. Make sure non-default ports are not in use by other processes or applications.

Figure 3-1: XIO Interface Communication Setup



- 3. Click **Send** to save connection parameters. After the device saves the configuration, wait 4 to 5 seconds for the device to be ready for communication, then proceed to the next step.
- 4. Select the **Status and Statistics** tab (Figure 3-2).
- 5. Under the **Status** section verify that:
- a. The communication status for reads and writes displays: No Error.
 - b. The Poll State for reads displays: Active.



IMPORTANT NOTE: The Poll State for writes shows Inactive until at least one write has occurred. At first-time installation, an inactive poll state for writes does not indicate an error in communication. Writes are issued only as needed.

c. The Port Status displays: Opened. This indicates the RMC-XIO connection is successfully established.

					-	
Operate View Window Help						- 8
🗇 🛅 💽 💽 🜃 🖤 🛄	🎗 🕺 🤌					
- RMC-100	Cotup Statu	s and Statistics Packet Log Write Stats				
	Setup Statu	Packet Log Write Stats				
		Description	Reads	Writes		
Totalflow/USB		Status	Redus			
-Totalflow/COM0:	208.2.44	Communication Status	No Error	No Error		
Generic Com App	208.2.68	Poll State	Active	Inactive		
-XIO Interface XIO_01 -Communications	208.0.23	Port Status	Opened	Opened		
System	200.0.23	T OIT SIGILIA	opened	opened		
		Statistics				
XMV Interface XIO 01 COM2	208.2.4	Number of Polls	613	0		
⊞-I/O System	208.2.5	Number of Errors	344840	0		
- Flow Measurement	208.2.6	Late Completions	114927	0		
⊕-A3-1	200.2.0	Late completions	114521	U		
	208.2.42	Last Success On	09/16/22 14:03:02	01/01/1900 00:00:00		
Holding Registers	208.2.42	Last Error On	09/16/22 14:02:48	01/01/1900 00:00:00		
Alarm System						
Trend System	208.2.66	Last Error	Connection Timeout	No Error		
i Plunger			•	•		
	208.2.8	Previous Loop Time	9	0		
	208.2.9	Minimum Loop Time	0	-1		
	208.2.10	Maximum Loop Time	9010	0		
	208.2.11	Number of Packets	1359	0		
	208.2.12	Number of Characters Received	1429358	0		
	208.2.13	Number of Characters Transmitted	322897	0		

Figure 3-2: Verifying communication Status section from the Status and Statistics tab

- 6. On the navigation tree, right-click the XIO Interface instance and select **Refresh**.
- 7. Verify that all exported applications from the XIO display under the XIO Interface instance.

4 **Operation**

4.1 Monitor overall communication with the XIO

The XIO Interface communication Overview screen provides quick visual connection status. Use this screen to verify the overall health of the RMC-XIO communication.

To monitor communication with the XIO:

- 1. On the Navigation tree, select the XIO Interface. The Overview screen displays.
- 2. Verify the connection indicator color.
- 3. Ensure the indicator is green and the Scan Enabled is selected.
- 4. Monitor statistics for any errors that display. Reset statistics to monitor if errors continue to appear. If they continue to increase, proceed to troubleshoot.
- 5. If the connection indicator remains red or yellow, proceed to troubleshoot. Observe the communication status for both the read and write connections to determine if communication failure has occurred for both connections, or only for one.

5 Troubleshooting

The XIO Interface **Overview** and **Status and Statistics** tabs display parameter values used to monitor connection status and report statistics per reads and writes. The XIO Interface monitors the read and write connections separately, helping to isolate issues specific to each flow. For additional troubleshooting procedures, refer to the XIO User Manual. See the <u>Additional information</u> section for a link to the manual.

When XIO-controller communication is successfully established, the status or Reads and Writes will show no error. The connections established are ready for the controller to read from or write data to the XIO as shown in <u>Figure 5-1</u>.

PCCU32 - [Entry]					- 0	×
Operate View Window Help						Ξ×
	🗴 Zu 🔌				-	
	Setup 🖤					
RMC-100	Setup Status	and Statistics Packet Log Write Stats				
- Communications - Totalflow/TCP						
Totalflow/USB		Description	Reads	Writes		^
Totalflow/COM0:		Status				
Generic Com App	208.2.44	Communication Status	No Error	No Error		
SIO Interface XIO_01	208.2.68	Poll State	Active	Active		
Communications	208.0.23	Port Status	Opened	Opened		
System						
I/O Interface		Statistics				
	208.2.4	Number of Polls	279580	86938		
XMV Interface XIO_01 COM2	208.2.5	Number of Errors	114	0		
ii-I/O System	208.2.6	Late Completions	57	0		
E-Flow Measurement						
	208.2.42	Last Success On	09/28/22 12:49:27	09/28/22 12:49:27		
Holding Registers	208.2.41	Last Error On	09/27/22 12:49:17	01/01/1900 00:00:00		
Alarm System	208.2.66	Last Error	No Error	No Error		
Trend System						
- Host Interface	208.2.8	Previous Loop Time	57	2		
i - Plunger	208.2.9	Minimum Loop Time	0	2		
	208.2.10	Maximum Loop Time	1817	4		
	208.2.11	Number of Packets	1344470	347752		
	208.2.12	Number of Characters Received	2994462573	4173024		
	208.2.13	Number of Characters Transmitted	1055730156	5650970		
	208.0.100	Reset All Statistics	-			~
	Re-read	Monitor Show editable fields	Print Scree	en Save Send Close	e Help X Help	۰
Ready		#Polls: 81 #E	rrors: 0 Connected	to RMC-100	Login: user v7.7	4:2

Figure 5-1: Successful XIO-controller connection

i

IMPORTANT NOTE: Before troubleshooting communication issues verify that the values for the **XIO IP address**, **XIO Station ID** and **XIO Security Code** are correctly configured in the XIO Interface **Setup** tab.

5.1 Connection indicator stays red or yellow

The connection indicator displayed on the Overview screen allows quick visual verification of the state of the communication with the XIO. An indicator that remains red or yellow indicates connection failure. For specific Ethernet troubleshooting, see the Networking Communication Guide. See the <u>Additional information</u> section for a link to the guide.

- 1. On the Navigation tree, select the XIO Interface instance of interest. The **Overview** tab displays.
- 2. Verify that Scan Enabled is selected. If not, select it, and click Send.
- 3. Click **Re-read** and verify if the connection indicator turns green.
- 4. If the indicator remains red, verify the physical connections for each the RMC and the XIO. Network connections for both devices must be active for communication to take place. Check network equipment also. Failure of field network switches/routers can cause the devices to lose connection or IP configuration if DHCP is used.
- 5. If cabling and network connections are ok, select **XIO Interface**>**Communication** on the navigation tree.
- 6. On the **Setup** tab, verify that the connection parameters for the XIO displayed on the screen match the parameters set up on the XIO device. Reconfigure if necessary.

5.2 Missing XIO applications from the navigation tree

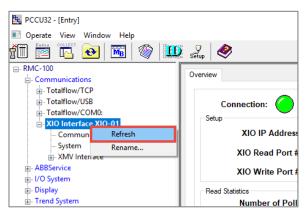
The XIO Interface must detect the XIO applications. If XIO applications do not display on the navigation tree under an XIO Interface instance, verify that the applications are set for export.

Only applications that support export can display under the XIO Interface instances.

To verify if an application is exported:

1. On the navigation tree, right click the XIO Interface instance and select **Refresh**.

Figure 5-2: Refresh XIO Interface instance from the RMC navigation tree



- 2. Expand or select the XIO Interface instance.
- 3. Verify if the missing application displays after the refresh. If the application does not display, continue to the next step.
- 4. On the navigation tree, select **System**. The Station Setup screen displays.
- 5. Select the **Applications** tab.
- Locate the application of interest and verify that the application shows as exported. If it is not exported, connect to the XIO and set the configuration for export from the XIO Application/Licensing Management screen.
- 7. Verify that the application displays under the XIO Interface.

5.3 Communication Status for writes displays: Request Not Accepted

The remote controller-XIO connection is established but writes by the controller are not accepted by the XIO. This error displays if the XIO level 1 security code (instead of level 2) is configured in the XIO Interface Setup. Using level 1 security code allows only read access to the XIO. Figure 5-3 shows this error on the **Overview** tab. Figure 5-4 shows this error in the **Status and Statistics** tab.

Figure 5-3: Write Communication Status error message - Request Not Accepted (Overview tab)

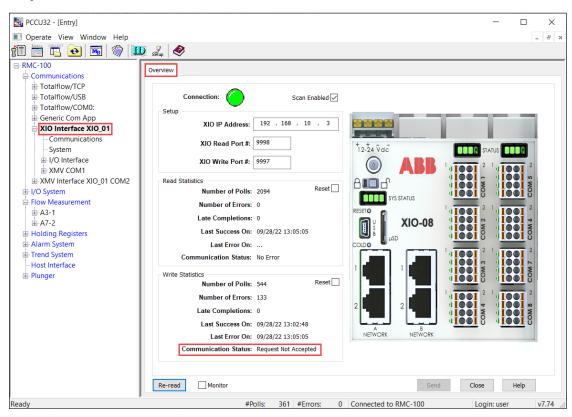


Figure 5-4: Write Communication Status error message - Request Not Accepted (Status and Statistics tab)

🔄 PCCU32 - [Entry]				-	
Operate View Window Help					_ 8 ×
19 🖾 🔂 💌 🖤 🛄	🤰 🌛 setup				
-RMC-100	Chature	and Chatiching and the state of the			
Generations	Setup Status	and Statistics Packet Log Write Stats			
Totalflow/TCP		Description	Reads	Writes	1
Totalflow/USB		Status	Redus	writes	
Totalflow/COM0:	208.2.44	Communication Status	No Error	Request Not Accepted	
Generic Com App	208 2 68	Poll State	Active	Active	
XIO Interface XIO_01 Communications	208.0.23	Port Status	Opened	Opened	
- System					
⊕ I/O Interface		Statistics			
-XMV COM1	208.2.4	Number of Polls	1678	415	
	208.2.5	Number of Errors	0	4	
⊞ I/O System	208.2.6	Late Completions	0	0	
Flow Measurement					
⊞-A3-1	208.2.42	Last Success On	09/28/22 13:02:55	09/28/22 13:02:48	
	208.2.41	Last Error On	01/01/1900 00:00:00	09/28/22 13:02:56	
	208.2.66	Last Error	No Error	Request Not Accepted	
Trend System					
- Host Interface	208.2.8	Previous Loop Time	59	2	
⊕ Plunger	208.2.9	Minimum Loop Time	0	2	
	208.2.10	Maximum Loop Time	330	7	
	208.2.11	Number of Packets	7141	1652	
	208.2.12	Number of Characters Received	14660502	19824	
	208.2.13	Number of Characters Transmitted	5073235	26831	
	208.0.100	Reset All Statistics	-		
	Re-read	Monitor Show editable fields	Print Screen Save	Send Close H	elp XHelp 🧶
Ready		#Polls: 357 #E	rrors: 0 Connected	to RMC-100	Login: user
Neduy		#POIIS. 337 #L	inois. o Connecteu		Login, user

There is no way to verify an existing security code as it is not visible once it is saved. It is expected that any security code configured is recorded for safe keeping.

To reconfigure the security code:

- 1. Obtain the level 2 security code used on the XIO.
- 2. Type the same security code in the XIO Interface Setup screen.

To verify that the security code change works:

- 1. Expand the XIO Interface instance and then select **Communications**.
- 2. On the Setup screen, under the Connection section, type the security code for the XIO.
- 3. Click Send.
- 4. Select the **Status and Statistics** tab.
- 5. Click **Re-read** and verify the communication status for writes. It should display: No error.

1

IMPORTANT NOTE: The Poll State for writes may show Inactive until at least one write has occurred. At first-time installation, an inactive poll state for writes does not indicate an error in communication. Writes are issued only as needed.

5.4 Communication Status for reads displays: Connection Timeout

The remote controller-XIO connection fails due to incorrect security code. <u>Figure 5-5</u> shows the error displayed. In this case the controller attempts to establish connection but no read access or write access is granted and the connection fails.

Eq PCCU32 - [Entry]					- 🗆 ×
Operate View Window Help					_ & ×
1 🖾 🔂 💽 🚳 🛄	🤰 🏒 🤌				
- RMC-100	Cature Statur	and Statistics Dealert Les Marke State			
	Setup Status	s and Statistics Packet Log Write Stats			
Totalflow/TCP		Description	Reads	Writes	
Totalflow/USB Totalflow/USB		Status	Nedus		
Totalflow/COM0: Generic Com App	208.2.44	Communication Status	Connection Timeout	No Error	
Schenc Com App	208.2.68	Poll State	Initializing	Active	
Communications	208.0.23	Port Status	Opened	Opened	
SMV Interface XIO_01 COM2					
Communications		Statistics			
-XMV Statistics	208.2.4	Number of Polls	21	0	
XMV 1	208.2.5	Number of Errors	21	0	
I/O System	208.2.6	Late Completions	11	0	
A3-1					
⊕ A7-2	208.2.42	Last Success On	01/01/1900 00:00:00	01/01/1900 00:00:00	
Holding Registers	208.2.41	Last Error On	09/28/22 13:24:58	01/01/1900 00:00:00	
Alarm System	208.2.66	Last Error	No Error	No Error	
Trend System					
Host Interface	208.2.8	Previous Loop Time	1813	0	
⊞. Plunger	208.2.9	Minimum Loop Time	0	-1	
	208.2.10	Maximum Loop Time	1814	0	
	208.2.11	Number of Packets	42	0	
	208.2.11	Number of Characters Received	42 504	0	
	208.2.12	Number of Characters Transmitted	4609	0	
	200.2.13	Number of Characters Halisinited	4005	v	
	208.0.100	Reset All Statistics	_		
	200.0.100				
	Re-read	Monitor Show editable fields	Print Screen	Save Send Close	Help X.Help 🥘
< >		11D 11			
Ready		#Polls: 504 #	Errors: 0 Connected	d to KMC-100	Login: user v7.74

Figure 5-5: Connection Timeout due to incorrect security code

To correct the security code:

- 1. Obtain the correct level 2 security code configured in the XIO.
- 2. On the RMC, Expand the XIO Interface instance and then select **Communications**.
- 3. On the Setup screen, under the Connection section, type the level 2 security code for the XIO.
- 4. Click Send.
- 5. Select the **Status and Statistics** tab.
- 6. Click **Re-read** and verify the communication status for reads. It should display: No error.

6 Reference Information

6.1 XIO Interface application screens

The information included in this section provides detailed parameter descriptions for each of the XIO Interface screens; (see item 1 in Figure 6-1). These screens include the default Overview screen (shown in the capture), and the Communication Screens: Setup, Packet Log, Statistics, Write Stats. For exported application screens; (see item 2 in Figure 6-1), refer to section 6.2 Exported application screens: System application.



IMPORTANT NOTE: On the remote controller's PCCU navigation tree, each XIO Interface instance displays all exported applications from the associated XIO; (see item 2 in Figure <u>6-1</u>). The applications displayed may vary depending on which applications are exported by the XIO. In the example below, the System and I/O Interface applications display.

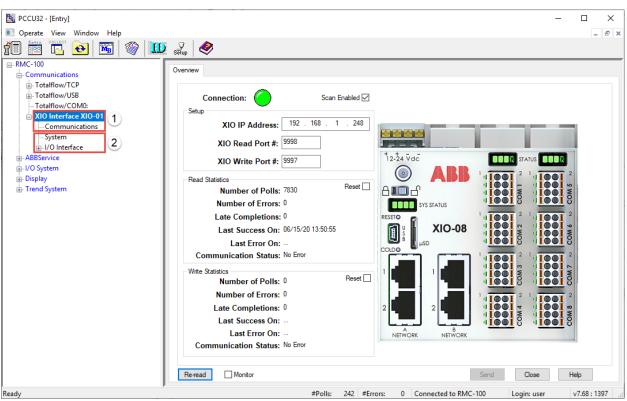


Figure 6-1: XIO Interface screens and exported applications

The I/O Interface application and communication application screen descriptions are beyond the scope of this guide. The applications are documented in other manuals and the help files.

6.1.1 XIO Interface Communications: Overview

The Overview screen provides a brief overview of the communication status and statistics related to read and write requests.

The screen displays setup information for the XIO it connects with and statistics for the connections supported:

- The Read Statistics section provides an overview of the connection established with the XIO [Read] Server. This connection manages the flow of Reads.
- The Write Statistics section provides an overview of the connection established with the XIO Write Server. This connection manages the flow of writes.

Figure 6-2: XIO Interface Overview Screen

PCCU32 - [Entry]	-	
Operate View Window Help		_ 8 ×
	🗴 😴 🧇	
	🕴 Sēlup 😻	
RMC-100 Communications Totalflow/TCP Totalflow/CDM0: XIO Interface XIO-01 Communications -System U/O Interface ABBService U/O System Display Trend System	Connection: Scan Enabled I Setup XIO IP Address: 192.168.1.248 XIO Read Port #: 9993 XIO Write Port #: 9997 Read Statistics Number of Polls: 516 Number of Errors: 0 Late Completions: 0 Last Success On: 06/15/20 13:12:49 Last Error On: Communication Status: No Beror Wite Statistics Reset Number of Polls: 0 Last Success On: 0 Last Error On: 0 Last Success On: 0	Help
Ready	#Polls: 201 #Errors: 0 Connected to RMC-100 Login: user	v7.68:1397

6.1.1.1 Enable Scan

Scanning is disabled by default. Check the Scan Enabled box to enable scanning. Enabling scanning is required for successful remote controller-XIO communication. Enable as soon as the configuration verification or update is complete. The Enable scan option is also available in the Setup screen.

6.1.1.2 Communication parameter verification or configuration

If the XIO communication parameters in this screen are not automatically populated, you can configure the parameters on this screen.

Always obtain the XIO parameters from the XIO device to ensure that the XIO Interface connection parameters match that on the XIO. Mismatched parameters prevent connection with or access to the XIO.

6.1.1.3 Statistics reset

Statistic reset is available on the Overview screen. Resetting statistics is useful for troubleshooting purposes or when changing communication parameters. It helps to monitor whether errors cease or continue to accumulate after corrective measures are taken.

The screen displays statistics for the read and the write connections. You can reset read or write statistics separately in two ways:

1. From each statistic section: Select **Reset** and then click **Send**.

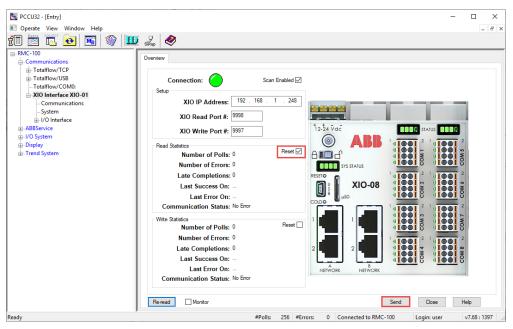


Figure 6-3: Reset from Read or Write Statistics sections

 From the top of the screen (quickest way): Right-click the connection indicator and select Reset Read Statistics or Reset Write Statistics. The statistic resets without the need to click Send. Reset all statistics onscreen by selecting Reset All if necessary.

Figure 6-4: Reset from connection indicator

B PCCU32 - [Entry] ■ Operate View Window Help		-	- □ ×
fi 🖻 🔁 💽 🚳 🛄	sing 🔗		
PMC-100 Communications Gommunications Gommunications Gommunications Gommunications Communications AlD Interface XID-01 Communications Gommunications Gommunica	Overview Setup Scan Enabled Setup XIO IP Addr XIO Read Por Reset Read Statistics Reset All XIO Write Port #: 1937 Peed Statistics Reset All Number of Polls: 0 Reset Last Success On: Last Success On: Last Error On: Communication Status: No Error Write Statistics Reset Number of Frons: 0 Last Success On: Last Success On: Last Error On: Communication Status: No Error Peetel Number of Errors: 0 Last Success On: Last Success On: Last Error On: Communication Status: No Error Nervicex Number of Errors: 0 Last Success On: Last Success On: Last Success On: Last Success On:	Serd Cose	Help

6.1.1.4 Parameter Description

The table below provides parameter or function descriptions for the Overview screen.



IMPORTANT NOTE: The Scan Enabled and Statistics Reset options are also available by right-clicking the Connection indicator (Figure 6-5).

Figure 6-5: Reset from connection indicator

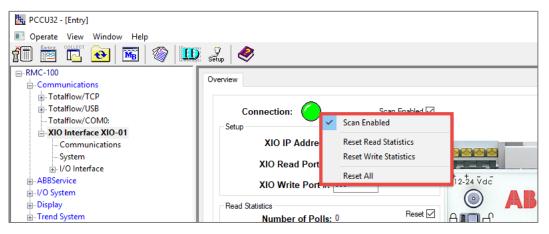


Table 6-1: XIO Interface Overview screen parameter description

Parameter/ Function	Description	Values
Connection Indicator	Provides visual indication of the overall status of the RMC-XIO communication. The expected sequence at the startup of the XIO Interface application is from red, to yellow, to green. If the indicator is red or yellow for long, check connection parameters or physical connection with the XIO (cables, connectors, network equipment).	 Indicator color changes to reflect the following conditions: Red: Poll State is initializing, configuring, or stopped. Communication Status is reporting an error. Port Status is Closed. Yellow: Poll State is synchronizing. Green: Communication with the XIO is successfully established. The poll state is active. The port status is opened.
Scan Enabled	Function to enable or disable read or write communication with the associated XIO.	Select checkbox: Enable continuous reads and required writes from and to the XIO. Clear checkbox (default): Do not perform reads and writes from or to the XIO. Scan disabled closes the TCP connection.
Setup		
XIO IP Address	The Internet Protocol (IP) address of the XIO that the device uses to establish connection. Note: The XIO may have more than one IP address depending on the field network topology and connections. Configure the IP address that is valid for the network the controller connects to the XIO on.	Automatically populated if the XIO Interface is added from the Communication Setup tab and the controller detects the XIO with auto discovery. If not automatically configured, the default value is: 0.0.00 Manually configure if the XIO Interface is added from the Application/Licensing tab or if the XIO is reconfigured: Type new IP address. Note: Changing an existing IP address will reinitialize the application and all the data from the XIO represented by the existing IP address is replaced by data from the XIO represented by new IP address. This data includes all the exported applications and their data.
XIO Read Port #	TCP port that the XIO [Read] Server listens to for XIO Interface connection requests and communication flow for reads. The connection established for reads is a separate logical connection from the connection for writes.	Automatically populated if the XIO Interface is added from the Communication Setup tab and the controller detects the XIO with auto discovery. Manually configure if not using the default value: Type the TCP port number assigned to the XIO Server on the XIO. Default value: 9998 Valid values: 1024 - 65535
XIO Write Port #	TCP port that the XIO Write	Automatically populated if the XIO Interface is

Parameter/ Function	Description	Values
	Server listens to for XIO Interface connection requests and flow for writes. The connection established for writes is a separate logical connection from the connection for reads.	added from the Communication Setup tab and the RMC detects the XIO with auto discovery. Manually configure if not using the default value: Type the TCP port number assigned to the XIO Write Server on the XIO. Default: 9997 Valid values: 1024 - 65535
Read Statistics		
Number of Polls	Number of times the device successfully reads data from the XIO. The count usually increments by 1 every second, but depending on the size of data to poll, it may increment by more than 1 every second.	Read-only Valid values: 0 - 4294967295
Number of Errors	Number of times the device could not read data from the XIO due to an error. The count increments only when there is an error.	Read-only Valid values: 0 - 4294967295
Late Completions	Number of times it took more than a second to read the data from the XIO. The count increments only when data is received late.	Read-only Valid values: 0 - 4294967295
Last Success On	Date/Time of the last successful poll from the XIO	Read-only Valid value is date format: mm/dd/yy h:m:s "" means no successful poll has occurred yet.
Last Error On	Date and time of the last read request sent to the XIO that resulted an error	Read-only Valid value is date format: mm/dd/yy h:m:s "" means no successful poll has occurred yet.
Communication Status	Status of the last poll request sent the XIO	 Read-only. The following values can display: No Error: successful poll Connection Timeout: no response received from XIO Unknown Request Type: invalid request type in packet Request Not Accepted: request rejected by XIO Bad Packet CRC: CRC check failed for the request Bad Packet Length: incorrect length of the request packet No Data Received: no data received in the response
Reset	Function to clear all poll statistics Hint: This reset is the same function as selecting the option: Reset Read Statistics, available when right-clicking the Connection indicator at the top of the screen.	To trigger reset: Select Reset and then click Send .
Write Statistics		
Number of Polls	Number of times the device successfully writes data to the	Read-only Valid values: 0 - 4294967295

Parameter/ Function	Description	Values
	XIO. The count usually increments by 1 for requests sent to the XIO. In some cases, the count may increment by more than 1 every second.	
Number of Errors	Number of times the device could not write data to the XIO due to an error. The count increments only when there is error.	Read-only Valid values: 0 - 4294967295
Late Completions	Number of times it took more than a second to write the data to the XIO and to receive a response. The count increments only when data is received late.	Read-only Valid values: 0 - 4294967295
Last Success On	Date/Time of the last successful write request to the XIO	Read-only Valid value is date format: mm/dd/yy h:m:s "" means no successful poll has occurred yet.
Last Error On	Date/Time of the last write request sent to the XIO that resulted an error	Read-only Valid value is date format: mm/dd/yy h:m:s "" means no failed poll has occurred yet.
Communication Status	Status of the last poll request sent the XIO	 Read-only The following states display: No Error: successful poll Connection Timeout: no response received from XIO Unknown Request Type: invalid request type in packet Request Not Accepted: request rejected by XIO Bad Packet CRC: CRC check failed for the request Bad Packet Length: incorrect length of the request packet No Data Received: no data received in the response
Reset	Function to clear all write statistics Hint: This reset is the same function as selecting the option: Reset Write Statistics , available when right-clicking the Connection indicator at the top of the screen.	To trigger reset: Select Reset and then click Send .
Reset All Statistics	Function to reset all read and write statistics.	To trigger the reset: Select Reset All Read and Write Statistics from the drop-down list, then click Send . This is equivalent to selecting the Reset for the read statistics and the write statistics and clicking Send to reset both statistics sets together.

6.1.2 XIO Interface Communications: Setup

The Setup screen allows the manual setup of the connection and authentication parameters for communication between the device and an XIO.

The screen has several parameters sections for configuration, fine tuning, and status verification. Review overview sections below or see parameter details in section <u>6.1.2.3 Parameter Description</u>.

[
🔄 PCCU32 - [Entry]				- 🗆 ×
Operate View Window Help				_ 8 ×
🗿 🛅 🔽 💽 🗺 🖤 🛄 🦨	7 e 🤣			
B-RMC-100	P Status and Statistics Packet	Log Write State		
E Communications	Status and Statustics Tacket	Log Write Stats		
Totalflow/TCP	Description	Value		Notes
Totalflow/USB	Connection			
Totalflow/COM0: Generic Com App	208.0.25 Scan Enabled	Enabled		
	208.3.4 XIO IP Address	192.168.10.3	Must match IP Address on XIO	,
	208.3.7 XIO Station ID	XIO_01	Must match Station ID on XIO	
	208.3.6 XIO Security Code		Must match Security Code Lev	vel 2 on XIO to allow write access
XMV COM1 2	208.3.3 XIO Read Port #	9998	Must match 'XIO Server' port o	on XIO
XMV Interface XIO_01 COM2 2	208.3.5 XIO Write Port #	9997	Must match 'XIO Write Server'	port on XIO
Communications				
-XMV Statistics	Advanced			
XMV 1 2	208.0.24 Keep Open	Keep Open		
I/O System 2	208.1.10 Response Delay	0	In milliseconds	
Elow Measurement	208.1.3 Timeout	1000	In milliseconds	
	208.1.14 TOS Phase	200	In milliseconds	
Holding Registers			Lananananananananananananananananananan	······································
Alarm System				
Trend System				
Plunger				
<	Re-read Monitor Shov	v editable fields	Print Screen Save Send	Close Help XHelp 🏹
Ready		#Polls: 441	#Errors: 0 Connected to RMC-100	Login: user v7.74 : 2209

Figure 6-6: XIO Interface Communications Setup screen

6.1.2.1 Connection: parameter configuration or verification

The Setup section on the Setup screen lists the XIO parameters required to establish connection.

TCP/IP parameters values may be automatically configured when the XIO Interface is added from the Communication Setup tab and the device has detected the XIO through auto discovery.

Parameters are not automatically detected when the XIO Interface is added from the Application/License Management tab (first time installation) or when the XIO parameters are changed (after initial successful communication). In these cases, configure correct parameters in this screen.



IMPORTANT NOTE: Always obtain the XIO parameters from the XIO device to ensure that the XIO Interface connection parameter configuration matches that on the XIO. Mismatched configuration prevents connection with or access to the XIO.

Changing the XIO IP address reinitializes the XIO Interface application. All data associated with the existing IP address is replaced by data associated with the new IP address. This data includes all the exported XIO applications along with their data.

6.1.2.2 Advanced parameters: connection mode and fine-tuning

The Advanced section on the Setup screen provides additional advanced configuration parameters for connection mode and fine-tuning. The factory default configuration is recommended, but it can be updated to adjust to conditions in the field or user preferences. Modification of these parameters may be necessary to adapt to the processing load on the devices and the number of devices connected on the same network.

6.1.2.3 Parameter Description

The table below provides parameter or function description for the Setup screen.

Parameter/ Function	Description	Values	
Connection			
Scan Enabled	Function to enable or disable read and	Select options from the drop-down list:	
	write communication with the associated XIO.	 Enabled: Perform continuous reads and required writes from and to the XIO. 	

Table 6-2: XIO Interface Communications – Setup screen parameter description

Parameter/ Function	Description	Values
		 Disabled (default): Do not perform reads and writes from or to the XIO. Scan disabled closes the TCP connection.
Setup		
XIO IP Address	Internet Protocol (IP) address of the XIO that the device uses to establish connection. Note: The XIO may have more than one IP address depending on the field network topology and connections. Configure the IP address that is valid for the network the controller uses to connect to the XIO.	Automatically populated if the XIO Interface is added from the Communication Setup tab and the RMC detects the XIO with auto discovery. If not automatically configured, the default value is: 0.0.0.0 Manually configure if the XIO Interface is added from the Application/Licensing Management tab or if the XIO is reconfigured. Type the new valid IP address. Note: Changing an existing IP address will reinitialize the app and all the data from the XIO represented by the existing IP address will be replaced by data from the XIO represented by the new IP address.
XIO Station ID	The XIO station identification or name. It must match the configured value in the XIO device. Hint: The remote controller requires the ID to detect and establish communication with the XIO. The device can differentiate advertised XIO servers by multiple XIOs based on this ID.	Automatically configured when the XIO Interface is added from the Communication Setup tab and the device auto discovers the XIO. Manually configure if the XIO Interface is added from the Application/Licensing Management tab or if the XIO is reconfigured. Type the ID as configured in the XIO. Default: TOTALFLOW (not recommended.) Change to non-default value on both the XIO and in this screen. Valid Length: 1-10 Characters
XIO Security Code	Provide the 4-digit level 2 security code configured on the XIO device to allow write access.	User-configurable Default: 0000 Obtain the level 2 security code configured in the XIO and type the same number in this field. The security number is hidden for viewing but can be changed by typing in the value.
XIO Read Port #	TCP port the XIO [Read] Server listens to for XIO Interface connection requests and communication flow for reads. The connection established for reads is a separate logical connection from the connection for writes.	Automatically populated if the XIO Interface is added from the Communication Setup tab and the RMC detects the XIO with auto discovery. Manually configure if not using the default value: Type the TCP port number assigned to the XIO Server on the XIO. Default: 9998 (recommended) Valid values: 1024-65535 (Ensure the port number is not in use by another application.)
XIO Write Port #	TCP port the XIO Write Server listens to for XIO Interface connection requests and flow for writes. The connection established for writes is a separate logical connection from the connection for reads.	Automatically populated if the XIO Interface is added from the Communication Setup tab and the RMC detects the XIO with auto discovery. Manually configure if not using the default value. Type the TCP port number assigned to the XIO Write Server on the XIO. Default: 9997 (recommended) Valid values: 1024-65535 (Ensure the port number is not in use by another application.)
Advanced		
Keep Open	TCP connection mode: The connection with the XIO can be kept open or be	Default (recommended): Keep Open. Select from the drop-down list:

Parameter/ Function	Description	Values
	closed after each request. Keeping the connection open reduces the overhead in creating and closing TCP connections. This setting applies to both Read and Write connections.	 Keep Open: The device keeps connections open for subsequent requests after the connections are established for the first request. Close Always: The device closes connections after each request.
Response Delay	The delay (in milliseconds) that is on the front end of communications between devices. It delays the start of communication to another device. Set to zero for no delay or enter a delay value in milliseconds. In most cases no delay is required. A small delay (~10 ms) may be required if the XIO or this device is heavily loaded. Heavy load on a device is reflected in frequent errors or late counts.	User-defined Default (Recommended): 0 Suggested Value range: 0 – 20 ms
Timeout	Maximum time (in milliseconds) tolerated between a request and a response from the XIO, or the largest gap tolerated between characters within a packet. If the Timeout time expires, any partial packet is discarded and the application protocol looks for the beginning of a new packet. Typically, 1000 milliseconds works well for communication with the XIO. This applies to both Read and Write connections.	User-defined Default (Recommended): 1000 Suggested Value range: 0 – 1000 ms
TOS Phase	TOS represents Top of Second. Everything in the device happens or is done in 1 second intervals including the scanning of XIO. The TOS phase field is for entering a delay in milliseconds from the top of second before starting the scan cycle of the XIO. TOS allows other applications to run prior to the XIO scan cycle. It applies to read connections only. It does not apply to the write requests which happen when required.	User-defined Default (Recommended): 200 Suggested Value range: 0 -500 ms

6.1.3 XIO Interface Communication: Status and Statistics

The **Status and Statistics** screen provides information on key remote controller-XIO communication parameters to help in troubleshooting. The information reports statistics for both Read and Write Communication. For write-specific statistics, go to the **Write Stats** tab.

Operate View Window Help	Burger PCCU32 - [Entry]					×	<
Image: Communications Image: Communications Image: Communications Image: Communications <td>Operate View Window Help</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>×</td>	Operate View Window Help						×
▼ MC-100 ⇒ Communications Image: Totalflow/COM0: ⊕ Totalflow/COM0: Image: Generation of the state of the stat		0 🔊					
Communications ⊕ Totalflow/CDP ⊕ Totalflow/CDA ⊕ Generic Com App ⊕ XMV Interface XIO_01 ● Statistics ● XMV Interface XIO_01 COM2 ● XMV Interface XIO_01 COM2 ● Communications ● XMV I ● Communications		Setup 💙					
Communications ⊕ Totalflow/ICP ⊕ Generic Com App ⊕ Stol Interface XIO.01 Communications ⊕ System ⊕ XNV Interface XIO.01 Communications ⊕ System ⊕ XWV 10M ⊕ KWV 10M ⊕ KWV 10M ⊕ VO System ⊕ HOId Statis ⊕ AT-2 ⊕ Holding Registers ⊕ AT-2 ⊕ Holding Registers ⊕ AT-2 ⊕ Holding Registers ⊕ Allow System ⊕ Plunger 208.2.8 208.2.11 Number of Packets 208.2.8 Pervious Loop Time 0 208.2.11 Number of Characters Received 483/1000 ⊕ Plunger 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Setup Statu:	s and Statistics Packet Log Write Stats				
Totalflow/USB Totalflow/USB Totalflow/USB Totalflow/USB Totalflow/COM0: Generic Com App XIO Interface XIO_01 Communications System XIV COM1 Communications System XIV COM1 Communications System XIV Statistics XIV 1 XIVV 1 XIV 1 XIVV 1 XIV 1 XIVV XIVV XIVV XIVV XIVV XIVV XIVV	. T						
Totalflow/COM0: Generic Com App XOU Interface XI0_01 Communications System XMV Interface XI0_01 COM2 Communications XMV Interface XI0_01 Communications Communications XMV Interface XI0_01 Communications XMV Interface XI0_01 Communications XMV Interface XI0_01 Communications XMV Interface XI0_01 Communications Communications XMV Interface XI0_01 Communications XMV Interface XI0_01 Communications XMV Interface XI0_01 Communications Communications XMV Interface XI0_01 Communications XMV Interface XI0_0 Communications XMV Interface			Description	Reads	Writes	^	
Generic Com App 208.2.4 Communication Status No Error No Error Molecter XIO_01 208.2.6 Poll State Active Inactive System System 0 0 0 XMV Interface XIO_01 COM2 Communications 228.2.4 0 0 XMV Interface XIO_01 COM2 Communications 228.2.4 0 0 XMV Interface XIO_01 COM2 Communications 1208.2.5 Number of Polls 252924 0 Communications XWV 1			Status				
XIO Interface XIO_01 Communications System System XMV COM1 Value XMV Interface XIO_01 COM2 Opened Communications Value XMV Statistics Value XMV Interface XIO_01 COM2 Opened Communications Value XMV Statistics Value XMV 1 Statistics XMV 1 Statistics W1 0 System 100 System Flow Measurement 100 System AAr-2 Late Completions AAr-2 Late Error On Opened Opened 208.2.6 Late Error On 208.2.8 Previous Loop Time A Arrow 0 208.2.9 Minimum Loop Time 208.2.10 Maximum Loop Time 208.2.11 Number of Packets 208.2.12 Number of Characters Received 489247205 0 208.2.11 Number of Characters Transmitted 208.2.12 Number of Characters Transmitted		208.2.44	Communication Status	No Error	No Error		
System System MWV COM1 208.2.4 MWV Interface XIO_01 COM2 -Communications -XMV Statistics -XMV 1 WMW Satistics -XMV 1 WAMA Alarn A3-1 A3-1 A3-1 BAirn System Polding Registers Alarn System D02.2.6 Last Error On 208.2.8 Previous Loop Time 0 208.2.1 Number of Packets 206.2.11 208.2.12 Number of Characters Received 489247205 0 208.2.13 Number of Characters Transmitted 190725372 0 208.1010 Re-read Montor Show editable fields Print		208.2.68	Poll State	Active	Inactive		
XMV COM1 XMV Interface XIQ_01 COM2 Communications XMV Statistics XMV Statistics XMV Statistics XMV 1 VIO System Flow Measurement A3-1 A3-1 A3-2 Holding Registers Alarm System Trend System Trend System Trend System Diage 2 Number of Polis Z08.2.10 Maximum Loop Time 0 1 Z08.2.10 Maximum Loop Time 0 1 Z08.2.10 Maximum Loop Time 0 Z08.2.10 Maximum Loop Time Sofo42 U Z08.2.10 Maximum Loop Time Sofo4 U Z08.2.11 Mumber of Characters Transmitted Sofo4 U Z08.2.12 Mumber of Characters Transmitted Sofo4 U Z08.2.10 Monitor Show editable fields Print Screen Swell Close Help XHelp	Communications	208.0.23	Port Status	Opened	Opened		
WV Interface XIO_01 COM2 Communications XMV Statistics XMV 1 I-OSystem Flow Measurement # A3-1 BA7-2 Holding Registers Alarm System Trend System Plunger 208.2.4 Number of Polls 228.2.5 Mainium Loop Time 0 208.2.11 Number of Packets 506042 0 208.2.11 Number of Characters Received 489247205 0 208.1010 Re-read Monitor Show editable fields Print Screen Save Send Close Help XHep *	System						
Communications XMV Statistics XMV Statistics XMV 1 ⇒ I/O System ⇒ Flow Measurement ⇒ A3-1 ⇒ A7-2 ⇔ Holding Registers ⇒ Alarm System ⇒ Trend System ⇒ Plunger	⊞-XMV COM1		Statistics				
XMV Statistics XMV 1 Briow Measurement 208.2.6 Briow Measurement 208.2.42 Briow Measurement 208.2.41 Last Error On 09/19/22 11:43:31 208.2.42 Last Error Connection Timeout No Error 0 Briow Measurement 8 Briow Measurement 0		208.2.4	Number of Polls	252924	0		
XMV 1 Image: Solution of Characters Transmitted 10/02 0 Plunger 208.2.11 Late Completions 10/01/1900 208.2.8 Late Completions 09/19/22 12:18:31 01/01/1900 208.2.8 Previous Loop Time 8 0 208.2.9 Minimum Loop Time 0 .1 208.2.10 Maximum Loop Time 0 .1 208.2.11 Number of Packets 506042 0 208.2.12 Number of Characters Received 489247205 0 208.2.13 Number of Characters Transmitted 190725372 0 208.0.100 Reset All Statistics . .		208.2.5	Number of Errors	356510	0		
H/O System Holding Registers Help Keep		208.2.6	Late Completions	120762	0		
Flow Measurement 208.2.42 Last Success On 09/19/22 12:18:31 01/01/1900 00:00:00 B: A3-1 B: A7-2 B: Holding Registers 0 00/19/22 11:43:31 01/01/1900 00:00:00 B: Alarm System 0 0 0 0 B: Plunger 208.2.8 Previous Loop Time 8 0 0 208.2.9 Minimum Loop Time 0 -1 0 0 208.2.10 Maximum Loop Time 9010 0 0 0 208.2.11 Number of Packets 506042 0 0 0 208.2.12 Number of Characters Received 489247205 0 0 0 208.2.13 Number of Characters Transmitted 190725372 0 0 0 208.0.100 Reeread IMonitor Streen Save Send Close Help X Help X Help							
	T	208.2.42	Last Success On	09/19/22 12:18:31	01/01/1900 00:00:00		
Ar-2 Holding Registers Alarm System Trend System Plunger Z08.2.66 Last Error Connection Timeout No Error Z08.2.8 Previous Loop Time 8 0 1 208.2.9 Minimum Loop Time 0 1 208.2.10 Maximum Loop Time 9010 0 208.2.11 Number of Packets 506042 0 208.2.12 Number of Characters Received 489247205 0 208.2.13 Number of Characters Transmitted 190725372 0 208.2.13 Number of Characters Transmitted 190725372 0 Z08.2.10 Reset All Statistics - Re-read Monitor Show editable fields Print Screen Save Send Close Help XHelp XHelp	T :	208.2.41	Last Error On	09/19/22 11:43:31	01/01/1900 00:00:00		
Holding Registers Alarm System Description: Trend System Description: Dop Time Output: Dop Time		208.2.66	Last Error	Connection Timeout	No Error		
Alarm System 208.2.8 Previous Loop Time 8 0 Trend System 208.2.9 Minimum Loop Time 0 .1 208.2.10 Maximum Loop Time 9010 0							
• Trend System • Plunger 208.2.9 Minimum Loop Time • 0 • 1 • 0 • 0 • 0		208.2.8	Previous Loop Time	8	0		
• Plunger 208.2.10 Maximum Loop Time 9010 0 0 0		208.2.9	Minimum Loop Time	0	-1		
208.2.12 Number of Characters Received 489247205 0 0 208.2.13 Number of Characters Transmitted 190725372 0 0 208.0.100 Reset All Statistics - 0 0 208.0.100 Reset All Statistics - 0 0 Re-read Monitor Show editable fields Print Screen Save Send Close Help XHelp @		208.2.10	Maximum Loop Time	9010	0		
208.2.12 Number of Characters Received 489247205 0 0 208.2.13 Number of Characters Transmitted 190725372 0 0 208.0.100 Reset All Statistics - 0 0 208.0.100 Reset All Statistics - 0 0 Re-read Monitor Show editable fields Print Screen Save Send Close Help XHelp @							
208.2.13 Number of Characters Transmitted 190725372 0 0 208.0.100 Reset All Statistics - 0 0 Re-read Monitor Show editable fields Print Screen Save Send Close Help X Help X Help		208.2.11	Number of Packets	506042	0		
Construction C		208.2.12	Number of Characters Received	489247205	0		
Re-read Monitor Show editable fields Print Screen Save Send Close Help X Help X Help		208.2.13	Number of Characters Transmitted	190725372	0		
Re-read Monitor Show editable fields Print Screen Save Send Close Help X Help X Help							
		208.0.100	Reset All Statistics	-			
			J				
	<u> </u>	Re-read	Monitor Show editable fields	Print Screen S	ave Send Close	Help X Help 🗮	Ī
	,		#Dolls: 87 #1	From: 0 Connected	to RMC-100	Login: user v7.7/	1

Figure 6-7: XIO Interface Communications – Status and Statistics screen

6.1.3.1 Communication status verification

The Status section in the Status and Statistics screen provides details on communication with the XIO, the state of the Poll function, and the status of the TCP ports. When communication or polling is not successful, the screen displays specific error messages that identify the cause of failure. The port status indicates if the TCP connections are established or not.

Verify the state of each of these parameters after parameter configuration or update is complete. It takes the device 4 to 5 seconds to be ready for communication (Poll Status displays: Active). Refresh the XIO Interface instance on the navigation tree to verify that the exported applications from the XIO display.

6.1.3.2 Statistics

If an unusually high number of errors display in the Statistics section on this screen or the overview screen, check the communication parameter configuration on the **Setup** tab. Ensure parameter values, such as the XIO Station ID, IP address or TCP ports, match those on the XIO. Ensure that the security code that allows read/write access to the XIO is configured in the XIO Interface setup. The remote controller cannot perform reads or writes unless it has this code.

When troubleshooting, reset statistics to observe if errors continue to accumulate after attempting to resolve connectivity or configuration issues.

6.1.3.3 Parameter description

The table below provides a detailed description of the parameters on the Statistics screen.

Table 6-3: XIO Interface Communications – Statistics screen parameter description

Parameter/Function	Description	Values
Status		
Communication Status	munication Status Status of the last read/write (Read-only) request sent to the XIO. The following states may display:	
		 No Error: successful poll

Parameter/Function	Description	Values
		 Connection Timeout: no response received from the XIO
		 Unknown Request Type: invalid request type in packet
		 Request Not Accepted: request rejected by the XIO
		 Bad Packet CRC: CRC check failed for the request
		 Bad Packet Length: incorrect length of the request packet
		 No Data Received: no data received in the response
Poll State	State of the polling function which is responsible for supporting the reads and	(Read-only) The states display for reads in the following sequence:
	writes from and to the XIO. The polling function goes through several states at the	 Initializing: initializing register definitions Configuring: reading system configuration from XIO
	XIO Interface startup (when scanning is enabled).	 Synchronizing: reading data for each exported application
		 Active: reading all the continuous data from XIO
		 Stopped: shutting down
		The states display for writes in the following sequence:
		 Inactive: no write has happened yet
		 Active: at least 1 write has occurred
Port Status	Status of the TCP port/connection to XIO.	(Read-only) The following states display:
	Connection should be Opened if the Scan is Enabled.	 Opened: connection is established with the XIO
		 Closed: connection with the XIO is closed
Statistics		
Number of Polls	Number of times the device successfully read data from the XIO. Usually increments by 1 every second but depending on the size of data to poll, it may increment by more than 1 every second.	Valid Values: 0 - 4294967295 Set to 0 to reset the value.
Number of Errors	Number of times the device could not read data from the XIO due to an error. Increments only when there is an error.	Valid Values: 0 - 4294967295 Set to 0 to reset the value.
Late Completions	Number of times it took more than a second to read the data from the XIO. The value in this field increments only when data is received late.	Valid Values: 0 - 4294967295 Set to 0 to reset the value.
Last Success On	Last Date/Time when the XIO was successfully polled. For reads, it should be updating every second. For writes it updates only when a write occurs.	Read-only Valid Value date format: mm/dd/yy h:m:s "" means no successful poll has occurred yet.
	WHEN A WHILE ULLUIS.	

Parameter/Function	Description	Values
	sent to the XIO that resulted in an error (displayed in the Last Error parameter below).	Valid Value date format: mm/dd/yy h:m:s "" means no failed poll has occurred yet.
Last Error	Cause for the last error that occurred in communication	Read-only The following values may display:
		 No Error: successful poll
		 Connection Timeout: no response received from the XIO
		 Unknown Request Type: invalid request type in packet
		 Request Not Accepted: request rejected by the XIO
		 Bad Packet CRC: CRC check failed for the request
		 Bad Packet Length: incorrect length of the request packet
		 No Data Received: no data received in the response
Previous Loop Time	Displays the last poll loop time in milliseconds.	Read-only Valid Values: 0 - 4294967295
Minimum Loop Time	Keeps the minimum poll loop time of all polls in milliseconds. Set to -1 to reset.	Read-only Valid Values: 0 - 4294967295
Maximum Loop Time	Keeps the maximum poll loop time of all polls in milliseconds. Set to 0 to reset.	Read-only Valid Values: 0 - 4294967295
Number of Packets	Displays the total number of transmit/receive packets.	Read-only Valid Values: 0 - 4294967295
Number of Characters Received	Displays a running total of received bytes from the devices.	Read-only Valid Values: 0 - 4294967295
Number of Characters Transmitted	Displays a running total of transmitted bytes to the devices.	Read-only Valid Values: 0 - 4294967295
Reset All Statistics	Function to reset all the statistics and date/times in the statistics screen.	To trigger statistic reset: Select Now from the drop-down list, then click Send .

6.1.4 XIO Interface Communications: Packet Log

The Packet Log tab is included for troubleshooting purposes only. The information provided only relates to Totalflow protocol. Customer service representatives may ask for information provided on this screen.

The information displayed on the screen is provided from a file maintained in the device. Specify the number of records that are kept in the file by selecting one of the values from the **Log Size** drop down list. Only the newest records are kept. To receive any updated information after initially viewing the screen, either click the **Re-read** button or check the **Monitor** button. The information displayed will only change if additional polls have occurred since the last time the information was read.

Entry]	- 🗆 X
Operate View Window Help	- 8 ×
10 📅 🖪 💽 💌 🖤 🛄	Seup 🛷
- RMC-100	Setup Status and Statistics Packet Log Write Stats
Communications Totalflow/TCP	\RXIO-1\Packet.Log
Totalflow/USB	
Totalflow/COM0:	09/19/22 11:57:47.265 < 0035C9 09/19/22 11:57:47.265 < 1600E9FF0002298D000003000000
Generic Com App	09/19/22 11:57:47.266 < 000000000000000000000000000000000
All NIO Interface XIO_01	09/19/22 11:57:47.267 < 0000000000000000000000000000000000
Communications System	09/19/22 11:57:47.267 < 2A00D5FF0002299000008000000 09/19/22 11:57:47.267 < 0000000000000000000000000000000000
B-XMV COM1	09/19/22 11:57:47.268 < 1600E9FF000229CC000003000000
XMV Interface XIO_01 COM2	09/19/22 11:57:47.268 < 0000000000000000000000000000000000
Communications	09/19/22 11:57:47.269 < 0000000000000000000000000000000000
-XMV Statistics	09/19/22 11:57:47.209 < 0800F4FF000229CE000001000000 09/19/22 11:57:47.270 < FFF060
XMV 1	09/19/22 11:57:47.270 < CA0035FF000229D100003000000 09/19/22 11:57:47.270 < 0000000000000000000000004842000096420000C842000000000000000000000000000000
⊞-I/O System	09/19/22 11.97.47.270 <= 0000000000000000000000000000000000
Flow Measurement H A3-1	4842000096420000C842000000000000000000000000000000
	00000000000000000000000000000000000000
Holding Registers	09/19/22 11:57:47.271 < 460089FF000229D200000F000000 09/19/22 11:57:47.271 < 000000000000C84100004842000096420000C8420000000000C84100004842000096420
Alarm System	C842000000000C84100004842000096420000542000050420000000000000000000000
Trend System	09/19/22 11:57:47.272 < 1000EFFF000229D4000003000000 09/19/22 11:57:47.272 < 8000800088008880
- Plunger	09/19/22 11.37.47.272 > 00000000000000000
-	
	#Errors: 356510
	Re-read Monitor Log 25 V #Polls: 350510 Close Help
< > > Ready	#Polls: 447 #Errors: 0 Connected to RMC-100 Login: L
Ready	

Figure 6-8: XIO Interface Communications - Packet Log screen

6.1.5 XIO Interface Communication: Write Stats

The Write Stats [Statistics] screen provides information to help in troubleshooting write request flow with the XIO remote applications.

The information reports write timing, write failures, and write totals per exported XIO application (app). Specific app statistic tracking helps narrow down the search for the source of errors. Unusually high timing values, or number of failures displayed for an application, helps focus troubleshooting specifically on that application. The remote application can then be checked on the XIO.

Figure 6-9: XIO Interface Communications – Write Stats screen

PCCU32 - [Entry]									-	$\Box \times$
Operate View Window Help										- 8
10 🖻 🔼 💽 🚳 🛄	🤰 🕺									
■ RMC-100	Setun Status a	and Statistics Par	cket Log Write Stats							
Communications			and boy							
Totalflow/TCP		Export At	Remote App (Slot)	Write Min [ms]	Write Max [ms]	Write Average [ms]	Write Last [ms]	Total Writes [per sec]	Total F	ailures
Totalflow/USB Totalflow/COM0:	208.14.200		System (0)	0	0	0	0	0	0	
Generic Com App	208.14.201	1	XMV COM1 (41)	0	0	0	0	0	0	
All Interface XIO 01										
Communications	208.10.103	Actions	Timings Enabled							
System										
XMV COM1										
SMV Interface XIO_01 COM2										
- Communications										
XMV Statistics										
- XMV 1										
il-I/O System										
Flow Measurement A3-1										
# A7-2										
- Holding Registers										
Alarm System										
Trend System										
i∎-Plunger										
	<									>
	Re-read	Monitor S	how editable fields			Print	Screen Save	Send Close	Help	X Help 🍓
< >		_								
Ready				#P	olls: 86 #Err	ors: 0 Connect	ed to RMC-100	Login: use	er i	v7.74 : 2209

6.1.5.1 Statistics enabling or reset

The screen supports statistics tracking enabling or statistics reset at any time. This ability is available for all applications. Reset statistics to monitor if errors continue to accumulate even after taking corrective action.

6.1.5.2 Supported applications

The XIO supports the export of up to 16 applications including the System application. If the maximum number of applications is exported and statistics are tracked for all, the screen can display information for up to 16 applications.

6.1.5.3 Parameter description

The table below provides the description of the parameters the device keeps statistics for. The Write Statistics screen displays only the exported applications. Statistic values display for each application.

Parameter or function	Description	Values
(Information per app)		
Export At	The index the application is exported at in the XIO	Read-only Valid Values: 0-15
Remote App (Slot)	The application name and slot for the app on the XIO	Read-only Valid Values: <app name=""> (0-254)</app>
Write Min [ms]	Minimum loop time of all write requests in milliseconds for that app on XIO.	Read-only Valid Values: floating point (2 decimal points)
Write Max [ms]	Maximum loop time of all write requests in milliseconds for that app on XIO.	Read-only Valid Values: floating point (2 decimal points)
Write Average [ms]	Average loop time of last 100 write requests in milliseconds for that app on XIO.	Read-only Valid Values: floating point (2 decimal points)
Write Last [ms]	Last loop time in milliseconds for that app on XIO.	Read-only Valid Values: floating point (2 decimal points)
Total Writes [per sec]	Total number of writes per sec for that app on XIO	Read-only Valid Values: floating point (2 decimal points)
Total Failures	Total number of errors occurred for that app on XIO	Read-only Valid Values: floating point (2 decimal points)
Actions	Enable/Disable or Reset all statistics displayed on the screen	 Select from the drop-down list: Timings Enabled (Default): start tracking all statistics on the screen Timings Disabled: stop tracking all statistics on the screen Reset Timings: reset all statistics on the screen

Table 6-4: XIO Interface Communications – Write Stats screen parameter description

6.2 Exported application screens: System application

The following sections describe the screens of the XIO System application only. The System application is automatically exported from the XIO to the remote controller when the remote controller-XIO connection is established successfully. When connecting to a new (non-configured) XIO, this application is the only application that displays under the XIO Interface instance assigned to that XIO. As additional applications are configured on the XIO, those applications, if exported, should display on the remote controller navigation tree (under the XIO Interface instance). See application set (2) in Figure 6-10 below.

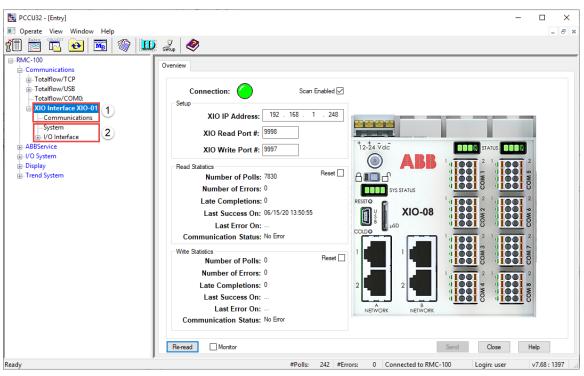


Figure 6-10: XIO Interface exported applications - System app

IMPORTANT NOTE: The exported System application shows a subset of the parameters shown in the System screens on the XIO. If you need to have more details or access the full parameter view, connect to the XIO instead, and view screens from there. I/O System or communication application screen descriptions are not included in this section. They are documented separately as embedded help files. Click **Help** on those applications' screens to view.

6.2.1 XIO Interface System: Station Setup

Figure 6-11 shows the Station Setup of the XIO as seen from the controller.

Figure 6-11: Exported XIO System Application - Station Setup screen

Operate View Window Help			
Image: Communications Image: Communications Image: Communications Image: Communications <td>🔩 PCCU32 - [Entry]</td> <td></td> <td>- 🗆 ×</td>	🔩 PCCU32 - [Entry]		- 🗆 ×
RMC-100 Communications Grotaflow/CDM0: Totaflow/COM0: XIO Interface XIO-01 Gystem Bastervice Jospitary Green Save Send Cose Help XHelp @.	📧 Operate View Window Help		_ <i>&</i> ×
Communications Station Setup Applications Resources Registry Introductions Station Setup Applications Resources Registry Introductions Interface XIO-01 System 208.14.8196 (0.0.4) Station Setup Applications Bartleville 208.14.8197 (0.0.5) Location Bartleville 06/15/2020 15:14:34 208.9.113294 (0.7.130) Automatically Synchronize Time with Controller Off Off	fi 🖻 🖪 💽 💌 🔯	Şetup 🧶	
Image: Totalflow/TCP Totalflow/C0M0; Use Value Image: Totalflow/C0M0; Image: Value XIO-01 XIO-01 Image: System Communications System Bartleville 06/15/2020 15:14:34 Image: ABBService Image: VO System Date/Time 06/15/2020 15:14:34 208.9.11/324 [0.7.130] Automatically Synchronize Time with Controller Off Image: Display Image: Trend System Image: Value Image: Va	RMC-100	Station Setup Applications Resources Registry	
Image: Construction of the second	T .		
AllO Interface XIO-01 Communications System 06/15/2020 15:14:34 ABBService 06/15/2020 15:14:34 I-Ospitaly Automatically Synchronize Time with Controller Off 0ff		Description	
Communications System B- ABBService 06/15/2020 15:14:34 UO System Display B- Trend System Automatically Synchronize Time with Controller Off Communications Education B- ABBService 06/15/2020 15:14:34 208.9.11394 (0.7.130) Automatically Synchronize Time with Controller Off Off		208.14.8196 [0.0.4] Station ID	XIO-01
System 206.11.12288 [0.9.0] Date/Time 06/15/2020 15:14:34 P. VO System Display 0.7.130] Automatically Synchronize Time with Controller Off P. Display Trend System 0.7.130] Automatically Synchronize Time with Controller Off P. Display 0.7.130] Automatically Synchronize Time with Controller Off P. Display 0.7.130] Automatically Synchronize Time with Controller Off P. Display 0.7.130] Automatically Synchronize Time with Controller Off P. Display 0.7.130] Automatically Synchronize Time with Controller Off P. Display 0.7.130] Automatically Synchronize Time with Controller Off P. Display 0.7.130] Automatically Synchronize Time with Controller Off P. Display 0.7.130] Automatically Synchronize Time with Controller Off P. Display 0.7.130] Automatically Synchronize Time with Controller Off P. Display 0.7.130] 0.7.130] Automatically Synchronize Time with Controller Off P. Display 0.7.130] 0.7.130] 0.7.130] 0.7.130] 0.7.130] 0.7.1		208.14.8197 [0.0.5] Location	Bartleville
ABBService J/O System Display Trend System Re-read Monitor Show editable fields Print Screen Save Send Close Help		208.11.12288 [0.9.0] Date/Time	06/15/2020 15:14:34
Display D		208.9.11394 [0.7.130] Automatically Synchronize Time with Controller	Off
#Polls: 281 #Errors: 0 Connected to RMC-100 Login: user v7.68:135		Re-read Monitor Show editable fields Print Screen Save	Send Close Help X Help 🦓
	Ready	#Polls: 281 #Errors: 0 Connected to	RMC-100 Login: user v7.68 : 139

6.2.1.1 Parameter description

1

The table below provides description of the parameters on the exported Station Setup view.

Parameter or function	Description	Values
Station ID	Name that uniquely identifies each installed XIO. This name is detected by remote controllers (using Auto Discovery) and must be unique. It is recommended not to leave the factory default name even when installing only a single XIO.	Read-Only Default: TOTALFLOW (change from the XIO at installation time)
Location	Describes the physical location of the device, such as the county name or road number.	Read-Only Default: Measurement and Control (change from the XIO at installation time)
Date/Time	Date and Time kept at the XIO. It can be automatically configured if the XIO date/time is synchronized with a laptop's date/time during installation, or manually configured later. For initial installations, if you replied "yes" to the request to synchronize data and time with your laptop when you connected with the device for the first time, you do not need to change these values. Note: Date and time must agree with the collection equipment. Changing date and time after the device is in operation must be considered carefully as it will affect time stamps for events, calibration, and logs required by auditing. Follow your company policies.	Read-Only Configure from the XIO if necessary. The XIO offers the additional option to synchronize time with an RMC-100. See Automatically Synchronize time with controller, below in this table. MM/DD/YYYY HH:MM:SS (24-hour clock)
Automatically Synchronize time with controller	Function to enable keeping the same time (with a reasonable margin of error) on the XIO and the remote controller, for the purpose of correlating events and logs on both devices. If new XIOs are connected to an RMC, set them to automatically synchronize their date/time with the RMC. There is no need to synchronize each with the laptop. If new XIOs are not connected to ABB Totalflow remote controllers, sync the XIOs date/time with the laptop at installation time or manually set up when required. Note: Changing date and time after the device is in operation affects time stamps for events, calibration, and logs required by auditing. Follow your company policies.	 Select from the drop-down list: Off: does not synchronize the XIO time with the remote controller's time. On (recommended): automatically synchronizes the XIO time with the remote controller's time.

Table 6-5: Exported XIO System Application - Station Setup screen parameter description

6.2.2 XIO Interface System: Applications

The read-only Applications screen provides a list of all the applications currently instantiated in the XIO. The list helps identify:

Exported applications from the XIO. Exported applications can be managed or monitored from the remote controller without the need to connect to the XIO. They are visible under XIO Interface instances on the controller's navigation tree. In the image below (Figure 6-12), the Applications screen lists all applications on an XIO. The System and the XMV Interface applications are exported and display on the RMC navigation tree (under the XIO Interface instance, on the left).

Figure 6-12: Exported XIO applications

PCCU32 - [Entry] Coperate View Window Help	Singe 🛷						×
Communications Totalflow/TCP	Station Setup Application	s Resou	irces Registry				
Totalflow/USB		App#	Name/ID	Туре	Revision	Exported	Exported At
Totalflow/COM0:	208.14.10241 [0.4.1]	0	System	System	2106203-001		0
-XIO Interface XIO-01 -Communications	208.14.10242 [0.4.2]	1	Totalflow/TCP	Communications	2101348-005		
System	208.14.10243 [0.4.3]	2	Totalflow/USB	Communications	2101340-005		
-XMV Interface	208.14.10244 [0.4.4]	3	XIO Server	XIO Server	2106258-001		
ABBService	208.14.10245 [0.4.5]	4	XIO Write Server	XIO Server	2106258-001		
ia-I/O System ia- Display	208.14.10248 [0.4.8]	7	I/O Interface	I/O Interface	2106202-001		
Trend System	208.14.10282 [0.4.42]	41	XMV Interface	XMV Interface	2103775-007		1
	Reread Monitor			Pirit Screen Sa	re Send	Close Heir	XHelp 🕷
	Re-read Monito	r 🗹 Sho	ow editable fields	Print Screen Sav	/e Send	Close Heip	vuen 🥰
Ready			#Poll	s: 187 #Errors: 0 Connecte	d to RMC-100	Login: user	v7.68 : 1397

— Non-exported XIO applications. These applications are not visible on the remote controller navigation tree. These can be applications that do not support export, or applications not configured for export. In the image below (<u>Figure 6-13</u>), there are several applications that are not exported, including the I/O Interface. Of these non-exported apps, only the I/O Interface supports export and can be set to export on the XIO.

Figure 6-13: Non-exported instantiated XIO applications

🗉 Operate View Window Help							- 1
1 🛅 🔁 🔂 📓 🖤 🛄	2.						
-RMC-100		_					
- Communications	Station Setup Application	is Resou	rces Registry				
Totalflow/TCP				-	Revision		Exported At
Totalflow/USB Totalflow/COM0:	208.14.10241 [0.4.1]	App# 0	Name/ID System	Type System	2106203-001	Exported	Exported At
XIO Interface XIO-01			-				U
Communications	208.14.10242 [0.4.2]		Totalflow/TCP	Communications	2101348-005		
System	208.14.10243 [0.4.3]	2	Totalflow/USB	Communications	2101340-005		
XMV Interface	208.14.10244 [0.4.4]	3	XIO Server	XIO Server	2106258-001		
ABBService	208.14.10245 [0.4.5]	4	XIO Write Server	XIO Server	2106258-001		
⊕-I/O System ⊕-Display	208.14.10248 [0.4.8]	7	I/O Interface	I/O Interface	2106202-001		
Trend System	208.14.10282 [0.4.42]	41	XMV Interface	XMV Interface	2103775-007		1

6.2.2.1 Application display on navigation tree

When updating application exports on the XIO, remember to refresh the navigation tree on the remote controller, then verify that the XIO Interface instance updates its display and the exported applications display.

6.2.2.2 Parameter description

Doromotor Description

Note that on the left-most column of the displayed application list, the screen displays the register mapping from the XIO system registers to the remote controller registers. The first register is the remote controller register. The second register (in square brackets) is the register on the actual XIO. The table below describes the Application screen parameters.

or function	Description	values
App#	The app slot number assigned to the application on the XIO	Read-only Valid values: 0-253
Name/ID	The name of the application instance on the	Read-only

Values

Parameter or function	Description	Values
	XIO.	Default or user-defined application name
Туре	Name of the general application category	Read-only
Revision	Application part number and revision	Read-only <totalflow number="" part="">-<revision number=""> For example: 2103775-007 is the part number for the XMV Interface application for revision 007.</revision></totalflow>
Exported	Indicates that the XIO application is set for export to the remote controller	Read-only Verify app export:
		 Selected: the XIO exported the application to the remote controller
		 Cleared: the XIO did not export the application to the remote controller
		If the application is not exported and it is required, set to Export on the XIO Application/License Management tab.
Exported At	In the XIO, this is the index the application is exported at. This number is used to calculate the corresponding register number for the remote application on the XIO Interface (RMC). Reserved index numbers are 0 for the System app, and 255 for un-exported apps.	Read-only Valid Values: 0-15, where 0 is reserved for the XIO System app

6.2.3 XIO Interface System: Resources

The Resources screen displays information on the XIOs system component utilization. This helps to determine system loading and available capacity for processor, memory, and disk space.

ष्सु, PCCU32 - [Entry]		- 🗆 X
Operate View Window Help		_ <i>6</i> ×
10 🛅 💽 💽 🖼 💷	General Server Server	
	Station Setup Applications Resources Registry	
Communications	Station Setup Applications Registry	
	Description Value Units	
Totalflow/COM0:	208.13.12800 [0.10.0] Current Processor Usage 1.00 %	
XIO Interface XIO-01	208.13.12801 [0.10.1] Average Processor Usage 1.19 %	
Communications	208.11.12289 [0.9.1] Available Task Memory 493449216 Bytes	
ABBService	208.11.12290 [0.9.2] Available RAM Disk Space 66822144 Bytes	
H- I/O System		
i vo oysenn i i o oysenn	208.11.12291 [0.9.3] Available FLASH File Space 475940864 Bytes	
Trend System	208.11.12292 [0.9.4] Available SD Card File Space 16226304 Bytes	
	Re-read Monitor Show editable fields Print Screen Save Send	Close Help X Help 💐
leady	#Polls: 58 #Errors: 0 Connected to RMC-100	Login: user v7.68 : 1397

6.2.3.1 Parameter description

The table below describes the Resources screen parameters.

Parameter or function	Description	Values	Units
Current Processor Usage	Current processor utilization or load	Read-only	Value in

Parameter or function	Description	Values	Units
			Percentage
Average Processor Usage	Running average processor load for the last 3 minutes.	Read-only	Value in percentage
Available Task Memory	Displays the amount of memory in bytes currently available. This is the part of RAM in which tasks run. Monitor (check) this value after:	Read-only	Bytes
	 Adding applications 		
	 Adding any task that will consume memory 		
	 Removing unused applications to free up memory for other purposes 		
Available RAM Disk Space	Displays the amount of RAM file space currently available. RAM file space is consumed by information such as the OS, Totalflow application (Totalflow.exe), the run time configuration data (tfData), and historical flow records and trend files. Check this value to verify that all file space has not been consumed after:	Read-only	Bytes
	 Adding an application 		
	 Increasing the frequency of log periods 		
Available FLASH file Space	Displays the amount of file space currently available. FLASH is the non-volatile memory which contains files such as the Boot Loader, Configuration Files (tfCold), the Operating System, and the Totalflow application (Totalflow.exe). Information from FLASH is loaded into RAM during Cold starts.	Read-only	Bytes
Available SD Card File Space	Displays available space on an SD card, if one is installed. An SD card is not required for normal operation but is recommended for additional memory space. It provides additional memory for data such as chromatograms, trend files, etc.	Read-only	Bytes

6.2.4 XIO Interface System: Registry

The Registry screen displays the XIO embedded hardware and software part numbers, revisions, and versions (Figure 6-15). The screen displays a subset of the parameters shown in the Registry screen local to the XIO. Of special interest on this screen are the part numbers for the Flash Software and the OS Software. ABB makes the OS+Flash packages available for download. The Flash-only and OS-only packages are not available for download but may be needed in cases where the update requires that each package is uploaded separately. If this is required, call ABB technical support to obtain access to the specific revs.



IMPORTANT NOTE: The OS+Flash package number is not listed in the Registry screen. The XIO OS+Flash package part number is 2106200. The Flash part number embedded in this package is 2106198.

IQ				
म्बु PCCU32 - [Entry]				- 🗆 X
Coperate View Window Help				_ <i>8</i> ×
f 📅 🖾 💽 🚾 🚳 🛄	🔰 🍠			
	Station Setup Application	Registry		
- Communications - Totalflow/TCP	Station Setup Application	is nesources negloay		
Totalflow/USB		Description	Value	
Totalflow/COM0:	208.11.12298 [0.9.10]	Software Build Date/Time	06/12/20 17:05:15	
⊨ XIO Interface XIO-01				
Communications 	208.14.8224 [0.0.32]	Board Part #	2106180	
	208.14.8193 [0.0.1]	Flash Software Part #	2106198-002	
	208.14.8231 [0.0.39]	Flash Software Version	4.0.0-8	
ia Display arrend System	208.14.8210 [0.0.18]	OS Software Part #	2106196-002	
	208.14.8232 [0.0.40]	OS Software Version	4.0.0-8	
	208.14.8194 [0.0.2]	Software Description	XIO FLASH	
	208.14.8225 [0.0.33]	First Stage Boot Loader Part #	2106194-001	
	Re-read Monito	or ☑ Show editable fields	Print Screen Save Send Clo	se Help XHelp 🍋
Ready		#Polls:	59 #Errors: 0 Connected to RMC-100	Login: user v7.68 : 1397

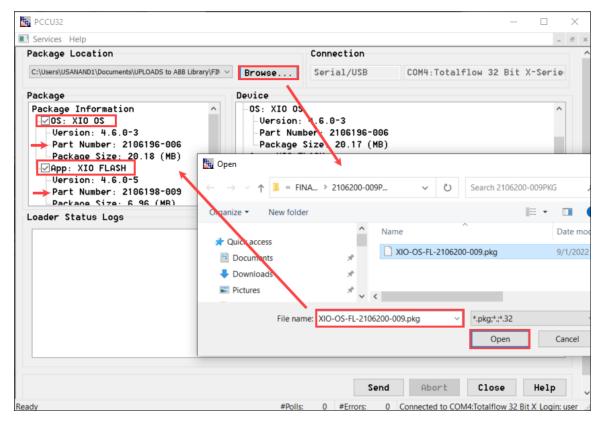
Figure 6-15: Exported XIO System application - Registry screen

This information helps determine software versions running on the XIO.

Determining the software revision running on the XIO helps when troubleshooting or when deciding if updates are required. ABB technical support personnel may require this information to determine the course of action to correct a problem.

When using the Device Loader to display customer package contents, the OS and Flash part numbers also display individually (Figure 6-16).





If you or ABB Technical support determine that the XIO requires a software update, perform the update on the XIO using the device loader. See the XIO User Manual for details (See <u>Additional</u> <u>information</u> for the link to the document).

Obtain the required software package revision from the ABB website (www.abb.com/upstream) or the ABB download center (easiest, and shown below).

To obtain software for the XIO:

1. Go to the ABB library download center (<u>library.abb.com</u>).

Figure 6-17: ABB Library Download Center

ABB Library	× +				-	0	×
\leftarrow \rightarrow C $ begin{tabular}{lllllllllllllllllllllllllllllllllll$	library.abb.com/#	Aø	ŵ	₹⁄≡	Ē		
ABB Library	Q Search for				EN		OG IN
E Category							
Document kind							
対 _人 Document language	Welcome to						
- Sort by	ABB Library Download Center						
	Start searching for documents or use existing filters.						
	To see your premium content please						
	LOG IN						
	Co	ntact Ur	Feedba	ick Tern	ns & Condit	ions ©	2022 ABB

- Type the product type or name in the search field (Figure 6-18).
 On the navigation tree on the left, select **Document Kind** as the filter for the search.
- 4. Scroll down to locate and select **Software**. The list of available software packages displays.

🔲 🔋 XIO 2.2 - All Documents	X i Inside+ X i ABB Library X ABB Library - A	II Categories	× +	– 🗆 X					
← → C ^(h) https://library.abb.com/r?dkg=dkg_software&q=XIO				🕒 😩 🗝					
ABB Library	Q XIO		;	K EN LOG IN					
Document kind	Software 😵								
Agreements 🗸	Documents found: 6		GÐ GET LINK	GET NOTIFIED					
Drawings and schematics General Guidelines and processes Instructions and manuals	PUBLIC Software DL - XIO Customer Package (2106200-009). Contains both Flash and OS. ID: DL/2106200-009, PART: 2106200-009, REV: A English XIO standard customer package 2106200-009. Contains both OS and Flash: OS (P/N: 210	Software	2022-09-0	2 ZIP					
Lists ¥ Multimedia ¥ Notifications ¥	FUBLIC Software DL - Hash file for integrity check of XIO Customer Package (2105200-009). ID: DL/2106200-009_OSFL_SHA512, REV: A English Hash file used to check for the integrity of customer package: 2106200-009. Download f	Software	2022-09-0	2 SHA5 👱 0,00 МВ					
Presentation Product data and specifications Promotional material Publications	PUBLIC Software DL - XIO Customer Package (2106200-008). Contains both Flash and OS. ID:DL/2106200-008, PART:2106200-008, REV:A English XIO standard customer package 2106200-008. Contains both OS and Flash: OS (P/N: 210	Software	2022-04-0	б ZIP <mark>. 21,68 мв</mark>					
Reports ✓ Software ✓ Training and support ✓	PUBLIC Software DL - Hash file for integrity check of XIO Customer Package (2106200-006). ID: DL/2106200-006_OSFL_SHA512, REV: A English Hash file used to check for the integrity of customer package: 2106200-006. Download f	Software	2021-09-2	9 SHA5 👱 0,00 МВ					
^	Contact Us Feedback Terms & Conditions © 2022 AB								

Figure 6-18: ABB library search lists XIO software

5. Search to locate the OS+Flash package (part number 2106200). Download the latest revision (for example, -002 or later). The latest package revision is always available.

ABB Inc.

Measurement & Analytics Quotes: <u>US-IAMA.inquiry@us.abb.com</u> Orders: <u>US-IAMA.order@us.abb.com</u> Training: <u>US-IAMA.training@us.abb.com</u> Support: <u>upstream.support@us.abb.com</u> +1 800 442 3097 (opt. 2)

Additional free publications are available for download at: www.abb.com/upstream

Main Office - Bartlesville

7051 Industrial Blvd Bartlesville, OK 74006 Ph: +1 918 338 4888

Texas Office - Houston

3700 W. Sam Houston Parkway S., Suite 600 Houston, TX 77042 Ph: +1 713 587 8000

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents - in whole or in parts – is forbidden without prior written consent of ABB.

2107011MNAB

Copyright[©] 2022 ABB all rights reserved