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ILX56-PBS

PROFIBUS DPV1 Slave

ControlLogix® Platform

August 19, 2025

User Manual

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ILX56-PBS User Manual
For Public Use.
August 19, 2025

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部件名称 Component Name	有害物质 Hazardous substances					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr(VI))	多溴联苯 Polybrominated Biphenyls (PBB)	多溴二苯醚 Polybrominated Diphenyl Ethers (PBDE)
印刷电路板组件 Printed Circuit Board Assemblies	X	O	O	O	O	O
接线和电缆 Wiring and Cable	O	O	O	O	O	O
塑料部件 Plastic Components	O	O	O	O	O	O

本表格依据 SJ/T 11364 的规定编制。This table is made per guidance of SJ/T 11364

O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

O: Indicates that this hazardous substance contained in all of the homogeneous materials for the part is below the limit requirement in GB/T 26572.

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

X: Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in GB/T 26572.

(企业可在此处，根据实际情况对上表中打"X"的技术原因进行进一步说明。)

(According to actual situation, extra explanations can be given here for the technical reasons of items with "X".)

Contents

1 Preface

1.1 Introduction to the ILX56-PBS

This manual describes the installation, operation, and diagnostics of the ProSoft ILX56-PBS PROFIBUS DPV0/DPV1 Slave module.

The ILX56-PBS slots into a 1756 ControlLogix backplane and allows the user to interface PROFIBUS DP to a ControlLogix controller via the ControlLogix backplane.

The ILX56-PBS can operate as one or more PROFIBUS DPV0/DPV1 Slaves. This will allow a ControlLogix controller to exchange process, alarming, and diagnostic data with a PROFIBUS DP Master.

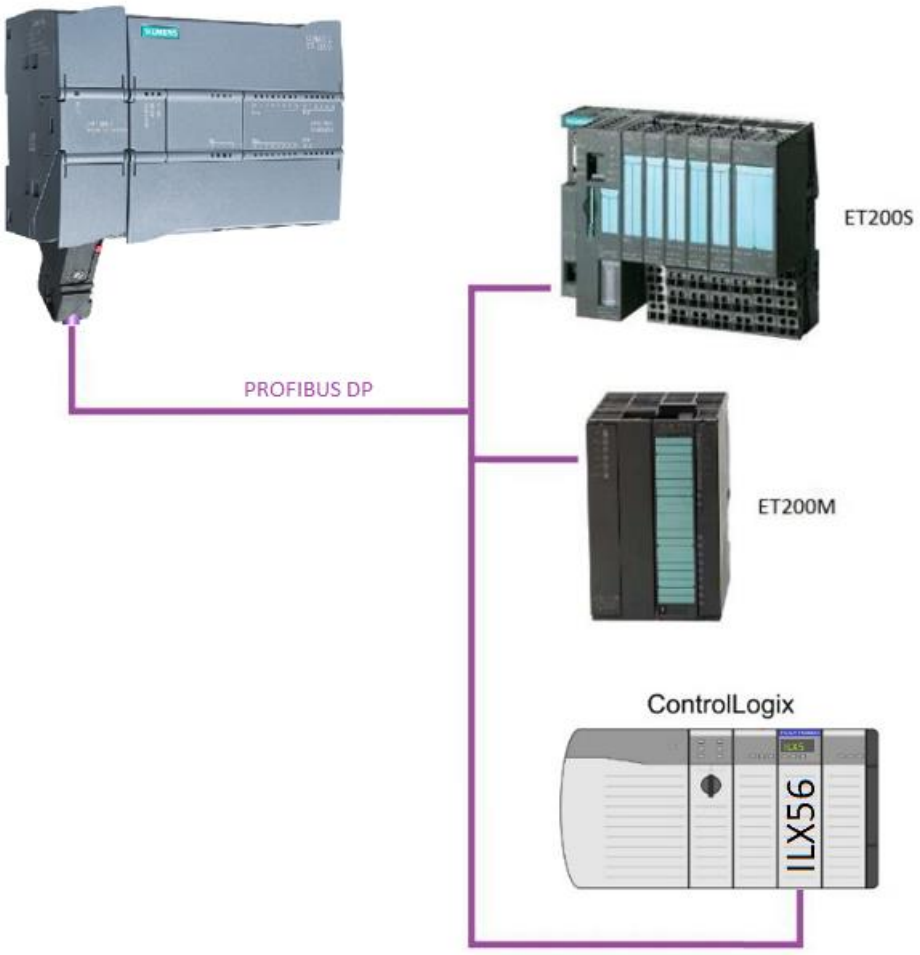


Figure 1.1 – Typical ILX56-PBS PROFIBUS Slave architecture

1.2 Features

The ILX56-PBS will allow the user to interface PROFIBUS DPV0/DPV1 to a ControlLogix controller via the 1756 ControlLogix backplane. The ILX56-PBS also supports an onboard non-volatile event log for improved fault finding.

PROFIBUS Slave (ILX56-PBS)

The ILX56-PBS can also be configured to emulate up to 10 PROFIBUS slave devices. Each slave device emulated by the ILX56-PBS can be configured to provide DPV0 data exchange with a PROFIBUS Master on the network.

The data will be formatted into the engineering units for use in a ControlLogix platform by using the automatically-generated mapping imports for Logix User Defined Data Types (UDTs).

Each emulated slave can also be configured to exchange DPV1 Class 1 data by mapping Logix tags for the relevant DPV1 data exchange. Each emulated slave will also be able to provide DPV1 alarming for the PROFIBUS Master.

1.3 Additional Information

The following documents contain additional information that can assist the user with the module installation and operation.

Table 1.1 - Additional Information

Resource	Link
PLX50 Configuration Utility Installation	www.prosoft-technology.com
ILX56-PBS User Manual ILX56-PBS Datasheet	www.prosoft-technology.com

2 Installation

2.1 Module Layout

The ILX56-PBS has one RS485 PROFIBUS DP port at the front of the module.

NOTE: All required power for the module is derived from the ControlLogix backplane.

The module provides 3 diagnostic LEDs and a 4-character alpha-numeric LED display that provides the mode and status of the module.

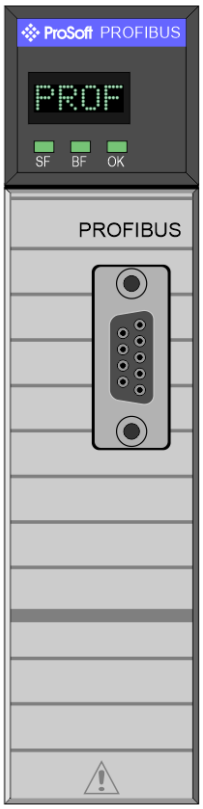


Figure 2.1 – ILX56-PBS Front View

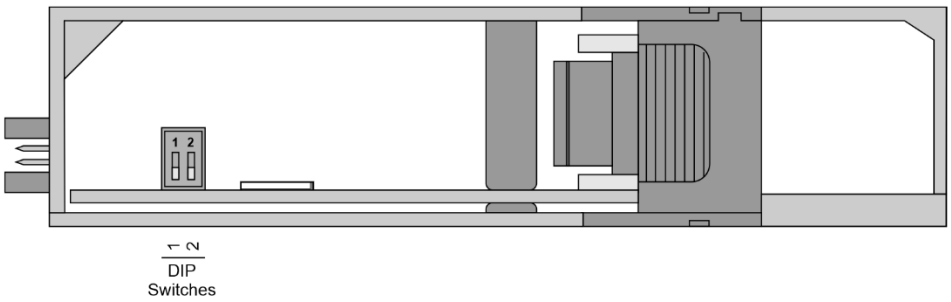


Figure 2.2 – ILX56-PBS Bottom View

The module provides two DIP switches and a slot for a SD memory card located on the bottom of the module. These switches can only be accessed when the module is removed from the ControlLogix chassis.

Table 2.1. - DIP Switch Settings

DIP Switch	Description
DIP Switch 1	Used to force the module into “Safe Mode”. When in “Safe Mode” the module will not load the application firmware and will wait for new firmware to be downloaded. This should only be used in the rare occasion when a firmware update was interrupted at a critical stage.
DIP Switch 2	Used to prevent changes to the configuration.

2.2 PROFIBUS DP Port (RS485)

The PROFIBUS DP port uses a female DB9 connector. This provides connection for the communication conductors, cable shielding and +5Vdc output power.

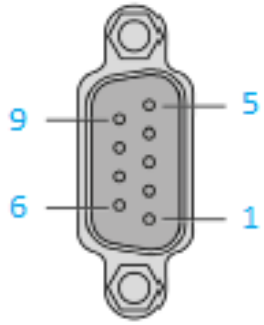


Figure 2.3 – ILX56-PBS PROFIBUS DP (RS485) DB9 connector

Table 2.2 – DB9 Connector layout

Pin	Signal	Description
1	-	Not connected
2	-	Not connected
3	RxD/TxD-P	Data received and transmit (+)
4	CNTR-P	Control signal to repeater (+)
5	DGND	Reference potential for +5Vdc
6	VP	+5Vdc for terminating resistors (active termination)
7	-	Not connected
8	RxD/TxD-N	Data received and transmit (-)
9	-	Not connected

3 Setup

3.1 Install Configuration Software

All the network setup and configuration of the module is achieved by means of the ProSoft PLX50 Configuration Utility. This software can be downloaded from:

http://www.prosoft-technology.com.

Figure 3.1. - ProSoft PLX50 Configuration Utility Environment

3.2 Creating a New Project

Before the user can configure the module, a new PLX50 Configuration Utility project must be created.

1 Under the File menu, select New.

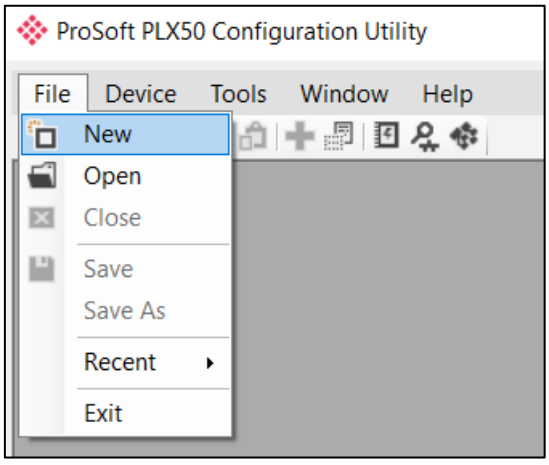


Figure 3.2 - Creating a new project

2 A new device can now be added by selecting Add under the Device menu.

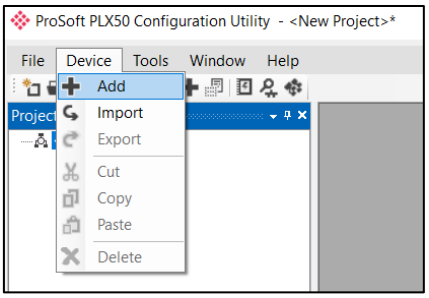


Figure 3.3 - Adding a new device

3 In the Add New Device window select the ILX56-PBS and click the Ok button.

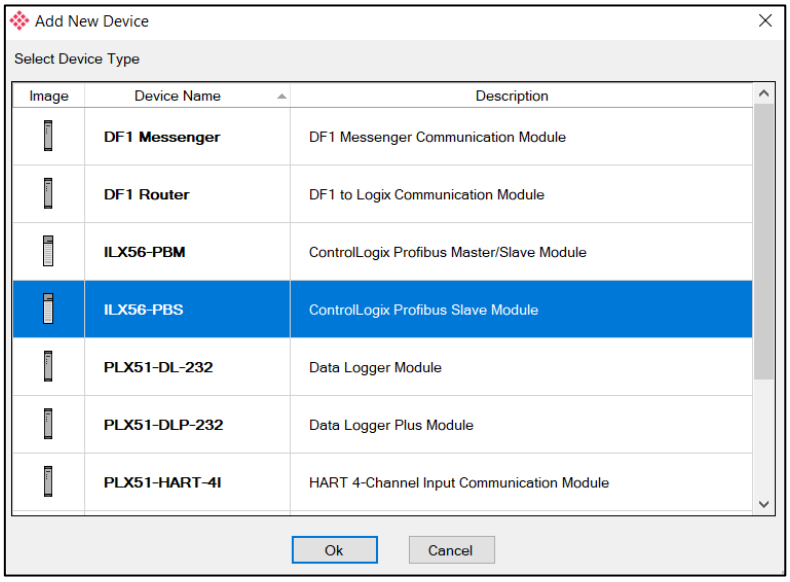


Figure 3.4 – ILX56-PBS

4 The device will appear in the Project Explorer tree as shown below, and its configuration window opened. The device configuration window can be reopened by either double-clicking the module in the Project Explorer tree or right-clicking the module and selecting *Configuration*.

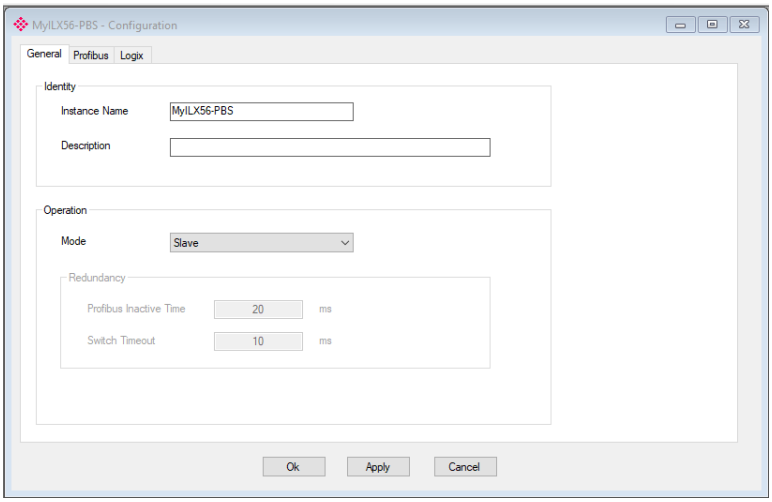


Figure 3.5 – ILX56-PBS configuration

3.3 ILX56-PBS Parameters

The ILX56-PBS parameters are configured by the PLX50 Configuration Utility.

NOTE: Refer to the additional information section for documentation and installation links for ProSoft's PLX50 Configuration Utility.

3.3.1 General

The General configuration is shown in the following figure. The ILX56-PBS General configuration window is opened by either double-clicking on the module in the tree, or right-clicking the module and selecting *Configuration*.

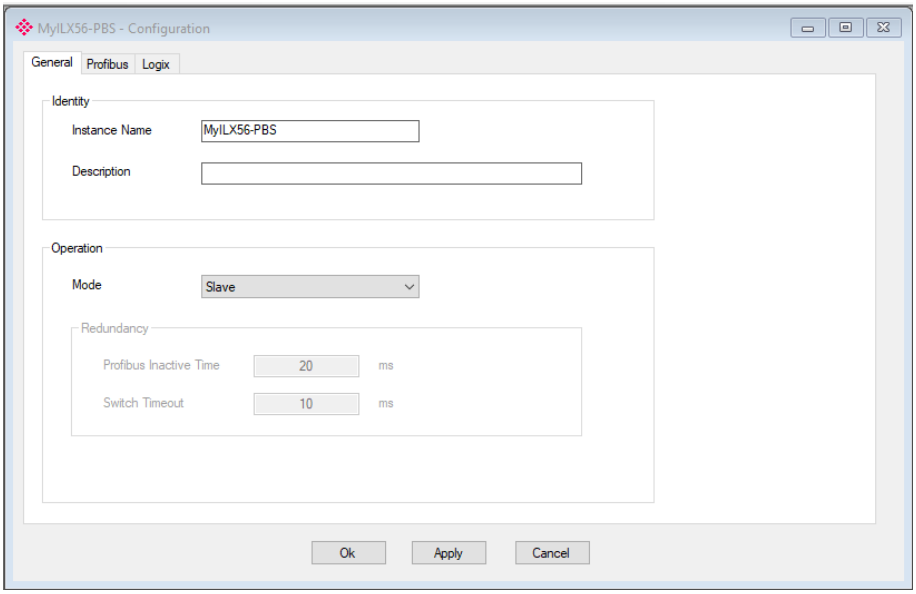


Figure 3.6 – ILX56-PBS General configuration

The General configuration consists of the following parameters:

Table 3.1 - General configuration parameters

Parameter	Description
Instance Name	This parameter is a user-defined name to identify between various ILX56-PBS modules.
Description	This parameter is used to provide a more detailed description of the ILX56-PBS.
Mode	The ILX56-PBS can operate in one of two modes: **Quiet** This mode allows the user to connect the ILX56-PBS to an active bus and run a DP packet capture. In this mode the ILX56-PBS will not communicate on the DP Bus, but rather only listen. **Slave** The ILX56-PBS will emulate multiple PROFIBUS Slave devices.

3.3.2 PROFIBUS – Slave Mode

The ILX56-PBS PROFIBUS configuration is shown in the following figure. The ILX56-PBS PROFIBUS configuration window is opened by either double-clicking on the module in the tree, or right-clicking the module and selecting *Configuration*.

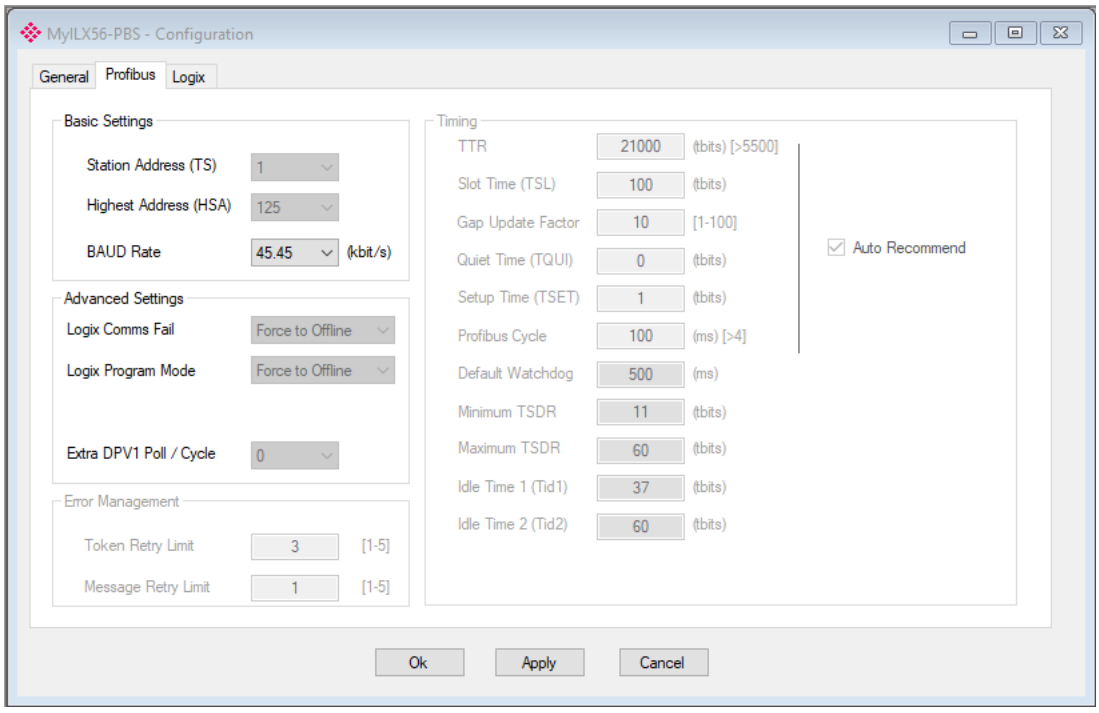


Figure 3.7 – ILX56-PBS PROFIBUS configuration – Slave Mode

The PROFIBUS slave configuration consists of the following parameters:

Table 3.2 - PROFIBUS configuration parameters – Slave Mode

Parameter	Description
BAUD Rate	Baud Rate (in Kbps) of the PROFIBUS network: 9.6, 19.2, 45.45, 93.75, 187.5, 500, 1500, 3000, 6000 or 12000 Kbps. The baud rate selected should be supported by the PROFIBUS master. The baud rate should be

	selected depending on the cable length, see chapter "***PROFIBUS DP***"

3.3.3 Logix

The Logix configuration is shown in the following figure. The ILX56-PBS Logix configuration window is opened by either double-clicking on the module in the tree, or right-clicking the module and selecting *Configuration*.

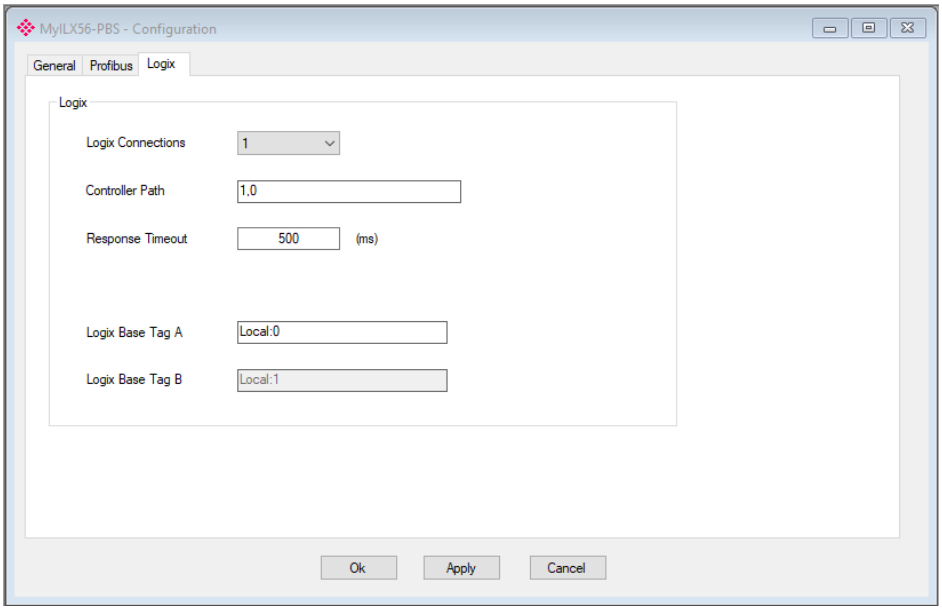


Figure 3.8 – ILX56-PBS Logix configuration

The Logix configuration consists of the following parameters:

Table 3.3 - Logix configuration parameters

Parameter	Description
Logix Connections	The number of Logix (CIP) Connections (1 to 10) to be used in the exchange with Logix. Each backplane connection is configured with 500 bytes output and 496 byte input and 0 byte configuration. **NOTE:** This value must match the same number of connections configured in the Logix IO tree.
Controller Path	This is the CIP path to the Logix controller. This path will be used for the Class 3 data exchanges for DPV1 objects and alarms.
Response Timeout	The maximum time (ms) allowed for a Class 3 response from the Logix controller.
Logix Base Tag A/B	This is the tagname of the ILX56-PBS used for the input and output assembly. For example, if the module is in the local slot connected to a Logix controller the base Logix tag will be local:x (where x is the slot number). The base tagname is used when generating the Logix L5X file, which will automatically map the required data. **NOTE:** Only Logix Base Tag A will be relevant.

3.4 Adding PROFIBUS DP Devices

The user will need to add each PROFIBUS device to the ILX56-PBS. Each PROFIBUS device can then be configured. This is done by right-clicking on the ***PROFIBUS Devices*** item in the tree and selecting ***Add PROFIBUS Device***.

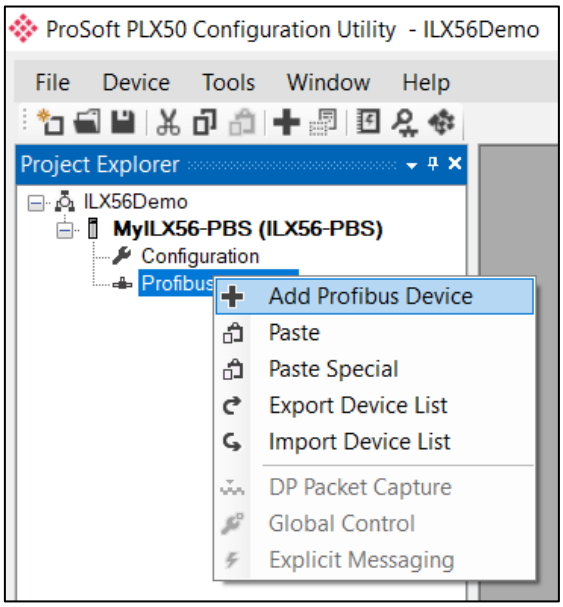


Figure 3.9 – Adding a PROFIBUS Field Device

When adding a PROFIBUS Device in Slave Mode, the user can select any of the following devices to add:

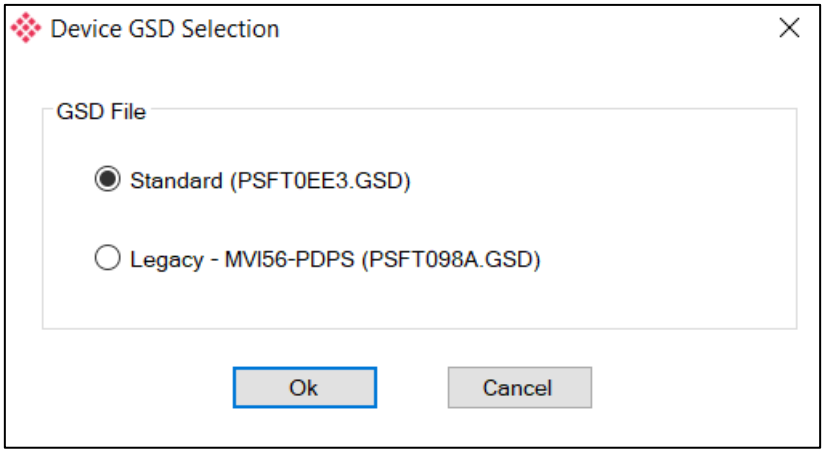


Figure 3.10 – Selecting a PROFIBUS Field Device

Table 3.4 – Slave GSD File

Module	GSD Filename
ILX56-PBS	PSFT0EE3.GSD
MVI56-PDPS	PSFT098A.GSD

3.4.1 General

The General configuration is shown in the following figure. The Device General Configuration window is opened by either double-clicking on the slave device in the tree, or right-clicking the slave device and selecting *Configuration*.

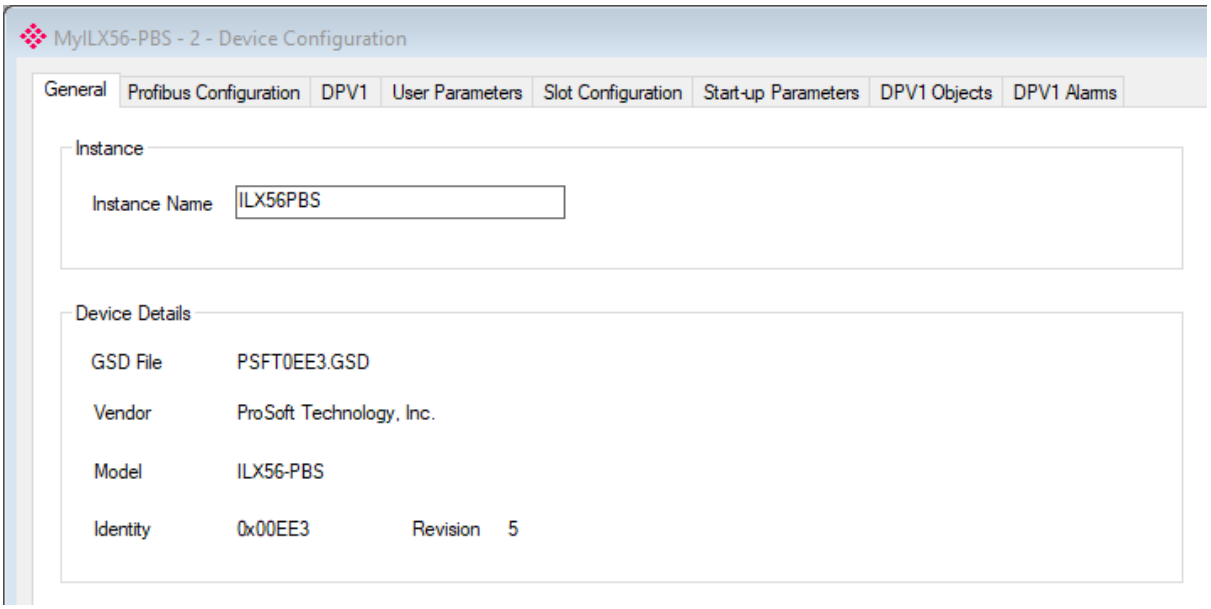


Figure 3.11 – Device General configuration parameters

When the module is emulating the legacy device, the General Configuration parameters will appear as follows:

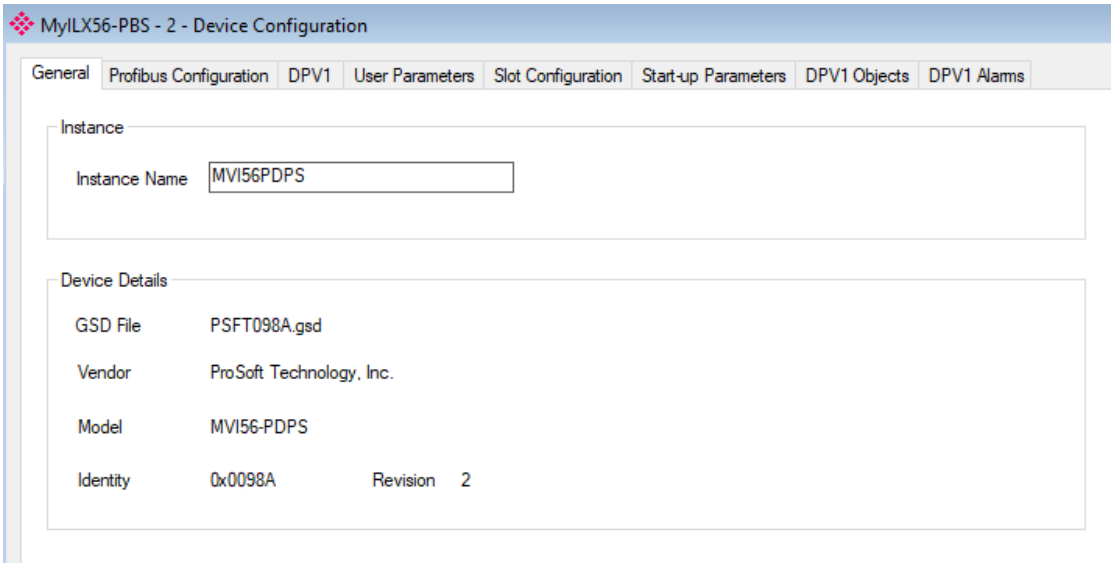


Figure 3.12 – Device General configuration parameters (legacy device)

The General configuration consists of the following parameters:

Table 3.5 –Device General configuration parameters

Parameter	Description
Instance Name	The device instance name which will be used to create the Tag names and UDTs in Logix.

3.4.2 PROFIBUS Configuration

The PROFIBUS configuration is shown in the following figure. The Device PROFIBUS configuration window is opened by either double-clicking on the slave device in the tree, or right-clicking the slave device and selecting *Configuration*.

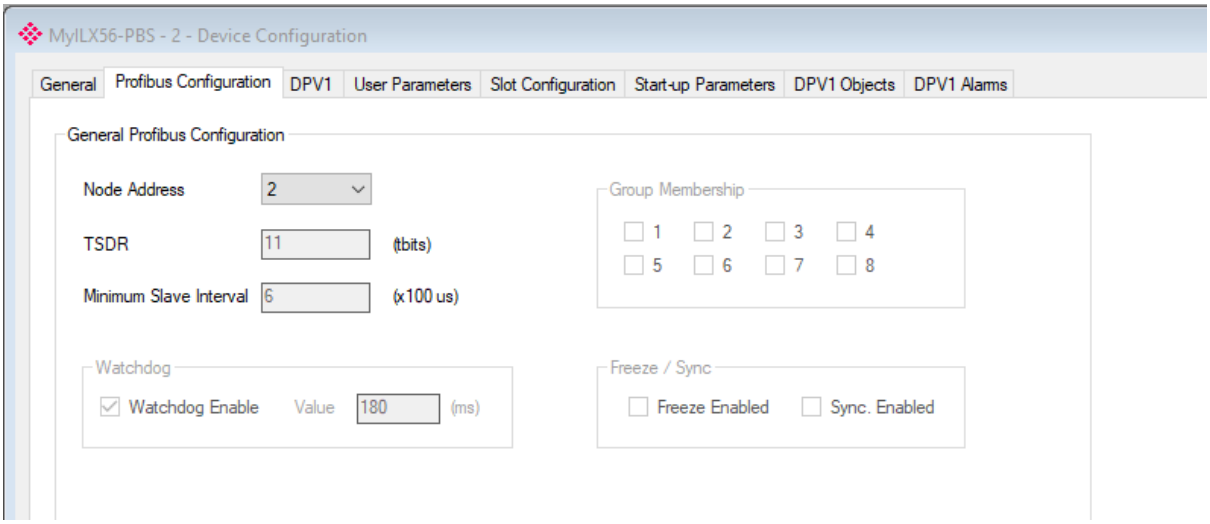


Figure 3.13 – Device PROFIBUS configuration parameters

When the module is emulating the legacy device, the Profibus Configuration parameters will appear as follows:

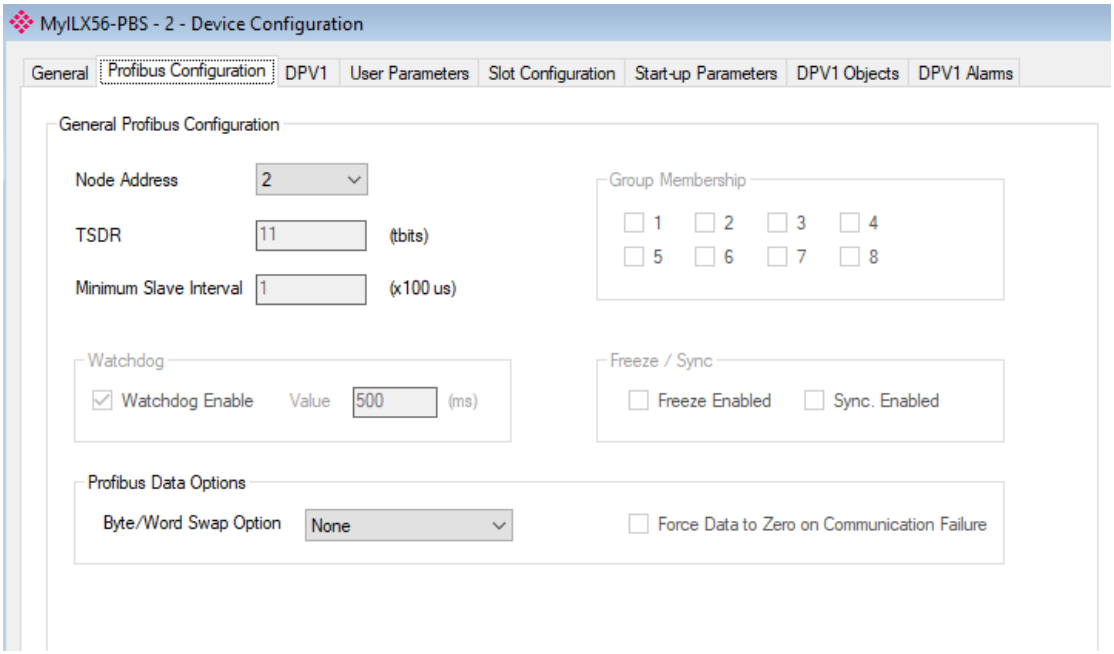


Figure 3.14 – Device PROFIBUS configuration parameters (legacy device)

The PROFIBUS configuration consists of the following parameters:

Table 3.6 – Field Device PROFIBUS configuration parameters

Parameter	Description
Node Address	The station address configured for the added device. This is the address the PROFIBUS Master will use to look for and configure the device for Data Exchange.
TSDR	This parameter is only configured by the PROFIBUS Master. Time Station Delay of Responders. The minimum time that a PROFIBUS-DP slave must wait before it responds. It must respect the rule: Min: 11 Max: 800 Default: 11
Minimum Slave Interval	This parameter is only configured by the PROFIBUS Master. The minimum time that the PROFIBUS Master must wait between two IO data exchanges with this device. The default value proposed comes from the GSD File. Min: 6 Max: 65535
Watchdog Enable	This parameter is only configured by the PROFIBUS Master. Enables the watchdog for the ILX56-PBS to monitor bus traffic. This ensures that the network master is still active, with process data still being updated. If the Watchdog timeout has been reached, the slave goes to its safe state (sets its outputs to "0").
Watchdog Value	This parameter is only configured by the PROFIBUS Master. Monitors cyclic communication and must be significantly higher than the time required for one PROFIBUS cycle. If a slave does not receive a request frame for a period of time longer than the watchdog time, it will revert to its initial, power-up state and cyclic communication will have to be reestablished.
Group Membership	This parameter is only configured by the PROFIBUS Master. Specifies which groups the slave belongs to. A slave can be in multiple groups at a time (from 1 through 8).
Freeze / Sync	Not supported
PROFIBUS Data Options - Byte/Word Swap Option	This parameter will reformat the input and output PROFIBUS DPV0 communication data. Below are the reformat options if the normal data format is AA BB CC DD: **None** **BB AA** **DD CC BB AA** **CC DD AA BB**
Force Data to Zero on Communication Failure	This feature is only supported by the ILX56-PBM in MASTER mode.

3.4.3 DPV1

The DPV1 configuration is shown in the following figure. The slave device DPV1 configuration window is opened by either double-clicking on the slave device in the tree, or right-clicking the slave device and selecting *Configuration*.

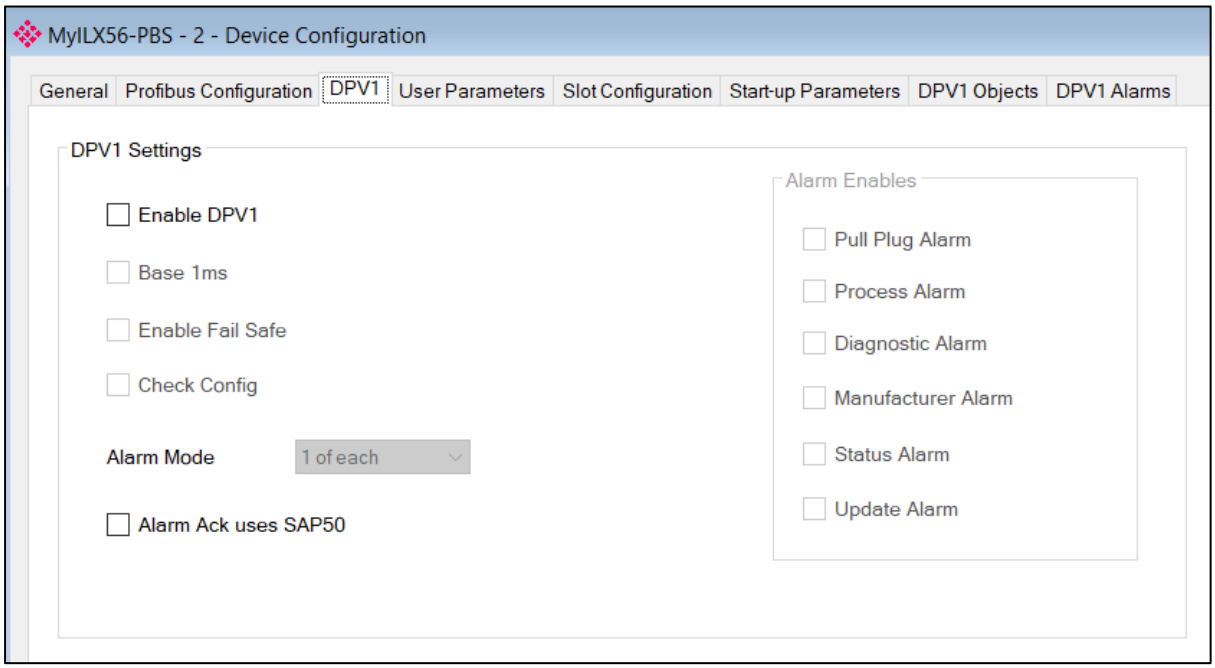


Figure 3.15 – Device DPV1 configuration parameters

When the module is emulating the legacy device, the DPV1 configuration parameters will appear as follows:

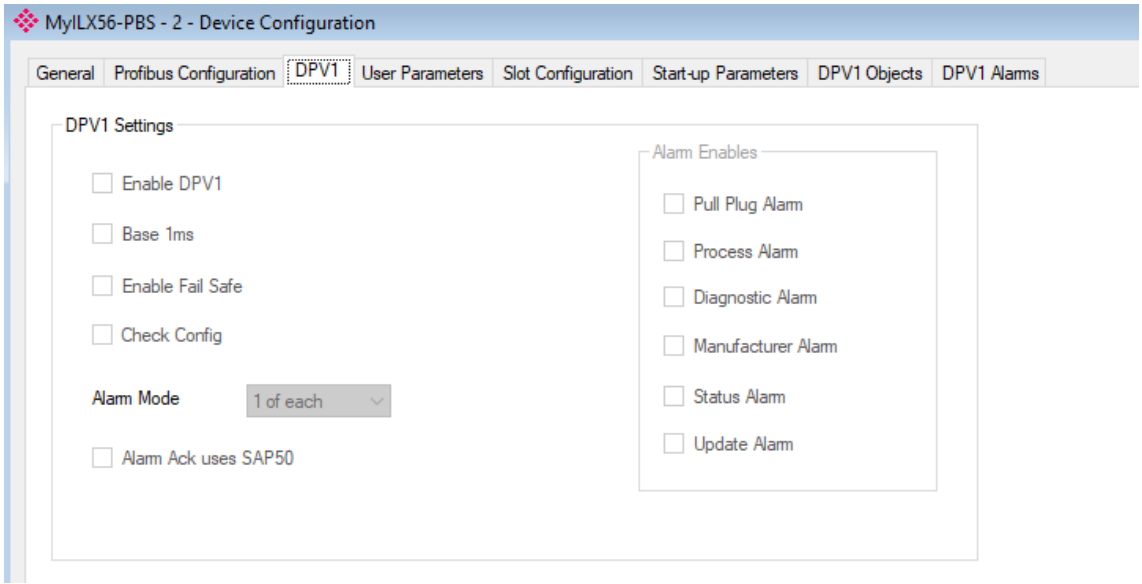


Figure 3.16 – Device DPV1 configuration parameters (legacy device)

The DPV1 configuration consists of the following parameters:

Table 3.7 – Device DPV1 configuration parameters

Parameter	Description
Enable DPV1	Enables the DPV1 capabilities of the ILX56-PBS.
Base 1ms	Not supported for the slave device.
Enable Fail Safe	Not supported for the slave device.
Check Config	Not supported for the slave device.
Alarm Mode	This parameter is only configured by the PROFIBUS Master. Specifies the maximum number of possible active alarms for the device.
Alarm Ack uses SAP50	This will force the PROFIBUS DP Master to use Service Access Point (SAP) 50 to acknowledge alarms.
Alarm Enables	This parameter is only configured by the PROFIBUS Master. Enables specific alarms for the slave device to report. The available alarms are listed below: ▪ Pull Plug Alarm ▪ Process Alarm ▪ Diagnostic Alarm ▪ Manufacturer Alarm ▪ Status Alarm ▪ Update Alarm

3.4.4 User Parameters

The *User Parameter*s tab is not used for the ILX56-PBS.

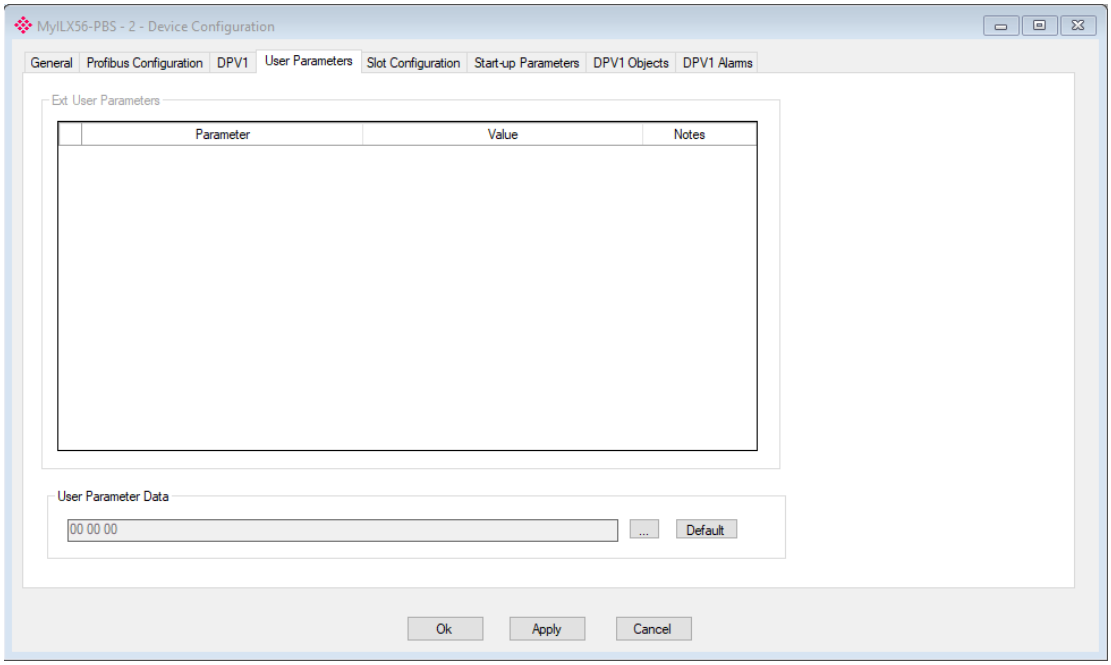


Figure 3.17 – Device User Parameter configuration parameters

3.4.5 Slot Configuration

The PROFIBUS Input/Output Module can be added in Slot Configuration tab. Slot data point selectable sizes are as follows: 1, 2, 4, 8 and 16 byte. Modular Input/Output Slave supports up to 16 modules.

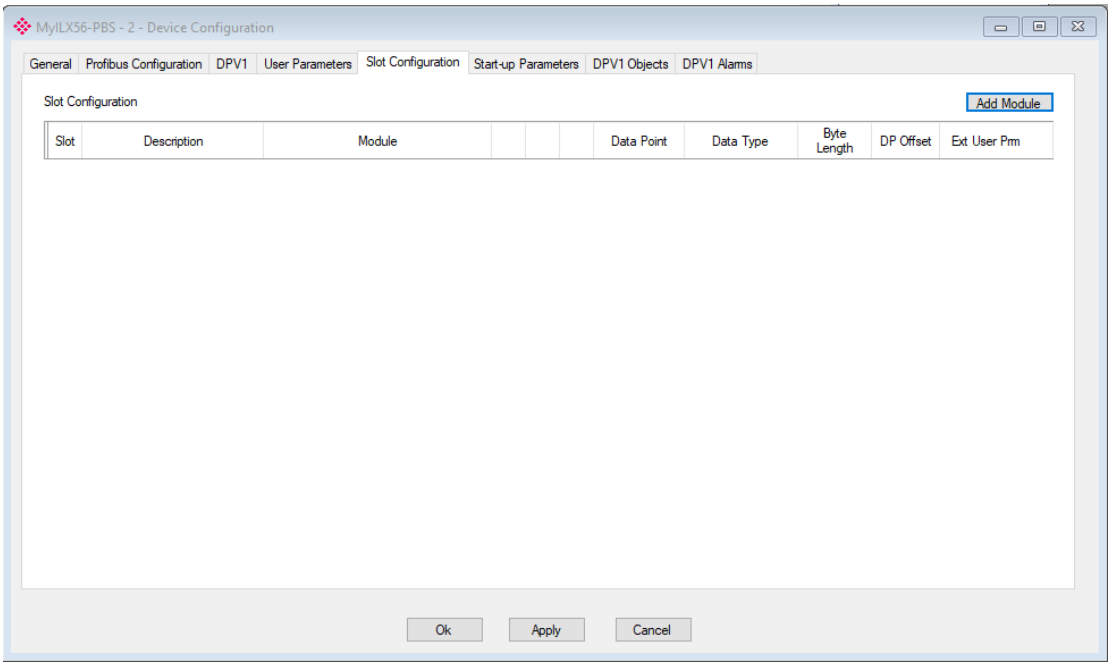


Figure 3.18 – Field Device Slot configuration start

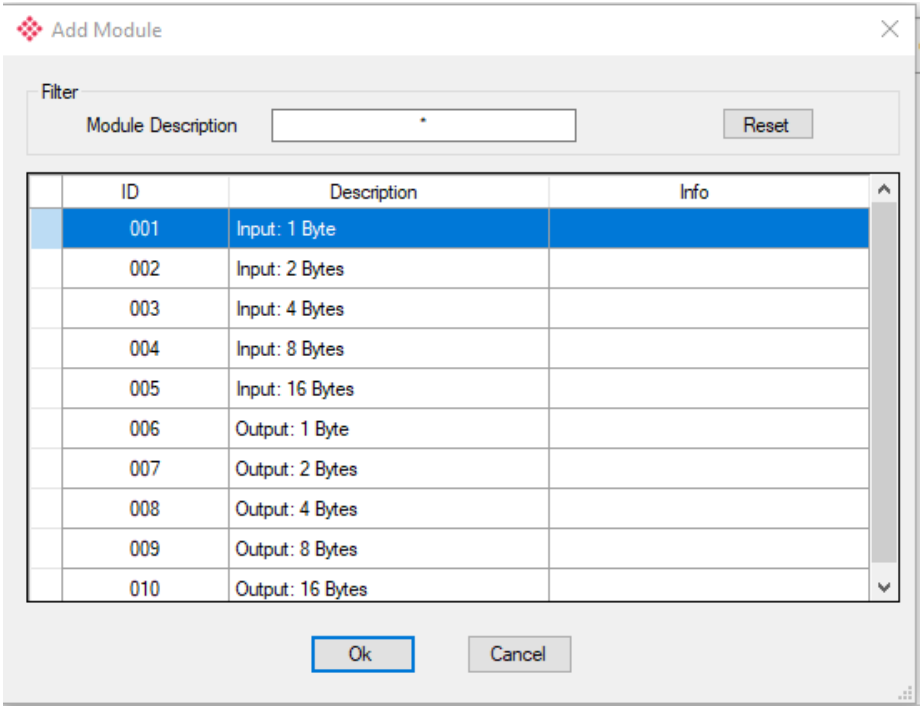


Figure 3.19 – Module Selection

When the module is emulating the legacy device, the Module Selection will appear as follows:

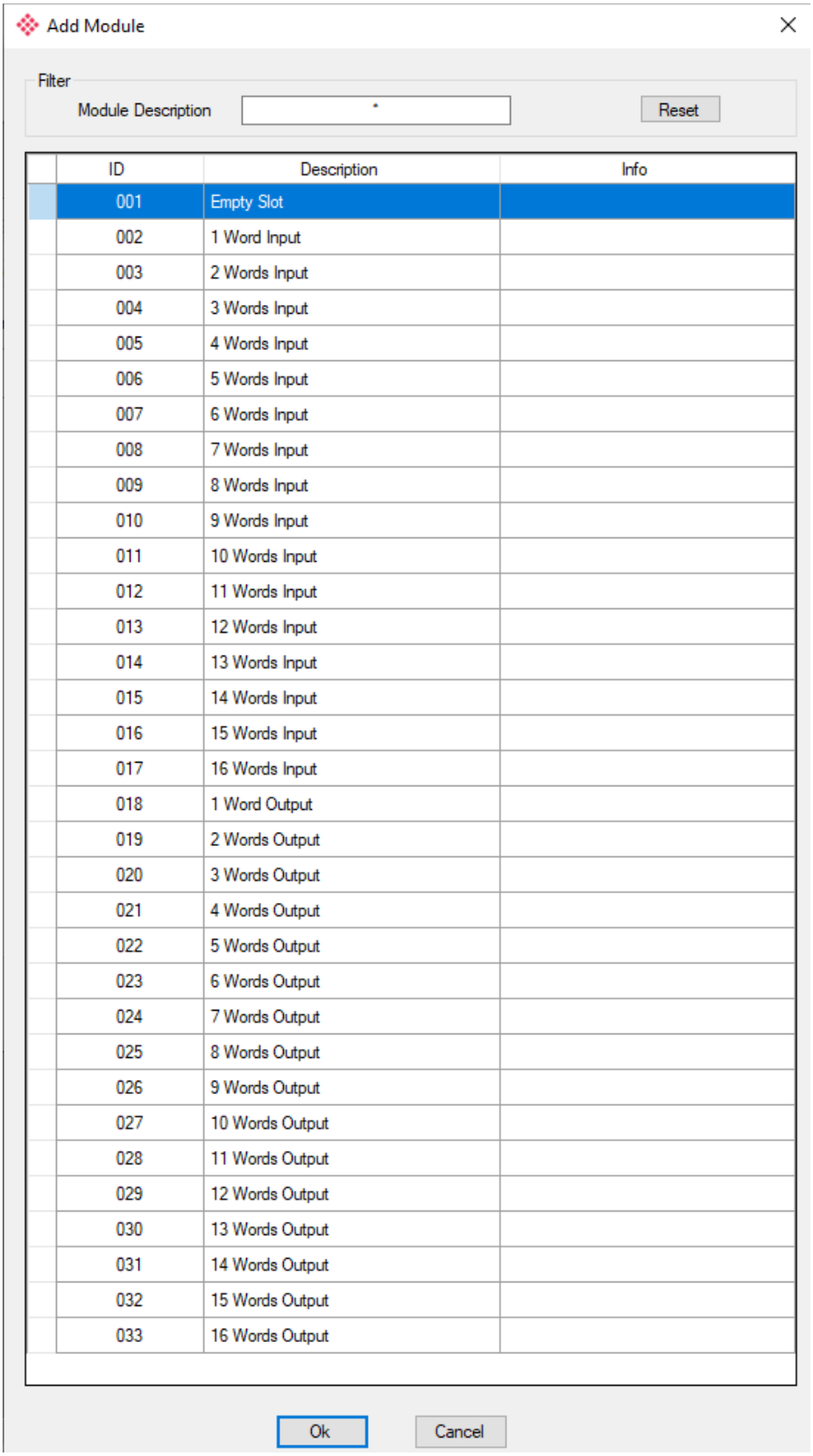


Figure 3.20 – Module Selection (legacy device)

3.4.6 Start-up Parameters

The *Start-up Parameters* tab is not used for the ILX56-PBS.

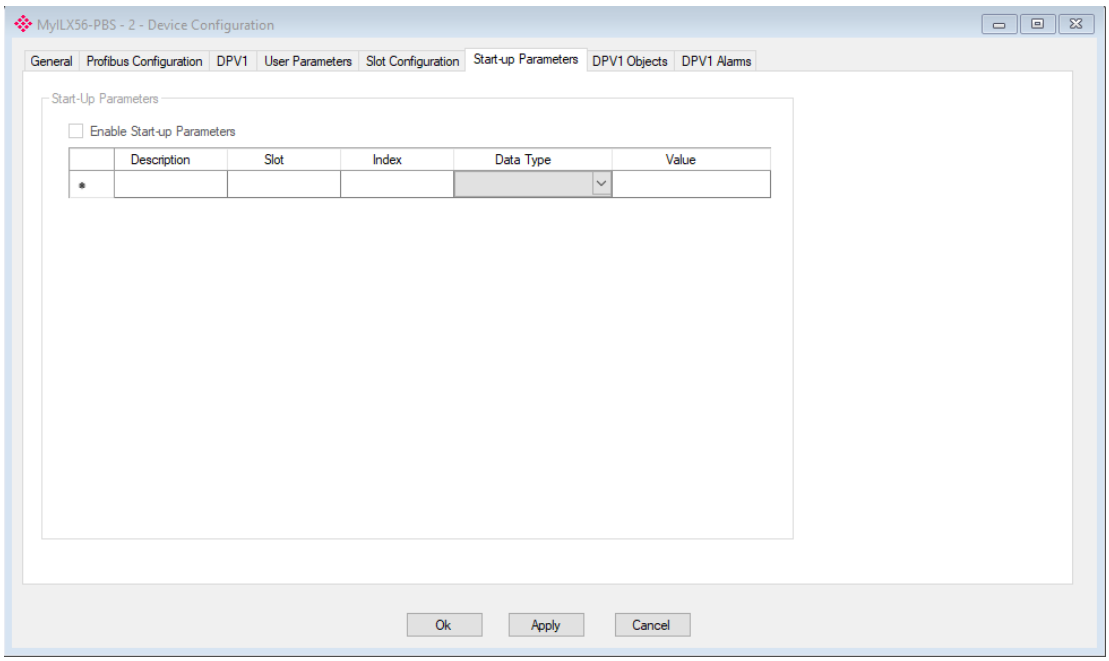


Figure 3.21 – Device Start-up Parameters

3.4.7 DPV1 Objects

The DPV1 Objects configuration is shown in the following figure. The slave device DPV1 Objects configuration window is opened by either double-clicking on the slave device in the tree, or right-clicking the slave device and selecting *Configuration*.

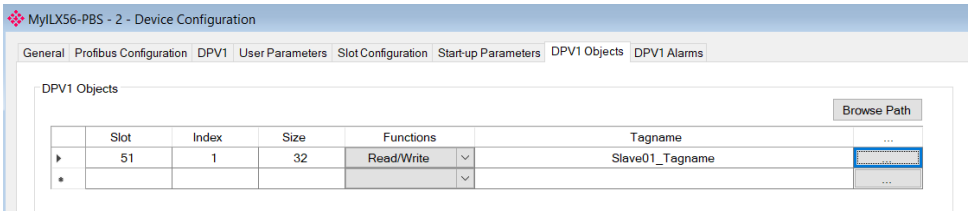


Figure 3.22 – Device DPV1 Objects configuration parameters – Logix

The DPV1 configuration consists of the following parameters:

Table 3.8 – Device DPV1 Objects configuration parameters

Parameter	Description
Slot	The Slot number to which the PROFIBUS DP transaction will be directed.
Index	The Index number to which the PROFIBUS DP transaction will be directed.
Size	The size (bytes) of the transaction.
Functions	The Functions supported for this object: • Read • Write • Read/Write
Tagname	The Logix Tagname where the data will be read / written. The Logix Tagname can be either entered manually or selected using the Logix Tag Browser by clicking on the Browse button (…) adjacent to the Tagname.

NOTE: The list of Logix tags will not be available if the Logix controller path has not first been correctly configured.

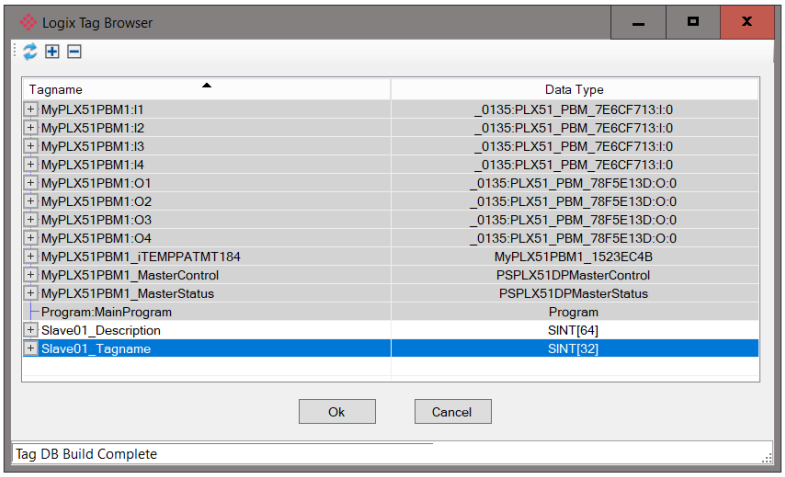


Figure 3.23 – Device DPV1 Objects Tag Browsing

3.4.8 DPV1 Alarms

The DPV1 Alarms configuration is shown in the following figure. The slave device DPV1 Alarms configuration window is opened by either double-clicking on the slave device in the tree, or right-clicking the slave device and selecting *Configuration*.

Important: The Size of the DPV1 Alarm **must** be greater than 4 or the alarm triggering will not execute.

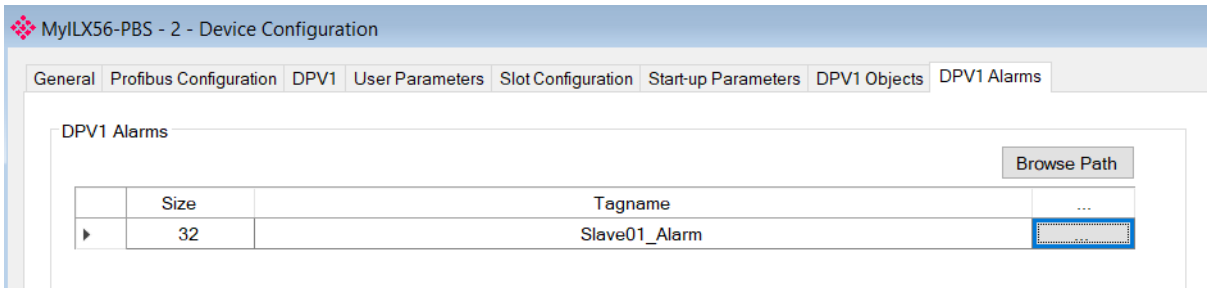


Figure 3.24 – Device DPV1 Alarms configuration parameters (Logix)

The DPV1 configuration consists of the following parameters:

Table 3.9 – Device DPV1 Alarms configuration parameters

Parameter	Description
Size	The size (bytes) of the Alarm object.
Tagname	The Logix Tagname from where the alarm data will be read. (Logix Only)

NOTE: The PROFIBUS DP Master connected to the ILX56-PBS will be able to configure the following alarms: Diagnostic Alarm, Process Alarm, Pull Plug Alarm, Status Alarm, Update Alarm, and Manufacturer Specific Alarm.

3.5 Module Download

Once the ILX56-PBS configuration has been completed, it must be downloaded to the module. The configured IP address of the Logix Controller or the 1756 Ethernet card will be used to connect to the module, as set in the “Connection Path”.

1 To initiate the download, right-click on the module and select the Download option.

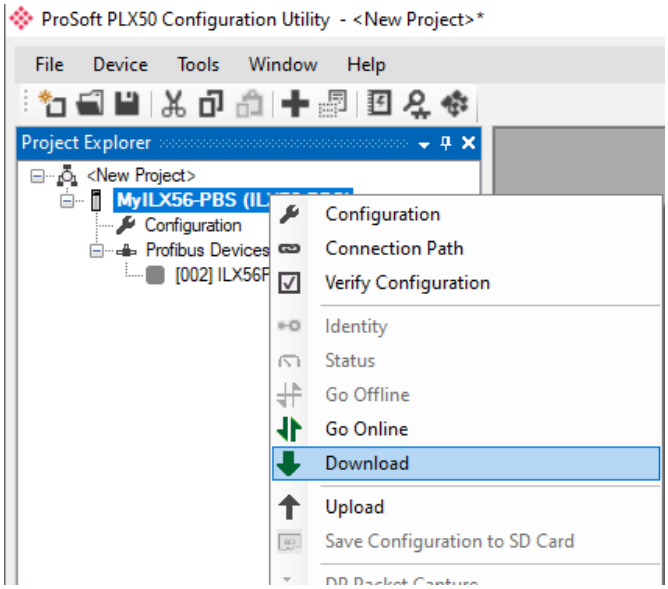


Figure 3.25 - Selecting Download

2 Once complete, the user will be notified that the download was successful.

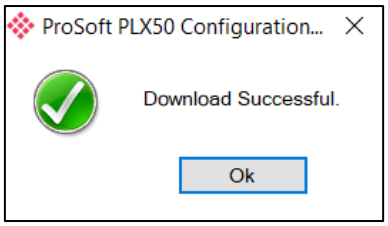


Figure 3.26 - Successful download

3 Within the PLX50 Configuration Utility, the module will be in the Online state. This is indicated by the green circle around the module. The module is now configured and in an operational state.

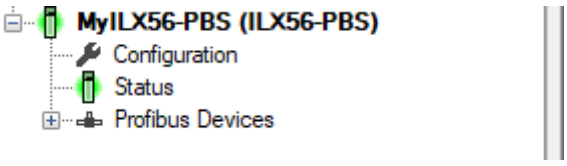


Figure 3.27 - Module online

3.6 Studio 5000 Configuration

NOTE: The ILX56-PBS uses an Add-On Profile (AOP) for the 1756 Backplane. Therefore, minimum Studio 5000 version that can be used is v21.

For Studio 5000 v20 and below, a *Generic 1756 Module* profile can be used. Please visit www.prosoft-technology.com to download the *ILX56_PBS_Installing_Logix_v20_and_below.zip* file. It contains a .L5X file and instructions.

The ILX56-PBS can be easily integrated with Allen-Bradley Logix family of controllers. Integration with the Logix family in Studio5000 makes use of the Add-On-Profile (AOP).

3.6.1 Installing the Add-On Profile (AOP)

The user will first need to install the ILX56-PBS AOP before the module can be added to the Logix I/O tree. Download the AOP from www.prosoft-technology.com. Once downloaded, extract the zip file and run the *MPSetup.exe* file.

3.6.2 Adding a Module to I/O Configuration

1 Under the 1756 Backplane, right-click and select the New Module option.

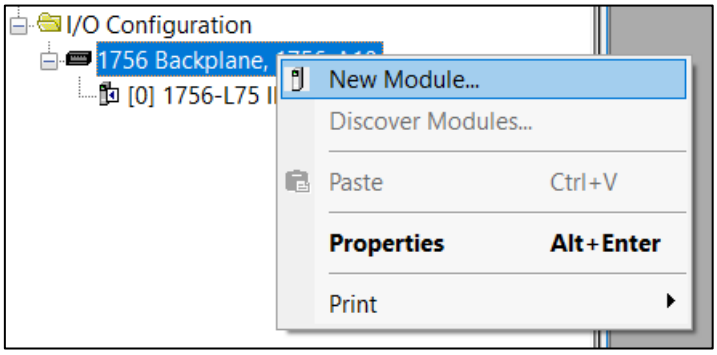


Figure 3.28 – Adding a module

2 The Select Module Type dialog will open. To easily find the module, use the Vendor filter to select the ProSoft modules as shown in the following figure. Locate and select the ILX56-PBS and select the *Create* option.

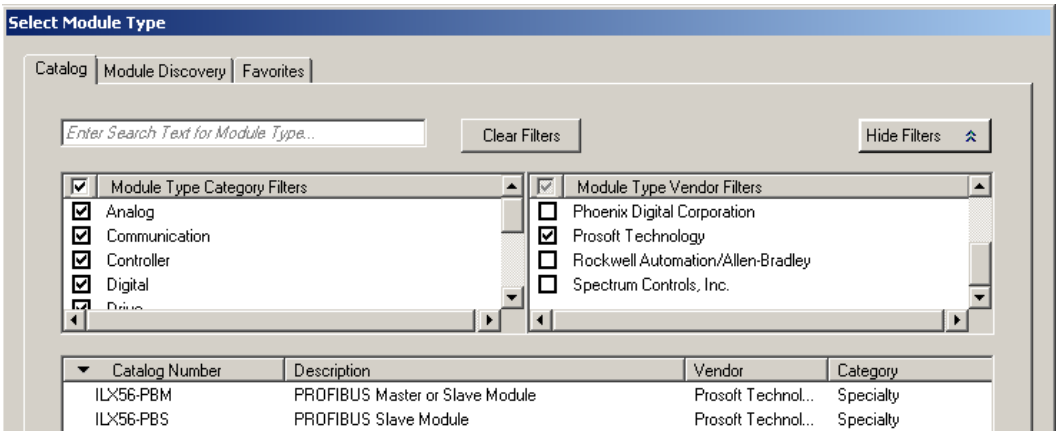


Figure 3.29 – Selecting the module

3 The module configuration dialog will open, specify the Name and Slot to complete the instantiation.

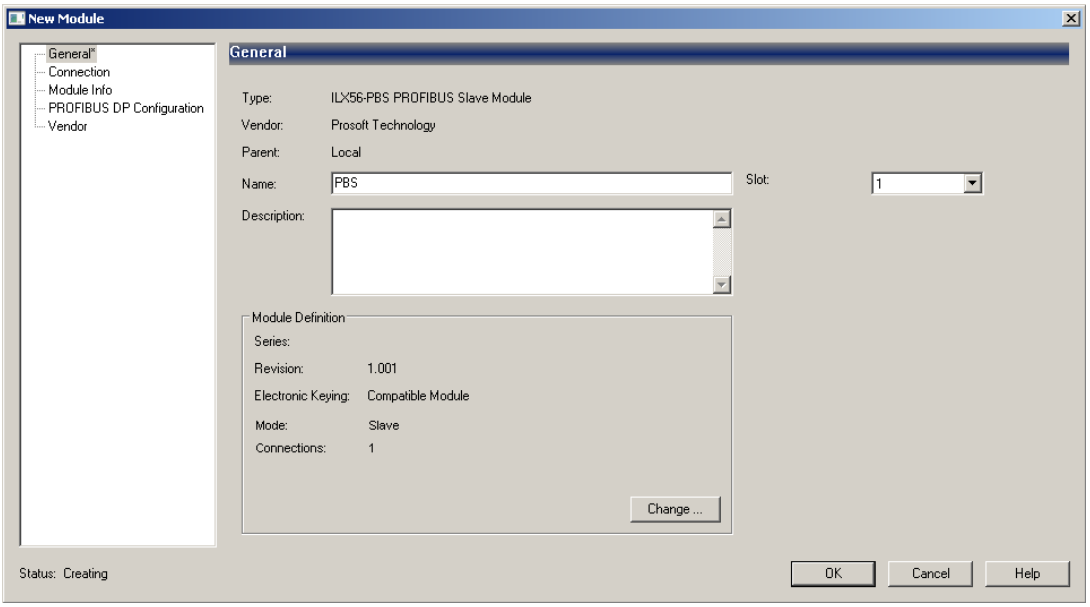


Figure 3.30 – Module instantiation

4 Once the instantiation is complete, the ILX56-PBS module will appear in the Logix IO tree.

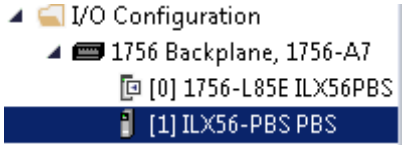


Figure 3.31 – Logix IO tree

5 The Module Defined Data Types will automatically be created during the instantiation process.

3.6.3 PLX50 Configuration Utility Project File

The ILX56-PBS AOP allows the user to save the PLX50 Configuration Utility project file in the AOP, as well as launch the PLX50 Configuration Utility from the AOP.

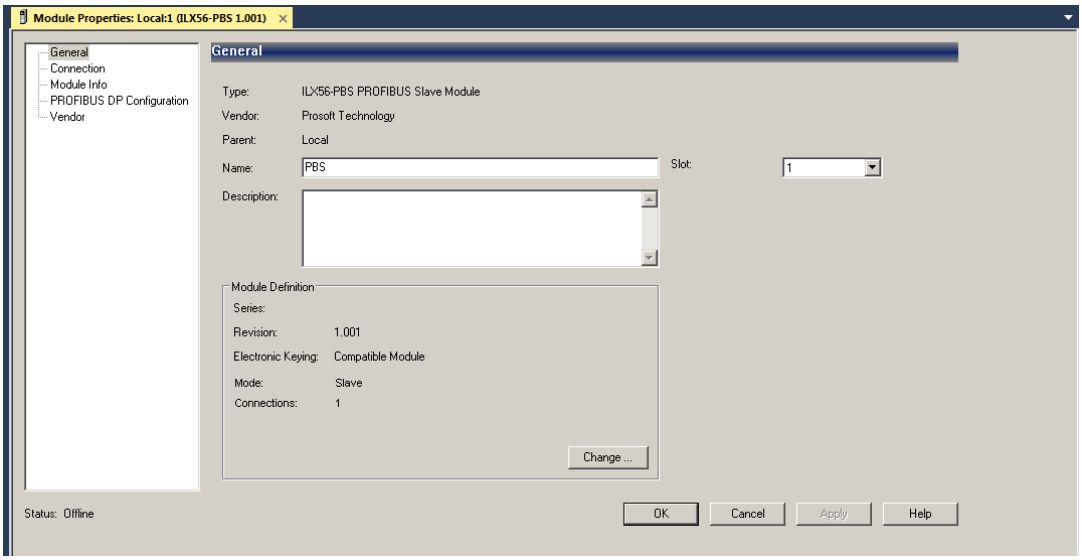


Figure 3.32 – AOP - PLX50 Configuration Utility

When no PLX50 Configuration Utility project has been defined, the user can *Browse* for an existing PLX50 Configuration Utility project. If no PLX50 Configuration Utility project has been defined, the user can enter the project file name in the *PLX50 Configuration Utility Project File* textbox and select Launch PLX50 Configuration Utility.

NOTE: Once the file name has been entered, the user will first need to click *Apply* before the *Launch PLX50 Configuration Utility* button will become available.

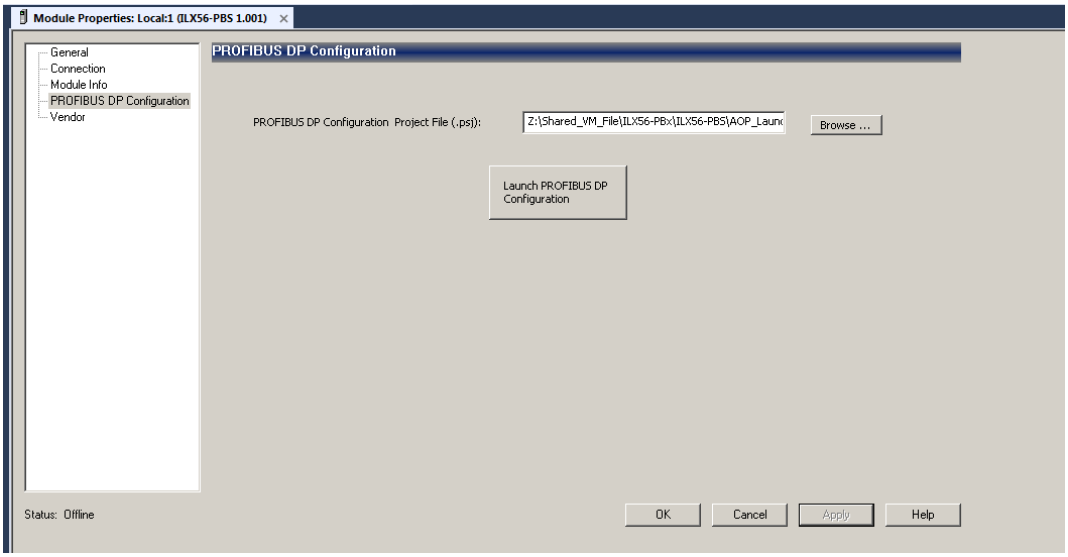


Figure 3.33 – AOP – Launch PLX50 Configuration Utility

3.7 Generating a Logix .L5X File

The PLX50 Configuration Utility will generate the required UDTs and Routines (based on the ILX56-PBS configuration) to map the required PROFIBUS Slave input and output data.

The user will need to generate the required Logix and UDTs by right-clicking on the module in the PLX50 Configuration Utility and selecting the ***Generate Logix L5X*** option.

Important: The user will need to ensure that the Logix Base Tag is correct for the generated Logix L5X code to work. The base tag will be the tag name for the module input and output assemblies in the Logix controller owning the module.

3.7.1 Local Rack Module Location

If the ILX56-PBS is in the same local rack as the Logix controller owning it, the Logix Base Tag will be *Local:xx* (where xx is the slot number of the module). Below is an example where the ILX56-PBS is in slot 1 of the local rack.

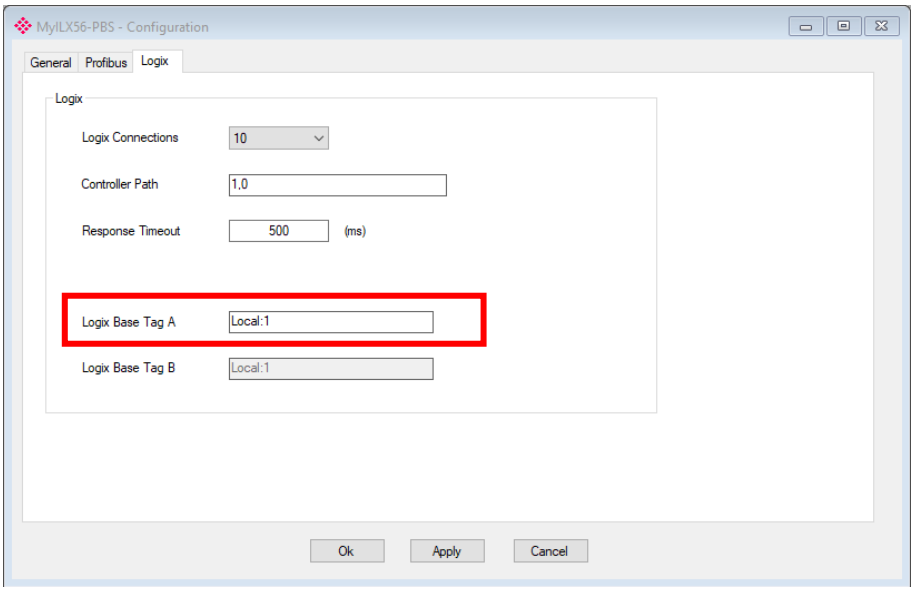


Figure 3.34 – Logix Base tag assignment in PLX50CU

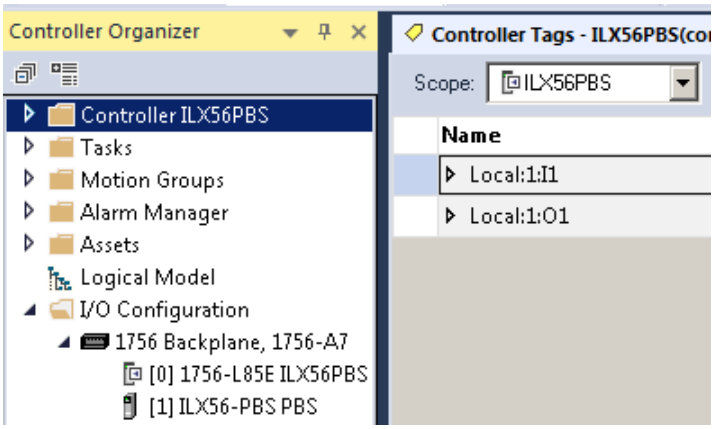


Figure 3.35 – Logix Base tag assignment in Studio 5000

3.7.2 Remote Rack Module Location

If the module is in a remote rack, the user will need to enter the Logix Base Tag based on the name of the remote rack (see the example below):

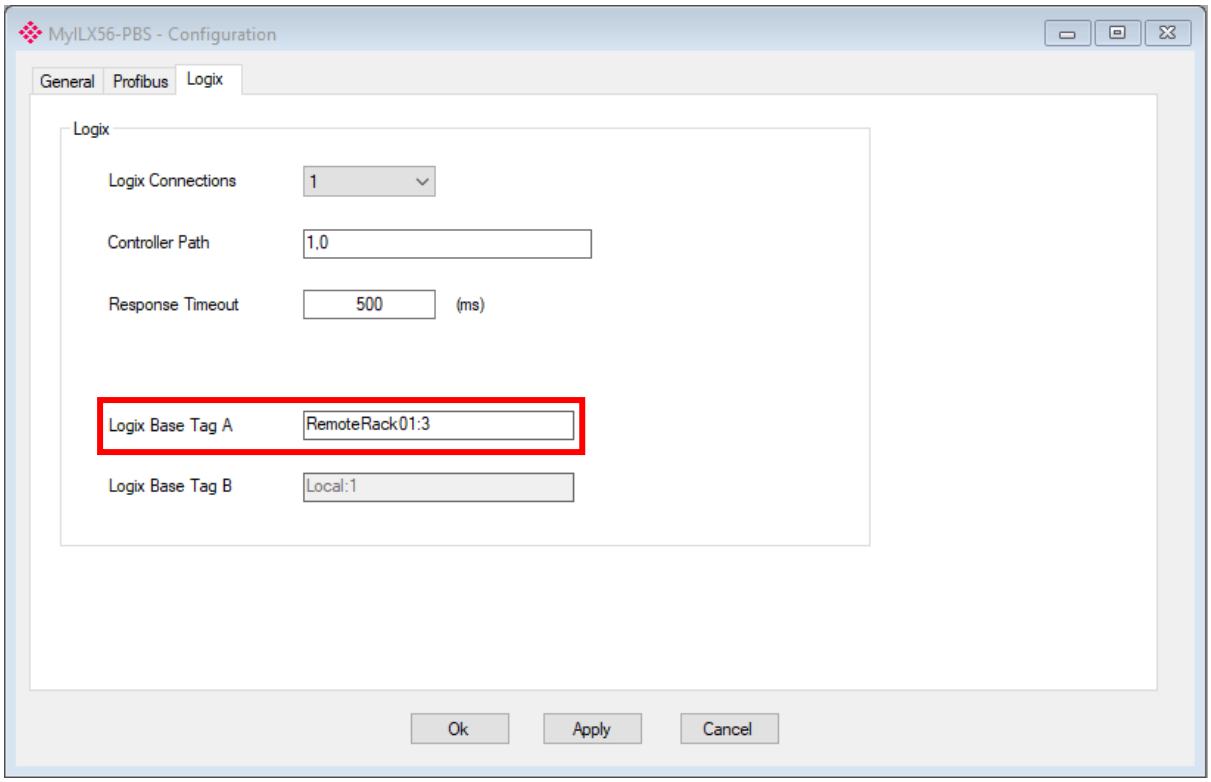


Figure 3.36 – Logix Base tag assignment in PLX50CU

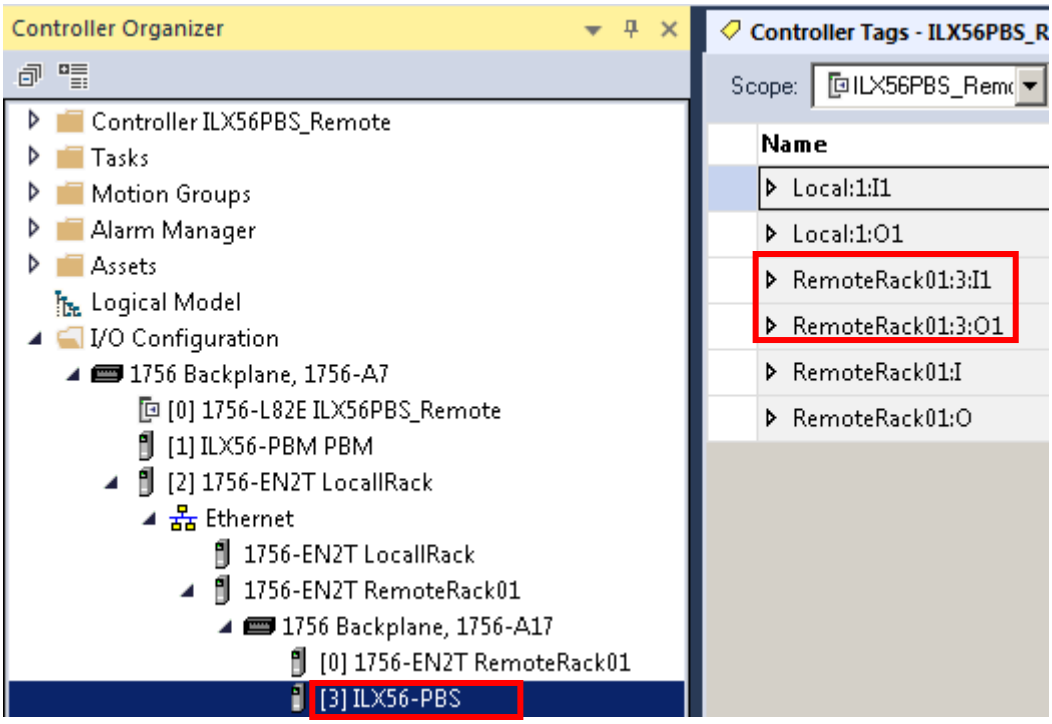


Figure 3.37 – Logix Base tag assignment in Studio 5000

3.7.3 Generating the L5X File

1 In the PLX50 Configuration Utility, right-click on the ***ILX56-PBS*** item in the tree and select ***Generate Logix L5X***.

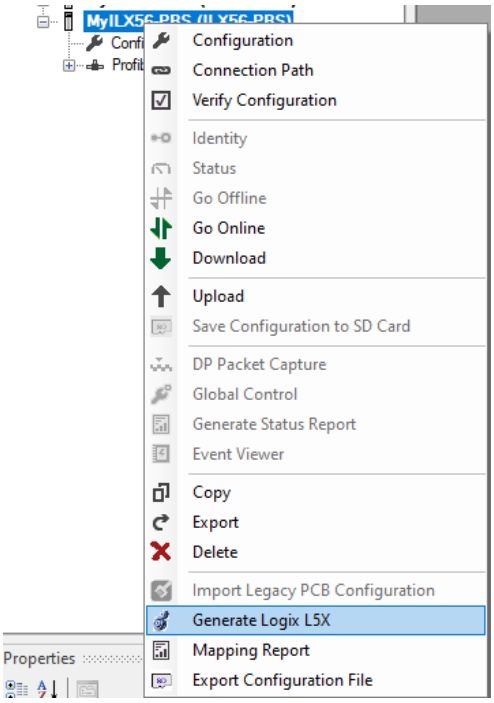


Figure 3.38 – Selecting Generate Logix L5X

2 The user will then be prompted to select a suitable file name and path for the L5X file.

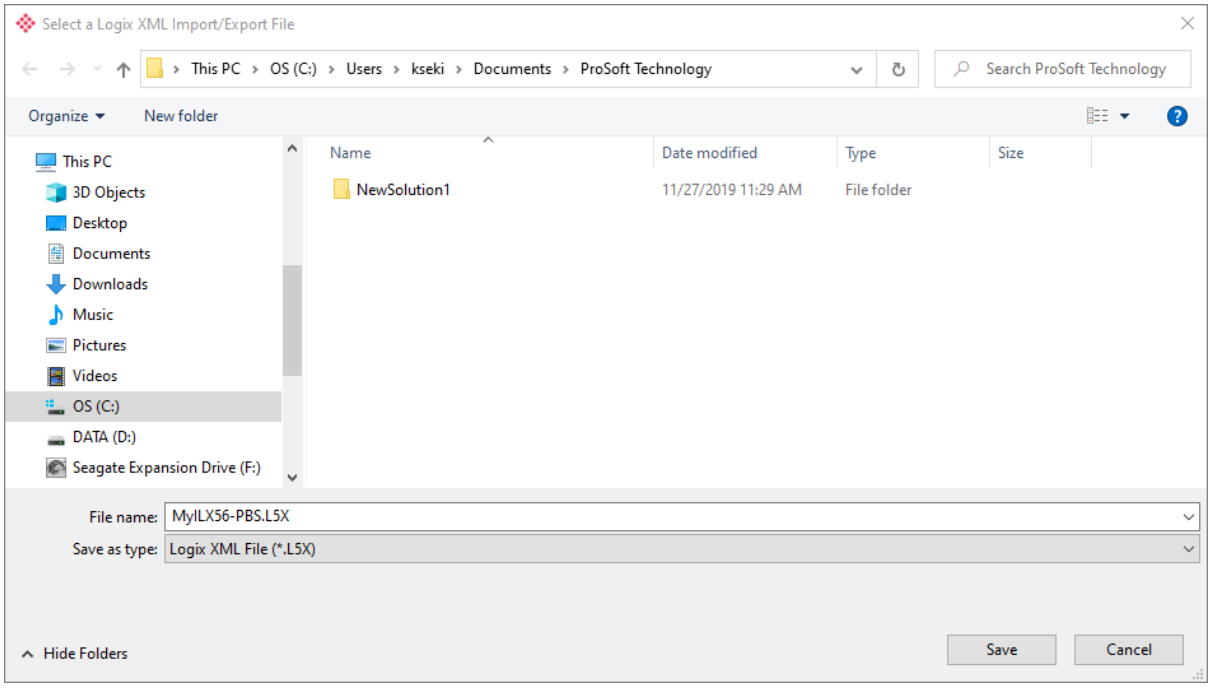


Figure 3.39 – Selecting the Logix L5X file name

3 This L5X file can now be imported into the Studio 5000 project by right-clicking on a suitable ***Program*** and selecting ***Add***, and then ***Import Routine***.

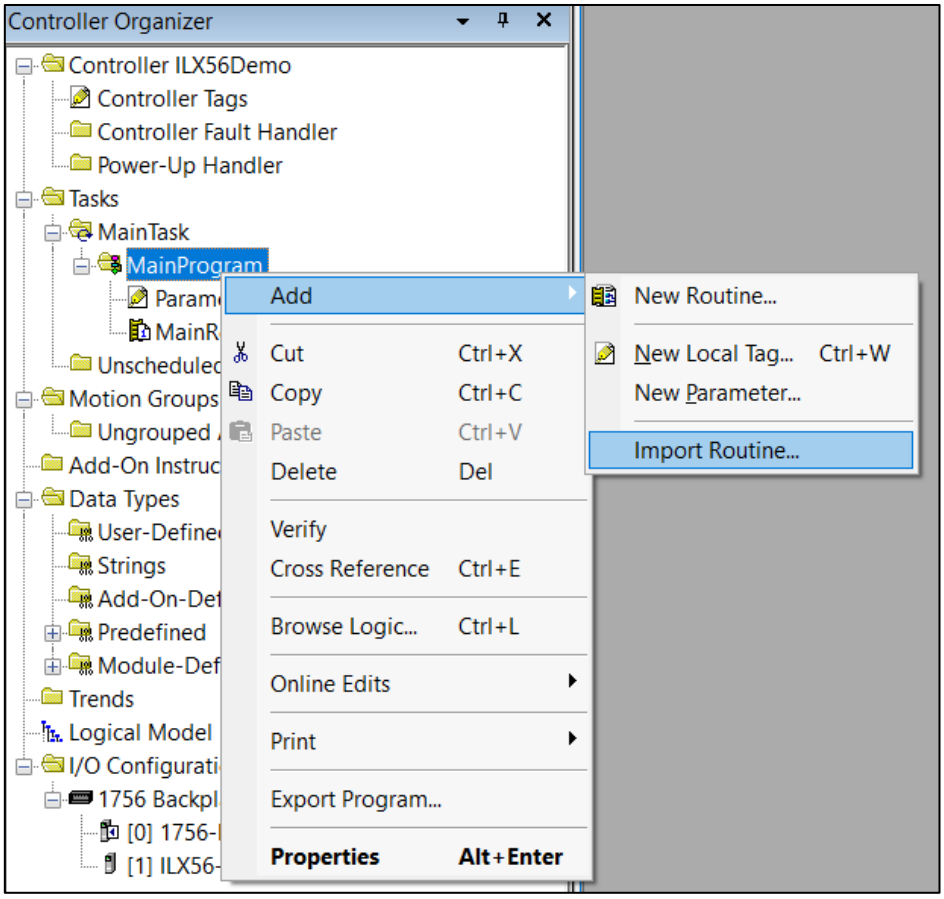


Figure 3.40 – Importing the L5X file into Studio 5000

4 In the file open dialog, select the newly-created L5X file and click **OK**.

The import will create the following:

- Mapping Routine
- Multiple UDT (User-Defined Data Types)
- Multiple Controller Tags

5 Since the imported mapping routine is not a Main Routine, it will need to be called from the current Main Routine.

Figure 3.41 – Calling the mapping routine

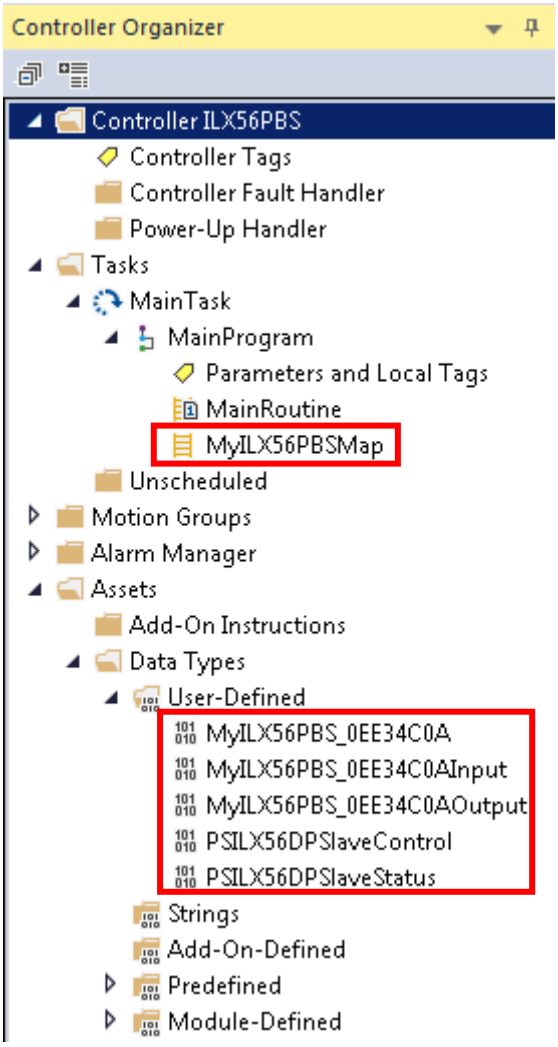


Figure 3.42 – Imported Logix Objects

6 Tags are created for each emulated slave device. The structure of which comprises the following:

- Input Status - Status related to slave device
- Input Data – As specified in the Input Data Points in the Slot configuration
- Output Control – Used to trigger alarms
- Output Data – As specified in the Output Data Points in the Slot configuration

Name	Value	Force	Style	Data Type
MyILX56PBS_ILX56PBS	{...}	{...}		MyILX56PBS_0EE34C0A
MyILX56PBS_ILX56PBS.Input	{...}	{...}		MyILX56PBS_0EE34C0AInput
MyILX56PBS_ILX56PBS.Input.Status	{...}	{...}		PSILX56DPSlaveStatus
MyILX56PBS_ILX56PBS.Input.Output16Bytes	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes1	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes2	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes3	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes4	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes5	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes6	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes7	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes8	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes9	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes10	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes11	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes12	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes13	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output16Bytes14	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Input.Output4Bytes	0.0		Float	REAL
MyILX56PBS_ILX56PBS.Output	{...}	{...}		MyILX56PBS_0EE34C0AOutput
MyILX56PBS_ILX56PBS.Output.Control	{...}	{...}		PSILX56DPSlaveControl
MyILX56PBS_ILX56PBS.Output.Input16Bytes	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Output.Input16Bytes1	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Output.Input16Bytes2	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Output.Input16Bytes3	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Output.Input16Bytes4	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Output.Input16Bytes5	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Output.Input16Bytes6	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Output.Input16Bytes7	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Output.Input16Bytes8	{...}	{...}	Decimal	SINT[16]
MyILX56PBS_ILX56PBS.Output.Input16Bytes9	{...}	{...}	Decimal	SINT[16]

Figure 3.43 – Slave Device-Specific tag

3.8 SD Card

The ILX56-PBS supports an SD Card that can be used for disaster recovery. It can be pre-loaded with the required firmware and/or application configuration.

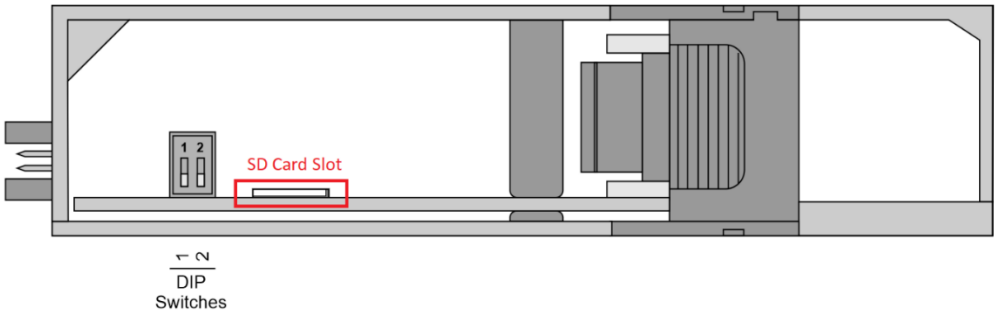


Figure 3.44 – Module Bottom View – SD Card Slot

Important: The user will need to ensure that the SD Card has been formatted for FAT32.

Important: All needed files must be copied into the root directory of the SD Card.

3.9 Firmware

The user can copy the required firmware (which can be downloaded from www.prosoft-technology.com) onto the root directory of the SD Card.

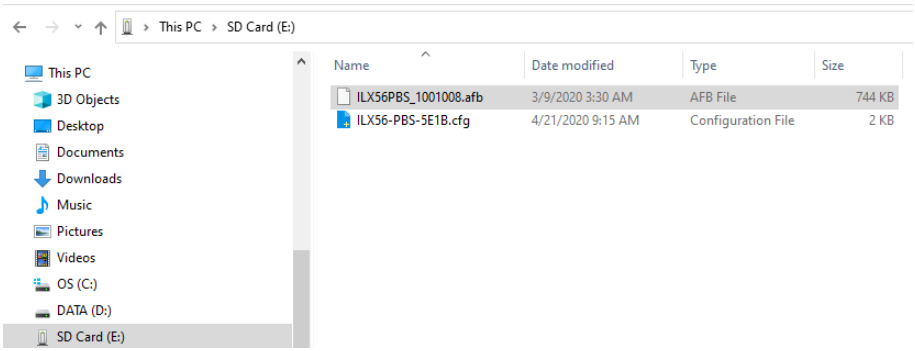


Figure 3.45 – SD Card – Firmware file

Important: If more than one firmware file, with different firmware revisions, is on the SD Card, it can cause the module to constantly firmware upgrade the module.

If a faulty module is replaced the user can insert the SD Card with the firmware file on into the new module. While the module is booting it can detect if the firmware on the new module is different from that on the SD Card. If yes, the firmware will either be upgraded or downgraded to the firmware revision on the SD Card.

3.10 Configuration

The user can add the PLX50CU configuration file to the SD Card root directory in one of two ways.

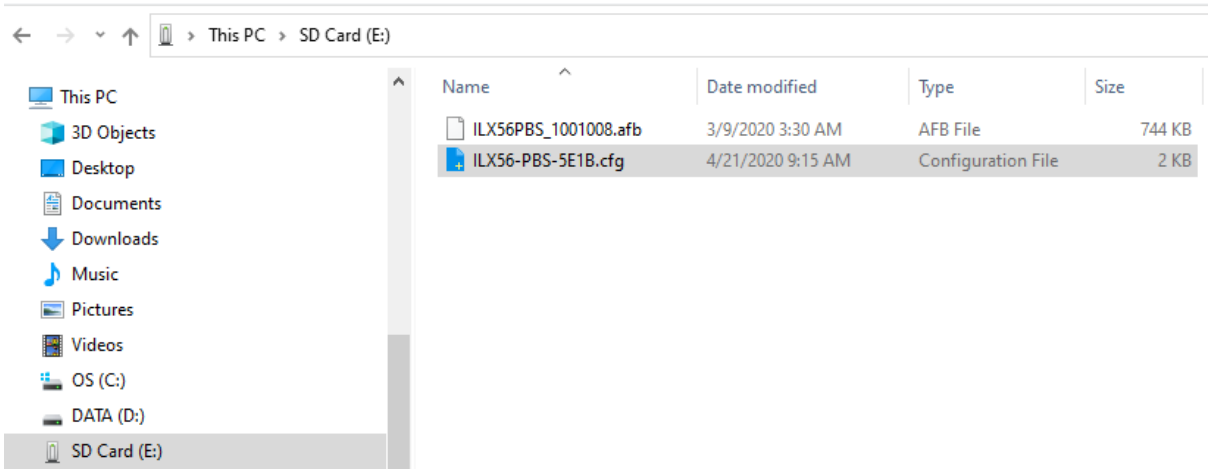


Figure 3.46 – SD Card – Configuration file

3.10.1 Manual Copy

Once the user has created the needed application configuration in the PLX50CU, the configuration can be exported to a file that can be copied into the root directory of the SD Card.

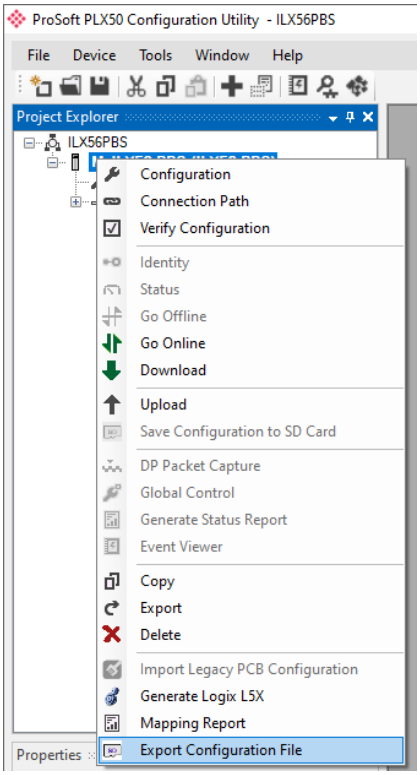


Figure 3.47 – Configuration Export for SD Card

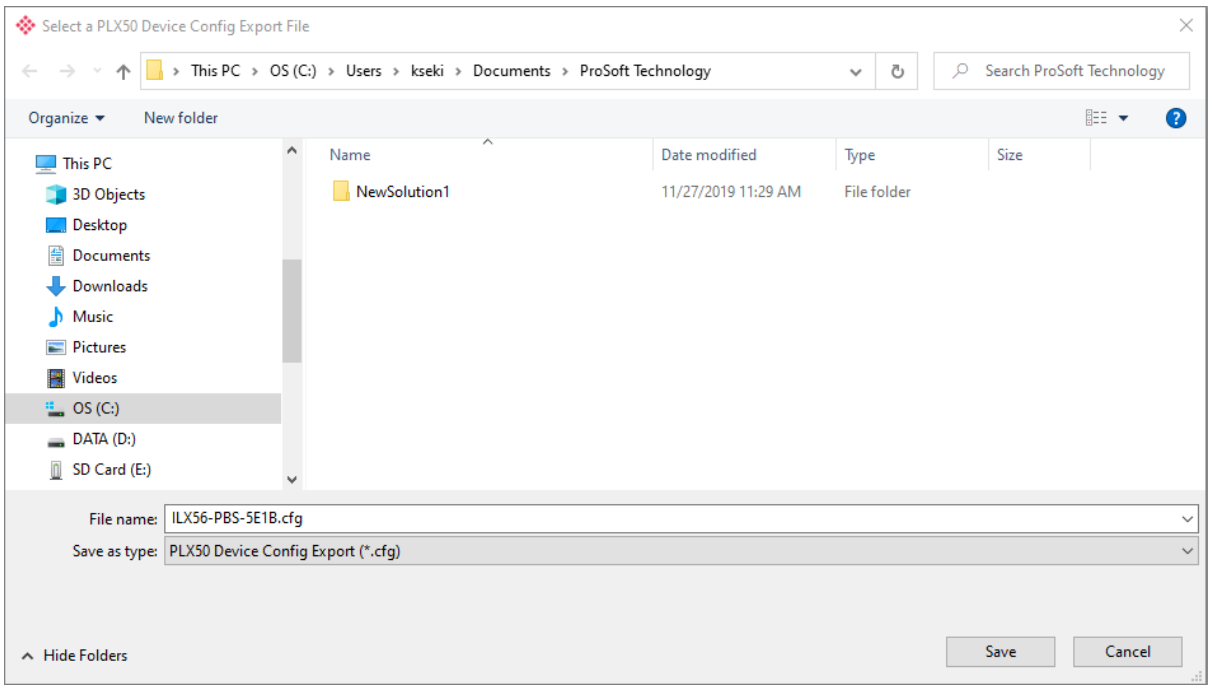


Figure 3.48 – Configuration Export for SD Card

Important: The filename of the configuration file must not be changed.

Important: If more than one configuration file, with different configuration signatures, of the same product is on the SD Card, only the last configuration will be used.

3.10.2 PLX50 Configuration Utility Upload

When the SD Card has been inserted into the module, the user has the option to directly upload the configuration onto the SD Card using the *Save Configuration to SD Card* option in PLX50CU. This will copy the module's current configuration directly to the SD Card without the need to remove it from the module and inserted into a PC.

Important: All other configuration files in the SD Card root directory will be deleted when the upload is complete.

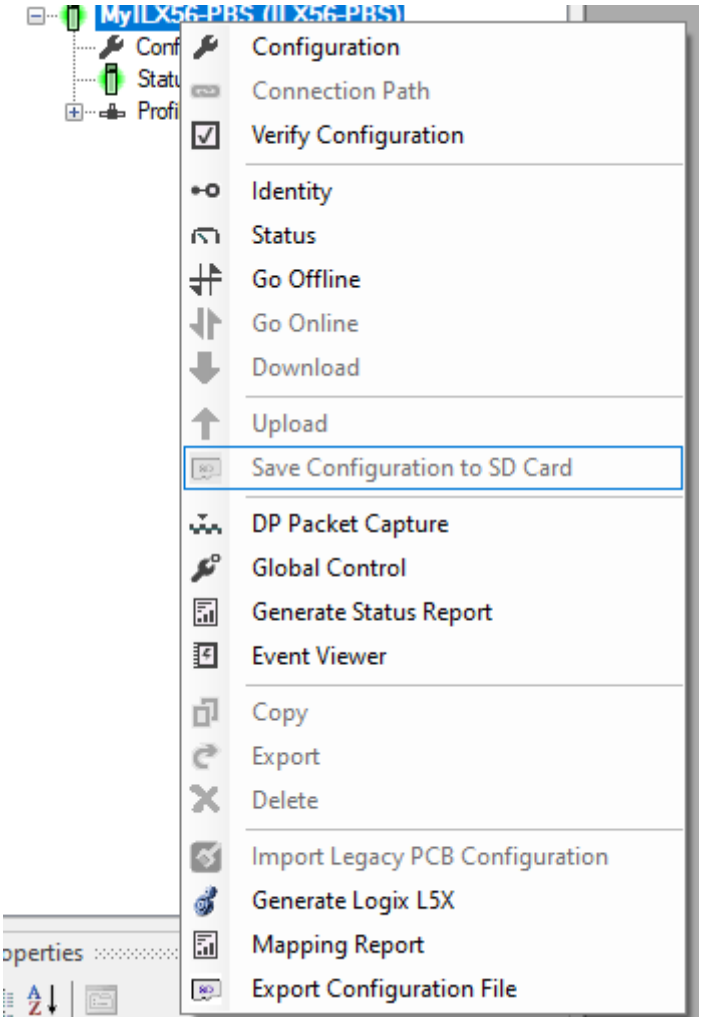


Figure 3.49 – Save Configuration to SD Card

4 Operation

4.1 Logix Operation

The ILX56-PBS will exchange data with a ControlLogix® controller by establishing a Class 1 I/O connection with the ILX56-PBS.

4.1.1 PROFIBUS DP - Slave

Important: The module input and output assembly of each connection will be an undecorated array of data. The imported Logix routine (generated by PLX50CU) will copy this data to the constructed input and output assemblies.

General Status

Below are the definitions for the tags in the General Status UDT created by the PLX50CU.

Local:2:I1	{...}	{...}		PS:ILX56_PBS_SLAVE:I1:0
Local:2:I1.ConnectionFaulted	0		Decimal	BOOL
Local:2:I1.ModuleStatus	16#0000_0603		Hex	DINT
Local:2:I1.ConfigValid	16#1		Hex	BOOL
Local:2:I1.Owned	16#1		Hex	BOOL
Local:2:I1.DuplicateDPStation	16#0		Hex	BOOL
Local:2:I1.ProfibusFieldBusError	16#0		Hex	BOOL
Local:2:I1.ProfibusDeviceError	16#0		Hex	BOOL
Local:2:I1.ProfibusOffline	16#0		Hex	BOOL
Local:2:I1.ProfibusStopped	16#0		Hex	BOOL
Local:2:I1.ProfibusClear	16#0		Hex	BOOL
Local:2:I1.ProfibusOperational	16#0		Hex	BOOL
Local:2:I1.SlaveMode	16#1		Hex	BOOL
Local:2:I1.ControllerRun	16#1		Hex	BOOL
Local:2:I1.ModuleRedundancyEnabled	16#0		Hex	BOOL
Local:2:I1.ModuleRedundancyStatus	16#0		Hex	BOOL
Local:2:I1.ConfigCRC	16#a82d		Hex	INT
Local:2:I1.DeviceLiveList	{...}	{...}		PS:OnlineSlaves:I:0
Local:2:I1.DeviceDataExchangeActive	{...}	{...}		PS:DataExchangeActiveSlaves:I:0
Local:2:I1.DeviceDeviceAlarmPendingFlags	{...}	{...}		PS:PendingAlarmsSlaves:I:0
Local:2:I1.DeviceDiagnosticPendingFlags	{...}	{...}		PS:DiagnosticsPendingSlaves:I:0

Figure 4.1 – Logix General Status tags

Table 4.1 – Logix General Status tags

Tag	Description
ConnectionFaulted	Indication of backplane connection fault. Each backplane connection will have this indication.
ModuleStatus	Indication of the module status for each Bool data type below this Controller Tag.
ConfigValid	Configuration has been downloaded to the ILX56-PBS and is being executed. 1 – ILX56-PBS has been successfully configured. 0 – ILX56-PBS is not configured.
Owned	Indicates if the ILX56-PBS is owned by a Logix Controller with a connection count similar to what has been configured in PLX50CU. 1 – ILX56-PBS is connected. 0 – ILX56-PBS is not connected.

DuplicateDPStation	Indicates that the ILX56-PBS has detected another PROFIBUS DP station with the same station address and has entered a temporary Back-off mode. 1 – Duplicate detected (Back-off mode active). 0 – Normal (No duplicate detected). **NOTE**: In this condition the ILX56-PBS will not communicate on the PROFIBUS DP network. Although the back-off time is approximately 5 seconds, should the conflicting DP master remain active on the PROFIBUS network, the ILX56-PBS will continuously re-enter the back-off mode.
PROFIBUSFieldbusError	There is a PROFIBUS network issue (e.g. cable unplugged, under/over terminated, etc.). 1 – Fieldbus error detected. 0 – Normal (No errors detected).
PROFIBUSDeviceError	At least one slave device has a communication issue (e.g. offline, not exchanging process data, etc.) 1 – Device error detected. 0 – Normal (No errors detected).
PROFIBUSOffline	For ILX56-PBM only.
PROFIBUSStopped	For ILX56-PBM only.
PROFIBUSClear	For ILX56-PBM only.
PROFIBUSOperational	For ILX56-PBM only.
SlaveMode	This tag was designed for ILX56-PBM to decipher between ILX56-PBM in master mode or slave mode. 1 – The ILX56-PBS will always have this bit on. 0 – The ILX56-PBS should **never** be in state where this bit is 0.
ControllerRun	The connected Logix controller is in RUN mode. 1 – RUN mode 0 – PROGRAM / FAULT mode
ModuleRedundancyEnabled	For ILX56-PBM only.
ModuleRedundancyStatus	For ILX56-PBM only.
ConfigCRC	The signature of the configuration currently executing on the module.
DeviceLiveList	Indicates the nodes that are online on the local PROFIBUS network. Each bit represents a node. When the specific bit is set ‘1’ then the device is online. When the bit is off ‘0’ the device is not on the PROFIBUS network. Bit 0 – Node 0 Online Bit 1 – Node 1 Online ……. Bit 126 – Node 126 Online
DeviceDataExchangeActive	Indicates the nodes that are online and exchanging DPV0 data on the local PROFIBUS network. Each bit represents a node. When the specific bit is set ‘1’ then the device is online and exchanging data and when the bit is off ‘0’ the device is not exchanging data on the PROFIBUS network. Bit 0 – Node 0 Exchanging DPV0 Data Bit 1 – Node 1 Exchanging DPV0 Data ……. Bit 126 – Node 126 Exchanging DPV0 Data
DeviceAlarmPendingFlags	Indicates the nodes that have an alarm pending on the local PROFIBUS network. Each bit represents a node. When the specific bit is set ‘1’ then the device has an alarm pending that must be unloaded and when the bit is off ‘0’ the device does not have an alarm pending. Bit 0 – Node 0 has an alarm pending Bit 1 – Node 1 has an alarm pending ……. Bit 126 – Node 126 has an alarm pending
DeviceDiagnosticPendingFlags	For ILX56-PBM only.

Table 4.2 – Logix General Status tags

General Control

The emulated ILX56-PBS slave devices will be enabled by setting the correct enable bit in the Logix output assembly. Once the respective bit has been set in the *DeviceEnable* array, the ILX56-PBS will become active on the PROFIBUS network and will start responding to a PROFIBUS DP Master.

Local:2:O1	{...}	{...}		PS:ILX56_PBS_SLAVE:O1:0
Local:2:O1.CommandControl	16#00		Hex	SINT
Local:2:O1.RedundancyControl	16#00		Hex	SINT
Local:2:O1.DeviceEnable	{...}	{...}		PS:DeviceEnable:O:0
Local:2:O1.DeviceEnable.SI_enable_0	2#1000_1000		Binary	SINT
Local:2:O1.DeviceEnable.SlaveID_0	0		Decimal	BOOL
Local:2:O1.DeviceEnable.SlaveID_1	0		Decimal	BOOL
Local:2:O1.DeviceEnable.SlaveID_2	0		Decimal	BOOL
Local:2:O1.DeviceEnable.SlaveID_3	1		Decimal	BOOL
Local:2:O1.DeviceEnable.SlaveID_4	0		Decimal	BOOL
Local:2:O1.DeviceEnable.SlaveID_5	0		Decimal	BOOL
Local:2:O1.DeviceEnable.SlaveID_6	0		Decimal	BOOL
Local:2:O1.DeviceEnable.SlaveID_7	1		Decimal	BOOL
Local:2:O1.DeviceEnable.SI_enable_1	2#0000_0000		Binary	SINT
Local:2:O1.DeviceEnable.SlaveID_8	0		Decimal	BOOL
Local:2:O1.DeviceEnable.SlaveID_9	0		Decimal	BOOL

Figure 4.2 – General Control tags

Table 4.3 – General Control tags

Tag	Description
CommandControl	For ILX56-PBM only.
RedundancyControl	For ILX56-PBM only.
DeviceEnable	These bits enable nodes on the PROFIBUS network for data exchange. Each bit represents a node. When the specific bit is set ‘1’, then the device (if configured) will exchange data with the PROFIBUS master. When the bit is off ‘0’, the device does exchange data with the PROFIBUS master. Bit 0 – Node 0 is enabled for data exchange Bit 1 – Node 1 is enabled for data exchange ……. Bit 126 – Node 126 is enabled for data exchange

The user will be able to see if there are any faults (e.g. configured device not found) by:

- Viewing the LEDs of the ILX56-PBS (see the *Diagnostics* section for more details)
- Going online with the module in the PLX50 Configuration Utility and viewing the ILX56-PBS Slave and Device Diagnostics
- Viewing the input assembly of the ILX56-PBS in Logix.

Status and DPV0 Data Exchange

The DPV0 data is exchanged with Logix using the Class 1 Logix connection. The device-specific tag contains all the input and output data fields, as well as important control and status information.

MyILX56PBS_PLX51PBS	{...}		MyILX56PBS_...	
MyILX56PBS_PLX51PBS.Input	{...}		MyILX56PBS_...	
MyILX56PBS_PLX51PBS.Input.Status	{...}		PSPLX51DPSI...	
MyILX56PBS_PLX51PBS.Input.Status.Online	0	Decimal	BOOL	Device Online (0=Offline, 1=Online)
MyILX56PBS_PLX51PBS.Input.Status.DataExchangeActive	0	Decimal	BOOL	Data Exchange Active (0=Inactive, 1=Active)
MyILX56PBS_PLX51PBS.Input.Status.IdentMismatch	0	Decimal	BOOL	Device Identity Mismatch (0=Ok, 1=Mismatch)
MyILX56PBS_PLX51PBS.Input.Status.DisabledByOutputAssembly	0	Decimal	BOOL	Disabled by Output (0=Enabled, 1=Disabled)
MyILX56PBS_PLX51PBS.Input.Status.DeviceError	0	Decimal	BOOL	Profibus Device Error (0=Ok, 1=Error)
MyILX56PBS_PLX51PBS.Input.Status.AlarmPending	0	Decimal	BOOL	Alarm Pending (0=Not Pending, 1=Pending)
MyILX56PBS_PLX51PBS.Input.Status.DiagnosticsPending	0	Decimal	BOOL	Diagnostics Pending (0=Not Pending, 1=Pending)
MyILX56PBS_PLX51PBS.Input.Status.OutputAssemblyNodeAddrMismatch	0	Decimal	BOOL	Station Number Mismatch (0=Ok, 1=Mismatch)
MyILX56PBS_PLX51PBS.Input.Status.MappingCRCMismatch	0	Decimal	BOOL	Mapping Checksum Mismatch (0=Ok, 1=Mismatch
MyILX56PBS_PLX51PBS.Input.Status.SlaveClearOpMode	0	Decimal	BOOL	Slave Clear Operation Mode
MyILX56PBS_PLX51PBS.Input.Status.SlaveAlarmAck	0	Decimal	BOOL	Slave Alarm Acknowledge
MyILX56PBS_PLX51PBS.Input.Status.StationNumber	0	Decimal	SINT	Device Station Number
MyILX56PBS_PLX51PBS.Input.Status.DeviceMappingCRC	16#0000	Hex	INT	Mapping checksum
MyILX56PBS_PLX51PBS.Input.Output4Bytes	0.0	Float	REAL	
MyILX56PBS_PLX51PBS.Output	{...}		MyILX56PBS_...	
MyILX56PBS_PLX51PBS.Output.Control	{...}		PSPLX51DPSI...	
MyILX56PBS_PLX51PBS.Output.Control.StationNumber	0	Decimal	SINT	Device Station Number
MyILX56PBS_PLX51PBS.Output.Control.AlarmTrigger	0	Decimal	BOOL	Device Alarm Trigger
MyILX56PBS_PLX51PBS.Output.Control.DeviceMappingCRC	16#0000	Hex	INT	Mapping Checksum
MyILX56PBS_PLX51PBS.Output.Input4Bytes	0.0	Float	REAL	

Figure 4.3 – ILX56-PBS Slave Device-Specific tag

Table 4.4 – Device Input tags

Tag	Description
Status	
Online	This bit indicates if the device is online on the PROFIBUS network. 1 – Device is online 0 – Device is not online
DataExchangeActive	This bit indicates if the device is configured and exchanging data on the PROFIBUS network. 1 – Device is active and exchanging data 0 – Device is not exchanging data The user must ensure that all application code making use of data from a slave device first checks that the *DataExchangeActive* bit is 1.
IdentMismatch	The device configured in the PLX50CU and the device at the configured node address do not match because they have different ident numbers. 1 – Online device Ident does not match configured device 0 – Online device and configured device ident match
DisabledByOutputAssembly	This bit indicates if the device has not been enabled for data exchange in the ILX56-PBS device enable control bits. 1 – Device has **not** been enabled for data exchange 0 – Device has been enabled for data exchange
DeviceError	This bit indicates an error with the device. 1 – Device has an error. 0 – Device has no error. The error flag will be set when one of the following conditions occur: • If there is an ident mismatch during slave parameterization, • When receiving any form of FDL fault (data link layer fault). For example: SAP Not Activated or Resource Not Available. • When the data size of the DPV0 data exchange does not match what has been configured in the PLX50CU.

	This Error flag is transient and will clear once a valid response is received.
AlarmPending	Indicates the device has an alarm pending on the local PROFIBUS network. When the specific bit is set '1' then the device has an alarm pending that must be unloaded and when the bit is off '0' the device does not have an alarm pending. 0 – The node has no alarm pending 1 – The node has an alarm pending
DiagnosticsPending	Indicates the device has diagnostics pending on the local PROFIBUS network. When the specific bit is set '1' then the device has diagnostics pending that must be unloaded and when the bit is off '0' the device does not have any diagnostics pending. 0 – The node has no diagnostics pending 1 – The node has diagnostics pending
OutputAssemblyNodeAddrMismatch	This bit indicates that there is a mismatch between the actual device station address and the expected Logix mapping station address. 0 – Station address matches 1 – Station address mismatch
MappingCRCMismatch	If there is a mismatch in the mapping between Logix and the ILX56-PBS it can result in data appearing in the incorrect location which means the user can be sending incorrect data to a device which can have unpredicted results. 0 – The mapping for the output data is correct. 1 – There is a mapping mismatch in the output data.
SlaveClearOpMode	This will indicate that the respective slave is in fieldbus CLEAR mode (received from the DP Master on the network). 0 – Slave Station is in CLEAR fieldbus mode. 1 – Slave Station is **not** in CLEAR fieldbus mode.
SlaveAlarmAck	This will indicate that the respective emulated slave has received an acknowledgement for the pending alarm. 0 – Slave Station has received an Alarm Acknowledgement for last pending alarm. 1 – No Alarm Acknowledgement have been received for a pending alarm or there is no alarm pending.
StationNumber	The station number of the specific slave device.
DeviceMappingCRC	The checksum of the Mapping for the specific slave device.
DeviceSpecificInputDataFields	The tags created for the input data will be slave specific.

Table 4.5 – Device Output tags

Tag	**Description**
Control	
StationNumber	The station number entered by the Logix mapping code of the specific slave device.
AlarmTrigger	When this bit is transitioned from 0 to 1, it will trigger an alarm notification to the DP Master.
DeviceMappingCRC	The checksum of the mapping that was applied by the generated Logix code used to verify if the mapping being used is valid.
DeviceSpecificOutputDataFields	The tags created for the output data will be slave which has been emulated in the configuration manager.

DPV1 Class 1 Messaging (MS1)

The ILX56-PBS supports DPV1 Class 1 (MS1) messaging. See the DPV1 Objects in the PLX50 Configuration Utility device configuration section for more information regarding the configuration of the DPV1 Objects. The user can configure several slot and index combinations for DPV1 Class 1 communication (for each added PROFIBUS Slave device).

When the PROFIBUS Master sends a DPV1 read/write command for the configured slot and index, the ILX56-PBS will access the configured Logix tag to provide the required data. The data that will be written or read will be extracted from the Logix SINT array configured in the DPV1 objects of the device configuration window. The following is an example of the DPV1 operation.

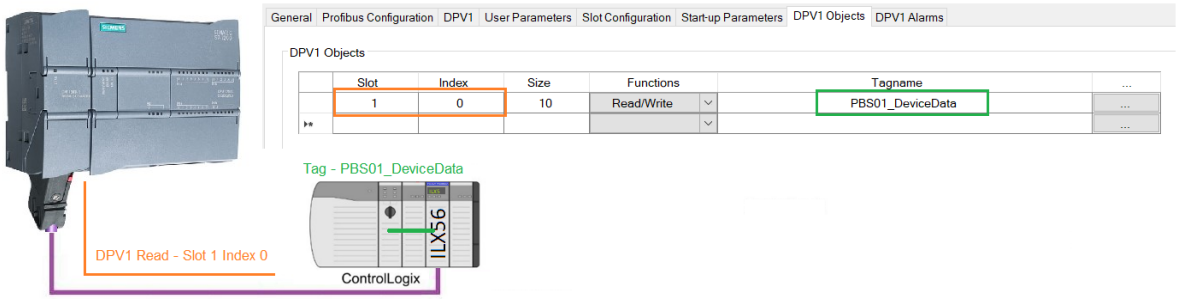


Figure 4.4 – ILX56-PBS DPV1 Object exchange

Alarming

The ILX56-PBS supports DPV1 Alarming. The user can trigger an alarm from the Logix device output assembly which will notify the PROFIBUS Master that a new alarm has been generated. When the PROFIBUS Master sends a DPV1 alarm read command, the ILX56-PBS will access the configured Logix tag to provide the required data for the specific alarm.

NOTE: The ILX56-PBS can only allow one alarm to be triggered at a time.

To trigger an alarm notification for the PROFIBUS Master, the user will need to toggle (from 0 to 1) the AlarmTrigger tag as shown below:

PBS01_PLX51PBS.Output	{...}		PBS01_10FF3E83Output
PBS01_PLX51PBS.Output.Control	{...}		PSPLX51DPSlaveControl
PBS01_PLX51PBS.Output.Control.StationNumber	2	Decimal	SINT
PBS01_PLX51PBS.Output.Control.AlarmTrigger	0	Decimal	BOOL
PBS01_PLX51PBS.Output.Control.DeviceMappingCRC	-27247	Decimal	INT
PBS01_PLX51PBS.Output.Input1Byte	33	Decimal	SINT

Figure 4.5 – ILX56-PBS Slave Alarm Trigger

Once the alarm has been triggered, the ILX56-PBS will read the alarm data from the Logix tag and add it to the PROFIBUS diagnostics (which will then be read by the PROFIBUS Master).

When the PROFIBUS Master acknowledges the alarm, the SlaveAlarmAck bit in the input assembly for the field device will be set indicating to the Logix controller that the next alarm can be triggered.

PBS01_PLX51PBS.Input	{...}		PBS01_10FF3E83Input
PBS01_PLX51PBS.Input.Status	{...}		PSPLX51DPSlaveStatus
PBS01_PLX51PBS.Input.Status.Online	1	Decimal	BOOL
PBS01_PLX51PBS.Input.Status.DataExchangeActive	1	Decimal	BOOL
PBS01_PLX51PBS.Input.Status.IdentMismatch	0	Decimal	BOOL
PBS01_PLX51PBS.Input.Status.DisabledByOutputAssembly	0	Decimal	BOOL
PBS01_PLX51PBS.Input.Status.DeviceError	0	Decimal	BOOL
PBS01_PLX51PBS.Input.Status.AlarmPending	0	Decimal	BOOL
PBS01_PLX51PBS.Input.Status.DiagnosticsPending	0	Decimal	BOOL
PBS01_PLX51PBS.Input.Status.OutputAssemblyNodeAddrMi...	0	Decimal	BOOL
PBS01_PLX51PBS.Input.Status.MappingCRCMismatch	0	Decimal	BOOL
PBS01_PLX51PBS.Input.Status.SlaveClearOpMode	0	Decimal	BOOL
PBS01_PLX51PBS.Input.Status.SlaveAlarmAck	0	Decimal	BOOL
PBS01_PLX51PBS.Input.Status.StationNumber	0	Decimal	SINT
PBS01_PLX51PBS.Input.Status.DeviceMappingCRC	0	Decimal	INT

Figure 4.6 – ILX56-PBS Alarm Acknowledge

NOTE: An alarm will only be triggered when the AlarmTrigger tag is toggled from 0 to 1.

The format of the DPV1 Alarm data in the Logix SINT array is shown below:

Alarm Parameter	Byte Offset	Byte Size	Description
Alarm Length	0	1	This is the length of the Alarm data at the bottom of the table.
Alarm Type	1	1	Refer to the *PROFIBUS Specification EN 50170* for information regarding the diagnostics. **Examples:** 1 - Diagnosis_Alarm 3 - Pull_Alarm 4 - Plug_Alarm
Alarm Slot	2	1	Refer to the *PROFIBUS Specification EN 50170* for information regarding the diagnostics.
Alarm Specifier	3	1	Refer to the *PROFIBUS Specification EN 50170* for information regarding the diagnostics. **Examples:** 0 - No further differentiation 1 - Incident appeared 2 - Incident disappeared and slot is ok 3 - One incident disappeared, others remain
Alarm data	4	Alarm Length	Refer to the *PROFIBUS Specification EN 50170* for information regarding the diagnostics.

Table 4.6 – Slave Alarm Data Format

An example of the Alarm Data is shown below:

Name	Value	Style	Data Type	Description
DPV1Alarm	{...}	Hex	SINT[40]	
DPV1Alarm[0]	16#05	Hex	SINT	Alarm Data Length
DPV1Alarm[1]	16#01	Hex	SINT	Alarm Type
DPV1Alarm[2]	16#03	Hex	SINT	Alarm Slot
DPV1Alarm[3]	16#01	Hex	SINT	Alarm Specifier
DPV1Alarm[4]	16#11	Hex	SINT	Alarm Data ...
DPV1Alarm[5]	16#22	Hex	SINT	
DPV1Alarm[6]	16#33	Hex	SINT	
DPV1Alarm[7]	16#44	Hex	SINT	
DPV1Alarm[8]	16#55	Hex	SINT	
DPV1Alarm[9]	16#00	Hex	SINT	

Figure 4.7 –DPV1 Alarm Data Example

4.2 Firmware Upgrade

The PLX50 Configuration Utility allows the user to upgrade the module firmware in the field.

1 In the PLX50 Configuration Utility, go to the Tool menu and select the *DeviceFlash* option.

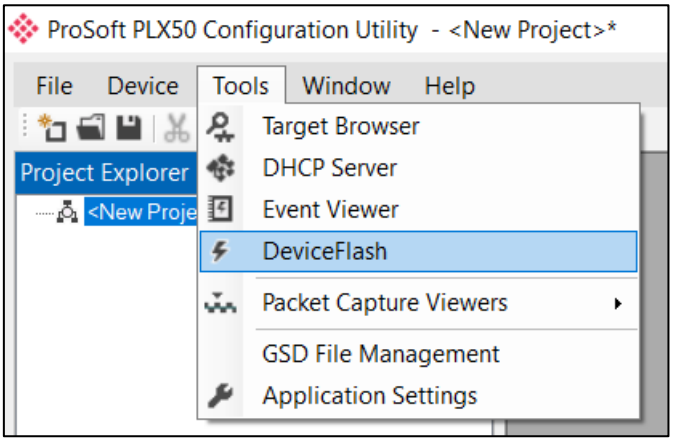


Figure 4.8 - DeviceFlash Tool

2 The user will need to select the appropriate AFB binary file and click **Open**.

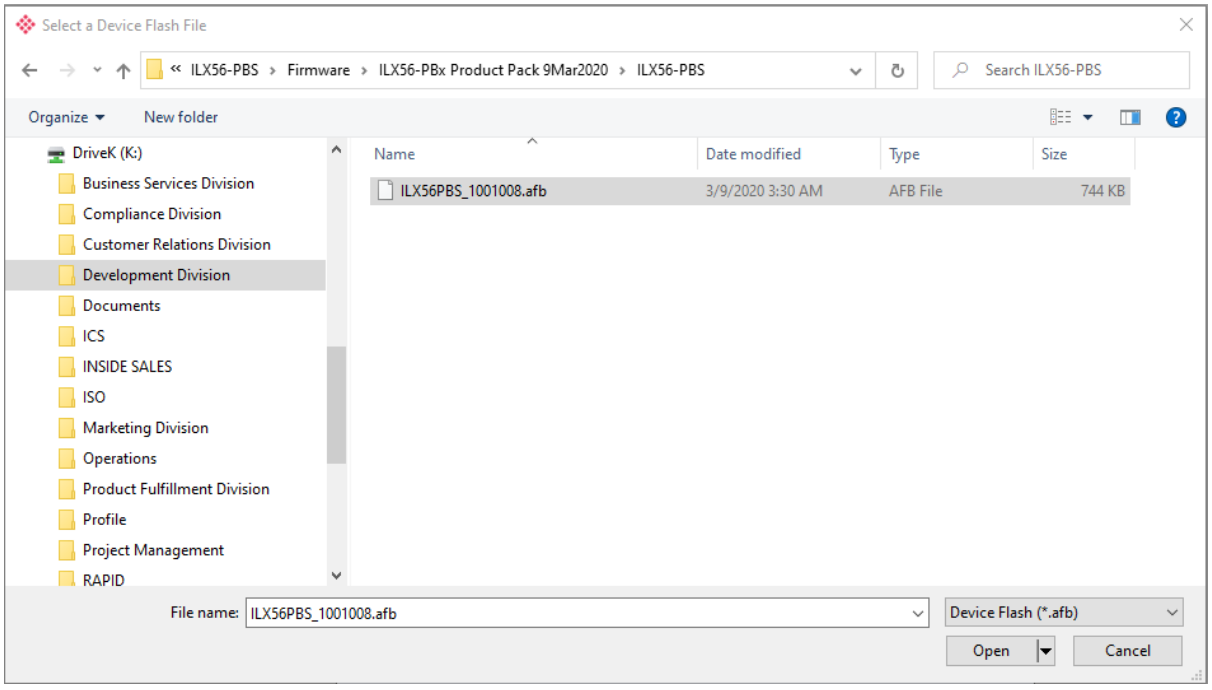


Figure 4.9 - Select the AFB binary

3 The user will need to select the ILX56-PBS module in the Target Browser dialog.

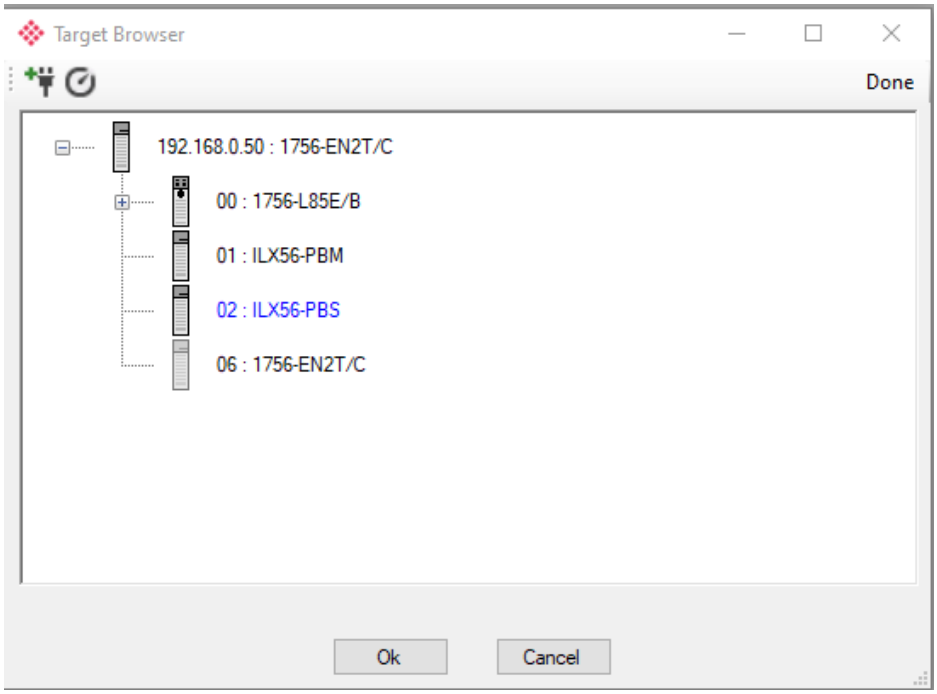


Figure 4.10 - Select the ILX56-PBS module

4 Once firmware upgrade is complete, the Device Flash tool will provide the details of the updated module.

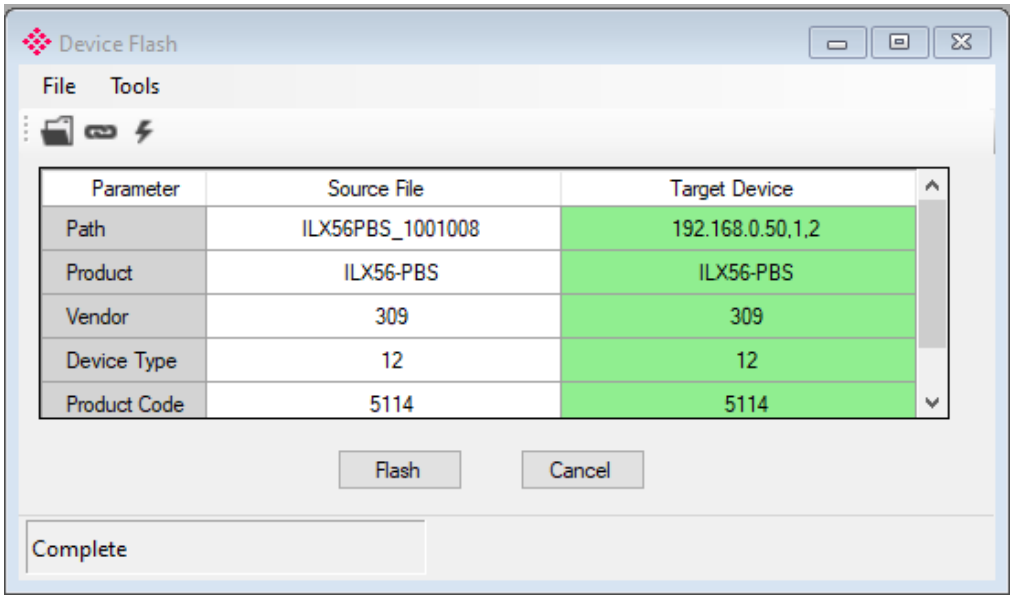


Figure 4.11 – ILX56-PBS successfully updated

Important: The ILX56-PBS firmware is digitally signed so the user will only be able to flash the ILX56-PBS with authorized firmware.

5 Diagnostics

5.1 LEDs

The ILX56-PBS provides 3 diagnostic LEDs and a 4-character alpha-numeric LED display for diagnostics purposes.

Figure 5.1 - ILX56-PBS LEDs

The ILX56-PBS LEDs indicate the module status as follows:

Table 5.1 – ILX56-PBS Module LED operation

LED	Description
SF	Off – This LED is N/A.
BF	This LED indicates the status of the configured field devices. Solid Red – There are bus communication errors (if no valid packet has been received by any configured slave for more than 1s). Flashing Red – There are slave errors (at least one slave has not been configured properly and is not exchanging DPV0 data). Flashing Green – All slaves are successfully exchanging DPV0 data and the DP network operational state is ***CLEAR***. Solid Green – All slaves are successfully exchanging DPV0 data and the DP network operational state is ***OPERATE***.
Ok	The module LED will provide information regarding the system-level operation of the module. Thus, if the LED is red then the module is not operating correctly. For example, if the module application firmware has been corrupted or there is a hardware fault the module will have a red Module LED. If the LED is green (flashing), then the module has booted and is running correctly **without** any application configuration loaded. If the LED is green (solid), then the module has booted and is running correctly **with** application configuration loaded.

The alphanumeric LED display may display the following messages:

Table 5.2 – ILX56-PBS LED Display operation

LED Text	Description
TEST	The module is busy testing all hardware during bootup.
OK	The module has successfully booted, and all hardware testing has passed.
OPERATE mode	The PROFIBUS network is in **OPERATE** operational mode.
CLEAR mode	The PROFIBUS network is in **CLEAR** operational mode.
Device Fault	At least one slave device is not operating correctly.
Comms Fault	Communication fault (e.g. bus cable has been unplugged).
PROFIBUS Slave	The module is operating as a PROFIBUS Slave.
Duplicate Station	A PROFIBUS station with a duplicate node has been detected.
No Config Loaded	No configuration has been loaded onto the ILX56-PBS.

The module LED display will also show the instance name of the module configured in PLX50CU.

5.2 Module Status Monitoring

The ILX56-PBS provides a range of statistics including module operation, maintenance, and fault finding. The statistics can be accessed in full by the PLX50 Configuration Utility.

To view the module's status in the PLX50 Configuration Utility environment, the ILX56-PBS must be online. If the module is not already online (following a recent configuration download), then right-click on the module and select the *Go Online* option.

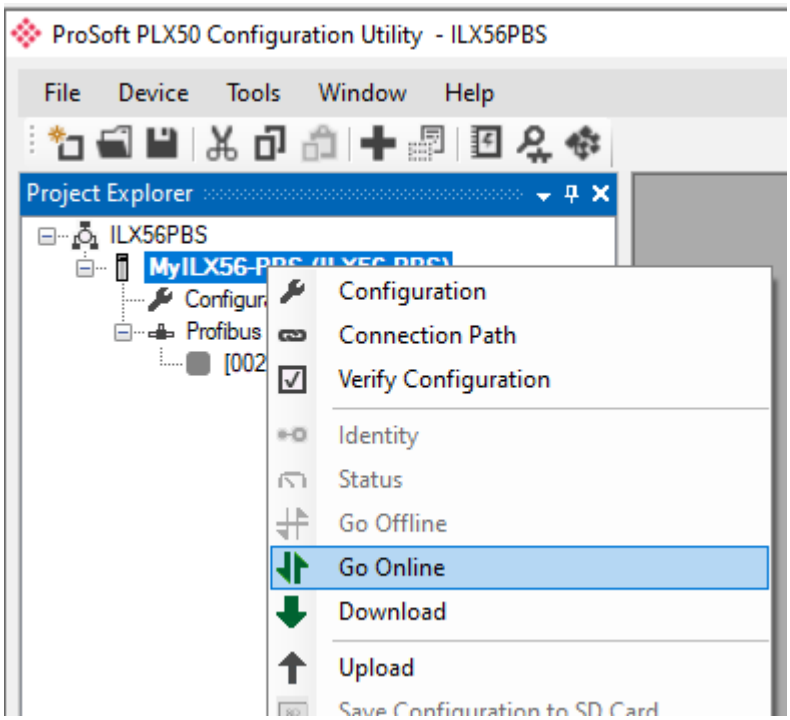


Figure 5.2 - Selecting to Go Online

The Online mode is indicated by the green circle behind the module in the Project Explorer tree.

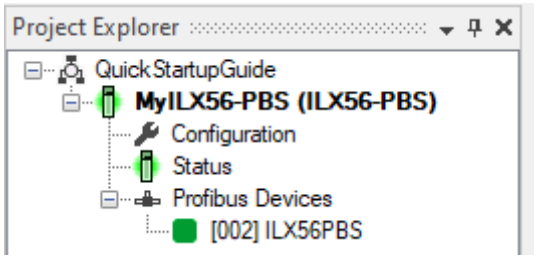


Figure 5.3 – Module online

5.2.1 ILX56-PBS Status

The Status monitoring window of the ILX56-PBS can be opened by either double-clicking on the *Status* item in the Project Explorer tree, or by right-clicking on the module and selecting *Status*.

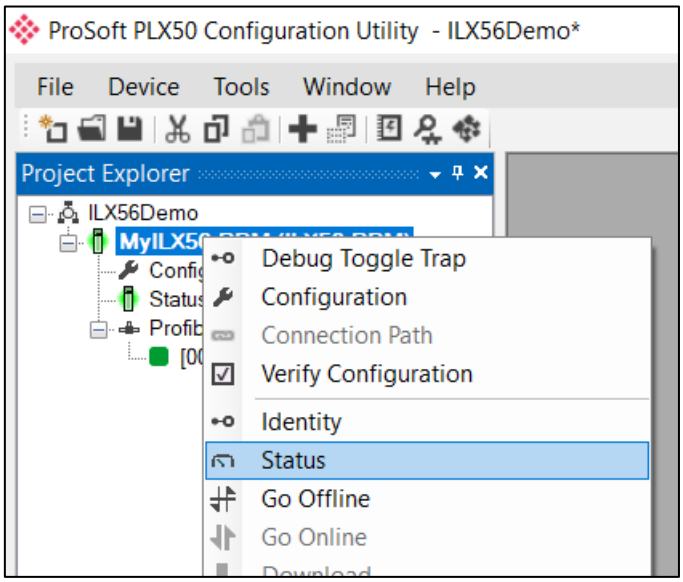


Figure 5.4 - Selecting ILX56-PBS online Status

General

The General tab displays the following general parameters:

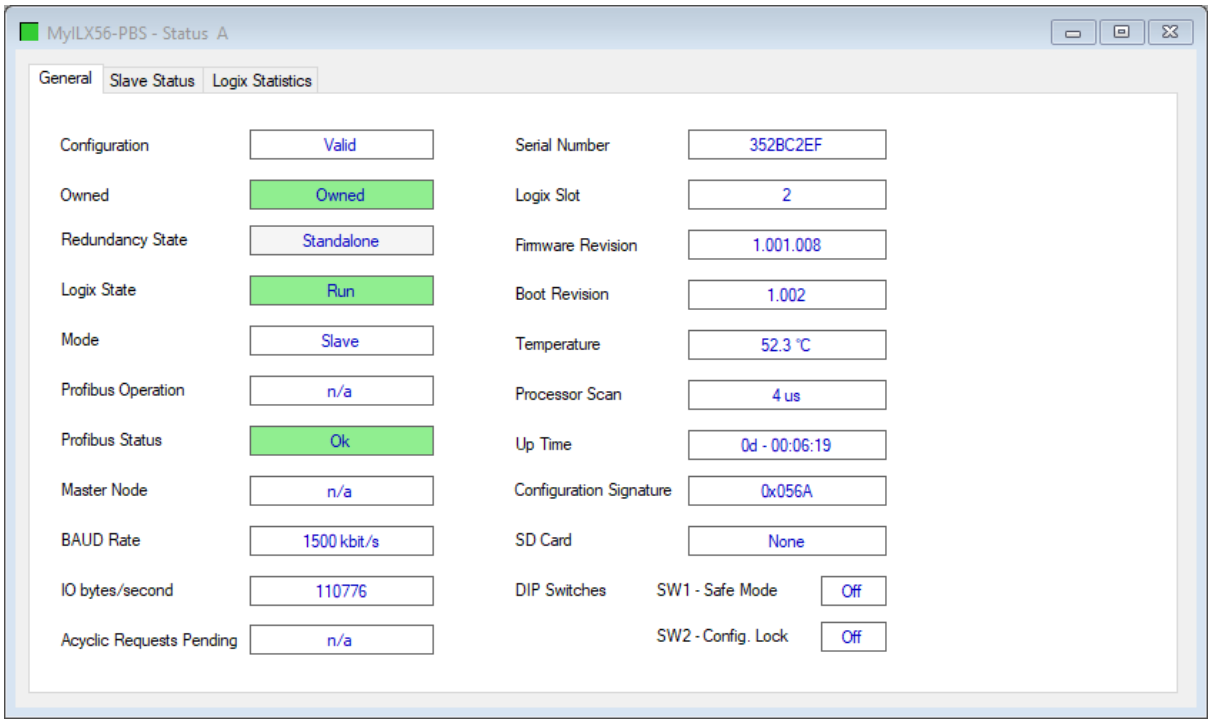


Figure 5.5 – ILX56-PBS Status monitoring – General

Table 5.3 - Parameters displayed in the Status Monitoring – General Tab

Parameter	Description
Configuration	Indicates if the downloaded configuration is valid and executing.
Owned	Indicates whether or not the module is currently owned (Class 1) by a Logix Controller.
Redundancy State	N/A
Logix State	Indicates the state of the connected Logix controller: **Run** – Controller is in RUN mode **Program** – Controller is in PROGRAM or FAULT mode or TEST mode.
Mode	This is the mode of operation of the module. **Quiet** This mode allows the user to connect the ILX56-PBS to an active bus and run a DP packet capture. In this mode the ILX56-PBS will not communicate on the DP Bus but rather only listen. **Slave** In this mode the ILX56-PBS will emulate multiple PROFIBUS Slave devices.
PROFIBUS Operation	N/A
Profibus Status	Status of the PROFIBUS network: **Ok** – No PROFIBUS errors **Fieldbus Error** – PROFIBUS network issue detected (e.g. cable fault) **Device Error** – One or more PROFIBUS devices not communicating.
Master Node	N/A
BAUD Rate	The BAUD Rate of the PROFIBUS network.
IO bytes/second	The number of process variable bytes being exchanged between the ILX56-PBS and PROFIBUS Master device every second.
Acyclic Requests Pending	The number of acyclic requests (DPV1 Class 1 and Class 2 requests) pending.
Up Time	Indicates the elapsed time since the module was powered-up.
Firmware Revision	The application firmware revision currently executing.
Boot Revision	The bootloader firmware revision.
Configuration Signature	The signature of the configuration currently executing on the module.
Serial Number	Displays the module's serial number.
Logix Slot	The current slot in which the module resides of the ControlLogix rack.
Temperature	The internal temperature of the module.
Processor Scan	The amount of time (microseconds) taken by the module's processor in the last scan.
DIP Switch Position	The status of the DIP switches when the module booted.
SD Card	Indicates if a SD Card has been inserted into the module.

Slave Status

The Slave mode diagnostics tab displays the following parameters:

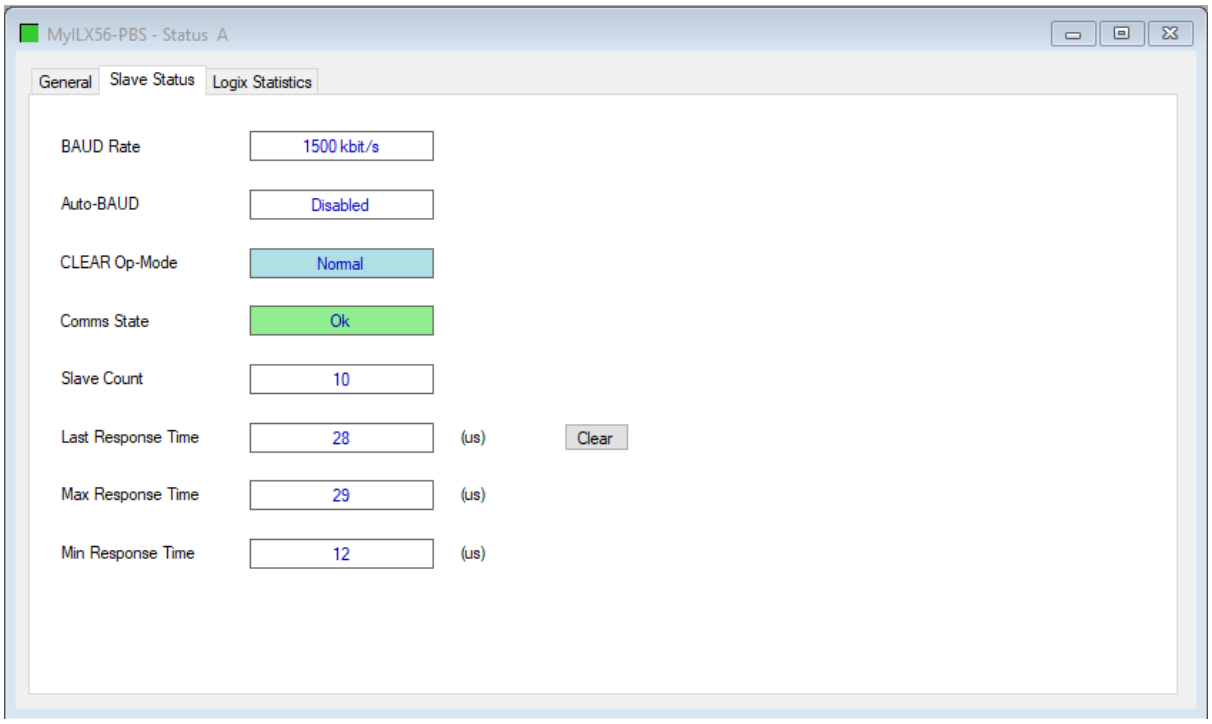


Figure 5.6 – ILX56-PBS Status monitoring – Slave Status

Table 5.4 - Parameters displayed in the Status Monitoring – Slave Status Tab

Parameter	Description
BAUD Rate	Current BAUD rate of the PROFIBUS Network
Auto-BAUD	If the BAUD rate for the PROFIBUS Network will be automatically detected
CLEAR Op-Mode	If the operational state of the PROFIBUS Network is CLEAR
Comms State	**OK** All configured slaves are operating correctly. **Failure** At least one of the configured devices are not operating correctly.
Slave Count	Number of slaves configured
Last Response Time	The time it took (in microseconds) to respond to the last request from a DP Master.
Max Response Time	The maximum time it took (in microseconds) to respond to a request from a DP Master.
Min Response Time	The minimum time it took (in microseconds) to respond to a request from a DP Master.

Logix Statistics

The Logix statistics are the statistics for connections and messages from the ILX56-PBS to the Logix Controller. These are used when DPV1 messaging and alarming are mapped to Logix tags.

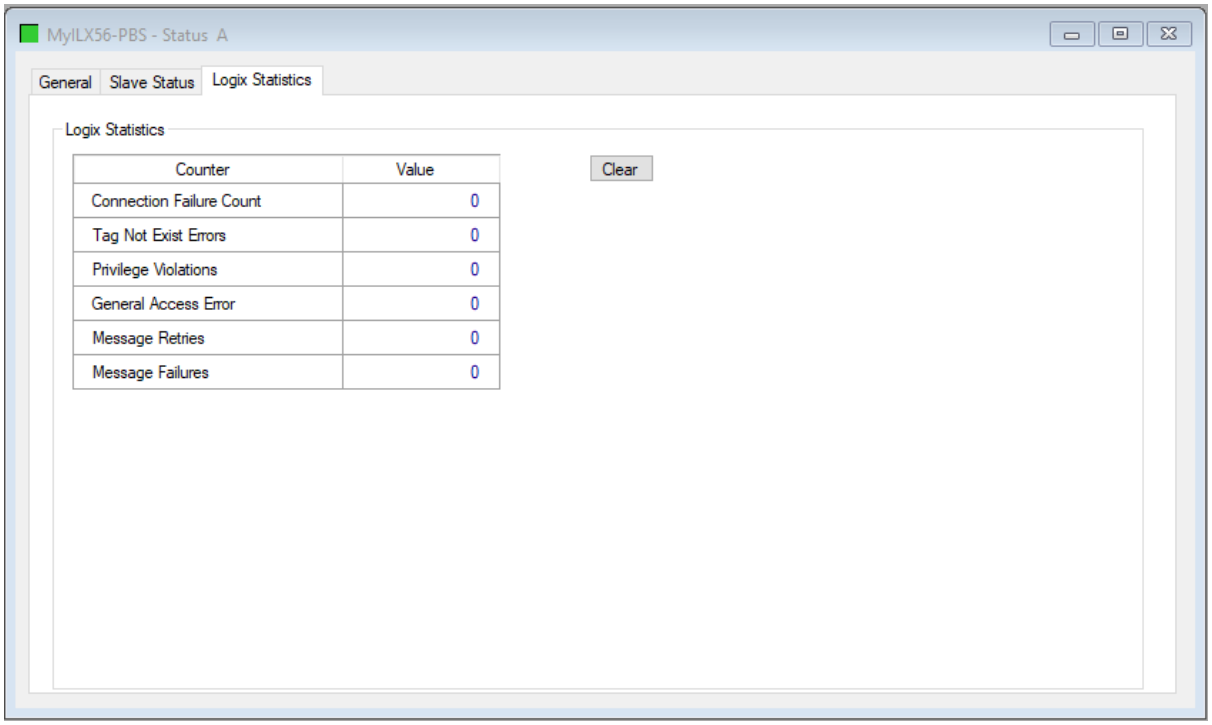


Figure 5.7 – Status Monitoring – Logix Statistics Tab

Table 5.5 - Parameters displayed in the Status Monitoring – Logix Statistics Tab

Parameter	Description
Connection Failures	The number of failed attempts at establishing a class 3 connections with a Logix controller.
Tag Not Exist Errors	The number of tag read and tag write transactions that failed due to the destination tag not existing.
Privilege Violation Errors	The number of tag read and tag write transactions that failed due to a privilege violation error. This may be caused by the External Access property of the Logix tag being set to either None or Read Only.
General Access Error	This statistic is used to indicate that the tag could not be accessed due to a general error (eg. writing to a tag more data than the actual array size).
Message Retries	This count increases when no response was received from the Logix Controller by the time the Message timeout is reached.
Message Failures	This count increases when the Message Retry Limit is reached and no response has been received from the Logix Controller.

5.2.2 ILX56-PBS Emulated Slave Device Status

The Status monitoring window of each PROFIBUS slave device connected to the ILX56-PBS can be opened by right-clicking on the specific slave device in the PLX50 Configuration Utility tree, and selecting *Status*.

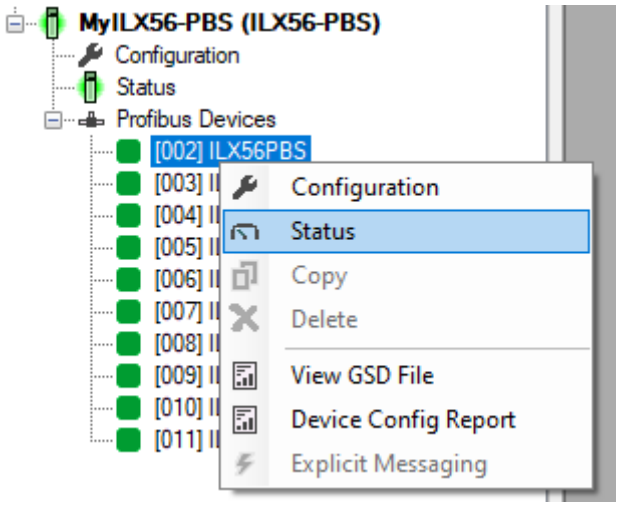


Figure 5.8 - Selecting slave device online Status

The device status window contains multiple tabs to display the current status of the specific slave device.

5.3 PROFIBUS Packet Capture

The ILX56-PBS provides the capability to capture the PROFIBUS traffic for analysis. To invoke the capture, double-click on the module in the Project Explorer tree, or right-clicking the module and selecting *DP Packet Capture.*

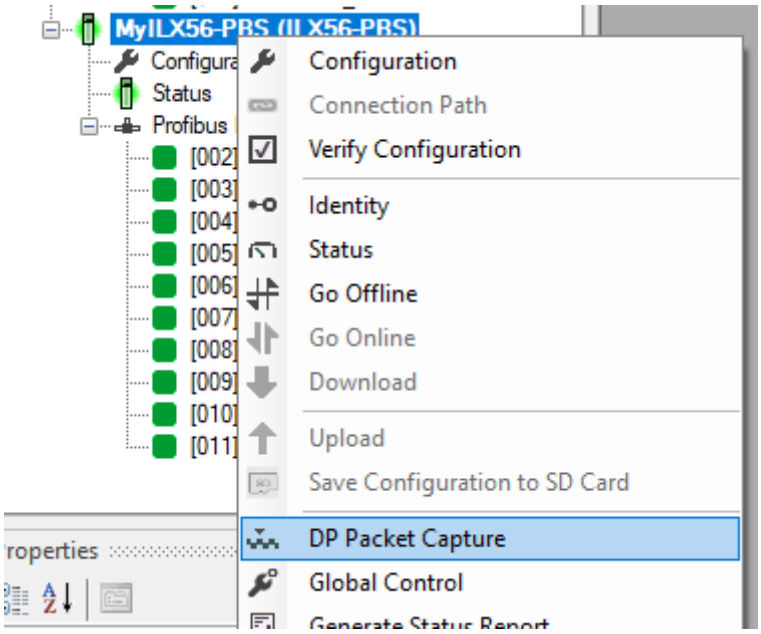


Figure 5.9 - Selecting PROFIBUS Packet Capture

The DP Packet Capture window will open and automatically start capturing all PROFIBUS packets.

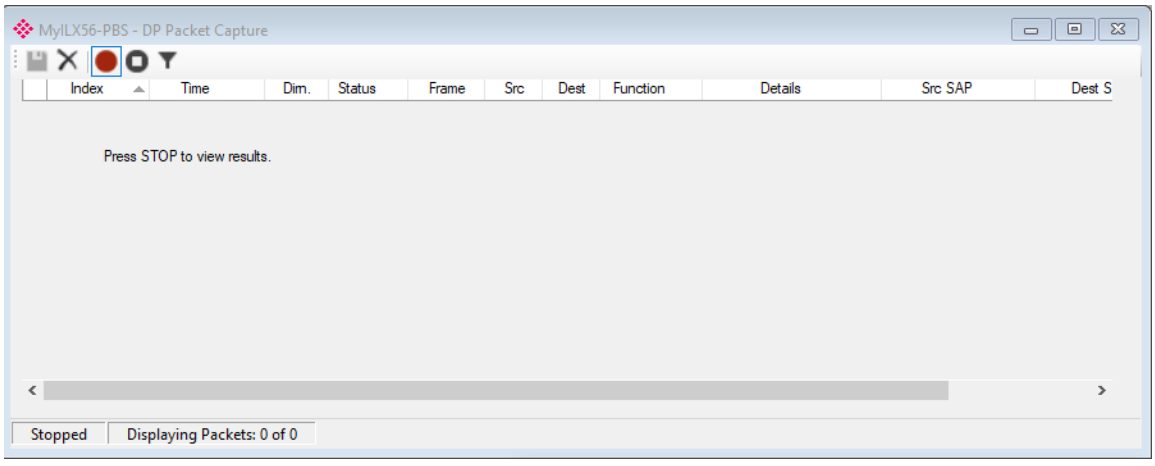
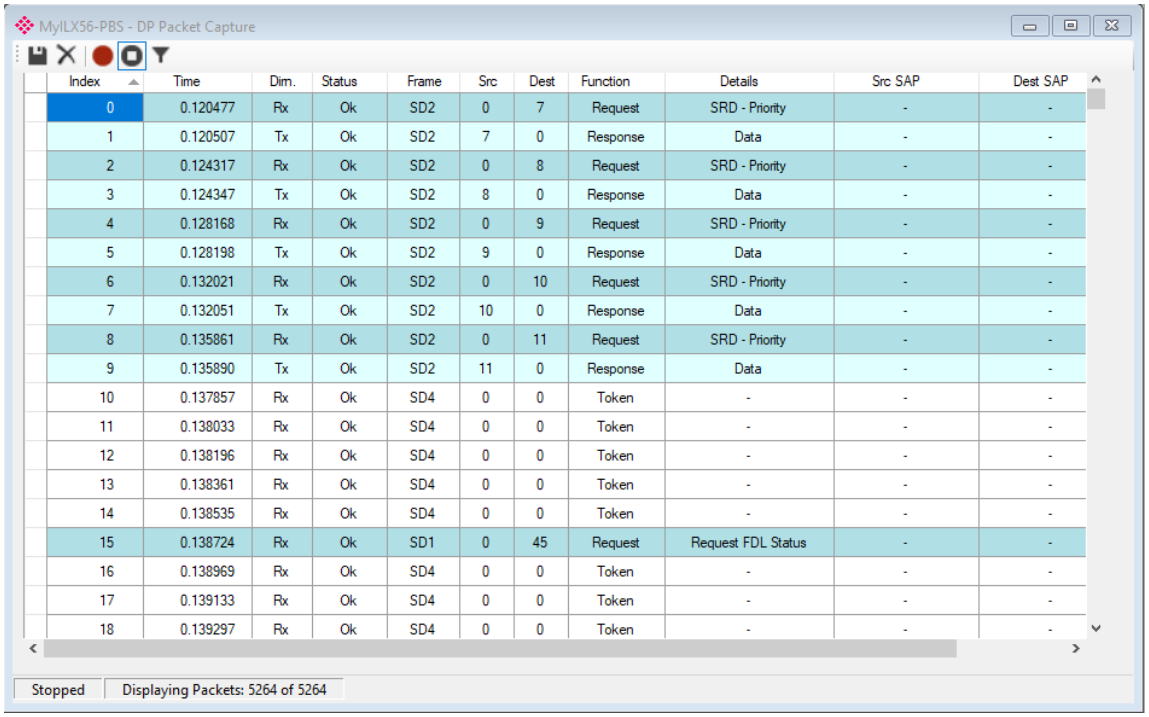


Figure 5.10 - PROFIBUS packet capture

NOTE: The module will capture packets until the user presses *Stop* or when 10,000 packets have been reached.

Example PROFIBUS capture:



Index	Time	Dirn.	Status	Frame	Src	Dest	Function	Details	Src SAP	Dest SAP
0	0.120477	Rx	Ok	SD2	0	7	Request	SRD - Priority	-	-
1	0.120507	Tx	Ok	SD2	7	0	Response	Data	-	-
2	0.124317	Rx	Ok	SD2	0	8	Request	SRD - Priority	-	-
3	0.124347	Tx	Ok	SD2	8	0	Response	Data	-	-
4	0.128168	Rx	Ok	SD2	0	9	Request	SRD - Priority	-	-
5	0.128198	Tx	Ok	SD2	9	0	Response	Data	-	-
6	0.132021	Rx	Ok	SD2	0	10	Request	SRD - Priority	-	-
7	0.132051	Tx	Ok	SD2	10	0	Response	Data	-	-
8	0.135861	Rx	Ok	SD2	0	11	Request	SRD - Priority	-	-
9	0.135890	Tx	Ok	SD2	11	0	Response	Data	-	-
10	0.137857	Rx	Ok	SD4	0	0	Token	-	-	-
11	0.138033	Rx	Ok	SD4	0	0	Token	-	-	-
12	0.138196	Rx	Ok	SD4	0	0	Token	-	-	-
13	0.138361	Rx	Ok	SD4	0	0	Token	-	-	-
14	0.138535	Rx	Ok	SD4	0	0	Token	-	-	-
15	0.138724	Rx	Ok	SD1	0	45	Request	Request FDL Status	-	-
16	0.138969	Rx	Ok	SD4	0	0	Token	-	-	-
17	0.139133	Rx	Ok	SD4	0	0	Token	-	-	-
18	0.139297	Rx	Ok	SD4	0	0	Token	-	-	-

Figure 5.11 - PROFIBUS Packet Capture complete

The captured PROFIBUS packets are tabulated as follows:

Table 5.6 - PROFIBUS Packet Capture fields

Statistic	Description
Index	The packet index incremented for each packet sent or received.
Time	The time is measured in microseconds (us) and is started at a fraction of a second and continued until the packet capture is done.
Dirn.	The direction of the packet, either transmitted (Tx) or received (Rx).
Status	The status of the packet. Received packets are checked for valid PROFIBUS constructs and valid checksums.
Frame	PROFIBUS Frame type. (e.g. SD1, SD2, SD3 etc)
Src	PROFIBUS node address of the message source.
Dest	PROFIBUS node address of the message destination.
Function	The PROFIBUS function (e.g. Token, Request, etc.)
Details	Additional details associated with the PROFIBUS command/function.
Src SAP	The source Service Access Point (SAP) when used.
Dest SAP	The destination Service Access Point (SAP) when used.
Description	A more detailed description of the packet payload. Only applicable to specific packet types.
PDU	The PROFIBUS packet payload.
Data	The packet's raw data displayed in space delimited hex.

5.3.1 Packet Details

Additional detail about specific packets can be viewed by either double-clicking or right-clicking on the packet and selecting the *Show Detail* option.

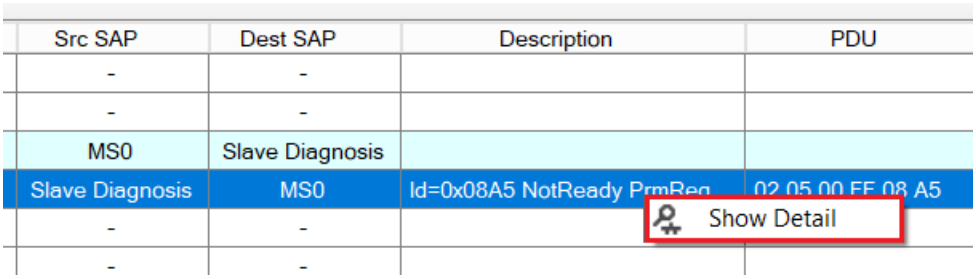


Figure 5.12 - PROFIBUS Packet Capture - Show Detail

A Packet Window will display the details of the selected packet.

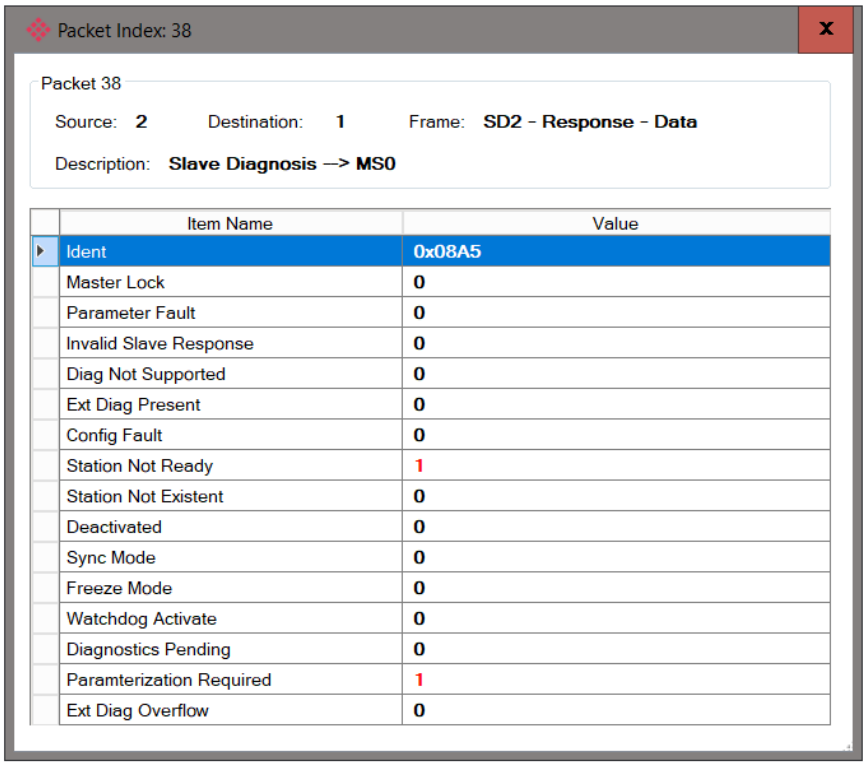


Figure 5.13 - PROFIBUS Packet Capture - Detail Example

5.3.2 Packet Filter

The packet filter can be used to hide certain packet types. To open the packet filter, click on the ***Filter*** icon in the toolbar.

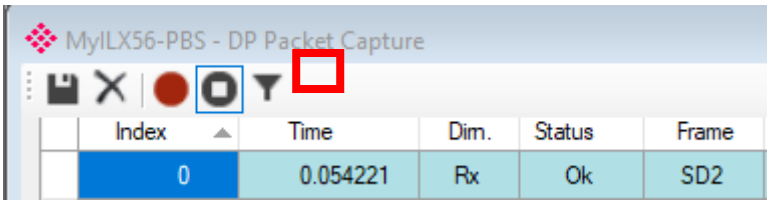


Figure 5.14 - PROFIBUS Packet Filter

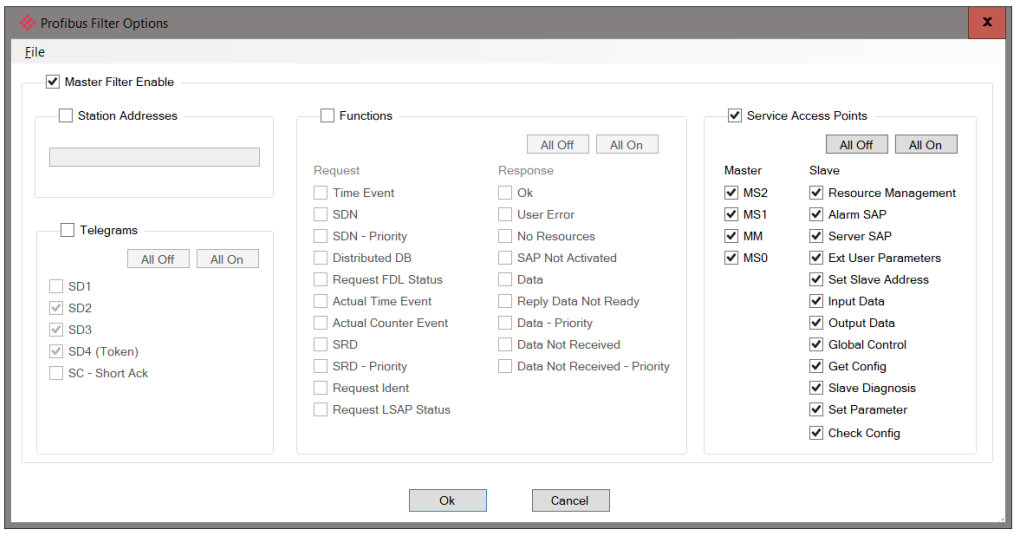


Figure 5.15 - PROFIBUS Packet Filter Options

PROFIBUS packets can be filtered on the following criteria:

- Station Address
- Telegram (Frame) Type
- Function
- Service Access Point

5.3.3 Saving Packet Filter Options

The selected Filter options can also be saved and re-opened for future use.

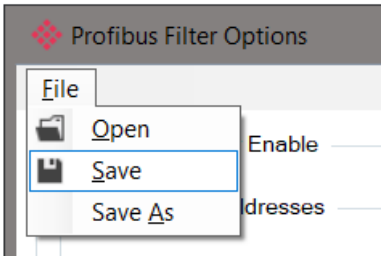


Figure 5.16 - PROFIBUS Packet Filter Options – Save / Open

The packet capture can be saved to a file for further analysis, by selecting the Save button on the toolbar. Previously saved PROFIBUS Packet Capture files can be viewed by selecting the *PROFIBUS Packet Capture Viewer* option in the tools menu.

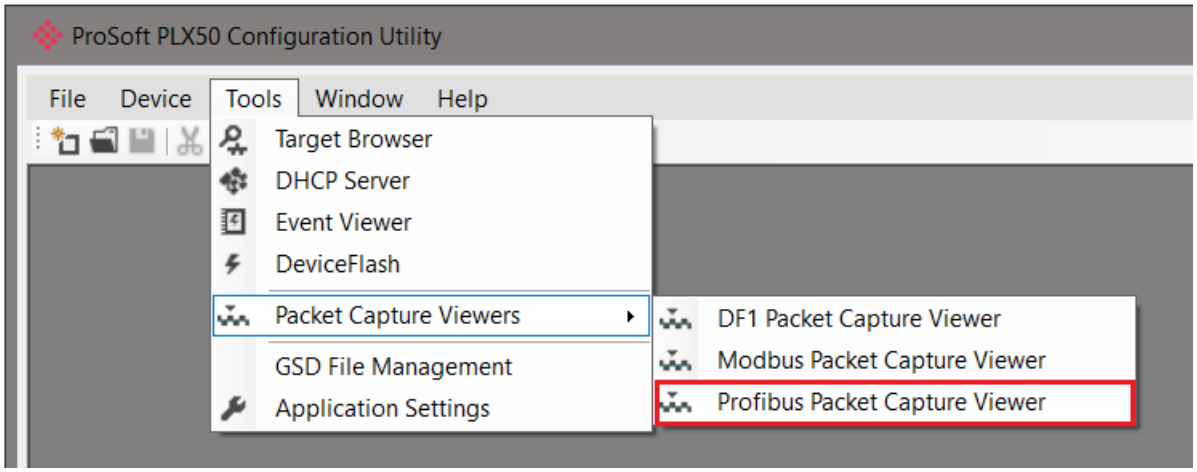


Figure 5.17 - Selecting the PROFIBUS Packet Capture Viewer

5.4 Module Event Log

The ILX56-PBS module logs various diagnostic records to an internal event log. These logs are stored in non-volatile memory and can be displayed using the PLX50 Configuration Utility.

To view the logs, select the Event Viewer option in the Project Explorer tree.

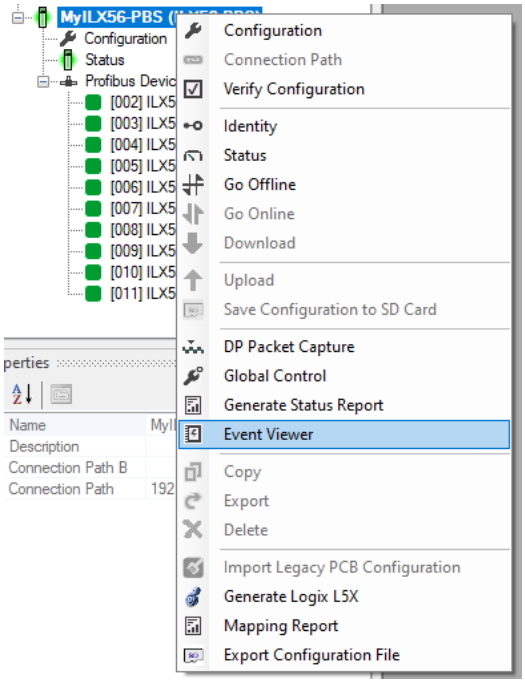


Figure 5.18. - Selecting the module Event Log

The Event Viewer window will open and display all the events from the module. The log entries are sorted with the latest record at the top.

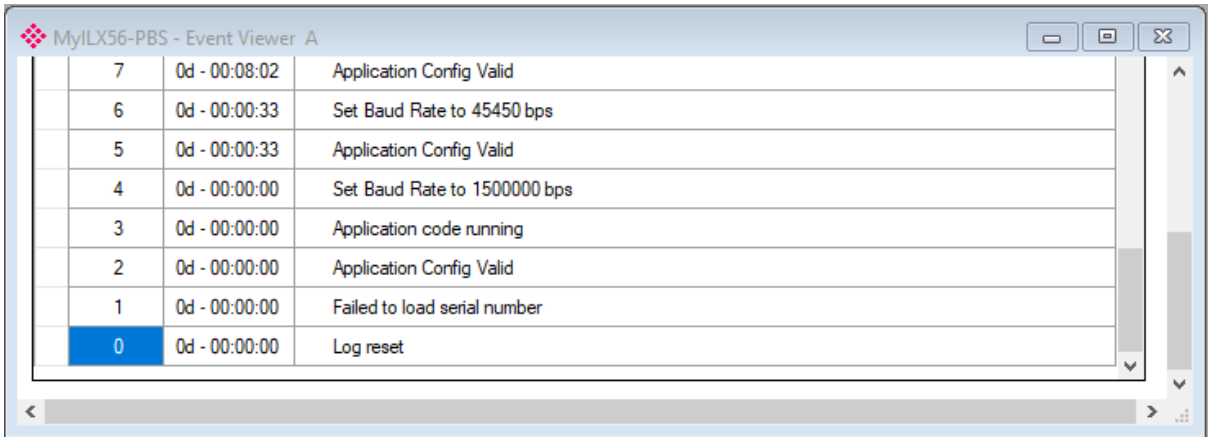


Figure 5.19. – Module Event Log

The log can also be stored to a file by selecting the Save button in the tool menu.

To view previously saved files, use the Event Log Viewer option under the Tools menu.

6 Technical Specifications

6.1 Electrical

Table 6.1 - Electrical specification

Specification	Rating
Backplane Current Load	450 mA @ 5 VDC 2 mA @ 24 VDC
Enclosure rating	IP20, NEMA/UL Open Type
Temperature	-20 to 70 °C
Earth connection	Yes, terminal based
Emissions	IEC61000-6-4
ESD Immunity	EN 61000-4-2
Radiated RF Immunity	IEC 61000-4-3
EFT/B Immunity	EFT: IEC 61000-4-4
Surge Immunity	Surge: IEC 61000-4-5
Conducted RF Immunity	IEC 61000-4-6

6.2 PROFIBUS DP

Table 6.2 – PROFIBUS DP specification

Specification	Rating
Connector	Female DB9 connector
Conductor	See *PROFIBUS DP* Section.
DP Master Mode Support	DPV0 Data Exchange DPV1 Class 1 Messaging DPV1 Class 2 Messaging DPV1 Alarming
DP Slave Mode Support	DPV0 Data Exchange DPV1 Class 1 Messaging DPV1 Alarming
Isolated	Yes
BAUD Rate supported	9.6 kbps, 19.2 kbps, 45.45 kbps, 93.75 kbps, 187.5 kbps, 500 kbps, 1.5 Mbps, 3 Mbps, 6 Mbps, 12 Mbps,

6.3 Certifications

Please visit our website: www.prosoft-technology.com

7 PROFIBUS DP

7.1 Introduction

PROFIBUS is a vendor-independent, open Fieldbus standard for a wide range of applications in manufacturing, process and building automation. Vendor independence and openness are guaranteed by the PROFIBUS standard EN 50 170. With PROFIBUS, devices of different manufacturers can communicate without special interface adjustments. PROFIBUS can be used for both high-speed time critical data transmission and extensive complex communication tasks. The PROFIBUS family consists of three compatible versions.

7.1.1 PROFIBUS DP

Optimized for high speed and inexpensive hookup, this PROFIBUS version is designed especially for communication between automation control systems and distributed I/O at the device level. PROFIBUS-DP can be used to replace parallel signal transmission with 24 V or 4-20 mA.

Table 9.1 – PROFIBUS Protocol (OSI model)

OSI Layer		PROFIBUS		
7	Application	DPV0	DPV1	DPV2
6	Presentation			
5	Session			
4	Transport			
3	Network			
2	Data Link	FDL		
1	Physical	EIA-485	Optical	MBP

To utilize these functions, various service levels of the DP protocol were defined:

- DP-V0 provides the basic functionality of DP, including
  - cyclic data exchange,
  - station, module and channel-specific diagnostics
- DP-V1 contains enhancements geared towards process automation, in particular
  - acyclic data communication for parameter assignment
  - alarm handling
- DP-V2 for isochronous mode and data exchange broadcast (slave-to-slave communication)

7.1.2 PROFIBUS PA

PROFIBUS PA is designed especially for process automation. It permits sensors and actuators to be connected on one common bus line through a dedicated DP/PA gateway or link between the PROFIBUS DP and PROFIBUS PA networks, even in intrinsically-safe areas. PROFIBUS PA permits data communication and power over the bus using a 2-wire technology according to the international standard IEC 1158-2.

7.1.3 PROFIBUS FMS

PROFIBUS FMS is the general-purpose solution for communication tasks at the cell level. Powerful FMS services open up a wide range of applications and provide great flexibility. PROFIBUS FMS can also be used for extensive and complex communication tasks. This protocol is the first developed for PROFIBUS, but it is no longer currently used.

PROFIBUS specifies the technical and functional characteristics of a serial fieldbus system with which decentralized digital controllers can be networked together from the field level to the cell level.

7.2 PROFIBUS master and slave

PROFIBUS distinguishes between master devices and slave devices.

Master devices determine the data communication on the bus. A master can send messages without an external request when it holds the bus access rights (the token). Masters are also called '**active stations**' in the PROFIBUS protocol.

Slave devices are peripheral devices. Typical slave devices include input/output devices, valves, drives and measuring transmitters. They do not have bus access rights and they can only acknowledge received messages or send messages to the master when requested to do so. Slaves are also called '**passive stations**'

7.3 PROFIBUS master class 1 (DPM1) or class 2 (DPM2)

7.3.1 PROFIBUS DP Master class 1 (DPM1)

A class 1 master handles the normal communication or exchange of data with the slaves assigned to it. This is typically a PLC.

It uses **cyclic communication** to exchange process data with its associated slaves. The class 1 master sets the baud rate and the slave's auto-detect this rate. Each slave device is assigned to one master and only that master may write output data to that slave. Other masters may read information from any slave but can only write output data to their own assigned slaves.

7.3.2 PROFIBUS DP Master class 2 (DPM2)

A class 2 master is a special device primarily used for commissioning slaves and for diagnostic purposes. This is typically a Supervisor. It uses **acyclic communication** over what is known as the **MS2 channel**. A DPM2 does not have to be permanently connected to the bus system.

7.4 Cyclic communication

The DP master class 1 cyclically exchanges data with all of the slaves assigned to it. This service is configured. During the configuration process, master and slave addresses are assigned, the bus parameters are defined, the types and numbers of modules (in the case of modular slaves) are specified, user-selectable parameter choices are made, etc.

Before data exchange can take place, the master will send parameterization and configuration telegrams to all of its assigned slaves. These parameters and configuration data are checked by the slaves. If both are valid, the master will initiate cyclic I/O data communication with the slave devices.

7.5 Acyclic communication

In addition to the cyclic data exchange, the PROFIBUS protocol has the option of acyclic communication. This service is not configured. There are 2 different communication channels possible between the requested master and the slave:

- **MS1 channel** (MS1 connection): can only be established if cyclic data exchange is taking place between that master (DPM1) and the slave
- **MS2 channel** (MS2 connection): is possible with several masters simultaneously, but the connection must be established explicitly by the master.

Acyclic reading and writing of data requires an established MS1 or MS2 connection.

For the MS1 channel, 3 conditions must be satisfied:

- The slave device must support the MS1 channel (key *C1_Read_Write_supp* at 1 in the GSD file)
- The DPV1_enable bit must be set during the parameter assignment
- Data exchange is taking place

For the MS2 channel, the connection must be explicitly initiated by the master. The maximum number of possible MS2 connections to the slave must not be reached. The connection can be closed by either the master or the slave device.

7.6 Topology of PROFIBUS DP

PROFIBUS devices are connected in a bus structure. Up to 32 stations (master or slaves) can be connected in one segment. The bus is terminated by an active bus terminator at the beginning and end of each segment. Both bus terminations must always be powered. When more than 32 stations are used, repeaters (line amplifiers) must be used to connect the individual bus segments.

7.7 PROFIBUS DP cable description

Only one type of cable can be used for PROFIBUS network:

Table 9.2 – PROFIBUS DP network cable

Parameter	Type A
Surge Impedance	135…165Ω (3 to 20 MHz)
Capacity	<30 pF/m
Loop Resistance	<110 Ω/km
Wire gauge	>0.64 mm
Conductor area	>0.34 mm²

The maximum cable length depends on the transmission speed and cable type. The specified cable length can be increased using the repeaters. The use of more than 3 repeaters in series is not recommended.

Table 9.3 – PROFIBUS DP cable length

Baudrate (kbps)	9.6	19.2	93.75	187.5	500	1500	3000-12000
Length A (m)	1200	1200	1200	1000	400	200	100

7.8 PROFIBUS DP connector description

Table 9.4 – PROFIBUS DP connector

DB9 Pin Description	DB9 Pin#	DB9 Termination with ILX56-PBS
Chassis ground	1	
Reserved	2	
Data+ / B	3	In case of termination connect this pin to Pin 8 (Data - / A) with 220 ohm resistor
Tx enable	4	
Isolated ground	5	Connect this pin to Pin 8 (Data - / A) with 390 ohm resistor
Voltage plus	6	Connect this pin to Pin 3 (Data + / B) with 390 ohm resistor
Reserved	7	
Data- / A	8	
Reserved	9	

8 ILX56-PBS Quickstart

This chapter covers the configuration of the ILX56-PBS to communicate with a Siemens CPU 315-2PN/DP PROFIBUS Master using the Siemens TIA Portal v15 software.

8.1 GSD File Management Tool Installation

1. Download the ProSoft PLX50 Configuration Utility from http://www.prosoft-technology.com.
2. Run the PLX50 Configuration Utility Setup.msi to install the software.
3. Follow the Setup Wizard to complete the installation process.

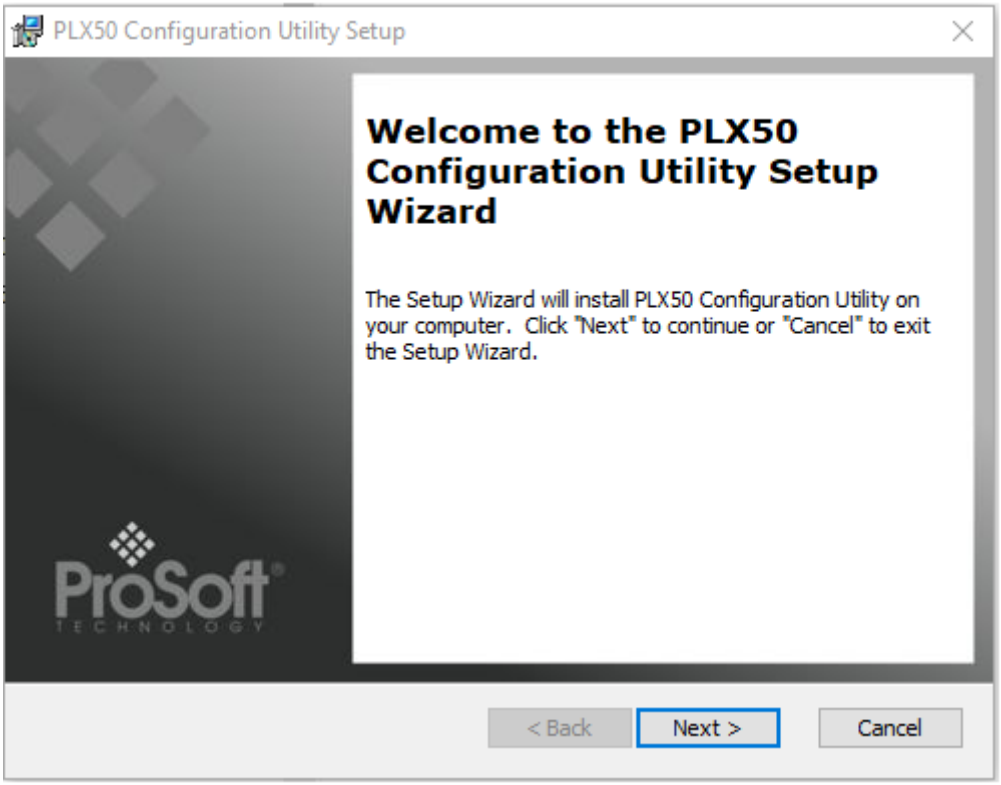


Figure 8.1 – PLX50 Configuration Utility Setup Wizard

8.2 Creating a New Project

Note: If project was started from a Studio 5000 Add-On Profile (AOP), the following step (creating a new project) can be skipped.

Before configuring the module, a new PLX50 Configuration Utility project must be created.

1 Under the File menu, select New.

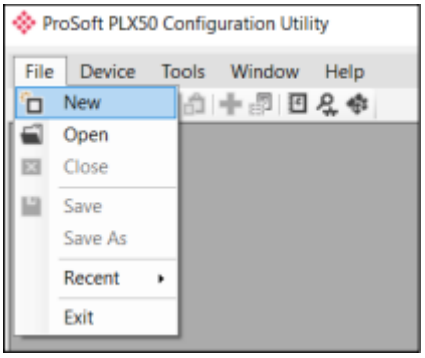


Figure 8.2 – Creating a new project

2 A PLX50 Configuration Utility Design Tool project will be created, showing the Project Explorer tree view. A new device can now be added by selecting Add under the Device menu.

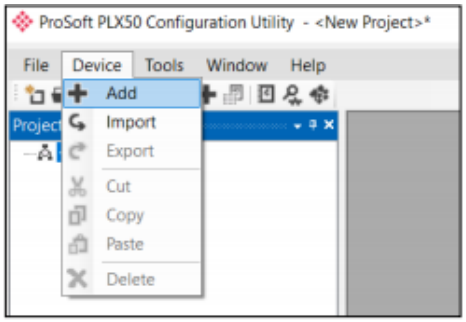


Figure 8.3 – Adding a new device

3 In the Add New Device window, select the ILX56-PBS and click the Ok button.

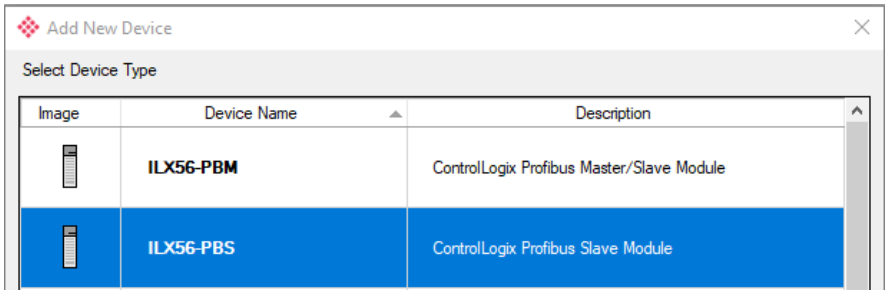


Figure 8.4 – Adding a new ILX56-PBS device

4 The device will appear in the Project Explorer tree with its configuration window opened.

8.2.1 PROFIBUS Configuration

Navigate to the *Profibus* tab to update the *Basic Settings*.

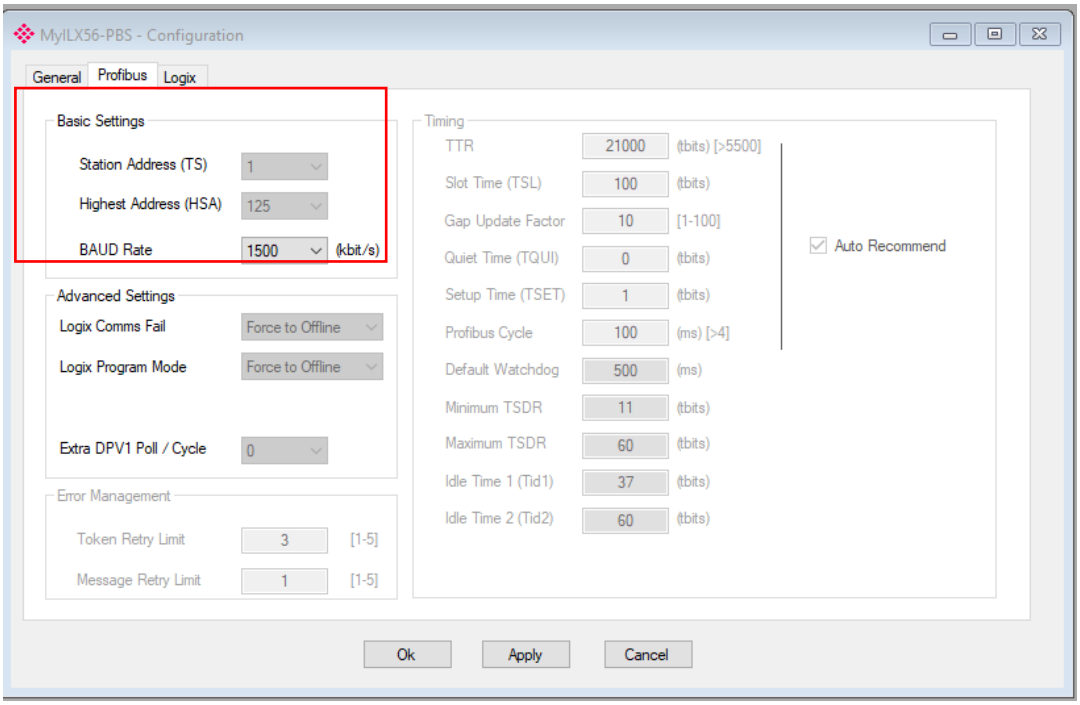


Figure 8.5 – Profibus tab

8.2.2 Logix Configuration

Under the *Logix* tab, configure the *Logix Connections* and *Logix Base Tag A* to reflect ILX56-PBS position in ControlLogix Rack. Click **Apply** and then the **Ok** button.

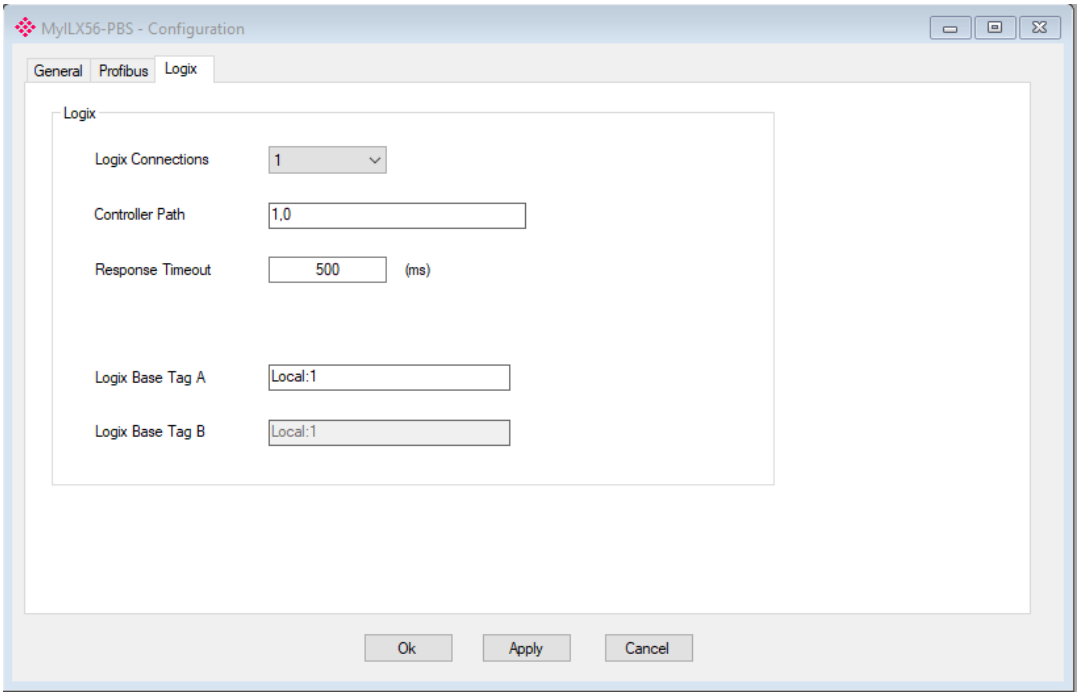


Figure 8.6 – Logix tab

8.3 Adding a PROFIBUS Slave

You will need to add each PROFIBUS device to the ILX56-PBS project tree, depending on how many PROFIBUS slaves you need to emulate (up to 10). In this example, 1 slave PROFIBUS slave will be added and configured.

1 Right-click on the *PROFIBUS Devices* icon in the tree and select **Add PROFIBUS Device**.

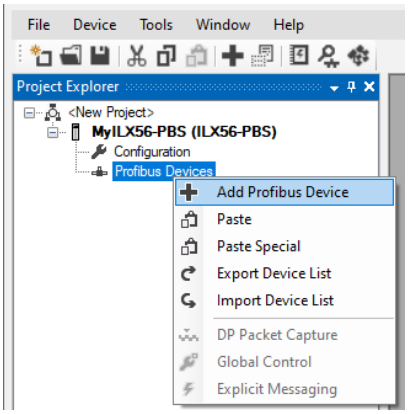


Figure 8.7 – Adding a PROFIBUS device

2 Once the device has been added, the *General Configuration* dialog opens and the device is added at the first open PROFIBUS Station Address.

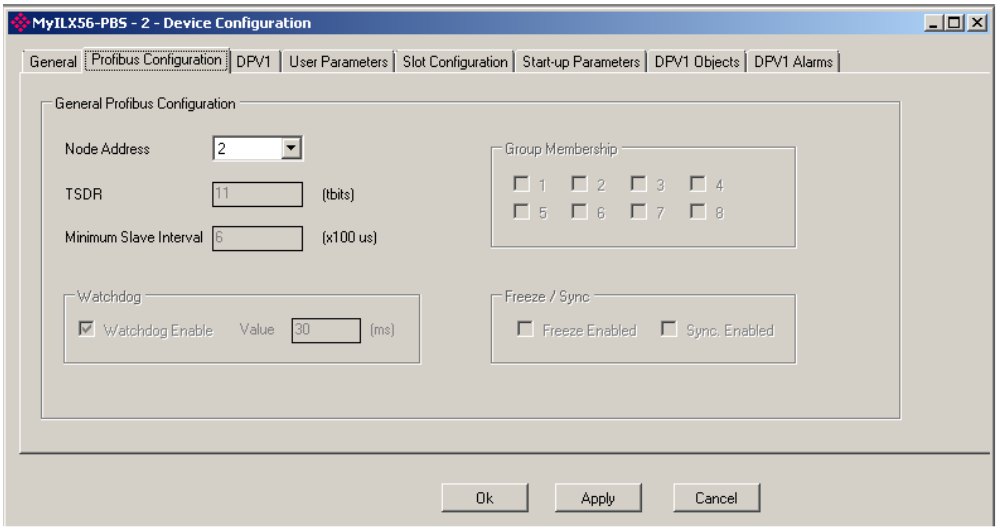


Figure 8.8 –PROFIBUS configuration

3 Navigate to Profibus Configuration tab to assign the Node Address.

4 Navigate to *Slot Configuration* tab, and click on the **Add Module** button.

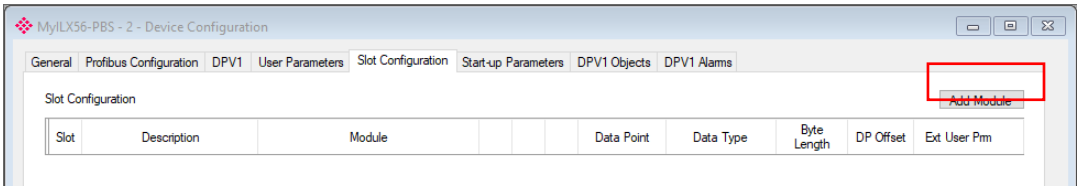


Figure 8.9 – Add Module

5 Add the appropriate modules and click the **Ok** button.

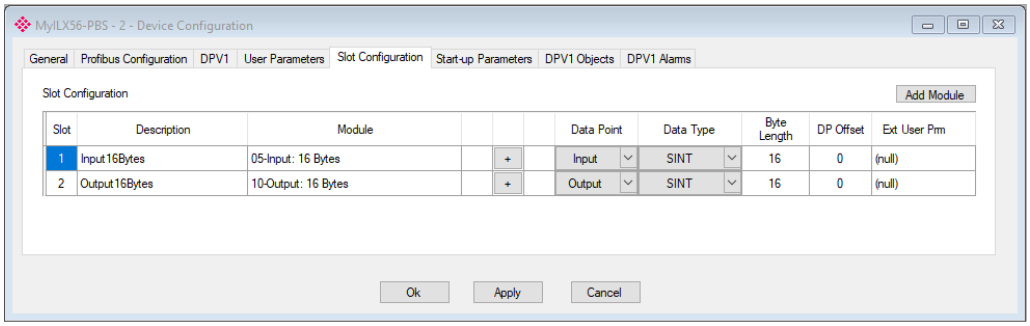


Figure 8.10 – Added modules

The ILX56-PBS is now configured in the ProSoft PLX50 Configuration Utility.

8.4 Downloading the Configuration to the ILX56-PBS

1 Establish a connection path for each module.

2 Right-click on the ILX56-PBS icon and select **Connection Path**.

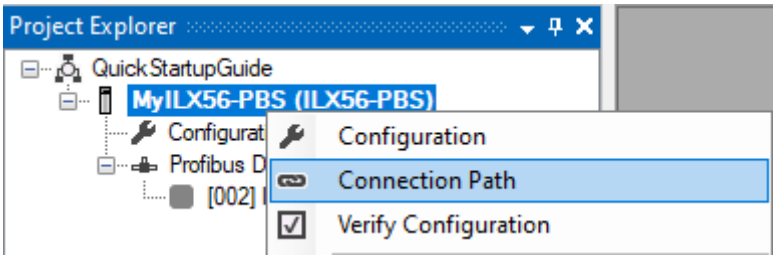


Figure 8.11 – Connection Path option

3 Click on the **Browse** button to launch the target browser. Navigate to the module, and press **Ok**.

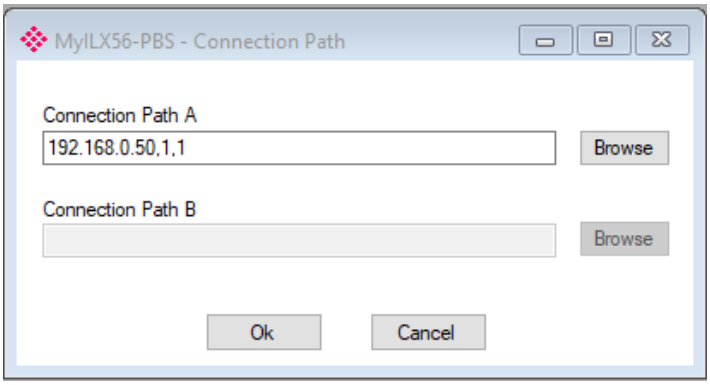


Figure 8.12 – Connection Path

4 Download device configuration by right-clicking on the ILX56-PBS icon and selecting **Download.**

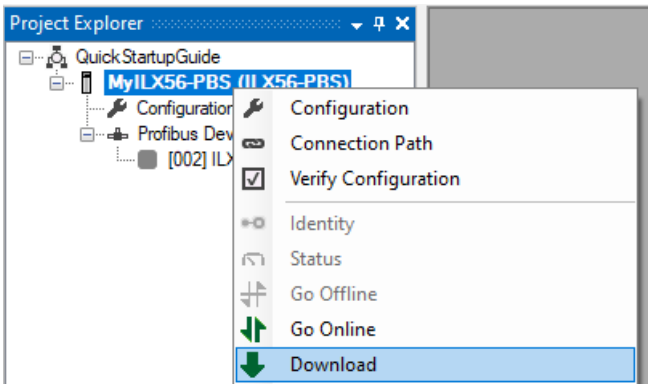


Figure 8.13 – Downloading the device configuration

5 Upon successful download, the PLX50 Configuration Utility device configuration is now complete.

8.5 ControlLogix Configuration

1 Generate the required Logix and UDTs in the PLX50 Configuration Utility by right-clicking on the ILX56-PBS icon and selecting **Generate Logix L5X**.

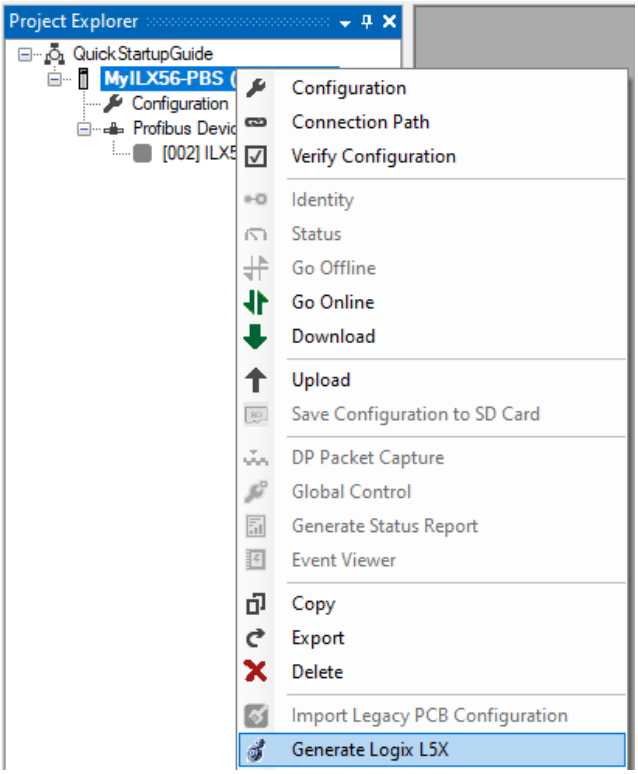


Figure 8.14 – Generate Logix L5X option

2 Select a suitable file name and path for the L5X file, then click the **Save** button.

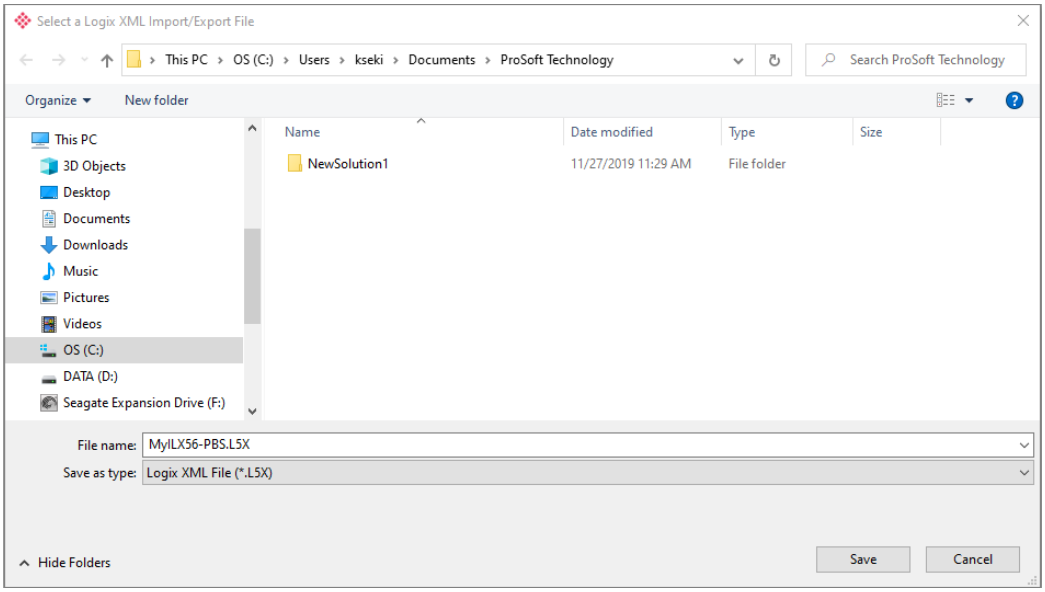


Figure 8.15 – File name and path for the L5X file

3 The L5X file can now be imported into the Studio 5000 project. Right-click on a suitable *Program* task and select *Add* > *Import Routine*.

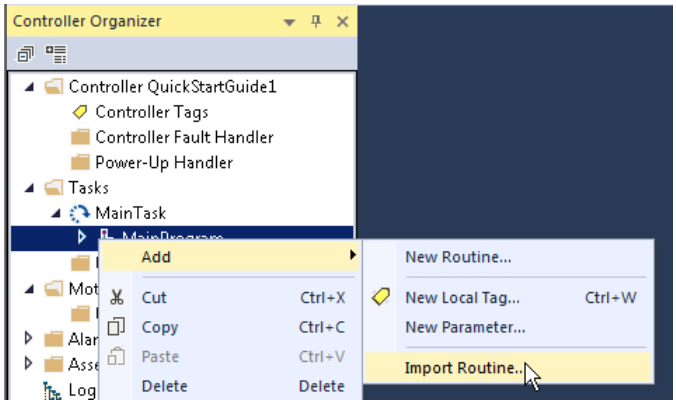


Figure 8.16 – Import Routine option

4 In the *File Open* dialog, select the L5X file and accept the import by pressing **Ok**. The import will create the following:

- Mapping Routine
- Multiple UDT (User-Defined Data Types)
- Multiple Controller Tags

5 Since the imported mapping routine is not a Main Routine, it will need to be called from the current Main Routine.

Figure 8.17 – Imported mapping routine

6 To enable the ILX56-PBS PROFIBUS slave, place a value of '1' in the appropriate slave ID Controller Tag(s) Local:1:O1.DeviceEnable.SlaveID_xxx.

Name	Value	Force	Style	Data Type
Local:1:O1.DeviceEnable	{...}	{...}		PS:DeviceEnab...
Local:1:O1.DeviceEnable.SI_enable_0	2#0000_0100		Binary	SINT
Local:1:O1.DeviceEnable.SlaveID_0	0		Decimal	BOOL
Local:1:O1.DeviceEnable.SlaveID_1	0		Decimal	BOOL
Local:1:O1.DeviceEnable.SlaveID_2	1		Decimal	BOOL
Local:1:O1.DeviceEnable.SlaveID_3	0		Decimal	BOOL
Local:1:O1.DeviceEnable.SlaveID_4	0		Decimal	BOOL
Local:1:O1.DeviceEnable.SlaveID_5	0		Decimal	BOOL
Local:1:O1.DeviceEnable.SlaveID_6	0		Decimal	BOOL
Local:1:O1.DeviceEnable.SlaveID_7	0		Decimal	BOOL
Local:1:O1.DeviceEnable.SI_enable_1	2#0000_0000		Binary	SINT

Figure 8.18 – Setting the value of the slave ID Controller Tag

8.6 PROFIBUS Master Configuration

The Siemens 315-2PN/DP Processor will be used as a PROFIBUS Master to the ILX56-PBS slave.

1 Open the **Total Integrated Automation Portal V15** software and create a new project.

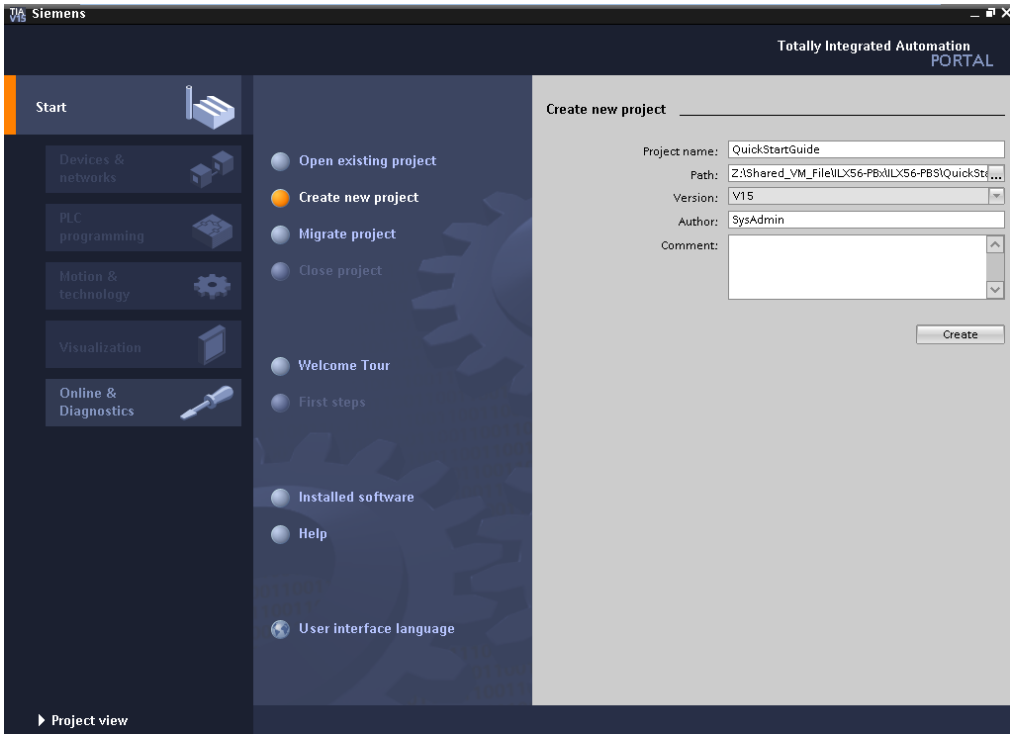


Figure 8.19 – Creating a new project

2 Add the Siemens *CPU 315-2 PN/DP* processor as a new device.

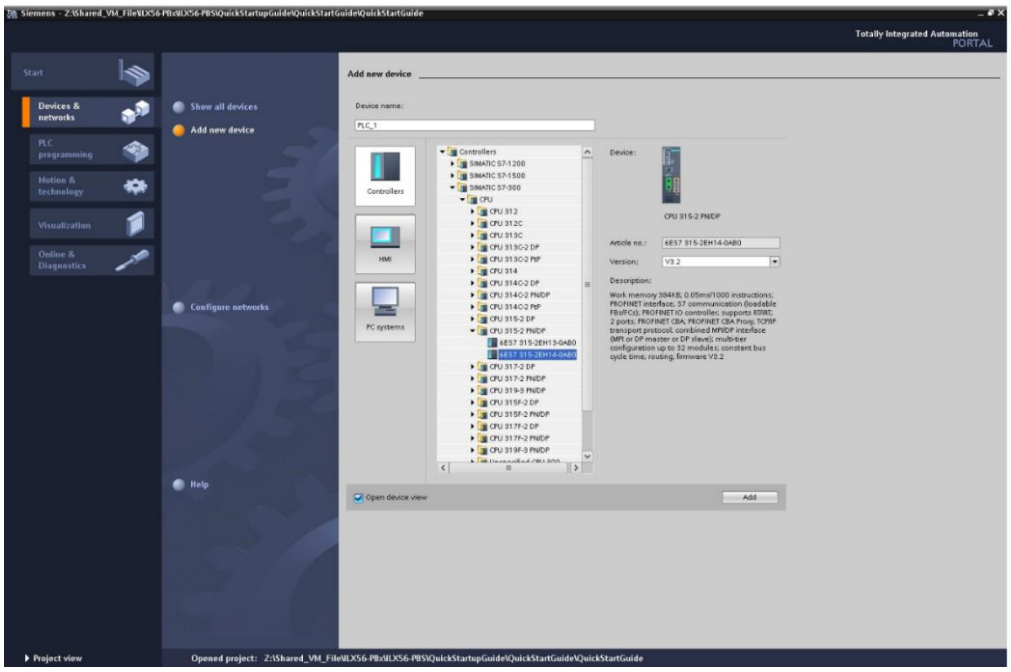


Figure 8.20 – Adding the processor as a new device

3 Add the ILX56-PBS GSD by selecting Option at the menu bar then selecting Manage general station description files (GSD)

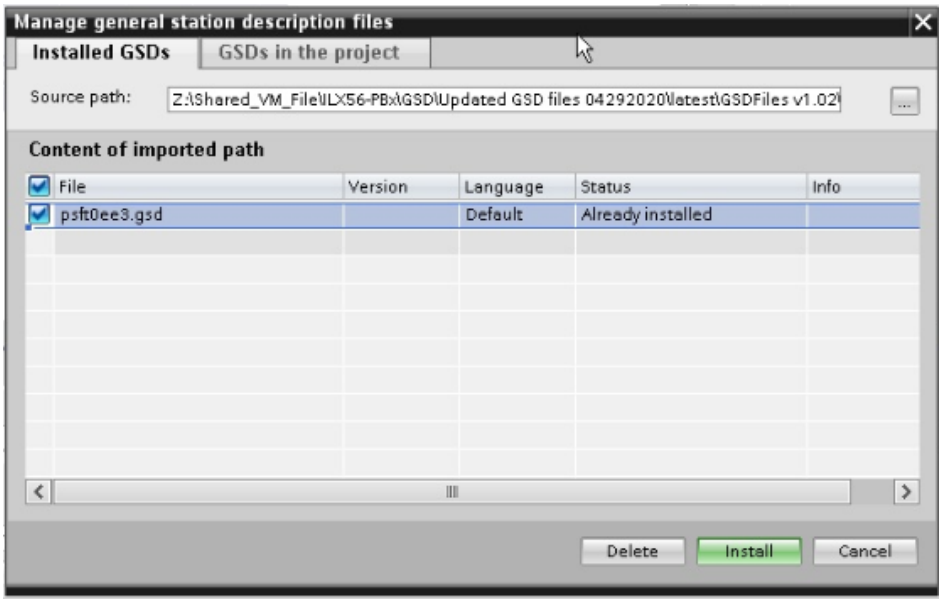


Figure 8.21 – Manage general station description files

4 *In this example, ILX56-PBS GSD has already been installed in this computer but this may not be the case for new users.

5 Configure the device's IP Address appropriately.

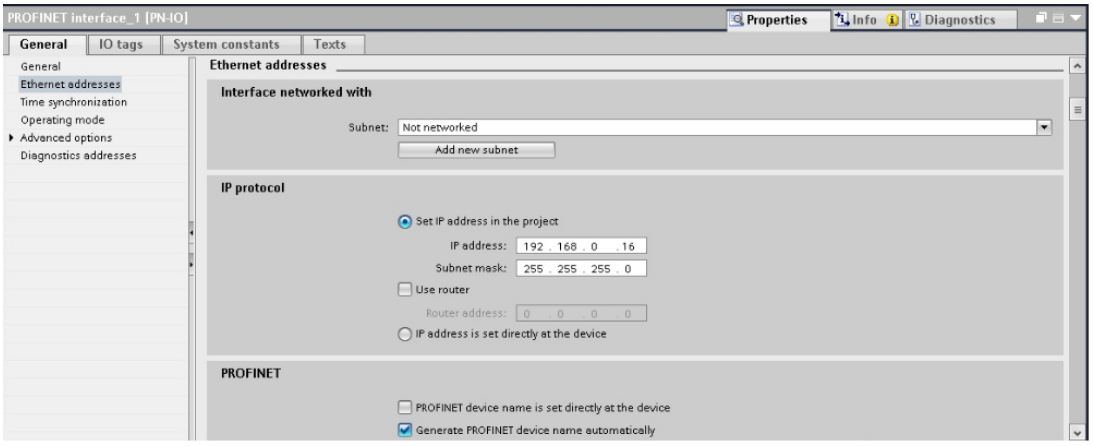


Figure 8.22 – Configuring the device's IP address

6 Configure MP/DP interface [X1] as PROFIBUS DP master with appropriate address.

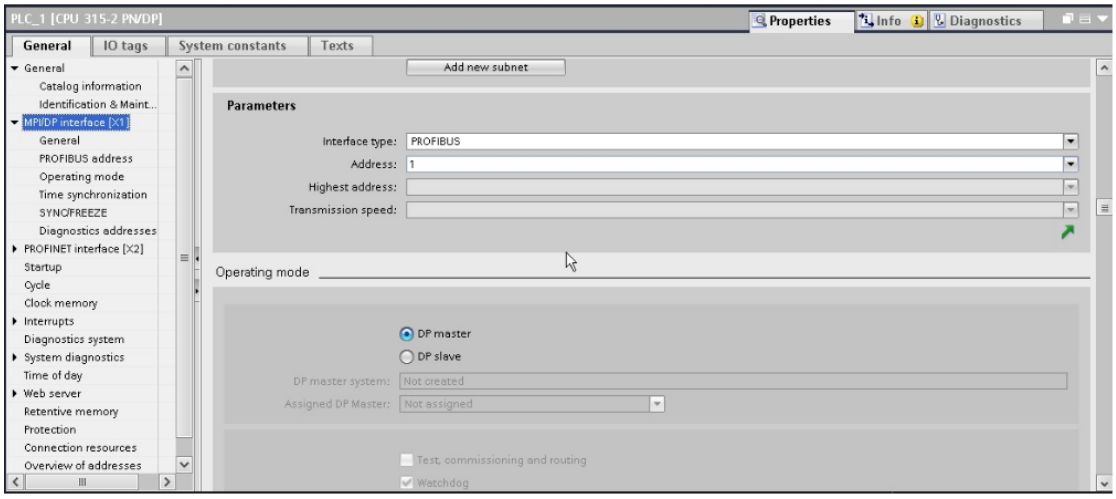


Figure 8.23 – Configuring the MP/DP interface

7 Add ILX56-PBS as PROFIBUS slave by choosing ILX56-PBS in the catalog list from the right and dragging the ILX56-PBS module in the Network window.

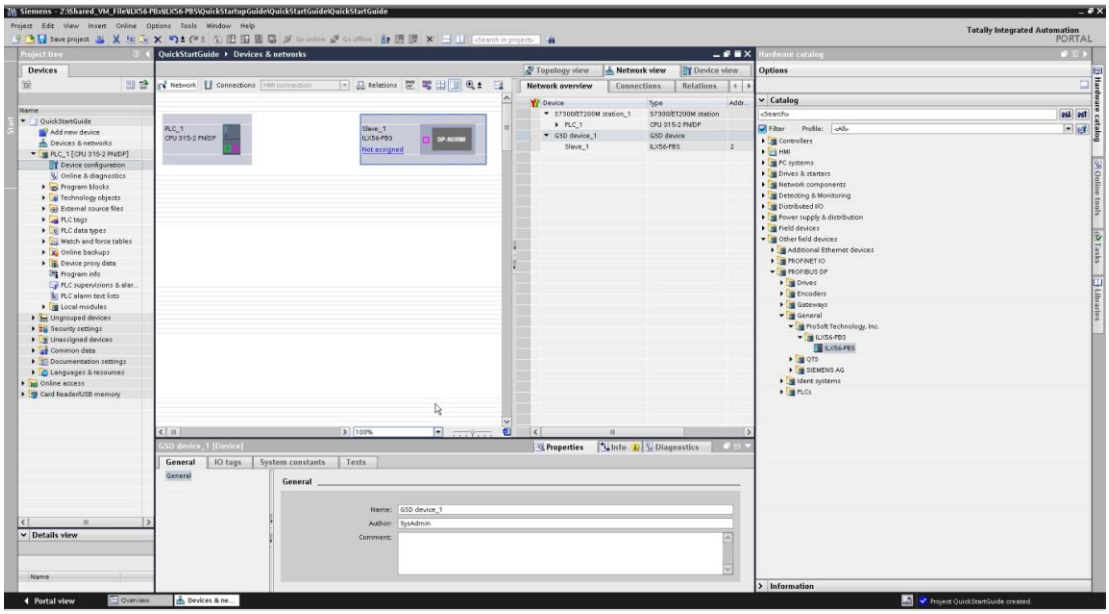


Figure 8.24 – Adding the ILX56-PBS as PROFIBUS slave

8 Connect the two purple box icons to assign the PLC_1 CPU 315-2PN/DP PROFIBUS Master to Slave_1 ILX56-PBS PROFIBUS Slave.

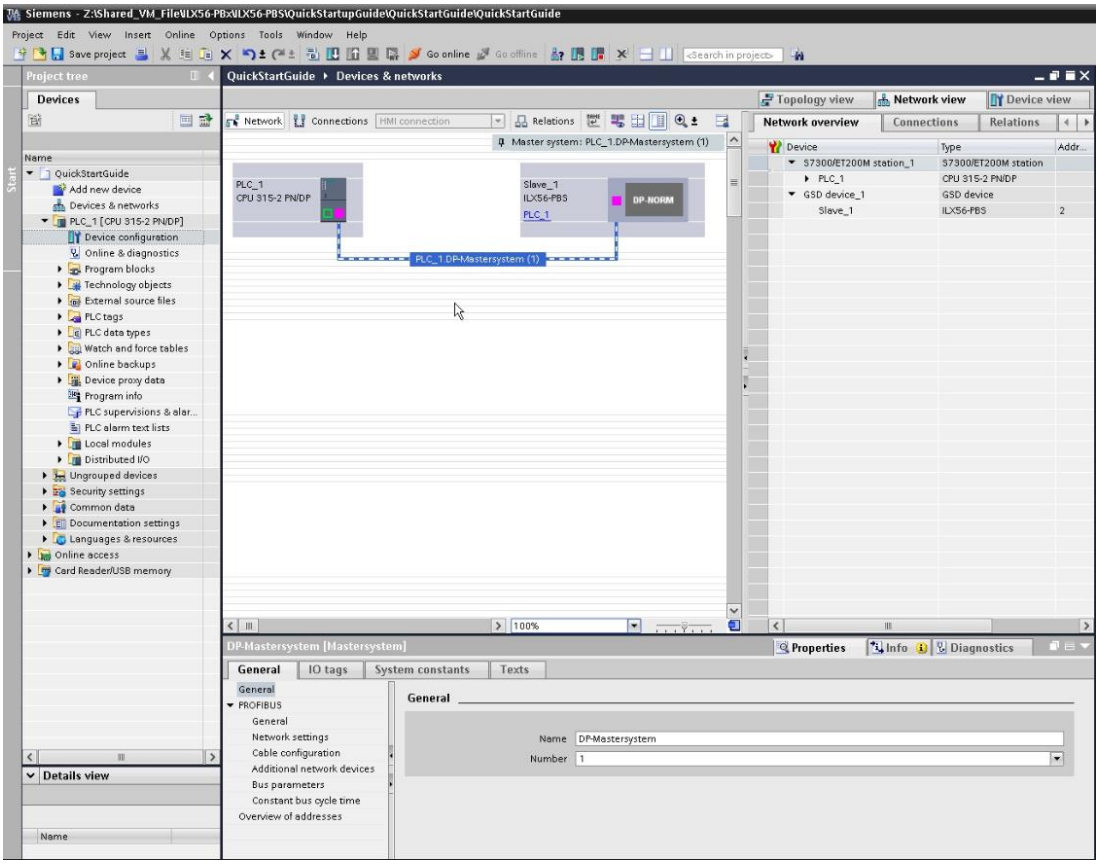


Figure 8.25 – Connecting the purple box icons

9 Double click on Slave_1 ILX56-PBS icon to configure the input/output bytes of ILX56-PBS.

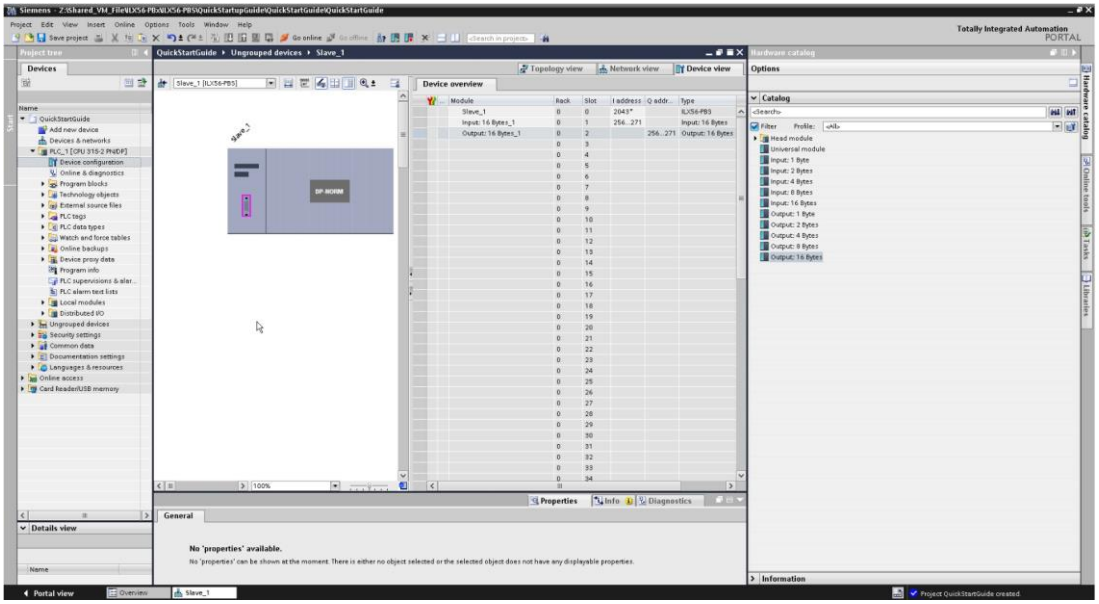


Figure 8.26 – Configuring the input/output bytes

10 Change the address of I address and Q address if so desire.

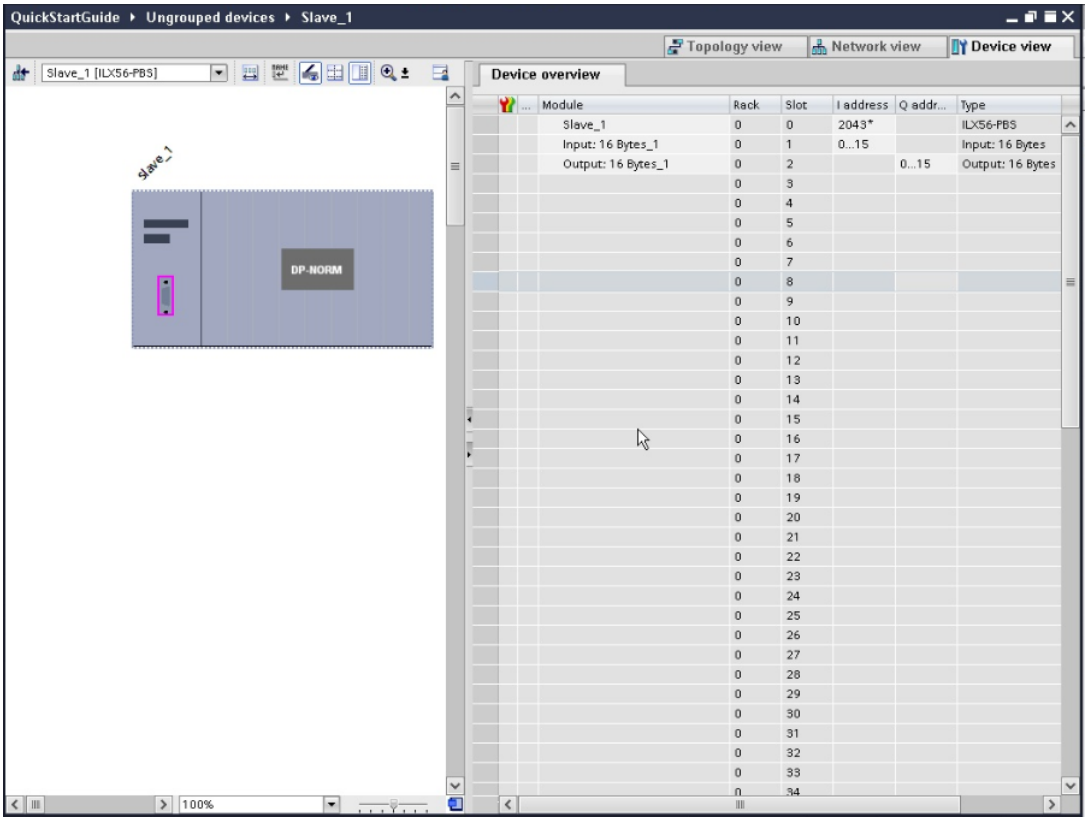


Figure 8.27 – Changing the I address and Q address

11 Add Watch Table to modify the output and monitor the input. Add desired QB and IB address to modify and monitor.

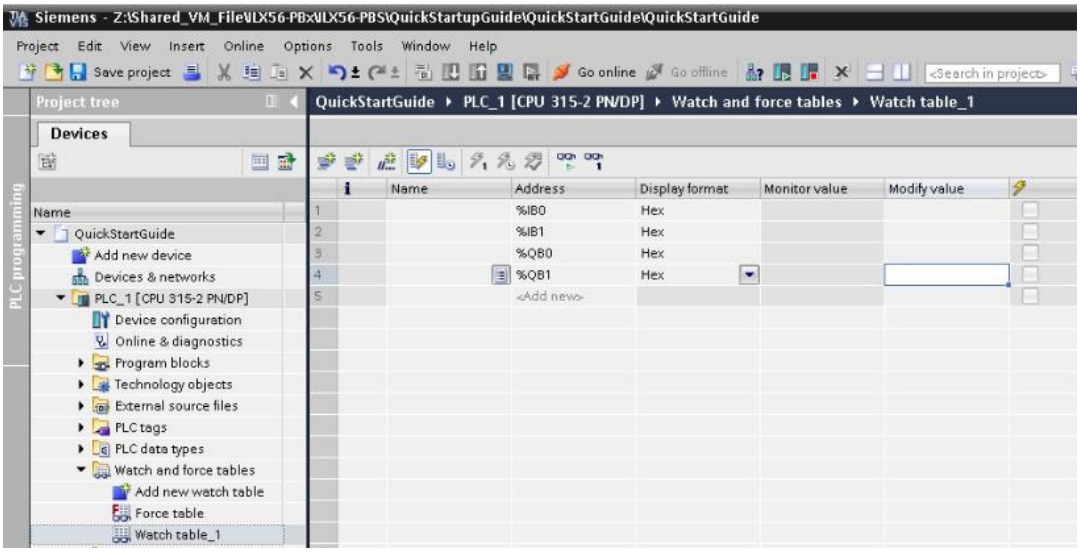


Figure 8.28 – Changing the I address and Q address

12 Compile and download the TIA V15 file to the 315-2PN/DP CPU.

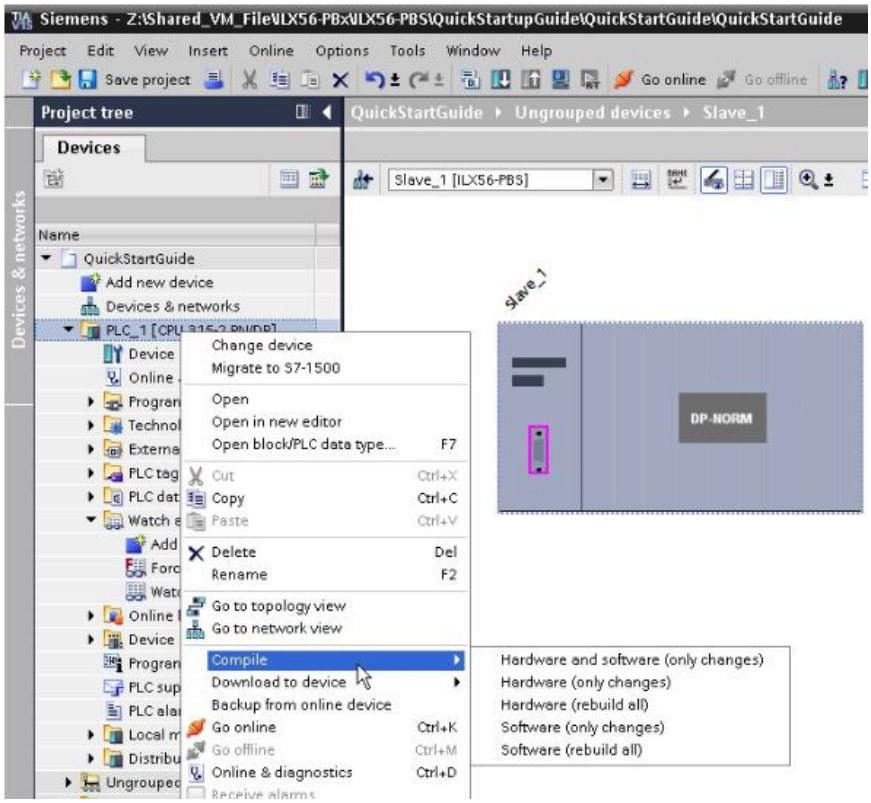


Figure 8.29 – Compiling the TIA V15 file

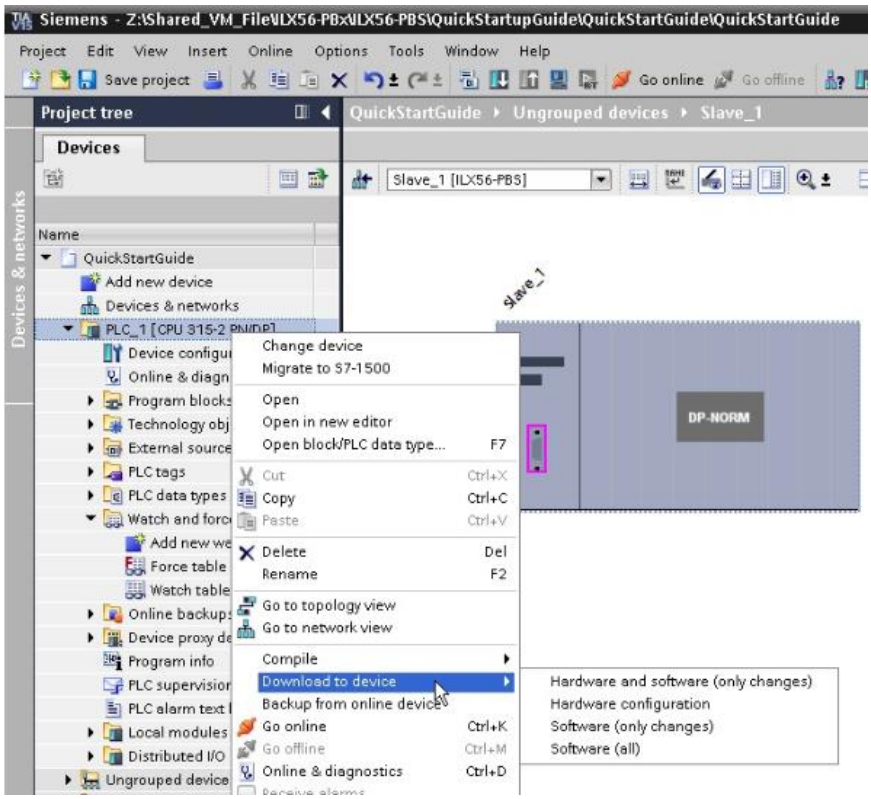


Figure 8.30 – Downloading the TIA V15 file

13 Click the **Load** button.

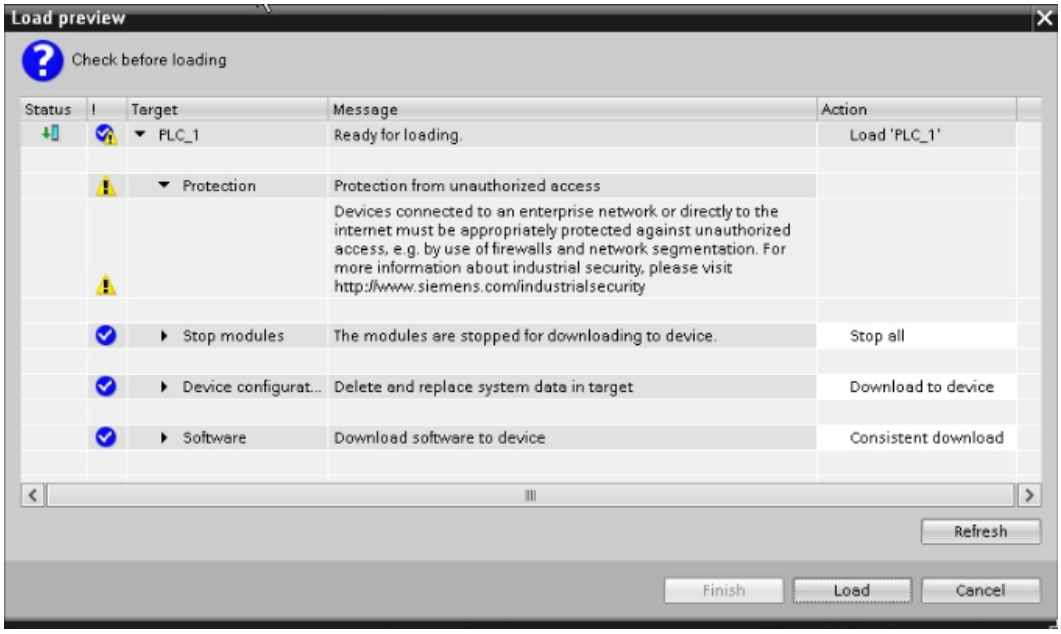


Figure 8.31 – Load preview

14 Click the **Finish** button.

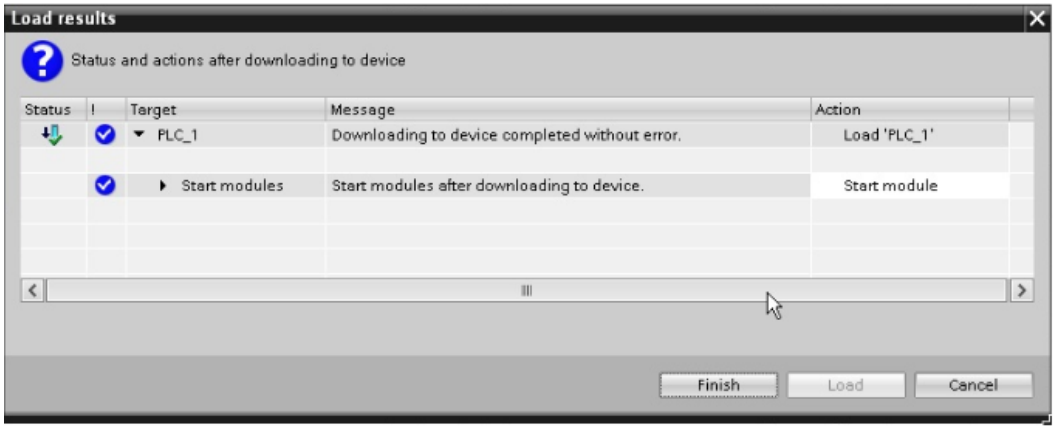


Figure 8.32 – Load results

15 Go **Online** with the Siemens processor.

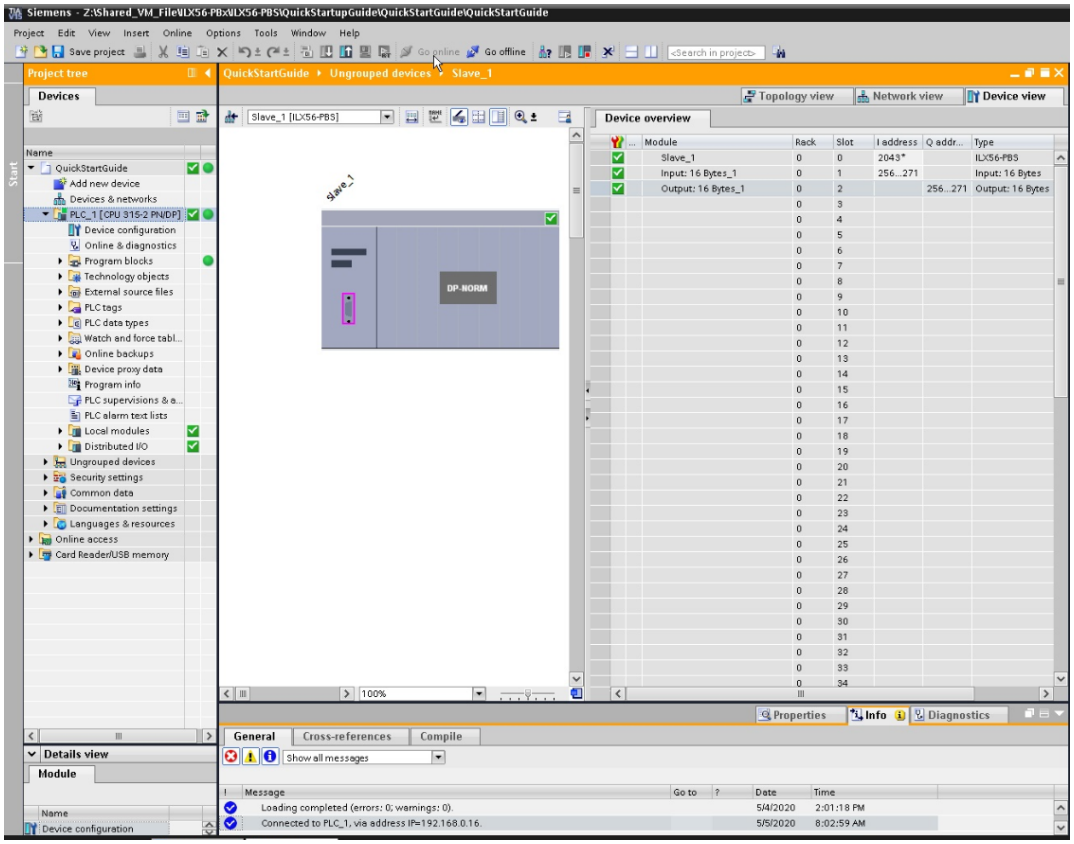


Figure 8.33 – Going online with the Siemens processor

16 To modify and monitor the PROFIBUS Output/Input data, open the *Watch* table and click the **Monitor All** button.

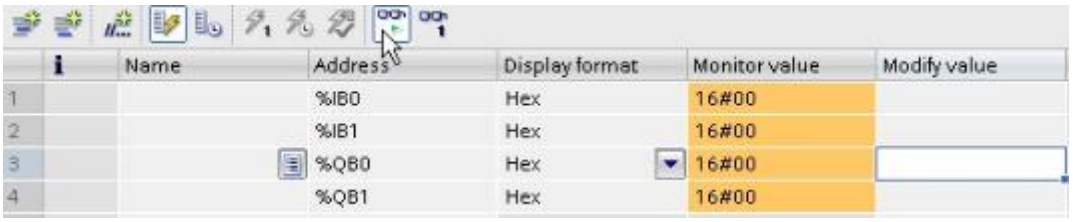


Figure 8.34 – Monitor All button

17 To modify the PROFIBUS Output data, enter modify values in Modify value column and click Modify all selected values once and now button.

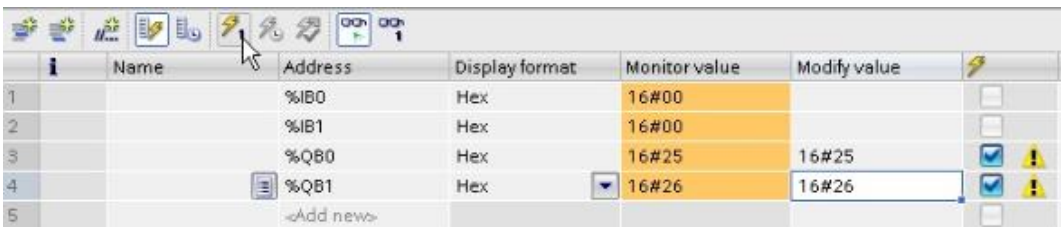


Figure 8.35 – Monitor All button

18 To verify the data was sent and received by the ILX56-PBS, Open Studio 5000 and check the appropriate Controller Tags while being online with the Rockwell Processor.

◢ MyILX56PBS_ILX56PBS.Input.Output16Bytes	{...}	{...}	Hex
▷ MyILX56PBS_ILX56PBS.Input.Output16Bytes[0]	16#25		Hex
▷ MyILX56PBS_ILX56PBS.Input.Output16Bytes[1]	16#26		Hex

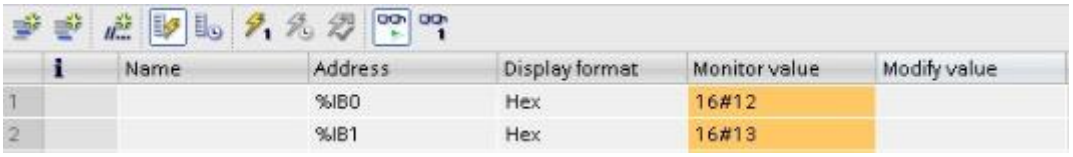
Figure 8.36 – Checking the Controller Tags

19 To monitor the PROFIBUS Input data, enter values in the appropriate Controller Tags in Studio 5000 while being online with Rockwell Processor.

◢ MyILX56PBS_ILX56PBS.Output.Input16Bytes	{...}	{...}	Hex
▷ MyILX56PBS_ILX56PBS.Output.Input16Bytes[0]	16#12		Hex
▷ MyILX56PBS_ILX56PBS.Output.Input16Bytes[1]	16#13		Hex

Figure 8.37 – Entering values in the Controller Tags

20 Verify the data was received in Siemens 315-2PN/DP Processor by monitoring the appropriate tags in the Watch Table.



	i	Name	Address	Display format	Monitor value	Modify value
1			%IB0	Hex	16#12	
2			%IB1	Hex	16#13	

Figure 8.38 – Monitoring the tags

9 Support, Service & Warranty

9.1 Contacting Technical Support

ProSoft Technology, Inc. is committed to providing the most efficient and effective support possible. Before calling, please gather the following information to assist in expediting this process:

1. Product Version Number
2. System architecture
3. Network details

If the issue is hardware related, we will also need information regarding:

1. Module configuration and associated ladder files, if any
2. Module operation and any unusual behavior
3. Configuration/Debug status information
4. LED patterns
5. Details about the interfaced serial, Ethernet or Fieldbus devices

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