

# Where Automation Connects.



# ILX34-MBS

User Manual Modbus Serial Module for CompactLogix L1 and Point I/O Adapters

May 5, 2016



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#### ProSoft Technology, Inc.

9201 Camino Media, Suite 200 Bakersfield, CA 93311 +1 (661) 716-5100 +1 (661) 716-5101 (Fax) www.prosoft-technology.com support@prosoft-technology.com

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ILX34-MBS User Manual May 5, 2016

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# 1 Start Here

This user manual will help you set up and configure the ILX34-MBS module. You should be somewhat familiar with the following:

- Rockwell Automation® Studio 5000 Logix Designer v21 (for CompactLogix L1 processors) or Rockwell Automation® RSLogix<sup>™</sup> 5000 version 16 or greater (for 1734 Point I/O adapters).
- Hardware Installation and Wiring

#### 1.1 ILX34-MBS Overview

The ILX34-MBS is the ideal solution for the many distributed I/O applications where Modbus connectivity can be integrated into an Allen Bradley System. The ILX34-MBSxxx is configured using Rockwell Automation Studio 5000 (CompactLogix L1) and RSLogix 5000 (Point I/O Controllers). The modules work in both the 1734 Point I/O adapters and the CompactLogix L1 processors.

#### 1.2 Package Contents

The following components are included with your ILX34-MBS adapter, and are required for installation and configuration.

Qty.	Part Name	Part Number	Part Description
1	ILX34-MBS Adapter	ILX34-MBS	POINT I/O Adapter

### **1.3** System Requirements

The ILX34-MBS requires the following minimum hardware and software components:

- Rockwell Automation<sup>®</sup> processor, with compatible power supply
  - ∘ CompactLogix<sup>™</sup> L1 Processors or 1734- Point I/O adapters,
- Rockwell Automation RSLogix 5000/Studio 5000 programming software
- Rockwell Automation RSLinx communication software version 2.54 or higher
- Pentium<sup>®</sup> II 450 MHz minimum. Pentium III 733 MHz (or better) recommended
- Supported operating systems:
  - Microsoft Windows<sup>®</sup> 7
  - Microsoft Windows Vista
  - Microsoft Windows XP Professional with Service Pack 1 or 2
  - Microsoft Windows 2000 Professional with Service Pack 1, 2, or 3
  - Microsoft Windows Server 2003
- 128 Mbytes of RAM minimum, 256 Mbytes of RAM recommended
- Microsoft Windows Explorer version 7
- 256-color VGA graphics adapter, 800 x 600 minimum resolution (True Color 1024 × 768 recommended)

**Note:** The Hardware and Operating System requirements in this list are the minimum recommended to install and run software provided by ProSoft Technology. Other third party applications may have different minimum requirements. Refer to the documentation for any third party applications for system requirements.

# 2 Installing the Adapter

## 2.1 Installing the Mounting Base/Wiring Base Assembly

The wiring base assembly consists of a mounting base and a removable terminal block. You can install the assembly or just the mounting base. Perform the following to install the base/wiring base assembly:

- 1. Position the mounting base/wiring base assembly vertically above the installed units (adapter, power supply, or existing module).
- 2. Slide the mounting base down allowing the interlocking side pieces to engage the adjacent module or adapter.



- 3. Press firmly to seat the mounting base on the DIN Rail. The mounting base snaps into place.
- 4. To remove the mounting base from the DIN rail, remove any installed module (and any module immediately to the right) and use a small blade screwdriver to rotate the DIN rail locking screw to a vertical position. This releases the locking mechanism. Lift straight up to remove the mounting base.
- 5. Repeat this procedure for the next mounting base assembly.

### 2.2 Installing an I/O Module

Make sure that the mounting base is correctly keyed before installing the module into the mounting base. In addition, make sure the mounting base locking screw is positioned horizontal referenced to the base.

**Warning:** When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is non-hazardous before proceeding.

1. Using a blade screwdriver, rotate the key switch on the mounting base clockwise until the number required for the type of module being installed aligns with the notch in the base.



2. Make certain the DIN-rail locking screw is in the horizontal position. You cannot insert the module if the locking mechanism is unlocked.



Make sure the DIN rail locking screw is in the horizontal position.

3. Insert the module straight down into the mounting base and press to secure. The module locks into place.



#### 2.3 Installing the Removable Terminal Block

A removable terminal block is supplied with the mounting base assembly. To remove, pull up on the RTB handle. This allows the base to be removed and replaced as necessary without removing any of the wiring. The following instructions show how to reinsert the removable terminal block:

1. Insert the RTB end opposite the handle into the base unit. This end has a curved section that engages with the mounting base.



**Warning:** When you connect or disconnect the Removable Terminal Block (RTB) with the field side power applied, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is non-hazardous before proceeding.

- 2. Rotate the terminal block into the mounting base until it locks itself in place.
- 3. If an I/O module is installed, snap the RTB handle into place on the module.

### 2.4 Removing a Mounting Base

In order to remove a mounting base, you must remove any installed module, and remove the Removable Terminal Block (if wired).

- 1. Unlatch the RTB handle on the I/O module.
- 2. Pull on the RTB handle to remove the Removable Terminal Block.

**Warning:** When you connect or disconnect the Removable Terminal Block (RTB) with the field side power applied, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is non-hazardous before proceeding.

3. Press on the module lock on the top of the module and pull up on the I/O module to remove from the base.

**Warning:** When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in a hazardous location. Be sure that power is removed or the area is non-hazardous before proceeding.

- 4. Remove the module to the right of the base. The interlocking portion of the base sits under the adjacent module.
- 5. Use a small screwdriver to rotate the orange DIN-rail locking screw on the mounting base to a vertical position. This releases the locking mechanism.
- 6. Lift the mounting base and remove.

#### 2.5 Connecting Power

Refer to the appropriate L1Y or Remote Adapter installation guides for adapter configuration instructions.

#### 2.5.1 CompactLogix L16/L18 Processor Power Connectivity

When using an L16/L18 CompactLogix controller, examine the side labeling of the controller to determine what Series it is. It will be listed next to the model number. The device power specification is 10 to 28.8 VDC.

There are two Series of the L16/L18 controllers:

- Series A requires two separate NEC Class 2 24V power supplies for the controller power and field power.
- Series B uses a single 24V power supply and has the field power jumped from the controller power as shown below. It uses isolated circuits and does not require an NEC Class 2 rated unit.

VDC+ to FP+ VDC- to FP-



# 2.5.2 Module Terminations

The voltage for the serial signal lines is  $\pm 3$  to  $\pm 25$  VDC.

	Module Terminations				
Terminal	RS-232	RS-485	RS-422		
0	TX <sup>1</sup>	S+1	Tx+1		
1	Rx <sup>2</sup>	NC	Rx+1		
2	NC	S-2	Tx-2		
3	NC	NC	Rx-2		
4	NC	NC	NC		
5	NC	NC	NC		
6	NC	CG	CG		
7	SG	SG	SC		

1 S+ and Tx+ are transmit from the module

2 S- and Rx- are receive into the module



Caution: Do not connect 120/240V AC power to this supply.

**Warning:** If you connect or disconnect wiring while the field-side power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding.

# 3 Configuration

The ILX34-MBS module supports several Point I/O Controllers and Adapters:

- 1734-AENT and AENTR
- 1734-ACNR
- 1769-L16ER-BB1B
- 1769-L18ER-BB1B
- 1769-L18ERM-BB1B

#### 3.1 1734-AENT and 1734-AENTR

To configure the ILX34-MBS module with a 1734-AENT adapter:

- 1. Refer to the 1734-AENT documentation for information on configuring the adapter.
- 2. Refer to **Create Module I/O Configuration** on page 18 to configure the ILX34-MBS module for this adapter.
- 3. Set the chassis size as described in the 1734-AENT/AENTR documentation.

### 3.2 1734-ACNR

To configure the ILX34-MBS module with a 1734-ACNR adapter:

- 1. Refer to the 1734-ACNR documentation for information on configuring the adapter.
- 2. Refer to **Create Module I/O Configuration** on page 18 to configure the ILX34-MBS module for this adapter.
- 3. Schedule the ControlNet as described in the 1734-ACNR documentation.

### 3.3 1769-L16ER-BB1B, L18ER-BB1B, and L18ERM-BB1B

Follow the instructions in the Sample Configuration procedure in this section.

### 3.4 Sample Configuration Procedure

**Note:** The following example procedures are accomplished using Rockwell Automation's Studio 5000 Designer, but apply to RSLogix as well. If you are installing this module into a 1734-AENT or ACNR, use RSLogix 5000 v16 or greater and skip to the section entitled Create Module I/O Configuration.

- 1. Open Studio 5000 and click Create New Project.
- 2. Expand **CompactLogix 5370 Controller**. Select the appropriate processor from the list:
  - 1769-L16ER-BB1B
  - 1769-L18ER-BB1B
  - 1769-L18ERM-BB1B
- 3. Enter a Name for the project.

New Project			? ×
ogix	Search		×
	⊟ CompactLogix™ 5370 Contr	oller	
	1769-L16ER-BB1B	CompactLogix™ 5370 Controller	
	1769-L18ER-BB1B	CompactLogix™ 5370 Controller	
	1769-L18ERM-BB1B	CompactLogix™ 5370 Controller	
	1769-L24ER-Q81B	CompactLogix™ 5370 Controller	
	1769-L24ER-QBFC1B	CompactLogix™ 5370 Controller	
	1769-L27ERM-QBFC1B	CompactLogix™ 5370 Controller	
	1769-L30ER	CompactLogix™ 5370 Controller	
	1769-L30ERM	CompactLogix™ 5370 Controller	
	1769-L30ER-NSE	CompactLogix™ 5370 Controller	
	1769-L33ER	CompactLogix™ 5370 Controller	-
	1769-L33ERM	CompactLogix™ 5370 Controller	
	1769-L36ERM	CompactLogix™ 5370 Controller	
	E ControlLogix® 5570 Contro	ller	
	1756-L71	ControlLogix® 5570 Controller	-
		A	-
Name:			
and the second s	Cill Jean Cur Admin Darkton		Browne

4. Click **Next** to open the *Project Configuration* dialog.

oject Configu	ration	iuth E270 Controll			
Expansion I/O:					
2	Danger: When onlin specified in Expansion	ne, if the modules in the project, unex I/O setting must r	present do not m pected control m natch the actual	natch the modules nay occur. The number of modules.	
Security Authority:	No Protection			•	
i	Use only the selected S	ecurity Authority f	or authentication	and authorization	
Description:					
I					

5. Select the **Expansion I/O** module number. If the modules present do not match the modules specified in the Project, unexpected control may occur. The Expansion I/O setting must match the actual number of modules.

New Project Project Configu	ıration				?
ILX34MBS (V21, 1769 Expansion I/O:	1 Module	gix™ 5370 Control	ler)		
Security Authority:	Danger: When onli specified i Expansion	ine, if the modules in the project, une n I/O setting must	present do not m xpected control m match the actual	natch the modules nay occur. The number of module	s.
Description:	Use only the selected !	Security Authority	for authentication	and authorization	-
		Cancel	Back	Nevt	Finish

6. Click Finish. The following window opens.



# 3.4.1 Create Module I/O Configuration

1. Right-click on **Expansion I/O** and select **New Module**. The *Select Module Type* dialog opens.

- 🔄 Controller ILX34MBS	
- A Controller Tags	
Controller Fault Handler	
Power-Lin Handler	
- A Tasks	Select Medule Type
🖻 😽 MainTask	ALL HOUSE THE
H B MainProgram	Catalog Madda Disasan Francisco
Unscheduled Programs ( Phases	Colory Module Discovery Pavones
Motion Groups	
Lingrouped Axes	Enter Search Text for Module Type
Add-On Instructions	
Data Types	
Liser-Defined	Module Type Category Filters
F Strings	Analog Malen-Bradley
Add-On-Defined	Digital Marced Micro Controls Inc. (AMCI)
F Predefined	Other     Other     Spectrum Controls, Inc.
Module-Defined	✓ Specially
Trends	
I/O Configuration	
PointIO	Cathe Nuclea Daviding Varian Category
International Contemporary C	Catalog Number Description Vendor Category
Embedded I/O	1734-23245C H5232 ASCI Inc., AltenBradey Specially
I [1] Embedded Discrete IO	1734-4854SC R5485 ASULI M Allen-Bradley Specialty
Expansion I/O, 1 Module	1734-8CFG 8 Point 10V-28V Alten-Bradley Digital
🖻 💑 Ethernet	1734-8CFGDLX 8 Point 10V-28V Allen-Bradley Digital
1769-L18ER-BB1B ILX34MB5	1734-IA2 2 Point 120V AC Allen-Bradley Digital
<u> </u>	1734-IA4 4 Point 120V AC Allen-Bradley Digital
	1734-IB2 2 Point 10V-28V Allen-Bradley Digital
	1734-IB4 4 Point 10V-28V Allen-Bradley Digital
	50 of 50 Module Types Found Add to Favorites
	Close on Create Liceste Help

2. Locate **1734-MODULE (Generic 1734 Module)** by scrolling the list or using the Search filter.

Controller Organizer	Sclert Module Type Catalog Module Discovery   Favorites   Fritar Search Text for Module Type Hide F	ikers 🛠
🖻 📹 Data Types	Module Type Category Filters Module Type Vendor Filters	
User-Defined	Analog I Allen-Bradley	
H	Digital Advanced Micro Controls Inc. (AMCI)	
Predefined	🗹 Other 🗹 Spectrum Controls, Inc.	
H Module-Defined	Specially	
Trends		
🖃 🚖 I/O Configuration		
🖃 📾 PointIO	Catalog Number Description Vendor Category	
[0] 1769-L18ER-BB1B ILX34MBS	1734-IB2 2 Channel BTD Input Allen-Bradley Analog	
😑 😋 Embedded I/O	1734-IB2E 2 Channel Enhanced BTD Input Allen-Bradley Analog	
[1] Embedded Discrete_IO	1734-IT2I 2 Channel Thermocouple Input. Allen-Bradley Analog	
Expansion I/O, 1 Module	1734-IV2 2 Point 10V-28V DC Input, Sour Allen-Bradlev Digital	
E 1700 LIGER PRID T VOMMOS	1734-IV4 4 Point 10V-29V DC Input, Sour Allen-Bradley Digital	
0 1769-LIBER-BBIB ILX34MB5	1734-IV8 8 Point 10V-29V DC Input, Sour Allen-Bradlev Digital	
	1734-MODULE Generic 1734 Module Allen-Bradley Other	
	1734-0A2 2 Point 120V AC Output Allen-Bradley Digital	-
	,	
	50 of 50 Module Types Found	o Favorites
	Close on Create Close Close	Help

3. Click Create. The New Module dialog opens.

New Module						×
Type:	1734-MODULE Generic 1734 Module					
Faleni.	Local	- Connection Pa	rameters Assembly Instance:	Size:		
Name:		Input:		1	.▲ • (8-bit)	
Description:		Output:		1	• (8-bit)	
		Configuration:		0	- (8-bit) 	
Comm Format:	Data - SINT	Status Input:				
Slot	2	Status Output:				
🔽 Open Mode	ule Properties	OK	Can		Help	]

- 4. Enter a **Name** for the module.
- 5. The **Connection Parameters** section is dependent on the application that you are using. There are three different block transfer sizes allowed by the module.

Register/Discrete Max Size per Modbus Message	Input Assembly Instance	Input Size	Output Assembly Instance	Output Size	Configuration Assembly Instance	Configuration Size
8/128	101	34	102	26	103	38
24/384	105	66	106	58	103	38
36/576	107	90	108	82	103	38

6. Ensure that the **Comm Format** is set to **Data-SINT** and that the Slot field matches the Slot Number that the module will reside in. Configuration for a Block Transfer size of 36 is shown below.

New Module						x
Туре:	1734-MODULE Generic 1734 Module					
Parent:	Local	- Connection Pa	rameters Assembly	Size		]
Name:	ILX34_MBS	Input:	107	90	• (8-bit)	
Description:		Output:	108	82	▲ (8-bit)	
	<b>T</b>	Configuration:	103	38	.▲ .▼ (8-bit)	
Comm Format	Data - SINT	Status Input:				
Slot:	2	Status Output				
🔽 Open Mode	ule Properties	OK	Can	cel	Help	_

- 7. Click **OK**. The *Module Properties Report* dialog opens.
- 8. Set the **RPI** time to a value larger than 50 ms.

🔝 Module Properties Report: L	ocal:2 (1734-MOD	ULE 1.1)		×
General Connection* Module I	nfo			
Requested Packet Interval (RPI)	5 0.0 <mark></mark> ms	(2.0 750.0 ms)		
Major Fault On Controller If C	onnection Fails While	in Run Mode		
- Madula Esult				
Module Fault				
Status: Offline	OK	Cancel	Apply	Help

9. Click **Apply** then click **OK**. The module now appears under *Expansion Module* in the tree.



## 3.4.2 Importing the Add-On Instruction (AOI)

1. Under Tasks, expand Main Task > Main Program.



2. Double-click on the Main Routine icon.

菺 File Edit View Search Logic Communications T	ools Window Help	_ 8 ×
	🔽 🍂 🍇 🗽 😰 😰 🔍 Select language 🔍 🔊	
Offline	Path. <none>       Image: Image:</none>	
	Image: Second state       Image: Second state         0       0         0       0         (End)       -	

3. Right-click anywhere in an empty ladder rung and select Import Rungs...



- In the *Import Rung* dialog, navigate to the .L5X file location of the appropriate Add-On rung according to your block transfer size (8, 24, or 36), configured in **Connection Parameters**. Example: *ILX34-MBS36\_AddOn\_Rung\_v1\_1.L5X*
- 5. Click **Import**. The *Import Configuration* dialog opens.

🔝 Import Configuration - ILX34-MB536	_AddOn_Rung_v1	_1.L5X			×
Find: Find: Find Within: Final Name	- <u>A</u>	Find/Replace			
Import Content:					
- 🔄 Programs	Configure Rung P	roperties		_	
MainProgram	Imported Rungs:	1			
References	Operation:	Create	after Rung 0		
Tags      Tags      Add-On Instruction      Data Types		(i) References will be imported as configured in the References folders			
Other Components	Routine Proper	ties			
Chois warnings	Name:	MainRoutine			
	Description:	×			
	Type:	🗎 Ladder Diagram			
	In Program:	🕞 MainProgram			
Preserve existing tag values in offline pr	oject		ОК	Cancel	Help
Ready					1.

i_Ad	dOn_	Rung_v1_1.L5X						
	•	Find/R	eplace					
Co	nfigu	re Tag References	;	-	_	-	_	_
	Τ	Import Name	Operation	-10	Final Name 🛛 🛆	2	Usage	Alias For
*	1	AENT:1:C	Undefined		AENT:1:C		Local	
*	1	AENT:1:I	Undefined		AENT:1:I		Local	
*	1	AENT:1:0	Undefined		AENT:1:0		Local	
	1	Local:1:C	Use Existing		Local:1:C	•••	Local	
	1	Local:1:I	Use Existing		Local:1:I	•••	Local	
	1	Local:1:0	Use Existing		Local:1:0	•••	Local	
	1	MBS	Create		MBS	••••	Local	
		MBS_AOI	Create		MBS_AOI	•••	Local	
	1	MBS_Config	Create		MBS_Config	•••	Local	
		MBSConfig_AOI	Create		MBSConfig_AOI	•••	Local	
		AddOn  Configu  Confi	AddOn_Rung_v1_1.LSX	Addon_Rung_v1_1.L5X         Image: Configure Tag References         Import Name       Operation         Import Name       Operation <th>AddOn_Rung_v1_1.L5X         Image: Configure Tag References         Import Name       Operation         Import Name       Operation     <th>AddOn_Rung_v1_1.L5X         Image: State Stat</th><th>AddOn_Rung_v1_1.L5X         Image: State Stat</th><th>AddOn_Rung_v1_1.L5X         Import Name       Disperation         Import Name       Disperation         Import Name       Disperation         AENT:1:C       Undefined         AENT:1:C       Undefined         AENT:1:I       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:1       Undefined         AENT:1:0       Undefined         AENT:1:0       Use Existing         Local:1:1       Use Existing         Local:1:1       Use Existing         Local:1:0       Use Existing         Local:1:0       Use Existing         Local:1:0       Use Existing         MBS_AOI       Create         MBS_AOI       MBS_AOI         MBS_Config       Create         MBSConfig_AOI       MBSConfig_AOI</th></th>	AddOn_Rung_v1_1.L5X         Image: Configure Tag References         Import Name       Operation         Import Name       Operation <th>AddOn_Rung_v1_1.L5X         Image: State Stat</th> <th>AddOn_Rung_v1_1.L5X         Image: State Stat</th> <th>AddOn_Rung_v1_1.L5X         Import Name       Disperation         Import Name       Disperation         Import Name       Disperation         AENT:1:C       Undefined         AENT:1:C       Undefined         AENT:1:I       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:1       Undefined         AENT:1:0       Undefined         AENT:1:0       Use Existing         Local:1:1       Use Existing         Local:1:1       Use Existing         Local:1:0       Use Existing         Local:1:0       Use Existing         Local:1:0       Use Existing         MBS_AOI       Create         MBS_AOI       MBS_AOI         MBS_Config       Create         MBSConfig_AOI       MBSConfig_AOI</th>	AddOn_Rung_v1_1.L5X         Image: State Stat	AddOn_Rung_v1_1.L5X         Image: State Stat	AddOn_Rung_v1_1.L5X         Import Name       Disperation         Import Name       Disperation         Import Name       Disperation         AENT:1:C       Undefined         AENT:1:C       Undefined         AENT:1:I       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:0       Undefined         AENT:1:1       Undefined         AENT:1:0       Undefined         AENT:1:0       Use Existing         Local:1:1       Use Existing         Local:1:1       Use Existing         Local:1:0       Use Existing         Local:1:0       Use Existing         Local:1:0       Use Existing         MBS_AOI       Create         MBS_AOI       MBS_AOI         MBS_Config       Create         MBSConfig_AOI       MBSConfig_AOI

6. Click on the Tags icon to open the Configure Tag References dialog.

7. In the *Final Name* column, edit (map) the 3 imported AENT tag names to reflect the location of the ILX34-MBS in the rack. Also, make sure to enter the correct slot number reference. Examples are shown below.

**Example 1**: ILX34-MBS in slot 1 of a local rack.

🔜 Import Configuration - ILX34-MB536_	AddOn_	Rung_v1_1.L5X						
Find: Find: Find Within: Final Name	•	Eind/R	eplace					
Import Content:								
Programs	Configu	re Tag References		-		-	_	_
MainProgram		Import Name	Operation		Final Name 🛛 🛆		Usage	Alias For
MainRoutine (Rungs)	× 1	AENT:1:C	Use Existing		Local:1:C	•••	Local	
	× 1	AENT:1:1	Use Existing		Local:1:I	•••	Local	
Add-On Instructions	1	AENT:1:0	Use Existing		Local:1:0	•••	Local	
📑 🛄 Data Types	1	Local:1:C	Use Existing		Local:1:C	•••	Local	
Components	1	Local:1:I	Use Existing		Local:1:I	•••	Local	
2 Errors/Warnings	1	Local:1:0	Use Existing		Local:1:0	•••	Local	
	1	MBS	Create		MBS	•••	Local	
		MBS_AOI	Create		MBS_AOI	•••	Local	
	11	MBS_Config	Create		MBS_Config	•••	Local	
		MBSConfig_AOI	Create		MBSConfig_AOI	•••	Local	

Import Configuration - ILX34-MB536_AddOn_Rung_v1_1.L5X								
Find: Find: Find/Replace								
Import Content:								
Programs	Config	ire Tag References	;	-		-	_	
MainProgram		Import Name	Operation	-	Final Name 🛛 🛆		Usage	Alias For
MainRoutine (Rungs)	** 1	AENT:1:C	Undefined		ExRemote:4:C		Local	
	🚩 🎽 🖞	AENT:1:1	Undefined		ExRemote:4:1		Local	
Add-On Instructions	🚩 🎽 🖞	AENT:1:0	Undefined		ExRemote:4:0		Local	
🛄 Data Types	× 1	Local:1:C	Create		ExRemote:4:C	•••	Local	
Components	× 1	Local:1:I	Create		ExRemote:4:1	•••	Local	
J Errors/warnings	× 1	Local:1:0	Create		ExRemote:4:0	•••	Local	
		MBS	Create		MBS	•••	Local	
		MBS_AOI	Create		MBS_AOI	•••	Local	
		MBS_Config	Create		MBS_Config	•••	Local	
		MBSConfig_AOI	Create		MBSConfig_AOI	•••	Local	

8. Click **OK**. The Add-On rung appears in the *Main Routine*.

Cogix Designer - ILX34MB5 [1769-L18ER-BB1B 21.     File Edit View Search Lonic Communications To	.11]* - [MainProgram - MainRoutine*] aok Window Helo		- 8
	▼ ▲▲ 🖳 📴 🗗 🔍 🔍 Select language		
Offline  I. FIUN No Forces I. Characterized Intervention	Path         Crones         2           Image: Control of the state		
Controle Tags     • 0.%       Controle Tags	Image: Section of the sectio	Configuration frie used for non-ACP applications MBS_CONFIO_MSSConf_QAC Inv_Configuration Edit Configuration MBS_CONFIO_MSSConf_QAC Inv_Configuration Edit Configuration (Configuration Edit Configuration) (Configuration Edit Configuration) (Configuration Edit Configuration) (Configuration Edit Configuration) (Configur	

## 3.4.3 Configuring the ILX34-MBS Modbus Serial Port

1. Double-click **Controller Tags** from the *Controller Organizer*.



2. Expand the **MBS\_Config** controller tag.

Controller Organizer - 4 ×	Scope: BILX34MBS  Show: All Tags			•	Y. Enter Name Fit	lac		
Controller LASAMBS	Name == [	Value 🔸	Force Mask 🔹 🕈	Style	Data Type	Description	Constant	Proper
Controller Fault Handler	+-Local1:C	()	()		AB:Embedded Di		Г	OT A
- 🗁 Power-Up Handler	T-Local11	()	()		AB:Embedded Di.		Г	
🖻 🔁 Tasks	+ Local 1:0	()	()		AB:Embedded Di.		Г	
🕀 🤕 MainTask	±-MBS	()	()		II X34MBSModule	ILX34MBS Data T	Г	
E 🤹 MainProgram	HMBS Confin	()	()		II X34MBSConfig	Configure the Mod	Г	
MainDoutine	H-MBS Config Type		()	Decimal	SINT	Configure the Mod	,	
Unscheduled Programs / Phases	H-MBS Config Slave ID	0		Decimal	SINT	Configure the Mod		
🖻 🚖 Motion Groups	E MPS_Config Pavel Pate	0		Decimal	SINT	Configure the Mod.		
- 🗀 Ungrouped Axes	E-MBS_Config Satial_COM	3		Decimal	SINT	Configure the Mod.		
🖻 🔄 Add-On Instructions	E MPS_Config Protocol	3		Decimal	CINIT	Configure the Mod.		
- 1 AOI1734MB5_36	ELMPS_Config.PV Length	109		Decimal	CINT	Configure the Mod.		
Parameters and Local Lags	El MDS_Config.th/_Length	100		Decimal	CINT	Configure the Mod.		
Prescan	I MDS_Config.1X_Length	107		Decimal	DINT	Configure the Mod.		
AOI1734MBS CONFIG	Mbs_conig.rimedut	300		Decimal	DINI	Configure the Mod.	•	
- 🖉 Parameters and Local Tags	HIMBS_Config.Heservedul	0		Decimal	INI	Configure the Mod.	•	E Dal
- Digit Logic	HIMBS_Contig.Input_Status_Count_TX	576		Decimal	INI	Lonfigure the Mod.		
🖻 😁 Data Types	H MBS_Config.ReservedU2	0		Decimal	INI	Configure the Mod.		
Gerebetined	H-MBS_Contig.Uutput_Col_Count_UK	576		Decimal	INI	Lonfigure the Mod.	-	-
III 1/24405ColData	MBS_Config.Reserved03	0		Decimal	INT	Configure the Mod.		-
- III II X34MBSConfig	HMBS_Config.Input_Register_Count_3X	500		Decimal	INT	Configure the Mod.		
ILX34MB5Data	HBS_Config.Reserved04	0		Decimal	INT	Configure the Mod.		
💹 ILX34MB5ModuleDef	⊞ MBS_Config.Holding_Register_Count_4X	500		Decimal	INT	Configure the Mod.		-
ILX34MBSStatus	MBS_Config.Coldboot	1		Decimal	BOOL	Configure the Mod.		1

#### Serial Port

Set the following parameters to configure the Serial Port.

Label	Description
Baud Rate	0 = 19200
	2 = 2400
	3 = 4800
	4 = 9600
	5 = 38400
Serial Comm	0 = 7N2 $4 = 8N2$
	1 = 7E1 5 = 8E1
	2 = 7O1 6 = 8O1
	3 = 8N1
Protocol	0 = ASCII
	1 = RTU

## Master Configuration

The following parameters must be set to use the module as a Master.

Label	Description
Туре	Set this to "0" for Master
Timeout	Timeout in centiseconds. The time that
	the master waits for a response from
	the Slave.

The following example shows the module configured as a *Master, 19200 baud,* 8N1 (8 Data bits, No Parity, and 1 Stop Bit) Framing, RTU mode with a three second timeout.

Name ==	∆ Value	*	Force Mask 💦 🔦 🔦	Style	Data Type	Description	Constant
±-Local:1:C	{	}	{}		AB:Embedded_Di		Г
+-Local:1:I	{	}	{}		AB:Embedded_Di		Г
±-Local:1:0	{	}	{}		AB:Embedded_Di		Г
±-Local:2:C	{	}	{}		AB:1734_MODUL		Г
+-Local:2:1	{	}	{}		AB:1734_MODUL		Г
+-Local:2:0	{	}	{}		AB:1734_MODUL		Г
±-MBS	{	}	{}		ILX34MBSModule	ILX34MBS Data T	Г
MBS_Config	{	}	{}		ILX34MBSConfig	Configure the Mod	
⊞-MBS_Config.Type		0		Decimal	SINT	Configure the Mod	
H■MBS_Config.Slave_ID		0		Decimal	SINT	Configure the Mod	
		0		Decimal	SINT	Configure the Mod	
⊞-MBS_Config.Serial_COM		3		Decimal	SINT	Configure the Mod	
HBS_Config.Protocol	-	1		Decimal	SINT	Configure the Mod	
		108		Decimal	SINT	Configure the Mod	
		107		Decimal	SINT	Configure the Mod	
		300		Decimal	DINT	Configure the Mod	
HBS_Config.Reserved01		0		Decimal	INT	Configure the Mod	
➡-MBS_Config.Input_Status_Count_1×		576		Decimal	INT	Configure the Mod	
HBS_Config.Reserved02		0		Decimal	INT	Configure the Mod	
E→MBS_Config.Output_Coil_Count_0×		576		Decimal	INT	Configure the Mod	
➡-MBS_Config.Reserved03		0		Decimal	INT	Configure the Mod	
➡-MBS_Config.Input_Register_Count_3X		500		Decimal	INT	Configure the Mod	
		0		Decimal	INT	Configure the Mod	
		500		Decimal	INT	Configure the Mod	
MBS_Config.Coldboot		1		Decimal	BOOL	Configure the Mod	

#### Slave Configuration

Label	Description
Туре	Set this to "1" for Slave.
Slave ID	1 to 255. Set this to the desired Slave
	ID that the Master is attempting to
	access.

The Count parameters determine that maximum address that the Master can access for the ILX34-MBS. The default values represent the max addresses allowed for the provided Add-On instruction. Valid ranges are: 00001 to 00576, 10001 to 10576, 30001 to 30501 and 40001 to 40501..

**Coldboot Bit** - If parameters change after initial configuration, use the Coldboot bit to initiate the changes.

#### 3.5 Downloading the Sample Program to the Processor

**Note:** The key switch on the front of the ControlLogix processor must be in the **REM** or **Program** position.

- 1. If you are not already online with the processor, open the *Communications* menu, and then choose **Download**. You do not have to download through the processor's serial port. You may download through any network connection.
- 2. When communication is established, Studio 5000 (or RSLogix 5000) opens a configuration dialog box. Click the **Download** button to transfer the sample program to the processor.

•	Download to	the controller.
<u>.</u>	Name:	My_Controller
	Type:	1756-L63 ControlLogix5563 Controller
	Path:	AB_DF1-1
	Security.	(None)

- 3. Studio 5000 (or RSLogix 5000) compiles the program and transfers it to the processor. This process may take a few minutes.
- 4. When the download completes, the configuration program opens another Confirmation dialog box. If the key switch is in the **REM** position, click **OK** to switch the processor from **PROGRAM** mode to **RUN** mode.



**Note:** If you receive an error message during these steps, refer to the Rockwell Automation documentation to interpret and correct the error.

# 3.6 Master Command Structure

	{}
⊞-MBS.MASTERCMD[0].Enable	0
⊞-MBS.MASTERCMD[0].Node	0
⊞-MBS.MASTERCMD[0].Function	0
	0
⊞-MBS.MASTERCMD[0].Count	0
-MBS.MASTERCMD[0].InternalAddress	0
⊞-MBS.MASTERCMD[0].PollInterval	0
HBS.MASTERCMD[0].Swap	0
MBS.MASTERCMD[0].Trigger	0

Label	Description
Enable	0 = Disable
	1 = Enable the Command: Polling and
	Trigger allowed.
	2 = Enable the Command: Only Trigger
	allowed.
Node	Node address of the target device on the
	network (1 to 255).
Function	Function code for the command. 1, 2, 3, 4,
	5, 6, 15 and 16 allowed for Master and
	Slave. 8 allowed for Slave only.
DeviceAddress	Address in remote device associated with
	the command (0 to 65535).
Count	Number of points associated with the
	command.
InternalAddress	PLC Tag Internal address associated with
	the command.
PollInterval	Minimum number of milliseconds between
2	(U to 2,147,483,647).
Swap	0 = None. No change is made in byte
	ordering.
	1 = Words – The words are swapped.
	2 = Words & Bytes – The words are
	swapped, and then the bytes in each word
	are swapped.
	3 = Bytes – The bytes in each word are
	Swappeu. The words should be swapped only when
	using an oven number of words
Triggor	1 - Trigger the message Can be triggered
	anytime the command is enabled
	anyume the command is enabled.

### 3.7 Data Handling

-MBS.DATA	{}	{}		ILX34MBSData
⊞-MBS.DATA.InputBit	{}	{}	Decimal	BOOL[576]
HBS.DATA.InputRegister	{}	{}	Decimal	INT[500]
⊞-MBS.DATA.OutputBit	{}	{}	Decimal	BOOL[576]
⊞-MBS.DATA.OutputRegister	{}	{}	Decimal	INT[500]

These are the PLC data tags that are use for the Master and Slave. For the Master, the following tags represent the internal addresses used by the Master commands. For the Slave, the following tags represent the addresses accessed by a remote Master.

Label	Description
InputBit	Incoming discreet data for address
	ranges 0x and 1x from other devices.
	Functions 5 and 15 when device is
	configured as a Slave. Functions and 1
	and 2 when configured as a Master.
InputRegister	Incoming register data for address
	ranges 3x and 4x from other devices.
	Functions 6 and 16 when device is
	configured as a Slave. Functions and 3
	and 4 when configured as a Master.
OutputBit	Outgoing discreet data for address
	ranges 0x and 1x from other devices.
	Functions 1 and 2 when device is
	configured as a Slave. Functions and 5
	and 15 when configured as a Master.
OutputRegister	Outgoing register data for address
	ranges 3x and 4x from other devices.
	Functions 3 and 4 when device is
	configured as a Slave. Functions and 6
	and 16 when configured as a Master.

### 3.8 Module Status

-MBS.STATUS	{)
	0
⊞-MBS.STATUS.R×Cnt	0
⊞-MBS.STATUS.TXCnt	0
	0
HBS.STATUS.CmdError	{)
-MBS.STATUS.CmdError[0]	0
⊞-MBS.STATUS.CmdError[1]	0
⊞-MBS.STATUS.CmdError[2]	0
⊞-MBS.STATUS.CmdError[3]	0
⊞-MBS.STATUS.CmdError[4]	0
⊞-MBS.STATUS.CmdError[5]	0
⊞-MBS.STATUS.CmdError[6]	0
⊞-MBS.STATUS.CmdError[7]	0
⊞-MBS.STATUS.CmdError[8]	0
⊞-MBS.STATUS.CmdError[9]	0
⊞-MBS.STATUS.CmdError[10]	0
+-MBS.STATUS.CmdError[11]	

Label	Description
Module	Module Status
	1 = Ready for Command
	2 = Processing Command
	3 = Waiting for Response
	4 = Processing Response
RXCnt	Number of messages received
TXCnt	Number of messages transmitted
ErrorCnt	Number of errors
CmdError [x]	The error represented for
	MBS.MASTERCMD[x].
	1 = Invalid Function
	2 = Invalid Address
	3 = Invalid Data
	20 = Checksum Error
	21 = Modbus Invalid Message
	22 = Modbus Timeout
	26 = Float Word Swap Uneven Word
	Count
	209 = Parity Error

# 4 General Features & Specifications

- Add-On instruction creates UDTs, providing logical definitions for I/O, status, and control data
- Diagnostic data available in RSLogix 5000/Studio 5000 controller tags, allowing decisions to be made based upon node health
- Module configuration is backed up in the CompactLogix project (.ACD file)
- Serial port enable/disabled through ladder logic
- Supports up to 1000 words of data
- Supports up to 30 Modbus commands and up to 36 words per command
- The Serial Port can be configured as a Modbus Master or Modbus Slave device
- Suitable for SCADA and field device interface applications

#### 4.1 General Specifications

Configuration Environment	RSLogix 5000/Studio 5000
Max Modbus Command Size	Modbus command sizes are limited to 8, 16, and 36 words per command, depending on AOI selected
Max Modbus Commands	30
Communication Parameters	Baud Rate: 110 to 38.4K baud
	Stop Bits: 1 or 2
	Data Size: 7 or 8 bits
	Parity: None, Even, Odd
Modbus Modes	RTU mode (binary) with CRC-16
	ASCII mode with LRC error checking
Node Address	1 to 247
Supported Modbus Function	1: Read Coil Status
Codes:	2: Read Input Status
	3: Read Holding Registers
	4: Read Input Registers
	5: Force (Write) Single Coil
	6: Preset (Write) Single Holding Register
	8: Diagnostics (Slave Only. Responds to Sub-function 00
	15: Force (Write) Multiple Coils
	16: Preset (Write) Multiple Holding Registers

Power Supply	10 to 28.8 VDC (Two 24V power supplies needed if using a Series A L16/L18 controller)
Pointbus Current	75 mA @ 5 VDC
Serial line Voltages	± 3 to ± 25 VDC
Number of Inputs	1 full duplex
Module Location	1734-TB or -TBS wiring base assembly (not included) 1734-TOP or -TOPS
LED Indicators	1 green/red module status indicator 1 green/red network status indicator 2 green TXD, RXD status indicators
Operating Temperature	-4°F to 131°F (-20°C to 55°C)
Storage Temperature	-40°F to 185°F (-40°C to 85°C)
Relative Humidity	5% to 95% RH with no condensation
Dimensions (H x W x L)	2.21 x 0.47 x 2.97 in 56 x 12 x 75.5 mm
Shock	30g Peak acceleration (operating) 50g Peak acceleration (non-operating)
Vibration	Tested 5g @ 10 to 500 Hz
ESD Immunity	6 kV contact discharges 8 kV air discharges

# 4.2 Hardware Specifications

# 4.3 Agency Approvals

Agency	Applicable Standard(s)	
UL/cUL	Class 1, Div. 2 Groups A, B, C, D	
ATEX	Category 3, Zone 2	
CE Mark		
CB Safety		

# 5 Support, Service & Warranty

#### 5.1 Contacting Technical Support

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

- Product Version Number
- System architecture
- Network details

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

- Module configuration and associated ladder files, if any
- Module operation and any unusual behavior
- Configuration/Debug status information
- LED patterns
- Details about the serial, Ethernet or fieldbus devices interfaced to the module, if any.

**Note:** For technical support calls within the United States, ProSoft's 24/7 after-hours phone support is available for urgent plant-down issues. Detailed contact information for all our worldwide locations is available on the following page.

Internet	Web Site: www.prosoft-technology.com/support
	E-mail address: support@prosoft-technology.com
Asia Pacific	Tel: +603.7724.2080, E-mail: asiapc@prosoft-technology.com
(location in Malaysia)	Languages spoken include: Chinese, English
Asia Pacific	Tel: +86.21.5187.7337 x888, E-mail: asiapc@prosoft-technology.com
(location in China)	Languages spoken include: Chinese, English
Europe	Tel: +33 (0) 5.34.36.87.20,
(location in Toulouse,	E-mail: support.EMEA@prosoft-technology.com
France)	Languages spoken include: French, English
Europe	Tel: +971-4-214-6911,
(location in Dubai, UAE)	E-mail: mea@prosoft-technology.com
	Languages spoken include: English, Hindi
North America	Tel: +1.661.716.5100,
(location in California)	E-mail: support@prosoft-technology.com
	Languages spoken include: English, Spanish
Latin America	Tel: +1-281-2989109,
(Oficina Regional)	E-Mail: latinam@prosoft-technology.com
	Languages spoken include: Spanish, English
Latin America	Tel: +52-222-3-99-6565,
(location in Puebla, Mexico)	E-mail: soporte@prosoft-technology.com
	Languages spoken include: Spanish
Brasil	Tel: +55-11-5083-3776,
(location in Sao Paulo)	E-mail: brasil@prosoft-technology.com
	Languages spoken include: Portuguese, English

### 5.2 Warranty Information

For complete details regarding ProSoft Technology's TERMS & CONDITIONS OF SALE, WARRANTY, SUPPORT, SERVICE AND RETURN MATERIAL AUTHORIZATION INSTRUCTIONS please see the documents on the Product DVD or go to www.prosoft-technology/legal

Documentation is subject to change without notice.