



Modbus RTU Slave

Overview

Maple Systems' **Silver Series** Operator Interface Terminals (Maple OITs) communicate with any device that uses the Modbus RTU protocol and originates binary messages as a master device. The Silver Series uses the **MODBUS RTU Slave** protocol driver, to allow the slave in a point-to-point single master, single slave, or single master, multiple slave format. RS485 networking is supported to connect multiple MODBUS slave devices to a single MODBUS master device.

Communications Cable

The Maple OIT should be connected to the device's Modbus port.

A list of communications cables offered by Maple Systems as well as cable assembly instructions to assist you in assembling your own communications cable are available on our website.

WARNING: If your communications cable is not wired exactly as shown in our cable assembly instructions, damage to the OIT or loss of communications can result.

Controller Settings

The Modbus port on the Controller must be set to RTU master mode in order to properly communicate with the OIT (working as a slave).

Accessible Memory

Register Memory

The following table lists Maple OIT register memory ranges that any host device using Modbus RTU are able to access. The memory areas in the OIT are non-retentive. All data stored in the memory area is erased when power is removed from the OIT. The following register memory is displayable in 16 , 32 or 64 bit formats on the Maple OIT.

Modbus Address	Corresponding Silver Series Register Address
30001 - 39999 or 40001-49999	LW0-LW9998

Discrete Memory

Modbus Address	Controller Bit Description
00001 - 09999 or 10001-19999	LB0-LB9998

Note: Some of the LW/LB addresses of the OIT are reserved for special use. Refer to the *Silver Series Installation and Operation Manual* for more information on internal memory.

The following Modbus RTU function codes are supported by this communication driver.

Data Type	Read/Write	Description	Uses Modbus Code
0x	R	Read a coil	0x01
0x	W	Write to a single coil	0x05
1x	R	Read a discrete input	0x02
3x	R	Read an input register	0x04
4x	R	Read a holding register	0x03
4x	W	Write to multiple registers	0x10
4x	W	Write to multiple registers	0x16

The Modbus Slave driver does not recognize or support Function Code 06 (Preset Single Register). To write a LW register, the master device must use Function Code 16 (Preset Multiple Registers). Also this driver does not support Function Code 15 (Multiple Bit Transfer).

EZware Settings

The following table lists the communications settings that must be configured in EZware. These settings can be found in the Edit-Set System Parameters menu under the PLC tab. Please note:

- the **Recommended Settings** column provides the recommended setting based upon default settings most commonly used in Modbus Devices

- the **Options** column lists EZware's options; your controller may not support every option

Name	Recommended Settings	Options	Important Notes
PLC type:	Modbus RTU Slave		
Serial port I/F:	RS232	RS232, RS485	
Data Bits:	8	7 or 8	Must match the Controller's port setting.
Stop Bits:	2	1 or 2	Must match the Controller's port setting.
Baud Rate:	19200	9600,19200, 38400,57600, 115200	Must match the Controller's port setting. Use the fastest baud rate supported by the Controller.
Parity:	None	Even, Odd, None	Must match the Controller's port setting.
HMI station No.:	0	0-255	Does not apply to this protocol.
PLC station No.:	1	0-255	Use this setting to assign a network node address to the OIT.
Multiple HMI:	Disable	Disable, Master, Slave	use for multiple OITs
HMI-HMI link speed:	38400	38400, 115200	use for multiple OITs
PLC time out constant (sec)	3.0	1.5 to 5.0	adjust if longer timeout is required
PLC block pack:	0	0-10	see <i>Silver Series Installation and Operation Manual</i>