



Entertron Industries

Programmable Controllers

Overview

Maple Systems' **BLU300 Series** Operator Interface Terminals (Maple OITs) communicate with Entertron Industries PLCs using the Modbus RTU protocol. When configured with BlueLeaf configuration software, the Maple OIT is the master in a point-to-point single master, single slave format.

Compatible PLCs	
Family	Model
Programmable Controllers	SK1600-R-SA, Elite 2000, Smart-Pak, Smart-Pak Plus

Communications Cable

The Maple OIT should be connected to the serial communications 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 at www.maple-systems.com/cables.htm.

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.

PLC Settings

Configure the programmable controller port as a Modbus RTU slave mode by using the Entertron-Modbus protocol software, P/N V4.MODBUS. This software will give you full Modbus capability.

PLC Modbus Address is set in one of the internal registers (TC243) in the PLC system.

TC243- Addresses 27 and 47 are forbidden by Entertron and stated to provide unpredictable results if utilized.

Accessible PLC Memory

Register Memory

The following table lists the PLC's register memory ranges that the Maple OITs are able to access. Please note that your PLC's memory range may be *smaller* or *larger* than that supported by these OITs. The following register memory can be displayed in 16, 32, or 64 bit format on the Maple OIT.

PLC Register Type	Address Range	Format	PLC Register Description
3x	1-65535	dddd (d=decimal)	Input Registers (Read Only)
4x	1-65535	dddd	Holding Registers
Sw3x	1-65535	dddd	Input Registers (Word Swap) ¹
Sw4x	1-65535	dddd	Holding Registers (Word Swap) ¹

¹ The Sw3x and Sw4x registers read and write to the same memory areas as the 3x and 4x respectively. However, these registers swap the word order when 32-bit values are used.

Discrete Memory

The following table lists the PLC's discrete memory ranges that the Maple OITs are able to access. Please note that your PLC's memory range may be *smaller* or *larger* than that supported by these OITs. The following discrete memory is displayable in single-bit format on the Maple OIT.

PLC Register Type	Address Range	Format	PLC Register Description
0x	1-65535	dddd (d=decimal)	Output Coils
1x	1-65535	dddd	Input Coils (Read Only)
Bit3x	1.00-65535.15	dddd.bb (b=bit#)	Input Register Bits (Read Only) ²
Bit4x	1.00-65535.15	dddd.bb	Holding Register Bits ²

² The Bit3x and Bit4x coils read and write to the same memory as the 3x and 4x registers respectively. However, these coils allow access to individual bits within the memory registers. The bit number is specified by using the '.' followed by the bit number, 0-15.

Important Memory Considerations

If your PLC's memory range is smaller than the range supported by the Maple OITs, it is possible to configure the OIT to monitor a PLC memory address which does not exist. Since this can cause unpredictable results, when you configure the OIT please ensure that all selected PLC memory addresses are valid for your PLC model.

Do not configure the OIT to write to any PLC memory address which should only be written to by the PLC.

The Maple OITs use the following Modbus function codes:

- 01 - Read output coils (ex. 00001)
- 02 - Read input coils (ex. 10001)
- 03 - Read data registers (ex. 40001)
- 04 - Read input registers (ex. 30001)
- 05 - Write output coils (ex. 00001)
- 06 - Write data registers (ex. 40001)

BlueLeaf Communication Settings

The following table lists the communications settings that must be configured in BlueLeaf software. These settings can be found in the Tools...HMI-PLC Communications Settings menu.

- The **Recommended Settings** column provides recommended settings based upon the default settings most commonly used in the Entertron Industries PLC.
- The **Options** column lists BlueLeaf's options; your controller may not support every option.

Name	Default	Options	Important Notes
PLC Type	Modbus RTU Master (Modicon, etc.)		
Com Port	RS232	RS232, RS485 (2-wire only)	Tools...Set HMI-PLC Port
Baud Rate	19200	115200, 57600, 38400, 19200, 9600, 4800	Must match the Modbus port settings. Use the fastest baud rate supported by both.
Data bits	8	7, 8	Must match the Modbus port settings
Stop bits	2	1, 2	Must match the Modbus port settings
Parity	None	Even, Odd, None	Must match the Modbus port settings
Net Addr:	1	0-255	Must match the Controller's port setting (configure in each object attribute).