



Watlow Electric

CAS200, CLS200, MLS300, PPC2000

Overview

Maple Systems' **BLU300 Series** Operator Interface Terminals (Maple OITs) communicate with Watlow Electric Controllers 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 Controllers	
Family	Model
CAS200	CAS200-xxxx, CASSIxx-xx-xx
CLS200	CLS2xx-xxxx, CLSSIxx-xx-xx
MLS300	MLS3xxx-xxxxx, MLS300SIxx-xx-xx
PPC2000	PPC-2010-xxx

Communications Cable

The Maple OIT should be connected to the RS232 or RS485 Serial Communications Port on the Controller.

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.

Controller Settings

Name	Default	Options	Notes
Comm. Protocol	Modbus RTU Slave	No Options	Only Modbus RTU Slave is supported.
Electrical Interface: CLS200, MLS300 PPC2000	RS485 RS485 (RJ12)	No Options RS232 (RJ11)	The PPC2010 Processor Board has jumpers to select RS232 or RS485.
Baud Rate: CLS200, MLS300 PPC2000	9600 19200	9600, 2400 19200, 9600	Must match the OIT's configuration. Use the highest rate supported by both.
Data Bits	8	No Options	Must match the OIT's configuration.
Parity: CLS200, MLS300 PPC2000	None Even	No Options No Options	Must match the OIT's configuration.
Stop Bits: CLS200, MLS300 PPC2000	2 1	No Options No Options	Must match the OIT's configuration.
Address: CLS200, MLS300 PPC2000	1 1	1 – 32 1 - 247	Must match the OIT's 'PLC Station' setting.

Accessible Memory

Register Memory

TRegister Memory

The following table lists the controller's register memory ranges that the Maple OITs are able to access. Please note that your controller's memory range may be *smaller* or *larger* than that supported by these OITs. The following register memory can be displayed in 16 or 32 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 controller's discrete memory ranges that Maple's OITs are able to access. Please note that your controller's memory range may be *smaller* or *larger* than that supported by Maple's 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 controller's memory range is smaller than the range supported by the Maple OITs, it is possible to configure the OIT to monitor a controller memory address which does not exist. Since this can cause unpredictable results, when you configure the OIT please ensure that all selected controller memory addresses are valid for your controller model.

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

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 Watlow Electric controller
- 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).