DATASHEET

Crestron to OJ Electronics WLM2 Interface

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Summary

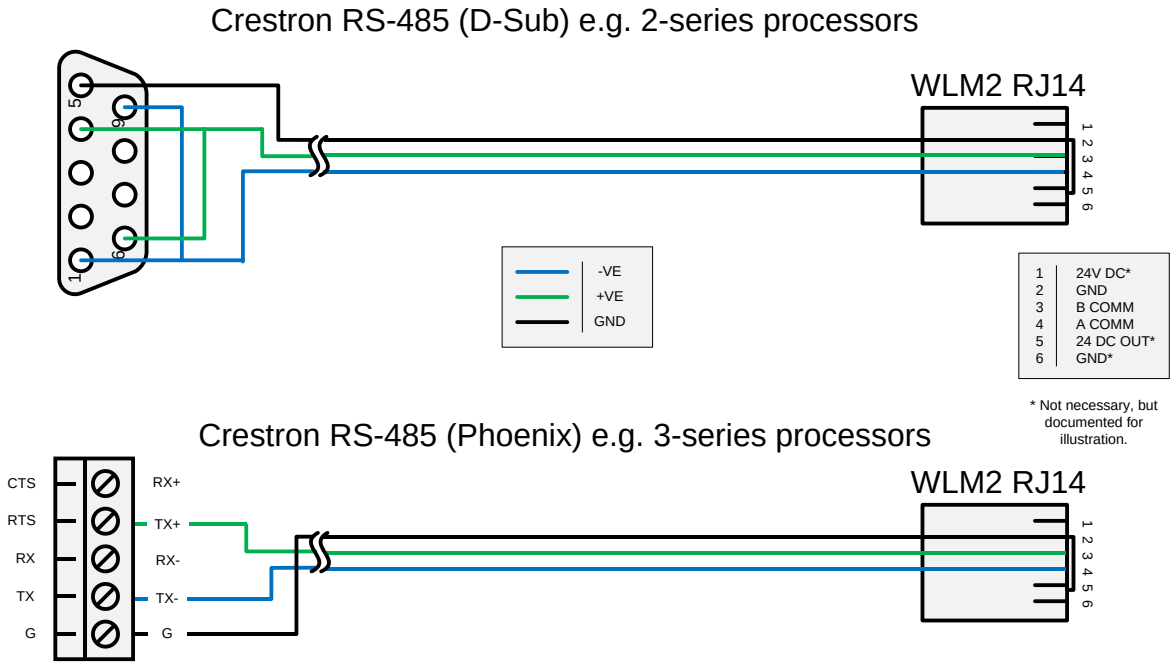
This datasheet relates to Ultamation's OJ Electronics WLM2 interface module for Crestron control systems. It provides the essential information for integration between the OJ Electronics WLM2 system and the Crestron control processor, and for programming of the modules with a host Crestron program.

Installation Notes

The Crestron system is connected to a standalone WLM2 installation directly via the WLM2 Modbus data bus, which is a standard RS-485 bus, using standard Crestron COM ports configured for RS-485 operation.

In small installations (stand alone master mode), the Crestron RS485 connection will be connected to the top port on the WLM2 (port 1). Larger installations (network master mode) will require connection of the Crestron system to port 3 of the WLM2. For installation of OJ Electronics equipment, please refer to the OJ Electronics WLM2 installation manual for the correct setup procedure.

The pin-out for the Crestron COM port and WLM2 Modbus port is provided below:



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An RS-232 to RS-485 converter will work for Crestron processors with RS-232 only ports. Testing has shown, however, that power supplied by the Crestron COM port is insufficient to power the adapter and an external power source is necessary for communication to function. The ComSpec for serial communication with the WL2 is provided below:

Setting	Value
Baud	38400
Data bits	8
Parity	None
Stop bits	1
Hardware flow control	None
Software flow control	None

Usage Licensing

For this module to operate, a license key must be purchased and inserted into the provided license key field on the programming module. Keys can be purchased from [OJ Electronics/Ultamation Limited] and are provided on a per-processor basis. The processor MAC address is used to uniquely identify the Crestron processor and bind the license to that hardware. License codes are issued to allow the module to communicate with a set number of WLM2 units. It is important to ensure that the license you purchase is of a type that covers the number of WLM2 units in the installation that you intend to integrate a Crestron system with.

You will need to obtain the processor's MAC address in order to have a license provided to you. To obtain the processor MAC address, follow this procedure:

2-Series Processors

1. Open Crestron Toolbox.
2. Open a Text Console session and connect to the processor.
3. Type "estatus" and press enter.
4. The processor's MAC address is listed under "Ethernet Parameters". If there is more than one MAC address listed (for example in a Pro2/AV2 processor with an ENET-2 card fitted), provide the first one when purchasing your license.

3-Series Processors

1. Open Crestron Toolbox.
2. Open a Text Console session and connect to the processor.
3. Type "ipconfig" and press enter.
4. The processor's MAC address is listed under "Ethernet Adapter [System LAN]".

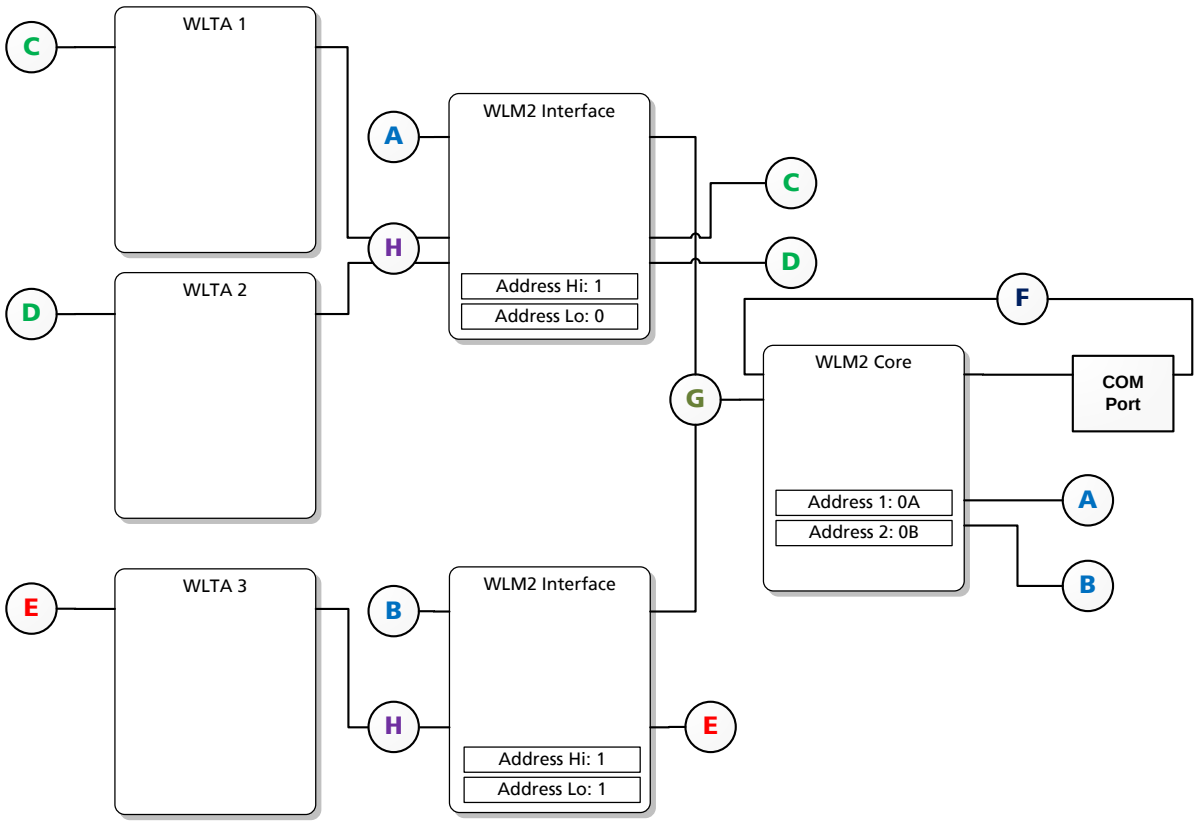
Programming Notes

Each of the module files should be placed either in the host program's project folder, or to make the WLM2 interface available to all Crestron programs, in the SIMPL Windows installation's User Macro (for .umc files) and User SIMPL+ (for .usp and .ush files) directories. This PDF should be placed in both directories for SIMPL's F1 help function to work properly.

The module suite is divided into three distinct parts:

1. A single core marshalling module that handles all communication between the WLM2 module (see 2) and the RS485 Modbus communications to the physical WLM2 devices on the bus.
2. One or more WLM2 interface modules that present control and feedback signals to the host program and handle communication with thermostat program modules for WLTA and other room-situated controllers (see 3).
3. One or more WLTx program modules that present control and feedback signals to the host program and handle communication with the WLM2 interface modules.

The diagram below illustrates the module arrangement for a program containing 2 WLM2 units, with 2 WLTx thermostats attached to one, and 1 WLTx thermostat attached to the other:



A. This signal connects the WLM2 Core Module_Tx_1$ and the WLM2 Interface From_Processor$ signals. This allows communication between the core and the interface module.
B. This signal connects the WLM2 Core Module_Tx_2$ and the WLM2 Interface From_Processor$ signals. This allows communication between the core and the interface module.
C. This signal connects the WLM2 Interface Channel_1_Tx$ and the WLTA From_WLM2_Interface$ signals. This allows communication between the WLM2 Interface module and the WLTA module.
D. This signal connects the WLM2 Interface Channel_2_Tx$ and the WLTA From_WLM2_Interface$ signals. This allows communication between the WLM2 Interface module and the WLTA module.
E. This signal follows the same purpose as signal C, though for the second WLM2 Interface module and corresponding WLTA module.
F. These signals connect the Modbus_Tx$ and Modbus_Rx$ signals on the WLM2 Core module to the corresponding Tx$ and Rx$ signals on the Crestron COM port hardware definition. This allows communication between the Crestron host program and the physical WLM2 unit.
G. This signal connects the To_Processor$ signal on the 2 WLM2 Interface modules to the Module_Rx$ signal on the WLM2 Core module. This allows communication between the Core and WLM2 Interface modules.
H. These signals connect the To_WLM2_Interface$ signals on the WLTA modules to the Channel_n_Rx$ (where n is the channel number) signals on the WLM2 Interface modules. This allows communication between the WLM2 Interface modules and the WLTA modules.

The Core Module

This module sits between the Crestron COM port and the WLM2/WLTx modules.

1. Connect the module's Modbus_Rx$ input signal to the rx$ output signal on the appropriate COM port.
2. Connect the module's Modbus_Tx$ output signal to the tx$ input signal on the same COM port as step 1.
3. Connect each of the module's To_Module_n$ output signals to the From_Core$ input signal of each WLM2 interface module in the system.
4. The module's From_Module$ input will share a common signal with all of the WLM2 modules' To_Core$ output.
5. Select the license type in the parameter section of the module and insert the license key provided to you on purchase.
6. Set the address of each WLM2 connected to the core module, to the same value as set on the physical unit.

WLM2 Interface module

The From_Core$ and To_Core$ signals should be connected to the core module as described above.

Day_Set_Point#	Set the current day set point temperature. The temperature should be expressed as an analogue value representing the current temperature scale, multiplied by 100. Therefore 18.25°C should be expressed as 1825d in Crestron decimal notation.
Night_Set_Point#	Set the current night set point temperature. Follows the same conventions as the Day_Set_Point# signal.
No_Override	On a rising edge, cancels any previously set override mode.
Heat_Override	On a rising edge, puts the WLM2 unit into "heat override" mode.
Cool_Override	On a rising edge, puts the WLM2 unit into "cool override" mode.
Poll_Pump_Output	On a rising edge, request the current status of the pump output relay.
Poll_Boiler_Output	On a rising edge, request the current status of the boiler output relay.
Poll_Aux_Output	On a rising edge, request the current status of the aux output relay.
Poll_Day_Set_Point	On a rising edge, request the current value of the day set point.
Poll_Night_Set_Point	On a rising edge, request the current value of the night set point
Poll_Time_Switch_Input	On a rising edge, request the current value of the time switch input.
Poll_Supply_Temp	On a rising edge, request the current value of the supply temp.
Poll_Outdoor_Temp	On a rising edge, request the current value of the outdoor temp.
Poll_Mixing_Valve	On a rising edge, request the current value of the mixing valve.
Poll_Max_Humidity	On a rising edge, request the current value of the max humidity.
Poll_Heat_Cool_Override	On a rising edge, request the current status of the heat cool override options.

Poll_Error_State	On a rising edge, request the current value of the WLM2 error state.
Channel_n_Rx$	Connect to the To_WLM2$ signal on a WLTx module to retrieve data from a device on channel "n" of the physical WLM2 device.
Pump_Output_fb	Digital signal that reflects the current state of the pump output relay.
Boiler_Output_fb	Digital signal that reflects the current state of the boiler output relay.
Aux_Output_fb	Digital signal that reflects the current state of the aux output relay.
Time_Switch_Input_fb	Digital signal that reflects the current state of the time switch input on the WLM2.
Day_Set_Point_fb	Represents the current value of the day set point, multiplied by 100. Therefore 22.52°C will be represented as 2252d in Crestron decimal notation.
Night_Set_Point_fb	Represents the current value of the night set point, multiplied by 100. Therefore 18.50°C will be represented as 1850d in Crestron decimal notation.
Supply_Temp_fb	Represents the current value of the supply temp, multiplied by 100. Therefore 40.50°C will be represented as 4050d in Crestron decimal notation.
Outdoor_Temp_fb	Represents the current value of the outdoor temp, multiplied by 100. Therefore 18.50°C will be represented as 1850d in Crestron decimal notation.
Mixing_Valve_fb	Represents the current value of the mixing valve, multiplied by 100. Therefore 20.35% will be represented as 2035d in Crestron decimal notation.
Max_Humidity_fb	Represents the current value of the max humidity, multiplied by 100. Therefore 40.23% will be represented as 4023d in Crestron decimal notation.
No_Override_fb	Digital signal that reflects the current state of the heat/cool override function.
Heat_Override_fb	Digital signal that reflects the current state of the heat/cool override function.
Cool_Override_fb	Digital signal that reflects the current state of the heat/cool override function.

Error_State_fb	Represents the current value of the WLM2 error state. 0d reflects no error. Any value > 0 represents an error state as listed in the WLM2 manual.
Device Active	Digital signal that reflects whether a device at the address entered into the module is communicating or not. Signal drops to a low state 2 minutes after last response.
Channel_n_Tx$	Connect to the From_WLM2_Interface$ signal on a WLTx module to retrieve data from a device on channel "n" of the physical WLM2 device.
Rotary_Addr_Hi	Set to the same value as the leftmost rotary selector on the WLM2 unit.
Rotary_Addr_Lo	Set to the same value as the rightmost rotary selector on the WLM2 unit.

WLTA Interface Module

The From_WLM2_Interface$ and To_WLM2_Interface$ modules should be connected to the WLM2 Interface module as described above.

Set_Point_Override#	Set the current set point override temperature. The temperature should be expressed as an analogue value representing the current temperature scale, multiplied by 100. Therefore 32.54°C should be expressed as 3254d in Crestron decimal notation.
Poll_Room_Temp	On a rising edge, request the current value of the room temperature.
Poll_Floor_Temp	On a rising edge, request the current value of the floor probe temperature.
Poll_Current_Set_Point	On a rising edge, request the current value of the current set point.
Poll_Set_Point_Override	On a rising edge, request the current value of the set point override.
Poll_Output_Relay	On a rising edge, request the current value of the channel output relay.
Poll_Error_State	On a rising edge, request the current value of the channel error state.

Room_Temp_fb#	Represents the current value of the room temperature, multiplied by 100. Therefore 22.50°C will be represented as 2250d in Crestron decimal notation.
Floor_Temp_fb#	Represents the current value of the floor probe temperature, multiplied by 100. Therefore 22.50°C will be represented as 2250d in Crestron decimal notation.
Current_Set_Point_fb#	Represents the current value of the set point, multiplied by 100. Therefore 22.50°C will be represented as 2250d in Crestron decimal notation.
Set_Point_Override_fb#	Represents the current value of the set point override, multiplied by 100. Therefore 22.50°C will be represented as 2250d in Crestron decimal notation.
Channel_Output_Relay_fb	Digital signal that reflects the current state of the output relay on this channel.
Error_State_fb	Represents the current value of the channel error state. 0d reflects no error. Any value > 0 represents an error state as listed in the WLM2 manual.

Software License

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