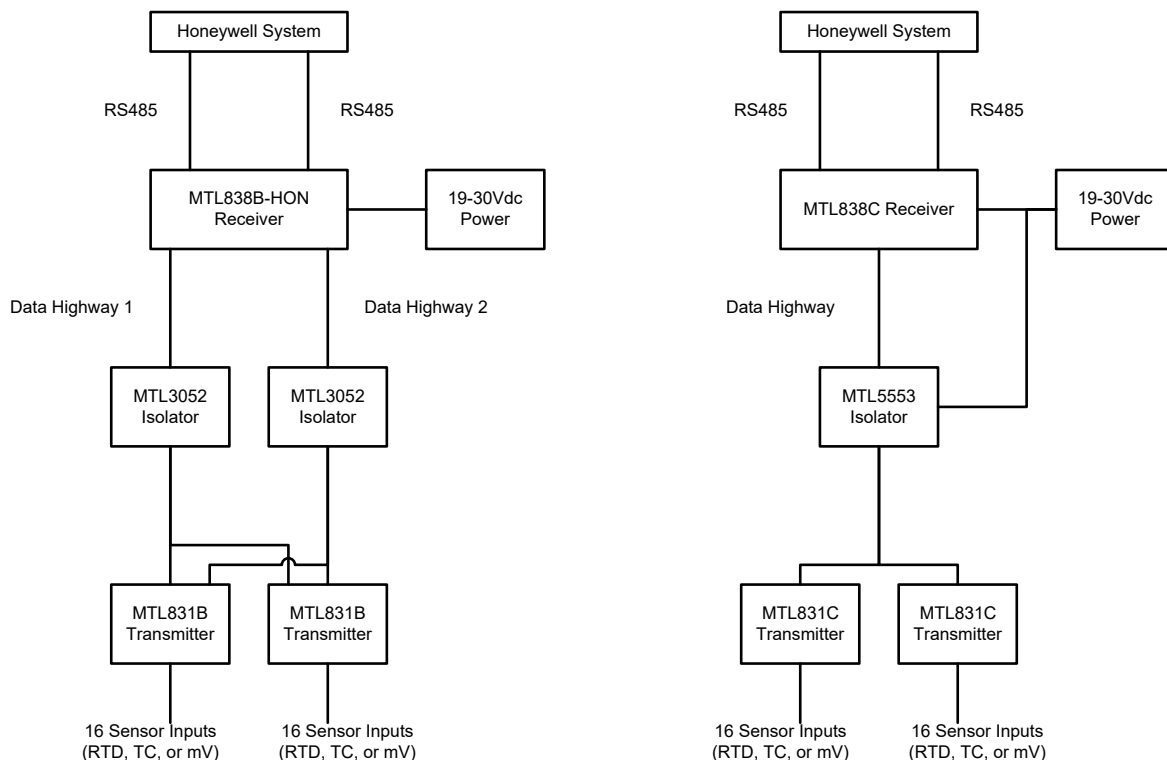


# Replacing an MTL830B System with an MTL830C System connected to a Honeywell LLMUX card

## 1 Introduction

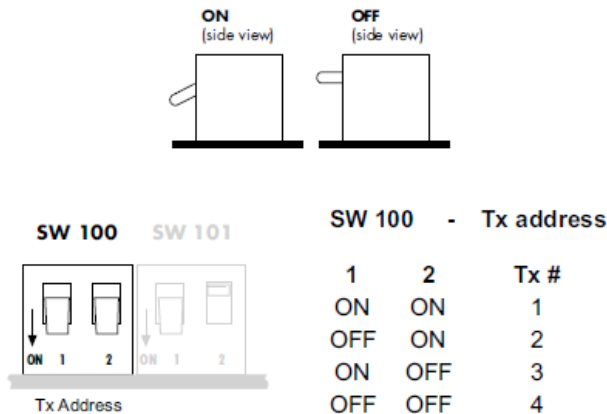
This document provides instructions for replacing an MTL830B temperature multiplexer system with a MTL830C temperature multiplexer system. A block diagram showing an example hardware installation before and after installation is shown below for reference.



**Figure 1:** Example of Hardware Changes Associated with Replacing an MTL830B System with an MTL830C System

2 Steps for replacing the MTL830B with the MTL830C system

- 1. Record the settings if the exsiting MTL830B system.
  - a. Record the channel configuration (thermocouple, mV, 2-wire RTD, 3-wire RTD or 4-wire RTD
  - b. Record the address of each MTL831B. The address is set by the positions of SW 100 switches 1 and 2.  
NOTE: Only addresses 1 and 2 are used.



- 2. Power of the MTL830B system. This can be done by turning off or disconnecting the power to the MTL838B-HON units.
- 3. Replace each MTL831B with an MTL831C (see the MTL831C Analog Transmitter Instruction Manual (INM MTL831C) for details).
  - a. For hazardous area installations, confirm the Intrinsic Safety entity parameters of the sensors are compatible with the entity parameters of the MTL831C.
  - b. Move the wires from each MTL831B sensor input channel to the corresponding MTL831C sensor input channel.
  - c. Each sensor input channel has 4 terminals labelled A, B, C, and D. The proper connections to the terminals for each input type are shown in the drawing below.

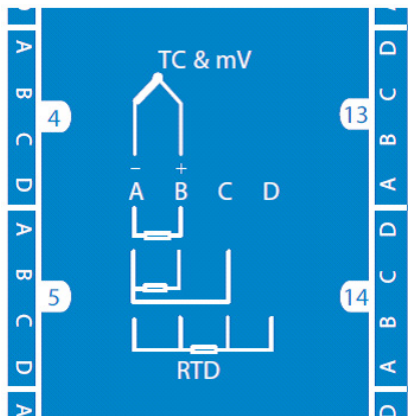


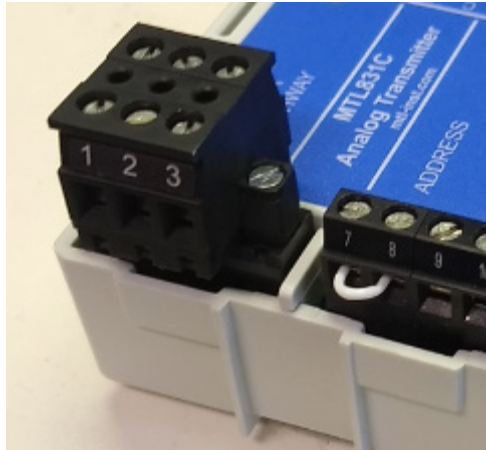
Figure 2: MTL 831C Terminal Connections for the Various Sensor Types

- d. The extra components, terminal strips and wiring used to connect RTDs to the MTL831B are not necessary on the MTL831C. The MTL831C supports direct connection Of 2, 3 and 4-wire RTDs. Extra diodes for RTD measurements are not required with the MTL831C. Connect each RTD to its own input channel port.

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- e. Move the Data Highway cable from the MTL831B to the MTL831C. If two Data Highway cables were used with the MTL830B system, select one of the two cables to use with the MTL830C system. The second Data Highway cable is not connected.
- f. On the MTL831C replacing the MTL831B with address 2 (if there is one), install a jumper wire between the ADDRESS terminals A and S (terminal numbers 7 and 8).



**Figure 3:** Jumper Wire Between Address Terminals

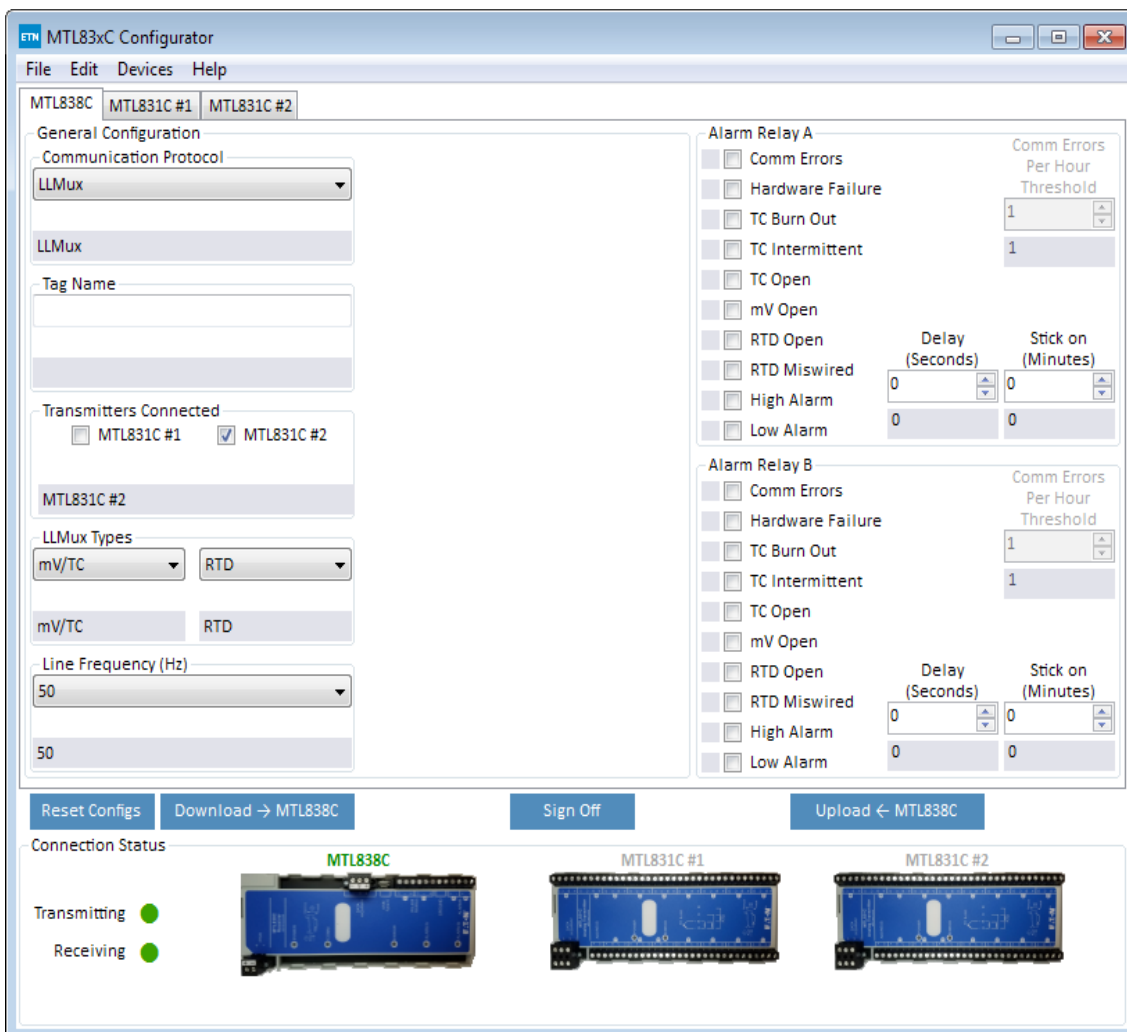
4. If an MTL3052 Isolator is installed in the Data Highway cable, replace the MTL3052 Isolator with the MTL5553 Isolator/Power Supply (see the MTL5500 Series Instruction Manual (INM MTL5500) for details).
5. Replace the MTL838B-HON with MTL838C (see the MTL838C Receiver Instruction Manual (INM MTL838C) for details).
  - a. Move the MTL838B-HON RS-485 ports to the corresponding terminals of the MTL838C.
  - b. Move the wires from the MTL838B-HON Data Highway port to the corresponding terminals of the MTL838C. If two Data Highway cables were used with the MTL830B system, connect the same cable attached to the MTL831C Data Highway port(s) to the MTL838C Data Highway port. The second Data Highway is not connected.
  - c. Move the wires from the MTL838B-HON power port to the corresponding terminals of the MTL838C.
6. Apply DC power to the MTL830C system (turn on power to the MTL838C and MTL5553, if installed).
7. Verify the MTL838C green POWER LED turns on.
8. Verify the MTL838C green COMM LED is flashing. This indicates communication is established with the MTL831C(s). If not, verify proper connection of the Data Highway wiring.
9. Install the MTL83xC Configurator software on a computer.
10. Connect the computer to the MTL838C USB-C port.

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11. Use the software to configure the MTL838C to match the old MTL830B system settings you recorded (see the MTL83xC LLMUX Emulation manual (INM MTL83xC LLMUX) for details).  
On the MTL838C tab:

- a. Check for relevant firmware updates for the MTL831/MTL838C
- b. Select LLMux as the Communication Protocol.
- c. Select the MTL831C transmitters that are connected (#1,#2, or both).
- d. Select the type of inputs connected to each MTL831C (mV/TC or RTD).
- e. Select the Line Frequency to 60Hz or 50Hz (frequency of power on site).
- f. Click the Download-> MTL838C button.



**Figure 4:** Example MTL838C Configuration

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12. Use the software to configure the MTL831C(s) to match the old MTL830B system settings you recorded,
  - a. NOTE: The Honeywell system sends most of the channel configuration to the MTL830C system. However, the number of wires used for RTDs is not included in the configuration data sent by the Honeywell system. The default channel configuration for RTDs is 3-wire. If mV, thermocouple, and 3-wire RTD are the only channel configurations used then no MTL831C configuration is required. If any channels are connected to 2- or 4-wire RTDs, set those channels using the software as described below.
  - b. On each MTL831C tab where MTL831C is configured to measure RTDs, select the correct number of wires for the RTD for each channel. NOTE: this is only required for channels connected to 2- or 4-wire RTDs. Any channels connected to RTDs and left as "Not Configured" will be treated as 3-wire RTD when the Honeywell system enables them.
  - c. Click the Download-> MTL831C button.
  - d. NOTE: The MTL838C remembers the last way a channel was configured for RTD even if it is later unconfigured. If the Honeywell system then configures the channel for RTD, it will use the number of wires that was last configured by the software. If you see unexpected behavior with RTDs use the software to configure the number of wires on ALL RTD channels so that you know they are correctly configured.

| Channel | Input Type | Safety Drive | High Alarm | Low Alarm | Input Zero | Output Zero | Gain  | Reading |
|---------|------------|--------------|------------|-----------|------------|-------------|-------|---------|
| 1       | 4W RTD Ω   | None         | 0.000      | 0.000     | 0.000      | 0.000       | 1.000 | 0.00 Ω  |
| 2       | 3W RTD Ω   | None         | 0.000      | 0.000     | 0.000      | 0.000       | 1.000 | 0.00 Ω  |
| 3       | 2W RTD Ω   | None         | 0.000      | 0.000     | 0.000      | 0.000       | 1.000 | 0.00 Ω  |
| 4       | 4W RTD Ω   | None         | 0.000      | 0.000     | 0.000      | 0.000       | 1.000 | 0.00 Ω  |
| 5       | 4W RTD Ω   | None         | 0.000      | 0.000     | 0.000      | 0.000       | 1.000 | 0.00 Ω  |
| 6       | 4W RTD Ω   | None         | 0.000      | 0.000     | 0.000      | 0.000       | 1.000 | 0.00 Ω  |
| 7       | 4W RTD Ω   | None         | 0.000      | 0.000     | 0.000      | 0.000       | 1.000 | 0.00 Ω  |

Reset Configs   Download → MTL831C   Sign Off   Upload ← MTL831C

Connection Status

MTL838C   MTL831C #1   MTL831C #2

13. Disconnect the computer from the MTL838C. NOTE: The Honeywell system will not be able to communicate with the MTL830C system while the computer is connected to the MTL838C.
14. Confirm the new system is operating properly using the Honeywell system.

### 3 Frequently Asked Questions

- Is the Data Highway cable between the transmitter and receiver required to be Fieldbus cable?  
*No. Standard, twisted-pair instrumentation cable may be used*
- Is there a separate Honeywell version of the receiver, equivalent to MTL838B-HON?  
*No. The MTL838C receiver is configurable for either standard (Modbus) or Honeywell (LLMUX) use*
- Can the MTL830C transmitter and receiver be used without the MTL5553 isolator, in non-IS applications?  
*Yes. The isolator is only required for hazardous area applications*
- In Modbus applications, are changes needed to be programming of the Modbus master if an MTL838B is replaced by an MTL838C?  
*No. The Modbus mapping of the MTL838C exactly the same as the MTL838B.*