



TECHNICAL NOTE **TNPC09**

TITLE: DLCD DH-485 TIME-OUT

PRODUCT(S): DLCD

Problem Description: The problem occurs when a disruption of the DH485 network communication between the DLCD and the target device occurs while the DLCD is waiting (TS_WAIT_RX state) for an acknowledgement from its target device. If the target device never transmits this acknowledgement or if the DLCD does not recognize the acknowledgement within 60 seconds, data exchange between the DLCD and the target device will stop (XP_TIMEOUT state). This is normal behavior of a DH485 network. The problem occurs when the DLCD does not reset the state-machine and recover from the timeout. Other network operation such as token passing and master invites continue to work uninterrupted. The only way to reset the state-machine and re-establish the data exchange between the DLCD and the target device is to cycle the DLCD power. If no network interruptions are present, the problem goes unnoticed. This problem exists in all DLCD units made prior to date code 2503.

Corrective Action: Code changes have been made to reset XP and MAC state machines in the event of an XP_TIMEOUT. The default time of 60 seconds for the timeout to occur has been made user settable via Modbus register 41117. The Factory default has been decreased from 60 to 15 seconds to allow for quicker response in the event of a timeout. This value is user settable using the RLCPro version 2.07 or higher. The 41117 Modbus register can be modified from the Scratch Pad. All DLCD units with date codes of 2503 or higher include this fix.

To tweak this setting for peak performance, use the following guideline:

N = Number of units in network.

Symptom #1: Units periodically stop sending data and take far too long to recover (timeout is too long).

Action: Decrease time to $N \times 0.5$ seconds, to the nearest 1 second (round up).

Symptom #2: Units are constantly resetting, interfering with data transfer or network operation (timeout is too short).

Action: Increase time to $N \times 0.5$ seconds, to the nearest 1 second (round up), or until problem goes away.

Note that the $N \times 0.5$ factor is a guideline only. You can tweak the time to more-or-less suit a particular customer.

To set the time:

Using RLCPro v2.07 (or later) for DLC:

Assuming customer is connected properly...

- 1) In the "View Register" category select the starting register to be 41117 (any other starting register *will not work*).
- 2) Enter the desired time, in seconds, in the appropriate field.
- 3) Tab out of the field and click the "Write" button.

Using ModScan:

Assuming customer is connected properly...

- 1) Make sure the "Modbus Point Type" is set to HOLDING REGISTER and the display mode is Unsigned Decimal.
- 2) Set "Address" to 1117.
- 3) Set "Length" to 1.
- 4) Double-Click the address in the data display area.
- 5) Enter the time, in seconds, in the "Value" field and click "Update".