

Configuring the Electrolab D99 Model 2100 Node to Work with the Model 2100 Digital Level Sensor – Quick Start Guide

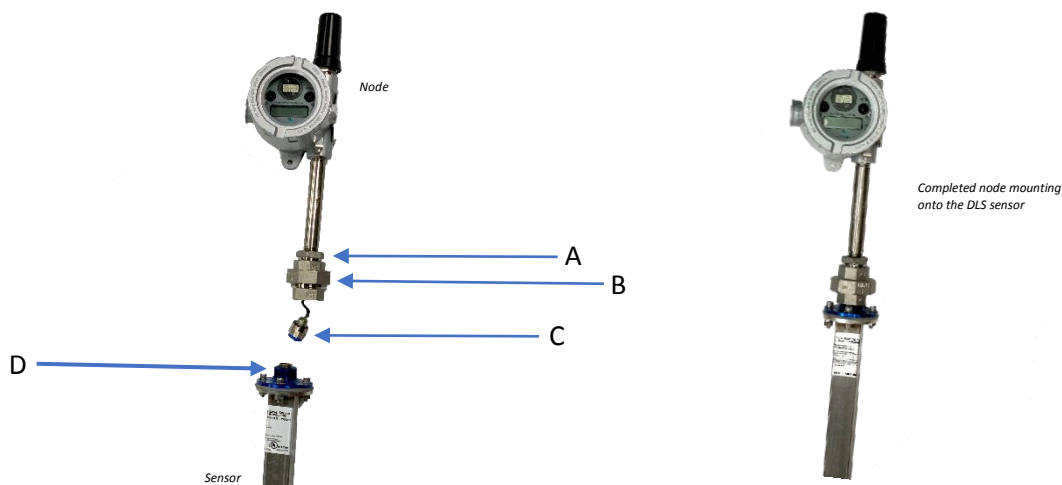
Installation Instructions

The Electrolab D99 Model 2100 Node ships as a complete unit that includes the radio core, the metal housing, mounting hardware with integrated pig-tail, and the integrated battery. The PT-E99D4 or PT-E99D4H pig-tail is pre-wired into the terminal strip on the radio with the proper connections for 13V Switch Power (SP2), Ground (GND), and 2-wire RS-485 (XC- and XC+).

Mounting and Sealing the Node to the DLS

Follow the steps below to successfully mount the Electrolab D99 2100 Node to a Model 2100 Digital Level Sensor.

1. Loosen the nut (B) on the top part of the 1-inch union (A). Loosen until the nut is almost removed.
2. Confirm that the number of pins on the sensor connector (D) matches the number of pins on the node connector (C).
3. Apply thread sealant to the sensor's 1-inch NPT connector (D).
4. Hold the node above the sensor flange connector. Insert the connector into the sensor and tighten.
5. Position the bottom part of the union of the node properly onto the sensor's NPT connector and screw the bottom part of the union (1-inch FNPT) onto the sensor's 1-inch MNPT flange. Ensure the connector cable is not caught in the threads or in the joint.
6. Screw and tighten the parts of the union, bottom nut, and retaining nut.



RS-485 Parameter Set-Up

The Electrolab D99 Model 2100 Node comes pre-configured from the factory to periodically wake up the DLS 2100 digital level sensor and request certain data registers over the 2-wire serial line. The sensor responds with the data (16-bit Modbus register values) before shutting down. This exchange takes 250 milliseconds. The D99 Model 2100 Node immediately transmits the register values back to an Electrolab Gateway. The Gateway retains the same register values (I/O points) in memory until the next read/update cycle so that the Modbus master (RTU) can poll the Gateway's holding registers over a wired RS-485 connection as fast as is needed without draining the remote D99 Model 2100 node's internal battery.

The user needs to configure the DLS 2100 device as Unit Number *1* with a baud rate of 9600 kbps and no parity (*none*).

The D99 Model 2100 node can request up to 6, 16-bit integer holding registers from the DLS sensor. By default, it is pre-configured to read five holding registers:

- Float 1 (top float)
- Float 2 (bottom float)
- Temperature 1
- Error Register
- Warning Register
- Digital Input (HLS, 13-pin **only**)

The frequency for the reads is defined differently for data registers (*Float 1*, *Float 2*, and *Temp*) than it is for error/warning registers. It is assumed error registers are not as time critical as data. Below are the default settings for read frequency:

- Float 1, Float 2, and Temp Sample Rate: 2 minutes
- Float 1, Float 2, and Temp Warmup Time: 250 ms
- Error and Warning Sample Rate: 15 minutes
- Error and Warning Warmup Time: 250 ms
- Digital Input (Change of state)

The user can change the update frequency of the individual register requests by changing the *Sample Rate* and *Report Rate* parameters of I/O 1 for data and I/O 4 for error/warning using the User Configuration Tool (UCT) software, available for download from the Tech Library tab at <http://www.electrolabcontrols.com/products/d99-model-2100-node/>.

Advanced Parameter Configuration

You can configure the D99 Model 2100 Node to read any Modbus data registers from the DLS 2100 Digital Level Sensor using the ELD99-D80 and the DX80 UCT Version 1. Consult the technical documentation for the DLS 2100 for a list of available data registers. The D99 Model

2100 Node's I/O retrieves a block of contiguous holding registers starting from "Modbus Start Address" of length determined by the Miscellaneous parameter (up to 16 total registers). Within the retrieved block of registers, the user may set which registers to keep and which to discard using the "Disable Register Bit Mask" parameter stored in I/O 1's Config and M-GAGE Baseline Filter (unrestricted) parameters. Due to the restrictions of the nodes register architecture, the maximum number of "kept" registers is six.

Parameter Name	Parameter in UCT	Allowable Values	Default Value
DLS Modbus Address or Unit Number	Serial Address	1 to 31	1
Modbus Start Address	Default Value	any	3990
# of Registers to Read (Consecutive)	Miscellaneous	1 to 16	7
Baud Rate / Parity Bit Mask *	Low Pass Filter	0 to 256	1 (9600/none)
Disable Register Bit Mask (Low Byte)†	I/O Config	0 to 256	60
Disable Register Bit Mask (High Byte) †	M-GAGE Baseline Filter (unrestricted)	0 to 256	0

† Bit mask indicates (starting from bit position 0, working through bit position 7, low byte to high) which Modbus registers to retain of the available 16 consecutive that have been read. A 0 indicates "enabled" while a 1 indicates disabled. Kept registers will be populated sequentially in the DX99 Model 2100 node's input register bank (I/O 1 through I/O 6).

* Bit positions 0 to 3 indicate baud rate, bit positions 4 to 5 indicate parity as follows:

Baud Rate (0-3)		Parity (4-5)	
000	19.2K	00	None
001	9600	01	Odd
010	38.4K	10	Even
011	76.8K		