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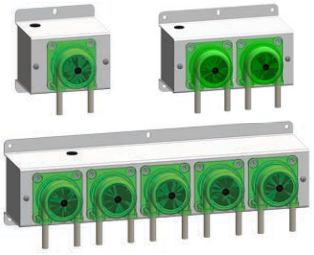


Weather Sensors

DIN Rail I/O

Specifications

Agrowtek's intelligent sensors, relays and peristaltic pumps are designed to communicate via the standard industrial MODBUS RTU protocol for PLC and OEM control applications.

Each device may be assigned an address of 1-247. Address 254 is a universal broadcast address. Addresses may be sent to the address register by MODBUS command, or configured using the LX1 USB link with PC software.

Supported Commands

0x01 Read Coils
0x03 Read Multiple Registers
0x05 Write Single Coil
0x06 Write Single Register

Sensors	**Relays**	**Pumps**
Read 16bit Signed	Read Coil Status	Read Pump Speed
Read 32bit Float	Write Coil Status	Write Pump Speed
Write Calibration	Read Close Count	Read Pump Hours
Read Manufacturing Info		

Register Types

Data registers are 16 bits wide with addresses using the standard MODICON protocol.

Floating point values use the standard IEEE 32-bit format occupying two contiguous 16 bit registers.

ASCII values are stored with two characters (bytes) per register in hexadecimal format.

Coil registers are single bit values which control and indicate the status of a relay; 1 = on, 0 = off.

Refer to individual product manuals for specific register maps and descriptions.

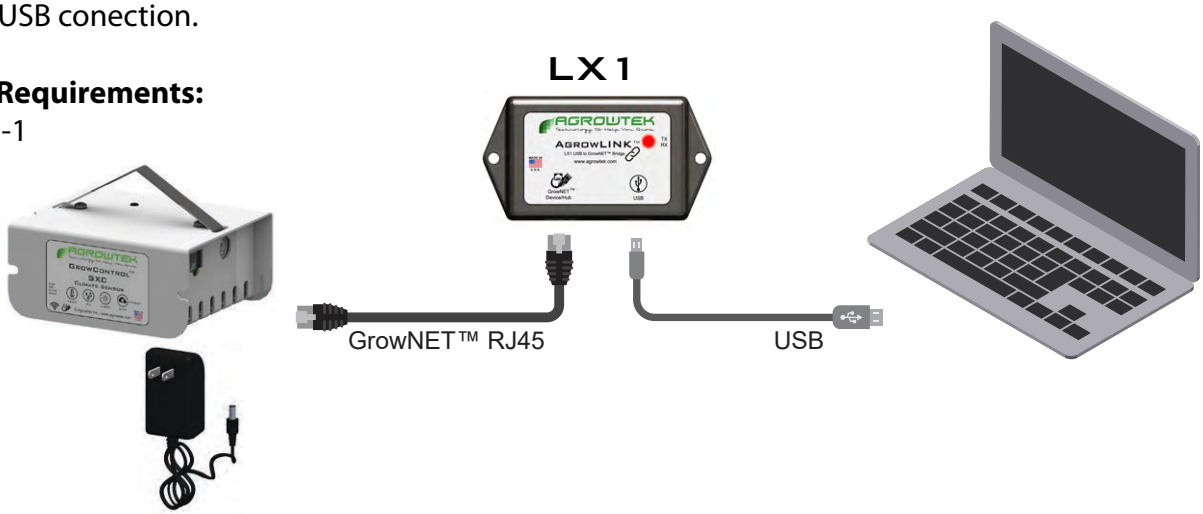
Connections

LX1 USB AgrowLINK

Agrowtek's intelligent devices may be connected to the LX1 USB AgrowLINK for firmware updates, calibration, addressing and testing/manual operation.

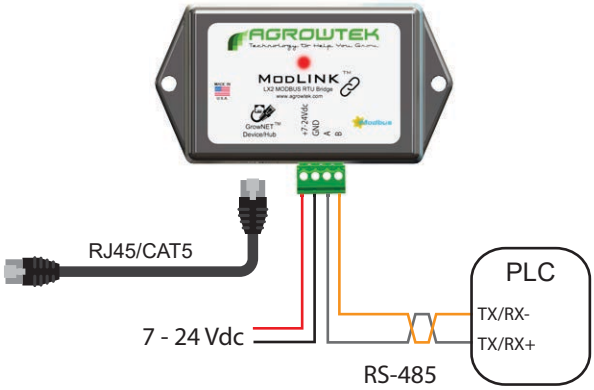
Standard drivers automatically install in Windows for the LX1 USB AgrowLINK. MODBUS commands may be sent over USB from a terminal or software application. More advanced GrowNET™ commands are also available over the LX1 USB conection.

USB Connection Requirements:
115,200 baud, 8-N-1



LX2 ModLINK™

LX2 ModLINK™ connects Agrowtek's intelligent sensors, peristaltic dosing pumps, and control relays equipped with a GrowNET™ RJ45 port to a standard RS-485 serial bus for use with the MODBUS RTU protocol. ModLINK is an MCU-buffered bridge between Agrowtek's high-speed, full duplex GrowNET™ devices connected with RJ45 cables, to a terminal block for integration with PLC systems. 15kV ESD rated RS485 terminals with 70V fault protection to protect against wiring errors and short circuits. LX2 may be configured for 19,200 -115,200 baud rates and any serial data format usung the LX1 USB Link and free PC application.



3.3/5Vdc Serial Bus Compatible.
Include required bus terminating resistors per EIA standard.

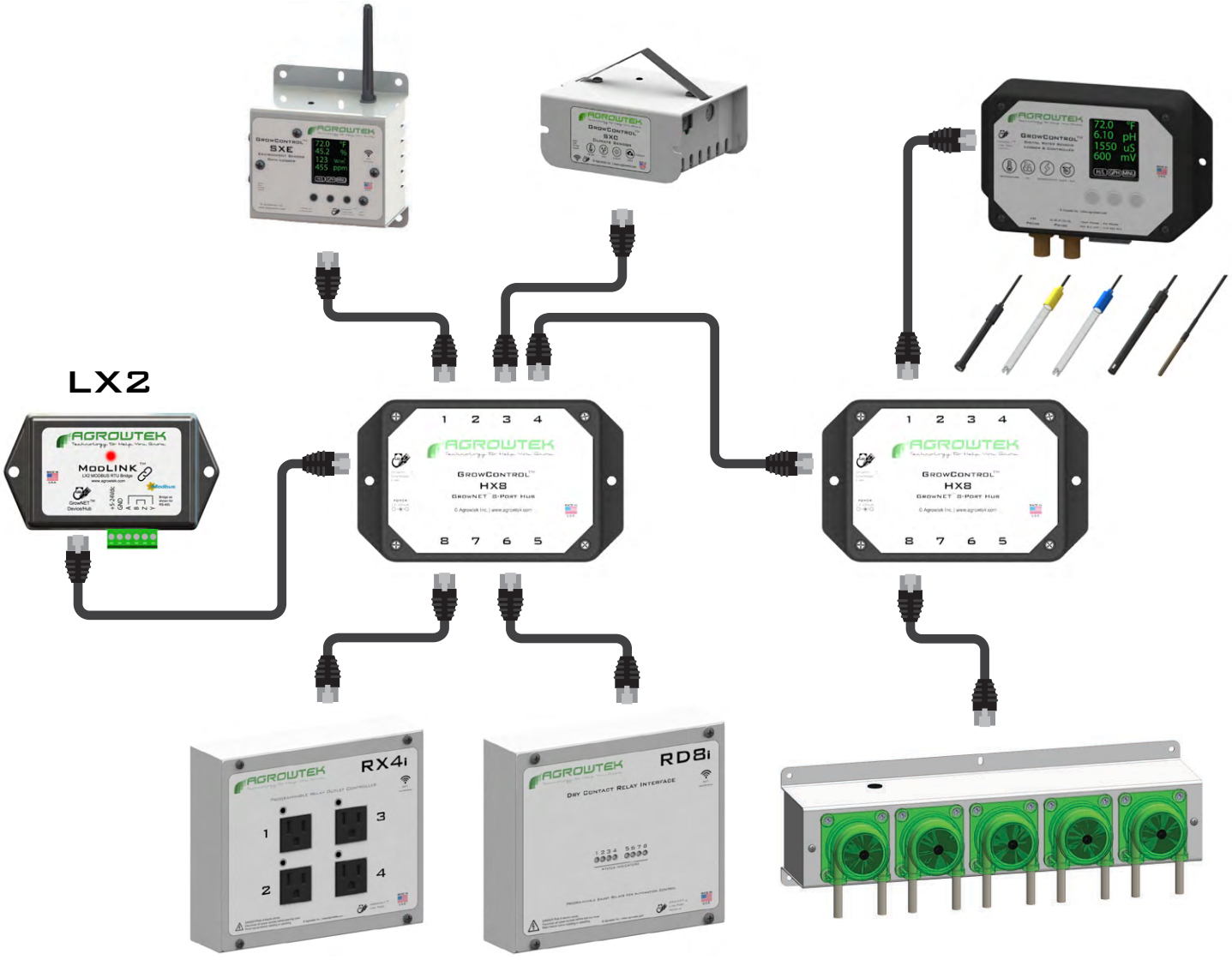
GrowNET™ Network with HX8 Hubs

HX8 GrowNET hubs connect multiple devices to a MODBUS network using only one LX2 ModLINK.

HX8 hubs supply power to all 8 ports from one power supply to operate sensors and relays from the GrowNET (Ethernet) cable connection for fast, easy installation (pumps require their own power supply.)

HX8 Hubs are fully buffered for excellent signal performance in long distance and distributed applications. Daisy chain hubs as needed for the number of ports required.

Uses standard RJ45 Ethernet cable for all connections.

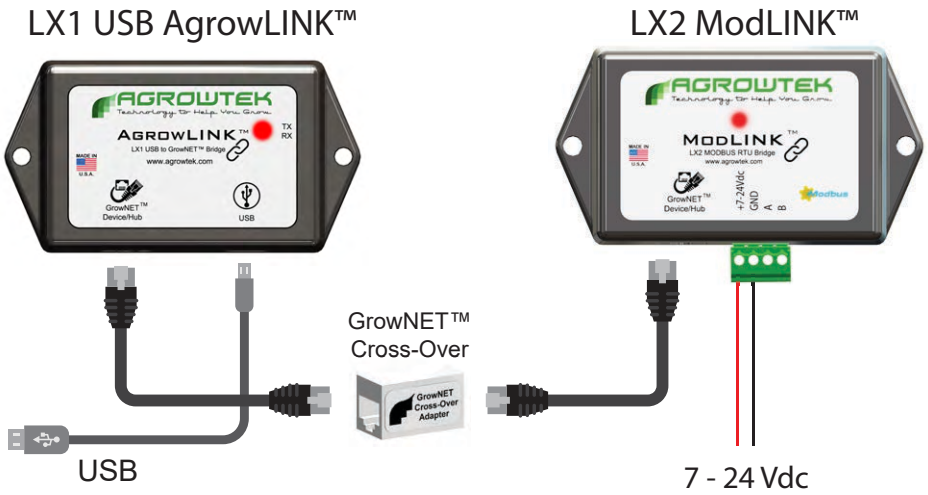


Power is provided to GrowNET™ devices from the HX8 hub's power supply allowing for single-cable installation for most devices (pumps require their own power supply.)

Data Format & Speed

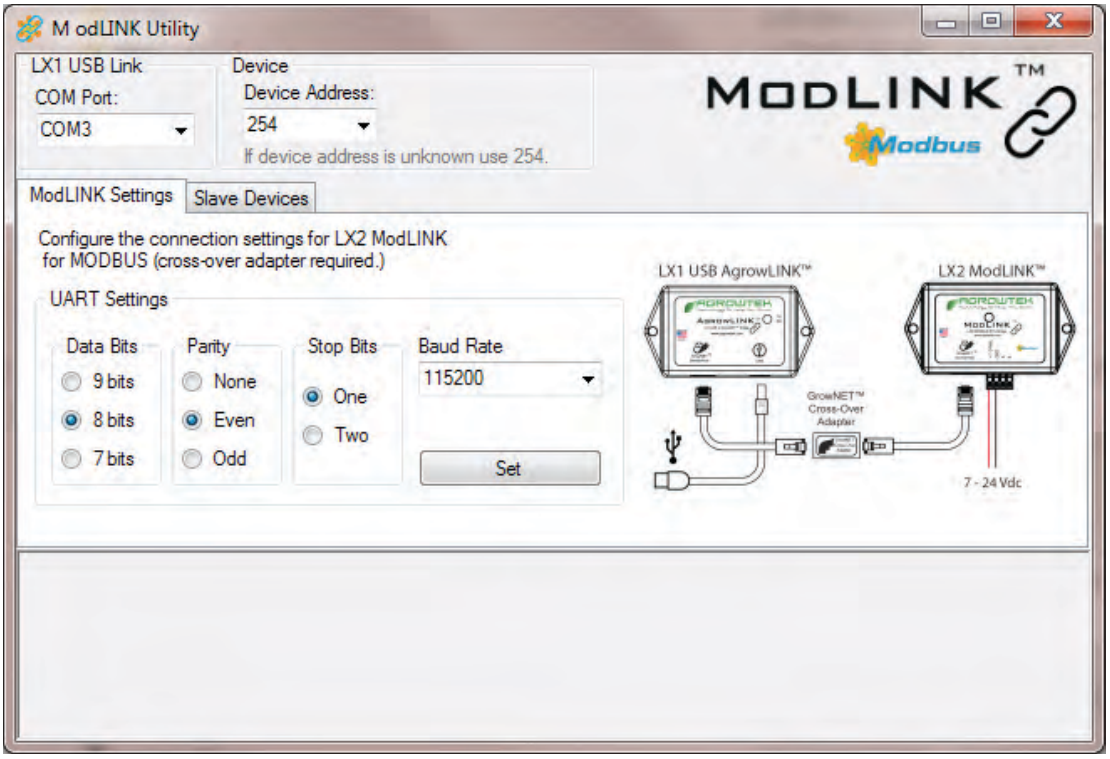
The default serial data format for the LX2 ModLINK interface is: **19,200 baud, 8-N-1**.

Alternate speeds and formats may be configured with the LX1 USB AgrowLINK and the cross-over adapter supplied with the LX2 ModLINK.



[Download ModLINK Utility]

Open the ModLINK utility and set:
Device Address = 254 *(address must be set to 254 to configure the LX2.)*



Configure the serial settings according to your master control device, then press the "Set" button.

"OK" reply confirms the settings have been successfully configured on the LX2.

Setting Device (Slave) Address

The slave ID is stored in each device at address register 1 (40001) and can be modified in several ways.

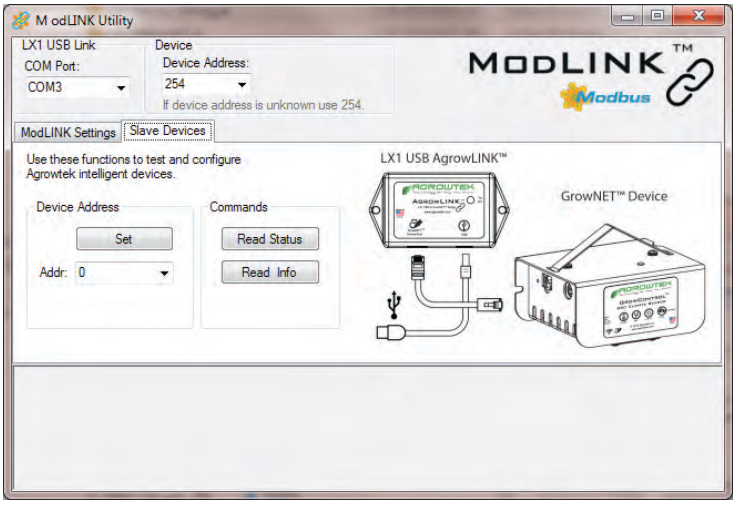
1. Send a modbus command using the broadcast address (254) to modify the value in register 1.
2. Use the LX1 USB link connected to a device with the AgrowLINK software utility to set the address.

Set Address via Modbus

Device address 254 is a universal broadcast address which can be used to set an address on a device which has an unknown address or has a 0 address. The device to be configured must be the only device on the bus when using the broadcast address or conflicts may occur.

To set a device address of "5", send the value "5" to register# 1 (40001) using address 254.

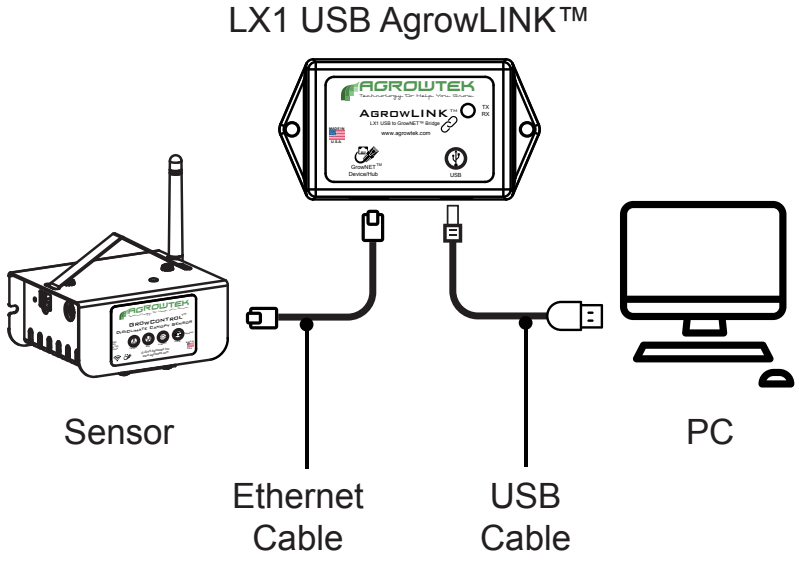
Set Address via LX1 USB Link



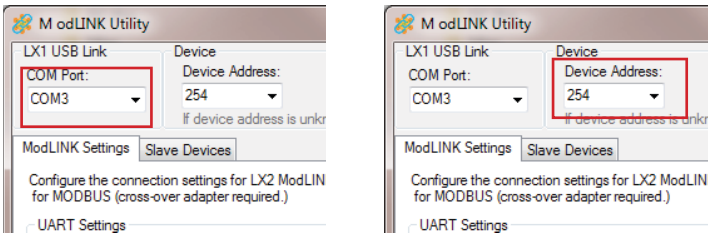
The LX1 USB AgrowLINK may be used to configure the LX2 ModLINK and set device (slave) addresss of devices.

[Download ModLINK Utility]

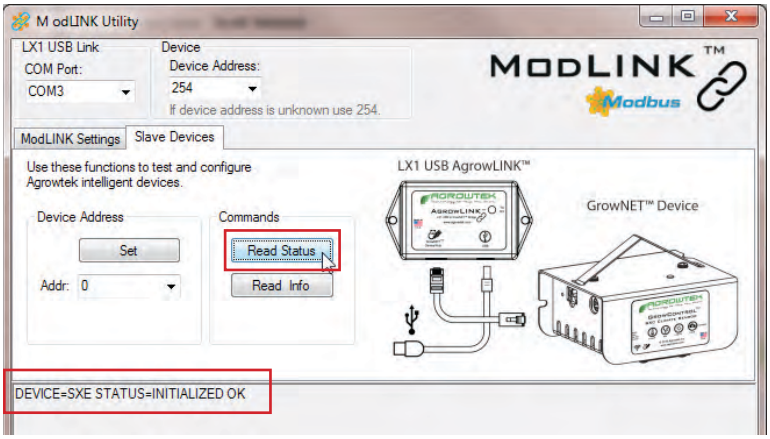
1. Connect the GrowNET™ device to the USB AgrowLINK with a standard Ethernet cable.
2. Connect the USB AgrowLINK to the PC and allow the drivers to install automatically.
   If the drivers do not install automatically download and install them [Download Driver].



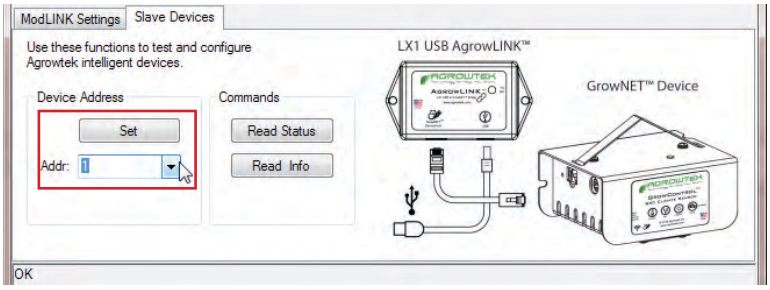
3. The COM port should be automatically selected when the program is opened if the drivers are installed.
   Select the COM Port drop-down to refresh and scan for a USB AgrowLINK.
4. Ensure device address "254" (universal broadcast address) is selected in the Connection box.



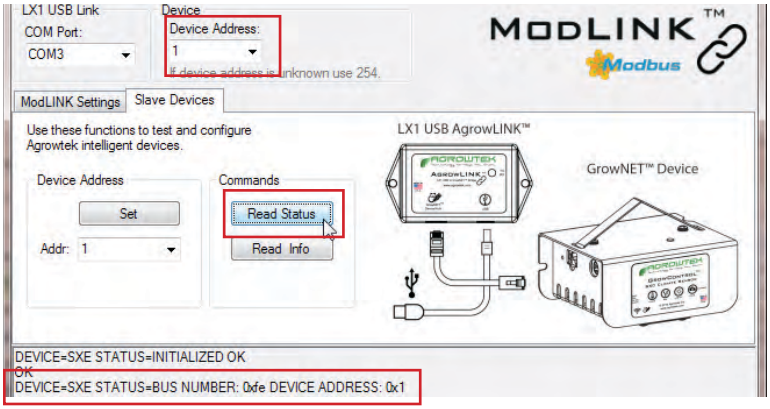
5. Check the device connection by clicking the "Read Status" button; you should get a reply with last internal status update from the device.



6. Set the device address to the desired value by selecting the "Addr." drop down then press "Set."



7. Verify the new address by selecting the new address in the Connection box then press "Read Status."



8. The device is ready to be deployed on a MODBUS network. Set the Device Address in the Connection box back to "254" to connect to the next device.