SCYNCELED

BRIDGE echo

USER MANUAL & INSTALLATION GUIDE

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MANUAL FOR END USER AND INSTALLER

Thank you for purchasing the Echo Bridge. The Echo Bridge allows users to control Scynce LED fixtures using a third-party control system or to add control of 0-10 devices in the Scynce LED environment.

This manual contains all the information needed to quickly familiarize yourself with the product and covers control and connectivity information in detail. Please review this information carefully before installing and/or operating the product.

We recommend you keep this manual on hand for future reference.

For further information, please contact:
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www.scynceled.com

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INCLUDED IN THE BOX

Several components are included in the Echo Bridge packaging box, each of which is critical for your successful setup. If any parts are missing please reach out to us for assistance.

PARTS INCLUDED

A - Echo Bridge

B - 120V Power Adapter

C - RJ45 / MODBUS Adapter

D - COM Cable Adapter

E - COM Termination Plug

F - Connector Plug (pre-installed)

PRODUCT DESCRIPTION

INTENDED USE

The Echo Bridge is intended to bridge the control of Scynce LED lighting fixtures using third-party controllers or add control of analog 0-10 devices to the Scynce LED environment. For other applications in professional horticulture, please contact a representative at Scynce LED.

Any use other than the approved intended use described above is considered an unintended use. Scynce LED cannot be held responsible for possible consequential damage caused by improper, incorrect or inadvisable use.

Scynce LED software is closed source. Any unauthorized modification to the software is strictly prohibited. Scynce LED cannot be held responsible for damage caused.

SYMBOLS USED

The following symbols are used in this manual to draw attention to specific topics or actions

WARNING

A warning indicates the possibility of injury to the user and/or damage to the product should the user not perform the procedures as described.

ATTENTION

A note alerts the user to potential problems which may occur if a procedure is not carried out as described.

SPECIFICATIONS

Product Name	Manufacturer ID	Size	Weight	Ingress Protection Rating	Installation Environment
Echo Bridge	52852	(129 x 110 x 34)mm (5 x 4.38 x 1.38)in	0.4 lbs	Not Rated	Not Suitable for Damp Locations
Main Voltage Power Supply	**Input Voltage**	**Power Draw**	**Ambient Operating Temp**	**MODBUS Speed**	**MODBUS Data Pattern**
120-240VAC (50/60HZ)	24VDC	<1 Watts (with no sensors)	-40C to 30C	19200	8N1
Analog 0-10 Source Current	**FCC Identification Numbers**	**Analog 0-10 Inputs**	**Analog 0-10 Outputs**	**Analog 0-10 Inputs Operating Voltage**	
Input: 1mA Output: 20mA	FCC ID: X8WBT840F IC: 4100A-X8WBT840 FCC ID: 2ABCB-RPIRMO	5, 1/Light Channel	4	0-10.5 Operational 10.5-12 Disabled	

MOUNTING OPTIONS

The Echo Bridge can be mounted to a surface by using the two #8 screws on either side of the housing.

ATTENTION

Use caution to not damage the Echo Bridge housing when tightening mounting fasteners.

INSTALLATION

Several connectors are located on the bottom side of the Echo Bridge. Depending on your setup, different connections may be used.

CONNECTOR LEGEND

- Echo Bridge Power
- Scynce LED COM
- COM Activity Indicator
- MODBUS Activity Indicator
- MODBUS
- USB C
- Mode Select Button
  - Thread mesh (on/off)
  - System Reset (hold for 10 sec)
  - Activate Boot-load
- (4X Outputs / Right Side)
- (5X Inputs / Left Side)

CONNECTING SCYNCE LED FIXTURES

Scynce LED fixtures can be connected in one of two methods depending on the Generation of the fixtures. For Generation 3 and later fixtures, fixture to fixture communication is accomplished through a daisy-chain COM cable provided with the fixture. The COM cable is attached from the COM ports on the Echo Bridge, depicted by ( ), using the provided adapter cable. Install the adapter plug to the Echo Bridge as shown. Route the COM cable to one of the COM ports on the Scynce fixture (located on the Power Hub or the fixture). The next fixture is then attached to the first using the same process and so on. The last fixture in the chain MUST be terminated using the provided COM Termination Plug.

The Echo Bridge will allow up to 75 fixtures to be attached through the COM port. The fixtures connected to an Echo Bridge will act as one zone. As required for your setup, COM Cables are available at various lengths at Scynceled.com.

For Generation 2 and prior fixtures, communication is achieved through the wireless thread-mesh network. This connection process is covered in a later step.

- Data (+): White Wire
- Data (-): Blue Wire
- Isolated GND: Bare Wire

ATTENTION

The last light fixture in the COM daisy-chain MUST be terminated with the COM Termination Plug to function properly.

From Echo Bridge or Previous fixture

To Next fixture or COM Termination Plug

Scynce fixture Power Hub

CONNECTING MODBUS

The Echo Bridge is equipped with a RS422 full-duplex serial interface port supporting both MODBUS and AGROWTEK serial communication protocols. The port is depicted as ( ) and is configured to run at 19200 baud with 8N1 parameters when in MODBUS mode, and 115200 baud with 8N1 parameters for AGROWTEK mode. To enter AGROWTEK mode, connect the bridge to the AGROWTEK controller with a standard Ethernet cable and ensure the AGROWTEK controller is powered on and supplying 24V to the bridge.

One RS485 (half-duplex) adapter cable is included with the Echo Bridge.

MODBUS CONNECTOR PIN-OUT

1 - A_2 (TX Data+) - orange / white
2 - B_2 (TX Data-) - green
3 - Y_2 (RX Data+) - green / white
4 - Not Used - blue
5 - Not Used - blue / white
6 - Z_2 (RX Data-) - orange
7 - +24V - brown / white
8 - GND - brown

1 2 3 4 5 6 7 8

RS485 (half-duplex): Tie A_2 with Y_2 and B_2 with Z_2 together

CONNECTING ANALOG INPUT CONTROL

The Echo Bridge is equipped with five analog 0-10 input ports designated by ( ) (five ports on the left side). These ports allow control of the Scynce LED light fixtures from external control systems that do not offer digital control by providing direct control over the 5 distinct spectrum channels.

CONNECTING ANALOG OUTPUTS

The Echo Bridge is equipped with four analog 0-10 output ports, also designated by ( ) (four ports on the right side). These ports allow control of any equipment that utilizes 0-10V signaling. These outputs are controlled by providing input values between 0 and 255 to MODBUS registers 101 through 104 respectfully.

In the case where an Echo Bridge is connected to either an Echo Display or an Echo Mini, the analog outputs will be automatically assigned to lighting zones 21 through 24 respectfully.

CONNECTING POWER

Connect power to the Echo Bridge using the farthest left connector depicted by ( ). Use either the provided 24VDC Power Adapter or an equivalent source.

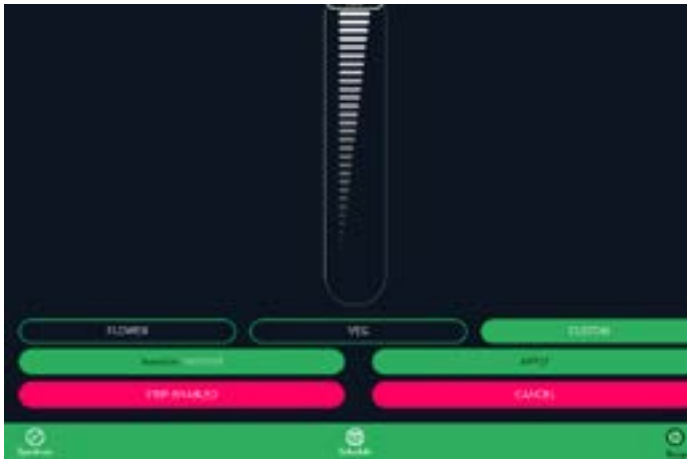
OPERATION

The Echo Bridge does not have a designated user interface, it is controlled by either Scynce LED Echo Display / Echo Mini or by a third-party facility control system.

CONNECTED TO ECHO BRIDGE FROM ECHO DIPLAY OR ECHO MINI

When the Echo Bridge is connected to the Echo Display or the Echo Mini, it will show the four analog 0-10 outputs as single sliders in the UI. The four ports will be mapped to lighting zones 21 to 24 respectfully.

Moving the slider up all the way will result in a 10VDC signal, moving the slider all the way down will result in a 0V signal.



- App Control: Mesh group settings and enable/disable functions can also be conveniently managed using the Scynce Theia Stratus app or the Echo Bridge Command line interface.

CONNECTED TO THIRD-PARTY CONTROLLER

Scynce LED light fixtures can be controlled through the Echo Bridge by any third-party control system in one of two ways, either using MODBUS interface or by analog 0-10 inputs. Either method will give the user full control of the Scynce LED required 5 channels (Master Intensity, White Color Shift, White Intensity, Red Color Shift, Red Intensity). The Echo Bridge sets all light fixtures attached in one zone. To achieve multiple zones, more than one Echo Bridge is required.

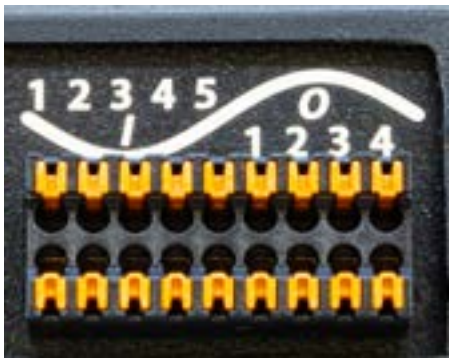
When interfacing using MODBUS, the following registration requirements must be set up to allow full control of the Scynce LED light fixtures. This will allow control of light fixtures connected using the COM cables and fixtures connected on the Thread mesh network. The serial communication port operates at 19200 baud with 8N1 parameters when in MODBUS mode.

- Register 1: Master Intensity (0 to 255)
- Register 2: White Color Shift (0 to 255)
- Register 3: White Intensity (0 to 255)
- Register 4: Red Color Shift (0 to 255)
- Register 5: Red Intensity (0 to 255)

If controlling Scynce LED light fixtures that are older than Generation III fixtures, the Thread mesh must be enabled and set up.

- Enable/Disable: The THREAD Mesh radio can be enabled or disabled via MODBUS register 202. The Thread mesh can also be enabled and disabled by momentary pressing the action button, designated by ( ) on the Echo Bridge.
- Group Setting: The MESH group can be configured by writing a value between 1 and 16 to register 203.

The Echo Bridge includes 4 analog 0-10 volt outputs, suitable for controlling any equipment that utilizes 0-10V signaling. These outputs are controlled by writing values between 0 and 255 to MODBUS registers 101 to 104. Entering a 0 value will output 0V, entering a 255 value will output 10VDC.



Bottom Row is ground

Analog Inputs (Left Side):
1. Master Intensity
2. White Color Shift
3. White Intensity
4. Red Color Shift
5. Red Intensity

Analog Outputs (Right Side):
1. Out 1
2. Out 2
3. Out 4
4. Out 5

CONNECTED TO AGROWTEK GCX CONTROL SYSTEM

The Echo Bridge is fully integrated into the AGROWTEK control system with full control over the same recipes and scheduling available on Scynce LED controllers. To enter AGROWTEK mode, connect the bridge to the AGROWTEK controller with a standard Ethernet cable and ensure the AGROWTEK controller is powered on and supplying 24V to the bridge. The serial communication port operates at 115200 baud with 8N1 parameters for AGROWTEK mode.

FIRMWARE UPGRADES

To upgrade the firmware on the Echo Bridge, plug the USB port ( ) into a computer. Power cycle the Echo Bride by unplugging the AC power adapter for 5 seconds and then re-attaching power. The two LED indicators (&) on the Echo Display will flash at a rapid rate for five seconds. Press the Mode Select button ( ) within the first five seconds after power on, while the LED indicators are flashing. This will put the Echo Bridge into UF2 mode. A new folder will appear on the computer's file manager. Drag the provided firmware file from Scynce LED technical support into this new folder. The folder will close, and the Echo Bridge will update and reboot. UF2 is supported by Windows 10/11, MAC, and most Linux distributions.

To upgrade Scynce LED light fixture firmware, process as follows depending on how the fixtures are attached:

Control to Scynce LED Generation 3 and newer light fixtures is accomplished using COM cables. These lights are connected to one another by fixture-to-fixture COM cables.

- Use the CLI to update the lights.
- Use the image list to find the firmware version of the firmware image for the lights in the Echo Bridge. Then run the discover command. This will list all of the lights in the network and the firmware version of each light. If the firmware image version is newer than the firmware version in the lights running, then running DFU command will update the lights with older firmware.

Control to Scynce LED Generation 2 and older light fixtures is accomplished using Thread Mesh radio network. These light fixtures can be updated using the Thread Mesh radio:

- Download and install the Scynce Theia Stratus app from the Android or Apple app store.
- Open the app and select the communication bridge. The app will connect to the communication bridge via Bluetooth.
- Once connected, select the "hamburger" icon (three horizontal lines) in the upper left corner to display the sidebar menu, and choose "Check for firmware updates."
- If an update is available, the app will download and install it on the light fixtures.

ATTENTION

All lights in the network will turn off during the update process.
The DFU process will take over 10 minutes for each light .

FACTORY RESET

To perform a factory reset of the Echo Bridge, press and hold the Mode Switch button ( ) for approximately 5 seconds. The LED indicators (&) will flash in an alternating pattern for several seconds, and then turn solid, indicating a successful reset. When the button is released, the Echo Bridge will reboot and use the factory default settings.

INDICATORS AND CONTROLS

The Echo Bridge is equipped with two status LED indicators (&) and a Mode Switch button ( ) located on the interface panel. The Mode Switch button will activate three separate modes in the Echo Display.

LED Indicators:

- MODBUS / AGROWTEK Indicator ( ): During normal operation this indicator will flash whenever there is communication activity on the MODBUS/AGROWTEK port ( ).
- Scynce LED Activity Indicator ( ): During normal operation this indicator will flash whenever there is activity on the Scynce LED communication port ( ).

Mode Switch Button:

Mode 1, Enable and Disable the Thread Mesh Radio: By momentarily pressing the Mode Switch Button (), the Echo Bridge on-board Thread Mesh radio will be activated or deactivated. The LED indicators (&) will momentarily light to indicate the new mode has been activated.

- If the Scynce LED activity indicator ( ) is on and the MODBUS/AGROWTEK indicator ( ) is off, the Thread Mesh radio is now enabled.
- If the Scynce LED activity indicator ( ) is off and the MODBUS/AGROWTEK indicator ( ) is on, the Thread Mesh radio is now disabled.

Mode 2, Factory Reset: By pressing and holding the Mode Switch Button (), the Echo Bridge setting can be reset to the factory configurations. This process is covered under Factory Reset.

Mode 3, Boot-load Mode: The Mode Switch button () is also used to update the Echo Bridge firmware. This is covered in detail io the Firmware Upgrades section.

USB COMMAND LINE INTERFACE (CLI)

The Echo Bridge has a command line interface that can be used to set and monitor the status of several parameters in the unit. The command line interface can be accessed by connecting a USB C port to a computer. Open a terminal communication program such as putty or minicom or the like to interface with the Echo Display.

Select the communication port of the Echo Bridge. The Echo Bridge will be listed as 2 different communication ports. The lower number one is for diagnostics and future applications. Choose the high number port. Then set the communication settings to 115200 baud, 8 data bits and no parity, then open connection. This should open a text window on the computer.

Select the window and type “help”. This will display a list of available commands. If the characters typed are not displayed on the screen, Check the communication settings or try a different communication port.

Mesh enable:
This enables the thread mesh radio if you are using generation 1 or 2 lights.

Mesh disable:
If you are not using generation 1 or 2 lights you should disable the mesh.

Mesh state:
Displays the mesh enabled state.

Mesh group:
This sets the group with valid values between 1 and 16. Or displays the current group if no parameter is provided.

MODBUS address:
This sets the MODBUS address with valid values between 0 and 247. Or displays the current address if no parameter is provided.

Light Test:
Sends a light on command to the light fixtures. The lights will stay on for the light timeout period of 2 to 3 minutes.

Discover:
Will start a discovery process to make a list of the lights on the wired connection. The list can then be used to run the DFU command.

Clear:
Clears the discovered lights list.

Image list:
Displays the information about the light firmware images.

DFU
Updates the lights on the hardwire network.

Version:
Displays the current version of firmware the Echo Bridge is running.

Production Test:
This is for production testing at the factory. Do not use !!

Reboot:
Software reboot of the Echo Bridge.

Serial:
Displays the serial number of the Echo Bridge.

MAINTENANCE

WARNING

- High Voltage - Switch off the main voltage before commencing maintenance work.
- Do not open or disassemble the product. Opening the product can prove hazardous and will void the warranty.
- Caution - Risk of shock

ATTENTION

In the event that the product is defective or damaged, contact Scynce Customer Support (www.scynceled.com) for assistance.

CLEANING

- Wipe down the outside of the Echo Bridge using a wet cloth. If the internal circuitry can be damaged is it gets wet.

TROUBLESHOOTING

WARNING

Do not open or disassemble the product. Opening the product can prove hazardous and will void the warranty.

ATTENTION

Never switch on a defective or damaged product. In the event the product is defective or damaged, contact Scynce Customer Support (www.scynceled.com) for assistance.

WHAT CAN YOU SEE?	WHAT SHOULD I DO?
Gen 3 Lights Not found when Hardwired to the Echo Display.	• Make sure the lights are powered on and wired to the Echo Display per the Light setup instructions. • If 0 lights are found. Check that the communication cable is connected to one of the 4 communication ports and not connected to the MODBUS port. The connectors are the same. • Check that the termination plug is installed on the last light in the string. • If some lights are found but not the full count expected. Check the cabling to make sure the lights are connected in a daisy chain and all lights are connected. • Turn on the lights you do find. This will indicate where the cable is disconnected or power is missing.

ECHO BRIDGE DIMENSIONS (IN MM)