SDI Sensor Hub

for Teros 12 and Terralink Sensors

Specifications

Input Power	5 W @ 12-24Vdc ⎓ Class II / Limited Energy Power Supply
Compatible Sensors	Teros 12, Terralink
Protocols	SDI-12
Number of Sensors	8
Sensor Addressing	Automatic
Controller Interface	RJ-45 GrowNET™, MODBUS
Sensor Connection	3.5mm TRS

Modbus

Contents

KEEP THESE INSTRUCTIONS

REV 11/24

This product is intended for commercial use only.

Introduction

HXT sensor hubs connect Teros 12 moisture sensors manufacturerd by Aroya to Agrowtek GrowControl™ GCX control systems or to industrial PLC systems via MODBUS RTU.

The HXT hub recieves power from the RJ-45 connection to operate the sensors and hub. Sensors are automatically detected when they are connected and no special addressing is required on the moisture sensors.

Any Teros 12 or Terralink sensor can be connected to the HXT sensor hub. Adapters for various ends available.

Warnings & Notices

This is a precision electronic instrument which requires proper installation and care to maintain reliability.

⚠ READ & UNDERSTAND ENTIRE MANUAL PRIOR TO INSTALLATION OR OPERATION.
Failure to read, understand and comply with warnings and installation requirements may result in property damage, personal injury or death.

⚠ NOTICE
GrowNET™ ports use standard RJ-45 connections but are NOT compatible the Ethernet network equipment.
Do not connect GrowNET™ ports to Ethernet ports or network switch gear.

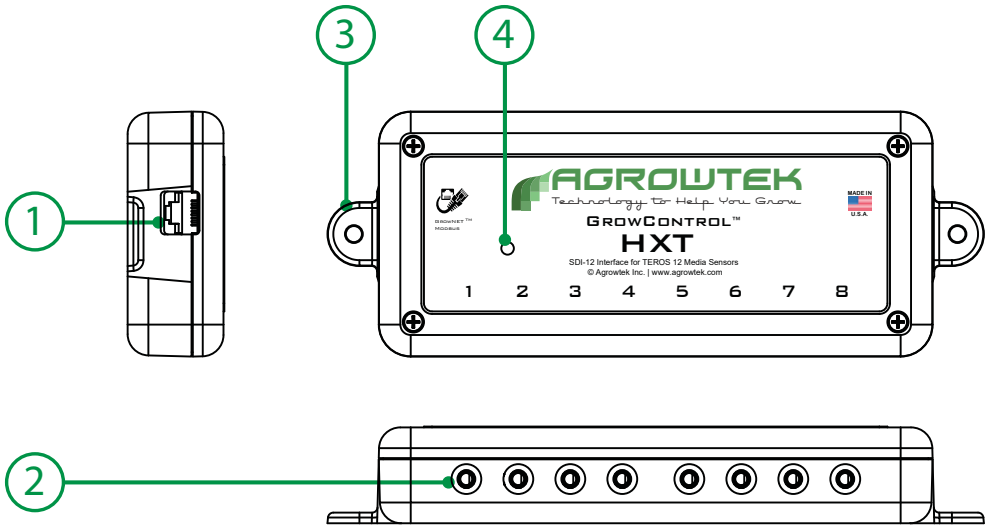
⚠ DIELECTRIC GREASE
Dielectric grease is recommended on RJ-45 GrowNET™ connections when used in humid environments. Place a small amount of grease onto the RJ-45 plug contacts before inserting into the GrowNET™ port.
Non-conductive grease is designed to prevent corrosion from moisture in electrical connectors.

- Loctite LB 8423
- Dupont Molykote 4/5
- CRC 05105 Di-Electric Grease
- Super Lube 91016 Silicone Dielectric Grease
- Other Silicone or Lithium based insulating grease

⚠ INDOOR LOCATIONS ONLY
This product is designed for indoor mounting only and must be protected from weather and direct sunlight.

⚠ WARNING
This product may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

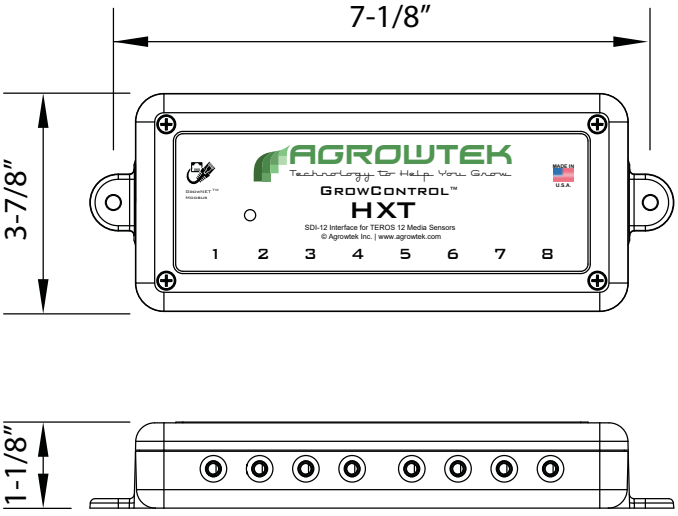
External Features



1. GrowNET™ Port	RJ-45 connector port for power & data.
2. TRS Port	3.5mm TRS (stereo) connector port for Teros 12 SDI sensors.
3. Mounting Flange	For wall mounting.
4. Power LED	Red LED indicates the HXT hub has power from the GrowNET™ connection.

Dimensions

Mounting holes: dia. 0.201″



Installation Instructions

Recommended installation location is above plants and benches to avoid water damage to the hub connectors and circuit board. Locate the hub centrally to where sensors will be installed. Consider rolling bench locations and sensor cable extensions (available from Agrowtek) if necessary.

- Do not install below misters, foggers, humidifiers and other water equipment.
- Avoid locations with condensation.
- Prevent condensation from entering the housing; locate the hub above cable runs.

Connections

Teros 12 sensors can be supplied with either a TRS (3.5mm stereo) connection from Agrowtek or a M8 (circular 4-pin) connection from Aroya.

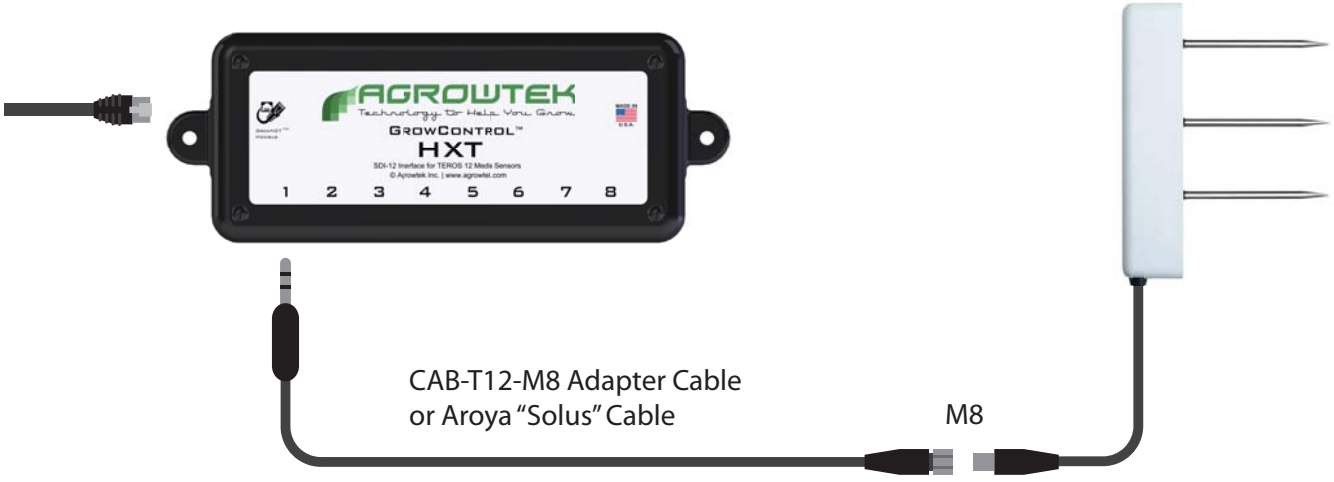
If the Teros 12 sensors have M8 connectors, an adapter cable is required to convert from the M8 connection to TRS.

TRS Connection

TRS type connectors simply plug into the TRS jacks on the HXT hub. If longer leads are required, simply connect in TRS extension cables for the length required (available from Agrowtek.)

M8 Connection

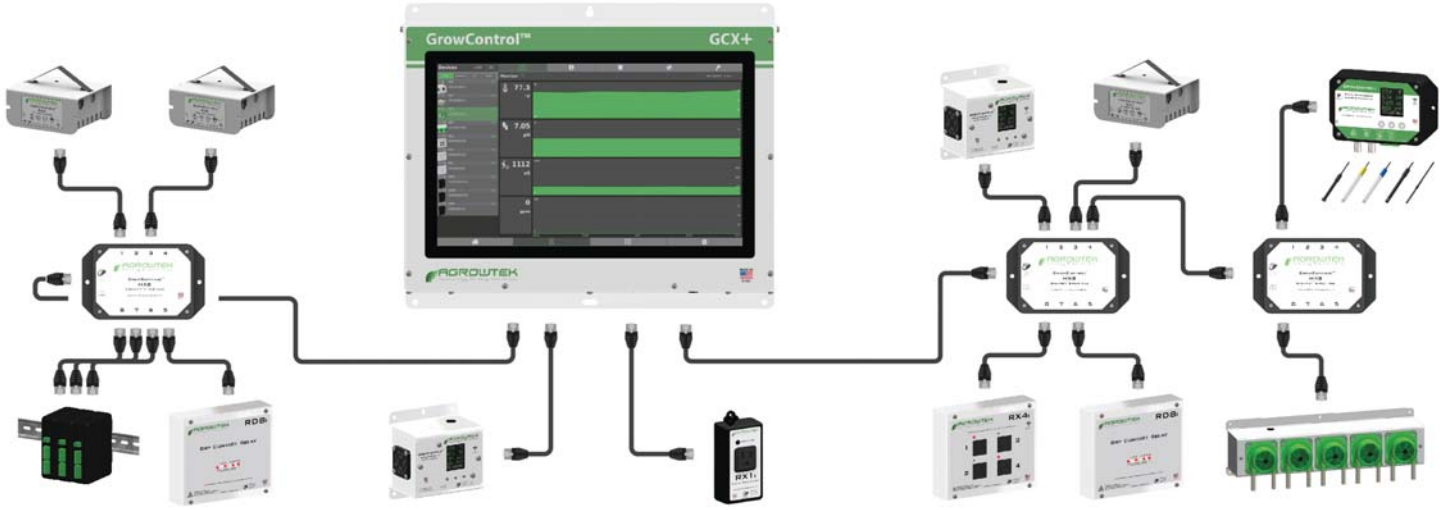
M8 connections are round with four pins. To connect M8 type sensors to the HXT hub, an adapter cable is required. Agrowtek manufactures the CAB-T12-M8 cable or the Aroya Solus adapter cable can also be used.



Connection to GrowControl™ GCX

All GrowNET™ devices are connected using standard CAT5 or CAT6 Ethernet cable with RJ-45 connections.

Devices can be connected directly to the GrowNET™ ports on the bottom of the controller, or through HX8 GrowNET™ hubs. It is typical to simplify cabling by locating hubs centrally in hall ways and rooms allowing single runs from an 8-port device hub back to a central hub or back to the controller.



Refer to the GCX controller manual for details on adding the device to the system.

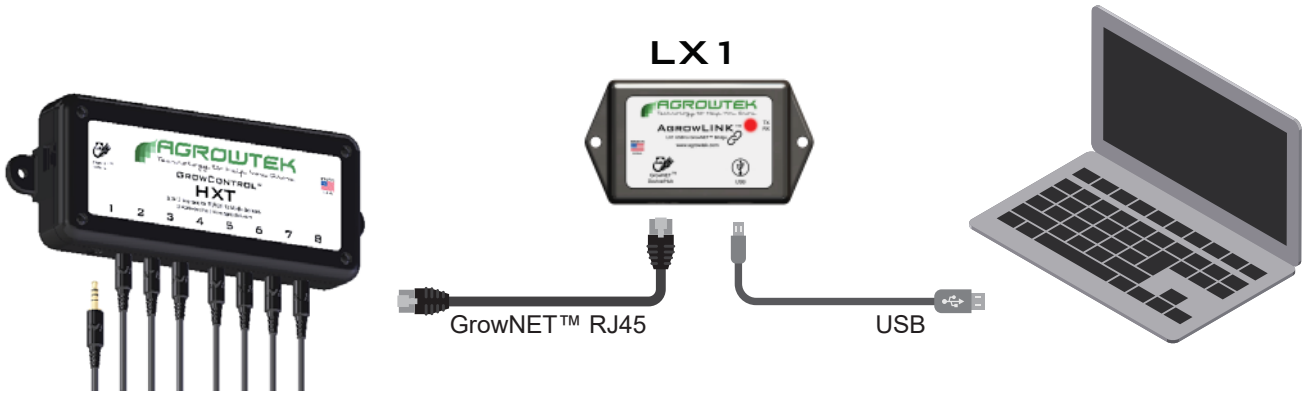
GrowNET™ Hubs

HX8 GrowNET ™ hubs expand a single port into eight more ports. Hubs can be daisy-chained to form a network of up to 100 devices per GrowNET™ bus. Individually buffered port transcievers provide excellent signal integrity and extended communication strength and range.

Hubs provide up to 1A of power for operating sensors and most relays directly over the CAT5 cable. A DC jack on the hub provides 24Vdc power to the ports from the included wall power supply. A terminal block power option is also available.

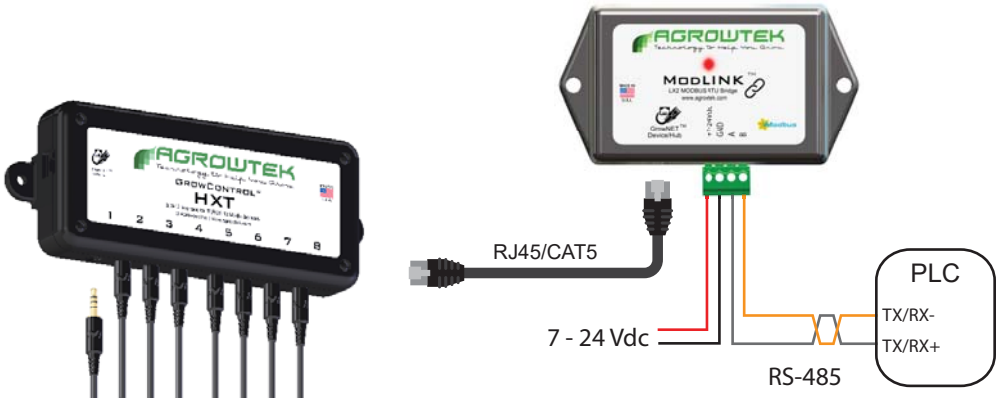
Connection to USB AgrowLINK

Agrowtek's HXT sensor hub may be connected to the LX1 USB AgrowLINK for firmware updates, communication protocol configuration, addressing and manual operation. Standard drivers automatically install in Windows for the LX1 USB AgrowLINK.



Connection to MODBUS RTU

Use the LX2 ModLINK to connect MODBUS devices to the GrowNET™ port.



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

HX8 GrowNET ™ hubs are compatible with LX2 ModLINK™ and MODBUS. Connect multiple devices to a single LX2 and benefit from the superior buffered communication of the HX8 hub.

Supported Commands

0x03 Read Multiple Registers
0x06 Write Single Register

A request to use a function that is not available will return an illegal function error (0x01).

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.

MODBUS Holding Registers

A request to read or write a register that is not available will return an illegal address error (0x02).

Parameter	Description	Range	Type	Access	Address
Address	Device Slave Address	1 - 247	8 bit	R/W	40001
Serial#	Device Serial Number	ASCII	8 char	R	40004
DOM	Date of Manufacture	ASCII	8 char	R	40008
HW Version	Hardware Version	ASCII	8 char	R	40012
FW Version	Firmware Version	ASCII	8 char	R	40016
VWC RAW Count, Integer		---	16 bit, unsigned	R	40101 - 40108
Electrical Conductivity		0 - 20,000 uS	16 bit, unsigned	R	40109 - 40116
Temperature		-40° - 60°C x10	16 bit, unsigned	R	40117 - 40124

Technical Information

This device uses 5Vdc to operate SDI sensors with TRS cable connections.

Compatible Sensors:
- Aroya Teros 12
- Growlink Terralink

Maintenance & Service

Exterior Cleaning
Exterior may be wiped with a damp cloth wish mild dish detergent, then wiped dry. Disconnect power before cleaning the enclosure to prevent damage to equipment.

Storage and Disposal

Storage
Store equipment in a clean, dry environment with ambient temperature between10-50°C.

Disposal
This indsutrial control equipment may contain traces of lead or other metals and environmental contaminants and must not be discarded as unsorted municipal waste, but must be collected separately for the purpose of treatment, recovery and environmentally sound disposal. Wash hands after handling internal components or PCB's.

Warranty

Agrowtek Inc. warrants that all manufactured products are, to the best of its knowledge, free of defective material and workmanship and warrants this product for one (1) year from the date of purchase. This warranty is extended to the original purchaser from the date of receipt. This warranty does not cover damages from abuse, accidental breakage, or units that have been modified, altered, or installed in a manner other than that which is specified in the installation instructions. This warranty is applicable only to products that have been properly stored, installed, and maintained per the installation and operation manual and used for their intended purpose. This limited warranty does not cover products installed in or operated under unusual conditions or environments including, but not limited to, excessive humidity or extreme temperature conditions outside of the specified limits. Agrowtek Inc. must be contacted prior to return shipment for a return authorization. No returns will be accepted without a return authorization. Returns not purchased directly from Agrowtek Inc. must include proof of purchase date otherwise purchase date is considered date of manufacture. The products which have been claimed and comply with the aforementioned restrictions shall be replaced or repaired at the sole discretion of the Agrowtek Inc. at no charge. This warranty is provided in lieu of all other warranty provisions, express or implied. It is including but not limited to any implied warranty of fitness or merchantability for a particular purpose and is limited to the Warranty Period. In no event or circumstance shall Agrowtek Inc. be liable to any third party or the claimant for damages in excess of the price paid for the product, or for any loss of use, inconvenience, commercial loss, loss of time, lost profits or savings or any other incidental, consequential or special damages arising out of the use of, or inability to use, the product. This disclaimer is made to the fullest extent allowed by law or regulation and is specifically made to specify that the liability of Agrowtek Inc. under this limited warranty, or any claimed extension thereof, shall be to replace or repair the Product or refund the price paid for the Product.