

LTX-100 Gateway

925-0490 Rev A

Operating Instructions

Please read carefully

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INTRODUCTION



Simply put, the LTX-100 moves your sensor data through an Ethernet or cellular connection to a software platform like BinCloud or Binventory 2.0 allowing multiple people on your team to see material distance, weight, percentage full, and more. It can also be used to send data to hardware such as a PLC.

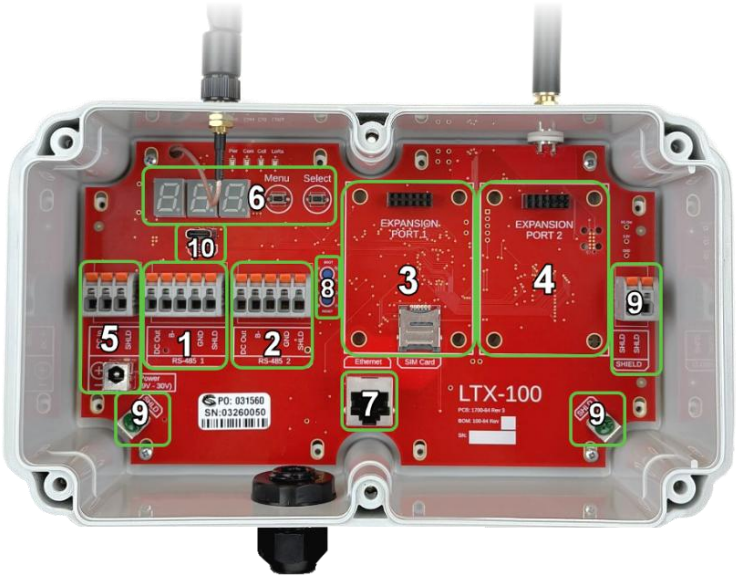
Technically, LTX-100 is an integrated, multi-protocol, purpose-built design to request and collect sensor data for viewing in BinCloud. LTX-100 is designed to route data through conventional serial protocols, perform analog to digital conversion, interface to WAN over Ethernet and/or cellular 4G modem, and intercommunicate over proprietary Long Range (LoRa communication).

LTX-100 SPECIFICATIONS

LTX GENERAL SPECIFICATIONS	
Power input	12-30 VDC; USB Power 5VDC (minimum function)
Temperature range & connections	-40°C to 70°C. Connections IP64 or above. Enclosure NEMA 4X (without holes)
Weight	1 lb. 10 oz.
Dimensions	9.2x5.3x2.6 inches
Interfaces	RS-485, USB-C, Ethernet
Power output	12-30 VDC (Dependent on Power Supply) 6-15W total device limit (Dependent on Power Supply) Output on RS1 and RS2 is current limited to 500 mA
LoRa	Encrypted LoRa communication allows LTXs to be used as a bridge for a secure local network
Scheduling	Schedules can be controlled on a sensor-by-sensor basis. Readings can be set to occur on regular intervals, or on specific days/times. Manual readings can also be done through BinCloud.
LTX HART EXPANSION CARD	
Supported devices	3DLS, NCR, CNCR, GWR
Power output	Current limited to 75 mA
Device limit	1-10 per expansion card with 24V wall wart. Up to 15 per card with a 30V power supply
LTX 4-20 mA EXPANSION CARD	
Supported devices	ToughSonic, 3DLS, NCR, CNCR, GWR
Power output	12-30 VDC; dependent on power supply
Device limit	4 per expansion card
LTX RS-485 TERMINALS	
Supported devices	SmartBob, ToughSonic, C-50, 3DLS, NCR, CNCR, GWR
Power output	12-30 VDC; dependent on power supply; Max current 500mA
Device limit	32 per RS terminal

LTX PC Board

1. RS-485 1
2. RS-485 2
3. Expansion Port 1
4. Expansion Port 2
5. Power Supply Entry
6. User Interface
7. Ethernet Port
8. Boot/Reset
9. Shield Ports (*Additional Shield terminals on (1) (2) and (5)*)
10. USB-C Port



INSTALLATION

Define your site

Your LTX delivers valuable data to software (BinCloud or Binventory 2.0) that must be set up with your particular operation in mind. Fill out the vessel setup form and BinMaster will customize a software home to display your data. Vessel Setup Form Link. QR code to the right.

LTX FIREWALL PERMISSIONS

It is critical to make sure the information pipeline for the LTX is open and accessible at your site. Below is a guide to accomplish this. It is highly recommended

Please instruct local IT to open these ports so your LTX can deliver readings:

Device IP -ethernet connection- BinMaster IP - TCP port 502 (for local connections)

Device IP -ethernet connection- BinMaster IP - TCP port 8883 (for outgoing connections)

Run this test command in PowerShell on a PC on the same network as the LTX:

Test-NetConnection d03507513nj8exstcdtyz-ats.iot.us-west-2.amazonaws.com -Port 8883

Should get a result like this if the port is opened correctly

```
ComputerName     : a18s7scjb3wffg-ats.iot.us-west-2.amazonaws.com
RemoteAddress    : 54.218.143.247
RemotePort       : 8883
InterfaceAlias   : Ethernet
SourceAddress    : 192.168.0.129
TcpTestSucceeded : True
```

Location

BinMaster sales and technical support are great resources to help you with choosing the proper LTX location. Every situation is different, but some key factors include signal strength. If your system is communicating via LoRa or cellular, consider your surroundings. LoRa signals require line-of-sight to other LoRa antennas. LoRa signals cannot “see” around corners or rooftops. It is recommended that LTX’s proximity to metal be limited, as it can reduce signal strength. LoRa signals work best when antennas aren’t blocked by structures or trees or ladders. If location presents a challenge, BinMaster sales may be able to recommend solutions. A menu item found inside your LTX three-digit display includes signal strength and may be helpful with final LTX placement (see pg. 14). The LoRa communication range for stock LTX is one mile with full line-of-sight. Cellular communication is also a consideration. Placement of the LTX should allow for good cellular coverage. If needed, consider a cellular extension to pull an antenna away from obstructions and interference.



Wiring

The LTX is typically powered by either a fixed 24v plug-in power supply or it can be powered by a variable 30v max power supply. Your sales rep will help you to make that determination in advance. Ethernet-enabled LTX requires an Ethernet connection. Consult with your IT department early about location and any security or firewall considerations so your LTX can communicate properly (see previous section for more info on firewall permissions). Split cable glands are provided to insert an Ethernet cable to ensure a seal, as shown below.



Separate both halves of the cable gland. Use a tool to pop up the tabs on both sides and pull them apart.



Insert the inside piece into the half without arms. **Make sure the flat side is facing out as shown above.**



Place the Ethernet cable into the middle piece so the side going into the LTX is coming out the end shown above. Push both sides together until they click.



Place the cable gland in one of the pre-drilled holes on the LTX housing. Put the washer on and screw on the nut tightly to create a seal.

Mounting

Use proper screws at mounting holes to attach the unit to the wall. Note: Avoid drilling into the case to avoid water or debris from getting in. This would also affect your warranty. A qualified electrician may drill a hole in the closure so that the LTX can mate with a standard conduit system.









Cable gland(s)

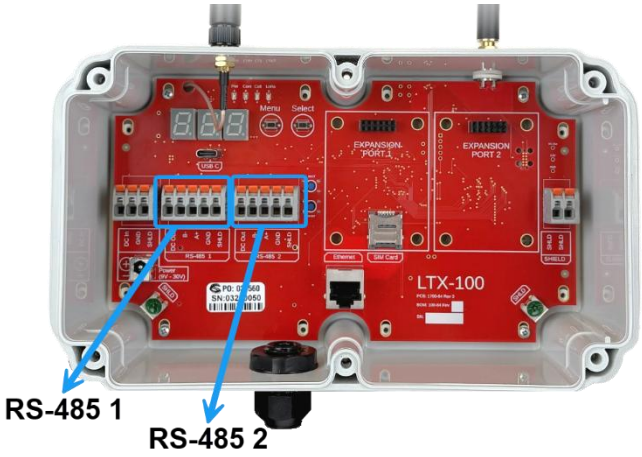
While your cable glands help to organize and reduce water infiltration, they will not reduce wire strain. Securing wires beyond the gland is recommended. Assemble split cable gland, left around ethernet cable and insert into opening at the bottom of the LTX. Make sure to properly tighten the nut to make a tight seal.

WIRING

Your LTX-100 Gateway breaks new ground for sensor communication. Its innovative design allows for multiple protocols (analog, HART, Modbus) with expansion cards, LoRa, cellular, and Ethernet capabilities. The key to a successful LTX deployment is a careful and deliberate wiring strategy. BinMaster will help you determine where to land wires. You are encouraged to use wire tags, markers, or cable labels to ensure the correct sensor lands in the correct LTX terminal.

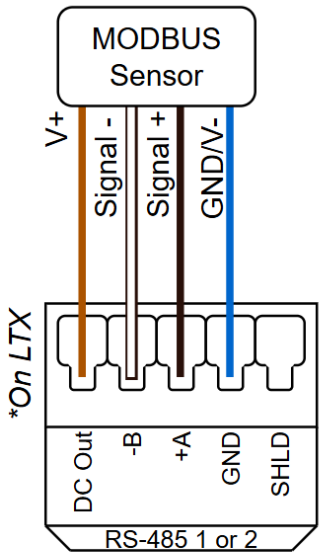
Modbus

Modbus protocol allows a reading (sensor data) to be delivered with a unique address. Typically, you will connect your Modbus sensor(s) line to RS-485 1 and RS-485 2 (blue arrows). Power wire goes to DC Out and ground wire goes to GND. Positive (+) data our wire goes to A and negative (-) data out wire goes to B. Typically Modbus sensors are daisy-chained together before landing in the LTX Port.

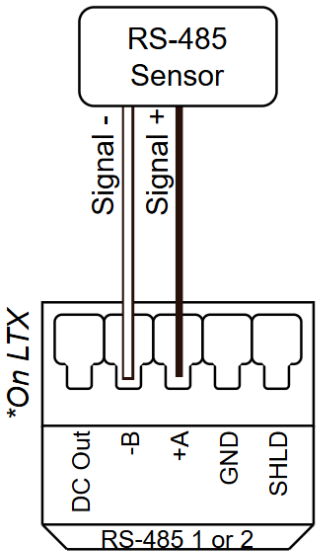


Note *Each sensor must be a unique address.*

Note *Both Modbus specific and general RS-485 devices can work and are shown interchangeably in the image below.*



Wiring for a standard MODBUS Sensor

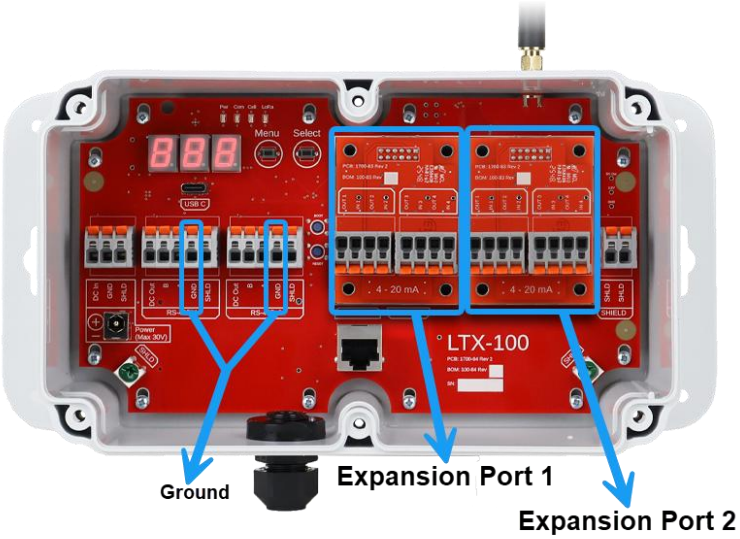


Wiring for an independently powered RS-485 Sensor

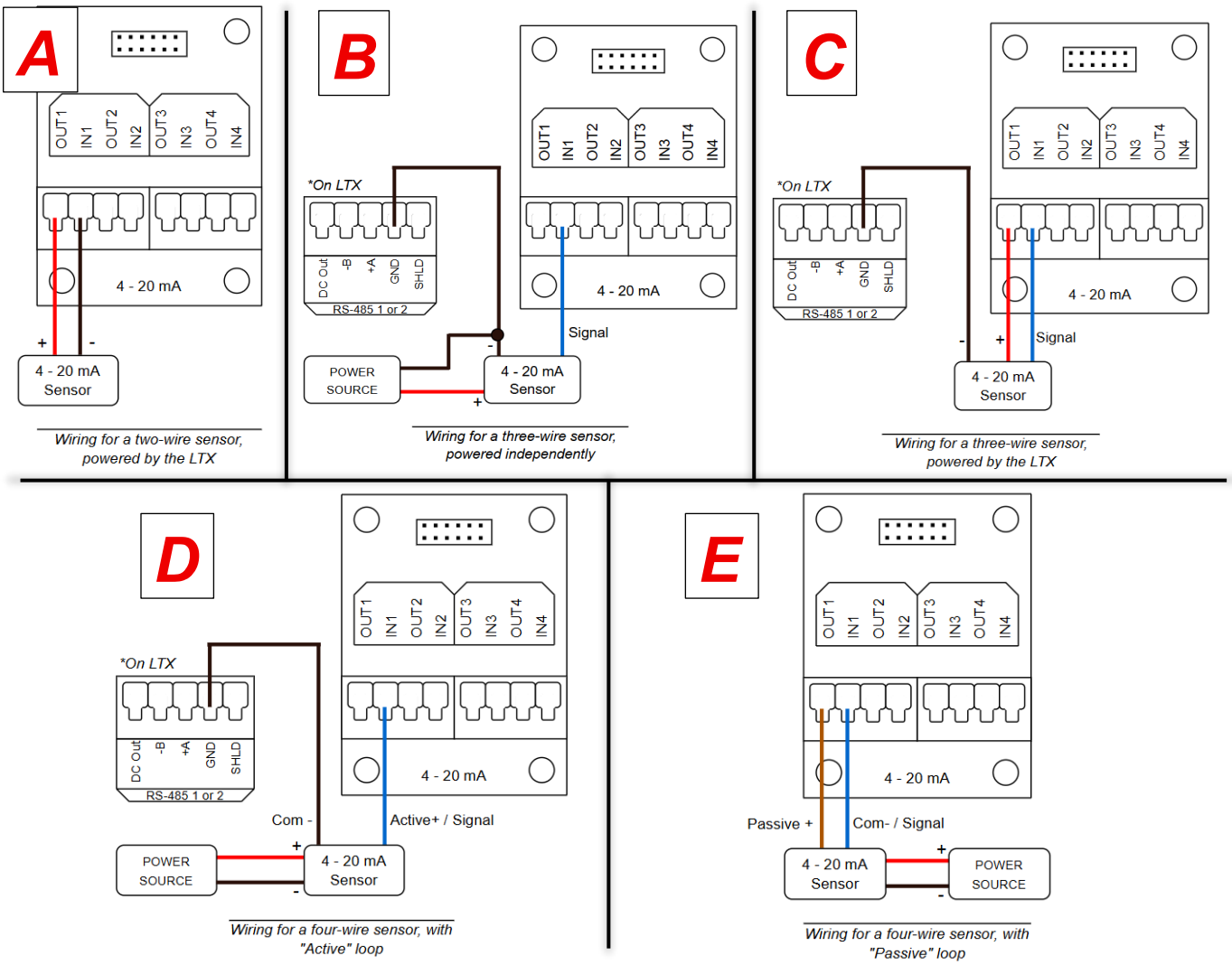
4-20 mA, Analog In

This section is for 4-20mA sensors sending data into the LTX.

4-20 mA, analog protocol requires each sensor's wire to land into your LTX (no daisy chain). 4-20 mA analog wires will land in expansion port 1 and/or 2 (blue arrow). Starting from left to right facing your LTX, connect the positive (+) sensor wire to terminal "OUT 1" and the negative (-) sensor wire to terminal "IN 1" (Figure A). Repeat this for each sensor working left to right on the expansion cards (blue arrows). Up to four sensors can be placed in each expansion card for a total of eight 4-20 mA sensors for a single LTX.



***Note**: If your 4-20 mA sensor has more than two wires, then one of the alternative wiring methods will need to be used (Figures B-E below) to match your scenario.*

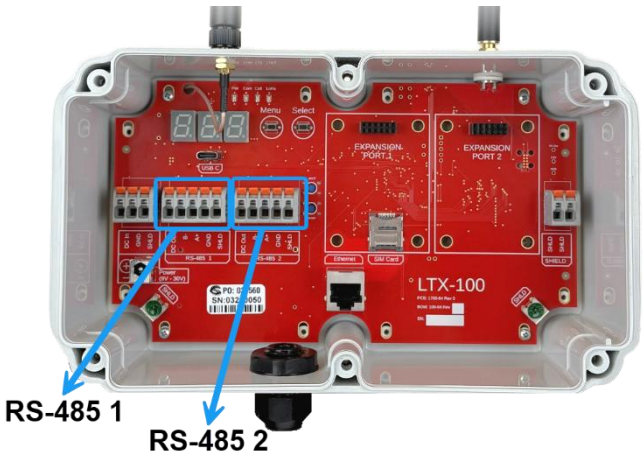


4-20mA, Analog Out

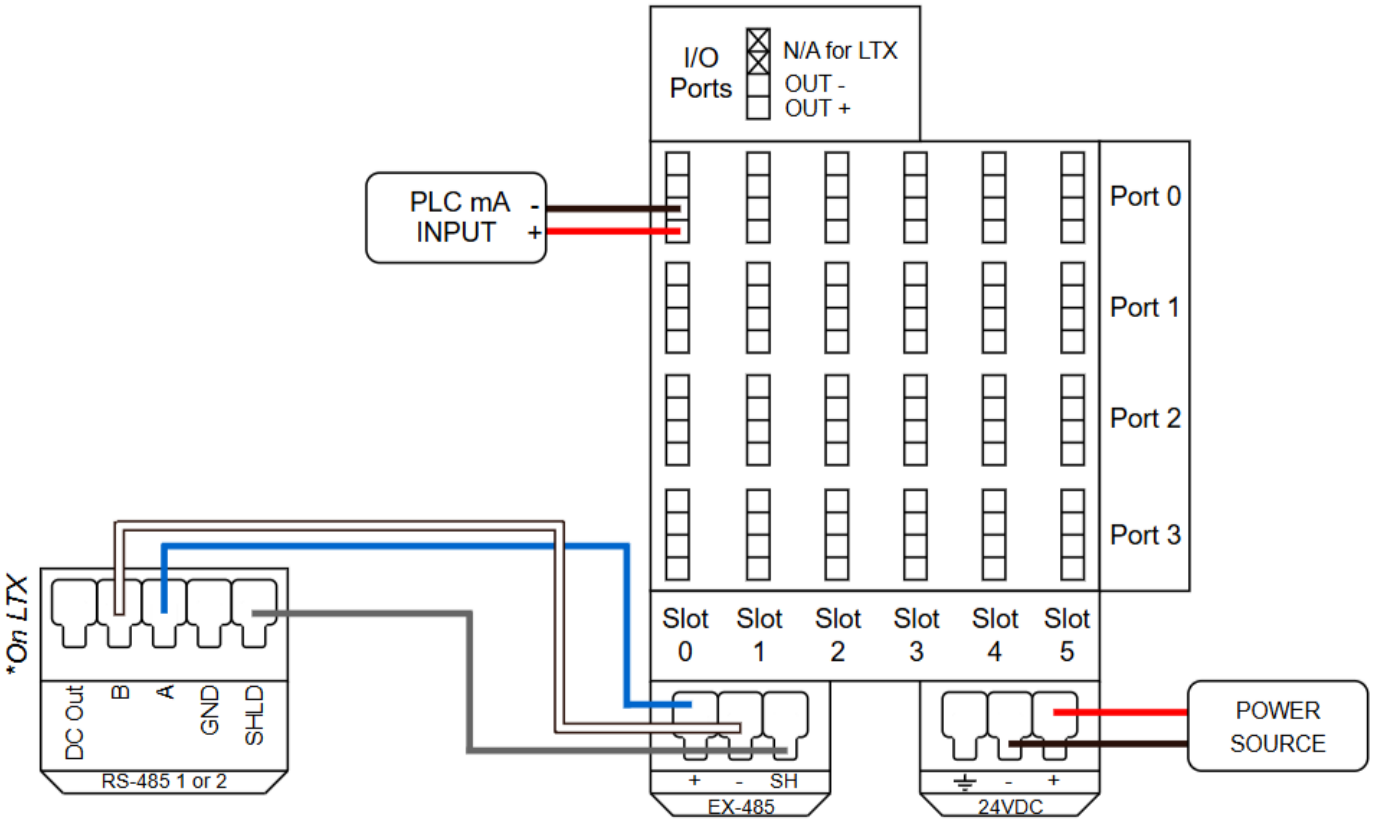
This section is for outputting 4-20mA signals from the LTX and C-50 Analog Expansion Console.

The LTX-100, when used with BinMaster's C-50 Analog Expansion Console, can take in any sensor data and output it as a scaled 4-20mA, analog signal. This allows up to 24 outputs per C-50 that can each be tied to a sensor.

To wire the LTX with the C-50, connect one of the RS-485 ports (Typically RS-485 1 unless it is reserved for another device) to EX-485 on the C-50. The C-50 requires a 24V power supply. Each card on the C-50 has four outputs, with space for five cards. There is space for four wires on each C-50 output port, but only the bottom two are used for 4-20mA analog outputs.



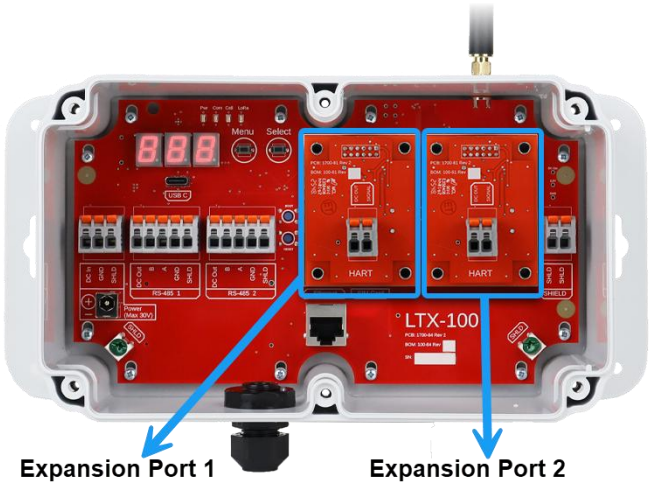
Note *Once wired, contact BinMaster technical support to configure the LTX so the sensors go to the desired output on the C50.*



Wiring a C-50 to an LTX and a PLC Analog Input Module

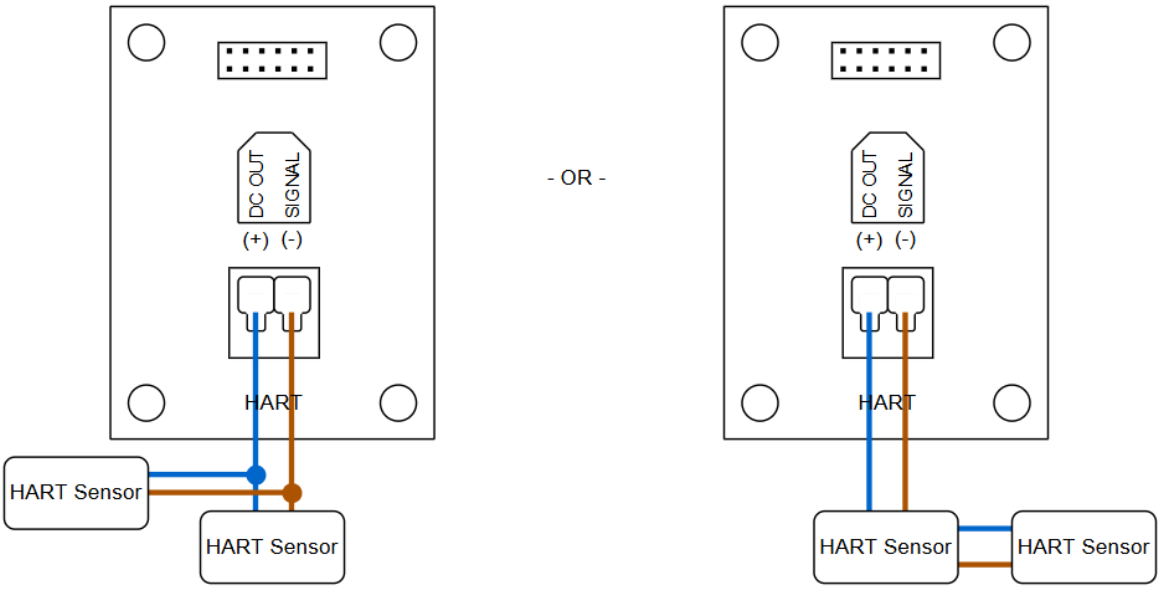
HART

HART protocol allows sensor data reading to be delivered with a unique address. Typically, you will connect your HART sensors into Expansion Card 1 and possibly Expansion Card 2 (blue arrows). The positive (+) sensor wire goes to terminal “DC OUT” and the negative (-) sensor wire to terminal “SIGNAL”. It’s recommended that no more than 10 HART sensors are daisy-chained to land into one HART expansion card when using a standard ”wall wort” power supply. If sensor quantity is above 10, a larger power supply, such as the BinMaster.



Note *High numbers of sensors can stress power requirements. For any configuration above 10 sensors on an expansion card (which is possible), consult with BinMaster Technical Support.*

Note *Each sensor must be a unique address.*



Wiring for a standard HART sensor chain

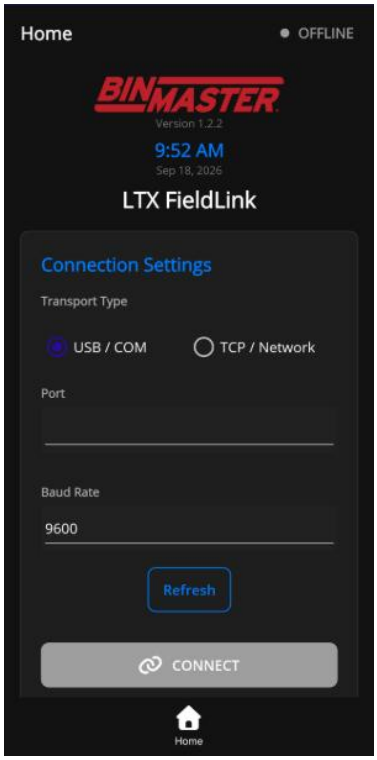
LTX FIELDLINK GUIDE

The LTX FieldLink is a new mobile and desktop app that can be used to connect, configure, and view LTXs, as well as devices connected to the LTX. To use this app, first download it from the Google Play Store, the Apple App Store, or the Microsoft App Store.

Microsoft App Store

Apple App Store

Google Play Store



Connecting to an LTX

FieldLink has two methods to connect to an LTX: USB/COM and TCP/Network.

USB/COM: *This feature is currently only available to Android (non-iOS) mobile devices.* Select the "USB/COM" transport type option in the app, connect mobile device to the LTX with a USB-C cable. Press Connect.

TCP/Network: To use this method of connection, both the LTX and the mobile device being used need to be connected to the same internet network. Open the app, select the "TCP/Network" transport type option, enter the IP Address of the LTX into the "IP address" field, and press connect. *See pg. 14 for help finding the LTX's IP address.*

Any time a connection with an LTX is established, the grey "Connect" button will turn into a green "Connected" button and the "offline" indicator in the top right corner of the screen will do the same. More options will also populate along the bottom of the screen

Devices Tab

The device tab is useful for checking the status of devices connected to the LTX by clicking Pull Sensors. The sensors will have a green border and show a current reading if communication was successful. The border will be red, and an error message will show at the bottom if there was a problem. There are a few options available with listed sensors.

Push: Attempt to push the current reading of the sensor to BinCloud.

Pull: Attempt to update the sensor stats with current values.

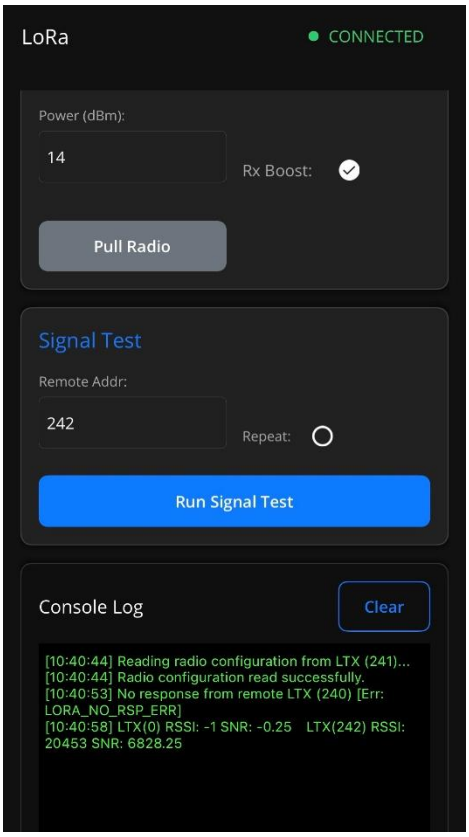
Edit: Allows a user to temporarily change sensor details such as address, scheduling, port, etc. *Contact BinMaster Technical Support if permanent changes need to be made.*



Successful Device Connection



Failed Device Connection



Console Log with Failed and Successful Ping

LoRa Tab

The LoRa tab can be used to read and configure the LoRa radio on an LTX as well as test the connection between other LoRa connected LTXs.

Radio Configuration: Pressing “Pull Radio” will fill this section with the current LoRa settings of the connected LTX. *Contact BinMaster Technical Support if these settings need to be changed.*

Signal Test: If another LTX is near, the connection between the two can be tested by entering the LTX address and running the test.

Console Log: Shows the results of the signal test as well as error information (See Table 1.1 on pg. 19.).

Diagnostics Tab

The Diagnostic Tab is useful for troubleshooting issues an LTX may have. By pressing the “Run All Tests” button, the connected LTX will undergo a quick test routine that checks the functionality of the hardware on the LTX.

Errors Tab

The errors tab displays an error log with the address of the LTX, a timestamp, and a short description of the error. Remote address allows the user to pull the error log of an LTX remotely connected to the base. *See Table 1.1 on pg. 19 for a list of errors.*

MENU OPTIONS

Another BinMaster innovation for the LTX-100 includes an on-device, push-button menu (blue arrow) to display critical information like IP address, MAC address, Modbus server, signal strength, LoRa channeling and firmware version. Press the “Menu” button to cycle through options in the order below





IP Address
An IP address is unique to the LTX when it is connected to a network. When selected, the IP address will cycle across the display. Press select to see the entire address.



MAC
Displays the MAC address, critical for device identification.



Srv
RS1 port can be accessed with a serial converter in some cases. OFF allows the RS1 port to communicate normally with sensors. *Note: Don’t adjust this menu unless you are with a BinMaster Technical Support person.*



LSS
Signal strength menu. Pressing select cycles between RSSI, SNR, or a bar graph to display signal strength. *Note: this displays value until the menu is exited.*



LCH
LoRa channels (specific radio bandwidth between 125-250 kHz) are displayed in this menu. Press select to cycle through the 8 channels. *Note: All LTXs must be on the same channel to communicate over LoRa.*



LPC
This the LoRa protocol and may be requested for some technical support calls.



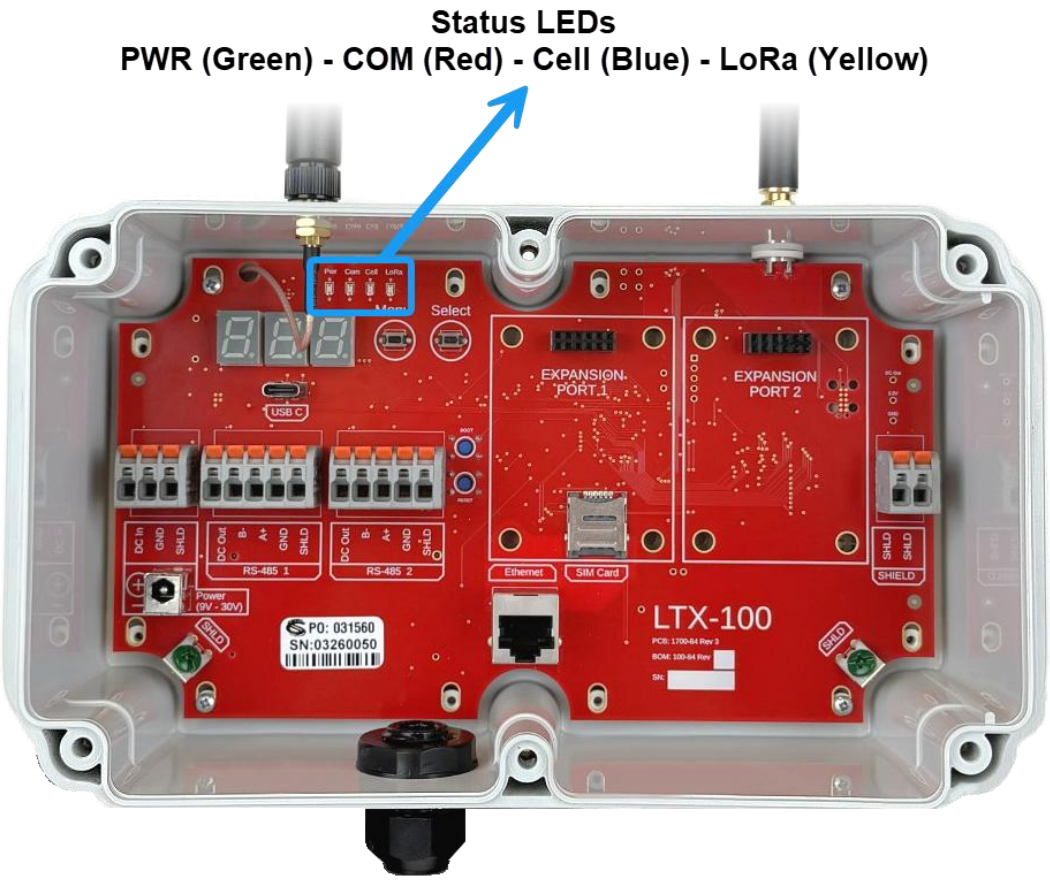
vEr
Displays current firmware version, handy for technical support calls.

Note: See error table 1.1 in the appendix.

LTX LED FUNCTION TABLE

When troubleshooting or setting up an LTX, it can be useful to understand what the LEDs in the top left of the LTX are showing. Below is a table describing what these LED indicators signify.

	Green (PWR)	Red (COM)	Blue (Cell)	Yellow (LoRa)
Off	No power being provided to the LTX OR if LoRa is steadily pulsing, in Ti bootloader mode	No communications from LTX Cfg (standard mode of operation)	No cell modem installed	No LoRa firmware loaded onto LTX
Solid	LTX is locked up, try power cycling	Firmware update in progress or bootloader started (Flickers a bit)	Does a solid/burst when connected to internet	LTX is locked up, try power cycling
Steady Pulse	Power provided, functioning normally	Write to LTX from LTX Cfg (can be difficult to see)	Cell modem connected, no internet connection found yet	LoRa available, functioning normally (standard mode of operation)
Rapid Pulse	LTX Bootloader started, sometimes will also see solid red light	Read from LTX to LTX Cfg (can be difficult to see)	Searching “aggressively” for an internet connection	N/A



ADDRESSING AND DEVICE LIST

The Device List is how the LTX keeps track of any connected devices (sensors, C-50s, and other LTXs).

As of LTX Firmware v0.50 the device list and internal device addressing has been overhauled. The Device List can be accessed through BinCloud, LTX FieldLink, or LTXCfg. To access the settings in LTX FieldLink, navigate to “Devices” -> “Pull Sensor” -> “Edit”. A short description of each field in the device list is provided below.

Note: Contact BinMaster technical support if permanent changes need to be made to the device list or to access LTXCfg.

Network Address:
A number between 1-240 given to a sensor/device by the user. This address should be unique to each sensor on the sensor list; this is the address referenced by the “Address” column in LTX View. *Addresses 240 – 254 are reserved for LTXs.*

LTX Address:
A number between 240-254 that should match the Modbus address of the LTX the sensor will be connected to. *The Modbus address of any LTX can be found under the “Gateway” tab in LTXCfg, or under “Gateway Information” on the Home page of FieldLink.*

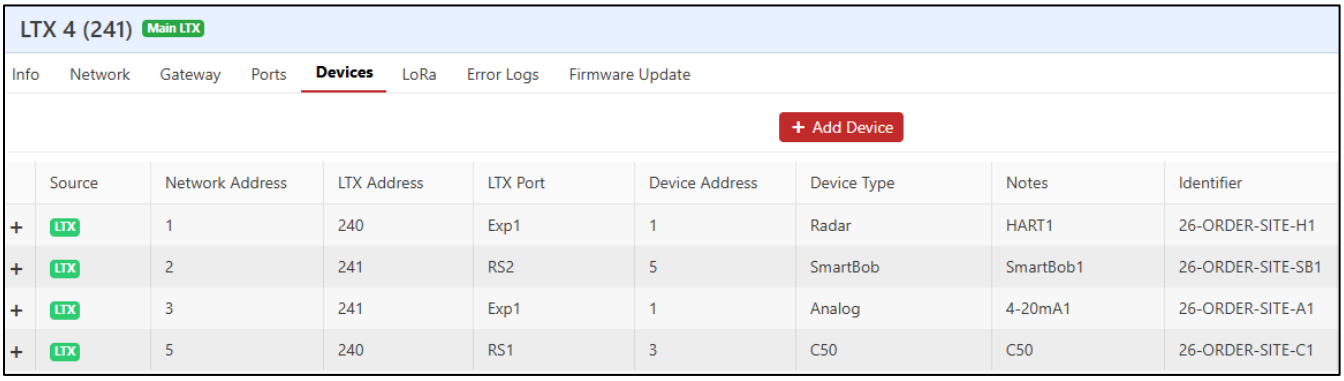
LTX Port:
A drop-down selector, the “LTX Port” field is either the physical port on the LTX or the radio connection that a specific sensor is connected by. *See the figure on pg. 4 for all physical ports.*

Device Address:
A number between 1-254 that serves as the sensor's personal identifier (not configurable via the LTX). This will be the Modbus address or HART address for a Modbus or HART device, respectively; this will be 0 for a 4-20mA analog device. For BinTrac sensors, this field will be the same as the BT260 station id.

Device Type:
A drop-down selector; the “Device Type” field should match the type of sensor/device that is connected.

Notes:
A useful place to add any additional information related to the sensor such as the vessel it is connected to.

Identifier:
A text field matching the sensors identifier in BinCloud. Should only be changed by BinMaster Technical Support. *For BinTrac setups, the identifier should be the same as the serial number of the BT260, followed by a dash and then a number between zero and three indicating which bin is being monitored (Ex: 115004-0 for SN 115004, Bin A).*



	Source	Network Address	LTX Address	LTX Port	Device Address	Device Type	Notes	Identifier
+	LTX	1	240	Exp1	1	Radar	HART1	26-ORDER-SITE-H1
+	LTX	2	241	RS2	5	SmartBob	SmartBob1	26-ORDER-SITE-SB1
+	LTX	3	241	Exp1	1	Analog	4-20mA1	26-ORDER-SITE-A1
+	LTX	5	240	RS1	3	C50	C50	26-ORDER-SITE-C1

Interval/Start Time/End Time:
These fields control the schedule the sensor follows for sending readings to BinCloud. Interval is the amount of time (in minutes) between readings, while start/end time set when the schedule begins and ends. Multiple different schedules can be made for a sensor by creating a duplicate of it in the device list with these options changed (day selections too).

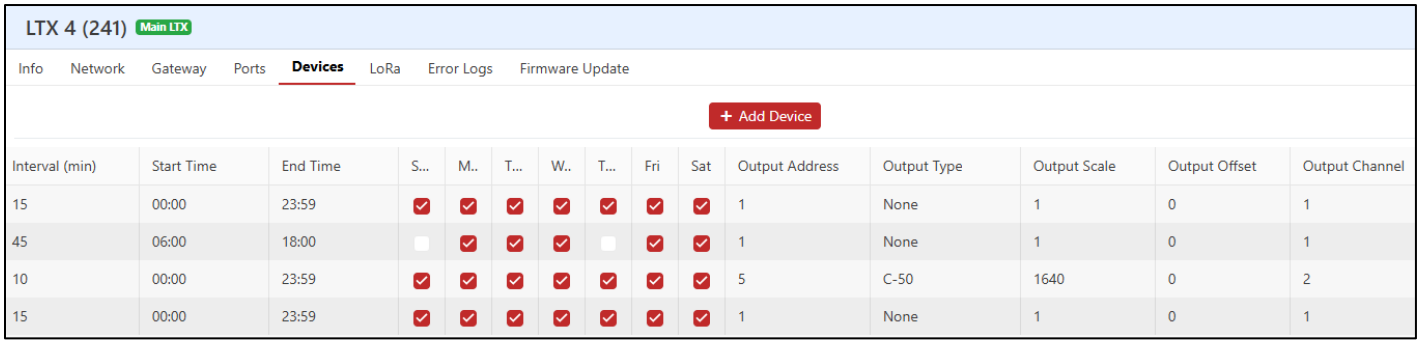
Sun/Mon/Tue/Wed/Thu/Fri/Sat:
Check boxes that indicate what days the schedule will run on.

**The "Output" settings are currently only used with the C-50 and can be left as default otherwise.*
Output Address:
A number between 1-254 that should match the "Network Address" of the C-50 being output to.

Output Type:
A drop-down selector, the "Output Type" field is indicative of what type of device the output is going to. *Only C-50 is supported currently.*

Output Scale:
A multiplier for the data being sent to be output from the C-50. Determined by taking *65535 ÷ height of vessel.* Default is 20mA for full and 4mA for empty, make the scale negative (-) to swap this.

Output Offset:
An additive offset that alters the data signal being sent to/from the C-50.



Interval (min)	Start Time	End Time	S...	M..	T...	W..	T...	Fri	Sat	Output Address	Output Type	Output Scale	Output Offset	Output Channel
15	00:00	23:59	☑	☑	☑	☑	☑	☑	☑	1	None	1	0	1
45	06:00	18:00	☐	☑	☑	☑	☐	☑	☑	1	None	1	0	1
10	00:00	23:59	☑	☑	☑	☑	☑	☑	☑	5	C-50	1640	0	2
15	00:00	23:59	☑	☑	☑	☑	☑	☑	☑	1	None	1	0	1

BASIC TROUBLESHOOTING

Problem	Possible cause	Solution
General Troubleshooting solutions	NA	Power cycle the LTX. First attempt a reset through one of the LTX apps or the RESET push button. If unsuccessful, fully disconnect power from the LTX for 15 seconds then reconnect.
	NA	Perform a factory reset by connecting to the LTX with the LTXCfg app (reach out to BinMaster Technical Support for access). Once connected click Alt + Read to reset. ***WARNING: The device list and all LTX settings will need to be reconfigured for the LTX to upload sensor data again.***
LTX does not power up (no power light)	Incomplete power connection	Power supply: One by one, open the power terminals and reclose them on the power wires. Lightly tug on wires to ensure proper terminal contact. Wall wart: Confirm barrel plug is seated all the way in LTX's port.
	Reversed power polarity	Swap the DC in and ground in wires from the power supply.
Wired sensor does not power up	Incorrect wiring	Confirm wiring against the wiring examples in wiring section of the manual
	Not enough power available	Reduce the number of sensors on a sensor loop (HART and Modbus). Contact BinMaster tech support for guidance.
"Spotty" LoRa Communication	Signal obstructed	Confirm that the antennas on each LTX can "see" without obstruction. *See section Location pg. 5 for more details*
	Antenna thread not tight	Check that all threaded connections between the antenna (basic or remote) are tightly in place.
"Remote" LTX not responding	Radio config mismatch	Confirm all LoRa settings match between LTXs Contact BinMaster tech support for guidance.
	Incorrect link port	Confirm Link port is set to LoRa. Contact BinMaster tech support for guidance.
No sensor data reaching BinCloud	LTX Clock out of sync	Open the FieldLink app and connect to the LTX, go down to Gateway Information and click "Sync" next to Device Clock (see *LTX FIELDLINK GUIDE pg. 11* for more details).
	Missing Firewall Permissions	Open TCP port 502 for local connections and TCP port 8883 for outgoing connections (see *LTX FIREWALL PERMISSIONS pg. 5* for more details).

TABLE 1.1 – ERROR CODES

Error Code	Description	Error Log Text
1000	HWSCI_TX_OVERRUN_ERR	Serial communication
1001	HWSCI_RX_UNDERRUN_ERR	Serial communication
1002	HWSCI_INVALID_PORT_ERR	Serial communication
1003	HWSCI_HAL_WRITE_ERR	Serial communication
1004	HWSCI_HAL_READ_ERR	Serial communication
1100	HWSPI_INVALID_PORT_ERR	SPI communication
1101	HWSPI_TX_TIMEOUT_ERR	SPI communication
1102	HWSPI_RX_TIMEOUT_ERR	SPI communication
5000	UTMS_CMD_TIMEOUT_ERR	Modbus server error
5001	UTMS_INVALID_PORT_ERR	Modbus server error
5002	UTMS_PORT_INIT_ERR	Modbus server error
5003	UTMS_TX_ERR	Modbus server error
5004	UTMS_INVALID_FUNC_ERR	Modbus server error
5005	UTMS_CMD_ERR	Modbus server error
5006	UTMS_CRC_ERR	Modbus server error
5007	UTMS_CLEAR_ERR	Modbus server error
5008	UTMS_DISCONNECT_ERR	Modbus server error
5100	UTMM_NO_RSP_ERR	Cannot connect to
5101	UTMM_INVALID_PORT_ERR	Cannot connect to
5102	UTMM_PORT_INIT_ERR	Cannot connect to
5103	UTMM_TX_ERR	Modbus client error
5104	UTMM_RX_ADDR_ERR	Modbus client error
5105	UTMM_RX_FUNC_ERR	Modbus client error
5106	UTMM_RX_CRC_ERR	Modbus client error
5107	UTMM_CLEAR_ERR	Modbus client error
5200	UTMB_BAD_FUNC_ERR	Modbus protocol error
5201	UTMB_BAD_ADDR_ERR	Modbus protocol error
5202	UTMB_BAD_VALUE_ERR	Modbus protocol error
5203	UTMB_INVALID_ERR	Modbus protocol error
5300	UTAC_OPEN_ERR	Accelerometer error
5301	UTAC_BAD_XFR_ERR	Accelerometer error
5302	UTAC_BADCHIP_ERR	Accelerometer error
5303	UTAC_NOINIT_ERR	Accelerometer error
5500	ERR_QFULL_ERR	Error queue full
5600	UTEE_INIT_ERR	EEPROM error
5601	UTEE_READ_ERR	EEPROM error
5602	UTEE_WRITE_ERR	EEPROM error
5700	UTFS_INIT_ERR	FLASH error
5701	UTFS_READ_ERR	FLASH error
5702	UTFS_WRITE_ERR	FLASH error
5800	UTT_INIT_ERR	Temperature sensor
5801	UTT_NOACK_ERR	Temperature sensor
5900	UTI2C_INIT_ERR	Display/clock error
5901	UTI2C_NOACK_ERR	Display/clock error

Error Code	Description	Error Log Text
5902	UTI2C_MAX_PORT_ERR	Invalid I2C port
6000	UTHM_NO_RSP_ERR	HART modem
6001	UTHM_INVALID_PORT_ERR	HART modem
6002	UTHM_PORT_INIT_ERR	HART modem
6003	UTHM_TX_ERR	HART modem
6004	UTHM_RX_ERR	HART modem
6005	UTHM_NOT_FOUND_ERR	HART modem
6100	UTM_PORT_INIT_ERR	Cannot connect to
6101	UTM_NO_RSP_ERR	No response from
6102	UTM_TX_ERR	Modem error
6103	UTM_RX_ERR	Modem error
6104	UTM_BAD_RSP_ERR	Modem error
6105	UTM_CLEAR_ERR	Modem error
6106	UTM_SIM_ERR	Modem SIM card
6107	UTM_NOT_REGISTERED_ERR	Modem not
6108	UTM_NO_SIGNAL_ERR	No signal detected
6200	UTU_INVALID_PORT_ERR	UART error
6201	UTU_PORT_INIT_ERR	UART error
6202	UTU_CLEAR_ERR	UART error
6300	UTSB_NO_RSP_ERR	No SmartBob
6301	UTSB_ADDR_ERR	SmartBob address
6302	UTSB_TX_ERR	SmartBob transmit
6303	UTSB_STX_ERR	SmartBob STX
6304	UTSB_ETX_ERR	SmartBob ETX
6305	UTSB_EOT_ERR	SmartBob EOT
6306	UTSB_DELIM_ERR	SmartBob delimiter
6307	UTSB_RSP_ERR	SmartBob
6308	UTSB_RSPMAX_ERR	SmartBob
6309	UTSB_RSPCRC_ERR	SmartBob
6310	UTSB_CMD_ERR	SmartBob
6400	UTSA_INVALID_PORT_ERR	Invalid SPI ADC
6401	UTSA_PORT_INIT_ERR	SPI ADC port
6402	UTSA_TX_ERR	SPI ADC transmit
6403	UTSA_CHAN_ERR	SPI ADC invalid
6500	UTXX_NO_DATA_ERR	No data available
6600	UTBM_NO_RSP_ERR	No response from
6601	UTBM_INVALID_PORT_ERR	Invalid port for
6602	UTBM_PORT_INIT_ERR	Port initialization
6603	UTBM_TX_ERR	Transmit error for
6604	UTBM_RX_SID_ERR	Invalid station ID
6605	UTBM_RX_PID_ERR	Invalid packet ID
6606	UTBM_RX_CRC_ERR	CRC error in
6607	UTBM_CLEAR_ERR	Error clearing
6608	UTBM_ACK_ERR	Invalid ACK

Error Code	Description	Error Log Text
6700	UTNS_IFID_ERR	Invalid network interface
6800	UTLR_PORT_INIT_ERR	Radio port initialization
6801	UTLR_LEN_ERR	Invalid radio packet
6802	UTLR_TIMEOUT_ERR	Radio response timeout
6803	UTLR_TX_ERR	Radio transmit error
6804	UTLR_NO_ACK_ERR	No ACK received from
6805	UTLR_NACK_ERR	NACK received from
6806	UTLR_NO_RSP_ERR	No response received
6807	UTLR_CSUM_ERR	Radio checksum error
6900	UTRTC_INIT_ERR	Real-time-clock
6901	UTRTC_CLOCK_ERR	Real-time-clock error
20700	UTTCP_DISCONNECT_ERR	TCP disconnect error
20800	CONFIG_MEM_ERR	Invalid configuration
20801	CONFIG_CRC_OPEN_ERR	Invalid configuration
20802	CONFIG_CRC_ERR	Invalid configuration
20803	CONFIG_WRITE_ONCE_ERR	Configuration write error
20804	CONFIG_SEMA_ERR	Configuration blocked
20805	CONFIG_PERIOD_ERR	Invalid PID Period
20806	CONFIG_OLIM_ERR	Invalid Overshoot Limit
20807	CONFIG_TARGET_ERR	Invalid Target position
20808	CONFIG_INVALID_ERR	PID Set not initialized
20809	CONFIG_CMIN_RANGE_ERR	CAE Min out of sensor
20810	CONFIG_CMAX_RANGE_ERR	CAE Max out of sensor
20811	CONFIG_TARG_RANGE_ERR	Target out of sensor
20812	CONFIG_OLIM_RANGE_ERR	Overshoot Limit out of
20813	(unnamed placeholder)	
20814	CONFIG_VMIN_ERR	Pump Voltage Minimum
20815	CONFIG_VMAX_ERR	Pump Voltage
20816	CONFIG_MIN_RANGE_ERR	Range Min out of
20817	CONFIG_MAX_RANGE_ERR	Range Max out of
20818	CONFIG_MAX_SENSOR_ERR	Too many sensors
20819	CONFIG_CERT_ERR	Certificate verification
20900	LOCAL_BAD_READ_ERR	Invalid read command
20901	LOCAL_BAD_WRITE_ERR	Invalid write command
20902	LOCAL_ADC_ERR	Local ADC conversion
20903	LOCAL_MSP_IMAGE_ADDR_ERR	
20904	LOCAL_LORA_IMAGE_ADDR_ER	
21000	SENSOR_NO_STATS_ERR	No stats available
21001	SENSOR_ADC_ERR	Sensor ADC conversion
21002	SENSOR_I2C_ERR	Sensor I2C
21100	UTDI_NOT_RUN_ERR	Diagnostics not run
21101	UTDI_IN_PROGRESS_ERR	Diagnostics in progress
21102	UTDI_33MAX_ERR	Maximum 3.3V error

Error Code	Description	Error Log Text
21103	UTDI_33MIN_ERR	Minimum 3.3V
21104	UTDI_15SMAX_ERR	Maximum 15V
21105	UTDI_15SMIN_ERR	Minimum 15V
21106	UTDI_15MAX_ERR	Maximum 15V
21107	UTDI_15MIN_ERR	Minimum 15V
21108	UTDI_24MAX_ERR	Maximum 24V
21109	UTDI_24MIN_ERR	Minimum 24V
21110	UTDI_TOUCH_ERR	Contact detected
21111	UTDI_SDRAM_ERR	SDRAM memory
21112	UTDI_INVALID_TEST_ERR	Invalid diagnostic
21200	PID_NO_TARGET_ERR	Unable to detect a
21201	PID_MIN_ERR	Position below
21202	PID_MAX_ERR	Position above
21203	PID_CUTOFF_NOT_ACTIVE_ERR	Cutoff signal
21204	PID_CUTOFF_ACTIVE_ERR	Cutoff signal is in
21300	MQ_QMEM_ERR	MQTT memory
21301	MQ_QBOX_ERR	MQTT mailbox
21302	MQ_SEND_ERR	MQTT send error
21303	MQ_RECV_ERR	MQTT receive
21304	MQ_CERT_ERR	MQTT certificate
21305	MQ_SPACE_ERR	MQTT out of
21306	MQ_GENERAL_ERR	MQTT general
21307	MQ_PUBLISH_ERR	MQTT publish
21308	MQ_WATCHDOG_ERR	MQTT watchdog
21309	MQ_SUBSCRIBE_ERR	MQTT
21400	HART_ADDR_ERR	HART invalid
21401	HART_RX_CHECK_ERR	HART receive
21500	PORT_MAX_ERR	Invalid port
21501	PORT_HOST_ERR	Port in use for
21502	PORT_PROTOCOL_ERR	Invalid protocol for
21503	PORT_CMD_ERR	Invalid command
21504	PORT_CARD_TYPE_ERR	Invalid card type
21505	PORT_ADDR_ERR	Invalid address for
21506	PORT_CFG_ERR	Invalid
21507	PORT_MEM_ERR	Port memory error
21508	PORT_LINK_ERR	Port link error
21509	PORT_BIN_ACK_ERR	Port BinTrac Bin
21510	PORT_BARN_ACK_ERR	Port BinTrac Barn
21511	PORT_EVENT_ACK_ERR	Port BinTrac Event
21600	LORA_NO_RSP_ERR	No LoRa
3099	UTFB_LAST_ERR	Firebase error
3100	UTFB_MALLOC_ERR	Firebase error

ACCESSORIES



Remote LoRa antenna kits - 530-5638
Remote LoRa antenna available if obstructions cannot be avoided, or there is a need to extend the maximum range of a base LTX.

Accessories coming soon
> Cellular antenna extender
> Mounting hardware
> Displays
> Wire glands

SAFETY SUMMARY

Review the safety precautions to avoid injury and prevent damage to equipment.
The product should be installed, commissioned, and maintained by qualified, authorized personnel only.

Install according to instructions and comply with all National and Local codes.
Use electrical wire that is sized and rated for the maximum voltage and current of the application. Properly ground the enclosure to an adequate earth ground.

Observe terminal and relay contact ratings on the nameplate and in the installation manual.

Ensure the enclosure cover is in place and secured tightly during normal operation. In potentially wet environments, thoroughly seal all conduit entries.

If this product is used in a manner not specified by the manufacturer. safety protection could be compromised.

Safety Terms and Symbols

⚠ WARNING: Warning statements identify conditions or practices that could result in injury or loss of life. Risk of electrical shock.

⚠ CAUTION: Caution statements identify conditions or practices that could result in damage to this product or other property.

TERMS AND CONDITIONS - WARRANTY

Refer to the official terms and conditions - warranty found here:
https://www.binmaster.com/terms-conditions

CUSTOMER SERVICE & TECH SUPPORT

BinMaster's toll-free Customer Service phone number is (800) 278-4241. Call the Technical Service Department for support 8 a.m.-5 p.m., Monday through Friday, Central Time. International customers call (402) 434-9100 or email techsupport@binmaster.com. More information at support.binmaster.com.

DISPOSAL

This product contains recyclable materials and electronics that can be easily separated and recycled by specialized recycling companies. Consult local authorities for proper disposal locations.