

BTA-400 Bluetooth to 4-20mA Transmitter Operation Manual



Confidentiality

The information contained in this manual may be confidential and proprietary and is the property of Pyxis Lab, Inc. Information disclosed herein shall not be used to manufacture, construct, or otherwise reproduce the goods described. Information disclosed herein shall not be disclosed to others or made public in any manner without the express written consent of Pyxis Lab, Inc.

Limited Warranty

Pyxis Lab warrants its products for defects in materials and workmanship. Pyxis Lab will, at its option, repair or replace instrument components that prove to be defective with new or remanufactured components (i.e., equivalent to new). The warranty set forth is exclusive and no other warranty, whether written or oral, is expressed or implied.

Warranty Term

The Pyxis warranty term is thirteen (13) months ex-works. In no event shall the standard limited warranty coverage extend beyond thirteen (13) months from original shipment date.

Warranty Service

Damaged or dysfunctional instruments may be returned to Pyxis for repair or replacement. In some instances, replacement instruments may be available for short duration loan or lease.

Pyxis warrants that any labor services provided shall conform to the reasonable standards of technical competency and performance effective at the time of delivery. All service interventions are to be reviewed and authorized as correct and complete at the completion of the service by a customer representative or designate. Pyxis warrants these services for 30 days after the authorization and will correct any qualifying deficiency in labor provided that the labor service deficiency is exactly related to the originating event. No other remedy, other than the provision of labor services, may be applicable.

Repair components (parts and materials), but not consumables, provided in the course of a repair, or purchased individually, are warranted for 90 days ex-works for materials and workmanship. In no event will the incorporation of a warranted repair component into an instrument extend the whole instrument's warranty beyond its original term.

Warranty Shipping

A Repair Authorization Number (RA) must be obtained from Pyxis Technical Support before any product can be returned to the factory. Pyxis will pay freight charges to ship replacement or repaired products to the customer. The customer shall pay freight charges for returning products to Pyxis. Any product returned to the factory without an RA number will be returned to the customer.

Pyxis Technical Support

Contact Pyxis Technical Support at service@pyxis-lab.com or 1-866-203-8397

Table of Contents

1. Introduction	4
1.1. Central Mode	4
1.2. Observer Mode	5
2. Using the BTA-400	6
2.1. Powering On BTA-400	6
2.2. BTA-400 Working in Central Mode	7
2.2.1. Pairing with Bluetooth Adaptor	7
2.2.2. Bond with Inline Sensors	8
2.2.3. Un-Bond with Inline Sensors	8
2.2.4. Un-Pairing with Bluetooth Adaptor	9
2.2.5. System Information	9
2.3. BTA-400 Working in Observer Mode	10
2.3.1. Bond with LS-202 or CR-200	10
2.3.2. Un-Bond with LS-202 or CR-200	12

1. Introduction

The Pyxis BTA-400 is a Bluetooth to 4-20mA gateway device that has a built-in Bluetooth interface and 4 channel 4-20mA current output. BTA-400 is programmed to support operation in 2 different working modes: **central mode** and **observer mode**. In central mode the BTA-400 can be paired with the Pyxis Bluetooth Adapter (MA-WB). The latter can connect with multiple Pyxis sensors that are operated in the Bluetooth beacon mode. Up to 4 sensor measurement outputs from BTA-400 can be re-directed via 4-20mA channels. In observer mode, the BTA-400 can be paired, via Bluetooth, directly with the Pyxis LS-202 level sensor and Pyxis CR-200 corrosion sensor as well. Level/Inventory data or General & Localized corrosion data can be directed as outputs from four BTA-400 4-20mA channels.

1.1. Central Mode

In central mode the BTA-400 pairs with Pyxis Bluetooth Adapter (MA-WB) and reads inline sensor values via Bluetooth and outputs those values in multiple (up to 4) 4-20mA channels to a controller. All inline sensors can be connected to the Bluetooth adapter via RS485 bus. A typical system diagram is illustrated by Fig 1.

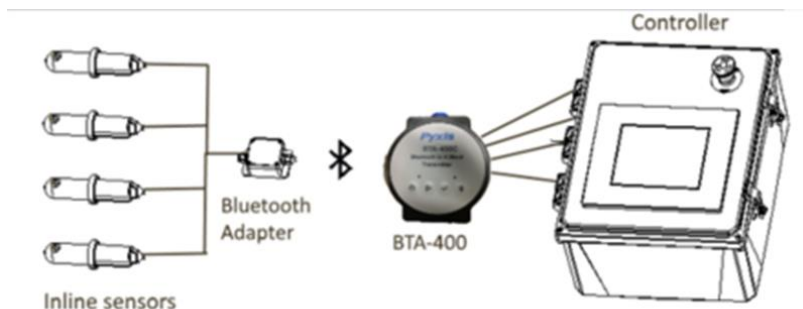


Fig 1. Central Mode System Diagram

The Pyxis BTA-400 is compatible with the following inline RS-485 sensors.

Pyxis Digital RS-485 Inline Sensors		
Model #	P/N	Description
ST-500D	50668	Inline Fluorometer for Cooling - PTSA (0-200ppb)- RS485 Modbus / Bluetooth
ST500ROD	50674	Inline Fluorometer for RO - PTSA (0-40ppb)- RS485 Modbus / Bluetooth
ST-525D	50672	Inline Fluorometer - Flourescein (0-60ppb)- RS485 Modbus / Bluetooth
ST-525SSD	50673	Inline Fluorometer - Flourescein Stainless Steel (0-60ppb)- RS485 Modbus / Bluetooth
ST-540SSD	50675	Inline Fluorometer - NDSA Stainless Steel (0-60ppb)- RS485 Modbus / Bluetooth
ST-565T-D	50676	Inline Fluorometer - Azole TTA (0-10ppm)- RS485 Modbus / Bluetooth
ST-710D	53007	Inline pH Analyzer (0-14)- RS485 Modbus / Bluetooth
ST-711D	53008	Inline ORP Anlayzer (± 1500 mV)- RS485 Modbus / Bluetooth
ST-712D	53009	Inline pH+ORP Analyzer- RS485 Modbus / Bluetooth
ST-720D	53102	Inline Conductivity Analyzer (10-10,000uS.cm) - RS485 Modbus / Bluetooth
ST-731D	50207	Inline Turbidimeter (0-10NTU)- RS485 Modbus / Bluetooth
ST-735D	50206	Inline Turbidimeter (0-4000NTU)- RS485 Modbus / Bluetooth
CR-300	51007	LPR Corrosion Sensor - Wired - 24V/2W Powered (RS485/4-20mA - 8Pin)

1.2. Observer Mode

In observer mode the Pyxis BTA-400 can be paired with up to four LS-202 level sensors or up to two CR-200 corrosion sensors. The CR-200 corrosion sensor has one General and one Localized corrosion output therefore only two CR-200 devices can be connected to one BTA-400. A typical system diagram is illustrated by Fig 2.

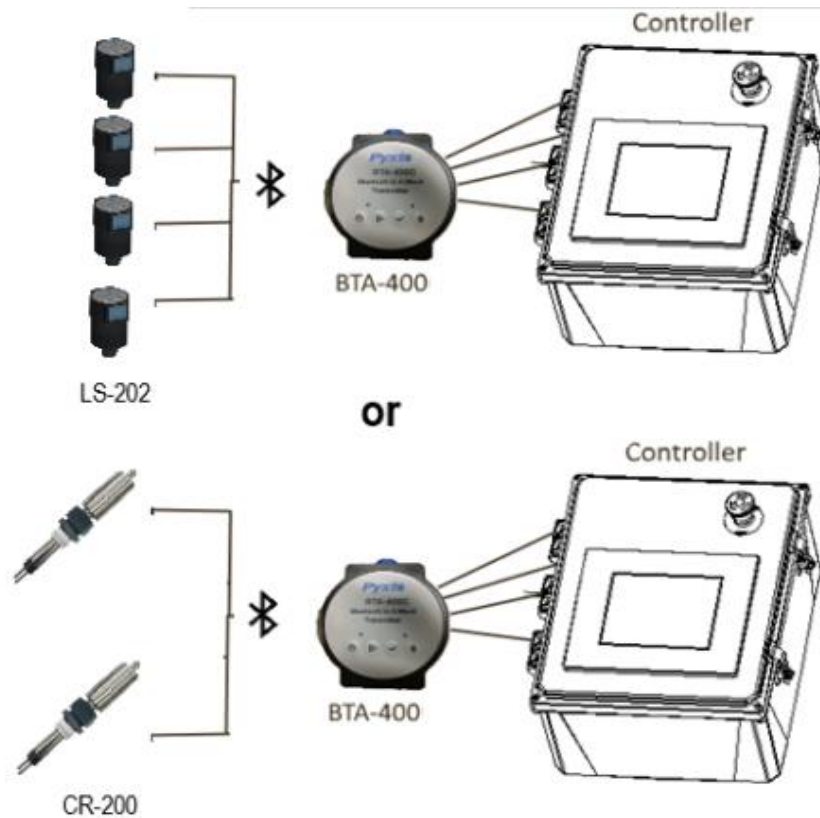


Fig 2. Observer Mode System Diagram

2. Using the BTA-400

2.1. Powering On BTA-400



Fig 3. Standard 7-wire Cable w/adapter (MA-1100)

The BTA-400 is powered by 24VDC power supply using a standard 7-wire flying lead / 7-pin adapter Pyxis cable to connect BTA-400 to a 24VDC power adapter, the following table describes the cable wiring definition. ***NOTE*** the standard cable is approximately 5' in length. Longer cables are available if desired. Contact your Pyxis representative or service@pyxis-lab.com to get details.

Wire Color	Designation
Red	24 V +
Black	24 V Power ground/4-20mA -
Blue	4-20 mA + Channel 1
White	4-20 mA + Channel 2
Yellow	4-20 mA + Channel 3
Green	4-20 mA + Channel 4
Clear	Shield, earth ground



Short press the power button to turn on the device. There are 4 buttons for this device as referenced below. ***NOTE*** If power supply is lost, the BTA-400 is programmed to re-power upon return of power supply.



Power button - short press to turn on device; long press to turn it off; once powered, press at any time to return to the main page; while in the main page you may press to switch display to each 4-20mA channel page.



Next button - move to next option in menu.

-  **OK** button - click to display the menu in 4-20mA channel page; click to confirm in menu page.
-  **Bluetooth** button - click to change Bluetooth mode and start firmware upgrade in bootloader mode.

2.2. BTA-400 Working in Central Mode

2.2.1. Pairing with Bluetooth Adaptor

In central mode, the BTA-400 searches for the Bluetooth Adapter (MA-WB) or other Pyxis Bluetooth enabled devices such as VR-200 and LS-202 immediately after power has been turned on. Once Bluetooth signal is identified, the BTA-400 will display the last 4 digits of MAC address of Bluetooth Adapter(s) that has been discovered.



Fig 4. Search Bluetooth Adapter

Click the **Next** button to select the Bluetooth Adapter to be paired with, then click the **OK** button to pair with that device. The BTA-400 will automatically display the main page to show 4-20mA value of each channel.

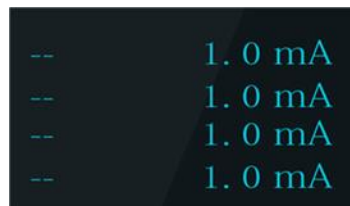


Fig 5. Main Page

NOTE If BTA-400 does not bond with the inline sensor in one of its 4-20mA output channels, it will output 1.0mA for that channel.

2.2.2. Bond with Inline Sensors

The BTA-400 further needs to be bonded with inline sensors after pairing with the Bluetooth adapter. Click the **OK** button to enter the BTA-400 menu page. Select **Search Device** to scan inline sensors, the upper-right corner will display # of sensors being detected and a sensor list will be displayed once the BTA-400 stops searching as shown in Fig 6.



Fig 6. Search For Inline Sensors

Click the **Next** button to select the sensor to be bonded with and then select the 4-20mA channel which you would like associated with that sensor, then click **OK** to confirm. When you have completed all channel bonding, click the Power button to return to the main page to show all channel information, including sensor type and their associated 4-20mA output values. Clicking the **Next** button in the main screen will switch the display for each 4-20mA channel page. The sensor reading value and mA output value will be displayed that channels page.

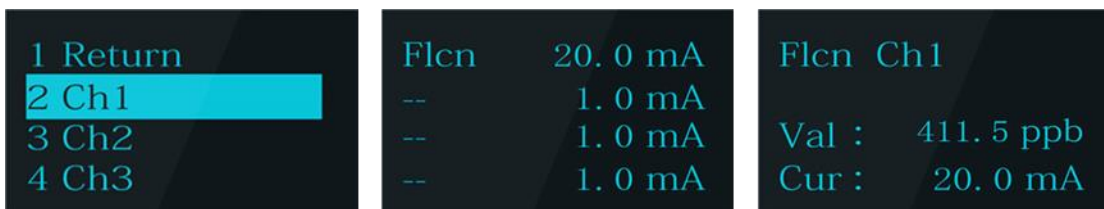


Fig 7. Bond with Inline Sensors

2.2.3. Un-Bond with Inline Sensor

When inline sensors are being replaced or removed it is suggested to complete the entire bonding procedure again according to chapter 2.2.2.

If you do not desire an output of 4-20mA from a particular channel, click the **OK** button to display the menu page, select **Unpair Device** and then select the channel number, click OK button to un-bond it.



Fig 8. Un-bond with Sensor

2.2.4. Un-Pairing with Bluetooth Adaptor

Click the **OK** button to enter menu page, select **Unpair BTLE** and click **OK** button to confirm, BTA-400 will display **Unpaired success** message and it will start searching for Bluetooth Adapters once again.

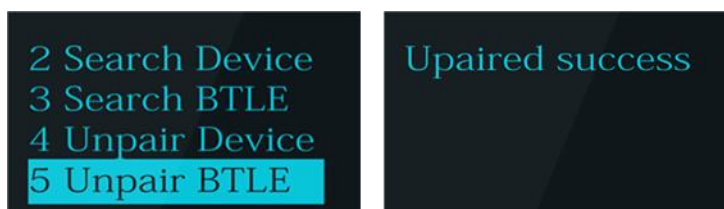


Fig 9. Un-pair with Bluetooth Adapter

2.2.5. System Information

Click the OK button to enter menu page, select Information to display the following parameters

1. Software version
2. Hardware version
3. FCC ID



Fig 10. System Information

2.3. BTA-400 Working in Observer Mode

When working in observer mode, BTA-400 can only connect with LS-202 and CR-200. Both the LS-202 and CR-200 should be configured to work in Beacon Mode before connecting to the BTA-400. Please refer to LS-202 and CR-200 operation manual for more information.

2.3.1. Bond with LS-202 or CR-200

Click **Bluetooth** button to switch Bluetooth mode to observer, the BTA-400 will automatically display the main page to show 4-20mA value of each channel.

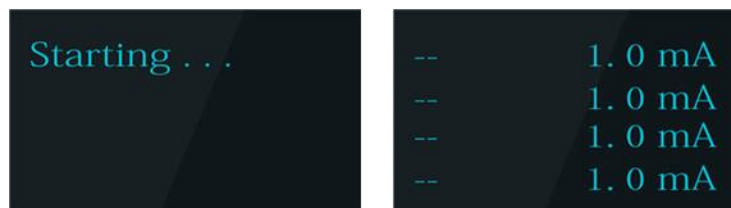


Fig 11. Main page

Click the **OK** button to enter menu page, select **Search Device** to scan sensors.

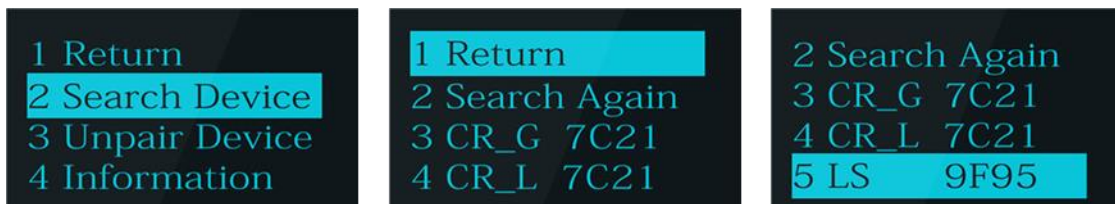


Fig 12. Search device

Click the **Next** button to select the sensor to be bonded with and then select the 4-20mA channel which you would like associated with this sensor, click **OK** to confirm. When have completed all channels bonding, click the Power button to return to main page to show all channel information, including sensor type and their 4-20mA output values.



Fig 13. Bond with LS-202

You can also bond CR-200 with the same operation as bonding LS-202. When you have completed all channel bonding, click Power button to return to main page, click **Next** button in main page. This will switch the display to show each 4-20mA channel with its associated sensor reading.

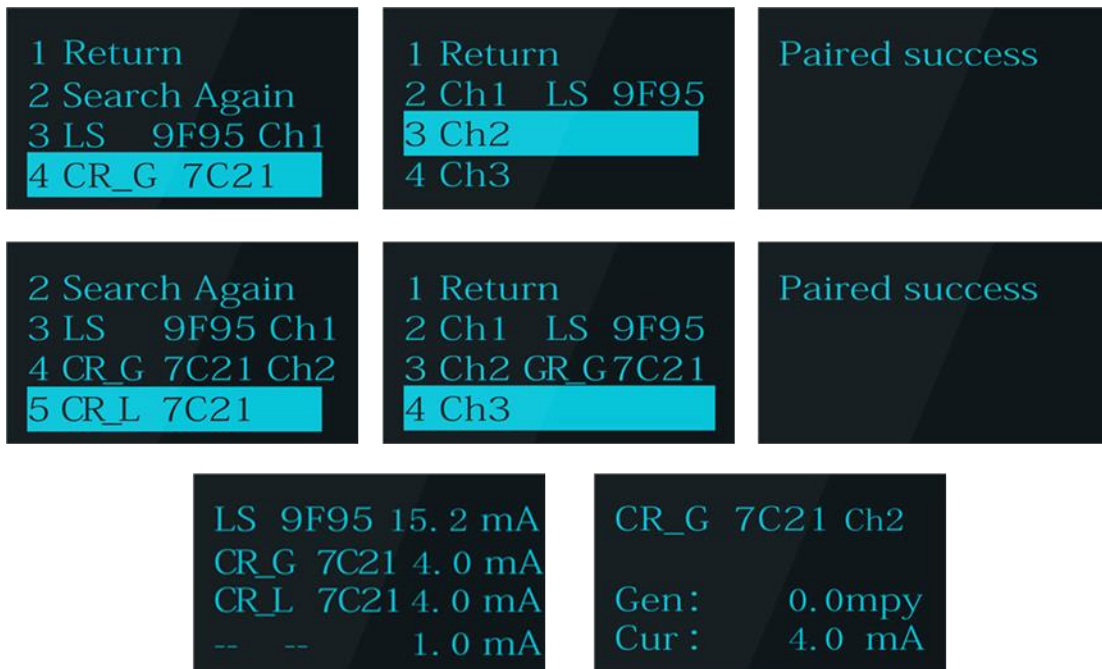


Fig 14. Bond with CR-200

2.3.2. Un-Bond with LS-202 or CR-202

If you do not desire an output 4-20mA from a particular channel, click the **OK** button to display the menu page, select **Unpair Device** and then select the channel number you desire to unpair, click OK button to un-bond it.



Fig 14. Un-Bond with Sensor

Contact Us

Pyxis Lab, Inc.
1729 Majestic Drive Suite 5
Lafayette, CO. 80026
1-866-203-8397
www.pyxis-lab.com
service@pyxis-lab.com