

Frontline X500™ Protocol Analyzer Quick Start Guide

1 Introduction

Use this document for quick installation and setup.

The Frontline X500 is designed to capture Bluetooth, Wi-Fi, 802.15.4, logic signals, and various wired technologies such as HCI-UART and USB. This quick start guide provides sufficient information to begin data capture. Detailed hardware and software information is contained in the Wireless Protocol Suite Hardware and Software User Manual. The manual is also available on FTE.com.



Frontline X500™ Protocol Analyzer

2 Components

Inspect the received shipping container for any damage. Unpack the container and account for each of the system components listed on the accompanying packing list. Visually inspect each component for any damage. In the event of damage, notify Teledyne LeCroy. Retain all shipping materials for shipper's inspection. The X500™ hardware does not contain any user serviceable items. Any repairs and maintenance must be performed by a service technician that has been trained and approved by Teledyne LeCroy.

The analyzer package includes the following components in addition to the X500:

Qty	Description	Qty	Description
1	15V 8A Power Supply	2	RF 2.4 GHz Antenna (Bluetooth)
1	3' USB 3.0 Type C to C cable	4	RF 2.4/5/6 GHz Antenna (Wi-Fi)
1	6' Ethernet Cable (for future use)	2	Logic pods (Advanced and Elite License)

Note: For information on installing a Frontline X500 Battery Pack as an external power source for the Frontline X500 protocol Analyzer, see the *Frontline X500™ Battery Installation Guide*.

3 Computer System Requirements

Supported Systems

- Operating System: Windows 10 and 11
- USB: USB 2.0 and later

Minimum Requirements

- Processor: Core i5 at 2.7 GHz
- RAM: 4 GB
- Free Hard Disk Space on C: drive: 20 GB

Install Software

From Download: Download the latest Wireless Protocol Suite installer from FTE.com. <http://fte.com/x500-soft>. Once downloaded, double-click the installer and follow the directions. When the installation is complete pin the Wireless Protocol Suite icon to your taskbar.



4 Set Up Hardware

1. Connect Cables

Power Connector: Connect the 15V Power adapter included with the product to the X500 hardware.

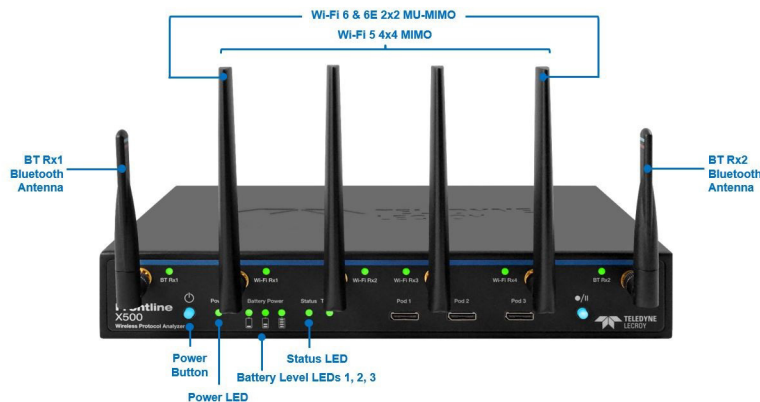
Connect to Host PC: Connect one end of the USB C-C 3.0 cable to the “Host” port on the X500 and connect another end to the 3.0 port on the host computer. This will allow sending data from the hardware to the PC for the analysis.



Frontline X500 Rear Panel Controls

2. Attach Antennas

Remove the Frontline X500 hardware from the box and attach the six antennas to the SMA connectors on the front panel. As their names indicate, BT Rx1 and BT Rx2 are Bluetooth antenna connectors. Wi-Fi Rx1, 2, 3, and 4 are Wi-Fi antenna connectors. The base of the antennas can be carefully rotated by 90 degrees so that the antenna points upward.



3. Power-up Hardware

Power Button: The Power button illuminates when the unit is connected to a power source. Press and release the button to power on or power off the system.

Status Indicators: Colored LEDs show the status of power, capture, and RF Status.

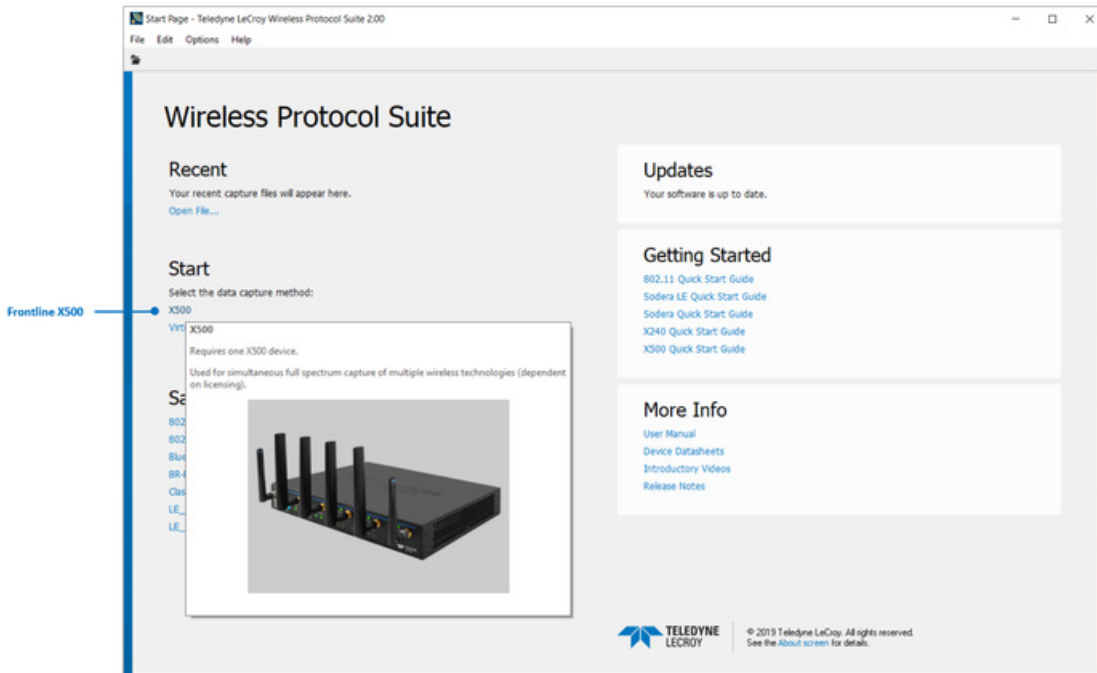
A separate external battery pack can be attached to the X500. See the *Wireless Protocol Suite Hardware and Software User Manual* for more information about the X500 external battery pack.

Table 1: X500 Front Panel Status Indicators

Indicator	Color	State	Status Indicated
Power	None	Off	Unit is powered off.
	Green	Constant	Unit powered on with sufficient power source plugged in.
	Blue	Constant	Unit powered on with sufficient power source plugged in.
	Red	Fast Flash	Thermal warning threshold reached.
		Constant	System reaches thermal overload. Unit has started a controlled/sequenced power down.
Battery Level 1	None	Off	Battery not present OR Battery not charged
	Green	Constant	Battery discharging. Capacity 20% - 45%.
		Slow Flash	Battery charging. Capacity 20% - 45%.
	Yellow	Slow Flash	Battery charging. Capacity <20%.
		Fast Flash	Battery discharging. Capacity <20%.
Battery Level 2	None	Off	Battery not present OR Battery <45% capacity, and not charging.
	Green	Constant	Battery discharging. Capacity 45% - 70%.
		Flash	Battery charging. Capacity 45% - 70%.
Battery Level 3	None	Off	Battery not present OR Battery <70% capacity, and not charging.
	Green	Constant	Battery discharging. Capacity 70% - 100%.
		Flash	Battery charging. Capacity 70% - 100%.
Status	None	Off	No Status.
	Green	Constant	Initialized and Ready. Not Capturing.
	Blue	Slow Flash	Waiting for Capture Trigger (future).
		Constant	Actively capturing.
	Yellow	Slow Flash	Initializing.
		Fast Flash	Shutting down.
	Red	Constant	The unit failed to initialize or has a System Error.
	Purple	Constant	Recovery Mode.
BT Rx1	None	Off	Antenna not in use
	Green	Constant	Antenna in use capturing.
	Red	Constant	Signal strength too strong.
BT Rx2	None	Off	Antenna not in use
	Green	Constant	Antenna in use capturing.
	Red	Constant	Signal strength too strong.
Wi-Fi Rx1	None	Off	Antenna not in use.
	Green	Constant	Antenna in use capturing.
Wi-Fi Rx2	None	Off	Antenna not in use.
	Green	Constant	Antenna in use capturing.
Wi-Fi Rx3	None	Off	Antenna not in use.
	Green	Constant	Antenna in use capturing.
Wi-Fi Rx4	None	Off	Antenna not in use.
	Green	Constant	Antenna in use capturing.

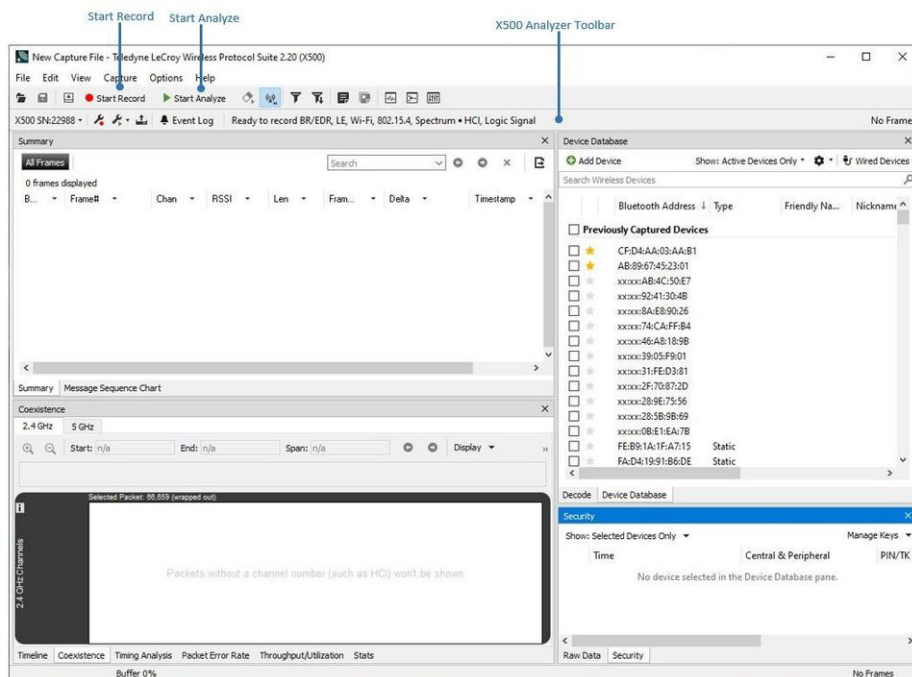
5 Configuration

Start the Wireless Protocol Suite software. The Start Page window displays the X500 option. Point to “X500” to see the hardware image. Click X500 under “Start”.



Wireless Protocol Suite - Start Page

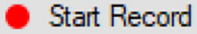
When the Wireless Protocol Suite window pops up, you will see the following display with the Analyzer Toolbar that controls hardware record and configuration options. Your unit is preconfigured with licensed features.



Wireless Protocol Suite software with Analyzer Toolbar

6 Begin Capture

Start Record



On the Wireless Protocol Suite's Toolbar, click the Start Record button or select Start Record from the Capture menu option. When the Start Record button changes to Stop Record, the X500 hardware is capturing data from all active Bluetooth devices within range and recording data on the PC. The Analyzer Bar shows a running total of captured packets.

Select Devices

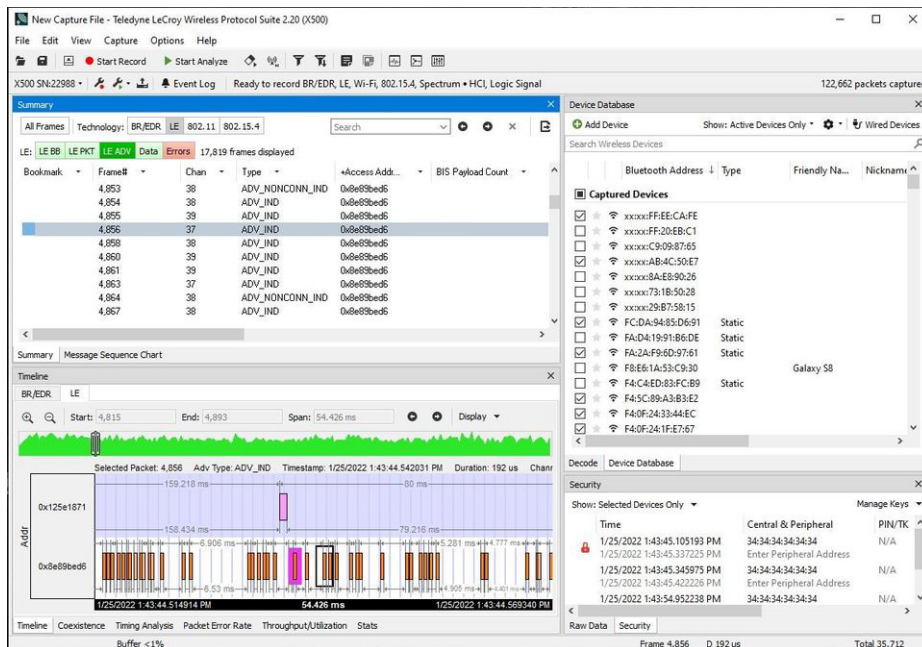
The Device Database pane populates with any newly discovered devices. Selecting devices for analysis can be done while recording. To analyze the data using the Wireless Protocol Suite, select specific devices of interest to include in the analysis. The Security pane shows all encrypted Bluetooth links. The Status Bar shows a running total of captured packets.

Start Analyze



On the Wireless Protocol Suite's Toolbar, click the Start Analyze button or select Start Record from the Capture menu option. The software shows Bluetooth packets in the main software. You are ready to analyze!

Note: Starting a new capture session clears all unsaved data from both the X500 hardware and the Wireless Protocol Suite. If it has not been saved, then a warning message appears.



Start to Analyze

7 Saving Analyzed Data to Disk

Stop Record

■ Stop Record

Click the Stop Record button to stop recording.

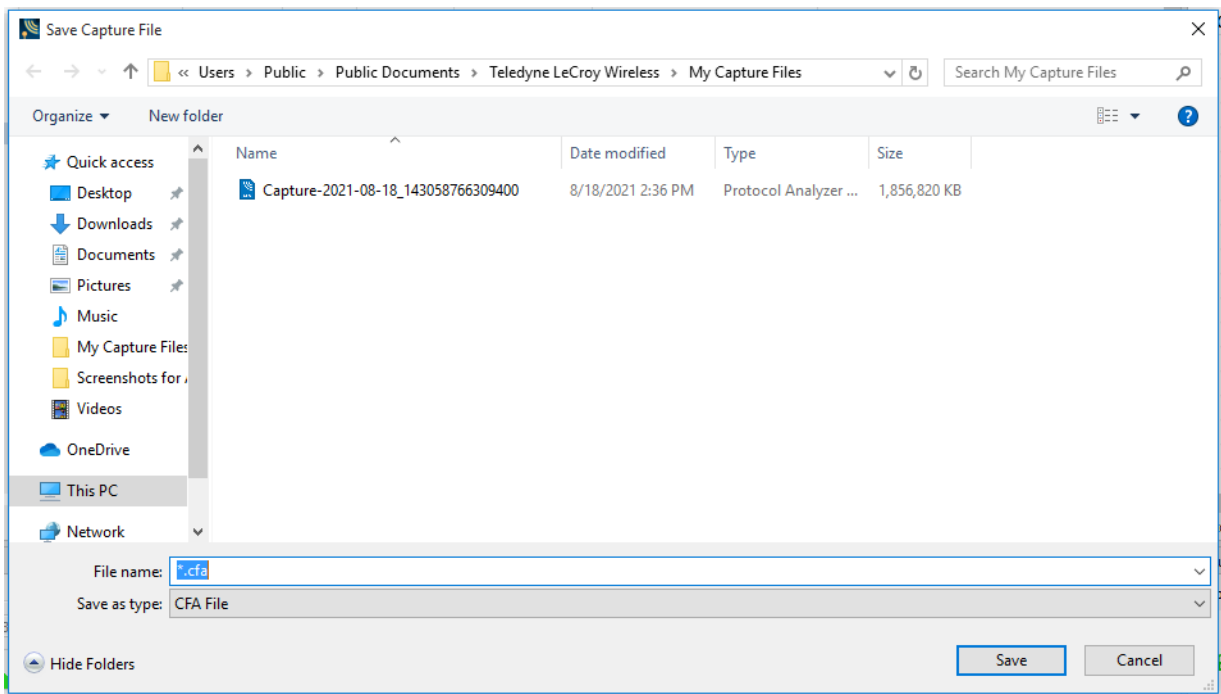
Stop Analyze

■ Stop Analyze

Click the Stop Analyze button to stop analyzing.

Save File

Click the Save icon to save the file to the selected location.



Saving Analyzed Data

To clear captured data, click the Clear icon.

If you select Clear after stopping analysis and have not saved it already, a message appears asking whether you want to save the data.

- You can click Save File and enter a file name when prompted.
- If you choose Do Not Save, all data will be cleared.
- If you choose Cancel, the dialog closes with no changes.

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Environmental Conditions

- Temperature: Operating 32° F to 122° F (0° C to 50° C)
- Humidity: Operating 0% to 80% RH (non-condensing)

Other Specifications

- Dimensions: 278 x 242 x 45 mm (11" x 9.5" x 1.77")
- Weight: 2.3 kg (5 lbs.)
- Input Voltage: 15 V
- Max Power: 90 W

Teledyne LeCroy Customer Support

Online Download

Periodically check the Teledyne LeCroy Protocol Solutions Group web site for software updates and other support related to this product.

Web: <http://www.fte.com/products/default.aspx>

Sales: Frontline_OnlineSales@Teledyne.com

Support: Frontline_Techsupport@Teledyne.com

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Changes

Product specifications are subject to change without notice.

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