1 Introduction

Use this document for installing a Frontline X500 Battery Pack as a power source for the Frontline X500 protocol analyzer. Once installed, refer to the X500 Quick Start Guide on how to use the X500 protocol analyzer. 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.

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 battery 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 battery pack:

Qty	Description
1	15V 8A power supply
1	Battery charging adapter for standalone charging

Before installing the battery pack on the X500, it is highly recommended to fully charge it. To do so, connect the power cord to the battery charging adapter. The LED turns blue indicating the adapter is powered correctly. Connect the battery charging adapter to the battery pack. Make sure the switch on the back of the X500 battery module is turned on. It must be turned on in order to charge. The LED indicator on the charging adapter starts blinking green. When the battery is fully charged (in about two hours), the LED turns solid green. See Table 1 below for details on LED states. Proceed to the installation section below.

The recommended procedure for using the charger is to plug the power cable into the charger before plugging the charger into the battery. Depending on the connection sequence the light sequence will vary as shown in Table 1.

Table 1: Light Sequence for Different Connection Scenarios

Action	Light Sequence
Plug power cable into charger and plug charger into battery.	1.Solid amber (½ second) 2.Solid green (½ second) 3.Solid blue (5 seconds) 4.Blinking green if adapter is charging. Solid green if fully charged.
Plug power cable into charger without plugging into battery.	1.Solid amber (½ second) 2.Solid green (½ second) 3.Solid blue
Plug power cable into charger then up to five seconds later plug charger into battery.	1.Solid amber (½ second) 2.Solid green (½ second) 3.Solid blue 4.Blinking green if adapter is charging. Solid green if fully charged.
Plug charger into battery then up to five seconds later plug power cable into charger.	1.Solid amber (½ second) 2.Solid green (½ second) 3.Solid red (5 seconds)[1] 4.Solid blue (5 seconds) 5.Blinking green if adapter is charging. Solid green if fully charged.

[1]The red light indicates an error with component communication or voltage levels. This can occur under normal conditions when not plugging the power adapter in first or removing it last. If the red light stays on longer than 15 seconds, contact customer support.

3 Battery Installation

The Frontline X500 has an external battery pack that allows you to use the analyzer in locations where access to a power source is inconvenient or unavailable. The battery pack can be connected to the X500 to operate solely on battery power for about two hours. The battery is charged with an external charging adapter (provided by Teledyne LeCroy) or can be charged when installed on an X500 that is connected to a power source.

To install a battery pack, follow the steps below:

Figure 1 – Frontline X500 battery

1. Turn off the X500 power and disconnect from the power source. Ensure that the power switch on the back of the X500 battery pack is off.

Battery power switch

Figure 2 - Frontline X500 battery switch in the off state

2. Open the battery compartment by removing the two screws securing the small panel to the underside of the unit, and remove the panel.

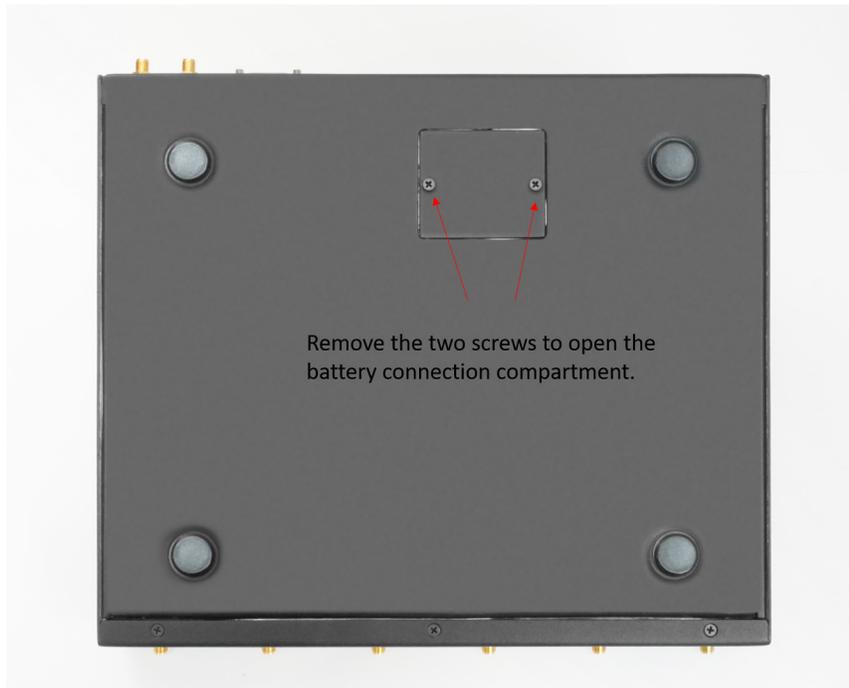Remove the two screws to open the battery connection compartment.

Figure 3 - Frontline X500 showing battery connection compartment

3. Remove the four screws (two on each side of the unit) to allow connecting the four thumb screws on the battery pack.

Remove the two bottom screws on each side of the X500

Figure 4 - Frontline X500 showing screws on the sides

4. Align and join the battery connections on the X500 and battery pack,and tighten the four thumbscrews to securely connect the battery pack to the X500.

Tighten the thumbscrews to secure the
connection of the battery pack to X500

Figure 5 - Frontline X500 and Battery installed

5. After installing the battery, turn the power switch on the back of the X500 battery pack to the ON position, then turn on power to the X500. Check the battery charge on the Battery Power indicators on the X500 front panel.

Three Battery level indicators

Figure 6- X500 Battery in the ON state

6. If the Battery Power LEDs on the X500 front panel indicate a low charge, connect the power supply to the X500 until the battery is fully charged. Once you connect the power source, the LEDs will indicate the current charge level.

Table 2: X500 Battery Power Status Indicators

Indicator	Color	State	Status Indicated
Battery Level 1	None	Off	Battery not present OR Battery not charged
	Green	Constant	Battery discharging. Capacity 20% - 45%.
	Green	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%.
	Green	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%.
	Green	Flash	Battery charging. Capacity 70% - 100%.

4 General Precautions

Handling

- Avoid shorting the battery.
- Do not immerse in water.
- Do not disassemble or deform the battery.
- Do not expose to or dispose of the battery in fire.
- Avoid excessive physical shock or vibration.
- Keep out of the reach of children.
- Never use a battery that appears to have been damaged.

Charge and Discharge

- Charge the battery pack by docking to the X500 or charging adapter provided by Teledyne LeCroy.
- Never use a modified or damaged charger.
- Specified product use only.

Storage

- Store in a cool, dry, and well-ventilated area.

Disposal

- Regulations vary for different countries. Dispose of in accordance with local regulations.

5 Specifications

- Type: Rechargeable Smart Lithium Ion Battery Pack
- Assembly: External, user removable
- Dimensions: 310.39 x 241.3 x 56.39 mm (12.22" x 9.5" x 2.22")
- Temperature Operating: 32° F to 113° F (0° C to 45° C) for charging and -4° F to 140° F(-20° C to 60° C) for discharging
- Power Capacity: 90 WAh
- Operating time: ~2 hours (varies based on RF activity)

Teledyne LeCroy Customer Support

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

Trademarks and Servicemarks

Teledyne LeCroy, Wireless Protocol Suite, Frontline and X500 Analyzer are trademarks of Teledyne LeCroy. Microsoft and Windows are registered trademarks of Microsoft Inc. The Bluetooth SIG owns the Bluetooth word mark and logos, and use of such marks is under license. All other trademarks are property of their respective companies.

Changes

Product specifications are subject to change without notice.
Teledyne LeCroy reserves the right to revise the information in this document without notice or penalty.