

# Frontline® X500e

## Wireless Protocol Analyzer



### Key Features and Benefits

- Powerful Protocol Test Solution for high accuracy capture performance
- One-Box solution for simultaneous time-correlated capture of Bluetooth (BR/EDR), Low Energy, 802.11be, 802.15.4 and wired technologies
- Unrivaled Wi-Fi coverage:  
Wi-Fi 7 with MLO (802.11be 2x2 MU-MIMO)  
Wi-Fi 6/6E (802.11ax 2x2 MU-MIMO)  
Wi-Fi 1-5 (802.11a/b/g/n/ac with 2x2 MIMO)
- Two (2) independent Bluetooth radios for superior capture performance
- Capture dual Wi-Fi channels simultaneously to follow connections over multiple access points
- Logic Analysis via highly user-configurable PODs supports up to 24-channels via three 8-channel PODs
- Capture and decode of HCI USB, HCI SPI and HCI UART (H4/H5/BCSP and WCI-2), Audio I2S
- Supports Teledyne LeCroy's comprehensive Wireless Protocol Suite software
- Faster root cause analysis of audio issues with the integrated Bluetooth Audio Expert System
- Live or post-capture decryption and analysis
- Raw RF spectrum view helps identify potential RF conflicts
- Optional battery pack available for in-field applications
- Excursion mode allows for one-button PC-free captures
- Manual and automatic gain controls for easy adaptations to every test environment
- All released Bluetooth profiles and protocols supported along with early access for pre-released features
- Easy integration into automation setup using extensive APIs

Teledyne LeCroy's Frontline X500e Wireless Protocol Analyzer is a powerful one-box test solution for wireless product developers. The X500e supports simultaneous capture and decode of Bluetooth® Basic Rate (BR), Enhanced Data Rate (EDR), Low Energy (LE), Wi-Fi, Matter, Thread, Zigbee and wired technologies in a time-correlated co-existence view. Coupled with Teledyne LeCroy's Wireless Protocol Suite software, the X500e delivers unparalleled capture performance for complex multi-technology test environments, including market-leading support for the latest Wi-Fi technologies.

### The Right Tool for EVERY Job

The Frontline X500e Wireless Protocol Analyzer is the most versatile wireless analysis tool in the industry, boasting support not just for all released and upcoming Bluetooth BR/EDR and Low Energy specifications, but for 802.15.4-based protocols like Matter and Thread, and all of the latest Wi-Fi technologies including Wi-Fi 7 with MLO, which extends Wi-Fi technology into the 6GHz ISM band.

With RF spectrum analysis, mesh analysis, support for 24 channel logic analysis and Bluetooth antenna-diversity capability, the X500e is truly the right tool for EVERY wireless analysis job.

The Frontline X500e comes equipped with Excursion Mode, which allows the user to capture everything in the air at the push of a button, without any PC attached. The system also supports time-correlated operation and capture with other Teledyne LeCroy Protocol Analyzer industry leading tools, using the proprietary CATC Sync connectivity and CrossSync Software.

The integrated Bluetooth Audio Expert System is the first and only analysis tool on the market to combine audio analysis with Bluetooth protocol analysis, allowing developers to quickly pinpoint the root cause of a wide array of Bluetooth protocol-related audio problems in various applications, including latest Bluetooth LE Audio and Bluetooth Auracast™.



The Audio Analyzer Pod and the Logic Analyzer Pod enable precise measurement of total system delay, including transport, presentation, and audio processing delays - critical metrics during the development of next-generation LE Audio devices. These capabilities also extend to Bluetooth® Classic devices, offering broad applicability across Bluetooth audio technologies.

## Specifications

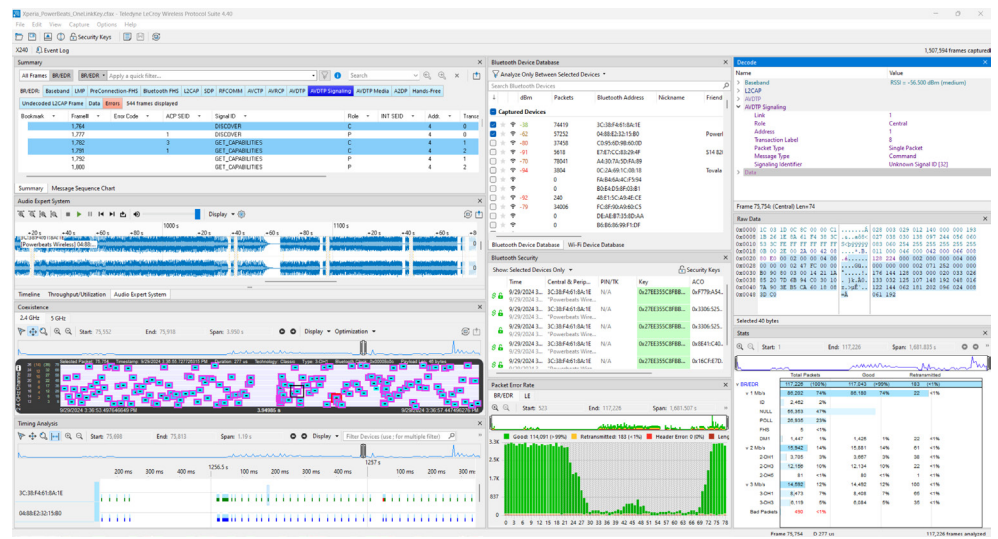
- **Power**  
Power Supply: AC-DC Desktop adaptor - 15V 6A
- **Optional Battery Pack**  
X500e Battery
- **Dimensions and Weight**  
278 x 242 x 45 mm (11" x 9.5" x 1.77")  
2.3kg (5 lbs)
- **Connection to Host Computer**  
USB-C  
Ethernet (10, 100, 1000 Mbps)
- **Operating Frequency of SDR used for Bluetooth and 802.15.4**  
2395MHz - 2485MHz
- **Operating Frequency of WiFi Module**  
802.11b/g/n/ax/be 2.4GHz  
802.11a/n/ac/ax/be 5GHz  
802.11ax (6E) 6GHz  
802.11be 6GHz
- **Sensitivity Range**  
-90dBm to +10 dBm
- **Supported Demodulators**  
BR/EDR and LE (GFSK, π/4 DQPSK, 8DPSK)  
802.15.4 (O-QPSK)
- **Logic Analyzer Timestamp Resolution**  
5ns
- **Operating Temperature**  
0° to 40°C (32° to 104°F)
- **Humidity**  
Operating: 10% to 90% RH (noncondensing)
- **Regulatory Compliance**  
CE UKCA  
KC WPC
- **Host Computer OS Supported**  
Windows 10, 11
- **USB Host Communications Port**  
USB 2.0, USB 3.0

## Intuitive Industry-Leading Software to Accelerate Your Tests

Teledyne LeCroy's Wireless Protocol Suite combines all the power and maturity of Frontline's protocol analysis software with a fresh streamlined interface that brings all analysis tools into a single docking framework window which you can customize to your own preferred way of working.

It's all there—message sequence charts, packet error rate statistics, throughput graphs, timelines, and all of the other views into these complex technologies are now available as dockable windows, and are supported by the mature and robust decodes that come from the decades of experience in wireless protocol analysis embodied by Teledyne LeCroy's Frontline brand of protocol analyzers.

Accurate and reproducible data captures are critical components when verifying the functionality and reliability of wireless devices. Wireless Protocol Suite (WPS) automation API provides reliable reproducibility, along with documentation of the process, while still reducing the amount of human intervention.



## Ordering Information

### Product Description

Frontline X500e Base: Bluetooth LE/BR/EDR, Excursion mode  
Frontline X500e Advanced: Bluetooth LE/BR/EDR, Excursion mode, Spectrum Analysis, two 8-Channel Pods  
Frontline X500e Elite: Bluetooth LE/BR/EDR, Wi-Fi 5, 802.15.4, Excursion Mode, Spectrum Analysis, two 8-Channel Pods  
Frontline X500e Base Wi-Fi: Wi-Fi 1-5, 6E, 7 with MLO 2x2, Spectrum Analysis, Excursion Mode

Frontline X500e Software License: For Wi-Fi 7/6/6E (requires Elite configuration 7014-50000-002)  
Frontline X500e Software License: From Base to Advanced  
Frontline X500e Software License: From Base to Elite  
Frontline X500e Software License: From Advanced to Elite  
Frontline X500e SW License: From Wi-Fi Base to Elite

Frontline X500 System upgrade from X500 Elite to X500e Elite

8-Channel Logic Analyzer Pod  
Audio Analysis Kit (Includes one Audio Analyzer pod and one Logic Analyzer pod)

CrossSync Cable Kit  
Frontline X500/X500e Battery Pack  
1 Year HW warranty

### Product Code

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