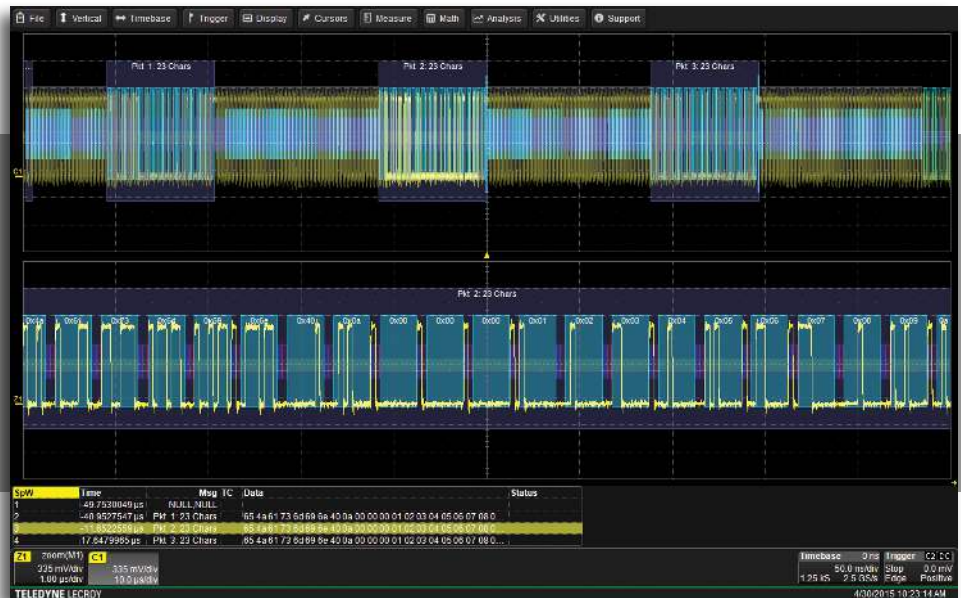# SpaceWire Serial Data Decode

Key Features

- SpaceWire protocol decode based on ECSS-E-ST-50-12C standard

- Simplifies design and debug

- Decodes over the entire bitrate range, 2 Mb/s to 400 Mb/s

- Provides Bits, N/L-Characters, or Packets decode views

- Intuitive color-coded overlay allows for easy viewing of decode

- Explicitly decodes time-codes within normal data traffic

- Decodes using data only or data and strobe lines

- Convenient table display with "zoom to message" capability

- Quick search capability for specific values of Time, Flags, Data, and Status

- Simultaneously decodes up to four SpaceWire buses

The SpaceWire decode adds a unique set of tools to your Teledyne LeCroy oscilloscope that simplifies the design, debug, and maintenance of SpaceWire systems. The high speed SpaceWire data stream is annotated directly on the physical layer waveforms. Various sections of the protocol are color-coded to make it easy to understand the protocol traffic. The decoder provides an interactive table, search, and zoom to make debugging fast and effective.

The Most Intuitive Decode

The SpaceWire decode uses color-coded overlays on various section of the protocol for an easy-to-understand visual display. Decode annotation shows Bits, Character or Packet level decode formats. Depending on the time base or the amount of zoom, the decode information is condensed or expanded to better assist in understanding events during short or long acquisitions

Data Only or Data + Strobe Decoding

Decoding is possible with just the data signal when the bitrate is stable. This saves channels for other concurrent measurements. For data with a variable bitrate, the decoder can be configured with a strobe line input to facilitate the decode.

Convenient Table Display

Deep oscilloscope acquisition memory provides long capture times of SpaceWire stream transmissions. Decoded information is conveniently shown in a table format, displayed with either Bit or Character type detail. Touch a decode row of interest in the table to automatically create a zoom to view a specific section of the decoded waveform. In addition, the table data may easily be exported as a .csv file.

Search and Zoom

The powerful search engine allows for specific flag, control, and data content to be easily scanned and searched. Quickly search through a long record of decoded data by entering any of the available search criteria. The search tools dynamically adjust the zoom to display only the desired portion of the decoded waveform.

SPACEWIRE	
Definition	
Protocol Setup	Selection for source channels. Support is provided for SpaceWire using Data and BitRate or Data and Strobe.
Decode Capability	
Format	Bits Mode: Raw Zeroes and Ones (one line per bit) N/L-Character Mode: ASCII, Hexadecimal, or Decimal (one line per N/L-Character). Packet Mode: ASCII, Hexadecimal, or Decimal (one line per Packet) Parity bits and data control flags are decoded in binary format while in N/L-Character and Packet Modes.
Decode Setup	Selection for source channels. Basic Tab: Table Mode selection in Bits, N/L Characters, or Packets; Physical Layer selection of Data and BitRate or Data and Strobe; Selectable annotation of long NULL sequences. Sync Tab: Automatically Synchronizes Decode on N consecutive NULLs (N is selectable), a user defined pattern, or manually synchronizes on individual bits. (This is not a trigger but a synchronization between Bit Level and Character level) Levels Tab: Select both Level and Hysteresis either in percent of amplitude or absolute (V) separately for Data and Strobe lines.
Decode Input	Any Analog Channel, Memory, or Math Trace
# of Decode Waveforms	Up to 4 buses may be decoded at one time. In addition, zooms can be displayed (with decoded information).
Location	Overlaid on SpaceWire Data physical layer waveform. (Note: Use multi-grid if more than one decoder is turned on).
Visual Aid	Color Coding for SpaceWire Control Characters (L-Chars: ESC, EOP, EEP, FCT), Data Characters (N-Chars), Parity Bits, Control Flag, Synchronization sequence, and Time-Codes.
Search Capability	
Pattern Search	"Bits" Mode: Search for Idx, Time, Data, and Status. "N/L-Chars" Mode: Search for Idx, Time, Msg, Time-Code, Control Flag, Data, and Status. "Packets" Mode: Search for Idx, Time, Msg, Time-Code, Control Flag, Data, and Status.
Other	
Compatible With...	Fully compatible with WaveSurfer 10/MXs-B/MSO MXs-B Series, HDO4000 Series, HDO6000 Series, WaveRunner 6 Zi Series, HDO8000 Series, MDA800 Series, WavePro 7 Zi Series, WaveMaster 8 Zi Series, LabMaster 9 Zi-A Series, and LabMaster 10 Zi Series.

Ordering Information

Product Description	Product Code
SpaceWire Decode Option for WaveSurfer MXs-B/MSO MXs-B Oscilloscopes	WSXS-SpaceWirebus D
SpaceWire Decode Option for WaveSurfer 10 Oscilloscopes	WS10-SpaceWirebus D
SpaceWire Decode Option for HDO4000/HDO4000-MS Oscilloscopes	HDO4K-SpaceWirebus D
SpaceWire Decode Option for HDO6000/HDO6000-MS Oscilloscopes	HDO6K-SpaceWirebus D
SpaceWire Decode Option for WaveRunner 6 Zi Oscilloscopes	WR6Zi-SpaceWirebus D
SpaceWire Decode Option for HDO8000 Oscilloscopes	HDO8K-SpaceWirebus D
SpaceWire Decode Option for WavePro 7 Zi Oscilloscopes	WPZi-SpaceWirebus D
SpaceWire Decode Option for WaveMaster 8 Zi Oscilloscopes	WM8Zi-SpaceWirebus D
SpaceWire Decode Option for LabMaster 9 Zi Oscilloscopes	LM9Zi-SpaceWirebus D
SpaceWire Decode Option for LabMaster 10 Zi Oscilloscopes	LM10Zi-SpaceWirebus D

Customer Service

Teledyne LeCroy oscilloscopes and probes are designed, built, and tested to ensure high reliability. In the unlikely event you experience difficulties, our digital oscilloscopes are fully warranted for three years and our probes are warranted for one year. This warranty includes:

- No charge for return shipping
- Long-term 7-year support
- Upgrade to latest software at no charge

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Local sales offices are located throughout the world. Visit our website to find the most convenient location.