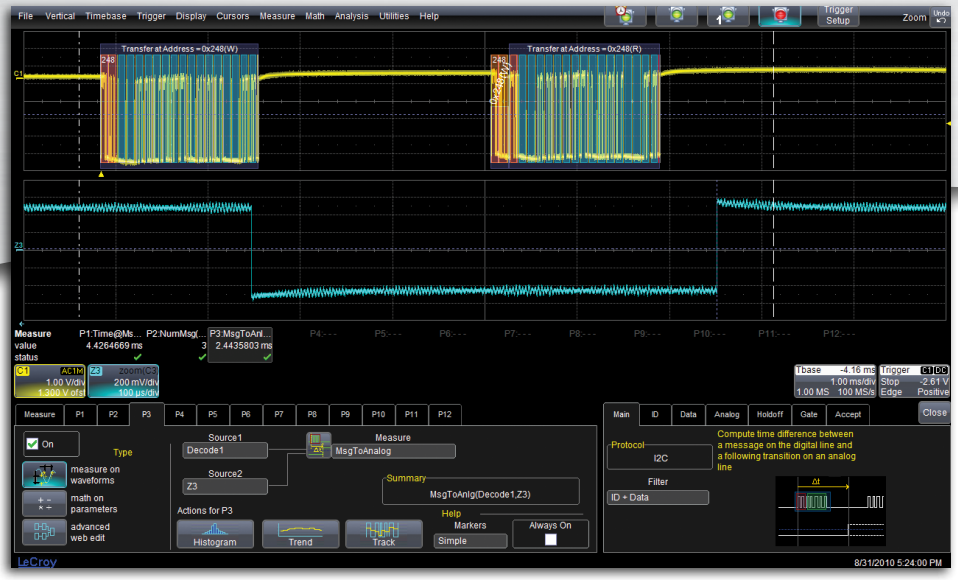
LeCroy

PROTObus MAG Serial Debug Toolkit



Use the Message to Analog measurement to find the time between an I²C data packet and a control signal on another channel. Measurement gates and filtering help to control the measurement packet under test to eliminate any confusion with setup.

Key Features

- **Additional 9 measurements to supplement serial decoders**
- **Works with I²C, SPI, UART, RS-232, CAN, LIN, FlexRay,™ DigRF 3G, DigRF v4, Arinc429 and MIL-STD-1553 Decode packages**
- **Quickly setup and view Serial Encoded Data as Analog waveform representation**
- **New Measurement setup window for easy configuration**
- **Conditional filtering for accurate measurements**

The PROTObus MAG (measure, analysis, graph) Serial Debug Toolkit is the basic building block upon which many other LeCroy serial trigger and decoder options can then be added. It significantly extends the trigger and decode functionalities of these other packages to by providing tools for more complete and faster validation and debugging of embedded designs. It provides the deepest level of insight possible.

Data Extraction and Graphing tools

Extract data from the serial protocol message stream and use the track functions to graphically plot that data on the oscilloscope display. The digital data is used to create an analog waveform that can then be compared to other electrical signals.

Timing and Bus Measurements

Specific measurement parameters allow you to quickly and easily characterize your serial data system and make gateway measurements. Use the Message-Message parameter to find the time between two messages on the bus or the Message-Analog parameter to correlate bus traffic to an analog signal. Use LeCroy's measurement statistics and histicons to understand the range of measurements on the protocol bus.

Easy Measurement Setup

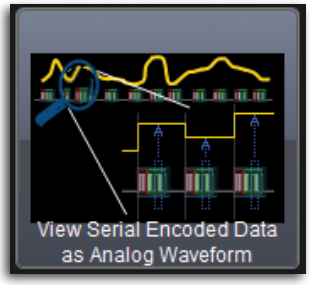
Easily configure the proper measurement with large descriptive icons, helpful descriptions, and measurement markers to make sure the measurement is made properly.

Apply a filter to any measurement for more accurate results. Identify a specific ID or ID and Data using the powerful conditional setup for more accurate filtering.

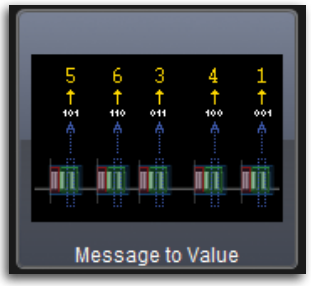
POWERFUL GRAPHING TOOLS

Data Extraction and Graphing Tools

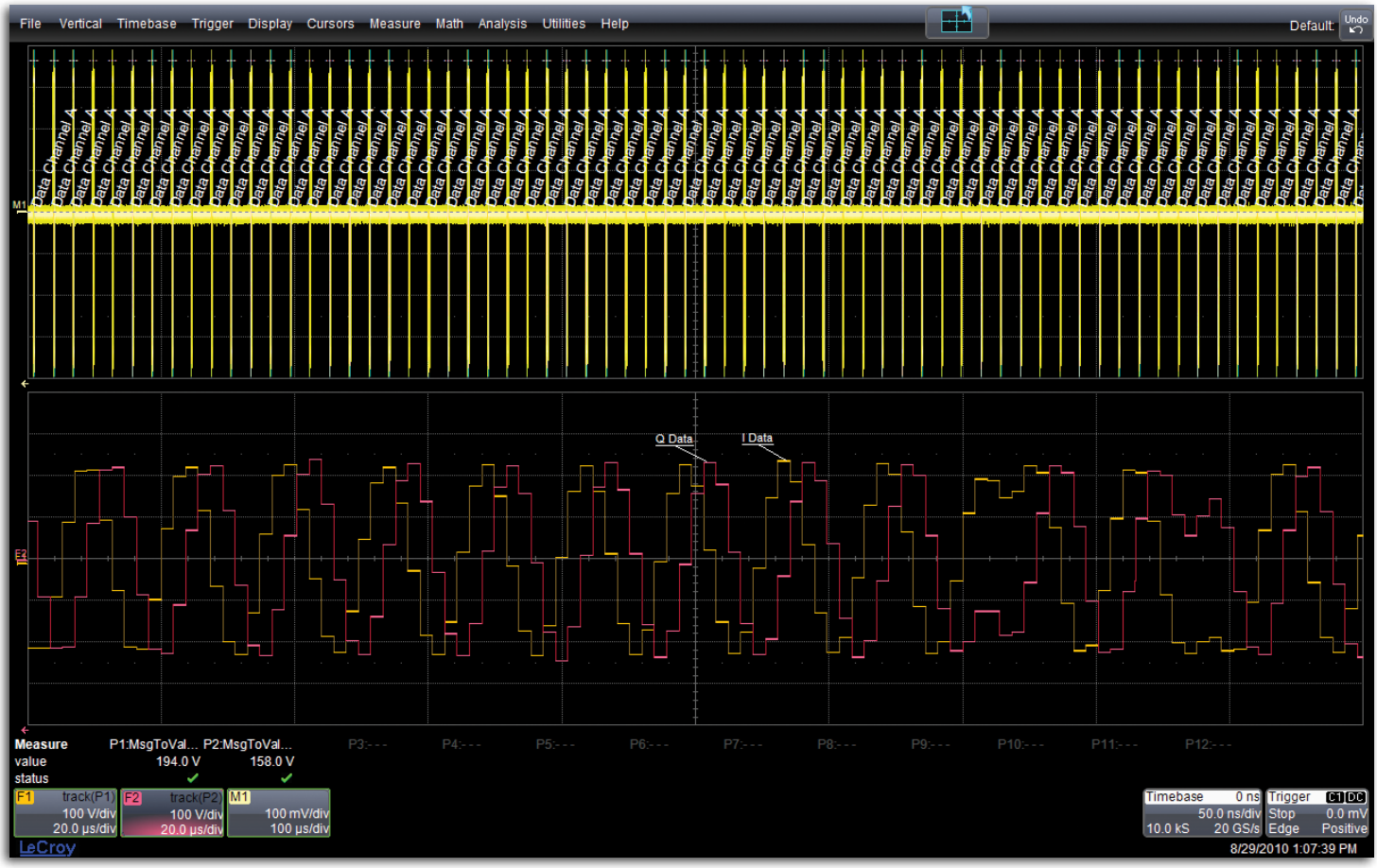
The most powerful feature of the PROTObus MAG Serial Debug Toolkit is the ability to extract digital data from the serial data message using the Message to Value measurement. Then, by applying the Math operator, View Serial Encoded Data as Analog Waveform, the user can view a plot of the data values over time with an intuitive analog waveform representation — a view not available in any other product. Some examples of the usefulness of this capability are: viewing data from a temperature sensor or controller that is sent via an I^2C or SPI bus; radio frequency I and Q modulated signal information sent via DigRF 3G; or rotational wheel speed information used by an anti-lock braking system (ABS) and sent via CAN. The ability to convert the embedded digital data in the serial data message to an analog value and view an analog waveform representation of the data is a powerful feature that makes the PROTObus MAG Serial Debug Toolkit a necessity for engineers debugging serial protocols.



Applies a track math operator to the Message to value measurement to view Serial Encoded Data as an Analog Waveform



Decoded data content of data payload of a protocol message meeting conditions.

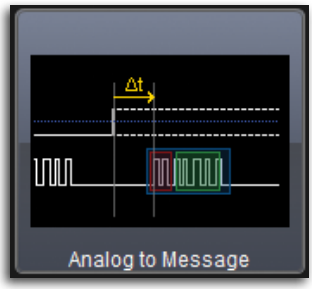


With the addition of the PROTObus MAG Serial Debug Toolkit, DigRF 3G I and Q digital data payload fields may be quickly converted into a corresponding I and Q analog waveform representation for easy analysis and debug. View the I, Q or both waveforms in the time domain, and perform time / delay measurements on I and Q signals.

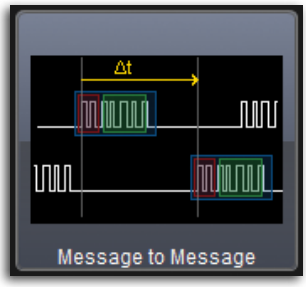
TIMING AND BUS STATUS MEASUREMENTS

Timing Measurements

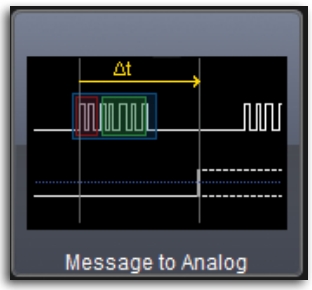
PROTObus MAG also includes automated timing measurements useful for embedded design cause-effect validation, such as **Message to Analog, Analog to Message, or Message to Message.** These measurements provide the ability to rapidly and accurately validate embedded system operation, and then perform statistical analysis using LeCroy's powerful statistical histogram views and measurements. For instance, a serial data message sent by an embedded controller might initiate another signal or serial data message on the same or another embedded controller. By automating the timing measurement between these two events, and allowing rapid collection and analysis of large amounts of timing measurement data, embedded system validation can be more quickly and accurately performed, and the presence and cause of timing violations quickly located.



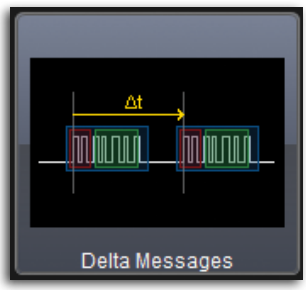
Computes the time difference from a protocol message meeting conditions to the crossing of a threshold on an analog signal.



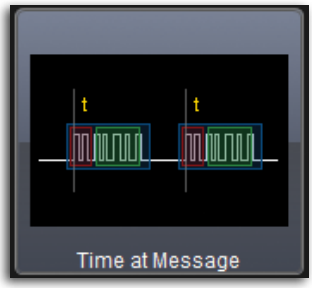
Computes the time difference from a protocol message meeting conditions to another protocol message meeting conditions



Computes the time difference from a protocol message meeting conditions to the crossing of a threshold on an analog signal.



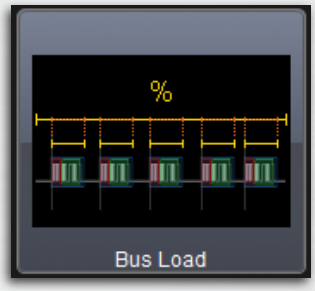
Computes the time difference between two messages on a single decoded line.



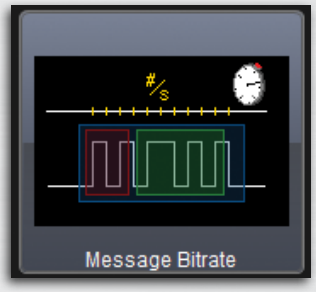
Time from Trigger to each protocol message meeting conditions.

Bus Status Measurements

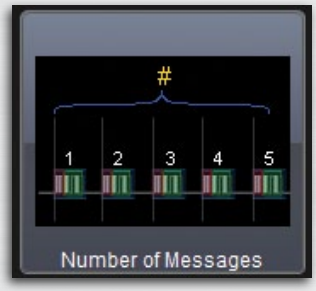
The bus status measurements Bus Load, Message Bitrate, and Number of Messages, give an overall status of the decode protocol to quickly learn if the bus is over utilized and to verify the bit rate matches expectations.



Computes the load of user defined message in percent on the bus

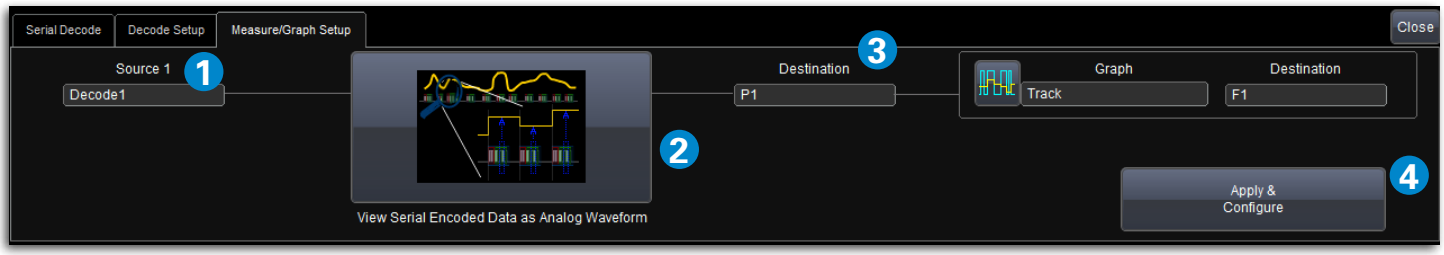


Computes the bitrate of the user specified messages on the decoded trace.



Computes the number of message matching user definition in a decoded trace.

SETUP, COMPATIBILITY AND ORDERING INFORMATION



Setup is easy with the improved serial decode measurement setup tab.

1. Choose the source
2. Choose the measurement
3. Select destination
4. Then apply and configure

Compatibility

The PROTObus MAG Serial Debug Toolkit is applicable to the I²C, SPI, UART, RS-232, CAN, LIN, FlexRay, DigRF 3G, DigRF v4, Arinc429 and MIL-STD-1553 decode solutions.

Ordering Information

Product Description	Product Code
PROTObus MAG Serial Debug Toolkit for WaveRunner Xi/Xi-A	WRXi-PROTObus MAG
PROTObus MAG Serial Debug Toolkit for WaveRunner 6Zi	WR6Zi-PROTObus MAG
PROTObus MAG Serial Debug Toolkit for WavePro 7 Zi	WPZi-PROTObus MAG
PROTObus MAG Serial Debug Toolkit for WaveMaster 8 Zi	WM8Zi-PROTObus MAG

Customer Service

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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1-800-5-LeCroy
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Local sales offices are located throughout the world.
Visit our website to find the most convenient location.

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