

# 9-Channel Bus and Node Monitoring Test Set

## Monitor 1394 Buses for Upsets Due to Electromechanical Testing

### Applications

Monitoring of 1394 buses during Electromagnetic Environment Effects Testing

Monitoring of 1394 buses during Diagnostic Testing

Monitoring of 1394 buses during Vehicle Assembly Processes

### Benefits

Safe remote viewing of monitored data through copper or optical connection

Safely and remotely monitors at varying distances (30m/100ft fiber optic and 2m/6ft copper cables included)

Standalone IEEE-1394 network monitor with no external PC required

Robust Electromagnetic Interference design

Monitors up to 9 IEEE-1394 buses for bus resets and node count

Battery-powered operations enables high EMI tolerant design and using in gas vapor environments

External copper to fiber optic Extender module allows for easy and cost effective fiber optic replacement

### Features

Monitor up to nine (9) independent IEEE-1394 buses for bus reset and node count

Integrated touchscreen enables IEEE-1394 network testing with no external PC required

Battery-powered along with well-shielded cables and devices provides excellent EMI tolerance

Robust fiber optic cabling enables long distances and electrical isolation

Direct copper connection between 9-Channel Bus Monitor and Remote Display for system setup and debug

Scalable architecture allows for new applications. See iVeriPHY product, in addition to currently supported applications, i.e. 9-Channel Bus Monitor

### Overview

Designed for Electromagnetic Environmental Effects testing, the rugged IEEE-1394/MIL1394 9-Channel Bus and Node Monitoring test set (Part Number: FW-VTSRT-9CH-1394B) monitors up to nine independent IEEE-1394-2008 Beta buses for bus resets and number of nodes present on the bus.

The 9-CH test set monitors up to nine (9) 1394 buses for bus resets and the resulting number of nodes present on the bus. The test set consist of a battery powered 9-Channel Monitor which interfaces to the air vehicle through three well-shielded (3) D38999 cables, a battery-powered Remote Display, two battery-powered copper to fiber optic Extenders (Extender) and associated cables along with a carrying case.

The 9-Channel Monitor provides the bus reset and node count information over an Ethernet "back-channel" connection to the Remote Display for viewing. The Ethernet connection between the 9-Channel Monitor and the Remote Display may be direct using a copper Ethernet cable or through two of the provided Extenders and the provided 30m/100ft optic cable. During EEE testing, the optical connection provides superior electrical isolation between the 9-Channel Bus Monitor and the Remote Display.

The test set also includes two 2 meter copper Ethernet cables and the required battery chargers and AC-adapter. All contents of the test set are securely contained in a portable MIL-STD 810G waterproof carrying case.

The 9-Channel Bus and Node Monitoring test set is built on the same scalable architecture as the New Wave iVeriPHY. The architecture allows New Wave to expand or even develop totally new applications that can run on the test set to provide more fault isolation and diagnostic information. Please contact New Wave for details.




> 9-Channel Bus & Node Monitor Kit

# 9-Channel Bus and Node Monitoring Test Set

## Monitor 1394 Buses for Upsets Due to Electromechanical Testing

	A			B			C		
	Bus 1	Bus 2	Bus 3	Bus 1	Bus 2	Bus 3	Bus 1	Bus 2	Bus 3
Resets	10	10	4	2	10	4	10	10	2
Node Count	23	23	2	0	23	2	23	23	0
VMC Connection	<span style="color: green;">●</span>	<span style="color: green;">●</span>	<span style="color: green;">●</span>	<span style="color: red;">●</span>	<span style="color: green;">●</span>	<span style="color: green;">●</span>	<span style="color: green;">●</span>	<span style="color: green;">●</span>	<span style="color: red;">●</span>

Screen Sleep Interval:

Initialize Configuration: 1.2.0-1.1.0 Clear All

9-Channel BM: Connected

[> Remote Display Connection Application](#)

### Functional Description

While conducting tests, IEEE-1394 bus resets and failed communication between devices on the network are key indicators the network is encountering signal integrity problems. During normal operation, when the network has stabilized after initial power up, an IEEE-1394 bus reset should never occur. Therefore, when external stimulus (external to the 1394 bus) causes the bus to observe bus resets or node count changes, this indicates the bus shielding is susceptible to external radiated emissions stimulus at specific power/frequency level.

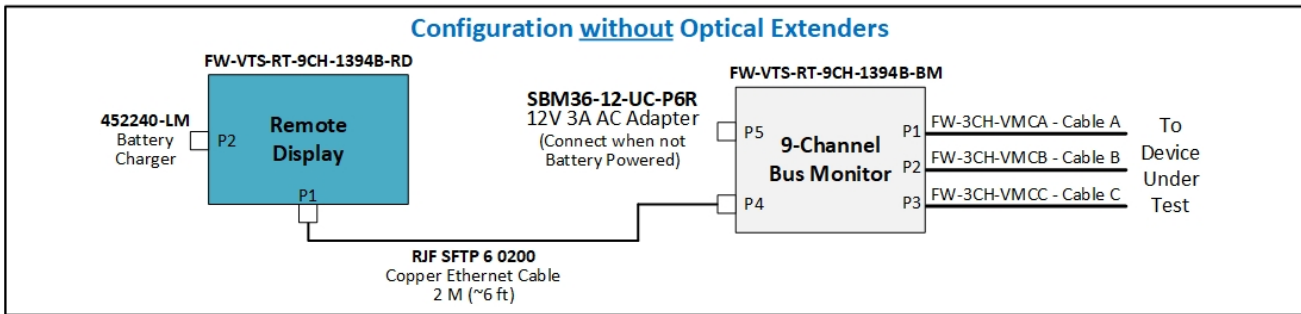
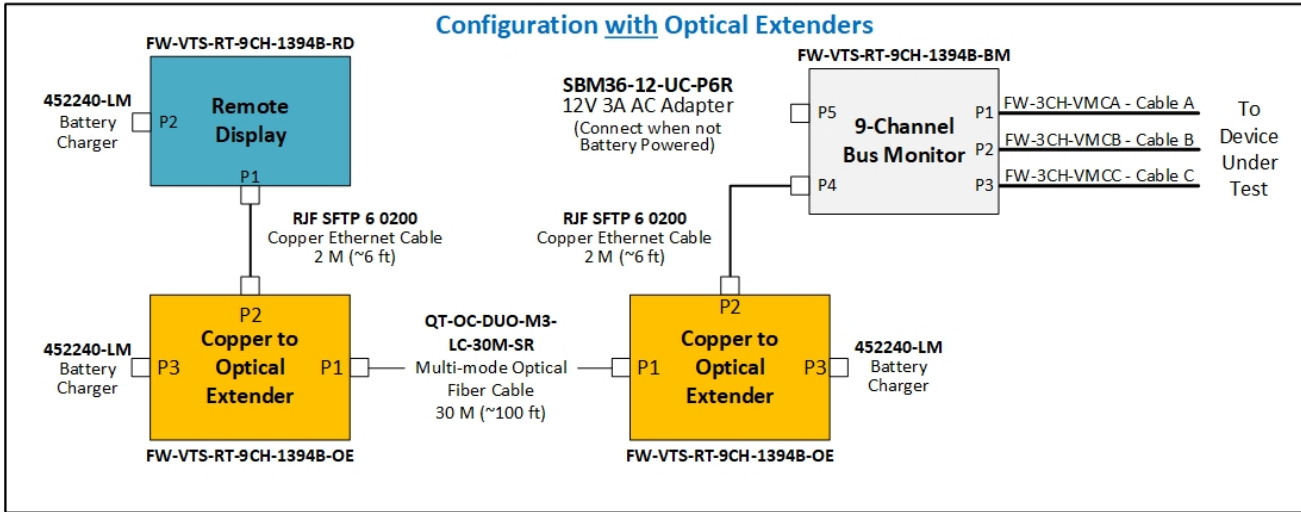
Given the harsh Electromagnetic Interface environment the 9-Channel Bus and Node Monitoring test set was designed to operate in, optically isolating the 9-Channel Bus Monitor from the Remote Display was required to protect both the user and the integrity of the system. One of the battery powered Copper to Optical Extenders connects to the 9-Channel Monitor via 2-meter copper Ethernet cable and the second connects to the Remote display using the second 2-meter copper Ethernet cable. The two Extenders connect to each other through the 30M fiber optic cable.

When short, less-isolated connections between the 9-Channel Bus Monitor and the Remote Display is desired, the provided 2-meter copper Ethernet cables can be used. When longer isolated connections between the 9-Channel Bus Monitor and the Remote Display is desired, the user can use the 2-meter copper Ethernet cables to connect to the battery powered Copper to Optical Extenders to both the 9-Channel Bus Monitor and the Remote Display and connect the 30 Meter fiber optic cable between the two Extenders.

All devices in the 9CH-BNM test set can be battery powered. The 9-Channel Bus Monitor's battery is removable and is charged externally. The batteries in the Remote Display and both Extenders are not removable and are charged in the device.

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## Monitor 1394 Buses for Upsets Due to Electromechanical Testing



> Example Connection Block Diagram

### Functional Description (cont.)

The test set devices and air vehicle connectivity and test functions are controlled through the Remote Display. The user can verify the connection of the 9-Channel Bus Monitor to the Remote Display by observing the 9-Channel Bus Monitor Connected indicator on the Remote Display application. Once the connection between the Remote Display and the 9-Channel Bus Monitor is established, the user can then verify 9-Channel Bus Monitor connections to the air vehicle are active by observing the VMC Connection indicators for all 9 buses on the Remote Display application.

After the expected air vehicle connections are established, the test is ready to monitor. Once the air vehicle is ready to begin testing, the user selects the "Clear All" button to reset the bus reset counter (Resets) back to zero. The user then observes the Resets and Node Count for changes while the test is being run.

At the end of the test the user can compare the number of Resets and Node Count observed by the test set with the expected values. If the number of Resets is greater than the expected values, the test fails. Additionally, if the number of Nodes found is less than the expected number the test also fails.

# 9-Channel Bus and Node Monitoring Test Set

## Monitor 1394 Buses for Upsets Due to Electromechanical Testing

### Complete Product Support Program

As our customers can attest, the New Wave DV prides itself on its excellent customer support. New Wave DV provides industry standard warranty on its products, but it is the human factor that makes our support so valuable to our customers. Our team takes the time and effort to ensure that the customer experience with our products is a positive one.

### Our Commitment

New Wave DV is committed to providing the latest innovations in technology, architectures, and techniques to keep our customers one step ahead of the rest. Our products, complete with the Development Framework, are intended to offer our customers an entirely unique out-of-the-box experience.

### Ordering Information

9 Channel Bus and Node Monitoring Test Set: FW-VTS-RT-9CH-1394B

#### What's Included:

- x1 9-CH-BNM w/ Shoulder Strap
- x1 9-CH-BNM CUI 12V Power Supply
- x1 9-CH-BNM Battery
- x1 9-CH-BNM Battery Charger w/ RRC A11-065N1A AC Adapter
- x1 Remote Display Unit
- x2 Copper to Optical Extender (Extenders)
- x3 Battery Chargers for Remote Display & Extenders
- x1 Bus A: 9-CH-BNM to MIP 12 foot Cable
- x1 Bus B: 9-CH-BNM to MIP 12 foot Cable
- x1 Bus C: 9-CH-BNM to MIP 12 foot Cable
- x1 30 Meter - Multimode OM3 50/125 Fiber Optical Cable
- x2 2 Meter - Shielded Cat 6 w/ 38999 Connector
- x1 Quick Start Guide
- x1 User's Guide & Operations Manual (Electronic)
- x1 Maintenance Manual (Electronic)

### Technical Specifications

#### CONNECTORS

9-Channel Bus Monitor:

- Three (3) 55-pin 38999 connectors each providing three (3) transformer-isolated IEEE-1394 Beta ports
- RJ-45 Ethernet Connector
- 12 VDC Power Connector

Remote Display:

- RJ-45 Ethernet Connector
- Battery Charger Connector

Fiber Optic Extender:

- RJ-45 Ethernet Connector
- LC Fiber Optic Connector
- Battery Charger Connector

#### DATA RATE SUPPORT

IEEE-1394 S200 $\beta$  and S400 $\beta$   
100M/1Giga-bit Ethernet

#### WEIGHT

Complete Test Set: 63lbs (28.57kg)

#### DIMENSIONS

Carrying Case: 26.5" x 26.54" x 15.65" (673mm x 674mm x 398mm)

#### TEMPERATURE

**9-Channel Bus Monitor: FW-VTS-RT-9CH-1394B-BM**

Operating Temperature: 0°F (-18°C) to 110°F (43°F)

**Remote Display: FW-VTS-RT-9CH-1394B-RD**

Operating Temperature: 0°F (-18°C) to 110°F (43°F)

**Fiber Optic Extenders: FW-VTS-RT-9CH-1394B-OE**

Operating Temperature: 0°F (-18°C) to 110°F (43°F)

**Test Set Batteries/Battery Chargers:**

Battery Operating: 0°F (-18°C) to 110°F (43°F)

Battery Charging: 32°F (0°C) to 110°F (43°F)

Charger Operating: 0°F (-18°C) to 110°F (43°F)

#### FOR MORE INFORMATION:

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