

# DisplayPort Aux Channel Preprocessor

For use with Tektronix Logic Analyzers

FuturePlus® Systems

Power Tools for Bus Analysis

- Low cost DisplayPort Aux Channel analysis
- Supports TLA7000-series logic analyzers
- Includes protocol-decode software and automatic logic analyzer setup software
- Requires a DP AUX channel high speed differential connection using a Samtec .050 header where pins 1 and 3 are AUXp and AUXn.



## Key Features

- Powerful Protocol Decode software decodes and displays Auxiliary channel activity on the Tektronix logic analyzer
- Included cable connects the FS4437 to the Aux Channel connectors in your target system

## Straightforward, Reliable DisplayPort Analysis

The FuturePlus FS4437 Aux Channel Preprocessor provides a mechanical, electrical and software interface between a Tektronix logic analyzer and the Aux Channel of DisplayPort, a digital display interface standard supported by the Video Electronics Standards Association (VESA). The FS4437 is used to design and debug computer motherboards, monitors, home theater systems, and silicon chips incorporating DisplayPort technology.



## Helping you Design Tomorrow's Computers, Today

FuturePlus Systems is the technology leader in protocol analysis tools for the computer design industry. Our preprocessors and software help you monitor and verify complex activities on your advanced-technology computer bus design. FuturePlus systems offerings include bus-analysis solutions for most popular computer buses. Visit [www.futureplus.com](http://www.futureplus.com) for more information.

**Tektronix**

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# Auxiliary Channel Protocol Analysis

**Aux Channel is a bidirectional half duplex 1Mb/sec communication channel**

**The serial data is de-serialized into a 48 bit wide bus and clocked to the logic analyzer. This wide bus makes triggering easy**

**Aux Channel communicates configuration data between the monitor and the host PC**

**Diagnostic mode information is also communicated over the Aux Channel**

| Sample | AuxPort Address | AuxPort Data | AuxPort Mnemonics   | AuxPort Status | AuxPort Byte_Count |
|--------|-----------------|--------------|---|----------------|--------------------|
| 9      | 000000          | 00           | Timeout   | 2              | 00000              |
| 10     | 00102           | 03           | AUX Read request, Address = 00102 Length = 04                 | 7              | 00100              |
| 11     | 000000          | 00           | Aux ACK   | 6              | 00010              |
|        | 000000          | 00           | TRAINING PATTERN SET  | 6              | 00010              |
|        | 000000          | 00           | Training Patt. Set= disabled                                  | 6              | 00010              |
|        | 000000          | 00           | Link Qual Patt. Set= pattern not transmitted                  | 6              | 00010              |
|        | 000000          | 00           | Recovered clock out enable = Disabled                         | 6              | 00010              |
|        | 000000          | 00           | Scrambling Disable = Scrambler enabled                        | 6              | 00010              |
|        | 000000          | 00           | Symbol error cnt sel.= Disparity error & illegal symbol error | 6              | 00010              |
| 12     | 000000          | 08           | TRAINING LANE 0 SET   |                |                    |
|        | 000000          | 08           | Training Patt. 1, Volt. swing level 0                         |                |                    |
|        | 000000          | 08           | Max Swing Reached = 0   |                |                    |
|        | 000000          | 08           | Training Patt. 2, with Pre-emphasis level 1                   |                |                    |
|        | 000000          | 08           | Max Pre-emphasis Reached = 0                                  |                |                    |
| 13     | 000000          | 08           | TRAINING LANE 1 SET   |                |                    |
|        | 000000          | 08           | Training Patt. 1, Volt. swing level 0                         |                |                    |
|        | 000000          | 08           | Max Swing Reached = 0   |                |                    |
|        | 000000          | 08           | Training Patt. 2, with Pre-emphasis level 1                   |                |                    |
|        | 000000          | 08           | Max Pre-emphasis Reached = 0                                  |                |                    |
| 14     | 000000          | 08           | TRAINING LANE 2 SET   |                |                    |
|        | 000000          | 08           | Training Patt. 1, Volt. swing level 0                         |                |                    |
|        | 000000          | 08           | Max Swing Reached = 0   |                |                    |
|        | 000000          | 08           | Training Patt. 2, with Pre-emphasis level 1                   |                |                    |
|        | 000000          | 08           | Max Pre-emphasis Reached = 0                                  |                |                    |
| 15     | 00102           | 00           | AUX Write request, Address = 00102 Length = 01                | 3              | 00101              |
| 16     | 00102           | 01           | TRAINING PATTERN SET  | 3              | 00101              |
|        | 00102           | 01           | Training Patt. Set= Training pattern 1                        | 3              | 00101              |
|        | 00102           | 01           | Link Qual Patt. Set= pattern not transmitted                  | 3              | 00101              |
|        | 00102           | 01           | Recovered clock out enable = Disabled                         | 3              | 00101              |
|        | 00102           | 01           | Scrambling Disable = Scrambler enabled                        | 3              | 00101              |
|        | 00102           | 01           | Symbol error cnt sel.= Disparity error & illegal symbol error | 3              | 00101              |
| 17     | 000000          | 00           | Aux ACK All Data bytes written                                |                |                    |
| 18     | 00102           | 03           | AUX Read request, Address = 00102 Length = 04                 |                |                    |
| 19     | 000000          | 01           | Aux ACK   |                |                    |
|        | 000000          | 01           | TRAINING PATTERN SET  |                |                    |

## Ordering Information

**FS4437** – Auxiliary Channel preprocessor for use with Tektronix Logic Analyzers

Four of the following are required to connect the FS4437 to the logic analyzer:

**FS1055** – TLA7Axx / TLA7Bxx Full Channel Probe Cable

### Software included:

Setup files for the Tektronix logic analyzer

Protocol Decoder software, runs on the Tektronix logic analyzer

### Logic Analyzer Requirements

- 68 channels required for Aux Data, 100 KHz state acquisition.
- The Tektronix logic analyzer connects to the FS4437 with four FS1055 Probe Cables.

### Product Upgrade

- Upgrade to the FS4435 version that includes both Main Link and Aux Channel analysis is available, contact FuturePlus for details.

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### Represented By:

