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General Description

The Communications Technologies (LVCT) software provides a user interface for the system. Each different communications technology is presented as a separate application. On start-up, the user selects the desired application in the Application Selection dialog box. Then the LVCT software loads the signal processing routines used to implement that application in the RTM.

The main window of the software has a number of tabs each containing one diagram. Some diagrams show how the elements of the system are interconnected. The other diagrams show the functional blocks of the circuits that make up the application. Each circuit diagram includes a number of Test Points (TPs) and/or Test Busses (TBs) allowing the student to observe and measure the signals within the circuit using the virtual instruments included in the software. In some applications, Data Points (DPs) provide access to data in the form of editable or read-only tables.

The software includes the following virtual instruments (depending on the application):

- The Oscilloscope displays analog or digital signal waveforms.
- The Spectrum Analyzer displays the frequency spectrum of a signal.
- The True RMS Voltmeter measures the true RMS value of a signal.
- The Logic Analyzer records and displays the states of multiple digital signals.
- The ADSL application has two Constellation Viewers to display complex signal constellations.

The user interface includes tables of settings that allow changing various software parameters in order to control the system or to configure the virtual instruments and the generators (function generators and clock generators) provided in the applications. In addition, faults can be inserted into the circuits by the instructor for troubleshooting exercises. The Communications Technologies Training System User Guide is included with the LVCT Software.

Various application sets are available for the LVCT Software:

The following applications are enabled when the Data Acquisition Interface and the Analog/Digital Output Interface plug-ins are detected:

- PAM / PWM / PPM Applications
- PCM / DPCM / Delta Modulation Applications
- ASK / FSK / BPSK Applications
- QPSK / QAM / ADSL Applications

The following applications are enabled when the Data Acquisition Interface, Analog/Digital Output Interface and Vocoder plug-ins are detected:

- DSSS / FHSS / CDMA Applications

* Please note that previous versions of the software used CD-ROMs to unlock the different applications. These CD-ROMs are not needed anymore as the applications are automatically enabled based on the detected RTM plug-ins.

Manual

Description

Manual number

Communications Technologies Training System (User Guide) _____ 584879 (39862-E0)

Specifications

Parameter	Value
Virtual Oscilloscope	
Display Channels	3 (including External Trigger channel)
Channel Math	None, Ch 1 + Ch 2, Ch 1 – Ch 2
Memories	2
View modes	Single Refresh, Continuous Refresh
Display Mode	Normal, Dots
X-Y Mode	Yes
Persistence	Off, 2 Traces, 3 Traces, 4 Traces
Cursors	Off, Horizontal, Vertical, Both (Hor. Active), Both (Vert. Active)
Trigger Source	Ch 1, Ch 2, Ext
Scale Settings	5 mV/div to 5 V/div
Auto Scale	Yes
Time Base Settings	0.2 μ s/div to 0.2 s/div
Virtual Spectrum Analyzer	
Memories	2
View modes	Single Refresh, Continuous Refresh
Averaging	Off, 2, 4, 8, 16
Cursors	Off, Horizontal, Vertical
Scale Type	Linear, Logarithmic
Maximum Input Settings	0.1 to 5 V Linear, -30 to 20 dBV Logarithmic
Scale Settings (Logarithmic)	1 to 10 dBV/div
Frequency Span Settings	2 to 20 kHz/div
Virtual True RMS Voltmeter	
Mode	Volts, dBm
View modes	Single Refresh, Continuous Refresh
Range Settings	10 mV to 10 V
Virtual Logic Analyzer	
Display Width	0.001 to 1000 ms
Data Channels	8
Symbol Channels	2
Record Buffer Length	256 clock cycles
Cursors	Off, On
Virtual Constellation Viewer (ADSL)	
Grid	None, Position, Limit
Axes	Off, On
Persistence	None, 5, 10, 15
Tone	0 to 31
Computer Requirements	
The LVCT software requires a currently available personal computer with USB 2.0 ports, including a 3D graphics card (dual-monitor support is recommended) and a fast Ethernet (100 Mb/s) network interface adapter, running under one of the following operating systems: Windows® 7 or Windows® 8.	

Reflecting the commitment of Festo Didactic to high quality standards in product, design, development, production, installation, and service, our manufacturing and distribution facility has received the ISO 9001 certification.

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Festo Didactic SE

Rechbergstrasse 3
73770 Denkendorf
Germany

P. +49(0)711/3467-0
F. +49(0)711/347-54-88500

Festo Didactic Inc.

607 Industrial Way West
Eatontown, NJ 07724
United States

P. +1-732-938-2000
F. +1-732-774-8573

Festo Didactic Ltée/Ltd

675 rue du Carbone
Québec QC G2N 2K7
Canada

P. +1-418-849-1000
F. +1-418-849-1666

www.labvolt.com

www.festo-didactic.com