Changeover Unit

▶ ECO422D SD/HD

The ECO422D is a highly versatile sync changeover unit designed for use in a serial SD/HD digital television environment. The ECO422D will accommodate component or composite serial digital video signals, AES/EBU digital audio, tri-level sync and analog black burst signals. This flexibility makes the ECO422D ideal for both the mixed-format and all-digital television facility.

The ECO422D provides 11 user-configured channels, each channel consisting of primary and backup inputs and an output.

- Six channels can be set for high definition serial digital video, standard definition serial digital video, AES/EBU digital audio, tri-level sync and PAL or NTSC analog black burst
- Five channels may be set for standard definition serial digital video, AES/EBU digital audio, tri-level sync and PAL or NTSC analog black burst

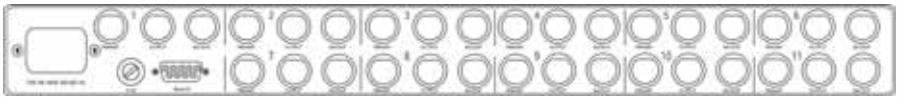
The Electrical Fast Switch function, available with Option ELSW, has the capability to improve the changeover switch speed between inputs and replaces the mechanical relay on inputs 4 to 6. Using this type of switch minimizes disturbance when switching between primary and backup input channels. The input channels (4 to 6) of Option ELSW can only accept a black burst or tri-level sync signal.

Channel configuration is by internal DIP switch. Signal amplitude fault detection level follows the setting of the channel configuration switches. Detection on individual channels may be disabled, giving the option of disabling changes to the backup unit on failure of signals not critical to the facility operation.

When operated in the switch-on-fault mode, the ECO422D will automatically select the backup sync source should any of the primary inputs fail. However, in the unlikely event both sync sources are faulty, the ECO422D will not alternate between the two sources. If necessary, this function may be overridden with the manual sync source selection. Manual source selection also facilitates periodic testing of the changeover function.

Switching is by mechanical relay with all channels switched simultaneously.

Front panel controls are provided for source selection, operating mode, resetting the fault indicators and for disabling the front panel controls. LED indicators are also provided. Indication of fault and unit online is also available via the remote connector.



▶ Features & Benefits

Switches Analog Black and Serial Digital Video, Both Standard and High-Definition, and Digital Audio

Eleven User-configurable Signal Channels

Amplitude Detection on All Channels

Electrical Fast Switch Function for Input Channels 4 to 6 with Option ELSW

Automatic or Manual Operation

Fault and Operating Mode Front Panel Indicators

▶ Applications

Provides Complete Fault Tolerance When Used as a Switch Between Primary and Back-up SPGs or TSGs

Tektronix

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Changeover Unit

▸ ECO422D SD/HD

▸ Characteristics

Inputs and Outputs

Return Loss –

Channels 1 to 6:
- 30 dB, 0 to 10 MHz.
- 15 dB, 10 to 750 MHz.
- 10 dB, 750 MHz to 1.5 GHz.

Channels 7 to 11:
- 30 dB, 0 to 10 MHz.
- 15 dB, 10 to 270 MHz.
- 12 dB at 360 MHz (15 dB typical) when selected.

Channels 4 to 6 (with Opt. ELSW):
- 30 dB, 0 to 10 MHz.

Insertion Loss –

Channels 1 to 6: 0.2 dB, DC to 10 MHz.
- In a frequency range of 10 MHz to 1.5 GHz, the instrument approximates less than 20 meters of Belden 1694A cable.

Channels 7 to 11:
- 0.2 dB, DC to 10 MHz.
- 0.5 dB, 10 to 200 MHz.
- 1.0 dB, 200 to 360 MHz.

Channels 4 to 6 (with Opt. ELSW):
- 0.3 dB, DC to 10 MHz.

Maximum Switched Voltage –

All channels:
- ±5 V.

Channels 4 to 6 (Opt. ELSW):
- ±1 V (only for the Tri-level sync and analog black burst signals).

Maximum Switched Current – 100 mA.

Crosstalk (unselected input to output or channel to channel) –

Channels 1 to 6:
- –60 dB to 10 MHz.
- –30 dB to 1.0 GHz.
- –20 dB to 1.5 GHz.

Channels 7 to 11:
- –60 dB to 10 MHz.
- –30 dB to 200 MHz.
- –15 dB to 360 MHz.

Channels 4 to 6 (Opt. ELSW):
- –55 dB to 10 MHz.
- –45 dB to 30 MHz.

Relay Switch Time –

Time that it takes for the relays to switch and settle. Approximately 10 ms.

Channel Switch Time (Opt. ELSW only) –

Time that it takes for the channel to switch and settle. Approximately 100 ns.

Amplitude Detection –

The ECO422D will determine a fault condition exists when the input signal is less than 2 dB from the nominal level. The following are the amplitude ranges for the various types of input signals that will result in a fault condition.

Black Burst –
NTSC: 180 to 225 mV.
PAL: 190 to 235 mV.
Tri-level: 150 to 210 mV.

Serial Digital Video – 505 to 630 mV.

AES/EBU Digital Audio – 630 to 790 mV.

Power Source

Mains Ranges –
Voltage: 100 to 240 VAC, ±10%.
Frequency: 48 to 62 Hz.
Power Consumption: 25 W maximum.

Environmental

Temperature –
Operating: 0 ºC to +40 ºC, IEC1010-1 compliance.
Nonoperating: –40 ºC to +65 ºC.

Altitude –
Operating: to 6562 feet (2000 meters), IEC1010-1 compliance.

Regulatory

EMC – Certified to the EMC Directive 89/336/EEC.

Safety –
Approved to: UL3111-1, CAN/CSA-C22.2 No.1010.1.
Complies with: EN61010-1, IEC1010-1.

Physical Characteristics

Dimensions	**mm**	**in.**
Height	44	1.734
Width	483	19.0
Depth	561	22.1
Weight	**kg**	**lbs.**
Net	4.9	10.8
Shipping	8.3	18.3

▸ Ordering Information

ECO422D

Changeover Unit.

Service Options

Opt. R3 – Repair Service 3 Years.

Opt. R5 – Repair Service 5 Years.

Product Options

Opt. ELSW – Provides Electrical Fast Switch Function for channels 4 to 6.

Opt. ELSW is installed at the factory and cannot be added later.

Contact Tektronix:

ASEAN / Australasia / Pakistan (65) 6356 3900
Austria +41 52 675 3777
Balkan, Israel, South Africa and other ISE Countries +41 52 675 3777
Belgium 07 81 60166
Brazil & South America 55 (11) 3741-8360
Canada 1 (800) 661-5625
Central East Europe, Ukraine and the Baltics +41 52 675 3777
Central Europe & Greece +41 52 675 3777
Denmark +45 80 88 1401
Finland +41 52 675 3777
France & North Africa +33 (0) 1 69 86 81 81
Germany +49 (221) 94 77 400
Hong Kong (852) 2585-6688
India (91) 80-22275577
Italy +39 (02) 25086 1
Japan 81 (3) 6714-3010
Luxembourg +44 (0) 1344 392400
Mexico, Central America & Caribbean 52 (55) 56666-333
Middle East, Asia and North Africa +41 52 675 3777
The Netherlands 090 02 021797
Norway 800 16098
People's Republic of China 86 (10) 6235 1230
Poland +41 52 675 3777
Portugal 80 08 12370
Republic of Korea 82 (2) 528-5299
Russia & CIS 7 095 775 1064
South Africa +27 11 254 8360
Spain (+34) 901 988 054
Sweden 020 08 80371
Switzerland +41 52 675 3777
Taiwan 886 (2) 2722-9622
United Kingdom & Eire +44 (0) 1344 392400
USA 1 (800) 426-2200
For other areas contact Tektronix, Inc. at: 1 (503) 627-7111

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Our most up-to-date product information is available at:
www.tektronix.com

Product(s) are manufactured in ISO registered facilities.

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