

7800TM2-3G, 7800TM2-XIO-3G, 7800TM2-IRIG-3G

Modular Time Code Processor Card



The 7800TM2-3G occupies one card slot and the 7800TM2-XIO-3G and the 7800TM2-IRIG-3G occupy two card slots in the 3RU 7800 series frame, which will hold up to 15 modules.

The 7800TM2-3G series Modular Time Code Processor expands on the professional line of time code solutions by Evertz®. The 7800TM series modules provide dual time code processing paths supporting 3G/HD/SD-SDI video signals. This unit is a combination Generator, Reader and Character Inserter for LTC, D-VITC (SDI only) or Ancillary Time Code (ATC). Applications such as reading LTC, D-VITC or ATC time codes and creating a visual burn-in or "transcoding" LTC to D-VITC or ATC time codes are natively supported.

The 7800TM2-XIO-3G version additionally provides six GPIOs per channel for control of various functions and for encoding/decoding GPI information in the timecode user bits. It also provides two serial ports that can be used to read timecode from devices supporting the Sony 9 Pin RS-422 compatible ports.

The 7800TM2-IRIG-3G version contains an IRIG-B Reader to burn IRIG time into the video as well as inserting the IRIG data into D-VITC and ancillary data packets. The IRIG data source for the burn-in windows is selectable between the IRIG-B reader and the ancillary data/D-VITC IRIG readers. The IRIG data can be transcoded to SMPTE time code so that video tapes and servers can be searched using commonly available SMPTE time code based equipment. Most of the regular features of the XIO version are also available on the IRIG version.

Model	Function	Special Features
7800TM2-3G	3G/HD/SD Dual LTC to Timecode Translator	For SD - D-VITC & ATC Generation, For HD - ATC Generation LTC reader input
	3G/HD/SD Dual Time Code Reader/Translator/VCG	For SD - D-VITC & ATC Generation, For HD - ATC Generation LTC generator output
7800TM2-XIO-3G	Same as 7800TM2-3G with GPIO and Serial IO Production Up/Down timers	6 GPIOs per channel 2 serial ports for RS-422/RS-232 I/O
	Production Up/Down timers	4 Up/Down Timers, up to 4 LTC outputs Ethernet port for Timer control and output
7800TM2-IRIG-3G	3G/HD/SD Dual IRIG Reader/VCG and ATC inserter	IRIG-B reader with D-VITC & ATC generation

Features & Benefits

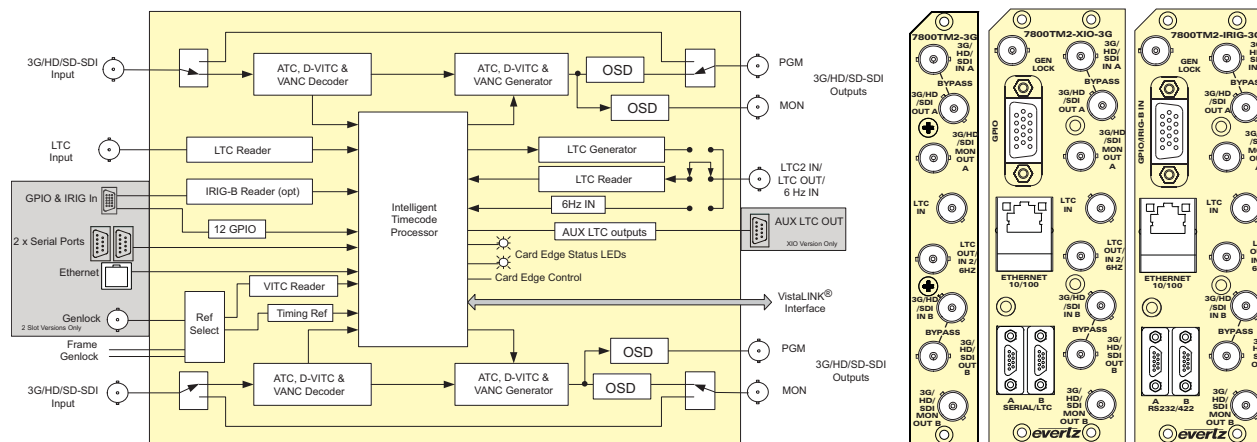
- Two independent video paths supporting 3G/HD/SD-SDI video – supports 525i/59.94, 625i/50, 1080i/60, 1080i/50, 1080p/24sF, 720p/60, 720p/50, 1080p/50 and 1080p/60 and the 1/1.001 divisor versions where applicable - auto sense using SMPTE ST 352 payload ID
- 1 bypass protected BNC Serial Digital Output from each input – with embedded D-VITC according to SMPTE ST 266 (SDI formats only) and ATC according to SMPTE ST 12-2
- 1 Monitor output from each input with visual character display of timecode
- Reads LTC and transcodes it to D-VITC (SDI only) and/or ATC onto 3G/HD/SD-SDI video
- Reads LTC, D-VITC (SDI only) and/or ATC and makes visual character burn-in
- Reads D-VITC (SDI only) and/or ATC and transcodes to LTC
- Character Inserter displays time and/or user bits in the picture – three font sizes and user programmable positioning - available on Monitor and Program outputs
- Outputs referenced to input or 7800 frame genlock reference
- Card edge menu using OSD to configure the operating modes
- Card Edge LEDs for signal presence, module status
- VistaLINK® - capable for remote monitoring, control and configuration capabilities via SNMP, using VistaLINK® PRO, CP-2116E or CP-2232E control panels. VistaLINK® is available when modules are used with the 7800 series frame and a VistaLINK® Frame Controller in the frame

XIO version (2 Slots) has additional features

- 6 Programmable GPI control inputs per channel (12 total) - select modes
- External Reference BNC
- 4 Up/Down timers to time program segments - outputs available on separate LTC outputs (total of 4 LTC outputs). timer control and outputs available via on-board Ethernet port

IRIG version (2 Slots) has additional features

- IRIG reader reads 1 kHz IRIG-B format sine wave amplitude modulated and pulse width modulated codes (format B122) and makes visual character burn-in
- Encodes IRIG data in VANC packets on HD output video
- Reads IRIG data encoded in VANC packet from incoming HD video
- IRIG data encoded to second line of D-VITC generator with special CRC on SDI video
- Reads IRIG encoded in D-VITC from incoming SDI video
- SMPTE Time Code LTC, D-VITC and ATC generators can be slaved momentarily or continuously to IRIG reader – converts milliseconds to closest video frame number. Milliseconds and days can be transferred to VITC user bits
- Character Inserter displays IRIG day and time to millisecond resolution in the picture IRIG modes
- IRIG CS-6 compatible serial data output to drive external IRIG display
- IRIG CS-5 compatible serial data input to read countdown program time



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Modular Time Code Processor Card



Specifications

Serial Digital Video Inputs:		Reference Video Input:	Serial Ports (XIO and IRIG versions only):
Standard:	270Mb/s SMPTE ST 259-C 10 bit 4:2:2 (525i/59.94, 625i/50) 1.485 Gb/s SMPTE SMPTE ST 292-1 10 bit 4:2:2 (1080i/60, 1080i/50, 1080p/30, 1080p/30sF, 1080p/25, 1080p/25sF, 1080p/24, 1080p/24sF, 720p/60, 720p/50, 720p/30, 720p/25, 2048 x 1080p/30, 2048 x 1080p/25, 2048 x 1080p/24)* 2.97 Gb/s SMPTE ST 424 & SMPTE ST 425- 1 Level A and Level B-DL 10 bit 4:2:2 (1080p/60, 1080p/50, 2048 x 1080p/60, 2048 x 1080p/50)* <i>*Includes the 1/1.001 rates where applicable</i>	Type: HD Tri-Level sync, NTSC or PAL Colour Black 1 V p-p	Number: 2 Connector: Female DB 9 Signal Level: RS-232/RS-422 Baud Rate: Selectable baud rates (38,400 default) Function: Serial A configurable for auxiliary LTC outputs (on XIO version) or CS-6 output (on IRIG version only) CS-5 input (on IRIG version only)
Connector:	BNC per IEC 61169-8 Annex A	Connector: Frame Genlock BNC per IEC 60169-8 Annex A (on 2 slots versions only)	
Signal Level:	1V nominal	Termination: 75Ω	
Input Equalization:	Automatic to 100m @ 1.485Gb/s with Belden 8281 or equivalent Automatic to 80m @ 2.970 Gb/s with Belden 8281 or equivalent	Linear Timecode Inputs and Outputs:	Control:
Return Loss:	> 15 dB to 1.5 GHz > 10 dB to 3.0 GHz	Standard: SMPTE ST 12-1 Frame Rate: 24, 25 and 30 Fps nominal # of Inputs & outputs: 1 dedicated reader input 1 Selectable as reader input, generator output or 6 Hz Input 3 additional auxiliary LTC outputs on XIO version Connectors: BNC per IEC 60169-8 Annex A. Micro 9 pin D for auxiliary LTC Output	Card Edge: Full control of all module functions using On screen menu, controlled from card edge shaft encoder VistaLINK®: VistaLINK® - capable for remote monitoring, control and configuration capabilities via SNMP, using VistaLINK® PRO, CP-2116E or CP-2232E Control Panels GPIO: 12 configurable General purpose inputs User Presets: 4 User presets to store and recall user configurations instantly
		Level: Reader Input: 0.2 to 4V p-p, unbalanced Generator Output: 1V p-p nominal unbalanced 1V p-p nominal balanced for auxiliary LTC outputs on XIO version	Electrical:
Serial Digital Video Outputs:		IRIG Reader (IRIG version only):	Voltage: +12VDC Power: 24 Watts EMI/RFI: Complies with FCC regulations for class A devices Complies with EU EMC directive
Standard:	Same as inputs	Standard: IRIG 200-04 Format B122	
Number of Outputs:	2 PGM (Relay Bypass Protected to Inputs) 2 MON with On Screen Display menu and character burn ins	Connector: DB15 Female Input Level: 0.2 to 4V p-p, balanced or unbalanced	Physical (number of slots):
Connector:	BNC per IEC 61169-8 Annex A	GPIO (XIO and IRIG versions only):	7800TM2-3G: 1 (2 in 7700FR-C frame – slot blocker must be installed)
Signal Level:	800 mV nominal	Number: 12 configurable as inputs or outputs Type: Opto-isolated, active low with internal pull-ups to +5 V	7800TM2-XIO-3G: 2
HD Rise/Fall Times:	200 ps nominal	Connector: Female DB 15	7800TM2-IRIG-3G: 2
Return Loss:	> 15 dB to 1.5 GHz > 10 dB to 3.0 GHz	Signal Level: Closure to ground Function: User preset select or programmable functions	

Ordering Information

7800TM2-3G	Dual Time Code Processor	Enclosures	
7800TM2-XIO-3G	Dual Time Code Processor with GPIO and serial I/O	350FR	3RU Portable Multiframe which holds up to 7 single slot modules
7800TM2-IRIG-3G	Dual Time Code Processor with IRIG-B reader	7700FR-C	3RU Multiframe which holds up to 15 single slot modules
		7800FR	3RU Multiframe which holds up to 15 single slot modules
		7801FR	1RU Multiframe which holds up to 4 single or 2 dual slot modules
Ordering Options	Rear Plate must be specified at time of order (Eg: Model +3RU)	Replacement Cables (2 included with XIO and IRIG versions)	
Rear Plate Suffix		WP-MICRO/CMD-DSUB/F-F	Micro D Female To DB9 Female Adapter Cable
+3RU	3RU Rear Plate for use with 350FR, 7700FR-C, 7800FR or 7801FR Multiframe		

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The 7800TM2-XIO-3G version additionally provides 6 GPIOs per channel for control of various functions and for encoding/decoding GPI information in the timecode user bits. It also provides two serial ports that can be used to read timecode from devices supporting the Sony 9 Pin RS-422 compatible ports.

The 7800TM2-IRIG-3G version contains an IRIG-B Reader to burn IRIG time into the video as well as inserting the IRIG data into D-VITC and ancillary data packets. The IRIG data source for the burn-in windows is selectable between the IRIG-B reader and the ancillary data/D-VITC IRIG readers. The IRIG data can be transcoded to SMPTE time code so that video tapes and servers can be searched using commonly available SMPTE time code based equipment. Most of the regular features of the XIO version are also available on the IRIG version. .

Model	Function	Special Features
7800TM2-3G	3G/HD/SD Dual LTC to Timecode Translator	For SD - D-VITC & ATC Generation, For HD - ATC Generation LTC reader input
	3G/HD/SD Dual Time Code Reader/Translator/VCG	For SD - D-VITC & ATC Generation, For HD - ATC Generation LTC generator output
7800TM2-XIO-3G	Same as 7800TM2-3G with GPIO and Serial IO	6 GPIOs per channel 2 serial ports for RS-422/RS-232 I/O
	Production Up/Down timers	4 Up/Down Timers, up to 4 LTC outputs Ethernet port for Timer control and output
7800TM2-IRIG-3G	3G/HD/SD Dual IRIG Reader/VCG and ATC inserter	IRIG-B reader with D-VITC & ATC generation

Features & Benefits

- Two independent video paths supporting 3G/HD/SD-SDI video - supports 525i/59.94, 625i/50, 1080i/60, 1080i/50, 1080p/24sF, 720p/60, 720p/50, 1080p/50 and 1080p/60 and the 1/1.001 divisor versions where applicable - auto sense using SMPTE ST 352 payload ID
- 1 bypass protected BNC Serial Digital Output from each input - with embedded D-VITC according to SMPTE ST 266 (SDI formats only) and ATC according to SMPTE ST 12-2
- 1 Monitor output from each input with visual character display of timecode
- Reads LTC and transcodes it to D-VITC (SDI only) and/or ATC onto 3G/HD/SD-SDI video
- Reads LTC, D-VITC (SDI only) and/or ATC and makes visual Character burn-in
- Reads D-VITC (SDI only) and/or ATC and transcodes to LTC
- Character Inserter displays time and/or user bits in the picture - user programmable positioning - available on Monitor and Program outputs
- Outputs referenced to input or 7800 frame genlock reference
- Card edge menu using OSD to configure the operating modes
- Card Edge LEDs for signal presence, module status
- VistaLINK® - capable for remote monitoring, control and configuration capabilities via SNMP, using VistaLINK® PRO, CP-2116E or CP-2232E control panels. VistaLINK® is available when modules are used with the 7800 series frame and a VistaLINK® Frame Controller in the frame

XIO version (2 Slots) has additional features

- 6 Programmable GPI control inputs per channel (12 total) - select modes
- Ability to 'sniff' Sony Protocol time code and convert to LTC, D-VITC or ATC as required
- External Reference BNC
- 4 Up/Down timers to time program segments - outputs available on separate LTC outputs (total of 4 LTC outputs). timer control and outputs available via on-board Ethernet port

IRIG version (2 Slots) has additional features

- IRIG reader reads 1 kHz IRIG-B format sine wave amplitude modulated and pulse width modulated codes (format B122) and makes visual character burn-in
- Encodes IRIG data in VANC packets on HD output video
- Reads IRIG data encoded in VANC packet from incoming HD video
- IRIG data encoded to second line of D-VITC generator with special CRC on SDI video
- Reads IRIG encoded in D-VITC from incoming SDI video
- SMPTE Time Code LTC, D-VITC and ATC generators can be slaved momentarily or continuously to IRIG reader - converts milliseconds to closest video frame number. Milliseconds and days can be transferred to VITC user bits
- Character Inserter displays IRIG day and time to millisecond resolution in the picture IRIG modes
- IRIG CS-6 compatible serial data output to drive external IRIG display

Specifications

Serial Digital Video Inputs:

Standard: 270Mb/s SMPTE ST 259-C 10 bit 4:2:2 (525i/59.94, 625i/50)
1.485 Gb/s SMPTE SMPTE ST 292-1 10 bit 4:2:2 (1080i/60, 1080i/50, 1080p/30, 1080p/30sF, 1080p/25, 1080p/25sF, 1080p/24, 1080p/24sF, 720p/60, 720p/50, 720p/30, 720p/25, 2048 x 1080p/30, 2048 x 1080p/25, 2048 1080p/24)*
2.97 Gb/s SMPTE ST 424-1 & SMPTE ST 425-1 Level A and Level B-DL 10 bit 4:2:2 (1080p/60, 1080p/50, 2048 x 1080p/60, 2048 x 1080p/50)*
*Includes the 1/1.001 rates where applicable

Number of Inputs: 2

Connector: BNC per IEC 61169-8 Annex A

Signal Level: 1V nominal

Input Equalization: Automatic to 100m @ 1.485Gb/s with Belden 8281 or equivalent
Automatic to 80m @ 2.970 Gb/s with Belden 8281 or equivalent
Return Loss: > 15 dB to 1.5 GHz
> 10 dB to 3.0 GHz

Serial Digital Video Outputs:

Standard: Same as inputs
Number of Outputs: 2 PGM (Relay Bypass Protected to Inputs)
2 MON with On Screen Display menu and character burn ins
Connector: BNC per IEC 61169-8 Annex A
Signal Level: 800 mV nominal
HD Rise/Fall Times: 200 ps nominal
Return Loss: > 15dB to 1.5GHz
> 10dB to 3.0GHz

Reference Video Input:

Type: HD Tri-Level sync, NTSC or PAL
Colour Black 1 V p-p
Connector: Frame Genlock
BNC per IEC 60169-8 Annex A (on 2 slots versions only)
Termination: 75Ω

Linear Timecode Inputs and Outputs:

Standard: SMPTE ST 12-1
Frame Rate: 24, 25 and 30 Fps nominal
of Inputs & outputs: 1 dedicated reader input
1 Selectable as reader input, generator output or 6 Hz Input
3 additional auxiliary LTC outputs on XIO version
Connectors: BNC per IEC 60169-8 Annex A.
Micro 9 pin D for auxiliary LTC Output
Level: Reader Input 0.2 to 4V p-p, unbalanced
Generator Output 1V p-p nominal unbalanced
1 V p-p nominal balanced for auxiliary LTC outputs on XIO version

IRIG Reader (IRIG version only):

Standard: IRIG 200-95 Format B122
Connector: DB15 Female
Input Level: 0.2 to 4V p-p, balanced or unbalanced

GPI/O (XIO and IRIG versions only):

Number: 12 configurable as inputs or outputs
Type: Opto-isolated, active low with internal pull-ups to +5 V
Connector: Female DB 15
Signal Level: Closure to ground
Function: User preset select or programmable functions

Serial Ports (XIO and IRIG versions only):

Number: 2
Connector: Female DB 9
Signal Level: RS-232/RS-422
Baud Rate: Selectable baud rates (38,400 default)
Function: Read Sony Protocol time code
Serial A configurable for auxiliary LTC outputs (on XIO version) or CS-6 output (on IRIG version only)

Control:

Card Edge: Full control of all module functions using On screen menu, controlled from card edge shaft encoder
VistaLINK® - capable for remote monitoring, control and configuration capabilities via SNMP, using VistaLINK® PRO, CP-2116E or CP-2232E Control Panels
GPIO 12 configurable General purpose inputs
User Presets 4 User presets to store and recall user configurations instantly

Electrical:

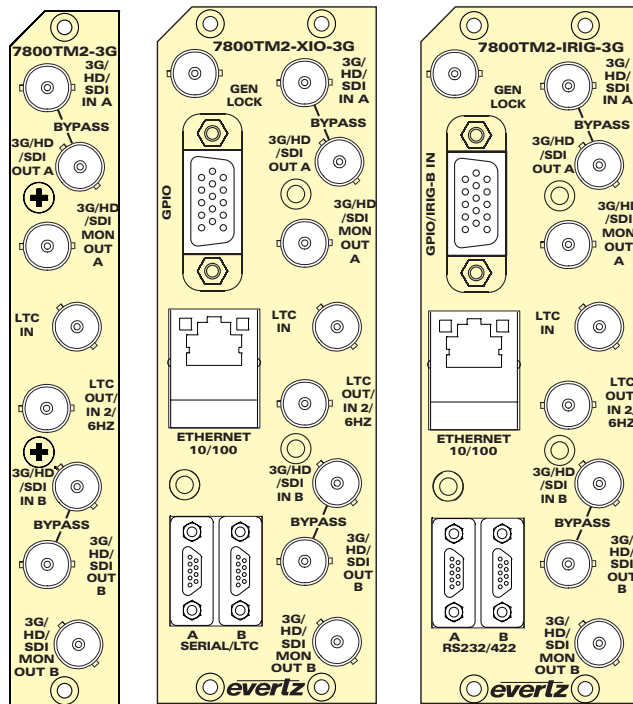
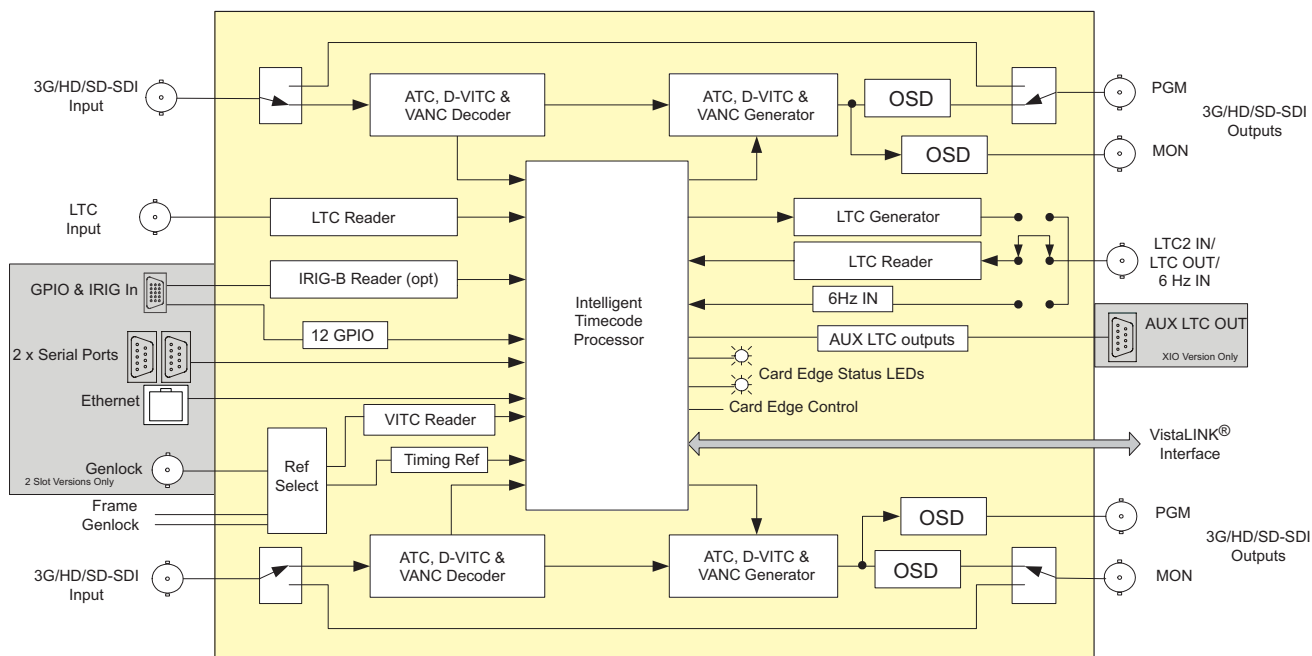
Voltage: +12VDC
Power: 24 Watts
EMI/RFI: Complies with FCC regulations for class A devices
Complies with EU EMC directive

Physical (number of slots):

7800TM2-3G: 1 (2 in 7700FR-C frame - slot blocker must be installed)
7800TM2-XIO-3G: 2
7800TM2-IRIG-3G: 2

7800TM2-3G, 7800TM2-XIO-3G, 7800TM2-IRIG-3G

Modular Time Code Processor Card



Ordering Information

7800TM2-3G Dual Time Code Processor
7800TM2-XIO-3G Dual Time Code Processor with GPIO and serial I/O
7800TM2-IRIG-3G Dual Time Code Processor with IRIG-B reader

Ordering Options Rear Plate must be specified at time of order
 Eg: Model +3RU

Rear Plate Suffix
+3RU 3RU Rear Plate for use with 350FR, 7700FR-C, 7800FR or 7801FR Multiframe

Enclosures
350FR
7700FR-C
7800FR
7801FR

3RU Portable Multiframe which holds up to 7 single slot modules
 3RU Multiframe which holds up to 15 single slot modules
 3RU Multiframe which holds up to 15 single slot modules
 1RU Multiframe which holds up to 4 single or 2 dual slot modules

Replacement Cables (2 included with XIO and IRIG versions)
WP-MICRO/CMD-DSUB/F-F Micro D Female To DB9 Female Adapter Cable