

DV6000 VIDEO TRANSPORT MODULES
DV6400 Multichannel Fiber Optic Transmission and Switching System
DV6400 Platform Features

- Expands flexibility of installed DV6000 networks
- Allows utilization of external reference clocks (GPS) thus achieving superior jitter performance
- Enables more cost-effective network design
- Bidirectional T1 and RS-232 traffic transported directly in system overhead
- Hot standby controllers, optics, and power supplies
- Advanced clock recovery abilities after network faults
- Inband communications channel enables remote control and monitoring
- Full backwards compatibility with DV6000, DV6300, and DVSAS
- Full module redundancy

Interfaces

- NTSC/PAL
- QAM IF/Analog IF
- SDI/SDTI
- DVB-ASI/SMPTE 310
- 10/100BaseT
- DS3/T1 (E3/E1)
- RS-232/422/485
- OC-48c/STM-16c



The Artel DV6400 Multichannel Fiber Optic Transmission and Switching System is a fully redundant, fully protected 2.38Gbps and 595Mbps digital transport system.

Built on the proven success of the DV6000 technology, the DV6400 system is capable of independent operation or as a tributary interface to larger DV6000 networks. Its flexibility and modular architecture is ideal in the expanding service transport requirements of post production, distance learning, videoconferencing, data, and voice transport markets.

The DV6400 System consists of the following two sub-systems:

- DV6408 Tributary Access System
- DV6444 Interface Gateway

DV6408 Tributary Access System

The DV6408 Tributary Access System, the first subsystem of the DV6400, is capable of optically transporting up to eight DV channels (four if configured for redundancy) in two 595Mbps datastreams. The DV6408 can interface to other DV6408 shelves for stand-alone, point-to-point, or ring applications, or into a DV6444 system as a tributary to a DV6000 system.

Features

- Optical interfaces of 595Mbps provide transport of four DV channels per fiber
- Two TX/RX modules (QRAM) per shelf allow eight channels to be interfaced simultaneously into/out of shelf
- Equipment shelf can hold up to eight single-wide DV6000 encoder or decoder cards (or four double-wide cards)
- Supports bidirectional or one-way point-to-point or tributary architectures
- Supports bidirectional or one-way ring architectures

DV6444 Interface Gateway

The DV6444 Interface Gateway, the second subsystem to the DV6400, provides 52 x 52 non-blocking channel switching and ring closing capability. It can consolidate and switch between channels coming from/going to up to four separate DV6408 rings or tributaries, up to two DV6000 rings or tributaries, and up to four local encoder or decoder slots.

Specifications

DV6400 System

Dimensions (W x H x D)	DV6408: 17.5 x 12.5 (7RU) x 12in. DV6444: 17.25 x 24.5 (14RU) x 12in.
Weight (empty shelf)	DV6408: 23lbs DV6444: 70lbs
Maximum Power Dissipation	DV6408: 350W DV6444: 500W
Power Supply Voltage Inputs	DV64ACPS input (110/220VAC): 90 to 265VAC, 47 to 63Hz DV6448PS input (-48VDC): -36 to -72VDC
System Monitoring Network Management Control Software PC Requirements for Craft Software	Information Monitoring & Interface (IMI-9000) SNMP via IMI-9000 DV6400 Craft Software IBM-compatible PC, 166MHz or faster Pentium processor, 32MB RAM or more, 2.0GB or larger hard drive, Windows 95 or NT operating system
Network Mgmt. and Control Interfaces	RS-232 Craft interface and dual RJ-11/RS-485 interfaces for Craft or IMI-9000
Alarm Interfaces	Six sets of alarm contact outputs: connections for audible and visual alarming for critical, major, and minor alarms. Each set has normally open (NO), normally closed (NC), and common (COM) contacts. An alarm cutoff (ACO) push-button on the front of the shelf disables audible alarm contacts.
Dry Contact Closure (Alarm Relays)	Terminal, Current rating: 500mA, max. Voltage rating: 60VDC, 60VAC, max.
Synchronizing Clock Signal Interfaces Clock Signal Requirements	E1 or T1 inputs, and loop-through T1/E1 outputs The external source must have a stability of better than 25ppm, jitter performance better than 100dB @ 8kHz

Environmental Specifications

Operating Temperature	0 to 50°C
Humidity	10 to 90% relative humidity, noncondensing
Storage Temperature	-40 to 85°C

Specifications (cont'd)**Compliance**

NEBS Compliance	Level 3 certified
Electrostatic Discharge (ESD)	Compliant with Bellcore requirements for electro static discharge (ESD) immunity for normal operation, GR-1089-CORE, paragraph 2.2.1

DV6400 Optical Transmission and Reception Specifications**DV6400 QRAMS**

Optical Wavelengths	1310nm, 1550nm
Optical Connectors	FC/UPC and SC/UPC, standard
Laser Type	DFB
Launch Power	0dBm
Dispersion	2dB at 3,600ps/nm
Receiver Photodiode Type	InGaAsP APD
Optical Receiver Sensitivity	30dB for BER < 10 ⁻⁹
Optical Receive Level, max.	-6dBm

DV6000 Standard Transmitters

Bit Rate	2.38Gbps
Optical Wavelengths	1310nm, 1550nm
Laser Type	DFB
Optical Connectors	FC/UPC, SC/UPC, SC/APC (8° angle polished), FC/APC (8° angle polished)
Optical Output Power	0dBm

DV6000 DWDM Transmitters

Bit Rate	2.38Gbps
Optical Wavelengths (Note 1)	ITU Grid Channels 21-59
Laser Type	DFB
Optical Connectors	FC/UPC, SC/UPC, SC/APC (8° angle polished), FC/APC (8° angle polished)
Optical Output Power	6.5dBm
Wavelength Stability	±0.05nm
Extinction Ratio	8 ± 1 min. (9dB)
Dispersion Penalty (Note 1)	~2dB @ 3200ps/nm

DV6000 Receivers

Receiver Photodiode Type	InGaAs APD
Optical Receiver Sensitivity (Note 2)	-30dBm
Optical Receiver Maximum Input Power	-12dBm

DV6400 Supplementary T1/E1 and RS-232 Data Streams (QRAM supported)**T1/E1 Data**

T1 Rate	1.544Mbps
E1 Rate	2.048Mbps
Line Code	BZ83
Equalization	tbid

RS-232 Data

Baud Rate	Optical Wavelengths	Auto-ranging up to 19.2 baud
Available Signal Lines		RX, TX, RTS, CTS

Notes:

1. Based on standard SMF-28 fiber assuming a loss of 0.25dB/km at 1550nm. 2. Assuming BER of 10⁻⁹
Specifications subject to change without notice.

Ordering Information

Part Number	Description
DV6408 and DV6444 Equipment Shelf and Power Supplies	
DV6408ES	DV6408 Tributary Access System Equipment Shelf
DV64ACPS	DV6400 AC power supply for both DV6408ES and DV6444ES01
DV64DCPS	DV6400 DC power supply for both DV6408ES and DV6444ES01
DV6408PSBP	DV6400 power supply blank panel
DV6408AFRKIT	DV6408 equipment shelf air filter replacement kit
DV6444ES01 (Note 1)	DV6444 Interface Gateway System Equipment Shelf
DV6444AFRKIT	DV6444 equipment shelf air filter replacement kit
DV6444BPO	DV6444 optical blank panel
DV6128BP	R RAM blank panel
DV6408 Half Drop/Add/Pass (HDAP) Control Modules	
DV6408HDAP2T1	DV6408 Half Drop/Add/Pass (HDAP) module, T1 clocking input
DV6408HDAP2E1	DV6408 Half Drop/Add/Pass (HDAP) module, E1 clocking input
DV6400HQBP	DV6400 QRAM/HDAP blank panel
DV6444 Interface Gateway System Modules	
DV6444QTSI2T1	DV6400 Quarter Time Slot Interchange Module (QTSI), T1 Clocking Input
DV6444QTSI2E1	DV6400 Quarter Time Slot Interchange Module (QTSI), E1 Clocking Input
DV6128RAM2	Ring Access Module
QRAM Transceiver Modules (Note 2)	
DV6413QRAM2BITxx	DV6400 QRAM bidirectional optical TX (1310nm) and RX, T1 input
DV6415QRAM2BITxx	DV6400 QRAM bidirectional optical TX (1550nm) and RX, T1 input
DV6413QRAM2BIExx	DV6400 QRAM bidirectional optical TX (1310nm) and RX, E1 input
DV6415QRAM2BIExx	DV6400 QRAM bidirectional optical TX (1550nm) and RX, E1 input
DV6411QRAM2BIT	DV6400 QRAM bidirectional Electrical TX and RX, T1 input
DV6000 Transmitters and Receivers	
DV6301TXDxxx02 (Note 3)	DV6000 Transmitter Module: 1310 nm, 0 dBm output
DV6501TXDxxx02 (Note 3)	DV6000 Transmitter Module: 1550 nm, 0 dBm output
DV6501TXDHCyyxxx (Notes 3, 4, 5, 6)	DV6000 Transmitter Module: ITU DWDM Channels 21–59, 100 GHz, 6.5 dBm output
DV6302RCQxxx02 (Note 3)	DV6000 Receiver Module: 1310nm/1550 nm/ITU, InGaAs APD, –30 dBm sensitivity
DV6302ERCQ	DV6000 Electrical Receiver Module: Receives electrical clock and data signal

Notes:

1. DV6444ES01 Equipment Shelf is available via custom order only, extended lead times may apply.
2. "xx" equals connector type, where FC = FC/UPC and SC = SC/UPC.
3. FC/UPC optical connectors are standard; specify "xx" or "xxx" only if different connector type is desired. [SC = SC/UPC, ASC = SC/APC (8° angle polished), and APC = FC/APC (8° angle polished)]
4. "yy" equals ITU DWDM channel number (21 through 59).
5. DV6501TXDHCyyxxx version TXs should now be used in placed of legacy DV6501TXDER version TXs.
6. DV6501TXDHCyyxxx version TXs should now be used in placed of legacy DV6501TXDHCtxxx02 (t=1–8) version TXs.

