

## Subscriber Networks

# Model D9479 Gigabit QAM Modulator

## Description

The Model D9479 Gigabit QAM Modulator (GQAM) represents an innovation in video transmission technology. The GQAM contains five input ports including four digital video broadcasting (DVB) standard asynchronous serial interface (ASI) inputs and a Gigabit Ethernet (GbE) port.



The GQAM contains the core functionality of four of our Model D9477 MQAM Modulators. One GQAM frees up a total of *seven* additional rack unit (RU) openings, thereby making the GQAM an exceptional product for mass deployment of video-on-demand (VOD), *anything-On-Demand* (xOD), and other interactive broadcast services.

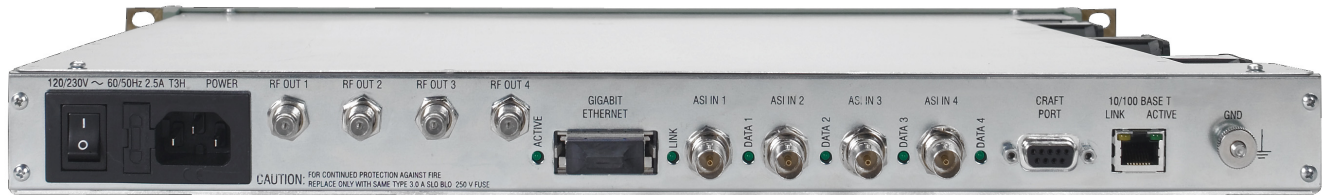
The four ASI inputs allow for direct connection to current generation video servers, encoders, integrated receiver-decoders (IRDs), and other digital video sources at the headend. The GbE interface allows for connection to the next generation of video servers, either linked locally with the GQAM or remotely through a network.

## Features

- Contains the core functionality of the MQAM modulator
- Includes 5 input ports and can provide up to 16 QAM outputs to achieve the broadcast capacity of 4 MQAM modulators or 16 QAM modulators
- Enables direct connect to both DVB ASI and Gigabit Ethernet video sources at the same time and the capacity to create transport streams from any combination of the 5 inputs
- Provides 4 DVB ASI inputs (216 Mbps each) and 1 plug-in Gigabit Ethernet input (GBIC) to multiplex content from any input to any of the 16 outputs (channels)
- Uses an output center frequency range of 91 MHz to 867 MHz
- Incorporates PowerKEY® DES and DVB Common Scrambling Algorithm options
- Enables higher rack density to save space
- Optimizes system management with provisioning and monitoring by the DNCS
- Facilitates deployment in either a headend or a hub

# Model D9479 Gigabit QAM Modulator

## Back Panel Connectors



## Specifications

| Digital I/O Performance       |                                                                               |
|-------------------------------|-------------------------------------------------------------------------------|
| Maximum Input Rate            | 1.804 Gbps (4 x 216 Mbps [ASI payload rate] plus 952 Mb/s [GbE payload rate]) |
| Maximum Aggregate Output Rate | 620 Mb/s (16 x 38.8 Mb/s)                                                     |

| RF                                                                                                                                                                                                                       |                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Block Conversion                                                                                                                                                                                                         | Up to four 6 MHz QAM channels within a 24 MHz bandwidth per QAM output                                                                                                  |
| Frequency Range (center frequency)                                                                                                                                                                                       | 91 MHz to 867 MHz                                                                                                                                                       |
| Minimum Tuning Step Size                                                                                                                                                                                                 | The 24 MHz block of frequencies can be tuned in increments of 250 KHz                                                                                                   |
| RF Output Power Level (per QAM carrier)                                                                                                                                                                                  | +44 dBmV to +54 dBmV (0.1 dB steps) minimum range<br><b>Note:</b> Noise and spurious performance limits apply with the output power in the range of 44 dBmV to 54 dBmV. |
| RF Output Power Tolerance<br><b>Note:</b> Actual output power is within $\pm 2$ dB of the value displayed for setpoint, temperature, and frequency variations. Power output adjustment range is from 42 dBmV to 56 dBmV. | $\pm 2$ dB                                                                                                                                                              |
| RF Output Impedance                                                                                                                                                                                                      | 75 ohm                                                                                                                                                                  |
| RF Output Return Loss (unsquelched)                                                                                                                                                                                      | > 12 dB (within output channel)                                                                                                                                         |
| Spurious Outputs (50 MHz to 1.1 GHz)                                                                                                                                                                                     | < -60 dB (relative to the average power of the QAM channel with the highest power level)                                                                                |
| Noise Floor (out of band)                                                                                                                                                                                                | < -136 dBc/Hz, > 40 MHz from center frequency                                                                                                                           |

| Mechanical      |                                                                            |
|-----------------|----------------------------------------------------------------------------|
| Rack Mount Type | EIA RS-310                                                                 |
| Dimensions      | 1.75 in. x 19 in. x 22.5 in., HWD<br>(44.45 mm x 482.6 mm x 571.5 mm, HWD) |
| Weight          | 13.5 lb (5.4 kg)                                                           |

# Model D9479 Gigabit QAM Modulator

## Specifications, continued

| Environmental               |                              |
|-----------------------------|------------------------------|
| Operating Temperature Range | 0°C (32°F) to 50°C (122°F)   |
| Storage Temperature Range   | -10°C (14°F) to 70°C (158°F) |
| Operating Humidity          | 5% to 95%, non-condensing    |

| Electrical               |                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Input Voltage            | AC unit: 90 VAC to 130 VAC @ 47 Hz to 63 Hz, or 180 VAC to 264 VAC @ 47 Hz to 63 Hz<br>DC unit: -42 VDC to -57 VDC               |
| Power Required (AC unit) | 155 VA (typical)                                                                                                                 |
| Power Dissipated         | 151 Watts (typical)                                                                                                              |
| In Rush Current          | 35 amps maximum, Vin = 130 VAC (AC unit)<br>75 amps maximum, Vin = 264 VAC (AC unit)<br>15 amps maximum, Vin = -57 VDC (DC unit) |

| Connectors           |                                                                                                             |
|----------------------|-------------------------------------------------------------------------------------------------------------|
| RF Outputs           | 4 total, type F, 75 ohm                                                                                     |
| ASI Inputs           | 4 total, BNC, 75 ohm                                                                                        |
| Gigabit Ethernet     | GBIC module connector. Modules are available for single-mode fiber, multi-mode fiber, and copper interfaces |
| Ethernet 10/100BaseT | RJ-45                                                                                                       |
| Craft Port           | DB-9 male                                                                                                   |
| AC Power             | IEC 320                                                                                                     |
| DC Power             | 2-pin removable terminal block                                                                              |

| Modulation |              |       |             |                            |                          |           |
|------------|--------------|-------|-------------|----------------------------|--------------------------|-----------|
| 6 MHz Spec | Type         | Alpha | Interleaver | Symbol Rate (Msymbols/sec) | Data Rate (megabits/sec) | Bandwidth |
| ITU-A      | DAVIC/DVB 64 | 12%   | I=12, J=17  | 5.304                      | 29.328 Mb/s              | 6 MHz     |
| ITU-A      | DAVIC 256    | 12%   | I=204, J=1  | 5.304                      | 39.104 Mb/s              | 6 MHz     |
| ITU-B      | QAM 64       | 18%   | I=128, J=1  | 5.056941                   | 26.971 Mb/s              | 6 MHz     |
| ITU-B      | QAM 256      | 12%   | I=128, J=1  | 5.360537                   | 38.811 Mb/s              | 6 MHz     |
| ITU-C      | DAVIC/DVB 64 | 13%   | I=12, J=17  | 5.274                      | 29.162 Mb/s              | 6 MHz     |

| Regulatory Compliance |                  |
|-----------------------|------------------|
| UL, CUL, and FCC      | Listed/Compliant |

# Model D9479 Gigabit QAM Modulator



## Ordering Information

Contact your Sales Representative for product availability in your area.

| Gigabit QAM Modulator Chassis                      | Part Number |
|----------------------------------------------------|-------------|
| Gigabit QAM Modulator Model D9479-1 (110 VAC unit) | 740450      |
| Gigabit QAM Modulator Model D9479-2 (48 VDC unit)  | 4000148     |

| Gigabit Ethernet Interface Options (select one)                        | Part Number |
|------------------------------------------------------------------------|-------------|
| Multi-mode fiber (MMF) GBIC, 850 nm wavelength, SC-SC connector type   | 1000839     |
| Single-mode fiber (SMF) GBIC, 1300 nm wavelength, SC-SC connector type | 1000127     |
| Copper GBIC, 1000BaseT, RJ-45 connector type                           | 4009446     |



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