



DM240-PIIC (DVB-S2)

Digital Video Broadcast Modulator



DM240-PIIC Digital Video Broadcast Modulator and PCMCIA Cards feature DVB-S2 Technology

HIGHLIGHTS

- ▶ DVB-S Ready
- ▶ DVB-S2 Field Upgradeable
- ▶ Data Rates Up To 238 Mbps (DVB-S)
Up To 80 Mbps (DVB-S2)
- ▶ QPSK, 8PSK and 16QAM Operation
- ▶ DVB-S2 Rate 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
- ▶ Powerful LDPC With BCH Coding
- ▶ Frequency-Agile 50 to 90, 100 to 180,
and 950 to 2050 MHz
- ▶ EN 302 307 (DVB-S2), EN 301 210 (DVB-S),
EN 300 421, and ITU-1294 System B (DSS)
- ▶ Low-Profile Chassis - 1 Rack Unit (1.75") High
- ▶ User-Friendly Front Panel Interface
- ▶ Monitor Port Available
- ▶ Optional Redundancy Configuration

THE NEW STANDARD IN DVB PERFORMANCE

Radyne's industry leading DVB modulator is now both DVB-S2 and DVB-S ready! The DM240-PIIC modulator is already the most popular DVB-S satellite modulator sold. Now the world's leading modulator is DVB-S2 ready and FIELD UPGRADEABLE! With a simple interface kit, and our industry leading PCMCIA EZ upgrade card, your DVB uplink can enjoy all the benefits of DVB-S2. Take advantage of the enormous benefits: 30% better bandwidth efficiencies, carrier-to-noise figures below the noise floor, and tighter BW spacing to name a few. If you already own a DM240-PIIC modulator, Radyne has made it easy and inexpensive for you to upgrade your existing equipment. The DVB-S2 coding gain performance is so powerful, it may be the

last major step in satellite coding gain. As always, the DM240 offers the fastest speeds (up to 80 Mbps for the DVB-S2, and 238 Mbps for the DVB-S), and the most flexible modulation schemes available (QPSK, 8PSK, 16QAM).

The powerful onboard Monitor and Control (M&C) processor has the unique capability to download upgraded firmware and enhanced features from a field-changeable PCMCIA card. Offering unprecedented flexibility, this feature represents a new level of Radyne's outstanding Customer Support. Additionally, features are added to the installed equipment base with extreme ease, allowing the equipment to expand with changes in service while lowering initial installation budgets.

The modulator offers a frequency-agile IF output from 50 to 90, 100 to 180, and 950 to 2050 MHz (in 100 Hz steps). Variable data rates from 1 Mbps to 238 Mbps for the DVB-S (1 Mbps to 80 Mbps for the DVB-S2) can be set in 1 bps steps.

Additional features include the choice of remotely interfacing through one of three onboard connections: Ethernet, RS-485, or RS-232. The familiar Radyne front panel offers push-button control of all features and a backlit LCD display. Menus are specifically designed for ease of use and quick online operation as well as changes in all modulator configuration.

An optional 1:1 Redundancy Control Switch (RCS11) is available to provide the DM240-PIIC with superior system reliability.



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SPECIFICATIONS

IF INTERFACE

Tx IF:	50 to 180 MHz (70/140 MHz) 950 MHz L-Band (2050 optional)
IF Step Size:	100 Hz
Frequency Stability:	1 ppm
Power Output:	0 to -25 dBm
Power Step Size:	0.1 dB
Power Output Accuracy:	± 1.0 dB
Power Output Stability:	± 0.5 dB
Carrier Mute:	-55 dB
Spurious:	-55 dBc, In-Band -45 dBc, Out-of-Band
Output Impedance:	75 Ohm (70/140 MHz), 50 Ohm (L-Band)
Return Loss:	20 dB (70/140 MHz), 14 dB (L-Band)
Phase Noise:	1 kHz, -73 dBc 10 kHz, -83 dBc 100 kHz, -100 dBc 1 MHz, -120 dBc
Output Connector:	BNC Female (70/140 MHz), SMA Female (L-Band)
IF Monitor:	SMA Female
External Reference:	1, 2, 5, 10 MHz in 8 kHz steps, better than 1 ppm, 1.5 to 10 Vp-p, 50 Ohms

BASEBAND (DVB-S)

Variable Data Rates:	Per EN 301-210 in 1bps steps 1 to 238
Symbol Rate:	68 Msps Maximum

(FEC) ENCODING

Inner Code:	PTCM (8PSK, 16QAM), QPSK (Verterbi)
Code Rates:	QPSK = 1/2, 2/3, 3/4, 5/6, 7/8 8PSK = 2/3, 5/6, 8/9 16 QAM = 3/4, 7/8
Outer Code:	Reed-Solomon (204, 188, T=8)
Interleaving:	Convolutional, I=12
Data Scrambling:	Per EN 300-421
Terrestrial Framing:	204, 188, 187

BASEBAND (DVB-S2) Per EN 302 307 (Broadcast Services)

Modulation Types:	QPSK, 8PSK
Data Rate:	1 to 54 Mbps in 1 bps Steps (QPSK) 2 to 81 Mbps in 1 bps Steps (8PSK)
Symbol Rate:	1 to 32 Maximum
Terrestrial Framing:	188 (1 Sync Byte, 187 Payload Bytes) Block Size: 64800 bits
FEC Code:	BCH + LDPC
Interleaver:	Block Interleaver, Per EN 302 307
Code Rates:	QPSK 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 8PSK 2/3, 3/4, 3/5, 5/6, 8/9, 9/10
Baseband Roll-Off:	Square Root Raised Cosine 0.20, 0.25, 0.35

Terrestrial Input

Clock Accuracy:	Better Than 400 ppm
Test Pattern:	Internal 2 ¹⁵ -1 and 2 ²³ -1
Pseudo-Random Number Generator	
Internal Clock Source	
Stability:	1 ppm

MONITOR AND CONTROL

Interface:	Serial RS-485 (Remote) and RS-232 (Terminal), Ethernet 10Base-T, (SNMP V1/V2)
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Parameters Controlled:	IF Frequency IF Output Level IF Output On/Off Data Rate Symbol Rate Clock Polarity Data Polarity Inner Code Rate Test Modes
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Parameters Monitored:	Faults Stored Faults
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OPTIONAL DATA INTERFACES (PIIC)

Serial:	DVB-ASI, G703, RS422/530 (<16 Mbps), HSSI
Parallel:	RS-422 (M2P, DVB), LVDS (M2P, DVB), DSS
Ethernet:	PRO-MPEG COP3 1000 Base -T

ENVIRONMENTAL

Prime Power :	100 - 240 VAC, 50 - 60 Hz, 40 Watts Maximum
Operating Temp:	0 to 50°C.
Humidity:	Up to 95%, Non-Condensing
Storage Temp:	-20 to 70°C.
Humidity:	Up to 99%, Non-Condensing

PHYSICAL

Weight:	10 pounds (4 Kg)
Size:	19" W x 17" D x 1.75" H 48.3 x 43.2 x 4.45 (cm)

CONFIGURATION SERIES DVB-S

Series 100:	1 - 10 Msps, QPSK
Series 200:	1 - 45 Msps, QPSK
Series 300:	1 - 45 Msps, QPSK/8PSK
Series 400:	1 - 68 Msps, QPSK/8PSK/16QAM

CONFIGURATION SERIES DVB-S2

Series 100:	1 to 10 Msps, QPSK
Series 200:	1 to 32 Msps, QPSK
Series 300:	1 to 32 Msps, QPSK/8PSK

U.S.A./Canada: 3138 East Elwood Street, Phoenix, Arizona 85034 USA Tel: +(1) 602.437.9620 Fax: +(1) 602.437.4811
7330 Trade Avenue, San Diego, California 92121 USA Tel: +(1) 858.805.7000 Fax: +(1) 858.805.7001

Europe/Middle East/Africa: Charwell House, Wilsom Road, Alton, GU34 2PP, United Kingdom Tel: +(44) 1420.540.233 Fax: +(44) 1420.540.232

Latin America: 3138 East Elwood Street, Phoenix, Arizona 85034 USA Tel: +(1) 561.892.2363 Fax: +(1) 561.892.2363

China: Room 405, Building B, Heqiao Mansion, No. 8 Guanghua Road, Chaoyang District, Beijing 100026 China Tel: +(86) 10.658.31975 Fax: +(86) 10.658.31974

Asia-Pacific: 150 Cecil Street, #08-02, Singapore 069543 Tel: +(65) 6325.1956 Fax: +(65) 6325.1950

Jl M.T. Haryono Kav 25, Jakarta, Indonesia 12820 Tel: +(62) 21.521.3733 Fax: +(62) 21.521.0142

www.radn.com

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