



M7D IF and L-Band DVB-S2/S2x Satellite Dual-Demods Modular Satellite Demodulators

DVB-S2X®

SYSTEM ARCHITECTURES SUPPORTED

- Point-to-Point
- Point-to-Multipoint
- Mesh
- Unicast
- Multicast

KEY FEATURES

- DVB-S2 and DVB-S2X Capability
- Widest Range of Modcod selections
- 950 to 2150 MHz (50 to 180 MHz optional)
- Data Rate from 256 kbps to 350 Mbps
- 256 ksps to 72 Msps Symbol Rate, 1 bps steps
- QPSK/8PSK/8QAM/16APSK/32APSK/64APSK (128APSK and 256APSK Optional)
- Full DVB-S2X Range /Carrier Roll-Off Factors
- Fully Supported Adaptive Coding and Modulation (ACM)
- Optional Smart Carrier Cancelling
- E7-GSE Express Ethernet Interface
 - Efficient GSE Encapsulation
 - Layer 2 Bridge, Switch Based
 - 4-Port with additional SFP Port
 - QoS and VLAN Support
 - VLAN Filtering
- Highly Configurable Remote Terminal
- Internal BUC and LNB Power Supply
- High Stability 10 MHz Reference
- Efficient Modem Control Channel, AUPC
- State-of-the-Art Web Browser GUI
- Local and Remote SNMP and Web Browser

APPLICATIONS

- Enterprise
- IP Networks
- IP Trunking
- Bandwidth on Demand
- Dynamic SCPC



M7D Dual Demod



M7D Quad Demod

Datum Systems introduces advanced DVB-S2/S2X capability in the M7 series. This product combines state-of-the-art performance in a platform that is versatile, compact, highly efficient, and costs less to own and operate.

Compact Modular Design – The completely new M7D and M7LD Dual-Demod platform fits within a half-rack 1 RU space, saving expensive rackspace at hub or remote locations. Demods can be mounted and operated side-by-side or used in a simple and clean 1:1 redundant configuration. The M7 Series Dual-Demod uses fully independent demod assemblies, which are not restricted by bandwidth allocation or single transponder requirements. The M7D and M7LD also supports multiple interface options, making it a true flexible and multipurpose demod-only platform.

DVB-S2 and DVB-S2X Capability – Datum now offers DVB-S2 and DVB-S2X capability. Datum supports both DVB-S2 modulation and also the recently standardized DVB-S2X extensions. DVB-S2X significantly improves satellite capacity by using much finer steps between modulation coding combinations (modcods) and allowing Filter Roll-Off options down to 5%. Datum features Symbol Rates up to 72 MHz to allow full utilization of wide transponders with data rates up to 350 Mbit/s.

Sharp Carrier Roll-Off Technology – This standard Roll-off capability allows an immediate spectral efficiency increase and significant bandwidth savings, at no additional hardware or software cost. Filter Roll-Off options in the M7 modems Series include 5%, 8%, 10%, 15%, 20%, 25%, 30%, 35% and 40%.

Adaptive Coding & Modulation (ACM) – Adaptive Coding Modulation provides a significant increase in throughput of point to multipoint duplex links by utilizing margin provided in link budgets for worst case scenarios. ACM also increases link availability as the link will adjust for poor link conditions by seamlessly adjusting it's available Modcods.

1:1 Redundancy - Built in 1:1 redundancy control allows for low cost implementation of redundancy when required.



Half-Rack M7D
(with Serial Interface)



Half-Rack M7D
(with Express Ethernet Interface)

SPECIFICATIONS	
Data Services	DVB-S2 and DVB-S2X DVB-S2 per ETSI EN 302-307 DVB-S2X per ETSI EN 302-307
Data Rate Range	256 Kbps to 350 Mbps
Symbol Rate Range	256 Ksps to 72 Msps (1 bps Steps)
L-Band Tuning Range	950 to 2150 MHz (1 Hz steps)
Modulation Types	QPSK, 8PSK, 8QAM, 16APSK, 32APSK, 64APSK
FEC	LDPC Inner Code BCH Outer Code
Filter Roll-Off	5%, 10%, 15%, 20%, 25%, 30%, 35%
Pilots	On
Frame Length	64800 bits - Long 16200 bits - Short
DVB-S2 Short & Long Frames	Modcods
QPSK	1/2 to 9/10
8PSK	3/5 to 9/10
16APSK	2/3 to 9/10
32APSK	3/4 to 9/10
DVB-S2x Short & Long Frames	Modcods
QPSK	13/45 to 9/10
8PSK	5/9 to 9/10
16APSK	1/2 to 9/10
32APSK	2/3 to 9/10
64APSK	32/45 to 5/6
ACM	-2 dB to 17 dB
Es/No Range (QEF)	0.6 to 4.95
Bits/Hz Range	Automatic (Preferred Table)
Modcod Selection	DVB-S2 and DVB-S2X
Smart Carrier	Optional, see detail section
Cancelling	
AUPC	Supported
Data Interface	GB Ethernet Layer 2 Bridge
Encapsulation	DVB GSE per ETSI TS 102 606
Carrier ID	Optional per ETSI TS 103 129

DEMODULATOR	
Input Acq Range	± 100 Hz to ± 3 MHz, 1 Hz Steps
Minimum Input Level	$10 \times \text{Log}(\text{SR}) - 80 = \text{Lvl}$ (dBm)
Maximum Input Level	$10 \times \text{Log}(\text{SR}) - 125 = \text{Lvl}$ (dBm)
Max IF In Pwr Density	+20 dBc/Hz
Maximum Total Power	+10 dBm
Demod Acq Time	Typical 71 ms at 64 kbps, QPSK
Input Impedance	L-Band 50 Ohms SMA IF 50 or 75 Ohms BNC (User Selectable)
Input Return Loss	IF > 20 dB, L-Band > 16dB
Input Phase Noise	> Intelsat by 6 dB typical, 4 dB min
Demod Roll-Off Factor %	5, 8, 10, 15, 20, 25, 30, 35, 40 (%)

TYPICAL EB/NO 1E-8 BER		
ModCod	Es/No	Bits/Hz
QPSK 13/45	-2.03	0.55
QPSK 9/20	0.22	0.87
QPSK 1/2	1.00	0.97
QPSK 11/20	1.45	1.06
QPSK 3/5	2.23	1.16
QPSK 2/3	3.10	1.29
QPSK 3/4	4.03	1.45
QPSK 4/5	4.68	1.55
8APSK 26/45-L	5.13	1.67
8PSK 3/5	5.50	1.74
16APSK 1/2-L	6.07	1.93
16APSK 8/15-L	6.65	2.05
16APSK 5/9-L	6.94	2.14
16APSK 26/45	7.61	2.23
16APSK 3/5	7.90	2.31
16APSK 28/45	8.20	2.40
16APSK 2/3-L	8.53	2.57
16APSK 25/36	9.37	2.68
16APSK 13/18	9.81	2.79
16APSK 3/4	10.31	2.90
16APSK 7/9	10.75	3.00
16APSK 4/5	11.13	3.09
32APSK 2/3-L	11.35	3.22
32APSK 32/45	12.00	3.43
32APSK 11/15	12.42	3.54
32APSK 3/4	12.98	3.62
32APSK 7/9	13.30	3.76
32APSK 4/5	13.89	3.87
64APSK 32/45-L	14.38	4.11
64APSK 11/15	15.21	4.24
64APSK 7/9	15.87	4.50
64APSK 4/5	16.27	4.63
64APSK 5/6	16.95	4.82

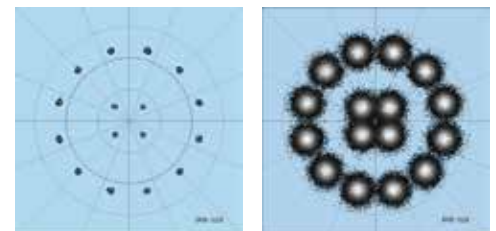
EXPRESS ETHERNET INTERFACE (E7)	
Express Ethernet Ports	4Ports (RJ-45), 1 Port SFP
4 Port Interface	10/100/1000 BaseT, Ethernet (RJ-45)
SFP Port	Optional Gigabit or Optic Fiber
Ethernet Protocol	Layer 2 Switched Bridge Only
Features	QoS and VLAN Selectable

MONITOR AND CONTROL	
Remote Control Interfaces	RS-232, RS-485, SNMP, Web Browser
Alarm Outputs	Qty 2 Form C

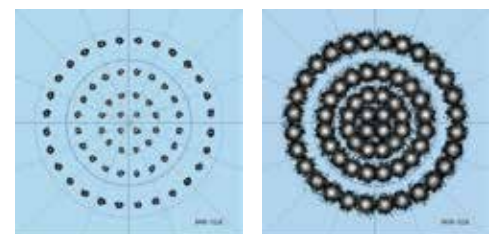
ENVIRONMENTAL AND PHYSICAL	
AC to DC Adapter (Std)	Input 100-240 VAC, Output 24 V 65 W max
DC Input (Rear of Unit)	8 to 36 VDC, -48 VDC Optional
Operating Temperature Range	0°C to 50°C, 99% humidity, non-con
Storage Temperature	-20°C to +70°C, 99% humidity, non-con
Size	8.5" (W) x 11" (D) x 1.75" (H), (2 Units in 1 RU)
Weight	< 5 lbs, fully configured

CERTIFICATION AND COMPLIANCE	
CE Certified for:	ETSI EN 301 489-1 V1.9.2 EN50022 Emissions EN50024 Immunity EN60950 (Safety)
RoHS	Meets RoHS lead-free standards

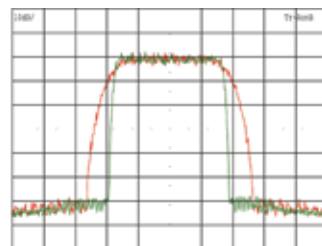
* Specifications subject to change without notice



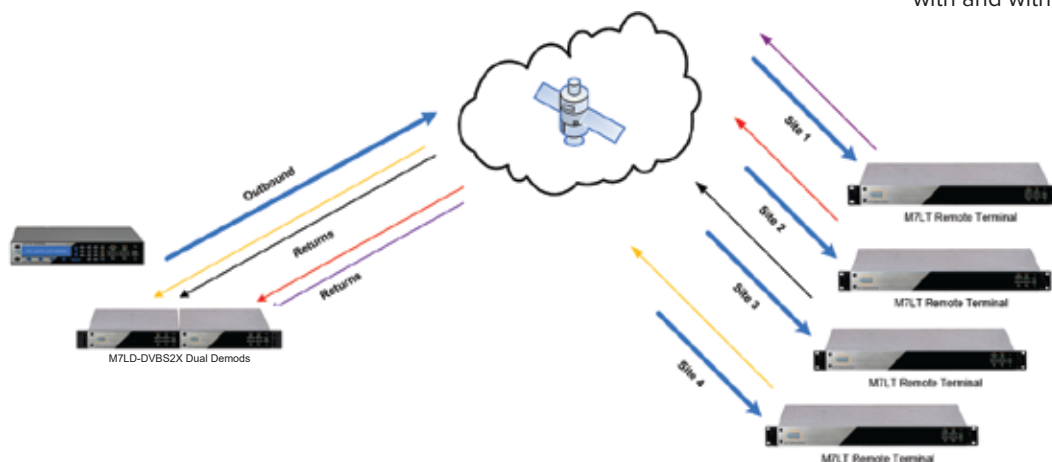
16APSK Constellation with and without Noise



64APSK Constellation with and without Noise



Sharp Carrier Roll-Off
8% versus 35%



Point-to-Multipoint Example