DATUM SYSTEMS

PRECISION SATELLITE MODEMS

M7 MODULAR MODEM SERIES M7LT L-BAND SAT-TERMINAL MODULAR SATELLITE MODEMS

System Architectures Supported

- Point-to-Point, Point-to-Multipoint,
- Mesh, Unicast & Multicast

Key Highlights

- Highly Configurable Remote Terminal
- Smart Carrier Cancelling (Patented)
- Internal BUC and LNB Power Supply
- High Stability 10 MHz Reference
- FlexLDPC Multi Block Sizes & Code Rates
- 1.2 kbps to 59.4 Mbps, 1 bps steps
- BPSK/QPSK/OQPSK/8PSK/8QAM/16QAM
- Widest Range of Carrier Roll-Off Factors
- Dual G.703/E1 Full & Fractional (N x 64)
- Advanced IP Interface
 - 200,000 Packets Per Second Throughput
 - Bridge and Router Modes
 - 3rd Party Platform for IP Optimization
- Express Ethernet Interface
 - Layer 2 Bridge, Switch Based
 - 4-Port with additional SFP Port
 - QoS and VLAN Support
- Lowest Latency, <15 ms at 64 kbps 3/4 QPSK
- Fast acquisition time
- Multi-Flo Async Channel, AUPC
- State-of-the-Art Web Browser GUI

Applications

- Cellular Backhaul
- Enterprise
- IP Networks
- E1 Trunking
- On-the-Move
- Bandwidth on Demand



Datum Systems innovation is transforming the SCPC and MCPC modem industry with a new generation modular modem product, the M7 Series, that is versatile, compact, highly efficient and costs less to own and operate.

Advanced *FlexLDPC* **Onboard** – With unparalleled configuration flexibility and superior coding gain, *FlexLDPC* takes FEC technology innovation to the next level, bringing strong economic advantages to satellite service providers and their customers. Granular code rates and block sizes get you the most out of your available satellite bandwidth and spectral power, while keeping processing latency at the desired level.

Sharp Carrier Roll-Off Technology – The M7 Series supports advanced filter shaping for optimizied carrier spacing as a standard feature. Datum currently offers down to an 5% Alpha, which means that carriers can be spaced at 1.05 times the symbol rate instead of the historical factor of 1.35. This allows an immediate spectral efficiency increase and significant bandwidth savings, at no additional hardware or software cost. Filter Roll-Off options in the new M7 modems Series include 5%, 8%, 10%, 15%, 20%, 25%, 30%, 35% and 40%. See Advanced Filter Shaping White Paper for more information.

Smart Carrier Canceller – Smart Carrier is a patented advanced second generation carrier canceller which allows 2 similar carriers to occupy the same transponder spectrum, but is different from other cancellers in that it is a baseband canceller instead of an IF canceller. It allows excellent performance with easy setup and no additional cabling. Smart Carrier is compatible with all Datum modulation types and FECs, and is well suited to be used with Sharp Roll-Off factors all the way down to 5%. Datum's technique provides improvement in the Shannon Capacity of ~ 2 dB, which is ~50 % increase in the fundamental channel capacity.





Request A Quote

MODEL M7LT

specifications	
Operating Modes	TX and RX Continuous (SCPC)
	FlexLDPC, Flexible Block and Code Rates, Low
	Latency
	Advanced TPC and Industry Compatible
	Std and Custom Async Low Overhead Channels,
	AUPC
	Remote Modem Control Channel
	IP, Ethernet, Dual G.703/E1 (D&I), Serial, HSSI
	Opt Plug-in I/O Selections (Up to 2 per M7 Unit)
Data Rate Range	1.2 kbps to 59.04 Mbps, (1 bps steps)
Symbol Rate Range	2400 sps to 14.76 Msps (1 sps steps)
L-Band Tuning Range	950 to 2150 MHz (1 Hz steps)
Modulation Types	BPSK,QPSK,OQPSK,8PSK/QAM,16QAM
FEC Options	None, Viterbi, TCM, Reed-Solomon, FlexLDPC
	TPC 4k and TPC 16k (Opt Plug-in HW)
Advanced FlexLDPC	Block Sizes 256,512,1k,2k,4k,8k,16k
	Rates 1/2,2/3,3/4,14/17,7/8,10/11,16/17
Turbo Product Code	TPC-4k 21/44, 1/2, 3/4, 7/8, 0.950
	TPC-16k 1/2, 3/4, 7/8, 0.453, 0.922
Viterbi	1/2, 3/4, 7/8 (k=7), Trellis 2/3
Reed Solomon	Selectable N & K, IESS 308/309/310
Scrambler/Descrambler	IBS, V.35, IESS, TPC, RS, LDPC, EFD

	Typical Eb/No for 1E-8 BER			Delay	
FlexLDPC™	QPSK	8PSK	8QAM	16QAM	@ 64kbps
LDPC-1/2 - 2k	2.04 dB	n/a	3.80 dB	4.48 dB	49.6 ms
LDPC-1/2-4k	1.73 dB	n/a	3.44 dB	4.16 dB	98.0 ms
LDPC-1/2-8k	1.52 dB	n/a	3.19 dB	3.92 dB	195.0 ms
LDPC-1/2-16k	1.38 dB	n/a	3.04 dB	3.76 dB	388.6 ms
LDPC-2/3-2k	2.77 dB	4.88 dB	4.68 dB	5.85 dB	44.4 ms
LDPC-2/3-4k	2.46 dB	4.53 dB	4.36 dB	5.46 dB	87.5 ms
LDPC-2/3-8k	2.23 dB	4.28 dB	4.09 dB	5.19 dB	173.7 ms
LDPC-2/3-16k	2.09 dB	4.14 dB	3.91 dB	5.01 dB	346.1 ms
LDPC-3/4-2k	3.52 dB	5.97 dB	5.51 dB	6.78 dB	41.9 ms
LDPC-3/4-4k	3.14 dB	5.56 dB	5.11 dB	6.37 dB	82.4 ms
LDPC-3/4-8k	2.89 dB	5.27 dB	4.83 dB	6.07 dB	163.1 ms
LDPC-3/4-16k	2.72 dB	5.07 dB	4.63 dB	5.87 dB	325.0 ms
LDPC-7/8-2k	4.96 dB	7.89 dB	6.98 dB	8.48 dB	38.1 ms
LDPC-7/8-4k	4.32 dB	7.21 dB	6.40 dB	7.84 dB	74.6 ms
LDPC-7/8-8k	4.00 dB	6.86 dB	6.05 dB	7.51 dB	147.3 ms
LDPC-7/8-16k	3.90 dB	6.66 dB	5.87 dB	7.32 dB	293.6 ms
LDPC-10/11-2k	5.63 dB	8.73 dB	7.68 dB	9.37 dB	37.0 ms
LDPC-10/11-4k	5.00 dB	7.99 dB	7.02 dB	8.63 dB	72.3 ms
LDPC-10/11-8k	4.58 dB	7.51 dB	6.60 dB	8.18 dB	143.0 ms
LDPC-10/11-16k	4.40 dB	7.33 dB	6.35 dB	7.95 dB	284.5 ms

Guaranteed Eb/No is 0.2 dB > Typical

Modulator	
Output Level	L-Band +5 to -35.00 (dBm)
Output Level Accuracy	±0.5 dB Over Freq, Level and Temp
Output Impedance	50 Ohms N-Type or 75 Ohms F-Type (factory option)
Output Return Loss	> 16 dB
Output Off Isolation	> 60 dB
Output Spurious	< -60 dBc / 4 kHz BW
Phase Noise Offset = 10 Hz	< -78 dBc/Hz
Offset = 100 Hz	< -95 dBc/Hz
Offset = 1.0 kHz	< -110 dBc/Hz
Offset = 10 kHz	< -110 dBc/Hz
Offset = 100 kHz	< -115 dBc/Hz
Offset = 1.0 MHz	< -130 dBc/Hz
Mod Roll-Off Factor %	5, 8, 10, 15, 20, 25, 30, 35, 40 (%)
Ext Reference Frequency	1, 1.544, 2.048, 5, 10, 20 (in MHz)
External Ref Level	-10 dBm to +10 dBm

- Specifications subject to chance without notice



Demodulator	
Input Acquisition Range	±100 Hz to ±3 MHz, 1 Hz Steps
Minimum Input Level	$10 \times \text{Log(Symbol Rate)} - 125 = \text{Lvl (dBm)}$
Maximum Input Level	$10 \times \text{Log}(\text{Symbol Rate}) - 80 = \text{Lvl}(\text{dBm})$
Maximum IF Input Power Density	+20 dBc/Hz
Maximum Total Power	+10 dBm
Receive Acquisition Time	Tunical 71 ms at 64 kbns. OPSK
Input Impedance	50 Ohme N-Tupe or 75 Ohms F-Tupe (factory option)
Input Impedance	SU OIIIIIS N-1900 01 /3 OIIIIS 1-1900 (motory option) T. Dand \times 164D
Input Keturn Loss	L-Band > 100B
Input Phase Noise	> Intelsat by 6 dB typical, 4 dB min
Demod Roll-Off Factor %	5, 8, 10, 15, 20, 25, 30, 35, 40 (%)
Smart Carrier Cancelling	
Delay Range	0 to 320 msec
Acquisition Time	< 30 Sec for Full Delay Sweep
Power Spectral Density	Ratio: +/- 10 dB:
-	Symbol Rate Ratio: +/- 30% of Symbol Rate
	Frequency Offset: +/- 12.5% of Symbol Rate
Eh/No Degradation	Den Datio A dR
ED/INO Degradation	PSD Kallo v ud DDGV (ODGV (OODGV · 0.2 dD
	BPSK/QPSK/OQPSK: 0.2 ub
	8PSK/8QAM: 0.3 dB
	16QAM: 0.5 dB
Latarfana Antions. (C	Lease Un to Two Day Modam)
Interface Options. (C	hoose Up to two rer widdenij
Serial Data Interface (S7)	
Main Interface Modes	Svnc RS-232.449,V.35,EIA-530 (DB-25)
Internal Clock (ST) Accuracy	± 1 E-12. (± 1 part per Trillion)
Donnler Buffer Depth	4 Bits to 524 284 Bits 1 Bit Steps
ESC Overhead I/O Modes	A sume RS-232 RS-485 (DR-25)
A der Mare ESC OH Data Rate	Disabled 200 brs to 2.5 Mbrs 1 brs Stens
Adv Mux ESC OII Data Rate	Disabled, 500 ops to 5.5 Millions, 1 ops Stops
Adv Mux (MUC) OH Data Kate	Disabled, 300 to 29.52 Mbps, 1 ops Steps
ESC Remote Signaling I/U's	Form C (Qty 2)
Advanced IP Interface (17)	
Adv Ethernet IP Interface	10/100 BaseT, Gigabit Ethernet (RJ-45)
Operating System	Debian Linux Operating System
Operating Modes	Deidee and Westa Router
Operating induces	
Packets Per Second	70,000 PPS
Network Protocols:	See Specification
Express Ethernet Interface (E/)	
Express Ethernet Ports	4Ports (RJ-45), 1 Port SFP
4 Port Interface	10/100 BaseT. Gigabit Ethernet (RJ-45)
SFP Port	Ontional Gigabit or Optiuc Fiber
Ethernet Protocol	Towar 2 Switched Bridge Only
Eactures	OoS and VI AN Selectable
Features	QOS alla VLAIN Selectable
Dual G.703/E1 Interface (G7)	
G.703 E1 Physical Inputs	Dual Bal Inputs on (RJ-48), UnBal Opt
Formats Supported	Full E1, D&I / PCM-30 (CAS), PCM-31 (CCS)
D&I Time Slots Supported	N x 64, N = 1 to 31 Time Slots
Monitor and Control	
Remote Control Interfaces	RS-232 RS-485 SNMP, Web Browser
Alarm Outputs	Oty 2 Form (
Alalin Output	
Environment and ruysical	
AC or DC Input (factory option)	90-264 VAC, Optional 48 VDC (20-60 VDC)
High Stability Ref Option	Internal 10 MHz at Nominal, -3 dBm
Reference Stability	1 x 10-8 OCXO, 2 x 10-7/year aging
PUC Bower Ontions	AC Input Models: (Max Current Rating Listed)
BUC Fower Options	
BOC Fower Options	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A
BUC Fower Options	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models:
BUC rower Options	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A
BUC Fower Options	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A
T NB Output Power	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A Selectable: Off: 13 or 18 VDC
LNB Output Power	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A Selectable: Off, 13 or 18 VDC
LNB Output Power Operating Temp Range	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A Selectable: Off, 13 or 18 VDC 0 to 50°C, 99% humidity, non-cond
LNB Output Power Operating Temp Range Storage Temperature	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A Selectable: Off, 13 or 18 VDC 0 to 50°C, 99% humidity, non-cond -20 to +70°C, 99% humidity, non-cond 100 UD = 110 (D) = 1.75" (D)
LNB Output Power Operating Temp Range Storage Temperature Size	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A Selectable: Off, 13 or 18 VDC 0 to 50°C, 99% humidity, non-cond -20 to +70°C, 99% humidity, non-cond 19" (W) x 11" (D) x 1.75" (H)
LNB Output Power Operating Temp Range Storage Temperature Size Weight	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A Selectable: Off, 13 or 18 VDC 0 to 50°C, 99% humidity, non-cond -20 to +70°C, 99% humidity, non-cond 19" (W) x 11" (D) x 1.75" (H) 10 lbs, fully configured
LNB Output Power Operating Temp Range Storage Temperature Size Weight Certification and Compliance	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A Selectable: Off, 13 or 18 VDC 0 to 50°C, 99% humidity, non-cond -20 to +70°C, 99% humidity, non-cond 19" (W) x 11" (D) x 1.75" (H) 10 lbs, fully configured
LNB Output Power Operating Temp Range Storage Temperature Size Weight Certification and Compliance	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A Selectable: Off, 13 or 18 VDC 0 to 50°C, 99% humidity, non-cond -20 to +70°C, 99% humidity, non-cond 19" (W) x 11" (D) x 1.75" (H) 10 lbs, fully configured EN55022 Emmissions/EN55024 Immunity
LNB Output Power Operating Temp Range Storage Temperature Size Weight Certification and Compliance CE Certified for	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A Selectable: Off, 13 or 18 VDC 0 to 50°C, 99% humidity, non-cond -20 to +70°C, 99% humidity, non-cond 19" (W) x 11" (D) x 1.75" (H) 10 lbs, fully configured EN55022 Emmissions/EN55024 Immunity ETSI EN301 489-1 V1.9.2 (Emissions/Immunity)
LNB Output Power Operating Temp Range Storage Temperature Size Weight Certification and Compliance CE Certified for CE Certified for	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A Selectable: Off, 13 or 18 VDC 0 to 50°C, 99% humidity, non-cond -20 to +70°C, 99% humidity, non-cond 19" (W) x 11" (D) x 1.75" (H) 10 lbs, fully configured EN55022 Emmissions/EN55024 Immunity ETSI EN301 489-1 V1.9.2 (Emissions/Immunity) EN60950 (Safetv)
LNB Output Power Operating Temp Range Storage Temperature Size Weight Certification and Compliance CE Certified for CE Certified for	(1) 24 VDC@110 watts, 4.2A (2) 24 VDC@120 watts, 5.0A DC Input Models: (1) 48 VDC@100 watts, 2.1A (2) 48 VDC@150 watts 3.1A (3) 48 VDC@200 watts 4.2A Selectable: Off, 13 or 18 VDC 0 to 50°C, 99% humidity, non-cond -20 to +70°C, 99% humidity, non-cond 19" (W) x 11" (D) x 1.75" (H) 10 lbs, fully configured EN55022 Emmissions/EN55024 Immunity ETSI EN301 489-1 V1.9.2 (Emissions/Immunity) EN60950 (Safety)