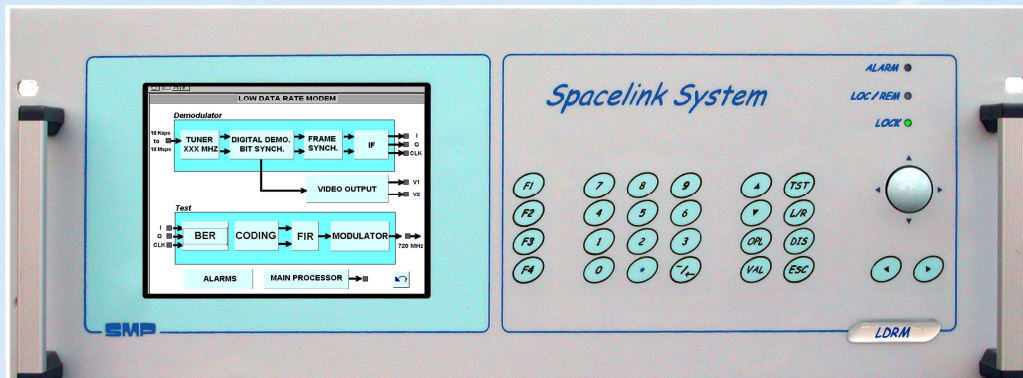


# SPACELINK SYSTEM

## DUAL CHANNEL TELEMETRY RECEIVER – Model : LDRM2



The SPACELINK SYSTEM is directly derived from our multi-modes experience. With new technologies and new digital boards, SMP shows its own capability to develop a complete solution for tracking, demodulation, synchronization & decoding as well as modulation & coding in single equipment.

The specifications of SMP Low Data Rate Modem (L.D.R.M.) can be used in the Command & Telemetry System.

The main frame is a Telemetry Receiver including a RF tuner, Multi-Mode Demodulator and as option Bit Synchronizer, Frame Synchronizer, Decoding Output and Simulator and Spectrum Analyzer.

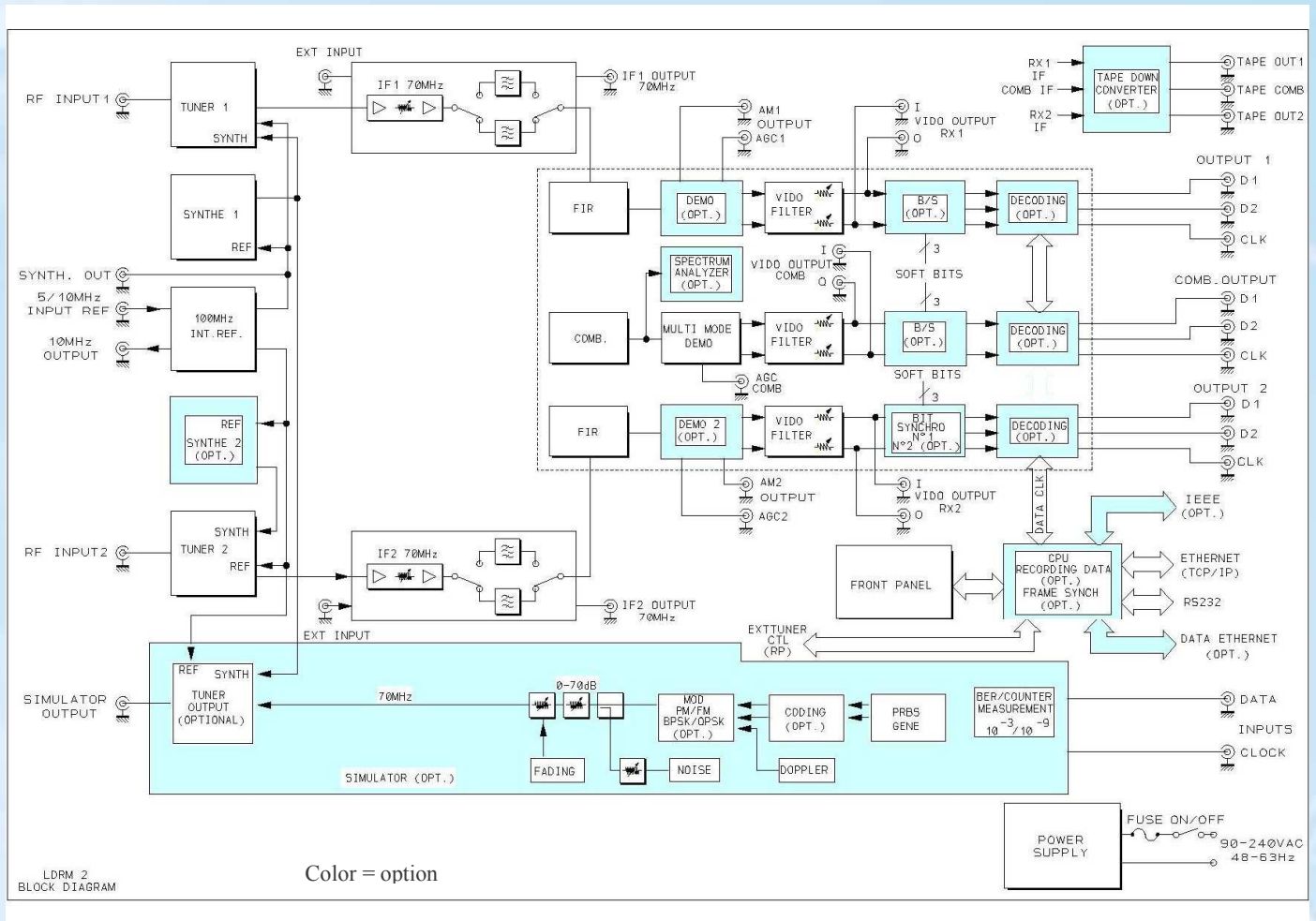
SPACELINK SYSTEM is existing under 3 models :

- LDRM1 (Mono Channel + Pre Detection Combiner as option) and
- LDRM2 (Dual Channel Receiver + Pre & Post Detection Combiner)
- LDRM.TTC (TT&C Processor)

### FEATURES

- Fully digital design from IF 70 MHz
- Input frequency from 70 MHz up to Ku band
- Programmable digital FIR filters eliminate costly IF filters upgrading
- Multi-demodulations : AM / PM / FM (option BPSK, QPSK, O/SQPSK, PSK subcarriers)
- Programmable Bit Synchronizer up to 20 Mbps with Soft decision (3 bits)
- Spectrum Analyzer
- Simulator (Doppler, Fading & Noise)
- Pre-Detection Combiner with IF input at 70 MHz
- Up 3 multi-mode demodulators (1 per channel + 1 for combiner)





MONITORING & CONTROL	
● Interfaces	: Ethernet (standard)

OPTIONS			
12. Play-back up converter	35a Viterbi coding	35b Reed Solomon	35c Turbo Code
13. Antenna Control Unit	36. Record down-converter (up to 3 : one per Rx channel + one for after comb.)		
14. Remote interface : RS, IEEE-488.1	37. Simulator		
31. Input frequency TNxxxx	38. Mono-scan tracking		
33. Demodulation : 8PSK, GMSK, BPSK, QPSK	42. Frame (CCSDS or IRIG)		
34. Spectrum display	43. External input for Bit Synchronizer		

POWER SUPPLY	DIMENSIONS
● Voltage : 110 V / 240 V ±10 %	● Drawer : 19" standard x 4 U x 500 mm (depth)
● Frequency : 45 to 65 Hz	
● Power consumption : 150 VA max.	
ENVIRONMENTAL CONDITIONS	RELIABILITY
● Temperature : Operating : +15°C to +40°C Non-operating : -20°C to +60°C	● Modulator design to ease maintenance
● Humidity : Operating : 70 % without condensing Non-operating : any in the original packing	● MTBF : 40 000 hours
	● MTTR : 4 hours With a full lot of spare parts

OPTIONS	
<b>SPECTRUM ANALYZER characteristics – Option 34</b> <ul style="list-style-type: none"> <li>● Spectrum Analyzer provides spectrum view to the User to display Incoming RF spectrum on receiving channel.</li> <li>● This spectrum analysis is made by FFT (1024 points) in the selected IF Bandwidth</li> <li>● Spectrum display is available in the remote mode</li> <li>● <b>Display :</b> <ul style="list-style-type: none"> <li>– Logarithmic, range 60 dB</li> </ul> </li> <li>● <b>Span</b> <ul style="list-style-type: none"> <li>– Equal to IF bandwidth selected (BW) : 10 kHz – 40 MHz</li> <li>– Resolution : Bw/1024</li> </ul> </li> <li>● <b>Video</b> <ul style="list-style-type: none"> <li>– BW/1024</li> </ul> </li> <li>● <b>Avering</b> <ul style="list-style-type: none"> <li>– <math>2^n</math> : n selectable from 0 to 7</li> </ul> </li> <li>● <b>Wave shape selectable</b> <ul style="list-style-type: none"> <li>– Hanning</li> <li>– Flat top</li> <li>– Rectangular</li> </ul> </li> </ul>	<b>SIMULATOR (with BER MEASUREMENT) characteristics – Option 37</b> <ul style="list-style-type: none"> <li>● An internal Pseudo Random Bit Stream (PRBS) with a programmable bit rate From 10 kHz up to 20 MHz with a length of <math>2^{23}-1</math>.</li> <li>● Modulator is FM, PM, BPSK &amp; QPSK, External inputs (data) are available.</li> <li>● Output frequency at 70 MHz (option S-Band, same as input frequency).</li> <li>● Output level programmable by a step size of 1 dB, dynamic range 70 dB                             <ul style="list-style-type: none"> <li>– Level output : -10 dBm down to -80 dBm</li> <li>– Connector : N female</li> <li>– Impedance : 50 ohms – VSWR : 1.5 max.</li> </ul> </li> <li>● Noise generator : dynamic range 60 dB, step of 1 dB Noise is summed to signal before the output attenuator</li> <li>● Fading simulation                             <ul style="list-style-type: none"> <li>– Rate : 1 Hz up to 100 kHz by a step size of 1 Hz</li> <li>– Range : 0 dB up to 30 dB by a step size of 0.2 dB</li> <li>– Wave : Triangular wave.</li> </ul> </li> <li>● Doppler simulation                             <ul style="list-style-type: none"> <li>– Rate : 1 kHz/sec up to 100 kHz/sec by step size of 1 kHz/s</li> <li>– Range : 0 dB up to <math>\pm 100</math> kHz by step size of 1 kHz</li> <li>– Wave : Sinusoidal wave</li> </ul> </li> <li>● BER Measurement                             <ul style="list-style-type: none"> <li>– External input data &amp; clock</li> <li>– Interface TTL</li> <li>– Format : NRZ / Bi-phase</li> <li>– Polarity : Data/Data inverted</li> <li>– Connector : BNC</li> <li>– Frequency 10 kHz up to 20 MHz</li> <li>– Dynamic : <math>xx.10^{-3}</math> up to <math>xx.10^{-9}</math></li> </ul> </li> </ul>
<b>MONO SCAN CHARACTERISTICS – Option 38</b> <ul style="list-style-type: none"> <li>● Single monopulse tracking : Mono-scan</li> <li>● Generation : Two signals in quadrature (0, 90°) Frequency : 1 kHz</li> <li>● Output : Differential 10 mA</li> <li>● AM demodulator : Synchronous detector provides to ACU <math>\Delta X</math> &amp; <math>\Delta Y</math> error voltages Output (IX, IY) : Impedance 1 k<math>\Omega</math>, 10V.DC for 50 % AM</li> <li>● Dry loop : Auto-tracking allowed (closed = allowed)</li> </ul>	