

# ***SM1- Satellite Modem***

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А Y E C K A  
S A T E L L I T E T E C H N O L O G I E S

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## meet SM1

The SM1 Advanced DVB-S2 SCPC Modem with a GigE interface, offers service providers a strong competitive edge when offering their services in today's competitive market.

SM1's best cost-performance parameters lead the market. With the high spectral efficiency of the DVB-S2 standard and its extensions the SM1 delivers more performance at lower cost and significantly reduces long-term operating costs.

Offered in multiple form factors, from 10X15 CM board to high end 19" chassis.

The SM1 offers fast recovery from power cycle to a well-defined last known state.

Image upgrade can be simply and reliably done locally or over the air.

The SM1 supports GSE and MPE encapsulations.

## Product Highlights

DVB-S2 receiver with support of 15% roll off, ACM, VCM, and 16/32 APSK

Up to 67.5Msps simultaneously in both directions

Wire speed processing of traffic – full hardware implementation

GigE interface to support full DVB-S2 transponder

Advanced GSE VCM optimizer for high channel utilization

High BUC power drive – up to 24V/6AMP



## Enhanced Features

**Focus on Data transfer** – SM1's unique architecture focuses on data transfer over satellite, leaving routing and other functionality to external device

**Standard base** - SM1 utilize the state of the art standards in satellite communication to offer high spectral efficiency and avoiding proprietary solutions

**Wire-speed** – SM1 handles traffic between the satellite to the network via dedicated hardware, supporting payload rates of up to 220Mbps and eliminating the bottleneck caused by CPU processing

**Efficiency** – SM1 supports the new generic stream IP over DVB-S2 encapsulation, offering superior performance for IP over satellite delivery, as compared to the multiprotocol encapsulation (MPE)

**Easy Integration** – With the flexibility of the GSE the SM1 can offer L2, L3. Flexibility that simplify the integration of the SM1 in any network

**Redundancy** – With its dual RX inputs, the SM1 Provides redundancy in the reception channels. The Two RF inputs are fully independent and support 2 LNB powering

**Flexible Management Interface** - Provides an independent management interface supporting CLI, Telnet, and SNMP.

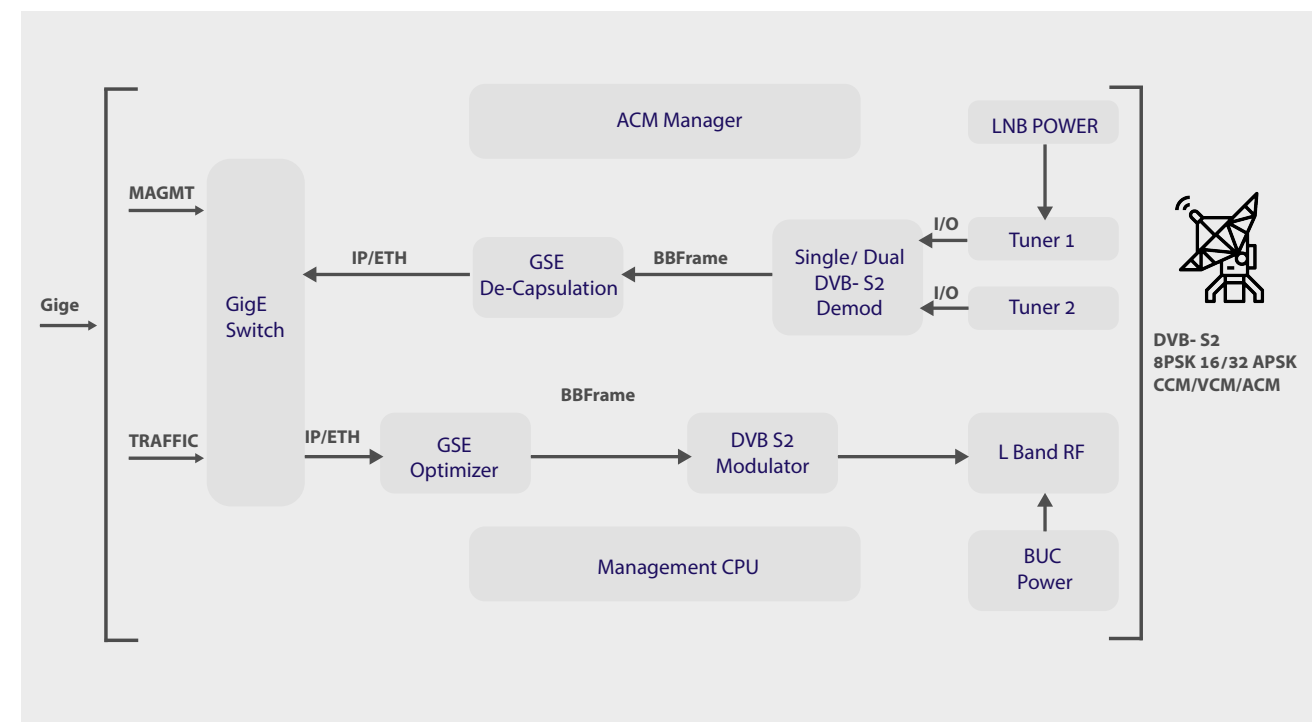
## Applications

**SCPC** – The superior RF front end and support for high bit rates makes the SM1 an optimal solution for reception of SCPC signals.

**Backhauling** – The small form factor and competitive price make the SM1 a perfect solution for Cellular and Wireless local loop backhauling

**IP DSNG** - Simply connect DSNG trucks to teleport to deliver UHD Video and data

## SM1 – Block Diagram





# SM1

## Specifications

### Receiver

<b>Standard</b>	DVB-S2
<b>Modulation</b>	QPSK, 8PSK, 16APSK, 32APSK
<b>Channel Rate</b>	Over 220Mbps
<b>Roll-off factors</b>	0.15, 0.2, 0.25, 0.35
<b>Coding</b>	LDPC and BCH decoder as for DVB-S2 specifications
<b>Code Rates</b>	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
<b>Framing</b>	DVB-S2 Normal and Short
<b>Modes</b>	CCM, VCM, ACM

### Receiver RF

<b>Input Frequency</b>	Full L-Band range 950-2150MHz
<b>Symbol Rates</b>	100Ksps to 67.5Msps (Low SR require PLL LNB, 32APSK performance up to 54Msps)
<b>Signal Level</b>	-35 to -75 dBm
<b>Input Connector</b>	Type F- 75 Ohms, SMA – 50 Ohms
<b>Redundancy</b>	Two RF inputs with Automatic selection
<b>LNB Power</b>	14/18V, 22Khz, DiSEqC 2.0

### Encapsulation

<b>MPE</b>	ETSI 301 192
<b>GSE</b>	ETSI TS 102 606 ETSI TS 102 771
<b>BB Frames Over UDP</b>	Comply with ESA / Sat labs L.3 protocol

### Environmental Conditions

<b>Operating Temp.</b>	0° to 50° C
<b>Storage Temp.</b>	-25° to +85° C
<b>Humidity</b>	5% to 95% non-condensing

### Transmitter SCPC – DVB-S2 mode

<b>Modulation</b>	QPSK, 8PSK, 16APSK, 32APSK
<b>Channel Rate</b>	Up to 240Mbps
<b>Roll-off Factors</b>	0.05, 0.1, 0.15, 0.2, 0.25, 0.35
<b>Coding</b>	LDPC and BCH decoder as for DVB-S2 requirements
<b>Code rates</b>	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
<b>Output frequency range</b>	Full L-Band 950-2150MHz
<b>RF connector Type</b>	Type-F, 75 Ohms / SMA 50 Ohms
<b>Output Spectrum</b>	< 50dBc/4kHz, modulated carrier
<b>Excludes spectral</b>	Mask area
<b>Phase Noise</b>	Better than IESS-316
<b>Reference clock</b>	10Mhz Internal, stability ±2.5 ppm
<b>Return loss</b>	>10 dB
<b>Output OFF</b>	Better than 50db
<b>Flatness</b>	+/- 0.5 dB over any 36MHz band, +/- 2dB over the full band

### Network

<b>Physical interfaces</b>	RJ-45 10/100/1000 BaseT Auto Switching MPE – L3, GSE – L2/L3
<b>Traffic handling</b>	Hardware based, Wire Speed
<b>Forwarding path</b>	
<b>GSE</b>	Tx – Up to 8 Different Label / MODCOD/ISI channels Rx – ISI + 4 labels advanced GSE VCM optimizer for high channel Utilization
<b>MPE</b>	Tx- Up to 1024 entries forward Rx – 8 PID/MAC filters
<b>Multicast</b>	Supported
<b>IP address</b>	Manual or DHCP
<b>BBFrames Over UDP</b>	Based on ESA / Sat labs L.2 protocol
<b>Management port</b>	Independent or using Traffic

### Control and Monitoring

<b>Serial Port IP</b>	Serial over USB CLI Switching 10/100 BaseT interface CLI and SNMP Management
<b>Management interface</b>	Configurable – DSCP, VLAN
<b>Maintenance</b>	Software, Firmware and boot loader are field upgradable using TFTP
<b>SNMP Traps</b>	RX Unlock, Link Margin low, Link Margin High
<b>Web</b>	PHP based* customizable on request

### Physical Characteristics

<b>Board only</b>	3 cm x 10 cm x 15 cm (H x W x D) 0.15K
<b>Rack mount</b>	1U 19" 20 cm deep. 2.5

### Power Supply

<b>Desk top – No BUC power</b>	12V 2A DC
<b>Rack mount</b>	100V – 240V

### Power Consumption

<b>Desk top – No BUC power</b>	15 Watts
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### Standards compliancy

<b>Safety</b>	CE
<b>EMI/EMC</b>	CC part 15, Class B

\* Specifications and product details are subject to changes