DVB-S2 Demodulator

SDD-IP / SDD-DV / SDD-TS

WORK Microwave's high-speed DVB-S2 demodulator SDD is designed to provide demodulation of DVB-S and DVB-S2 signals.

The SDD-IP demodulator provides operators with a platform for receiving IP/Ethernet data over DVB-S2 satellite connections. The device is the corresponding demodulator unit to the DVB-S2 IP modem SK-IP and supports low overhead Generic Stream Encapsulation and Multiprotocol Encapsulation. In combination with the integrated support of OptiACM and VideoACM, the demodulator provides adaptive or variable FEC and modulation setting for point-to-point or point-to-multipoint applications.

The SDD-TS device can be used for receiving digital video broadcast contribution or distribution signals as MPEG transport streams and is suitable for a wide range of applications, including video reception sites, monitoring facilities, and program exchange points.

The SDD-DV device combines both operation types in a single device.

The demodulator has two L-band inputs in the range from 950 to 2150 MHz or alternatively one L-band input and one VHF-band input in the range from 50 to 180 MHz, with one input being selected. On L-band inputs, LNBs can be powered directly.

Operating and control – easy integration into your system

The configuration of the demodulator can be controlled via the front panel keys or remotely via RS232, RS422/485 and TCP/IP (over Ethernet). For the remote control addressable packet-based commands, an HTTP Web browser interface, or SNMP can be used. Detailed monitoring of system parameters is possible.

Key features

- DVB-S2 - ETSI EN 302 307-1
  DVB-S - ETSI EN 300 421
- DVB-S2 modulations QPSK / 8PSK / 16APSK / 32APSK
- DVB-S demodulation QPSK
- Normal and short FEC frames, pilots on or off (DVB-S2)
- Physical layer framing with descrambling codes 0 to 262141 according to DVB-S2 standard
- Automatic reception of Roll-Off: 35 %, 25 %, 20 %, 15 %, 10 %, 5 %
- Symbol rates from 60 ksps to 76 Msps
- Data rate max 345 Mbps
- OptiACM and VideoACM
- Gigabit Ethernet data interface
- 2 ASI Output Interfaces (SDD-TS / SDD-DV)
- 6 ASI Output Interfaces for up to 6 Multiple Transport Streams (Option MT6)
  (SDD-TS / SDD-DV)
- Generic Stream Encapsulation (GSE), Multiprotocol Encapsulation (MPE)
- Network layer 2 or layer 3 operation
- Remote control through RS232, RS422/485 (2-wire or 4-wire) interfaces, TCP/IP over Ethernet, Web browser interface, SNMP with MIBs downloadable from the device
- Summary alarm output with dual change over switch contacts
- Operating temperature range 0° C to 50 °C (32 °F to 122 °F)
- CE compliant
- **3 years warranty**

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Demodulator Type:	**SDD-IP / SDD-DV / SDD-TS**	
Signal Inputs:	SDD-xx-L75: 2x L-band input (950..2150 MHz) SDD-xx-Vx/L75: 1x L-band input (950..2150 MHz), 1x VHF-band input (50..180 MHz), can be alternatively enabled	
	VHF-band Input	**L-band Input**
Input Characteristics:	Frequency: 50 … 180 MHz Impedance: 50 Ω or 75 Ω Return Loss: > 18 dB Input Power: -60 dBm … -15 dBm (total aggregate power) IF-Connector: BNC female	Frequency: 950 … 2150 MHz Impedance: 75 Ω Return Loss: > 13 dB Input Power: -70 dBm … -20 dBm (total aggregate power) IF-Connector: F female LNB DC-Feed: 13.5 V or 18 V (450 mA) switchable, 22 kHz tone on/off, DISEqC 1.1 short circuit protected
Symbol Rate:	Max. Range: 60 ksps … 76 Msps (QPSK, 8PSK, 16APSK) 60 ksps … 62 Msps (32APSK) Step size: 1 sps	
Demodulation / Decoding **DVB-S2:**	Outer BCH Code: FEC-Frames nldpc = 64800 (normal FEC Frame) nldpc = 16200 (short FEC Frame) Inner LDPC Code: QPSK 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 8PSK 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 16APSK 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 32APSK 3/4, 4/5, 5/6, 8/9, 9/10 Demodulator auto detection: Modulation- and FEC-type, pilots on/off are automatically detected Physical Layer Scrambling: N = 0 … 262141 all according ETSI EN 302307	
Demodulation / Decoding **DVB-S:**	Outer Reed Solomon Code: 188/204, T=8 Convolutional Interleaving: Depth I=12 Inner Code: QPSK 1/2, 2/3, 3/4, 5/6, 6/7, 7/8 (Convolutional K=7) automatically selected all according ETSI EN 300421 (SDD-TS only)	
OptiACM:	CCM / VCM / ACM functionality for point-to-point and point-to-multipoint links	
Signal Spectrum Mask:	α = 0.35, 0.25, 0.20 according ETSI EN 302307, 301210, 302307 α = 0.15, 0.10, 0.05 (compatible)	
Data Interfaces:	1x Ethernet (RJ-45, 10/100/1000 Mbps auto sensing) 2x ASI (BNC female 75 Ω; SDD-TS, SDD-DV only) 6x ASI (BNC female 75 Ω; SDD-TS, SDD-DV only; Option MT6)	
Data Rate:	up to 345 Mbps	
Network Operation:	Layer 2 (Ethernet frame reception) or Layer 3 (IP packet reception), IPv4 and IPv6 dual stack	
Data Encapsulation:	Generic Stream Encapsulation (GSE) according ETSI TS 102606 (SDD-IP, SDD-DV only) Multiprotocol Encapsulation (MPE) according to ETSI EN 301192 (SDD-IP, SDD-DV only)	
Transport Stream Output:	2x ASI (BNC female 75 Ω) (SDD-TS, SDD-DV only) Supporting Single Transport Stream Operation or 1 Multiple Transport Stream Operation (Dual Output) 1x RTP/UDP IP over Ethernet according to IETF RFC 2250 With Option MT6 (SDD-TS, SDD-DV only): Processing of 6 Multiple Transport Streams Support of Null Packet Reinsertion according to ETSI EN 302 307 Annex G.3 6x ASI (BNC female 75 Ω) Outputs, can be assigned arbitrarily Up to 6x RTP/UDP IP over Ethernet according to IETF RFC 2250	
Transport Stream Frame Size:	188 bytes (SDD-TS and SDD-DV only)	
Transport Stream Security: **(Option BI)**	BISS-E Descrambler, compliant to EBU Tech 3292 rev.2 (SDD-TS only) Supports single or multi program transport stream in BISS Modes 0, 1 and E BISS Mode 0: no descrambling, MPEG transport stream is transferred untouched BISS Mode 1: MPEG transport stream is descrambled using 48-bit Clear Session Word BISS Mode E: MPEG transport stream is descrambled using 64-bit Encrypted Session Word and 56-bit Injected Identifier Max. input rate for Session Words: 1 time per 10 seconds 10 times per 5 minutes **Important note**: Option BI operates exclusively with single stream operation	
DVB-S2 Baseband Frame Output: **(Option BBO)**	Instead of Transport Stream over ASI (SDD-TS, SDD-DV only) RTP/UDP IP over Ethernet, Jumbo Frames over GbE (SDD-IP, SDD-DV only)	

Specifications continued next page

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SDD-IP / SDD-DV / SDD-TS

Monitoring and Control Interface:	Protocol: Connection:	SNMP UDP over Ethernet (10/100 Mbps, auto sensing),IPv4, IPv6, connector RJ-45
	Protocol: Connection:	HTTP (web browser interface) TCP/IP over Ethernet (10/100 Mbps, auto sensing), IPv4, IPv6,connector RJ-45
	Protocol: Connection:	Multipoint RS232 or RS422/RS485 (configurable), connector DSUB09 female or TCP/IP over Ethernet (10/100 Mbps, auto sensing), IPv4, IPv6,connector RJ-45
Alarm Interface:	Alarm: two potential free contacts (DPDT), Connector DSUB09	
Temperature Range:	0 °C ... 50 °C operating -30 °C ... 80 °C storage	
Relative Humidity:	<95% non condensing	
User Interface:	LCD-Display 2 x 40 characters, 4 cursor keys, 2 function keys	
Mains Power Input:	100 … 240 V AC nominal, 90…264 V AC max, 50…60 Hz	
Mains Power Consumption:	Typ.: 35 VA / 25 W	
Mains Power Input Connector:	IEC C14	
Mains Fuse:	2 x 2 A time-lag fuse	
Dimension and Weight:	483 x 44 x 470 mm³ (WxHxD), 1 RU (19") approx. 5.5 kg	

Specifications are subject to change

Order Information:

SDD-[Device Type]-[Input Band Input Imp]-[Options]

Device Types:

IP	DVB-S2 IP Demodulator
DV	DaVid Technology Demodulator (switchable combination of TS and IP)
TS	DVB-S/S2 Transport Stream Demodulator

Possible Options are:		**Cannot be combined with:**	**Available for:**
BBO	Baseband frame output	-	SDD-IP, SDD-DV, SDD-TS
BI	BISS decryption	MT6	SDD-DV, SDD-TS
MT6	Support of 6 Multiple Transport Stream outputs	BI	SDD-DV, SDD-TS

Examples:

SDD-TS-L75	DVB-S/S2 TS Demodulator with L-band Input 75 Ω
SDD-IP-L75	DVB-S2 IP Demodulator with L-band Input 75 Ω
SDD-IP-V75/L75	DVB-S2 IP Demodulator with VHF-band and L-band Input
SDD-DV-V50/L75-BBO	DVB-S2 DaVid Demodulator with VHF-band 50 Ω and L-band Input 75 Ω, Baseband Frame Output option

Digital Video Broadcasting