

A-Series AR-60

Satellite Demodulator



www.work-microwave.com



The A-Series is a family of next generation satellite modem platforms built on versatile FPGA- and software-based architecture. The AX-60 product line supports the full range of DVB-S2X/S2/S standards. Exceptional analog and digital engineering provides teleport-grade devices with future-proof expandability.

Beyond DVB waveforms, A-Series devices can be extended to customized signal and data processing. Through an all-IP structure, the platform supports both native network operation as well as data streaming over IP. Built-in encapsulators provide support for a

wide range of formats plus specialized streaming like transparent baseband data, raw IQ information, space data formats and more.

The **AR-60 Satellite Demodulator** is a powerful receiver for all types of DVB signals. A wide range of supported frame formats and data types allows transparent access to all layers of transmissions. Together with extensive monitoring utmost control and insight over signal reception is provided for networks, LEO downlinks, governmental applications, and others.

Key Features

- DVB-S2X - ETSI EN 302 307-2
- DVB-S2 - ETSI EN 302 307-1
- DVB-S2X modulations:
QPSK to 256APSK normal, short, linear
- DVB-S2 modulations:
QPSK to 32APSK; normal, short
- Symbol rates from 100 ksps to 75 Msps
- Data rate up to 360 Mbit/s integrated
- Roll-Off: 35%, 25%, 20%, 15%, 10%, 5%
- Operates as layer 3 bridge or layer 3 router including traffic shaping / QoS functionality
- ACM controller open to various ACM systems
- GSE and MPE encapsulation integrated
- Transparent output of all transmission layers
- Customizable processing infrastructure for easy integration into large communication systems
- Flexible software architecture for easy extension and future virtualization of functionality
- **3 years warranty**

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RX Signal Specifications

Signal input L-band:	Frequency: Connector: Impedance: Return Loss: Input power: LNB DC-Feed	950...2150 MHz 680...2300 MHz <i>w/ licenses RXL680 and RXL2300</i> 1x F female 75 Ohm > 13 dB -70...-10 dBm total aggregate power 13.5 V or 18 V switchable 450 mA max. current, short circuit protected 22 kHz tone on/off, DISEqC 1.1
Signal input 70/140 MHz: <i>w/ option IF</i>	Frequency: Connector: Impedance: Return Loss: Input power:	50...180 MHz 1x BNC female 50 Ohm / 75 Ohm switchable > 13 dB -60...15 dBm total aggregate power
Symbol rate:	Range: Acquisition bandwidth: Tolerance:	100 ksp/s ... 75 Msps <i>depending on license RXS*</i> $\pm$ selected symbol rate / 2 $\pm$ 1% of selected symbol rate
DVB-S2X Modulation / Coding:	ModCods: (normal FEC frame) ModCods: (short FEC frame) ModCods linear: (normal FEC frame)	QPSK 13/45, 9/20, 11/20 8PSK 23/36, 25/36, 13/18 16APSK 26/45, 3/5, 28/45, 23/36, 25/36, 13/18, 7/9, 77/90 32APSK 32/45, 11/15, 7/9 64APSK 11/15, 7/9, 4/5, 5/6 128PSK 3/4, 7/9 256PSK 32/45, 3/4 QPSK 11/45, 4/15, 14/45, 7/15, 8/15, 32/45 8PSK 2/15, 8/15, 26/45, 32/45 16APSK 7/15, 8/15, 26/45, 3/5, 32/45 32APSK 2/3, 32/45 16APSK 1/2-L, 8/15-L, 5/9-L, 3/5-L, 2/3-L 32APSK 2/3-L 64APSK 32/45-L 256PSK 29/45-L, 2/3-L, 31/45-L, 11/15-L all according to ETSI EN 302307-2
DVB-S2 Modulation / Coding:	ModCods: (normal and short FEC frame; 9/10 normal FEC frame only) Auto detection: Physical layer scrambling:	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 Modulation- and FEC-type pilots on / off CCM / VCM / ACM N = 0...262141 all according to ETSI EN 302307-1
DVB-S Modulation / Coding:	ModCods:	QPSK 1/2, 2/3, 3/4, 5/6, 7/8 all according to ETSI EN 300421 only streaming functionality, no network operation <i>w/ license DVBS</i>
Signal spectrum mask:	$\alpha = 0.35, 0.25, 0.20, 0.15, 0.10, 0.05$ according to ETSI EN 302307	

Specifications are subject to change

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Data Processing and Device Specifications

Device connectors:	Data network: M&C network: 10 MHz reference input: RX time stamp synchronization:	1x Ethernet RJ-45, 10/100/1000 Mbps auto sensing 1x Ethernet RJ-45, 10/100/1000 Mbps auto sensing BNC female, 50 Ohm <i>w/ option RT</i> SMC male, 26 pin <i>w/ option RT</i>
Network operation:	IP network connectivity: Data encapsulation: Data encapsulation:	Layer 3 Bridge or Router for IPv4 packet transmission, IPv6 on request Generic Stream Encapsulation (GSE) according to ETSI TS 102606 Generic Stream Encapsulation (GSE) according to ETSI TS 102606 Multiprotocol Encapsulation (MPE) according to ETSI EN 301192 Contact factory for other encapsulation formats.
Stream outputs:	Interfaces: Baseband data: Transport stream: IQ data: CCSDS CADU frames:	1x RTP/UDP/IP over Ethernet according to IETF RFC 2250 direct output of baseband data w/o filtering padding selectable <i>w/ license BBO</i> transport stream from DVB carriers 1 ISI selectable from DVB-S2 multistream carriers <i>w/ license TSO</i> raw IQ data after demodulation signed 8-bit I and Q values for each symbol decimator selectable to reduce bandwidth occupation <i>w/ license IQ</i> extraction of CCSDS CADU frames from DVB-S2 automatic detection of frame length <i>w/ license CCSDS131.3</i>
Frontpanel interface:	LCD-Display 2x40 characters, 4 cursor keys, 4 function keys VFD-Display 2x40 characters, 4 cursor keys, 4 function keys	<i>w/ option EXT</i>
Remote monitoring and control:	Protocol: Connection: Protocol: Connection:	SNMP UDP/IP over Ethernet/RJ-45 or in-band via satellite link HTTP web browser interface TCP/IP over Ethernet/RJ-45 or in-band via satellite link
Temperature range:	Operating: Storage: Relative humidity:	0°C...50°C -30°C...60°C <i>w/ option EXT</i> -30°C...80°C < 95% non condensing
Mains power:	Input: Consumption: Connector: Fuse:	100...240 V AC nominal, 90...264 V AC max, 50...60 Hz 65 VA / 45 W typical IEC C14 2x 3.15 A time-lag fuse
Dimension and weight:	483 x 44 x 505 mm ³ (WxHxD), 1 RU 19" up to approx. 10 kg depending on device type	

Specifications are subject to change

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Order information:

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Hardware options:

Hardware options have to be defined with the order and are not field-upgradable. Not all device types may support all combinations. Please contact factory with specific requests.

IF	additional IF input, 50/75 Ohm switchable
RT	external 10 MHz reference input and synchronization timestamp
EXT	extended operating temperature range of -30°C...60°C

License based throughput:

License based throughput performance is field-upgradable by uploading a license file to the device. Either a symbol rate or a data rate based license has to be selected. License model can be changed in field.

RXSxx	symbol rate based reception license for xx Msps select from: RXS15, RXS30, RXS45, RXS60, RXSmax RXSmax supports full throughput according to specification or device limits
RXDxx	data rate based reception license for xx Mbps select from: RXD10 (default), RXD30, RXD100, RXD160, RXDmax RXDmax supports full throughput according to specification or device limits

License based functions:

License based functions are field-upgradable by uploading a license file to the device.

BBO	direct baseband frame output streaming over IP
TSO	transport stream over IP output
RXL680	extended L-band input down to 680 MHz
RXL2300	extended L-band input up to 2300 MHz
IQ	IQ constellation data output over IP
CCSDS131.3	decapsulation of CCSDS CADU frames from DVB-S2/S2X signals
XMON	extended demodulator signal monitoring