A-Series AR-80
Satellite Demodulator

WORK MICROWAVE

The A-Series is a family of next generation satellite modem platforms built on versatile FPGA- and software-based architecture. The AX-80 product line supports DVB-S2X/S2 standards with utmost possible throughput up to bandwidths of 500 Msps. 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-80 Satellite Demodulator** is a powerful receiver for DVB-S2/S2X wideband 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 up to 500 Msps
- Data rate up to 3 Gbit/s per direction 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:	950...2150 MHz 1x N female 50 Ohm > 13 dB -55...-10 dBm total aggregate power	
Symbol rate:	Range: Acquistion bandwidth: Tolerance:	5 Msps ... 500 Msps *depending on license RXS** ± selected symbol rate / 2 ± 1% of selected symbol rate	
DVB-S2X Modulation / Coding:	ModCods: (normal FEC frame)	QPSK 8PSK 16APSK 32APSK 64APSK 128PSK 256PSK	13/45, 9/20, 11/20 23/36, 25/36, 13/18 26/45, 3/5, 28/45, 23/36, 25/36, 13/18, 7/9, 77/90 32/45, 11/15, 7/9 11/15, 7/9, 4/5, 5/6 3/4, 7/9 32/45, 3/4
	ModCods: (short FEC frame)	QPSK 8PSK 16APSK 32APSK	11/45, 4/15, 14/45, 7/15, 8/15, 32/45 2/15, 8/15, 26/45, 32/45 7/15, 8/15, 26/45, 3/5, 32/45 2/3, 32/45
	ModCods linear: (normal FEC frame)	16APSK 32APSK 64APSK 256PSK	1/2-L, 8/15-L, 5/9-L, 3/5-L, 2/3-L 2/3-L 32/45-L 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)	QPSK 8PSK 16APSK 32APSK	1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 3/4, 4/5, 5/6, 8/9, 9/10
	Auto detection:	Modulation- and FEC-type pilots on / off CCM / VCM / ACM	
	Physical layer scrambling:	N = 0...262141	
		all according to ETSI EN 302307-1	
Time-slicing:	Physical layer framing according to ETSI EN 302307 Annex M *w/ license RTS*		
Signal spectrum mask:	α = 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:	6x Ethernet RJ-45, 10/100/1000Base-T auto sensing 2x SFP+ adapter slot for optical GbE or optical/copper 10GbE ***Contact factory for available SFP+ modules.***
	M&C network:	1x Ethernet RJ-45, 10/100/1000Base-T auto sensing
	10 MHz reference input:	BNC female, 50 Ohm ***w/ option RT***
	RX time stamp synchronization:	SMC male, 26 pin ***w/ option RT***
Network operation:	IP network connectivity:	Layer 3 Bridge or Router for IPv4 packet transmission, IPv6 on request
	Data encapsulation:	Generic Stream Encapsulation (GSE) according to ETSI TS 102606 Multiprotocol Encapsulation (MPE) according to ETSI EN 301192 ***Contact factory for other encapsulation formats.***
	IP data rate limits:	6 Gbps or 1 Mpps rx+tx processing, subject to prevailing modem limits maximum rates can vary in combination with complex internal processing
Stream outputs:	Interfaces:	1x RTP/UDP/IP over Ethernet according to IETF RFC 2250
	Baseband data:	direct output of baseband data w/o filtering padding selectable ***w/ license BBO***
	Transport stream:	transport stream from DVB carriers 1 ISI selectable from DVB-S2 multistream carriers ***w/ license TSO***
	IQ data:	raw IQ data after demodulation signed 8-bit I and Q values for each symbol decimator selectable to reduce bandwidth occupation ***w/ license IQ***
	CCSDS CADU frames:	extraction of CCSDS CADU frames from DVB-S2 automatic detection of frame length ***w/ license CCSDS131.3***
Frontpanel interface:	LCD-Display 2x40 characters, 4 cursor keys, 4 function keys	
Remote monitoring and control:	Protocol:	SNMP
	Connection:	UDP/IPover Ethernet/RJ-45 or in-band via satellite link
	Protocol:	HTTP web browser interface
	Connection:	TCP/IP over Ethernet/RJ-45 or in-band via satellite link
Temperature range:	Operating:	0°C...50°C
	Storage:	-30°C...80°C
	Relative humidity:	< 95% non condensing
Mains power:	Input:	100...240 V AC nominal, 90...264 V AC max, 50...60 Hz
	Consumption:	150 VA / 150 W typical
	Connector:	IEC C14
Dimension and weight:	483 x 98 x 505 mm³ (WxHxD), 1 RU 19" up to approx. 14 kg depending on device type	

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Order information:

    AR-80   Satellite Demodulator

Hardware options:

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

    RT   external 10 MHz reference input and synchronization timestamp

License based throughput:

    License based throughput performance is field-upgradable by uploading a license file to the device.

    RXSxxx   symbol rate based reception license for xxx Msps
                     select from: **RXS125** (default), **, RXS250, RXS400, RXS500**

License based functions:

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

    RTS   DVB-S2X time-slicing support for reception
    BBO   direct baseband frame output streaming over IP
    TSO   transport stream over IP output
    IQ   IQ constellation data output over IP
    CCSDS131.3   decapsulation of CCSDS CADU frames from DVB-S2/S2X signals