

# AZ930

## WAN Satellite Demodulator

### Azimuth Product Family

# AZIMUTH

SERIES

#### Description

The AZ930 is a state-of-the-art satellite demodulator designed for applications where two parts of a Wide Area Network (WAN) are connected over satellite using routers with HSSI interfaces. The AZ930 can be used in conjunction with the WAN Satellite Modulator AZ130.

The AZ930 has a dual L-band input (950-2150 MHz). The active input is selected by the user and can provide DC power and frequency band selection signals compatible with most professional and commercial LNBs. Optionally, one L-band input can be replaced by an IF (50-180 MHz) input.

At the output of the demodulator, the signal is available on an HSSI interface with bit rates up to 52 Mbit/s (standard HSSI) or 110 Mbit/s (extended HSSI).

This demodulator is fully compliant with the DVB-S and DVB-S2 standards and provides exceptional performance and bandwidth efficiency.

The AZ930 is equipped with an adaptive equalizer to compensates linear distortion of the transmission channel.

The integrated Noise & Distortion Estimator tool provides an accurate reading of the satellite link margin even in presence of non-linear distortion and allows the user to find the optimum input back-off setting very easily for 16APSK or 32APSK operation, whether or not non-linear predistortion is applied .

#### Key features

- DVB-S2 and DVB-DSNG/S compliant
- QPSK, 8PSK, 16APSK and 32APSK
- HSSI interface
- Max data rates up to 52 or 110 Mbit/s
- Adaptive equalizer
- Noise & Distortion Estimator (NoDE) tool
- Optional 10 MHz reference input/output

#### Main advantages

- Lower operational costs thanks to highest bandwidth efficiency
- High compactness
- Easy integration with standard routers
- Fully compatible with the satellite DVB standards

#### Applications

- Satellite interconnection of routers
- High speed satellite links

#### Related products

AZ130 WAN Satellite modulator

AZ290 1+1 Demodulator Redundancy switch

AZ200 Universal Switching system

AZ7x0 Frequency converters

#### Related Documents

Care Pack Brochure



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Specifications – AZ930(R8)



Input interface

- Dual L-band input (default)**
- Connector 2 x F-type (F), 75 ohms
  - Return loss > 7 dB
  - Frequency 950 - 2150 MHz
  - Level -65/-25dBm
  - Adjacent signal < (Co+7) dBm/Hz where Co = signal level density

- IF-band input (optional, replaces one L-band input)**
- Connector BNC (F) - 75 ohms
  - Return loss > 15 dB
  - Frequency 50 - 180 MHz
  - Level -55 to -15 dBm
  - Adjacent signal < (Co+7) dBm/Hz where Co = signal level density

- LNB power and control**
- Max. current 350 mA (on selected IFL input)
  - Voltage 11,5 -14 V (Vertical polarization)  
16 -19 V (Horizontal polarization)  
& additional 22 kHz +/- 4KHz (band selection according to universal LNB for Astra satellites)
  - 10 MHz reference

Demodulation

Supported modulation schemes and FEC

- DVB-S/DSNG:  
Outer/Inner FEC: Reed Solomon /Viterbi  
MODCODs:  
QPSK: 1/2, 2/3, 3/4, 5/6, 7/8  
8PSK: 2/3, 5/6, 8/9  
16QAM: 3/4, 7/8
- DVB-S2:  
Outer/Inner FEC: BCH/ LDPC  
MODCODs:  
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

Baud rate range

- DVB-S2  
- QPSK/8PSK/16APSK 0,256 – 45 Mbaud  
- 32 APSK 1-33 Mbaud
- DVB-S/DSNG  
- QPSK/8PSK/16QAM 1-45Mbaud

Frame length

- DVB-S2 Short Frames 16200 bit
- DVB-S2 Normal Frames 64800 bit
- DVB-S/DSNG 188 byte

Roll-off factor

- 20 % - 25% -35%

DVB-S2 performances at PER 1E-5

|              | Short Frames | Normal Frames |
|--------------|--------------|---------------|
|              | < 15 Mbaud   | < 45 Mbaud    |
| Config       | Es/No        | Es/No         |
| QPSK- 1/3    | -0,6         | -0,7          |
| QPSK- 2/5    | 0,4          | 0,2           |
| QPSK- 1/2    | 1            | 1,4           |
| QPSK- 3/5    | 3,1          | 2,8           |
| QPSK- 2/3    | 3,8          | 3,6           |
| QPSK- 3/4    | 4,5          | 4,3           |
| QPSK- 4/5    | 5,1          | 5,1           |
| QPSK- 5/6    | 5,8          | 5,5           |
| QPSK- 8/9    | 6,7          | 6,6           |
| QPSK- 9/10   | -            | 6,7           |
| 8PSK- 3/5    | 6,5          | 6,3           |
| 8PSK- 2/3    | 7,4          | 7,1           |
| 8PSK- 3/4    | 8,6          | 8,4           |
| 8PSK- 5/6    | 10,2         | 9,7           |
| 8PSK- 8/9    | 11,4         | 11,1          |
| 8PSK- 9/10   | -            | 11,3          |
| 16APSK- 2/3  | 9,9          | 9,6           |
| 16APSK- 3/4  | 10,9         | 10,5          |
| 16APSK- 4/5  | 11,6         | 11,5          |
| 16APSK- 5/6  | 12,4         | 12,1          |
| 16APSK- 8/9  | 13,6         | 13,3          |
| 16APSK- 9/10 | -            | 13,6          |
| 32APSK-3/4   | -            | 13,6          |
| 32APSK-4/5   | -            | 14,5          |
| 32APSK-5/6   | -            | 14,9          |
| 32APSK-8/9   | -            | 16,1          |
| 32APSK-9/10  | -            | 16,5          |

DVB DSNG/S performances at BER 1E-7 after RS

|             | < 20 Mbaud | > 20 Mbaud |
|-------------|------------|------------|
| Config      | Eb/No      | Eb/No      |
| QPSK- 1/2   | 3,9        | 3,9        |
| QPSK- 2/3   | 4,4        | 4,5        |
| QPSK- 3/4   | 4,9        | 5,1        |
| QPSK- 5/6   | 5,4        | 5,8        |
| QPSK- 7/8   | 5,8        | 6,4        |
| 8PSK- 2/3   | 6,3        | 6,5        |
| 8PSK- 5/6   | 8,3        | 8,8        |
| 8PSK- 8/9   | 8,8        | 9,8        |
| 16QAM- 3/4  | 8,4        | 8,6        |
| 16 QAM- 7/8 | 10,1       | 11,1       |

Output interface

- HSSI interface**
- connector sub-D (F)
  - rate 0.05 - 110 Mbit/s
  - output levels ECL-10 kH (330 ohms; -5 V)
  - input levels 0.15 - 1 Vptp (diff. 110 ohms)

10 MHz reference input / output (optional)

- Connector BNC (F) – 50 ohms
- Input level -3dBm up to 7dBm
- Output level +7dBm

Internal Reference frequency

- High Stability (optional)  
Stability ±5x10-8 over 0°C to 70°C  
Ageing: ± 15 ppb/day  
± 300 ppb/year
- Very High Stability (optional)  
Stability ±2x10-9 over 0°C to 65°C  
Ageing: ± 0.5 ppb/day  
± 500 ppb/10 year

Generic

Monitor and control interfaces

- Web based GUI
- Diagnostics report, alarm log
- RMCP over TCP-IP/UDP and RS232/RS485
- SNMP v2c

Alarm interface

- Electrical dual contact closure alarm contacts
- Connector 9-pin sub-D (F)
- Logical interface and general device alarm

Physical

- Very compact: 1RU, width: 19", depth 51 cm, 6 kg
- Power supply:  
90-130 & 180-260 Vac, 105 VA, 47-63 Hz
- Temperature  
- Operational: 0°C to 40°C  
- Storage: -40 to +70°C
- Humidity: 5% to 85% non-condensing
- CE label

Ordering information

| AZ 930 WAN SATELLITE DEMODULATOR                                                                                                    |                                                | Order n° |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------|
| Default Configuration                                                                                                               |                                                |          |
| DVB demodulator with HSSI interface, SNMP<br>Output interface: HSSI 52 Mbit/s<br>Modulation:<br>DVB-S Q/8PSK, DVB-S2 Q/8PSK 45Mbaud |                                                | AZ930    |
| Configuration options                                                                                                               |                                                |          |
| Category                                                                                                                            | Max. 1 option per category                     |          |
| Output HSSI Interface                                                                                                               | max 52 Mbit/s                                  | Default  |
|                                                                                                                                     | max 110 Mbit/s (extended)                      | AP-10    |
| Input Interface                                                                                                                     | L-band                                         | Default  |
|                                                                                                                                     | L-band + 10MHz                                 | AJ-02    |
|                                                                                                                                     | IF+ L-band                                     | AJ-03    |
|                                                                                                                                     | IF+ L-band + 10MHz                             | AJ-04    |
| Modulation & Baud rate                                                                                                              | DVB-S/S2 Q/8PSK 45Mbaud *                      | Default  |
|                                                                                                                                     | DVB-S/S2 Q/8PSK, 16QAM, 16APSK 45Mbaud *       | AL-12    |
|                                                                                                                                     | DVB-S/S2 Q/8PSK, 16QAM, 16/32APSK 45/33Mbaud * | AL-16    |
| Additional options                                                                                                                  |                                                |          |
| Category                                                                                                                            | Max. 1 option per category                     |          |
| 10MHz reference In/Out                                                                                                              | High stability                                 | GR-01    |
|                                                                                                                                     | Very high stability                            | GR-02    |
| Services Category                                                                                                                   |                                                |          |
| Assistance                                                                                                                          | Care Pack Basic                                | GA-06    |
|                                                                                                                                     | Care Pack Extended                             | GA-07    |

(\*) upgradeable via license key

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