

# AZ910

## DSNG and Contribution Demodulator

### Azimuth Product Family

# AZIMUTH

SERIES

#### Description

The AZ910 is a state-of-the-art satellite demodulator designed for broadcast contribution, Digital Satellite News Gathering (DSNG) and Primary distribution applications over satellite in full compliance with the DVB standards.

In its default configuration, the AZ910 is capable to demodulate one MPEG transport stream in DVB-S, DVB-DSNG or DVB-S2 mode and to interface with terrestrial broadcast network through a standard ASI interface. Optionally, an optical ASI interface can be added.

To simplify the migration towards IP, the AZ910 is also available with DualFlow (combined ASI+Ethernet interface), providing broadcasters the following capabilities:

- The ability to demodulate Multistream and VCM carriers, and to output up to two transport streams and one IP stream simultaneously.
- The ability to interface (via a GbE output) with equipment or networks that accept transport streams carried over IP with the RTP protocol
- The ability to receive IP services (file transfers, VoIP, TCP services...) simultaneously or alternatively with transport stream(s). In this case the demodulator also performs the extraction of the IP packets encapsulated in MPE or XPE mode.

The AZ910 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.

The AZ910 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
- Data rates up to 155 Mbit/s
- Adaptive equalizer
- Noise & Distortion Estimator (NoDE) tool
- Optional DualFlow: ASI + GbE interfaces with integrated IP decapsulator
- Support of Multistream and /or VCM operation (with optional ASI+GbE interface)
- Optional 10 MHz reference input/output

#### Main advantages

- Lower operational cost thanks to highest bandwidth efficiency
- Fully compatible with the satellite DVB standards for a guaranteed interoperability
- High versatility and flexibility
- Future proof design combining video and IP technologies
- High compactness

#### Applications

- Contribution
- Primary distribution
- DSNG
- Professional signal monitoring

#### Related products

AZ110 Broadcast Satellite Modulator  
AZ410 Broadcast Satellite Modem

AZ290 1+1 Demodulator Redundancy Switch  
AZ200 Universal Switching system



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# Specifications – AZ910(R6)



## Input interface

### Dual L-band input (default)

- Connector 2 x F-type (F), 75 ohms
- Return loss > 7 dB
- Level -65/-25dBm
- Frequency 950 - 2150 MHz
- 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
- Level -55 to -15 dBm
- Frequency 50 - 180 MHz
- 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 & DiSeQC command transmission)
- 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 bits
- DVB-S2 Normal Frames 64800 bits
- DVB-S/DSNG 188 bytes

### Roll-off factor

- 20 % - 25% -35%

### DVB-S2 performances at PER 1E-5

Config	Short Frames		Normal Frames	
	Es/No	Es/No	Es/No	Es/No
	< 15 Mbaud	< 45 Mbaud		
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

Config	< 20 Mbaud		> 20 Mbaud	
	Eb/No	Eb/No	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		
16QAM- 7/8	10,1	11,1		

## Output interfaces

### ASI interface (default)

- ASI (Asynchronous Serial Interface) :  
- BNC (F) - 75 ohms (coax) or optionally ST (optical)  
- 188 byte mode

### SPI interface

- 25 pin sub-D connector
- 188 byte mode

### DualFlow: Combined ASI+Ethernet (optional)

- 2 x ASI on BNC (F) - 75 ohms (coax)
- 188 byte mode
- Auto switching 10/100/1000 Base-T Ethernet interface  
- Transport stream on IP interface (UDP/RTP)  
- Layer 2 bridge mode: Ethernet frames over satellite (data piping)  
- Layer 3 bridge mode: IP packets over satellite using Multi Protocol (MPE) or Extended Performance (XPE) Encapsulation  
- Processing of up to 40 000 IP packets per second – maximum 50 Mbit/s
- DVB-S2 Multistream and VCM support

### 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  $\pm 5 \times 10^{-8}$  over 0°C to 70°C  
Ageing:  $\pm 15$  ppb/day  
 $\pm 300$  ppb/year
- Very High Stability (optional)  
Stability  $\pm 2 \times 10^{-9}$  over 0°C to 65°C  
Ageing:  $\pm 0,5$  ppb/day  
 $\pm 500$  ppb/10 year

## Generic

### Monitor and control interfaces

- Web based GUI
- Diagnostics report, alarm log (HTTP)
- 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 910 DSNG AND CONTRIBUTION DEMODULATOR		Order n°
<b>Default Configuration</b>		
DVB demodulator, SNMP Output interface: ASI Input interface: L-band (950-2150 MHz) Modulation & baud rate: DVB-S Q/8PSK, DVB-S2 Q/8PSK 45 Mbaud		AZ910
<b>Configuration options</b> Category Max. 1 option per category		
Output Interface	ASI	Default
	ASI + Optical ASI	AP-02
Input Interface	DualFlow: Ethernet + ASI (CCM/VCM)	AP-06
	L-band	Default
	L-band + 10 MHz	AJ-02
Modulation & Baud rate	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
<b>Additional options</b> Category Max. 1 option per category		
10MHz reference In/Out	High stability	GR-01
	Very high stability	GR-02
Encryption	BISSM (only with ASI interface)	AD-02

(\*) upgradeable via license key

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