

# 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 compensate linear distortion of the transmission channel.

To protect the satellite transmission, the BISSM or AES option can be activated. BISSM descrambles a BISSM scrambled multiple program transport stream. AES decrypts the content of all streams of an AES encrypted DVB-S2 transmission.

When activated, the per stream mode allows to decrypt up to four S2 streams with individual keys.

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.

Clean Channel Technology™ is available on the modulator as an option. Clean Channel Technology™ further improves satellite efficiency by up to 15% compared to the current DVB-S2 standard. Newtec's customers will be able to immediately benefit from Clean Channel Technology, as it is available as a software field upgrade for existing Newtec equipment.

#### 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
- Optional BISSM descrambling or AES decryption
- Optional 10 MHz reference input/output
- ISSY compliant
- Clean Channel Technology™

#### 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

AZ29x 1+1 Demodulator Redundancy Switch  
AZ20x Universal Switching system

#### Related documents

Care Pack Brochure



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# Specifications – AZ910(R9)



## 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 450 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 bits
- DVB-S2 Normal Frames 64800 bits
- DVB-S/DSNG 188 bytes

### Roll-off factor

- 20 % - 25% -35%

### Clean Channel Technology™

- Roll-Off: 5%-10%-15%-20%-25%-35%
- Optimum carrier spacing
- Advanced filter technology

DVB-S2 performances at PER 1E-5

Config	Short Frames		Normal Frames	
	< 15 Mbaud	< 45 Mbaud	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

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
- BISSM: mode 0, 1 and E (optional)  
BISSM does not modify PSI/SI tables. It can descramble any BISS-compliant scrambled stream, but the output will have PSI/SI tables still containing CA descriptors and CAT.
- AES 64 bit decryption (optional)

### 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 or router 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
- AES 64 bit decryption (optional)

### 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
	DualFlow: Ethernet + ASI (CCM/VCM)	AP-06
Input Interface	L-band	Default
	L-band + 10 MHz	AJ-02
	IF+ L-band	AJ-03
Modulation & Baud rate	IF+ L-band + 10MHz	AJ-04
	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
Security	AES 64 bit decryption*	AA-01
Encryption	BISSM (only with ASI interface)	AD-02
<b>Services</b>		
Category		
Assistance	Care Pack Basic	GA-06
	Care Pack Extended	GA-07

(\*) upgradeable via license key

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