AZ420
Telco Satellite Modem
Azimuth Product Family

AZIMUTH SERIES

Description

The AZ420 is a state-of-the-art satellite modem designed for fixed rate telco, voice and data applications over satellite in full compliance with the DVB standards.

The AZ420 connects directly with terrestrial data and voice networks through a standard G.703 interface.

In its default configuration, the AZ420 supports E1 rates. The support of E2, T2, E3 and T3/DS3 rates are available as configuration option.

It is also possible to configure the modem with a secondary G.703 input/output, for the implementation of a redundant configuration or to allow the modem to be compatible with two different transmission rates.

At the output of the modulator, the signal is available on an L-band interface. Extended L-Band, IF band as well as HPA control functions are available as configuration options. When activated, the unique linear and non- linear predistortion option Equalink™ provides an additional link margin improvement of up to 2,5dB.

On the receive side, the AZ420 has a dual L-band input(950-2150 MHz). The active L-Band 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). An adaptive equalizer compensates linear distortion of the transmission channel and the integrated Noise & Distortion Estimator (NoDE) 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
- G.703 interface with E1, T2, E2, E3 or T3/DS3 rates
- L-band monitoring output
- Programmable amplitude slope equalizer
- Adaptive equalizer (demodulator input)
- Noise & Distortion Estimator tool (NoDE)
- Optional Extended L-Band (950 - 2150 MHz)
- Optional 10 MHz reference input/output
- Optional Linear and non-linear predistortion (Equalink™)
- Featured-based pricing and software upgradability

Main advantages

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

Applications

- Telephony backbone
- Data backbone
- Mobile telephony backhauling
- Corporate networks
- Cable restoration
- Leased lines in the sky

Related products

AZ120 Telco Satellite Modulator
AZ920 Telco Satellite Demodulator

AZ7x0 Frequency converters
AZ200 Universal Switching System

Related Documents

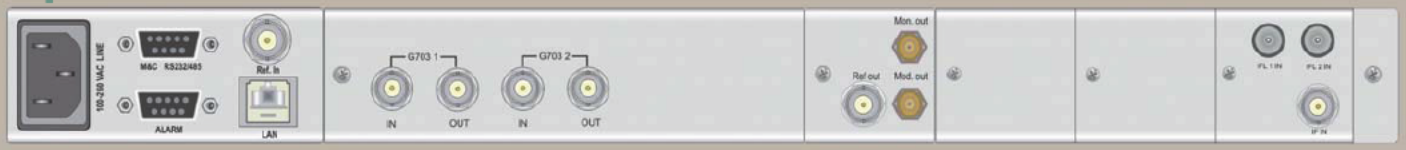
White paper Equalink™
Care Pack Brochure

Newtec
SHAPING THE FUTURE OF SATELLITE COMMUNICATIONS

BUY NOW

Digisat International Inc.
4195 W. New Haven Ave., Suite 15
Melbourne, FL 32904
USA
+1-321-676-5250
Email: sales@digisat.org
http://www.digisat.org

Specifications – AZ420(R7)



Input/output interface

G.703 input/output :

Connector	: BNC (F)
Impedance	: 75 ohms
Rate	: 2.048 ; 6.312 ; 8.448; 34.368 ; 44.736 Mbps

Clock stability – G.703 :

2 Mbit/s	: ± 50 ppm
6 & 8 Mbit/s	: ± 30 ppm
34 & 44 Mbit/s	: ± 20 ppm

Line coding

fully compliant to the ITU-T G.703 standard
HDB3 for E1, E2, and E3
B3ZS for DS-3 (T3)
Adaptive equalizer with 4 preset values, compensating cable lengths up to 1350 ft

Modulation and 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

	mod	demod
• DVB-S2	0,05 - 45	0,256 - 45/33
• DVB-S/DSNG	0,05 - 45	1 - 45

Frame length

- DVB-S/DSNG 188 bytes
- DVB-S2 Short Frames 16200 bits
- DVB-S2 Normal Frames 64800 bits

Roll-off factor

- 20 % - 25% -35%

Modulator interface

L-band output (default):

- Connector SMA (F), 50 ohms
- Return loss > 14 dB
- Level -35/+5 dBm (+/- 2 dB)
- Frequency 950 - 1750 MHz (50 Hz steps)
- spurious: better than -65 dBc/4 kHz @ +5 dBm level and > 256 kbaud

Extended L-band output (optional)

- Connector SMA (F), 50 ohms
- Return loss > 14 dB
- Level -35/+5 dBm (+/- 2dB)
- Frequency 950 - 2150 MHz (50 Hz steps)

IF-band (optional):

- Connector BNC (F) - 75 ohms (intermateable with 50 ohms)
- Return loss 50 ohms : > 14 dB
  75 ohms : > 20 dB
- Frequency 50 - 180 MHz (50 Hz steps)
- Level -30/+5 dBm (± 3 dB)
- spurious: better than -65 dBc/4 kHz @ -10 dBm level and > 256 kbaud

L-band monitoring output (default):

- Connector SMA (F), 50 ohms
- Return loss > 7 dB
- Frequency default: identical to L-band output. with option AA-02: 1080 MHz
- Level -45 dBm
- spurious: better than -65 dBc/4 kHz @ -10 dBm level and > 256 kbaud

BUC power and reference frequency (optional)

- Max. current 1,5 A
- Voltage 24V
- Frequency 10MHz
- Stability ±5x10-8 over 0°C to 65°C

10 MHz reference input / output (optional)

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

Demodulator 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 with Co = signal level density

IF-band input (optional, replacing 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 with 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

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

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

- 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 420 Telco Satellite Modem		Order n°
Default Configuration		
DVB modem with G.703 interfaces, SNMP Rate: 2,048Mbit/s Input interface demod: L-band (950-2150 MHz) Output interface mod: L-band (950-1750 MHz) Modulation: DVB-S Q/8PSK, DVB-S2 Q/8PSK		AZ420
Configuration options Category	Max. 1 option per category	
Rate	2,048 Mbit/s (E1)	Default
	6,312 Mbit/s (T2)	AK-02
	8,448 Mbit/s (E2)	AK-03
	34,368 Mbit/s (E3)	AK-04
	44,736 Mbit/s (T3/DS3)	AK-05
Input Interface Demod	L-band (950-2150 MHz)	Default
	L-band + 10MHz	AJ-02
	IF + L-band (only with IF Mod output)	AJ-03
Output Interface Mod	L-band (950-1750 MHz)	Default
	IF (50-180 MHz)	AA-02
	L-band + 10MHz for BUC	AA-03
	L-band + 10MHz + 24Vdc for BUC	AA-04
	Extended L-band (950-2150 MHz)	AA-18
Modulation	DVB-S/S2 Q/8PSK *	Default
	DVB-S/S2 Q/8PSK, 16QAM, 16APSK *	AB-12
	DVB-S/S2 Q/8PSK, 16QAM, 16/32APSK *	AB-16
Additional options Category	Max. 1 option per category	
Secondary rate	2,048 Mbit/s (E1)	AH-01
	6,312 Mbit/s (T2)	AH-02
	8,448 Mbit/s (E2)	AH-03
	34,368 Mbit/s (E3)	AH-04
	44,736 Mbit/s (T3/DS3)	AH-05
10MHz reference In/Out	High stability	GR-01
	Very high stability	GR-02
Predistortion	Equalink *	AC-01
Services Category		
Assistance	Care Pack Basic	GA-06
	Care Pack Extended	GA-07

(*) upgradeable via license key