HZ930

Satellite Receiver and Deconcentrator

Horizon Product Family

horizon

Description

The HZ930 satellite receiver and deconcentrator displays Newtec's vast understanding of the challenge of distributing different television multiplexes to a number of remote terrestrial transmission sites over satellite.

Transparent and efficient transport of content are key elements for each player in the primary distribution of terrestrial and mobile TV.

The HZ930 makes use of the innovative proprietary concentration technology by Newtec. This technology combines up to 8 MPEG Transport streams into a single stream without changing their content. The resulting stream remains compatible with MPEG/DVB transmission equipment such as modulators or ATM interfaces.

The HZ930 is installed at the receiving end of Newtec's concentrator solution.

The Newtec concentration - deconcentration solution guarantees the integrity of the initial Transport stream at the receiving end. The output of the HZ930 is bit-by-bit identical to the signal transmitted by the play out centre. This feature is essential in networks with strict synchronization requirements like SFN networks where adjacent towers are transmitting on the same frequency.

The HZ930 supports both DVB-S and DVB-S2 modulation standards and allows deconcentration up to 4 ASI streams. The mapping between the streams and the outputs is fully programmable, enabling the use of the HZ930 as a matrix router to send Transport streams to various access points in a network. A descrambling feature has been added to protect each stream individually against piracy.

The HZ930 is easy to operate and monitor. All control and monitoring parameters are available locally on the front panel and remotely through a web interface. It is also possible to control or monitor the AZ930 via RMCP or SNMP.

Key features

- Demodulates DVB-S or DVB-S2 signals
- Deconcentrates the bundled Transport streams into 4 individual ASI streams
- Fully transparent and efficient transport of content
- Compliant to SFN requirements
- Independent descrambling of each individual Transport stream
- Matrix routing of the Transport stream outputs
- Optional 10 MHz reference input/output

Main advantages

- Lower operational costs thanks to efficient use of transmission bandwidth
- Cost-effective and easy to implement technology compared to traditional multiplexer solutions
- Protection of the data content against unauthorized access by other parties.

Applications

1. Primary distribution of digital television

Newtec has engineered the perfect solution to increase the efficiency of satellite bandwidth usage. Transport streams from different broadcasters or intended for different regions can be bundled on the same satellite carrier. Cable head-ends and terrestrial/mobile TV remote transmitters can now benefit from optimized feeder links over satellite. Additionally this solution is fully compatible with SFN requirements and allows protecting the different Transport streams independently.

2. ASI networking and routing

The matrix routing function enables routing between the multiple inputs and the multiple outputs of the concentrator and deconcentrator devices.
In a cabled or wireless network, the combined Transport streams can be deconcentrated and the signals extracted individually in order to send the required transport streams to various access points in the network.

Related products

AZ860 – Concentrator
HZ932 – Dual Deconcentrator-Receiver
AZ110 – Broadcast Satellite Modulator

Related documents

White paper on ASI concentration and deconcentration

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Specifications – HZ930(R2)

Interfaces

L-band input : dual input, selectable (default)

- Connector F-type,(F) 75 ohms
- Frequency range 950-2150 MHz
- Return loss > 7 dB
- Signal level -25 to -65 dBm
- Adjacent signal < (C0 + 7) dBm/Hz with C0 = signal level density

IF-band input (optional, replaces one L-band input)

- Connector BNC (F) - 75 ohms
- Level -55 to -15 dBm
- Frequency 50 - 180 MHz
- Return loss > 15 dB
- Adjacent signal < (Co+7) dBm/Hz where Co = signal level density

ASI Deconcentrator outputs (default)

- Connector 4x BNC female / 75 ohms
- Level 800 mVpp ± 10%

External 10 MHz. reference (optional)

- Connector BNC female / 50-75 ohms
- Level sine 1.0 Vpp ± 6 dB
- Return loss > 13 dB (9-31 MHz)

Performance

Transport stream rate limits :

4 Mbit/s (min) to 158 Mbit/s (max with HW option 2)

HW option 1

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
  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

Baudrate range

- DVB-S2
  QPSK/8PSK 3 – 30 Mbaud
- DVB-S/DSNG
  QPSK/8PSK/16QAM 1-45Mbaud

Frame lengths

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

HW option 2

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
  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

Baudrate range

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

Frame lengths

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

Roll-off factor

- 20 % - 25% -35%

HW option 1

DVB-S2: Specification for BER=1E-7

Config	Es/No	Eb (188 Bytes)/No
	dB	dB
QPSK- 1/2	1.4	1.55
QPSK- 3/5	2.8	2.05
QPSK- 2/3	3.6	2.39
QPSK- 3/4	4.3	2.58
QPSK- 4/5	5.1	3.09
QPSK- 5/6	5.5	3.31
QPSK- 8/9	6.6	4.13
QPSK- 9/10	6.7	4.17
8PSK- 3/5	6.3	3.70
8PSK- 2/3	7.1	4.23
8PSK- 3/4	8.4	4.92
8PSK- 5/6	9.7	5.76
8PSK- 8/9	11.1	6.87
8PSK- 9/10	11.3	6.96

DVB-DSNG: Specification for BER=1E-7 after RS

	< 20 Mbaud	> 20 Mbaud
Config	Es/No	Es/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

HW option 2

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	Es/No	Es/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

Generic

Control functions

- Output select (per output) any TS, Concentrated stream or OFF
- Reference clock internal / external (optional)
- Scrambling mode ON/OFF per output
- Scrambling key 6 byte (per output)

Monitoring functions

- Alarms on all inputs
- All control parameters
- External reference alarm

Monitor and control interfaces

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

Alarm interface

- Electrical switch-over contact
- Connector 9-pins SUB-D Female interface

Physical

- Very compact: 1RU, width 19", depth 45 cm, 4 kg
- Power Supply: 90-130 and 180-260 Vac, 40 VA, 47-63 HZ
- Temperature:
  Operational 0° to 40°C
  Storage -40° to +70°C
- Humidity: 5% to 85% non-condensing
- CE Label

Ordering information

HZ930 DECONCENTRATOR-RECEIVER		Order n°
Default Configuration		
ASI Deconcentrator, SNMP Modulation & Baud rate: DVB-S/DSNG Q/8PSK/16QAM 30 Mbaud, DVB-S2 Q/8PSK 30Mbaud Input interface: L-Band		HZ930
Configuration options Category	Max. 1 option per category	
Input Interface	L-band	Default
	L-band + 10 MHz	HJ-02
	IF + L-band	HJ-03
	IF + L-band + 10 MHz	HJ-04
Either HW option 1 or 2 can be selected		
Modulation & Baud rate HW option 1 (is not upgradeable to HW option 2)	DVB-S/DSNG Q/8PSK/16QAM 30 Mbaud, DVB-S2 Q/8PSK 30Mbaud	Default
	DVB-S QSPK-8PSK 45Mbaud * DVB-S2 Q/8PSK 30Mbaud	HA-17
Modulation & Baud rate HW option 2 (is not downgradeable to HW option 1)	DVB-S Q/8PSK - S2 QSPK-8PSK 45Mbaud	HA-08
	DVB-S/S2 QSPK-8PSK-16QAM/16APSK 45Mbaud **	HA-12
	DVB-S/S2 QSPK-8PSK-16QAM/16APSK/32APSK 45/33Mbaud **	HA-16
Additional Options Category	Max. 1 option per category	
10 MHz reference In/Out	Internal reference : 1ppm	GR-01
	Internal reference : 0,01 ppm	GR-02

(*) Upgrade via license key from Default
(**) Upgrade via license key from option HA-08

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