smartbox Headend In a Box

The Dish SMARTBOX is a revolutionary new video platform for reception and delivery of Dish Programming and Local Content to customers in MDU's, Bars, Enterprise Facilities, Sports Stadiums, Convention Facilities, delivering energy efficiency, flexibility, and redundancy in a compact 5 RU chassis.

- 16 slots for multiple satellite, QAM, 8VSB or DBV-T/T2 input cards
  - Each card features eight tuners to either descramble one TV service or pass through off a complete transponder or carrier
  - Optional transcoder module for format conversions of eight streams per blade
- Four slots for QAM and NTSC output cards
  - The QAM card is available with 16 or 96 channels (72 and 288 services)
  - The NTSC card provides 24 RF analog channels
- Output is free-to-air or scrambled using either DRM- or CAS-based encryption
- Built-in 96-channel stacking switch (CSS)
- Remote management via a built-in, intuitive web interface
- Integrated RF switching
- Integrated IP switching
- Future proof infrastructure
- 8 tuner satellite receiver blades
- 8 tuner, 8 VSB blades
- 8 channel transcoder blade
- 16 or 96 QAM blades
- 24 channel NTSC analog output blade
- Dual redundant power supplies
- IP plus QAM plus analog output simultaneously
- 5RU 8.75" x 19" x 15" deep chassis

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Specification

16-Slot Digital Platform

General

Dimensions (H x W x D)	5 RU (8.7" x 17.6" x 15.8")
Power Consumption	1500 W max.
Operating Temperature	0 °C to 50 °C

Blade Configurations

Satellite Receiver Blade	1 to 12 blades per chassis
ATSC Receiver Blade	0 to 3 blades per chassis
QAM Blade	0 to 2 blades per chassis
NTSC Analog Blade	0 to 3 blades per chassis

Satellite Inputs (From LNB)

Number of Inputs	4
Frequency Range	950 MHz to 2150 MHz (stacked LNB)
Input Level Per Carrier	- 65 dBm to - 25 dBm to aggregate
Impedance	75 Ω
Connectors	F-Female

Integrated RF Switch (Multiswitch)

Internal L-Band Channel Stacking	4x8x12 CSS

IP Input/Output

Number of Ports	4
Connections (4)	RJ-45, GbE, Full Duplex, Auto-Neg
Addressing	Multicast
Transport Protocol	UDP/IP
Transport Format	SPTS
IP Management	HTTP, TR-069
Local User Interface	Web browser

Wireless Interface (Optional)

Connector	SMB
Impedance	50 Ω
Receiver Sensitivity	- 105 dBm (typical)
Transmit Power	+ 24.5 dBm (typical)
CDMA EV-DO Rev A	800/1900 MHz - 3.1 Mb/s (forward link), 1.8 Mb/s (reverse link)
SMS	MT/MO PDU/Text mode

Power Supply

Output Power	700 W (per power supply)
Input Range	90 Vac - 264 Vac
Input Fusing	Internal 10 A fuses
Redundancy	Triple hot-swappable N+1
Cooling	Internal fan (smart fans speed control)

Certification

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Inputs

Satellite Receiver Blade

Satellite Channels	8 transponders or 8 programs
Modulation Rates	DVB-S: 1 to 45 Msps 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2: 5 to 33 Msps
	QPSK: 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
Security	CI Plus (CI+)
Acquisition Range	± 5 MHz
Tuner Step Size	100 kHz
Optional Modules	Transcoder
Power Consumption	30 W (typical)

ATSC Receiver Blade

ATSC Frequencies	8 carriers or 8 programs
Frequency Range	470 MHz to 884 MHz (UHF/VHF)
Connector	F-Female
Impedance	75 Ω
Return Loss	> 15 dB
Input Level Per Carrier	- 83 dBm to - 5 dBm
Optional Modules	Transcoder
Power Consumption	20 W (typical)

QAM Receiver Blade

QAM Frequencies	12 programs (2x6)
Frequency Range	42 MHz to 1002 MHz
Security	Multi-stream CableCARD™, M-card, or CI Plus (CI+)
Connector	F-Female
Impedance	75 Ω
Return Loss	> 15 dB
Input Level Per Carrier	- 83 dBm to - 5 dBm
Optional Modules	Transcoder
Power Consumption	20 W (typical)

Transcoder Module (Optional)

Maximum Number of Streams/Transponders	8
Conversions Supported	MPEG-4 to MPEG-4, either HD or SD, with lower output bit rate (transrating) with no format conversion
	MPEG-4 to MPEG-2, either HD or SD, with no format conversion
	MPEG-2 to MPEG-4, either HD or SD, with no format conversion
	MPEG-2 or MPEG-4 HD to MPEG-2 SD, with format conversion to 480i with no cropping
Power Consumption	30 W (typical)

IP Input

Input Connector Type	4 x RJ-45 (1x management port)
Layer 1 Ethernet	GbE (1000 Base-T)
Layer 2 Addressing/Protocols	Multicast (UDP/IP)
Packetized Data Types	SPTS (ITU13818-1)

Outputs

QAM Output Blade

QAM CARRIER PER BLADE	MAX. SERVICES PER BLADE
16 Channels	72
96 Channels	288

General

Output Frequency	45 MHz to 1003 MHz
Modulation	ITU-T J.83 Annex A, C (16 QAM, 32 QAM, 64 QAM, 128 QAM or 256 QAM) ITU-T J.83B Annex B (64,256 QAM)
QAM Symbol Rate	2.0 Msps ~ 7.0 Msps
Connector	F-Female
Output Level	45 dBmV effective pre-combined output power
Output Attenuation	0 dB to 10 dB (0.5 dB step)
Output Level Flatness	(45 MHz to 864 MHz) ± 1 dB, (45 MHz to 1003 MHz) ± 2 dB
Spurious	> 60 dBc (in 4 MHz)
Output Impedance	75 Ω
Interleaving	128/1 Annex B, 12/17 Annex A,C
Channel Plans	EIA, HRC, IRC, Manual
Power Consumption	25 W (typical)

NTSC Output Analog Blade

Maximum Number of NTSC Channels	24
Frequency Range	54 MHz to 519 MHz
Connector	F-Female
Output Level	45 dBmV (pre-combined)
Output Impedance	75 Ω
Band Plan	STD, HRC, IRC
Audio/Video Ratio	15 ± 5 dB
Power Consumption	70 W (typical)

IP Output

Input Connector Type	4 x RJ-45 (1x management port)
Layer 1 Ethernet	GbE (1000 Base-T)
Layer 2 Addressing/Protocols	Multicast (UDP/IP)
Packetized Data Types	SPTS (ITU13818-1)

Encryption

PRO:IDIOM® (Zenith LG) for IP or QAM

LYNK® (Samsung) for IP or QAM

VCAS™ (Verimatrix) for IP or QAM

Guide Options

EPG - Electronic Program Guide

Scrolling Guide

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DN004404
Satellite Receiver Blade, 8 Tuners

DN006571
Transcoder Module, 8 Channels (Optional)

DN003393
ATSC Receiver Blade, 8 Tuners

DN003390
QAM 16 Blade, 16 Channels

DN003392
QAM 96 Blade, 96 Channels

DN003397
NTSC Blade, 24 Analog Channels

Ordering Information

DN005655	16-Slot Chassis
DN003398	Power Supply
DN004404	8-Channel Satellite Receiver Blade
DN006571	8-Channel Satellite Receiver Blade with Transcoder
DN003393	8-Channel ATSC Receiver Blade
DN003390	16-Channel QAM16 Blade
DN003391	48-Channel QAM48 Blade
DN003392	96-Channel QAM96 Blade
DN003397	NTSC (Analog) TV Blade
DN003399	Single Blade Filler Pate

Specifications Subject To Change Without Notice

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