



# MD16

## Headend in a Box



MD16  
(front view)

ATX's MD16 is an ultra-compact "headend in a box" for the secure delivery of cable, satellite and IPTV content to MDUs, headend in the sky (HITS) and hospitality video clients. Offering the performance, functionality and broadcast-approved security features of a traditional multi-rack headend within a compact 5RU form factor, the high-density MD16 decodes, decrypts, re-encrypts and rebroadcasts content in IP, QAM, or analog NTSC output, while providing end-to-end content protection from uplink to the TV. Scaling from a few channels to 96 transponders of video content, the MD16 platform offers the highest density available on the market, the lowest cost per HD channel and an unmatched feature set.

\* Satellite receiver blade not available for U.S. market

## Features

- Compact 5RU form factor
- End-to-end content protection from uplink to the TV
- 12 slots for multiple satellite, QAM, ATSC, DVB®-T/T2 or ISDB-T input cards
  - Each card features eight tuners to either descramble one TV service or pass through a complete transponder or carrier
  - Optional transcoder module for format conversions of eight streams per blade
- Four slots for QAM, DVB-T, ISDB-T and NTSC output cards
  - The QAM output card is available with 16, 48 or 96 carriers
  - The NTSC output card provides 24 RF analog channels
  - 24 carrier DVB-T and ISDB-T output cards now available

## Applications

- Headend in the sky (HITS)
- IPTV headend
- Cable TV headend
- Hospitality TV system
- Output is free-to-air or scrambled using either DRM or CAS-based encryption
- Supports multiple encryption formats, including LG Pro:Idiom®, Samsung LYNK®, Verimatrix VCAS™, Phillips V-Secure and Simulcrypt
- Fully secure platform
- Front-facing connectors and top-accessible fans
- Built-in 96-channel stacking switch (CSS)
- Remote management via a built-in, intuitive web interface
- Redundant power supplies
- Hot-swappable modular cards with a wandering-master architecture
- Internal multi-Gb Ethernet switching fabric
- Low power consumption

## Benefits

### High Density

Up to 96 transponders of video content in an ultra-compact form factor.

### Low Cost of Ownership

Full headend functionality in a single low-cost unit that consumes 25% less power than comparably equipped systems.

### Security

Output can be scrambled using DRM- or CAS-based encryption, with formats such as LG Pro:Idiom, Samsung LYNK and Verimatrix VCAS supported. Content is scrambled until displayed by the TV.

### Ease of Use

Front facing connectors, top-accessible fans and front panel Ethernet connectivity make installation and maintenance quick and easy, while a built-in 96-channel stacking switch (CSS) simplifies connection to satellite dishes. Easy-to-read LEDs provide immediate notification of issues with the unit, while a built-in, intuitive web interface provides the convenience of remote management.

### Reliability

Redundant power supplies implement load sharing to reduce wear and ensure continued operation, while the wandering-master architecture of the unit's hot-swappable modular cards allows quick switch over in the event of a failure. An internal multi-Gb Ethernet switching fabric enables nonblocking, seamless packet transfers between cards.

### Flexibility

Create digital and analog cable TV and IPTV signals to supply to different clients at the same time.







## Specifications

### MD16

16-SLOT DIGITAL PLATFORM	
<b>GENERAL</b>	
<b>DIMENSIONS</b>	5RU; 8.75"H x 19.0"W x 15.8"D (22.23H x 48.26W x 40.1D cm)
<b>POWER CONSUMPTION</b>	1500W Max.
<b>OPERATING TEMPERATURE</b>	0°C to +50°C (+32°F to +122°F)
<b>BLADE CONFIGURATIONS</b>	
<b>SATELLITE RECEIVER BLADE</b>	1-12 Blades per Chassis
<b>ATSC RECEIVER BLADE</b>	0-15 Blades per Chassis
<b>QAM BLADE</b>	0-2 Blades per Chassis
<b>NTSC ANALOG BLADE</b>	0-3 Blades per Chassis
<b>DVB-T/T2 INPUT BLADE</b>	
<b>DVB-T OUTPUT BLADE</b>	
<b>ISDB-Tb INPUT BLADE</b>	
<b>ISDB-Tb OUTPUT BLADE</b>	
<b>SATELLITE INPUTS (From LNB)</b>	
<b>NUMBER OF INPUTS</b>	4
<b>FREQUENCY RANGE</b>	950-2150 MHz (Stacked LNB)
<b>INPUT LEVEL PER CARRIER</b>	-65 dBm to -25 dBm Aggregate
<b>IMPEDANCE</b>	75 Ω
<b>CONNECTORS</b>	F-Female
<b>INTEGRATED RF SWITCH (Multiswitch)</b>	
<b>INTERNAL L-BAND CHANNEL STACKING</b>	4x8x12 CSS
<b>IP INPUT/OUTPUT</b>	
<b>NUMBER OF PORTS</b>	4x RJ-45 (1x Management Port)
<b>CONNECTIONS (4)</b>	RJ-45, GbE, Full Duplex, Auto-neg

## Specifications (cont'd)

### MD16

ADDRESSING	Multicast
<b>16-SLOT DIGITAL PLATFORM (cont'd)</b>	
<b>IP INPUT/OUTPUT (cont'd)</b>	
TRANSPORT PROTOCOL	UDP/IP
TRANSPORT FORMAT	SPTS
IP MANAGEMENT	HTTP, TR-069 (Certain Configurations)
LOCAL USER INTERFACE	Web Browser
<b>WIRELESS INTERFACE (Optional)</b>	
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
<b>POWER SUPPLY</b>	
OUTPUT POWER	700W (per Power Supply)
INPUT RANGE	100-240 VAC
INPUT FUSING	Internal 10A Fuses
REDUNDANCY	Triple Hot-swappable N+1
COOLING	Internal Fan (Smart Fan Speed Control)
<b>CERTIFICATION</b>	
     	
<b>INPUTS</b>	
<b>SATELLITE RECEIVER BLADE (not available for U.S. market)</b>	
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
	Turbo: 2 Msps to 30 Msps
	QSPK: 1/2, 2/3, 3/4, 5/6, 7/8
	8PSK: 2/3, 3/4, 4/5, 5/6, 7/8
SECURITY	CI, SCCH (Additional Integration Required)
ACQUISITION RANGE	± 5 MHz
TUNER STEP SIZE	100 kHz
OPTIONAL MODULES	Transcoder
POWER CONSUMPTION	30W (Typical)
<b>ATSC RECEIVER BLADE</b>	
ATSC FREQUENCIES	8 Carriers or 8 Programs
FREQUENCY RANGE	54-806 MHz (UHF/VHF)
CONNECTOR	F-Female
IMPEDANCE	75 Ω

## Specifications (cont'd)

### MD16

RETURN LOSS	> 15 dB
INPUT LEVEL PER CARRIER	-75 dBm to -5 dBm
<b>INPUTS (cont'd)</b>	
<b>ATSC RECEIVER BLADE (cont'd)</b>	
OPTIONAL MODULES	Transcoder
POWER CONSUMPTION	20W (Typical)
<b>QAM RECEIVER BLADE</b>	
QAM FREQUENCIES	12 Programs (2x6)
FREQUENCY RANGE	42-1002 MHz
SECURITY	Multi-stream CableCARD™, M-card, or CI
CONNECTOR	F-Female
IMPEDANCE	75 Ω
RETURN LOSS	> 15 dB
INPUT LEVEL PER CARRIER	-75 dBm to -5 dBm
OPTIONAL MODULES	Transcoder
POWER CONSUMPTION	20W (Typical)
<b>TRANSCODER MODULE (Optional)</b>	
MAX. NUMBER OF STREAMS/TRANSPONDERS	8
CONVERSIONS SUPPORTED	MPEG-4 to MPEG-2, HD or SD, No Format Conversion, Watermark Added (optional) MPEG-2 to MPEG-2, HD or SD, No Format Conversion, Watermark Added
POWER CONSUMPTION	30W (Typical)
<b>IP INPUT</b>	
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)
<b>DVB-T / T2 INPUT</b>	
NUMBER OF DVB - T/T2 CARRIERS	8 Carriers
FREQUENCY	470-854 MHz
CONNECTOR	F-type Female
IMPEDANCE	75 Ω
INPUT LEVEL PER CARRIER	-75 dBm to -5 dBm
RETURN LOSS	>15 dB
POWER CONSUMPTION	20W (Typical)
<b>ISDB-T INPUT</b>	
NUMBER OF ISDB-T CARRIERS	8 Carriers
FREQUENCY	470-806 MHz
CONNECTOR	F-type Female
IMPEDANCE	75 Ω
INPUT LEVEL PER CARRIER	-75 dBm to -5 dBm
RETURN LOSS	>10 dB
POWER CONSUMPTION	20W (Typical)
<b>OUTPUTS</b>	

## Specifications (cont'd)

### MD16

<b>QAM OUTPUT BLADE</b>	
NUMBER OF CARRIERS	16, 48 or 96
<b>OUTPUTS (cont'd)</b>	
<b>GENERAL</b>	
OUTPUT FREQUENCY	45-1003 MHz
MODULATION	ITU-T J.83 Annex A, C (16, 32, 64, 128 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	0-10 dB (0.5 dB Step)
OUTPUT LEVEL FLATNESS	(45-864 MHz) $\pm$ 1 dB, (45-1003 MHz) $\pm$ 2 dB
SPURIOUS	> 60 dBc (in 4 MHz)
OUTPUT IMPEDANCE	75 $\Omega$
INTERLEAVING	128/1 Annex B, 12/17 Annex A, C
CHANNEL PLANS	EIA, HRC, IRC
POWER CONSUMPTION	25W (Typical)
<b>NTSC OUTPUT ANALOG BLADE</b>	
MAX. NUMBER OF NTSC CHANNELS	24
FREQUENCY RANGE	121-547 MHz
CONNECTOR	F-Female
OUTPUT LEVEL	45 dBmV (Pre-combined)
OUTPUT IMPEDANCE	75 $\Omega$
BAND PLAN	STD, HRC
AUDIO/VIDEO RATIO	15 $\pm$ 5 dB
POWER CONSUMPTION	40W (Typical)
<b>IP OUTPUT</b>	
INPUT CONNECTOR TYPE	4x 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)
<b>ENCRYPTION</b>	
PRO:IDIOM (Zenith LG) FOR IP, QAM or DVB-T	
LYNK (Samsung) FOR IP, QAM or DVB-T	
VCAS (Verimatrix) FOR IP, QAM or DVB-T	
V-SECURE (Phillips) FOR IP, QAM or DVB-T	
SIMULCRYPT FOR IP, QAM or DVB-T	
<b>GUIDE OPTIONS</b>	
ELECTRONIC PROGRAM GUIDE DATA (Optional, Integration Required)	
SCROLLING GUIDED (Optional)	
<b>DVB-T OUTPUT</b>	
NUMBER OF CARRIERS	24
FREQUENCY	470-854 MHz

# Specifications (cont'd)

## MD16

<b>CARRIER BW</b>	6, 7, 8 MHz
<b>MODULATION</b>	DVB-T (ETSI EN 300 744)
<b>MODULATION MODES</b>	COFDM 2K
<b>OUTPUTS (cont'd)</b>	
<b>DVB-T OUTPUT (cont'd)</b>	
<b>MODULATION TYPE</b>	QPSK, 16 QAM, 64 QAM
<b>MAX. BIT RATE</b>	31.7 Mbps
<b>CONNECTOR</b>	F-type Female
<b>IMPEDANCE</b>	75 Ω
<b>INPUT LEVEL PER CARRIER</b>	-85 dBm to -5 dBm
<b>RETURN LOSS</b>	>10 dB
<b>POWER CONSUMPTION</b>	20W (Typical)



Satellite Receiver Blade, 8 Tuners



Transcoder Module, 8 Channels (Optional)



ATSC Receiver Blade, 8 Tuners



QAM 16 Blade 16 Carriers



QAM 48 Blade 48 Carriers



QAM 96 Blade 96 Carriers



NTSC Blade, 24 Analog Channels



DVB-T / T2 Receiver Blade, 8 Tuners



DVB-T Output Module, 24 DVB-T Carriers



ISDB-T Receiver Blade, 8 Tuners

Products or features contained herein may be covered by one or more U.S. or foreign patents. Pro:Idiom®, LYNK®, VCAS™, DVB® and other non-ATX product and company names mentioned in this data sheet are the property of their respective companies.

© 2019 ATX Networks  
Information in this document is subject to change without notice.  
Rev. 04/19 (ANW1269)



**ATX Networks**

1-501 Clements Road West, Ajax, ON L1S 7H4 Canada  
Tel: 905.428.6068 | Toll Free: 800.565.7488 | support@atx.com