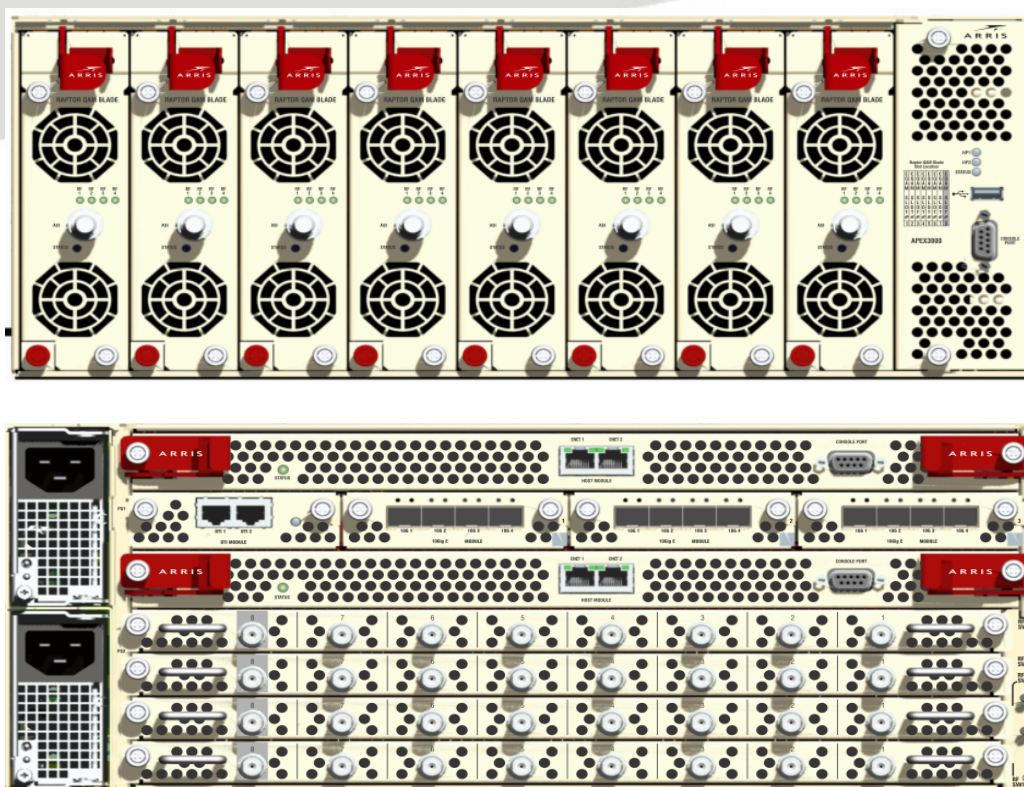


APEX3000

Ultra Dense Universal Edge QAM



PRODUCT OVERVIEW

The APEX3000 is an ultra-dense, fully redundant, state-of-the-art chassis-based edge QAM platform with excellent RF performance that is ideal for all narrowcast and broadcast applications such as VOD, network DVR, SDV, M-CMTS, and all Linear Broadcast services. Combined with its full suite of encryption capabilities, the APEX3000 enables operators to converge all QAM services onto a single platform.

The APEX3000 provides up to 32 RF ports in a 4 RU chassis and supports up to 48 Annex B 6MHz QAM channels per RF port for a maximum of 1536 QAM channels (384 QAM channels per RU). At maximum density the power draw is sub-1 Watt/QAM. In Annex A mode (8MHz channels) the APEX3000 supports up to 36 8MHz QAM channels per RF port for a maximum of 1152 QAM channels.

The number of QAM channels available per RF port is configurable from 16 to 36/48 using a pay-as-you-grow QAM upgrade model. When used in the 7+1 QAM Blade redundancy mode, one QAM blade is reserved as a backup and the chassis provides 28 primary RF ports.

PHYSICAL CHASSIS

The APEX3000 is a 4 RU chassis that supports eight QAM blades, primary and redundant host (CPU) modules, an integrated RF switch for QAM Blade redundancy, twelve 10GigE interfaces (eight primary and four for GigE input redundancy), and dual redundant load-sharing power supplies available in both AC and DC models.

POWER SUPPLIES

Support for up to two hot-swappable, load-sharing, redundant power supplies. The APEX3000 is capable of operating with either one or two power supplies installed. Both AC and DC power supplies can simultaneously be supported within the same chassis.

QAM MODULES

The APEX3000 supports up to eight hot-swappable Raptor QAM Blades, each of which contain four RF ports. The Raptor QAM Blades are upgradable from 16 up to 48 (Annex B) or 36 (Annex A) QAM channels per RF port (increase in increments of a single QAM via a pay as you grow QAM Upgrade process).

REDUNDANCY

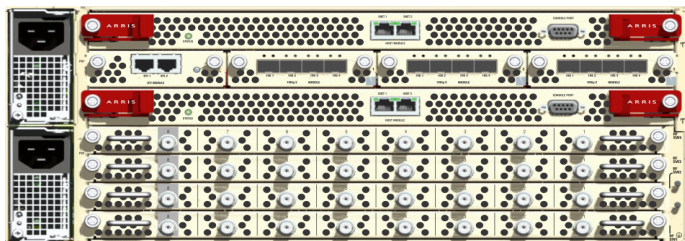
The APEX3000 is a fully-redundant edge QAM device capable of supporting the following redundancy features:

- 7 + 1 QAM Blade redundancy
- 1 + 1 Host Module redundancy
- 1 + 1 Power Supply redundancy
- RF output redundancy via internal RF switching
- GigE Interface redundancy
- GigE Input transport stream redundancy
- DEPI-HA
- Fast failover times enable optimal availability of services

APPLICATIONS

The APEX3000 platform provides support for:

- M-CMTS (Manual DEPI and DEPI Control Plane)
- VOD (Port Map or Session-Based and CTE Encryption)
- Cloud DVR
- Standards based SDV
- Add/Drop Multiplexing
- Linear Broadcast (DTA/PPV/EAS)
- Cisco DNCS/USRM (VOD/SDV)
- Encryption – Full MediaCipher, DVB Simulcrypt
- Pass-through pre-encrypted streams (MediaCipher, Powerkey, other)



SPECIFICATIONS

Modular Chassis	
Chassis Height	4 RU
RF Ports	32 (28 with EQAM blade redundancy)
QAM Channels per RF Port	Up to 48 (Annex B 6 MHz Channels) Up to 36 (Annex A 8 MHz Channels)
QAM Channels per Chassis	1536 (Annex B) or 1152 (Annex A)
Raptor QAM Blades	Up to eight per chassis; Increase from 16 to 36/48 QAMs / port in single QAM increments
Dimensions	26.0 in x 17.3 in x 4 RU
Weight	130 lbs
Chassis Height	4 RU
Power	
Power Supplies	One or two per chassis (AC or DC)
Hot Swappable	Yes
Load Sharing	Yes
AC Power Supply	180V AC to 240V AC
AC Power Cord	Length – 7 Feet Cord terminates with NEMA L6-20P interface (NEMA L6-20R receptacle required)
DC Power Supply	–40V DC to –70V DC
DC Power Cord	Sold Separate from DC PS, Length – 10 Feet Discrete Wire Connections
Power Consumption	1450W (<1 W per QAM channel at maximum density)
Input Data Interfaces	
10GigE Physical Ports	Twelve 10 GigE SFP+ interfaces
10GigE MPEG Data	Receive only
IGMPv3	Supported
Optical SFP+ Support	850, 1310, 1550 nm
SFP Support	SFP+ ports also support SFP optics and SFP 1000Base-T Modules
RF Outputs	
MER	Unequalized – typically > 45 dB Equalized – typically > 49 dB
RF Frequency Range	57MHz to 999MHz
Maximum Allowed RF Output Power	4dB above DRFI specification*
Per QAM RF Output Power Adjustment	0 to -4dB per QAM channel
RF Performance	Meets/Exceeds DOCSIS 3.0 DRFI Specifications
RF Connectors	F-Type, 75Ω

* All DRFI specifications cannot be guaranteed when RF Output Power is > +3dB above DRFI Specification.

SPECIFICATIONS (CONTINUED)

Security	
User Privileges Control	Radius, TACACS+
HW Redundancy	
Raptor QAM Blade	7 + 1
Host Module	1 + 1
GigE Ports	Eight Active Ports, four Backup Ports
Power Supply	1 + 1
DTI	1 + 1 Source Redundancy
RF Output	Internal RF Switching
Other Ports	
Management Ports	2 RJ-45 10/100/1000 Ethernet per Host Module
ASI Monitor	1 BNC 75Ω per Raptor QAM Blade allows monitoring of full TS pre-encryption and post-encryption
DTI (M-CMTS)	2 RJ-45
Serial Port	1 RS-232 port per Host Module and Front Panel
DOCSIS	
DTI	CM-SP-DTI-IO5
DEPI	CM-SP-DEPI-I08 D-MPT Mode Manual DEPI and DEPI Control Plane DEPI-HA
Environmental	
Operating Temperature	0° C to 50° C up to 10,000 feet
Storage Temperature	-40° C to +70° C
Cooling	Front to back airflow
Operating Altitude	-200 feet to 10,000 feet AMSL
Operating Humidity	5% to 95%

APEX 3000 INDIVIDUAL COMPONENT PART NUMBERS

Component	Description	Part Number
APEX3000 Chassis**	APEX3000 base configuration	582678-001-00
Host Module	Contains host processor and 10GigE switch function	582681-001-00
Raptor QAM Blade 4x16 (Annex B)	Four RF ports / module (up to 16 QAMs / port)	582679-001-00
Raptor QAM Blade 4x12 (Annex A)	Four RF ports / module (up to 12 QAMs / port)	582679-008-00
Raptor QAM Fan Filler Blade	QAM Filler Blade with fan	582688-001-00
AC PS Module	AC Power Supply Module	582683-001-00
DC PS Module	DC Power Supply Module	582683-002-00
DC Power Cable	DC Power Supply Cable (not included with DC PS)	587880-001-00
Single QAM Upgrade (Annex B)	Increase QAM capacity for a specific chassis by 1 QAM	582690-004-00
Single QAM Upgrade (Annex A)	Increase QAM capacity for a specific chassis by 1 QAM	582690-005-00
DOCSIS Entitlement (Annex B)	Entitles use of an active QAM in DOCSIS mode	586909-001-00
DOCSIS Entitlement (Annex A)	Entitles use of an active QAM in DOCSIS mode	586909-004-00
MediaCipher Broadcast Encryption Entitlement	Enables MediaCipher Broadcast Encryption on an active QAM channel	591799-001-00
10GigE Interface Module	Spare network interface module (included in base chassis)	582684-001-00
DTI Interface Module	Spare DTI module (included in base chassis)	582685-001-00
RF Switch Module	Spare RF Switch module (included in base chassis)	582686-001-00

CUSTOMER CARE

Contact Customer Care for product information and sales:

- United States: 866-36-ARRIS
- International: +1-678-473-5656