MP3 Active/Passive Chassis

INSTALLATION & OPERATION MANUAL
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1. Product Description

The MP3 chassis is a 3RU design that comes in both a passive and active configuration. Both configurations include options for dual cable management bars and a large cable management tray as well as user configurable horizontal and vertical cable management systems. The MP3 active chassis also include a fiber management tray that can be configured into two positions.

The passive and active chassis can accommodate up to 24 single-width passive modules (DC Logic A/B RF Switch; 2, 4, 8, dual 4-way and triple 2-way splitters/combiners; DC & triple DCs) or up to 12 dual-width modules (16-way splitter/combiners).

The active chassis can accommodate all the modules that a passive chassis can, but also up to 12 dual-width active modules (amplifier, power supply, optical receiver/transmitter, RF Switch).

The active chassis comes with a +24 VDC power interface backplane/rail and a removable communications module that draws power from the rail. This communications module can be removed without affecting the operation of the modules in the chassis by removing the two Phillips screws on either side that fasten it to the chassis. All active modules are hot-swappable.

Power is supplied to the backplane by installing an MPAC or MPDC power supply into one of the chassis slots or by remotely powering the chassis from an external 24 VDC supply. The MP3 active chassis is equipped with an HMS compliant SNMP management system. An RJ-45 port is used for both set-up and status monitoring. No custom software is required.

Please refer to the web page for up-to-date specifications – [www.atxnetworks.com](http://www.atxnetworks.com)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP1</td>
<td>1RU Passive Chassis with Cable Management Bar</td>
</tr>
<tr>
<td>MP3B</td>
<td>3RU Passive Chassis with Dual Cable Management Bars</td>
</tr>
<tr>
<td>MP3H</td>
<td>3RU Passive Chassis with Configurable Horizontal Channel Cable Management</td>
</tr>
<tr>
<td>MP3V</td>
<td>3RU Passive Chassis with Configurable Vertical Channel Cable Management</td>
</tr>
<tr>
<td>MP3T</td>
<td>3RU Passive Chassis with Large Cable Management Tray</td>
</tr>
<tr>
<td>MP3R</td>
<td>3RU Passive Reverse Chassis</td>
</tr>
<tr>
<td>MP3BA</td>
<td>3RU Active Chassis with Dual Cable Management Cable Bars</td>
</tr>
<tr>
<td>MP3RA</td>
<td>3RU Active Reverse Chassis</td>
</tr>
<tr>
<td>MP3HA</td>
<td>3RU Active Chassis with Configurable Horizontal Channel Cable Management</td>
</tr>
<tr>
<td>MP3VA</td>
<td>3RU Active Chassis with Configurable Vertical Channel Cable Management</td>
</tr>
<tr>
<td>MP3TA</td>
<td>3RU Active Chassis with Large Cable Management Tray</td>
</tr>
<tr>
<td>MPRB</td>
<td>Round Cable Management Steel Bar</td>
</tr>
<tr>
<td>MPBAR</td>
<td>Flat Cable Management Steel Bar</td>
</tr>
<tr>
<td>MPLT</td>
<td>Large Cable Management Tray (includes clips)</td>
</tr>
<tr>
<td>MP3A-COM</td>
<td>Replacement Communication Module for Dual-width Active Chassis</td>
</tr>
<tr>
<td>MP3BAS-COM</td>
<td>Replacement Communication Module for Single-width Active Chassis</td>
</tr>
<tr>
<td>MP-HKIT</td>
<td>Configurable Horizontal Channel Cable Management Kit</td>
</tr>
<tr>
<td>MP-BLANK-19</td>
<td>19&quot;, 1RU, Blank Rack Panel, Flat</td>
</tr>
<tr>
<td>MP-BLANK-19R</td>
<td>19&quot;, 1RU, Blank Rack Panel, Recessed</td>
</tr>
<tr>
<td>MP-BLANK-01</td>
<td>Single-width Blank Module for all MAXNET® II Chassis Versions</td>
</tr>
<tr>
<td>MP-BLANK-02</td>
<td>Dual-width Blank Module for all MAXNET II Chassis Versions</td>
</tr>
</tbody>
</table>

Table #1: Ordering Information

(See [http://www.atxnetworks.com/pdf/ANW0614_MNIi_ChassisCableOptns.pdf](http://www.atxnetworks.com/pdf/ANW0614_MNIi_ChassisCableOptns.pdf) for photos of various options)

1 Provided that the chassis is not being solely powered via the terminal block on the comm module, there would simply be no alarms and no remote adjustment of parameters. The modules would continue to run with the last set values.

2 It is not recommended to hot swap a power supply module into a full chassis if there is no other power supply present. The current surge to supply a full rack of active modules would be stressful on the electrical contacts during mating and may reduce the lifespan of the chassis and power supply. It is recommended that you install the power supply first, then apply AC or DC input to the power supply connector.
1.1. Functional Diagrams

**Figure #1: Active Chassis Functional Diagram**

1.2. Technical Specifications

<table>
<thead>
<tr>
<th><strong>ELECTRICAL SPECIFICATIONS</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC INPUT</strong></td>
<td></td>
</tr>
<tr>
<td>INPUT VOLTAGE</td>
<td>24 VDC</td>
</tr>
<tr>
<td>INPUT CURRENT (Max)</td>
<td>8 Amps DC</td>
</tr>
<tr>
<td><strong>OTHER</strong></td>
<td></td>
</tr>
<tr>
<td>24V POWER INDICATOR</td>
<td>+24V LED</td>
</tr>
<tr>
<td>COMMUNICATION STATUS</td>
<td>COMM LED</td>
</tr>
<tr>
<td>SYSTEM RESET</td>
<td>SYS RST LED</td>
</tr>
<tr>
<td>SYSTEM READY</td>
<td>RDY LED</td>
</tr>
<tr>
<td>TERMINAL BLOCK WIRING</td>
<td># 12 AWG</td>
</tr>
<tr>
<td>COMMUNICATIONS INTERFACE</td>
<td>10/100 Base-T</td>
</tr>
<tr>
<td></td>
<td>Web/SNMP (HMS)</td>
</tr>
<tr>
<td>USB I/O</td>
<td>Version 2.0</td>
</tr>
<tr>
<td>OPERATING TEMPERATURE</td>
<td>0°C to +50°C (+32°F to +122°F)</td>
</tr>
<tr>
<td>HUMIDITY</td>
<td>5-95% (without condensation)</td>
</tr>
</tbody>
</table>

**NOTE:**
Powering can be provided via A/B input on rear terminal block or by plug-in MPAC/MPDC power supplies.

*Table #2: Active Chassis Technical Specifications*
2. Installation

The MP3 is a 3RU chassis and comes pre-assembled and ready to mount to any existing 19" rack cabinet hub system using 10/32" rack screws.

NOTE: This equipment is intended for installation in a RESTRICTED ACCESS LOCATION only.


Rack Mounting Precautions
a) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (35ºC) specified by the manufacturer.

b) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.

c) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

d) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

e) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

2.1. Module Installation Into the MP3 Chassis

All MAXNET II active and passive chassis have 24 grooves that act as guide slots for the active and passive modules. Passive modules and the DC Logic Switch can be inserted into any of the 24 slots. Active modules must be inserted into the odd number slots indicated by the white markers on the bottom rail of the chassis. These odd numbered slots are the only slots that will allow an active module to be connected to the active chassis backplane to receive power and allow monitor and control of the module. To insert a module, align the module guide rails to the chassis guide slots and then gently slide the module into a locked position (the module should be flush against the top and bottom rail of the chassis). No mounting hardware is required. To remove a module, grab the front handle on the module and gently lift and pull back the module until it is clear of the chassis guide rails.

NOTE: When installing the MPAC or MPDC Power Supply, the GND bonding terminal #1 on the back of the MPAC or MPDC Power Supply shall be connected to the chassis ground lug.

2.2. Powering the Active MP3 Chassis

The MP3 active chassis can be powered by power supply modules (MPAC-110, MPAC-220 or MPDC) installed in one of the slots of the chassis, or by connecting power directly to one or both of the terminal block inputs on the rear of the chassis. Both connections are not necessary unless redundancy is required. If the source of 24 VDC is not an MPXX power supply, the line should be fused at a minimum with a 10 Amp slo-blo fuse. A disconnect device is required between the 24 VDC supply and the Chassis remote power terminals.
2.3. Remote Chassis Power Applications

* In any of the examples above, be sure to refer to the next section for module power requirements. In any redundant scenario, if a power supply fails, the load on any remaining power supply must not exceed 8 amps.

Table #3: Terminal Block Pin Assignments

<table>
<thead>
<tr>
<th>TB#</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+24V A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>COM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>+24V B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>COM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>MON</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* recommended minimum of #12 gauge wire rated for up to 10A

Figure #2: Remote Powering

Figure #3: Redundant Powering

Figure #4: Redundant Remote Powering
2.4. Module Power Requirements*

<table>
<thead>
<tr>
<th>Module</th>
<th>MP RFA/B</th>
<th>QMP200</th>
<th>QMP1000 (&lt;22 dB Gain)</th>
<th>QMP1000 (&gt;22 dB Gain)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Current (A)</td>
<td>0.03</td>
<td>0.14</td>
<td>0.47</td>
<td>0.52</td>
</tr>
</tbody>
</table>

* For other skews, please see individual module specification sheets
3. Hardware Network Set-up

The MP3 active chassis can be easily connected to an existing network through the use of a patch cable connected between the network port on the rear of the chassis and any switch or router. For a connection directly to a PC or laptop, use a crossover cable. This product has been verified to work on Windows® 7/10 and Linux® operating systems.

3.1. LED Indicators

There are six LED’s visible at the rear of the chassis. Two small square LEDs on the RJ45 port itself (see the next section for details on these), a ‘COMM’ LED, a ‘+24V’ LED, a ‘System Reset’ LED, and a ‘Ready’ LED.

The ‘+24V’ LED indicates the presence of power to the chassis and comm module, it should always be solid and bright.

All LED’s except for the ‘+24V’ LED should be off during the boot cycle. The ‘COMM’ LED should start blinking after approximately 2 minutes. It must always be blinking during regular operation to indicate the monitoring software is running. The ‘System Reset’ LED will only blink if the ‘System Reset’ or ‘Restart’ buttons are pressed. The ‘Ready’ LED will go solid once the software has booted. This will indicate that the chassis is ready for web GUI activity.

3.2. Ethernet Port

The Ethernet connector is an 8-wire RJ-45 jack that meets the ISO 8877 requirements for 10/100BASE-T. See the following figure and table for pin orientation and pin assignments.

The yellow LED indicates whether a valid network connection is present. It should be solid. Otherwise, check the network cable or the piece of hardware that has been connected to the network cable (switch, router or PC’s network card).

The green LED indicates network activity. It will be solid during any boot process (approx 2 min) and then blink if there is any network traffic. If it remains solid, this may be indicative of corrupt hardware – contact ATX Networks.
<table>
<thead>
<tr>
<th>LED</th>
<th>Pin Header EM</th>
<th>LED Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top left</td>
<td>5 (+)</td>
<td>Network link status:</td>
</tr>
<tr>
<td>(yellow)</td>
<td>7 (-)</td>
<td>Off - no link has been detected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On - a link has been detected.</td>
</tr>
<tr>
<td>Top right</td>
<td>1 (+)</td>
<td>Serial port activity / Network activity:</td>
</tr>
<tr>
<td>(green)</td>
<td>3 (-)</td>
<td>Off - the serial channel is idle.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blinking - serial data is transmitted or received</td>
</tr>
</tbody>
</table>

Table #4: Ethernet Interface LED Indicators
4. Status Monitoring

4.1. Chassis Interface Options

The Active MAXNET II product line can be monitored and controlled in either of two ways:

a) A free, web-based interface. This comes pre-installed on every chassis and provides a user friendly method of configuring the administrative set-up and all monitoring and control. It is based on SNMP, but requires little knowledge of SNMP. Any Internet browser, such as Internet Explorer®, is all the software that is required.

b) Any third-party SNMP Management software (eg. www.castlerock.com, www.ndt-inc.com/SNMP/MIBrowser.html) may be purchased separately. These suites tend to be expensive and not as user friendly as the web interface. The web interface is also still required for administrative set-up. The 3rd party interface is recommended only for systems that have an existing SNMP architecture. All MIBs (Management Information Bases) are freely downloadable from the SCTE (www.scte.org/standards). ATX was able to support all modules using the SCTE standard HMS MIBs, so no custom MIBs are required.

4.2. Software Network Set-up

a) Recommended: Connect the chassis to a PC/laptop directly with a cross-over network cable.  
   Alternative: Connect the chassis to a switch or router using a patch network cable.

b) Enter the IP address of the chassis as the URL in a web browser. By default (factory reset), this will be 192.168.0.1. If the device does not respond, see Troubleshooting section at the end of this document.

c) The login page should appear. Login as administrator (default password for all levels is the lower case name of the level, i.e. Observer password is observer).

d) The chassis overview page should appear. Select the configuration tab.

e) The configuration settings page should appear. It is important to either use DHCP or (preferably) assign a unique IP address to each MP3 chassis that will be on the same subnet as your DHCP server assigns addresses. ‘Same Subnet’ refers to an IP address that has the same first three octets, but a unique fourth octet e.g. 192.168.0.1 and 192.168.0.2 are on the same subnet.

f) Obtain a list of IP addresses from your IT department to use for your chassis’ and assign them one by one. If DHCP is chosen, then this is not required, but you may have trouble finding out what IP address the DHCP server assigned to each chassis, and it may change during a reboot of the chassis or DHCP server, so it is not recommended unless the DHCP server is set to assign static IP addresses to the unique MAC addresses of each chassis installed.

g) There are several other options that can be set at this time.

h) Select ‘save changes’ and reboot. The device will take approximately 90 seconds before it is responsive again. Remember that your PC/laptop must be set to the same subnet to ‘see’ it, so if you just assigned an IP address other than 192.168.0.x, then you will need to change your PC’s IP again. It is recommended you change all chassis IP addresses before reverting your PC back to DHCP.

4.3. Web Interface

The MAXNET II chassis uses an integrated web page to supplement the SNMP management. All configuration of the chassis (static IP address, trap/email recipients, firmware upgrades, etc) must be done through the web page. Simply use any web browser (Internet Explorer, Firefox®, etc) and enter the IP address of the chassis as the URL. Login as administrator to modify configuration and have full read/write access to monitor and control modules. Login as Operator to have full read/write access or login as observer to have read-only access. There is only one password per login level.
4.4. Module Replacement

In order to facilitate the replacement of any MAXNET II module, the software set-up information of the module such as HI and LO alarm thresholds and alias are stored in the chassis itself and not the module. If any module is removed the chassis and the same module or another of the same type is inserted into that slot of the chassis, then this configuration data will be maintained.

4.5. Factory Reset

A factory reset will restore the chassis to the state which it left the ATX production facility.

4.5.1. Parameters That Will be Changed

| IP address | 192.168.0.1 |
| NetMask     | 255.255.255.0 |
| Gateway     | 192.168.0.254 |

Passwords set to same text (but all lower case) as the login level. e.g. Operator password is operator.

All analogue and discrete alarm thresholds of modules will be reset to default values.

4.5.2. Purpose

Common reasons for requiring a factory reset are:

a) The chassis is unresponsive, or the IP address is not known
b) The Administrator password has been forgotten
c) The COMM LED does not blink after the two minute boot cycle, even after a power cycle or press of the ‘RESTART’ button

4.5.3. Method

If you are sure you want to factory reset, hold down the ‘RESTART’ button. The ‘System Reset’ LED will blink 12 times, then it will go solid. Once it goes solid, release the ‘RESTART’ button and the reboot process will begin.

4.6. SNMP Parameters

<table>
<thead>
<tr>
<th>Display Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hostname/Domain Name</td>
<td>Optional fields.</td>
</tr>
<tr>
<td>DHCP</td>
<td>Enable if using connecting chassis to a DHCP server.</td>
</tr>
<tr>
<td>LAN IP Address, Net Mask, Default Gateway</td>
<td>Define the static IP address of the chassis. This address is maintained during power cycles and firmware upgrades. A factory reset will revert the IP back to 192.168.0.1</td>
</tr>
<tr>
<td>DNS Server</td>
<td>Enter the domain name server to be able to enter textual URLs instead of only IP addresses. This affects how you can enter data in some fields below such as NTP server and SMTP server.</td>
</tr>
</tbody>
</table>

Table #5: Administration Level IP Settings
### Display Name | Description
--- | ---
Timezone: Region | Drop down selection of common timezone regions or countries.
Timezone: Zone | Drop down selection of cities within selected timezone region.
NTP | Network Time Server enable/disable selection.
NTP Server | Network Time Server (e.g. time.windows.com)
Language | Drop down selection of languages the GUI will be displayed with.

**Table #6: Administration Level Date, Time, & Language Settings**

### Display Name | Description
--- | ---
Trap | SNMP trap enable/disable selection.
System Name, Location, Contact | Optional SNMP fields. User can store information about this particular chassis for reference later.
Trap Community Name | SNMP required variable.
Trap Recipient List | List any email addresses that are to receive email notifications.

**Table #7: Administration Level Trap Server Settings**

### Display Name | Description
--- | ---
Read Community | SNMP required variable
Write Community | SNMP required variable

**Table #8: Administration Level Agent Settings**

### Display Name | Description
--- | ---
Email Enabled | Email notifications enable/disable selection.
Out Going Server | The mail server used during email notifications.
Username | If authentication is required, (ask your IT department), you must enter an email user name.
Port | Port used for outgoing mail server.
Password | If authentication is required, (ask your IT department), you must enter an email password.
Encryption | Type of encryption used for the outgoing mail server.
Authentication | Authentication used for the outgoing mail server.
Send To Address | List any email addresses that are to receive any email notifications.
From Address | The email address used to send the notification.
Email Subject | The subject that will appear in the subject field of the sent email notification.

**Table #9: Administration Level Email Notification Settings**
### Display Name | Description | HMS MIB Variable | Read Write / Read Only
---|---|---|---
Model | ATX model number (note, in empty slots you can enter passive, dual-passive, or empty to populate the overview page with passive picture placeholders). | entPhysicalModelName | RO
Description | Description of the module. | entPhysicalDescr | RO
Name | Indicates the slot of the chassis the module is in. | entPhysicalName | RO
Alias | Optional user defined field - added to fifth variable binding of traps and emails e.g. set this to “Node 69” for a given Receiver and any alarms generated by this receiver will have “Node 69” in the description. Otherwise, it would only contain the IP address of the chassis, the Model and Name (slot number). | entPhysicalAlias | RW
Manufacturer | ATX | entPhysicalMfgName | RO
Asset I.D | Optional user settable field (suggestions: enter in a custom serial number or purchase order # for tracking). | entPhysicalAssetID | RW
Serial No | Module's serial number. | entPhysicalSerialNum | RO
Hardware Rev | Hardware rev of module. | entPhysicalHardwareRev | RO
Firmware Rev | Firmware rev of module. | entPhysicalFirmwareRev | RO
Temperature [C] | Module’s current heatsink temperature. | heCommonTemperature | RO
Alarm Detection Control | detectionEnabled: normal operation, with active alarms detectionDisabled: used to temporarily disable alarms/traps from this module detectionEnabledandRegenerate: enter detectionEnabled state while regenerating all alarm table entries | heCommonAlarmDetectionControl | RW
Fan Unit Status | Alarm status of the fan. | heFanUnitAlarm | RO
Voltage In [Volt] | Measured voltage supplied to the module from the chassis (nominally 24V). | hePsUnitVoltageIN | RO
Current In [mA] | Current taken from the 24V rail by the module. | hePsUnitCurrentIN | RO
Power In [Watts] | P.S. Voltage * P.S. Current | hePsUnitPowerIN | RO

Table #10: Common Module SNMP Parameters

### Display Name | Description | HMS MIB Variable | Read Write / Read Only
---|---|---|---
Input AGC Mode | Automatic Gain Control mode, if set to on then the broadcast digital attenuator is automatically adjusted to provide RF power levels at laser input for optimum OMI. | heOpTxInputAGCMode | RW
Input Modulation Mode | Either CW or modulated. This variable affects the calibration of the RF power detector. There is approx a 2 dB difference seen by the power detector if a CW or modulated carrier of the same power is applied. | heOpTxInputModulationMode | RW
Input Attenuation, BC | Input digital attenuators. See MPTX functional diagrams to see location of the BC (Broadcast) and NC (Narrowcast) attenuators. 0-15 dB in 0.5 dB steps. | heOpTxInputRFPadLevel | RW
Input Attenuation, NC | | | |
Laser Temperature | Laser Temperature. | heOpTxLaserTemp | RO
Laser Bias Current | Laser Bias Current. | heOpTxLaserBiasCurrent | RO
Laser Output Power | If a 10dBm laser is ordered, this variable will be close to 10 dB, with some variation as individual lasers are tuned for optimum OMI. | heOpTxLaserOutputPower | RO
Laser TEC Current | Thermo-Electric cooler current. | heOpTxLaserTECCurrent | RO
Laser Type | Typically “Cooled DFB”. | heOpTxLaserType | RO
Laser Wavelength | Factory set wavelength of laser. | heOpTxLaserWavelength | RO
Laser Output Status | A read-only field to indicate what Laser On/Off control is set to. | heOpTxLaserOutputStatus | RO
Laser On/Off Control | A writable field. Laser is muted if set to off. | heOpTxLaserOnOffControl | RW

Table #11: MPTX Laser SNMP Parameters
### Display Name | Description | HMS MIB Variable | Read Write / Read Only
---|---|---|---
Switch Mode | Automatic: switching based on threshold Manual: switch forced to Default position | heRFSwitchMode | RW
Switch Control | Default position of switch (PathA or PathB only). | heRFSwitchControl | RW
Switch Revert Enable | On: switch will revert back to default position if power returns to it (also, must be in automatic mode and hysteresis accounted for). | heRFSwitchRevertEnable | RW
Switch State | Current position of the switch (PathA or PathB only). | heRFSwitchState | RO
Switch Fail-Over Status | Fault if RF Sw Control not equal to RF/Opt Sw State. | heRFSwitchFailoverStatus | RO
Switch Both Input Status | Fault if either switch input is below RF/Opt Sw Input Power Threshold. | heRFSwitchBothInputStatus | RO
Switch Hysteresis [dB] | Only values >= 0 are acceptable. e.g. If 2 dB, switch will occur if power falls below RF Sw Input Power Threshold, but does not return until power exceeds RF Sw Input Power Threshold + 2 dB (*must also be in automatic mode, revert-enable on and wait to restore time expired). | heRFSwitchHysteresis | RW
Switch Wait to Restore Time [sec] | Time-based hysteresis. Same principle as above, but time delayed switching if default path power returns. | heRFSwitchWaitToRestoreTime | RW
Switch Input Level | Measured input level of switch. | heRFSwitchInputRFLevel | RO
Switch Input Power Threshold [dBm] | User defined switch threshold. | heRFSwitchSetInputPowerThreshold | RW
Switch Output Description | Description of the output. | heRFSwitchOutputDescription | RO
Switch Input Status | If RF/Opt Input power is below the input power threshold, then this discrete variable will be in fault, generating an alarm condition. | heRFSwitchInputStatus | RO
Switch Input Description | Identifies inputs as either path A or path B. | heRFSwitchInputDescription | RO

| Display Name | Description | HMS MIB Variable | Read Write / Read Only
---|---|---|---
OptRx Input Power | Measured optical power input (max +3dBm). | heOpRxInputPower | RO
OptRx Input Wavelength | Optional, user-settable integer to store the wavelength of operation. This value has no effect on the operation of the device. | heOpRxInputWavelengthControl | RW
OptRx Input Status | If optical input power is beyond thresholds, this will be in fault condition. | heOpRxInputStatus | RO
OptRx Output Control | Allows the user to mute the RF output. | heOpRxOutputControl | RW
OptRx Output RF Attenuation | Control of RF output attenuation level (0-31.5 dB in 0.5 dB steps). | heOpRxOutputRFPadLevel | RW
RF Amp Output Description | Description of the approx gain value of the amp. | heRF AmpOutputDescription | RO
RF Amp Output Level [dBmV] | Composite RF level at output of amp. | heRF AmpOutputLevel | RO
Voltage Out | Measured voltage supplied to the chassis. (power supply modules only) | hePsOutputVoltage | RO
Current Out | Current supplied to the 24V rail by the module. (power supply modules only) | hePsOutputCurrent | RO
Power Out | Voltage Out * Current Out. (power supply modules only) | hePsOutputPower | RO

Table #12: RF & Optical Switch SNMP Parameters

Table #13: Misc SNMP Parameters
4.7. Default Alarm Thresholds

To change a module's Alarm Threshold from their default settings, log into the appropriate chassis and using the GUI click on the image of the module you desire to change. This will bring you to the parameters page for that particular module. Scroll the window down to the Analog Alarm Threshold region. This will list all available alarm thresholds for the chosen module. Simply click in the alarm state box for each alarm parameter (HIHI, HI, LO, LOLO, DEADBAND), and enter a unique numerical variable (there is no need to enter the units). After modifying any alarm thresholds, press the ‘Save’ button to begin using the unique alarm threshold variables.

### Power Supply Default Alarm Thresholds

<table>
<thead>
<tr>
<th>HMS MIB Variable</th>
<th>GUI Reference</th>
<th>LOLO</th>
<th>LO</th>
<th>HI</th>
<th>HIHI</th>
</tr>
</thead>
<tbody>
<tr>
<td>hePsOutputVoltage</td>
<td>Voltage Out (V)</td>
<td>220</td>
<td>220</td>
<td>260</td>
<td>260</td>
</tr>
<tr>
<td>heCommonTemperature</td>
<td>Temperature (C)</td>
<td>-400</td>
<td>-400</td>
<td>850</td>
<td>850</td>
</tr>
<tr>
<td>hePsOutputCurrent</td>
<td>Current Out (mA)</td>
<td>0</td>
<td>0</td>
<td>11000</td>
<td>11000</td>
</tr>
<tr>
<td>hePsOutputPower</td>
<td>Power Out (mW)</td>
<td>0</td>
<td>0</td>
<td>26000</td>
<td>26000</td>
</tr>
</tbody>
</table>

### Common Default Alarm Thresholds

<table>
<thead>
<tr>
<th>HMS MIB Variable</th>
<th>GUI Reference</th>
<th>LOLO</th>
<th>LO</th>
<th>HI</th>
<th>HIHI</th>
</tr>
</thead>
<tbody>
<tr>
<td>hePsInputVoltage</td>
<td>Input Voltage</td>
<td>220</td>
<td>220</td>
<td>260</td>
<td>260</td>
</tr>
<tr>
<td>hePsInputPower</td>
<td>Input Power</td>
<td>0</td>
<td>0</td>
<td>2500</td>
<td>2500</td>
</tr>
<tr>
<td>hePsInputCurrent</td>
<td>Input Current</td>
<td>0</td>
<td>0</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>heCommon Temperature</td>
<td>Temperature</td>
<td>0</td>
<td>0</td>
<td>600</td>
<td>700</td>
</tr>
</tbody>
</table>

### Amplifier Default Alarm Thresholds

<table>
<thead>
<tr>
<th>HMS MIB Variable</th>
<th>GUI Reference</th>
<th>LOLO</th>
<th>LO</th>
<th>HI</th>
<th>HIHI</th>
</tr>
</thead>
<tbody>
<tr>
<td>heRFAmpOutputLevel¹</td>
<td>RF Amp Output Level (dBmV)</td>
<td>300</td>
<td>300</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>heRFAmpOutputLevel²</td>
<td>RF Amp Output Level (dBmV)</td>
<td>400</td>
<td>400</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>heRFAmpOutputLevel³</td>
<td>RF Amp Output Level (dBmV)</td>
<td>95</td>
<td>95</td>
<td>320</td>
<td>320</td>
</tr>
</tbody>
</table>

¹QMP1000/200, MPSA  
²QMP1218  
³QMP65-22IT2F

### Receiver Default Alarm Thresholds

<table>
<thead>
<tr>
<th>HMS MIB Variable</th>
<th>GUI Reference</th>
<th>LOLO</th>
<th>LO</th>
<th>HI</th>
<th>HIHI</th>
</tr>
</thead>
<tbody>
<tr>
<td>heOpRxInputPower¹</td>
<td>OptRx Input Power (dBm)</td>
<td>-170</td>
<td>-170</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>heOpRxInputPower²</td>
<td>OptRx Input Power (dBm)</td>
<td>-300</td>
<td>-250</td>
<td>-130</td>
<td>-100</td>
</tr>
</tbody>
</table>

¹MPRX8*, MPRX2-8*, MPRX2-4*, MPSRX-8  
²MPSARXL2
### Transmitter (MPTX4*-**, MPTX8*-**) Default Alarm Thresholds

<table>
<thead>
<tr>
<th>HMS MIB Variable</th>
<th>GUI Reference</th>
<th>LOLO</th>
<th>LO</th>
<th>HI</th>
<th>HIHI</th>
</tr>
</thead>
<tbody>
<tr>
<td>heOpTxLaserTemp</td>
<td>OptTx Laser Temperature (C)</td>
<td>0</td>
<td>0</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>heOpTxLaserBiasCurrent</td>
<td>OptTx Laser Bias Current (mA)</td>
<td>0</td>
<td>0</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>heOpTxLaserOutputPower</td>
<td>OptTx Laser Output Power (dBm)</td>
<td>0</td>
<td>0</td>
<td>160</td>
<td>160</td>
</tr>
</tbody>
</table>

* Denotes optional ‘F’ version
** Denotes laser value

### 4.8. SNMP MIBs Required

<table>
<thead>
<tr>
<th>RFC</th>
<th>MIB-II</th>
<th>Entity MIB (Version 2)</th>
<th>SNMP-Notification</th>
<th>SNMP-Target</th>
<th>SNMP-Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1213</td>
<td>2737</td>
<td>3413</td>
<td>3413</td>
<td>3411</td>
<td></td>
</tr>
</tbody>
</table>

Table #14: General IETF MIBs Required - All Modules

<table>
<thead>
<tr>
<th>HMS#</th>
<th>SCTE#</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCTE-ROOT</td>
<td>028</td>
</tr>
<tr>
<td>SCTE-HMS-ROOTS</td>
<td>072</td>
</tr>
<tr>
<td>SCTE-HMS-HEADENDIDENT-MIB</td>
<td>114</td>
</tr>
<tr>
<td>SCTE-HMS-HE-COMMON-MIB</td>
<td>111</td>
</tr>
<tr>
<td>SCTE-HMS-PROPERTY-MIB</td>
<td>026</td>
</tr>
<tr>
<td>SCTE-HMS-HE-FAN-MIB</td>
<td>117</td>
</tr>
<tr>
<td>SCTE-HMS-HE-POWER-SUPPLY-MIB</td>
<td>116</td>
</tr>
</tbody>
</table>

Table #15: General SCTE HMS MIBs Required - All Modules

<table>
<thead>
<tr>
<th>HMS#</th>
<th>SCTE#</th>
<th>MAXNET II Modules:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCTE-HMS-HE-OPTICS-MIB</td>
<td>108</td>
<td>83-1</td>
</tr>
<tr>
<td>SCTE-HMS-HE-OPTICAL-RECEIVER-MIB</td>
<td>113</td>
<td>85-2</td>
</tr>
<tr>
<td>SCTE-HMS-HE-OPTICAL-TRANSMITTER-MIB</td>
<td>112</td>
<td>85-1</td>
</tr>
<tr>
<td>SCTE-HMS-HE-RF-MIB</td>
<td>133</td>
<td>83-4</td>
</tr>
<tr>
<td>SCTE-HMS-HE-RF-AMP-MIB</td>
<td>131</td>
<td>94-1</td>
</tr>
<tr>
<td>SCTE-HMS-HE-RF-SWITCH-MIB</td>
<td>132</td>
<td>94-2</td>
</tr>
</tbody>
</table>

Table #16: Module-Specific SCTE HMS MIB’s Required

*freely download any SCTE MIB’s from www.scte.org/standards
5. Setting Up a MAXNET® II Chassis To Use A Meinberg NTP Server Local Host PC

The following section describes an option to use one freely available time server program, in the event that there is no time server already existing on the customer's network. Any other time server could be used by following the instructions provided with that program.

5.1. Installation

2. Run the file after it has finished downloading
3. Select the install location and click ‘Next’
4. When prompted make sure all components are checked and click ‘Next’
5. When prompted for Configuration File Settings, leave the ‘Location of configuration file:’ at default and uncheck the box ‘Create an initial configuration file with the following settings:’ then click ‘Next’
6. You will get a warning ‘The configuration file you chose (C:\Program Files\NTP\etc\ntpd.conf) does not exist. Do you still want to use it and create the file later?’ Click ‘Yes’
7. For the NTP Service Settings, select ‘Use SYSTEM account (not recommended)’. Leave all other selections checked then click ‘Next’
8. After installation ends you will get an NTP warning. Click ‘OK’ to close.
9. Click ‘Finish’ to complete the installation

5.2. Starting the NTP Server

1. Click the Windows Start button
2. Click the ‘Meinberg’ folder created under ‘All Programs’
3. Click the ‘Network Time Protocol’ folder
4. Click the ‘Service Control’ folder
5. Right click ‘Start NTP Service’ icon and choose ‘Run as administrator’
6. A command prompt window should open indicating the server is running
7. Press any key to close the window (The server will continue to run in the background)

5.3. Setting Up the MAXNET® II Chassis

1. Connect and login to the MaxnetII chassis web GUI using a web browser
2. Navigate to the ‘configuration’ tab
3. Beside the ‘Date and Time Settings’ fill in the ‘NTP Server’ field with the IP of the PC running the Meinberg NTP server
4. Click the ‘Save’ button and ‘reboot’ the chassis
5. The MAXNET II chassis will now use the host PC local time
6. Firmware Load Instructions

6.1. FTP Upgrade

1. Create a folder anywhere on your computer. The name and drive location should be remembered as it will be required in future steps. Place the .bin and .md5 files you wish to upgrade to into this folder. For this tutorial, we named the folder Maxnet2 and will be installing 'image.mn2.bin' and 'images.md5'.

2. Download and install Filezilla® Server program. Once installed, run Filezilla Server. A connect to server box will open. Leave the default settings as is, and press 'OK'.

3. On the top right select the 'Edit' menu, then select ‘Users’ submenu.

4. Under the ‘Users’ window, select ‘Add’. An ‘Add user account’ box should open. In the ‘Please enter the name of the user account that should be added’ field, enter the folder name you created in step one, and then press ‘OK’. Make sure to enter this exactly as the folder is named as it is case sensitive. In the example to the right, the ‘M’ in Maxnet2 is capitalized, so it should also be capitalized in the User name.
5. With User Name now created, highlight under the ‘Users’ window, select the ‘Shared folders’ under the ‘Page:’ window, then click ‘Add’ under ‘Directories’.

6. A browser box will open. Browse to the location you created the folder during step one and press ‘OK’.

7. Ensure that the ‘Read’ is checked under ‘Files’, as well as ‘List’ and ‘+Subdirs’ is checked under ‘Directories’, then click ‘OK’.
8. Filezilla is now setup correctly. Leave it running in the background and open windows explorer and log into the chassis web interface. For the next section you need to know your computers IP. If you are unsure what it is, open windows command prompt. To access the command prompt, Click ‘start’ and select ‘Run’. Type ‘cmd’ then ‘ok’). In the command prompt window, type ‘ipconfig’. Your IP should now be listed beside the ‘IPv4 Address’ line.

9. Open a web browser and connect to the chassis web GUI. Select the ‘Configuration’ tab and scroll down to the ‘Upgrade’ box. In the ‘FTP Server:’ field, type the IP address of your computer. **Note:** Your computer needs to be connected directly to or on the same network as the chassis. In the ‘File Path:’ field, type the upgrade file name (include the .tar extension). In the ‘Username:’ field, type the exact name of the folder created in step 1. When all this is done, press the ‘Get File’ button.

10. The Filezilla interface window should show some signs of the .tar file being transferred.
11. Once the file has been uploaded, the message ‘System ready for upgrade:’ will appear. Press the ‘Upgrade’ button.

12. When the upgrade is complete, a server box will inform that the chassis has been updated and needs to be rebooted. Scroll up to the top of the page and press the ‘Reboot’ button.
6.2. USB Upgrade

1. Connect to the chassis GUI main page.
2. Select the ‘Configuration’ tab.
3. Scroll down to the ‘Upgrade’ box and ensure that ‘USB Auto Upgrade’ is set to ‘TRUE’. Press the ‘Save’ button.
4. Insert a standard USB stick into a Windows PC.
5. In the USB base directory, create a new directory called ‘MN2-OQ-1’
6. Place the .tar upgrade file into the ‘MN2-OQ-1’ directory. Do not extract this file.
7. Insert the USB stick into the USB port on the back of the chassis. The upgrade will occur automatically and should be completed within 2 minutes. Log out and log back in to complete the upgrade.
8. Check the build listed on the GUI to ensure that the software was updated.

6.3. WWW Upgrade

![Image of GUI showing WWW Upgrade]

**Note:** Chassis must be connected to the world wide web to use this upgrade.

1. Connect to the chassis GUI main page.
2. Select the ‘Configuration’ tab.
3. Scroll down to the ‘Upgrade’ box.
4. In the ‘WWW Download’ field, type in the ftp upgrade address provided by ATX.
5. Press the ‘Download’ button. The ‘Upgrade Status’ field will indicate that the download has started.
6. When the download is complete, the ‘Upgrade Status’ field will indicate that the download has completed. Press the ‘Upgrade’ button when the ‘Download’ field displays ‘System ready for upgrade’.
7. When the chassis is finished upgrading, the ‘Upgrade Status:’ field will display ‘Upgrade Complete, Reboot the system!’ Scroll up to the top of the page and press the ‘Reboot’ button to complete the upgrade.
7. Maintenance & Troubleshooting

7.1. Maintenance

Daily, ensure that the Power LED’s are on for all of the modules and that there are no Alarm lights. Ensure that the ‘COMM’ LED at the back of the chassis is blinking.

Weekly, ensure that all module cooling fans are operational and unobstructed.

Monthly, vacuum all module cooling fans.

7.2. Troubleshooting

The following guide will help the operator to diagnose problems in active modules or chassis’. If none of the items in this section are of help, please contact ATX for Technical Support.

7.2.1. Slow Flashing Red LED on Module Front

If any alarm LED on the front of the module is blinking at a rate of approximately 1 second ON, 1 second OFF, then this is indicative of a slot addressing communications failure. RF and Optical functionality will likely still work, but the unit will have no software monitoring or control during this time.

Try removing the module and replacing it. If this does not fix the problem, then switch the module to a different slot in the chassis. If the red LEDs return to normal operation, then the problem is in actual slot of the chassis and likely the connector on the back rail is damaged. Contact ATX and report a defective chassis.

If this does not fix the problem then contact ATX and report a defective module.

7.2.2. Chassis’ COMM LED Not Blinking

It is normal for the COMM LED at the rear of the chassis to be solid ON or OFF during various states of system boot-up. If the chassis has been powered up (solid green on the ‘+24V’ LED at the rear of the chassis) for at least 2 minutes, then the COMM LED should be blinking to indicate the chassis software is running. If it is not, a reboot is necessary.

If the chassis can be interrupted briefly, then simply remove power to it by pulling all MPAC/MPDC modules out part-way.

If the chassis must remain live then try pressing the RESTART button. If this doesn’t work, press the system reset button (1 second then release) and the power to the communications module will be interrupted. This will not interrupt power to any RF/Optical modules installed in the chassis. If the communications module is still not responsive, then a factory reset may be necessary. See Section 4.6.

7.2.3. No Response From Chassis Over Network

Typically, this is a ‘subnet’ issue. In order for any device to see another device on the same network, they must be on the same subnet. Consult your IT department for details of your network, but typically the subnet refers to the first three of the four octets in an IP address. E.g. if the computers in your network are given IP addresses of 192.168.10.1 through 192.168.10.250, then the subnet is the 192.168.10 part.
Each MAXNET II chassis ships with a default IP of 192.168.0.1, so the PC connected to it must have an IP address of 192.168.0.x where x is not equal to 1. This is not generally the case, so it must be forced.

To modify the PC’s IP in Windows, choose Start -> Settings -> Network Connections -> Local Area Connection -> Properties -> Internet Protocol (TCP/IP).

If the chassis IP is no longer at the default IP, modify the subnet portions of these settings (IP address and Default Gateway) to match.

If the chassis is still not visible, it is possible the IP address of the chassis has been forgotten (see Factory Reset section), the network connection is not good (see Ethernet Port section for LED diagnostics) or a network port is blocked or firewallled (check with your IT department).

### 7.2.4. Some Modules Do Not Show Up On Web Page

If the chassis is visible on the web or through SNMP walks, but one or more installed modules is not, try removing and replacing the module in a different slot. Verify that the green power LED is solid and the red LED is either off or blinking quickly (approx half second on, half second off). If the LED’s are not as stated, see the appropriate troubleshooting section.

### 7.2.5. Module Power LED Off or Intermittent

Check the ‘24V’ green LED on the rear of the chassis. If it is off, then the problem is that the chassis is not getting power. See MPAC/MPDC troubleshooting section. If it is on or if other modules in the chassis are okay, the module itself is suspect. Continue.

Remove the suspect module and trade slot positions with another functioning module.

a) If the suspect module is okay and the previously good module fails, contact ATX and report a defective chassis.

b) If the suspect module fails and the previously good module is okay, contact ATX and report that the suspect module is defective.

### 7.2.6. MPAC/MPDC Not Powering Chassis

*Note that 220 VAC applied to an MPAC-110 will damage the module, but 110 VAC applied to an MPAC-220 will simply not turn on.*

a) Check the fuse continuity on the MPAC or MPDC module

b) Verify that the 110 VAC / 220 VAC electrical outlet is active using a voltmeter and checking the circuit breaker. (In the case of the MPDC insure that there is -48 VDC on the rear terminal block)

c) Verify that IEC power cord is properly inserted into the receptacle on the rear of the module and properly connected to a 110 VAC / 220 VAC electrical outlet.
7.2.7. Module Will Not Insert Fully Into Chassis
   a) Remove the module and inspect it for damage or bent guide rails. Check active modules for damage to the power connector at the rear of the unit.
   b) Inspect the chassis for bent metal or obstructions.
   c) Be sure that the active module is inserted such that the module guide is in an odd numbered slot i.e. (left side of module is above an odd numbered slot and the right side is above an even number slot).
   d) Try the module in a different slot. Due to machinery tolerances, some modules may be more snug in some slots than others. If the tolerances are unacceptable, contact ATX.

7.2.8. Temperature/Fan Fault Alarm on Any MAXNET® II Active Module
   Check to see if the module fan is operating. If not replace with a new fan from ATX (Fan Part #: MPFANA) using the below procedure.

1. Remove two screws holding plate and fan in place.
2. Remove fan cover and screws.
3. Pull out fan with tweezers.
4. Remove push-fit power connections.
5. Install replacement fan in the opposite order shown. Ensuring that:
   a) The red and black wires are aligned.
   b) The labelled side of the fan faces inward toward the module.
   c) The wires do not bunch up behind the fan, interfering with fan rotation.

7.2.9. Removing & Replacing a Communications Module
   Note: Replacing a comm module on a live chassis will not interrupt or impact the functionality of any RF/Optical modules.

   1. Using a Phillips screwdriver, remove the two 4-40 comm module screws at the back of the chassis.
2. Remove the comm module.

3. Gently install the replacement comm module. Care must be given to ensure that the two 3-pin connections are aligned before pushing the comm module into place.

4. Using a Phillips screwdriver, fasten the two 4-40 comm module screws back into place.
7.2.10. Generating Reports

It may be necessary to generate a report to help diagnose issues with the chassis or modules which can be sent to ATX for diagnosis. To generate a report, follow these instructions:

1. Select the ‘Reports’ tab at the top of the main overview page.
2. Select from the following report options:
   - Overview
   - Chassis Comm
   - System Startup
   - IP Communications
   - SNMP
   - Login Activity
3. Once a report option is selected, press the ‘Download as file’ button. A report .txt file will be downloaded to the ‘Users/<User Name>/Downloads’ folder of the PC connected to the chassis.
8. Service & Support

8.1. Contact ATX Networks

Please contact ATX Technical Support for assistance with any ATX products. Please contact ATX Customer Service to obtain a valid RMA number for any ATX products that require service and are in or out-of-warranty before returning a failed module to the factory.

**RF Products**
(MAXNET, SignalOn, HFC Enhance, PCI Filters, Q-Series, SCN, SMAC, FiberLinx)

**TECHNICAL SUPPORT**
Tel: (905) 428-6068 – press *3 then press 2
Toll Free: (800) 565-7488 – press *3 then press 2 (USA & Canada only)
Email: rfsupport@atxnetworks.com

**CUSTOMER SERVICE**
ATX Networks
1-501 Clements Road West
Ajax, ON L1S 7H4 Canada

Tel: (905) 428-6068 – press *1
Toll Free: (800) 565-7488 – press *1 (USA & Canada only)
Fax: (905) 427-1964
Toll Free Fax: (866) 427-1964 (USA & Canada only)
Email: support@atxnetworks.com
Web: www.atxnetworks.com

8.2. Warranty Information

All of ATX Networks’ products have a 1-year warranty that covers manufacturer’s defects or failures.

8.3. Safety

**IMPORTANT! FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:**

**Water and Moisture:** Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

**Power Sources:** The device should be connected to a power supply only of the type described in the operating instructions or as marked on the device.

**Grounding or Polarization:** Precautions should be taken so that the grounding or polarization means of the device is not defeated.

**NOTE:** A separate connection shall be made to ground the chassis using the ground bonding lug provided on the rear of the chassis. This connection should be protected from breakage and abuse.

**Power Cord Protection:** Power supply cords should be routed so that they are not likely to be pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the device.

**Servicing:** The user should not attempt to service the device beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

**Fusing:** If your device is equipped with a fused receptacle, replace only with the same type fuse. Refer to replacement text on the unit for correct fuse type.

Recommended external fusing of the MPDC supply to be limited to 10 Amps.

The MPAC-110 Power Supply receptacle fuse rating is 6.3 Amps 250 Volts slo blo.
The MPAC-220 Power Supply fuse rating is 3.15 Amps 250 Volt slo blo.

**CAUTION:** For continued protection against the risk of fire, replace only with the same type and rating of fuse.

**Power Supply Removal:** Power (AC or DC) should be disconnected from the module before removing for replacement or service. This is accomplished by removing the AC IEC plug for the MPAC unit and the terminal block for the MPDC unit. To remove a power supply module from the chassis, gently lift the front handle and pull back on the module until it is clear of the chassis guide slot.

**ERRATA (14 May 2008)**
The Optical Transmitter modules MPTXxxx referenced in this manual for use in the MP3xxx Chassis are pending acceptance by UL.