



DISCONTINUED

## ChromaFlex

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### **ChromaFlex DMT24, DMT34 & DMT44 Multi-Wavelength DWDM Direct Modulated Transmitter Module**

**HARDWARE INTERFACE MANUAL**

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# TABLE OF CONTENTS

<b>1</b>	<b><u>IMPORTANT SAFETY INSTRUCTIONS</u></b> .....	<b>1-1</b>
1.1	<u>Electric Shock Hazard</u> .....	1-1
1.2	<u>Installation Site</u> .....	1-1
1.3	<u>Installation Requirements</u> .....	1-1
1.4	<u>Equipment Placement</u> .....	1-1
1.5	<u>Power Connections</u> .....	1-2
1.5.1	<u>Connection To AC Power Source</u> .....	1-2
1.5.2	<u>Connection To -48 VDC Power Source</u> .....	1-2
1.6	<u>Fuse Replacement</u> .....	1-2
1.7	<u>Laser Safety</u> .....	1-2
1.8	<u>Laser Power &amp; Warning Labels</u> .....	1-3
<b>2</b>	<b><u>PRODUCT INTRODUCTION</u></b> .....	<b>2-1</b>
<b>3</b>	<b><u>UNPACKING &amp; INSPECTING A NEW UNIT</u></b> .....	<b>3-1</b>
3.1	<u>What To Do About Physical Damage</u> .....	3-1
3.2	<u>What To Do About Concealed Damage</u> .....	3-1
3.3	<u>How To Return Equipment</u> .....	3-1
<b>4</b>	<b><u>SPECIFICATIONS</u></b> .....	<b>4-1</b>
<b>5</b>	<b><u>BLOCK DIAGRAM &amp; OPERATION</u></b> .....	<b>5-1</b>
<b>6</b>	<b><u>FRONT PANEL</u></b> .....	<b>6-1</b>
6.1	<u>Front Panel Illustration</u> .....	6-1
6.2	<u>Table of Front Panel Features</u> .....	6-1
6.3	<u>Alarm Status Indicators</u> .....	6-1
<b>7</b>	<b><u>MODULE INSTALLATION</u></b> .....	<b>7-1</b>
<b>8</b>	<b><u>MODULE CONNECTIONS</u></b> .....	<b>8-1</b>
8.1	<u>RF Connections</u> .....	8-1
8.2	<u>Optical Connections</u> .....	8-2
<b>9</b>	<b><u>MODULE SET-UP</u></b> .....	<b>9-1</b>
9.1	<u>Setting RF Input Levels</u> .....	9-1
9.1.1	<u>All QAM Channels</u> .....	9-1
9.1.2	<u>Mix of Analog &amp; QAM Channels</u> .....	9-1
9.2	<u>Configuring The DMTx4 Transmitter Module</u> .....	9-1
9.2.1	<u>AGC Mode (Hand-held Display)</u> .....	9-2
9.2.2	<u>MGC Mode (Hand-held Display)</u> .....	9-3
9.3	<u>Setting Transmitter Fiber Length</u> .....	9-4
<b>10</b>	<b><u>TROUBLESHOOTING THE DMTX4</u></b> .....	<b>10-1</b>
<b>11</b>	<b><u>SERVICE &amp; SUPPORT</u></b> .....	<b>11-1</b>
11.1	<u>Contact ATX Networks</u> .....	11-1
11.2	<u>Warranty Information</u> .....	11-1

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# IMPORTANT SAFETY INSTRUCTIONS

## 1. Important Safety Instructions

- Carefully read all safety and operating instructions contained in this user guide before operating this equipment, and retain them for future reference.
- Follow all installation and operating instructions. Pay attention to all warnings and cautions in the manual as well as those that are affixed to this equipment.

### 1.1 Electric Shock Hazard

This equipment meets applicable safety standards.



**WARNING:** To reduce risk of electric shock, perform only the instructions that are included in the operating instructions. Refer all servicing to qualified service personnel only.

Adhere to the following safety warnings and guidelines:

- Dangerous Voltages
  - Only qualified service personnel are allowed to perform equipment installation or replacement.
  - Disconnect power before servicing the unit.
  - Only qualified service personnel are allowed to remove chassis covers and access only field replaceable pluggable accessories.
- Grounding
  - Do not violate the protective grounding by using extension cables, power cables, or other devices on the mains power without a protective ground conductor.
  - If this equipment is equipped with an external grounding terminal, attach one end of an 18-gauge wire (or larger) to the grounding terminal; then, attach the other end of the wire to a ground, such as a grounded equipment rack.

### 1.2 Installation Site

When selecting the installation site, comply with the following:

- Maintain a Protective Ground - The protective ground lead of the building's electrical installation should comply with national and local electrical and safety requirements.
- Environmental Condition - The installation site should be dry, clean, and ventilated. Do not use this equipment where it could be at risk of contact with water. Ensure that this equipment is operated in an environment that meets the requirements as stated in this equipment's environmental specifications.

### 1.3 Installation Requirements



**WARNING:** Allow only qualified service personnel to install this equipment. The installation must conform to all local codes and regulations.

### 1.4 Equipment Placement



**WARNING:** Avoid personal injury and damage to this equipment. An unstable mounting surface may cause this equipment to fall.

- Install this equipment in a restricted access location.
- Place this equipment close enough to a mains AC outlet to accommodate the length of this equipment's power cord.
- Route all power cords so that people cannot walk on, place objects on, or lean objects against them.
- Make sure the mounting surface or rack is stable and can support the size and weight of this equipment.

- Make sure that the rack is placed on a stable surface. If the rack has stabilizing devices, install these stabilizing devices before mounting any equipment in the rack. The mounting surface or rack should be appropriately anchored according to manufacturer's specifications.
- Ensure this equipment is securely fastened to the mounting surface or rack to protect against damage.
- This equipment has openings for ventilation to protect it from overheating. To ensure equipment reliability and safe operation, do not block or cover any of the ventilation openings.



**WARNING:** Avoid personal injury and damage to this equipment. Mounting this equipment in the rack should be such that a hazardous condition is not caused due to uneven mechanical loading.



**CAUTION:** Installation of this equipment in a rack should be such that the amount of airflow required for safe operation of this equipment is not compromised.

## 1.5 Power Connections

### 1.5.1 Connection To AC Power Source

**Important:** If this equipment is a Class I equipment, it must be grounded.

- Connect this equipment only to the power sources that are identified on the equipment-rating label.
- Overcurrent protection breakers or fuses must be sized appropriately for the total current rating of the modules and accessories contained within a system chassis or multiple chassis that are connected to a common mains circuit.
- This equipment may have two power sources. Be sure to disconnect all power sources before working on this equipment.
- If this equipment **does not** have a main power switch, the power cord connector serves as the disconnect device.

### 1.5.2 Connection To -48 VDC Power Source

- Use at least #16 AWG wire for all DC power wiring.
- Overcurrent protection breakers or fuses must be sized appropriately for the total current rating of the modules and accessories contained within a system chassis.
- Follow the recommended practices of the DC power system manufacturer.



**CAUTION:** Consider the connection of this equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring.

## 1.6 Fuse Replacement

To replace a fuse, comply with the following:

- Disconnect the power before changing fuses.
- Identify and clear the condition that caused the original fuse failure.
- Always use a fuse of the correct type and rating. The correct type and rating are indicated on this equipment.

## 1.7 Laser Safety

This equipment may contain or be connected to an infrared laser source that transmits intensity-modulated light and emits invisible radiation.



**WARNING:** Avoid Personal Injury. The laser light source on this equipment or the fiber cables connected to this equipment emit invisible laser radiation. Avoid direct exposure to the laser light source.

Viewing the laser output (if a transmitter) or fiber cable with optical instruments may pose an eye hazard.

This equipment may only be installed, operated and serviced by authorized personnel trained in the safe handling and operation of fiber optic cables and laser sources.

- Do not apply power to this equipment if the fiber is unmated or unterminated.
- Do not look into an activated fiber with optical instruments such as magnifiers, or microscopes.

### 1.8 Laser Power & Warning Labels

This equipment may contain or be connected to other equipment containing Class 1M laser sources. The following labels adhered to each product will indicate the type of laser source utilized along with general laser radiation labels.



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## PRODUCT INTRODUCTION

### 2. Product Introduction

These are directly modulated C-Band DWDM downstream transmitter modules supporting up to 1.2 GHz for full DOCSIS® 3.1 spectrum. LC/APC front fiber launch with or without internal multiplexing of outputs. Also includes front female F-port test point with selection switch to locally monitor any individual laser input.

DMT24 has two separate lasers with one common RF input port (broadcast) and one unique (narrowcast) port per laser. For a total of three RF inputs at rear of chassis.

DMT34 has three separate lasers with one common RF input port (broadcast) and one unique (narrowcast) port per laser. For a total of four RF inputs at rear of chassis.

DMT44 has four separate lasers with one unique (narrowcast) port per laser. For a total of four RF inputs at rear of chassis. Any Broadcast/Narrowcast combining is done externally if needed.

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## UNPACKING & INSPECTING A NEW UNIT

### 3. Unpacking & Inspecting a New Unit

Before shipment, ATX inspects and packs all the essential items carefully. Nevertheless, damage may occur during shipment. The carrier assumes full responsibility for a safe delivery of the equipment.

Inspect the package for any physical damage.

1. Open the package.
2. Remove any packing material.
3. Inspect the unit for any physical damage.
4. Shake the unit with care, paying attention to any rattling loose parts that may suggest a concealed damage (some noise due to moving cables is normal).
5. Check for any missing accessories.

When any damage is noticed to the merchandise, please notify customer service (see [Service & Support](#) section) and file a claim with the carrier as noted below.

#### 3.1 What To Do About Physical Damage

Record any evidence of physical damage or loss on the freight bill or receipt and have the carrier's agent sign it. If you fail to do so, the carrier may refuse to honor the damage claim. The carrier will supply you with any forms required to file such a claim.

#### 3.2 What To Do About Concealed Damage

Damage which is not apparent until the unit has been unpacked is considered concealed damage. The contents may have been damaged due to rough handling even if there is no external evidence. If you should notice damage upon unpacking the unit you should make a written request for inspection by the carrier's agent within 10 days of the delivery date. Afterwards file a claim with the carrier.

#### 3.3 How To Return Equipment

Call customer service (see [Service & Support](#) section) for a Return Materials Authorization (RMA) number. You will need the unit's serial number, description of the problem, and some shipping information. We must receive the unit within thirty (30) days from the date a RMA number is issued. If for any reason, you want to ship the unit 30 days after the RMA number has been issued, you must obtain a new RMA number by calling customer service. Units received without an RMA number or one with an expired RMA number will not be accepted by our receiving department.

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# SPECIFICATIONS

## 4. Specifications

See ChromaFlex DMT24, DMT34 & DMT44 DWDM Transmitter Specs & Ordering Info pdf at [atx.com](http://atx.com)

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# BLOCK DIAGRAM & OPERATION

## 5. Block Diagram & Operation

The following block diagrams depict the RF and optical signal flow through the DMT24, DMT34 and DMT44 transmitter modules:

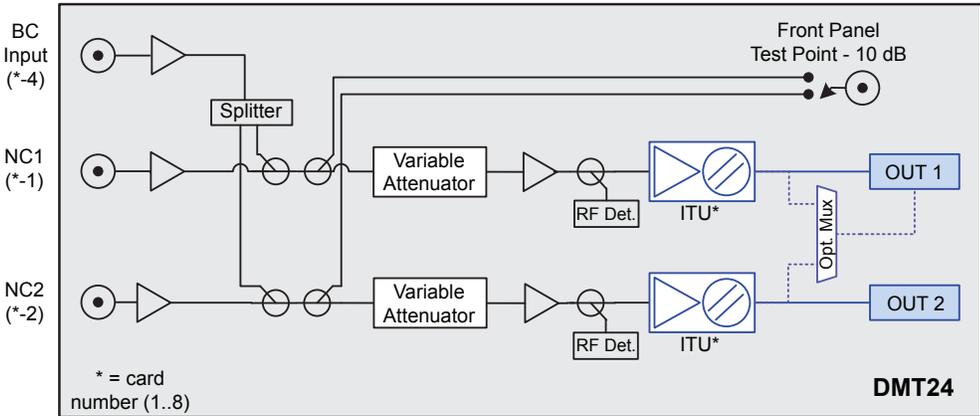


Figure 1: ChromaFlex DMT24 Transmitter Module Block Diagram

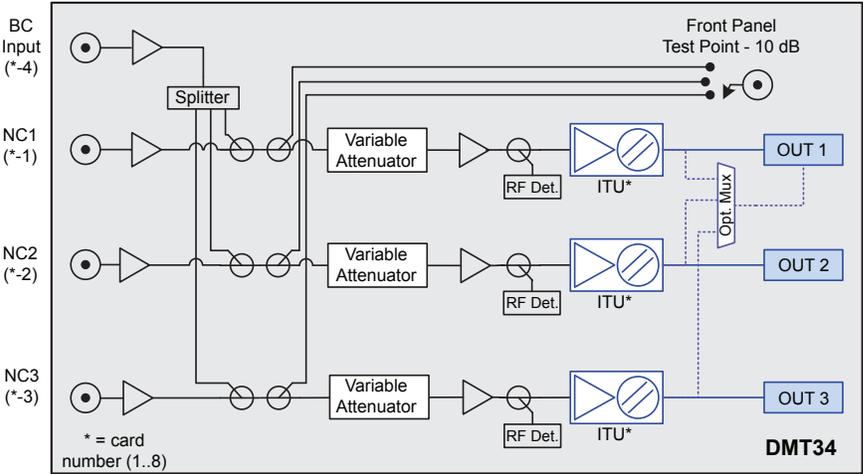
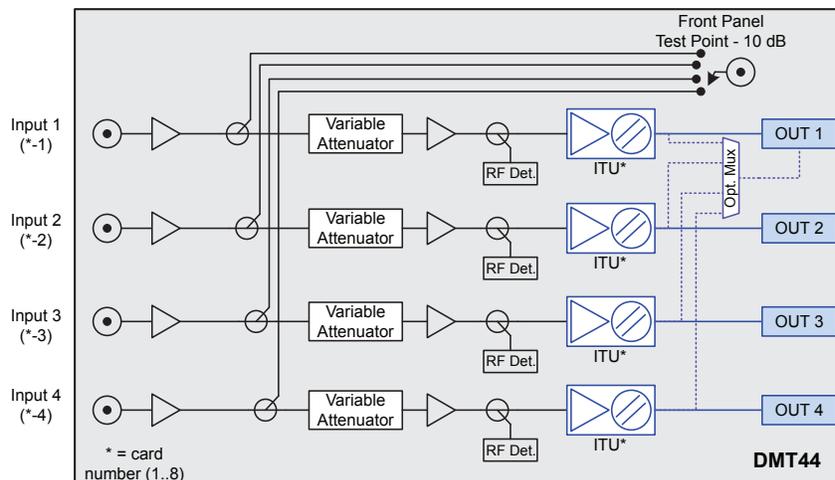


Figure 2: ChromaFlex DMT34 Transmitter Module Block Diagram



**Figure 3: ChromaFlex DMT44 Transmitter Module Block Diagram**

As seen in the block diagrams above and as described in Product Introduction, the DMT24 and DMT34 have internal RF combining to merge a common broadcast RF input signal to each individual NC input. The DMT44 has no such combining since all four rear F-ports are utilized for direct application to each laser segment in the quad module. After this initial combining stage, all transmitter versions have the same functionality.

A directional coupler for each laser segment provides a sample of the full spectrum RF load applied to each laser to the switchable female F-port on the front. This level is calibrated to be -10 dB relative to the input at the rear of the module, regardless of AGC function of the module. The RF signal passes through a variable RF attenuator. The attenuator is either automatically set through the feedback loop when operated in the AGC mode or may be set in the manual mode via software interfaces. The signal is amplified and then passes through a directional coupler used to sample the RF signal for remote monitoring and the AGC control loop back to the input variable attenuator. The through path is applied to a laser. Fiber length adjustment for the laser is set through the software interfaces. The optical signal passes to each of the front panel optical connectors. An internal multiplexer option is available in which case each wavelength is multiplexed internally with the combined wavelengths connected to output port 1.

# FRONT PANEL

## 6. Front Panel

### 6.1 Front Panel Illustration

The following diagram and table depicts the features of the transmitter module front panel. The DMT44 module is shown for reference. The DMT24 and DMT34 are labeled “NA” or “N” for the unused optical connector and RF test point selection.

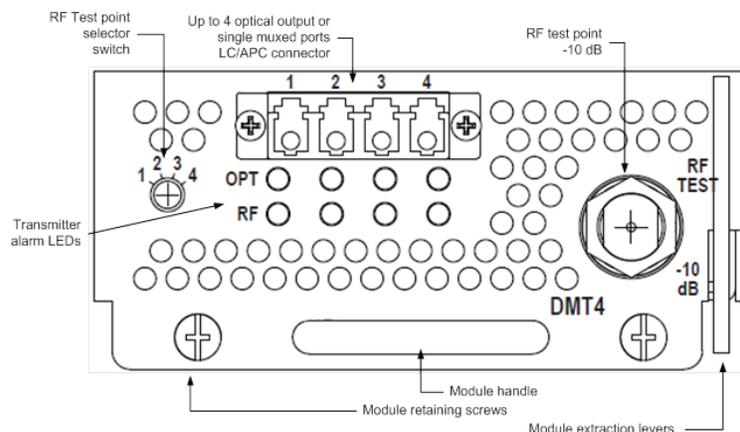


Figure 4: Front Panel

### 6.2 Table of Front Panel Features

Module Extraction Levers	Lever assist in removing the module from the chassis backplane connector.
Module Retaining Screws	Secures the module to the chassis.
Module Handle	Utilized to insert and remove the module.
RF Test Point	-10 dB sample of the RF input to the module. Relative to RF input at rear of module.
RF Test Point Selector Switch	Selects the RF test point for transmitter 1 to 4.
Optical Output LC/APC Connector (OUT)	Optical output signal connection.
Transmitter Alarm LEDs	Visual alarm status indicators for each of the four transmitters.

### 6.3 Alarm Status Indicators

LED	Function	Value
OPT	One LED for Each Laser 1 through 4 Optical Output Power Laser Temperature Module Temperature	Green = Normal Amber = Minor Temp Alarm or Opt Power +/- 1dB Red = Major Temp Alarm or Opt Power +/- 2 dB
RF	One LED for Each Laser 1 through 4 Monitors the RF Drive Level to Each Laser	Green = Normal Amber = Minor Alarm, RF Out of Range +/- 2 dB Red = Major Alarm, RF Out of Range +/- 3 dB

For more information regarding alarm status and monitoring refer to the ChromaFlex Operation Manual.

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## MODULE INSTALLATION

### 7. Module Installation

The DMT $x$ 4 ( $x=2, 3$  or  $4$ ) transmitter module occupies a single ChromaFlex chassis module slot. The modules may be inserted or removed while the chassis is powered without interrupting other operational modules in the chassis. The following module installation procedures assume the chassis is installed and powered following the instructions in the ChromaFlex Operation Manual.

1. Align the module into the desired slot opening in the ChromaFlex chassis.
2. Using the handle push the module into the slot with even pressure until the module is mated with the chassis mid-plane connector.
3. Press the module extraction levers downward against the module face.
4. Tighten the two module retaining screws until snug in an even manner.
5. The module LEDs should now be lit with the four OPT LEDs green and the four RF LEDs red (DMT44) if RF has not already been connected to the chassis rear panel RF connectors.

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# MODULE CONNECTIONS

## 8. Module Connections

The following describes the initial RF and optical connections to the chassis and module.

### 8.1 RF Connections

RF connections are made at the back of the ChromaFlex chassis. The DMT24 and DMT34 have one broadcast input which is shared across each laser transmitter and two or three narrowcast inputs for the dedicated services to each laser transmitter. The DMT44 has a single RF input for each laser transmitter where the common broadcast and each individual laser transmitter narrowcast channels is externally combined prior to connection to the chassis.



**NOTE:** Each laser transmitter should have the same common RF channel content below 270 MHz.

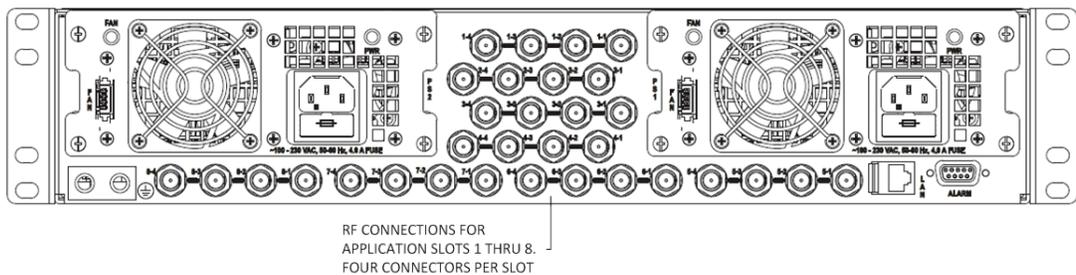


Figure 5: RF Connections

The following table and diagrams show the corresponding RF connector to module slots for the DMTx4 transmitter modules. The RF connector numbering corresponds to the chassis slot number – laser transmitter number. For example, RF connector 1-1 is connected to chassis slot 1- laser transmitter 1 within the module. RF connector 1-2 is connected to chassis slot 1- laser transmitter 2 within the module.

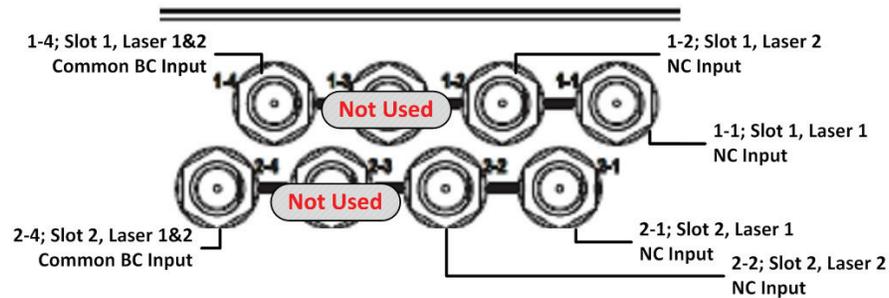


Figure 6: DMT24 – Rear Panel RF Connections

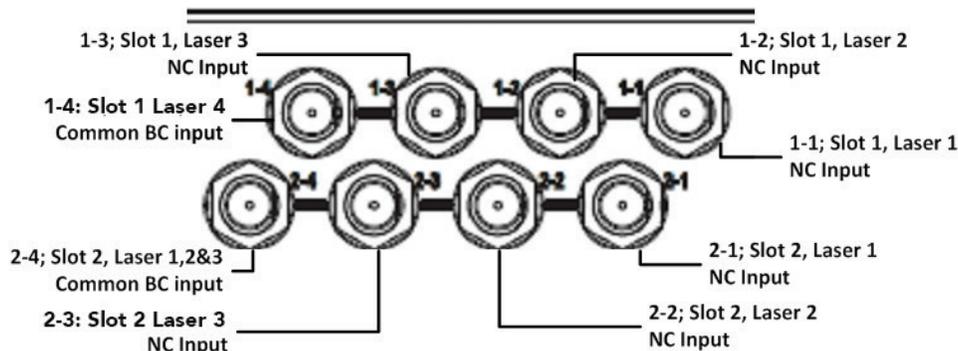


Figure 7: DMT34 – Rear Panel RF Connections

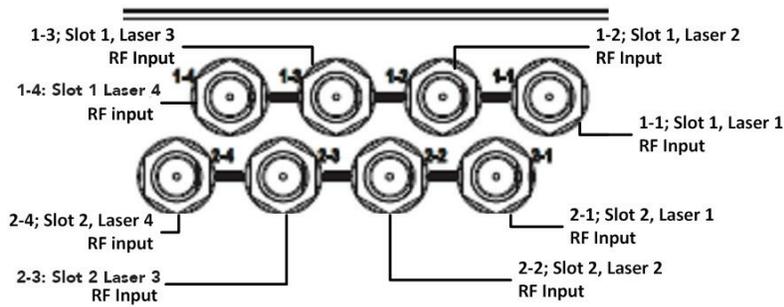


Figure 8: DMT44 – Rear Panel RF Connections

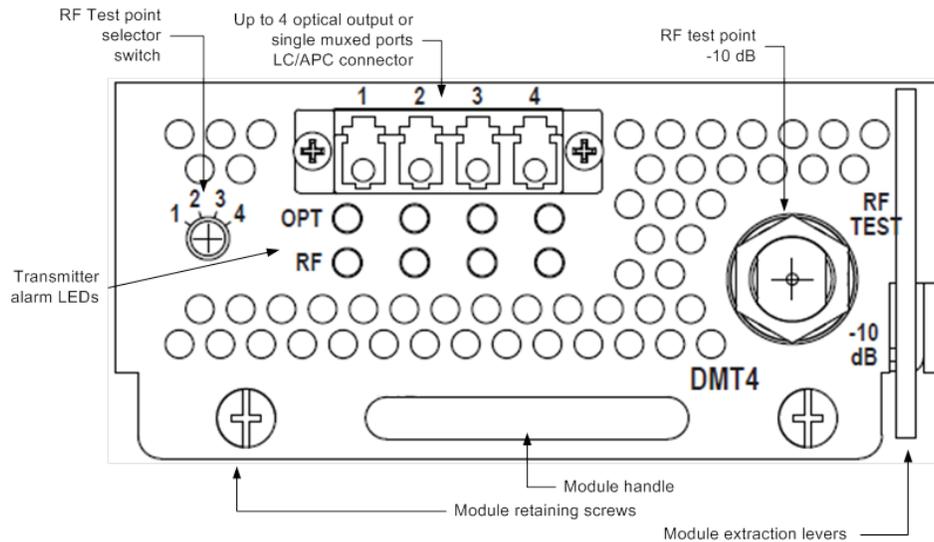
Module Slot	Rear Panel Connector	DMT24	DMT34	DMT44 (BC & NC external combine)
1	1-1	Narrowcast 1	Narrowcast 1	RF 1
	1-2	Narrowcast 2	Narrowcast 2	RF 2
	1-3	N/A	Narrowcast 3	RF 3
	1-4	Broadcast	Broadcast	RF 4
2	2-1	Narrowcast 1	Narrowcast 1	RF 1
	2-2	Narrowcast 2	Narrowcast 2	RF 2
	2-3	N/A	Narrowcast 3	RF 3
	2-4	Broadcast	Broadcast	RF 4
3	3-1	Narrowcast 1	Narrowcast 1	RF 1
	3-2	Narrowcast 2	Narrowcast 2	RF 2
	3-3	N/A	Narrowcast 3	RF 3
	3-4	Broadcast	Broadcast	RF 4
4	4-1	Narrowcast 1	Narrowcast 1	RF 1
	4-2	Narrowcast 2	Narrowcast 2	RF 2
	4-3	N/A	Narrowcast 3	RF 3
	4-4	Broadcast	Broadcast	RF 4
5	5-1	Narrowcast 1	Narrowcast 1	RF 1
	5-2	Narrowcast 2	Narrowcast 2	RF 2
	5-3	N/A	Narrowcast 3	RF 3
	5-4	Broadcast	Broadcast	RF 4
6	6-1	Narrowcast 1	Narrowcast 1	RF 1
	6-2	Narrowcast 2	Narrowcast 2	RF 2
	6-3	N/A	Narrowcast 3	RF 3
	6-4	Broadcast	Broadcast	RF 4
7	7-1	Narrowcast 1	Narrowcast 1	RF 1
	7-2	Narrowcast 2	Narrowcast 2	RF 2
	7-3	N/A	Narrowcast 3	RF 3
	7-4	Broadcast	Broadcast	RF 4
8	8-1	Narrowcast 1	Narrowcast 1	RF 1
	8-2	Narrowcast 2	Narrowcast 2	RF 2
	8-3	N/A	Narrowcast 3	RF 3
	8-4	Broadcast	Broadcast	RF 4

## 8.2 Optical Connections

There are many different optical system configurations that are possible with the ChromaFlex DMTx4 transmitter. The transmitter may have individual output ports per laser transmitter or they can be optioned with an internal optical multiplexer with all wavelengths combined to a single optical output on port number 1. Your specific design may include additional components such as external multiplexers, an EDFA, return path receivers, destacker modules or other external components.



**Important Note:** Always clean and inspect optical connectors prior to making a connection to the DMTx4 optical ports. Never look into an optical connector when a signal is present.



**Figure 9: Optical Connections**

Please take the following steps for first time set up of the unit.

- Identify the transmitter unit at the corresponding slot location.
- Connect each output port (1 through 4) to a fiber jumper utilizing a good quality clean LC/APC connector to the next device or fiber cable per your specific design schematic drawing.

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## MODULE SET-UP

### 9. Module Set-up

#### 9.1 Setting RF Input Levels

The RF signals that are common to each laser transmitter are connected to the Broadcast (BC) input port as shown in the rear panel connector table in section 6.1. The common RF loading into the BC RF input port should occupy the RF spectrum to at least approximately 270 MHz to avoid SRS crosstalk degradation.

The Narrowcast (NC) signals for each of the individual laser transmitters is connected to the corresponding input port as shown in the rear panel connector table in section 6.1. Note that the NC input should be all QAM signals and above 270 MHz. The RF combining is performed externally for the DMT44 module with four laser transmitters. Follow the same guidelines for combining BC and NC RF signals as described above.

Determining the proper rear panel RF input level is important to ensure optimum transmitter performance. The following will provide guidance in calculating the proper adjustment to the per channel RF level for your actual channel loading from the reference channel loading and the total RF input power requirement.

Each DMTx4 transmitter is factory optimized for a rear panel nominal total input power of +31 dBmV for the combined BC and NC signals. This level provides 3 to 4 dB of reserve gain for the AGC operation. The reserve gain is the amount of headroom below the +31 dBmV reference level.

##### 9.1.1 All QAM Channels

The all QAM reference channel loading and per channel input level is 155 ITU-T J.83 Annex B QAM 256 channels between 54-1002 MHz set to 9 dBmV. The RF per channel level of 9 dBmV is calculated from the total power as follows:

$$\begin{aligned} \text{Total Power} &= [10 \cdot \log_{10}(\text{channel load})] \\ 31 \text{ dBmV} &= [10 \cdot \log_{10}(155)] = 31 \text{ dBmV} - 22 = 9 \text{ dBmV} \end{aligned}$$

Using the same formula to adjust for a lower channel loading such as a 750 MHz system with 110 channels:

$$31 \text{ dBmV} - [10 \cdot \log_{10}(110)] = 31 \text{ dBmV} - 20.4 = 10.6 \text{ dBmV}$$

Therefore with 110 of all QAM channel loading the correct rear panel RF input level is 10.6 dBmV at the input of both the BC and NC ports.

##### 9.1.2 Mix of Analog & QAM Channels

The mix of Analog and QAM reference channel loading and per channel input level is 30 NTSC analog (54-258 MHz) set to 13 dBmV and 124 ITU-T J.83 Annex B QAM 256 channels (258-1002 MHz) set to 11 dBmV. The RF level per channel for analog and QAM is calculated from the total power as follows:

Since there is a 6 dB power level difference between the QAM and analog channels it is easier if we convert the QAM channels to an equivalent analog power level in the formula below. The QAM RF level being 6 dB lower means the QAM power level is 1/4<sup>th</sup> the analog level. As a point of reference, -3 dB is 1/2 power and -6 dB is 1/4 power.

$$\begin{aligned} \text{Total Power} &= [10 \cdot \log_{10}(\text{Analog channel load}) + (\text{QAM channel load}/4)] \\ 31 \text{ dBmV} &= [10 \cdot \log_{10}((30) + (124/4))] = 31 \text{ dBmV} - 18 = 13 \text{ dBmV} \end{aligned}$$

Therefore the analog channels are set to 13 dBmV and the QAM channels are 6 dB lower or 11 dBmV.

Use the same formula to increase the number of analog channels to 60 and decrease the number of QAM channels to 94 and calculate the correct input level for each:

$$31 \text{ dBmV} - [10 \cdot \log_{10}((60) + (94/4))] = 31 \text{ dBmV} - 19 = 12 \text{ dBmV}$$

Therefore the analog channels are set to 12 dBmV and the QAM channels 6 dB lower or 6 dBmV.

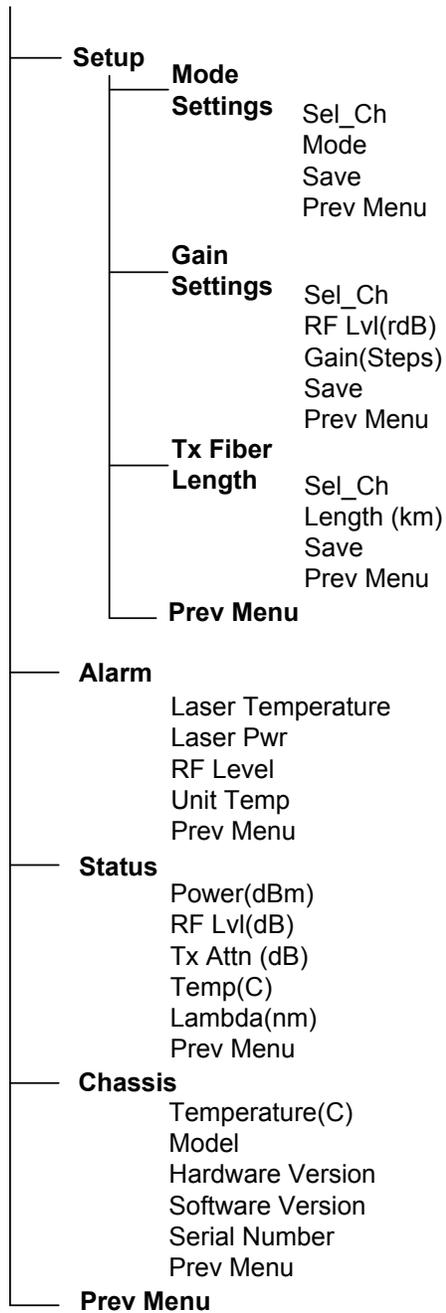
#### 9.2 Configuring The DMTx4 Transmitter Module

To set-up, configure and verify the RF drive level for the DMTx4 requires the operator to become familiar with the Hand-held Display or GUI status and configuration menus. Refer to the ChromaFlex Chassis – Hardware Interface Manual as a supplement to the following procedures which will reference the associated display parameters.

The following DMTx4 Hand-held Display menu tree will assist in navigating the Hand-held Display.

**Greeting:**

InnoTrans Communications  
DMTX

**9.2.1 AGC Mode (Hand-held Display)**

Operating in the AGC mode provides for plug-and-play RF level setting as the transmitter automatically sets the internal attenuators for the optimal laser drive level and OMI. When in the AGC mode the variable attenuators will automatically be adjusted for each laser transmitter so the RF reference display will read  $0.0 \text{ dB} \pm 0.5 \text{ dB}$ . The following provides the procedures and associated menus for configuring the DMTx4 with the Hand-held Display in the AGC mode.

1. Connect power to the chassis. Unit should power up (no switches).
2. Plug the RS-232 cable from the Hand-held Display into the RS-232 port on the CF-CTRL control and communications module.
3. Using the Hand-held Display choose the appropriate slot for the desired module location.
4. Example DMT34 - With a combined Broadcast/Narrowcast total RF power of 31 dBmV plug the Broadcast cable into

port 1-4, Narrowcast cable into port 1-1 to 1-3. (see section 6.1)

5. From the front panel RF Test Point confirm the Narrowcast QAM RF channels are at the same level as the Broadcast QAM RF channels. If not, correct the level difference coming into the chassis on each individual NC port.
6. Using the Hand-held Display navigate to the Tx Setup Menu.
7. Under the Tx Status menu the RF (*reference level*) reading should be approximately 0.0 dB,  $\pm$  0.5 dB. The Att (dB) (*reserve gain level*) should be between 3-4 dB (if 31 dBmV total RF power is applied to input ports).



RF : -0.1  
Att(dB): +3.5

The reserve gain is the amount of headroom below the +31 dBmV reference level.

## 9.2.2 MGC Mode (Hand-held Display)

The following provides the procedures and associated menus for configuring the DMTx4 with the Hand-held Display in the MGC mode. When operating in the MGC mode the variable attenuator for each laser transmitter can be manually adjusted to so the RF reference display will read 0.0 dB  $\pm$  0.5 dB.

1. Connect power to the chassis. Unit should power up (no switches).
2. Plug the RS-232 cable from the Hand-held Display into the RS-232 port on the CF-CTLR control and communications module.
3. Using the Hand-held Display choose the appropriate slot for the desired module location.
4. Example DMT34 - With a combined Broadcast/Narrowcast total RF power of 31 dBmV plug the Broadcast cable into port 1-4, Narrowcast cable into port 1-1 to 1-3. (see section 8.1)
5. From the front panel RF Test Point confirm the Narrowcast QAM RF channels are at the same level as the Broadcast QAM RF channels. If not, correct the level difference coming into the chassis on each individual NC port.
6. Using the Hand-held Display navigate to the Setup/Mode Settings menu.



Setup Menu      Mode Setting Menu  
Tx Status Menu      Gain Setting Menu

7. Under the Setup/Mode Settings menu place the unit in MGC mode and save the setting.



Mode: MGC      Save: Yes (MGC)  
Save: No (AGC)      Prev Menu

8. Next using the Hand-held Display navigate to the Setup/Gain Settings menu.



Gain Setting Menu  
OPTOut Setting Menu

9. Select the internal laser transmitter to be adjusted (Sel\_Ch)
10. Under the Gain Setting Menu note the RF Lvl.



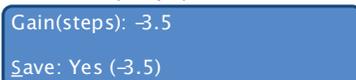
Rf Lvl (rdB)      Gain(steps): 4.5

11. Using the *Gain (Steps)* menu add or remove the attenuation steps until the *RF Lvl* displays 0.0 dB -  $\pm$  0.5 dB in the Tx Status/RF menu.



Rf Lvl (rdB)      Gain(steps)

12. Save Gain (Steps) value.



Gain(steps): -3.5  
Save: Yes (-3.5)

13. Next using the Hand-held Display navigate to the Tx Status menu.



Tx Status Menu  
Alarm Menu

14. Under the Tx Status Menu note the *RF* level. The level should be the same value as the *RF Lvl* value set in step #10. The Att (dB) value should be  $+3.5 \pm 0.5$  dB with a total combined input power of 31 dBmV at the back of the chassis.



RE : -0.1  
Att(dB): +3.5

15. Repeat the RF adjustment steps for each laser transmitter.

### 9.3 Setting Transmitter Fiber Length

The fiber link length that each laser transmitter will propagate through needs to be entered to achieve optimal distortion performance.

1. Using the Hand-held Display navigate to the Setup/Mode Settings/TX Fiber Length menu.



Setup Menu

Tx Status Menu



Mode Setting Menu

Tx Fiber Length

2. Select the internal laser transmitter to be adjusted (Sel\_Ch).
3. Enter the fiber length in km associated with the selected laser transmitter. This should not be based on distance measured on a map. Use an optical TDR for proper fiber length.
4. Repeat for each laser transmitter.

## TROUBLESHOOTING THE DMTX4

### 10. Troubleshooting The DMTx4

Condition	Steps to Check
Power LED OFF (AC)	Check if Power Cable is plugged in and Power Switch is in ON position. Verify AC Outlet is Functional and confirm fuse on the AC feed is fine, replacing it if necessary. Look for other signs of life in unit like running fan, LCD display etc.
Power LED OFF (DC)	Verify DC Feed is active and fuse is intact on fuse panel. Verify DC Feed is not reversed. Look for other signs of life in unit like running fan, LCD display etc.
Optical LED is Amber or Red	Check output light level.
RF LED is Amber or Red	Check RF Input level. If in MGC mode Attn set too high (or too low if overdriving RF inputs).
Communication Issue with Unit	Please confirm set-up is as described in the User Interface document. If problem persists, please contact customer service for further help.

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# SERVICE & SUPPORT

## 11. Service & Support

### 11.1 Contact ATX Networks

Please contact ATX Technical Support for assistance with any ATX products.

#### TECHNICAL SUPPORT

Tel: 289.204.7800 – press 1  
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only  
Email: [support@atx.com](mailto:support@atx.com)

#### SALES ASSISTANCE

Tel: 289.204.7800 – press 2  
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only  
Email: [insidesales@atx.com](mailto:insidesales@atx.com)

#### FOR HELP WITH AN EXISTING ORDER

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Email: [orders@atx.com](mailto:orders@atx.com)  
Web: [www.atx.com](http://www.atx.com)

### 11.2 Warranty Information

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



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Tel: 289.204.7800 | Toll-Free: 866.YOUR.ATX (866.968.7289) | [support@atx.com](mailto:support@atx.com)

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