



**ACT AT5000  
1310 nm F3ST  
Optical  
Transmitter**

**Quick Reference  
Guide**

**Revision A**

## ACT AT5000 1310 nm F3ST Optical Transmitter

### Quick Reference Guide

ACT Document Number: ACT AT51 F3ST Transmitter

Quick Reference Guide Revision A

Copyright © 2021 Ascent Communication Technology Limited.

All rights reserved. Reproduction in any manner whatsoever without the express written permission of Ascent Communication Technology is strictly forbidden.

This document is produced to assist professional and properly trained personnel with installation and maintenance issues for the product. The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice.

For more information, contact ACT: [support@ascentcomtec.com](mailto:support@ascentcomtec.com)



#### Revision History

Revision	Date	Reason for Change
A	03/18/2019	Initial release

## Table of Contents

Precautions .....	5
1 Introduction .....	6
1.1 Overview .....	6
1.2 Features.....	6
1.3 Specifications .....	7
1.4 Models and Options.....	8
2 Installation.....	9
2.1 Equipment Inventory .....	9
2.2 Packaging and Transportation.....	9
2.3 Power and Cooling Requirements.....	9
2.4 Installation and Adjustment.....	10
2.5 Front Panel Operation.....	11
2.6 Rear Panel Operation .....	12
3 Technical Description .....	13
3.1 Overview .....	13
3.2 Physical Description .....	13
3.3 AGC Operation .....	13
4 Software Description – Operation .....	14
4.1 Web Management .....	14
4.2 Device Status Submenu .....	17
4.3 Device Settings Submenu.....	18

4.4 Alarm Status .....	18
4.5 Alarm Properties .....	19
4.6 Network Settings .....	19
4.7 Change Password .....	20
4.8 Reset Settings .....	20
5 Setup Menu .....	21
6 Input Signal Level .....	24
7 Troubleshooting .....	25
7.1 Fiber Optic Maintenance .....	25
7.2 Troubleshooting Conditions .....	25
Appendix 1: Conversion of Optical Power .....	25

## Precautions



Exposure to class 1M laser radiation is possible. Access should be restricted to trained personnel only. Do not view exposed fiber or connector ends when handling optical equipment.

- Ensure adequate cooling and ventilation as specified.
- The installation and operation manual should be read and understood before units are put into use.
- Always replace protective caps on optical connectors when not in use.
- The typical connectors fitted are SC/APC 8°. **Note:** 8° angle polished connectors must be used.

## Cleaning

Use only a damp cloth for cleaning the front panel. Use a soft dry cloth to clean the top of the unit.

Do not use spray cleaner of any kind.

## Grounding

The Optical Transmitter should have good grounding with grounding resistance  $< 4\Omega$ .

According to the international standard, 220V plug in adopts tri-wire rule and the middle wire is the grounding wire.

Before connecting circuit, please use proper electric wire (#20AWG and more) to connect the grounding screw and the grounding frame. When use DC input power supply, the equipment chassis must be grounded.

## Overloading

Overloading wall outlets and extension cords can result in a risk of fire or electric shock.

Use approved electrical cords.

## Damage requiring service

Unplug unit and refer servicing only to Ascent Communication Technology qualified service personnel.

## Servicing

Do not attempt to service this unit yourself. Refer all servicing only to Ascent Communication Technology qualified service personnel.

## 1 Introduction

### 1.1 Overview

AT5000 1RU 1310 Forward Transmitter offers a flexible, 1RU, high performance platform for high quality forward path CATV video and data services distribution, especially for the sub headend and hubs in CATV networks. Together with ACT 1RU AT5000 ARQR return receiver provides an ideal standalone MDU solution in traditional HFC network and also high density FTTX networks to bring back the data signal from business and subscriber home premises.

AT5000 1RU 1310 Direct Mod forward transmitter is designed with a high performance 1310nm DFB laser transmitter module and ideal for both broadcast and narrowcast application in one pizza box platform. AT5000 F3ST can provide a wide range of optical output power to deliver both analog and digital signals. Advanced pre-distortion circuitry achieves superior CSO and CTB performance. Good link performance enables DOCSIS 3.0 downstream bonding on HFC architectures.

AT5000 F3ST forward transmitter is equipped with intuitive front panel LCD display to make operator's life easier. The optical transmitter is packaged in a self-contained 19" sub-rack of 1 RU with universal mains power supply and SNMP management.

### 1.2 Features

- High performance distributed feedback (DFB) laser with pre-distortion circuit
- Suitable for CTAV sub headend or hub standalone application
- Bandwidth 45 MHz to 1218 MHz
- Automatic/manual gain control (AGC/MGC)
- Single input for both broadband and narrowband signal
- RF input test point
- Short circuit protection
- Dual redundant hot-swappable AC or DC power supplies
- Front-panel LCD for local monitoring of transmitter status
- Local or remote monitoring and configuration
- SNMP/HTTP monitoring, management and control.

## 1.3 Specifications

### AT5000 Direct Mod 1310 nm Single Forward Transmitter, F3ST

Item	Description	Note
<b>Optical Specifications</b>		
Wavelength	1310 nm ± 10 nm	
Output Ports	1	
Output Power per Port	2 dBm to 36 dBm, 2 mW intervals	
Optical Connector	SC/APC	FC/APC, LC/APC
Optical Return Loss	≥50 dB	
<b>RF Specification</b>		
RF Bandwidth	47 MHz to 1002 MHz	
RF Flatness	±0.75 dB	
RF Input Level	75 dBμV to 85 dBμV (80 dBμV typ.)	AGC
RF Input Return Loss	≥16 dB	
RF Input Impedance	75 Ω	
RF Connector	F metric/imperial	Customizable
<b>Link Performance</b>		
No. of Test Channels	59 PAL-D channels, 80 NTSC channels	
CNR	≥52.0 dB	-1 dBm receive
CTB	≥65.0 dB	-1 dBm receive
CSO	≥65.0 dB	-1 dBm receive
<b>General Specifications</b>		
Network Management	Supports SNMP, WEB	
Power Supply	AC: 90 V <sub>AC</sub> to 265 V <sub>AC</sub> DC: -72 V <sub>DC</sub> to -36 V <sub>DC</sub>	
Power Consumption	≤20 W	Dual power supply, 1+1 redundancy
Operating Temperature	-5 °C to +65 °C	
Storage Temperature	-40 °C to +85 °C	
Operating Relative Humidity	5 % to 95 %	
Dimensions (W×D×H)	483 mm × 370 mm × 44 mm	
Weight	4.1 kg	

## 1.4 Models and Options

<b>AT5000 F3ST Series</b>	<b>Description</b>
AT-51-F3ST-DM-08-SC-AC	AT5000 1310nm F3ST Direct Mod TX 1RU, 8dBm output, 1002MHz, SC/APC, Dual AC Power
AT-51-F3ST-DM-10-SC-AC	AT5000 1310nm F3ST Direct Mod TX 1RU, 10dBm output, 1002MHz, SC/APC, Dual AC Power
AT-51-F3ST-DM-12-SC-AC	AT5000 1310nm F3ST Direct Mod TX 1RU, 12dBm output, 1002MHz, SC/APC, Dual AC Power
AT-51-F3ST-DM-13-SC-AC	AT5000 1310nm F3ST Direct Mod TX 1RU, 13dBm output, 1002MHz, SC/APC, Dual AC Power
AT-51-F3ST-DM-14-SC-AC	AT5000 1310nm F3ST Direct Mod TX 1RU, 14dBm output, 1002MHz, SC/APC, Dual AC Power
AT-51-F3ST-DM-15-SC-AC	AT5000 1310nm F3ST Direct Mod TX 1RU, 15dBm output, 1002MHz, SC/APC, Dual AC Power
AT-51-F3CT-DM-10-SC-AC2	AT5000 1RU 1310nm F3ST Direct Mod TX, 10 dBm output, 1.2 GHz, SC/APC, Dual AC Power



## 2 Installation

### 2.1 Equipment Inventory

On receiving your new AT51-F3ST, you should carefully unpack and examine the contents for loss or damage that may have occurred during shipping. Refer to warranty registration if loss or damage has occurred. The AT51-F3ST should consist of the following:

Qty	Description
1	AT51-F3ST unit
1	Key for switching laser ON / OFF
1	Test report
1	Power supply cord
1	Product User Manual (Optional)

### 2.2 Packaging and Transportation

Keep all AT51-F3ST packing boxes and packaging for future transport.

Use only the original AT51-F3ST packaging when transporting. This packaging has been specifically designed to protect the equipment.

### 2.3 Power and Cooling Requirements

The AT51-F3ST requires a mains input of 90 V<sub>AC</sub> to 265 V<sub>AC</sub> at 50 to 60 Hz. The unit will automatically adjust the power conversion for inputs within these ranges, with no switch setting or other user intervention. Power consumption of the unit is 50 W maximum.

The transmitter is designed to operate with an ambient temperature of -5 °C to +65 °C with humidity up to 95 %. Free ambient air should be maintained around all sides of the unit. Care should be taken to ensure that the air flow around the unit is unrestricted.

The AT51-F3ST should have a minimum ventilation clearance of 1 RU above and below the transmitter.



#### Warning

DO NOT expose AT51-F3ST to conditions which would permit condensation to form on the inside of the transmitter.

DO NOT operate AT51-F3ST outdoors.

## 2.4 Installation and Adjustment



### Warning

Exposure to class 1M laser radiation is possible. Access should be restricted to trained personnel only. Do not view exposed fiber or connector ends when handling optical equipment.

The following steps explain how the AT51-F3ST is to be installed.

1. Unpack the transmitter and inspect the unit as stated in **Section 3.1**.
2. Locate the transmitter in a 19" cabinet ensuring adequate ventilation and space for accessing the rear ports and front-panel keypad.
3. Before connecting AC power to the unit, make sure that the LASER ON/OFF key is switched **OFF** (front panel).
4. Use the supplied power cord to apply mains power to the transmitter.
5. Switch the AC power ON (switch located on the rear panel).

The ALARM LED will light red.

The LCD will light and display "Model: AT51-F3ST" and "KEY OFF" on start up.

6. Switch on the laser using the key switch.

Front panel shows "KEY ON...", Laser status LCD turns green from red, the unit enters self-checking, after checking it enters working status, display " Descriptor"



### Note

Allow 15 minutes for the transmitter to reach its stable operating temperature. Do not connect the optical ports to the network or start aligning your system until then.

7. Before connecting an RF signal, check that the power input level is within the acceptable range. Refer to **Section 2** for details.
8. Connect a matrix generator or head-end RF signal.



### Note

The default control mode is AGC. The modulation control mode displayed in the main menu is RF Mode = AGC.

9. Connect a fiber patch-cord from optical port to an optical power meter and verify the LCD reading matches your power meter reading.

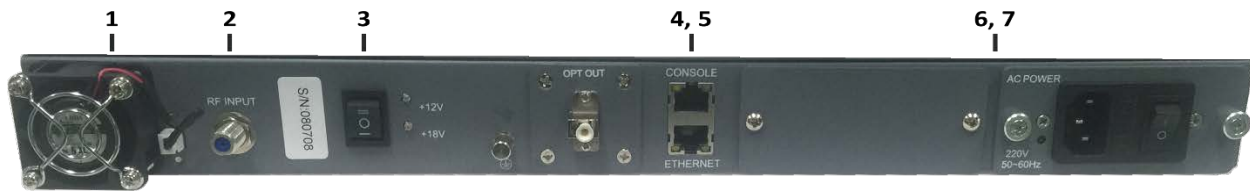
When the ALARM LED shows green, the transmitter is ready for full operation.

## 2.5 Front Panel Operation



Port	Item	Description
1	Mounting Points	Holes for securing unit to rack3
2	LASER ON/OFF	Key switch for laser activation
3	LASER	Laser indicator GREEN – Output power is normal RED – Abnormal status
4	RF	RF indicator GREEN – Normal operation RED – RF input is too low or too high
5	Status	Status indicator GREEN – Status is normal RED – Status temperature is too low or too high
6, 7	PWR1/PWR2 (Optional)	Power 1 / Power 2 indicators GREEN – Two-way switch power supply is working YELLOW – One-way power supply is working RED – Abnormal status
8	VFD/LED	VFD/LED display for satellite optical transmitter parameters such as model number and operation status
9, 10	KEYPAD	Keypad used to scroll through menu items on transmitter display
11	ENT	Enter button
12	RF TEST	Input level test (-20 dBm)

## 2.6 Rear Panel Operation



Port	Item	Description
1	FAN	Intelligent fan, begins to run when the chassis temperature reaches 32 °C to 35 °C (set by
2	IF/RF IN	IF/RF signal input
3	Power Supply Switch	UP – 12 V <sub>DC</sub> MIDDLE – Off DOWN – 18 V <sub>DC</sub>
4	CONSOLE	Console for computer network management
5	ETHERNET	Ethernet port, compliant with CNMP standard interface
6, 7	PS2/PS1	Power supply 2 outlet

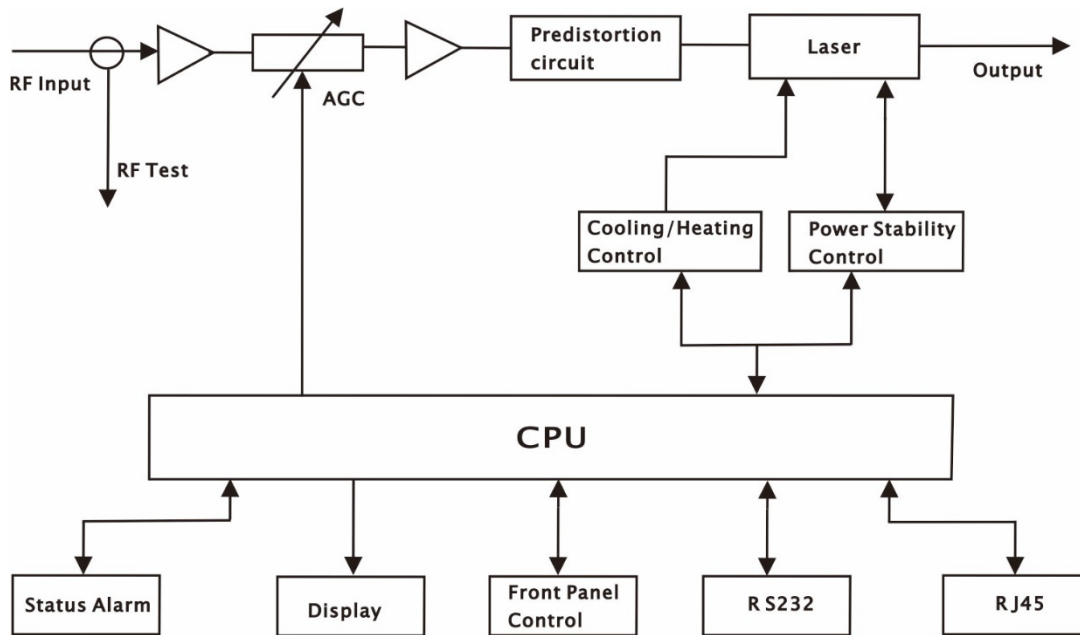


### Note

Product appearance may vary with model options.

## 3 Technical Description

### 3.1 Overview



### 3.2 Physical Description

The unit is housed in a 19" rack, 1 RU height. Status indicators and control keys are located on the front panel along with an RF monitor port. The front panel provides an LCD display for comprehensive status information and user interface. The rear panel contains the optical interconnects, power, and data interface connectors.

The RF test port on the front panel is -20 dB from the modulating signal level. This is just after the internal AGC functional block. This signal is constant when the AGC circuit is functioning normally. Refer to the specification for typical levels. The output impedance of this port is 75  $\Omega$ , with an F-type connector.

The rear panel also contains the two optical ports, which are typically SC/APC bulkhead connectors.

The power interface, is a standard 3-prong line cord, with hot, neutral, and chassis ground. The metal chassis of the transmitter is tied to ground.

### 3.3 AGC Operation

The AT51-F3ST will be in AGC mode (Automatic Gain Control) when first powered on. To change it to MGC mode (Manual Gain Control), refer to **Section 5.3**.

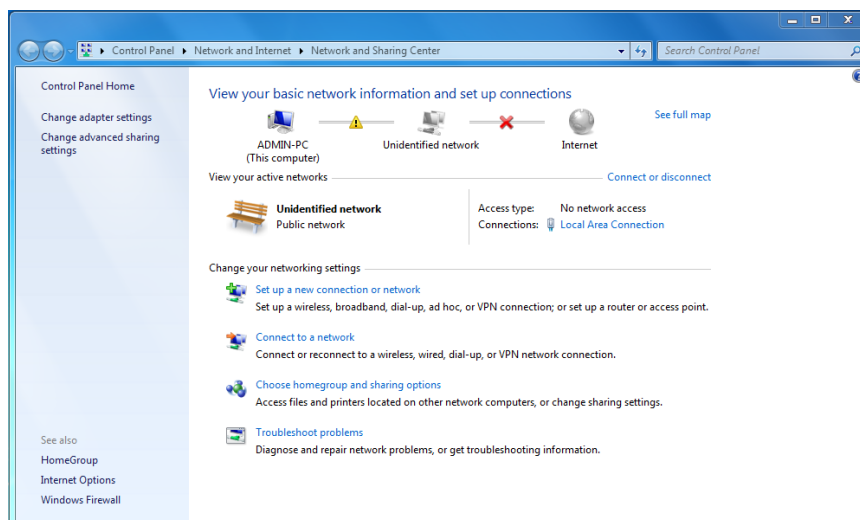
## 4 Software Description – Operation

### 4.1 Web Management

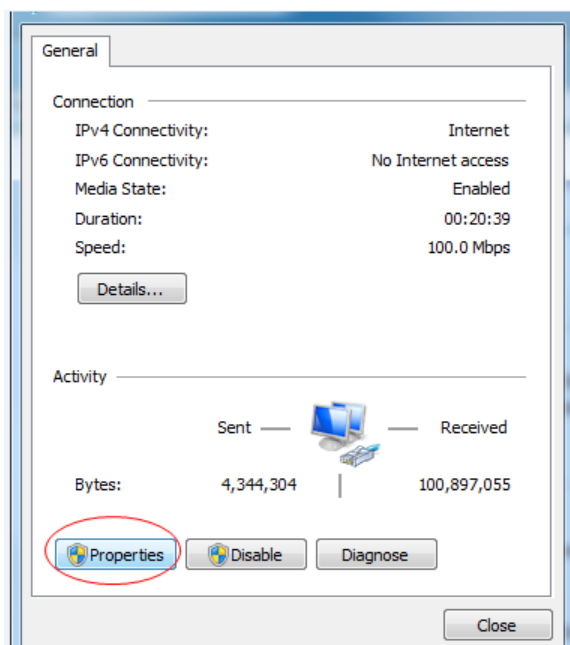
The user can use web browser to check the working condition and basic parameters of the amplifier, it supports IE, Chrome, Firefox, Opera and other main web browser. The following example are based on Opera browser.

1. Find the IP add in the machine, for example 192.168.1.XXX, set the IP add of the PC in the same range as following:

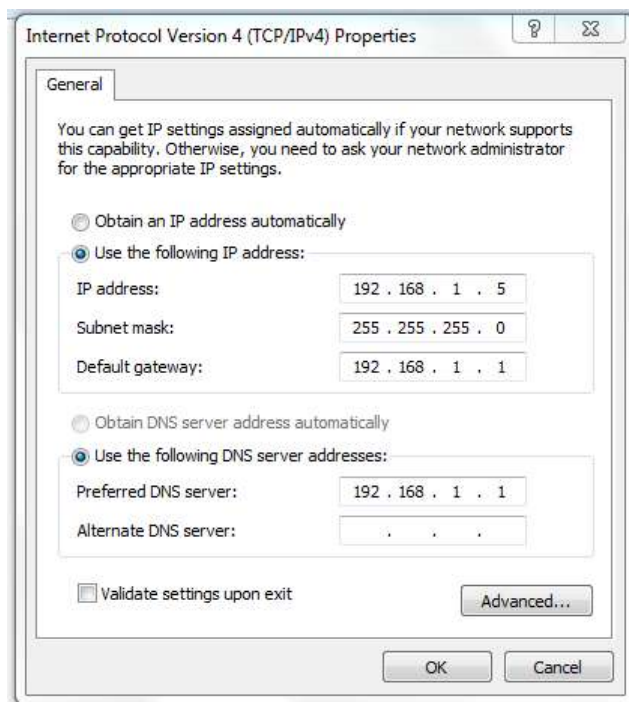
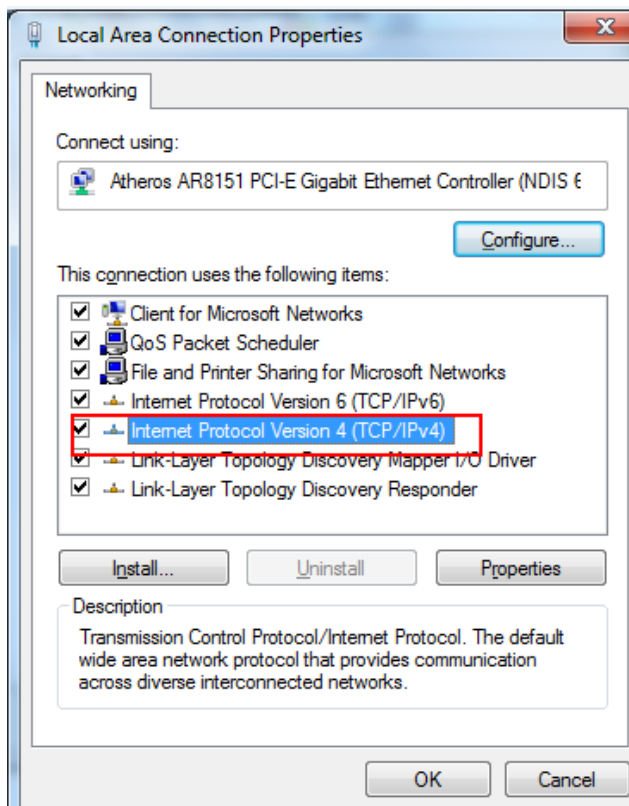
Step 1: Open local Area Connection setting:



Step 2: Set Properties



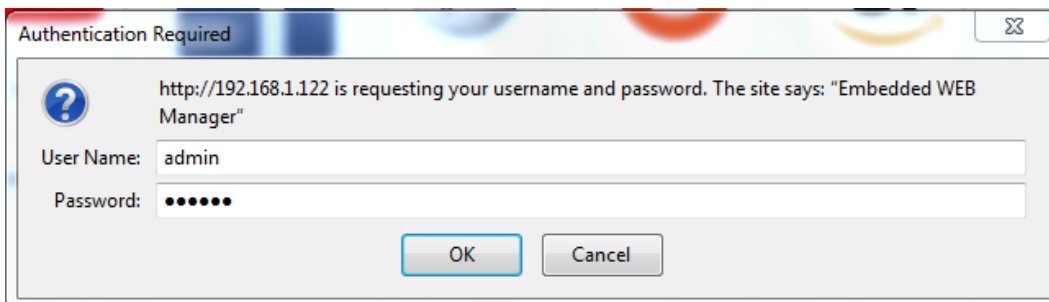
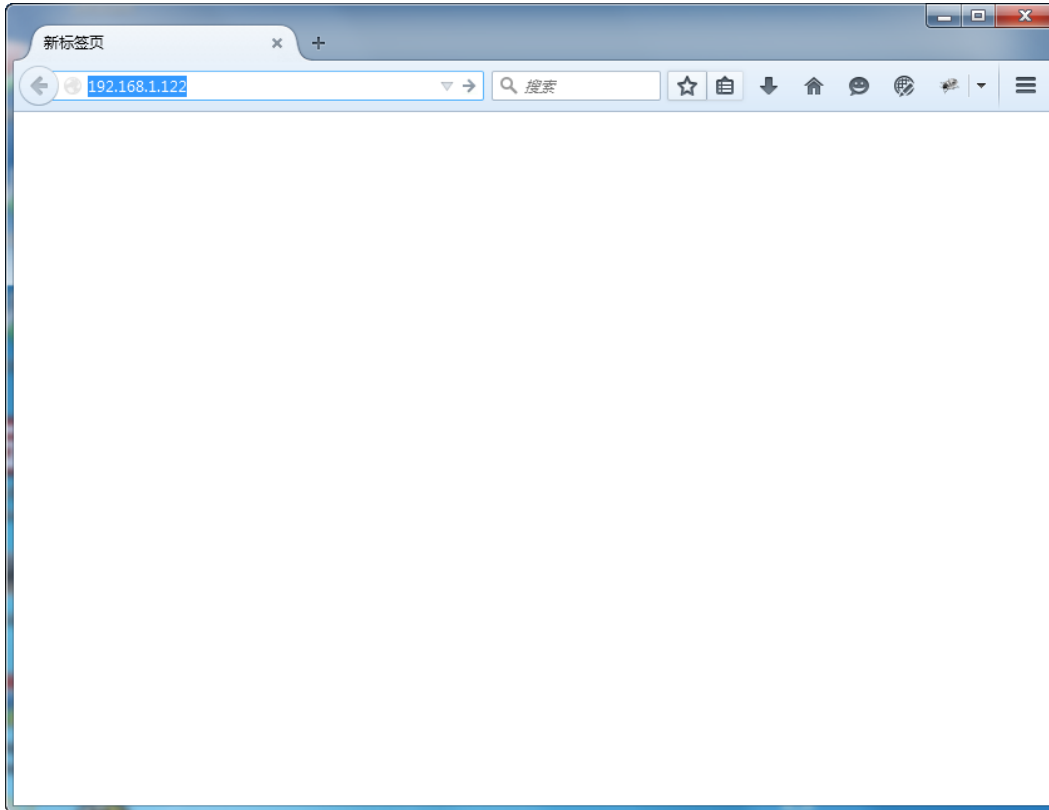
Step 3: Set the PC IP address in the same range with device IP address. For example the device IP address is 192.168.1.122, pls set PC IP address to 192.168.1.X (X different from 122).



2. Open web browser, input the IP add and login in. The IP factory setting is 192.168.1.122.

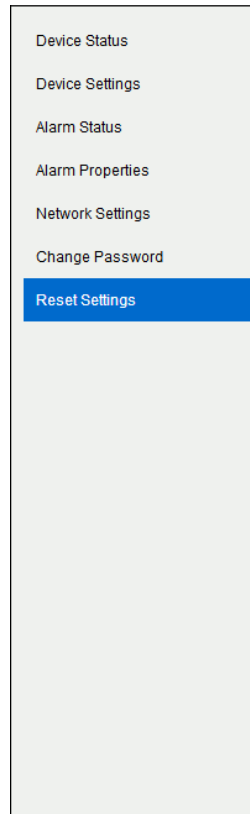
**User Name: admin**

**Password: ascent**

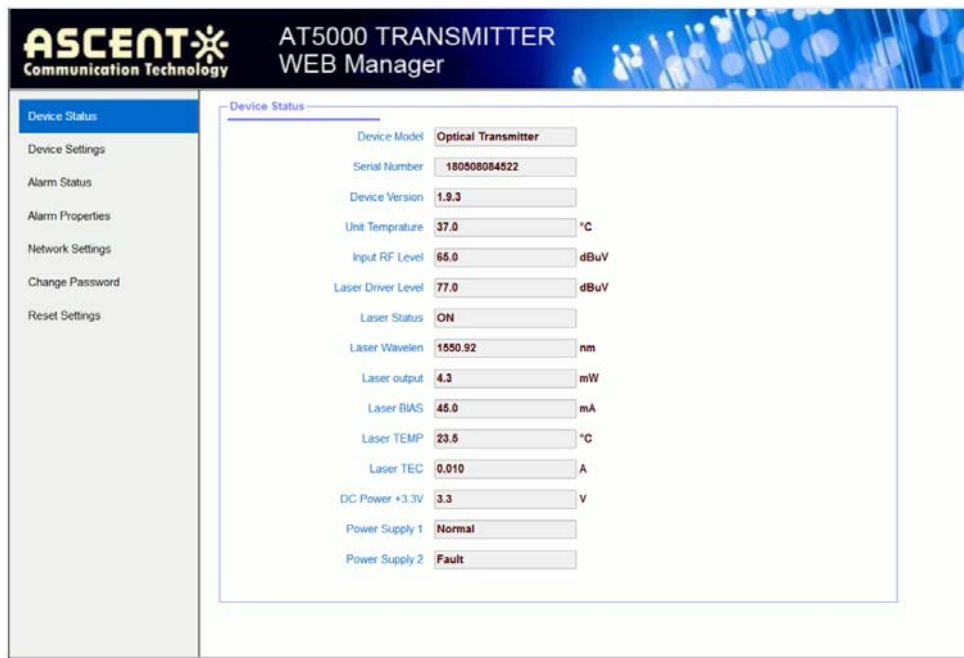


3. The web management consist of five submenus. Items guide on the left, click to enter.





## 4.2 Device Status Submenu



## 4.3 Device Settings Submenu

**OMI mode:** switch AGC/MGC statuses.

**OMI Value:** -3 dB to +3 dB adjustable, factory setting is 0 dB.

**SBS:** 13 dB to 19 dB continuously adjust, 0.1 dBm step 0.1 dB.

The screenshot shows the 'Device Settings' page of the AT5000 TRANSMITTER WEB Manager. The left sidebar contains a menu with options: Device Status, Device Settings (highlighted), Alarm Status, Alarm Properties, Network Settings, Change Password, and Reset Settings. The main content area is titled 'Device Settings' and contains the following fields:

- Laser Status: Laser ON (dropdown)
- OMI Mode: AGC (dropdown)
- OMI Value: 0.0 dB (input field)
- MGC ATT: 5.0 dB (input field)
- Channel: 84 (input field)

A 'Submit' button is located below the input fields. The footer of the page reads 'Copyright © 2011-2018 Ascent Communication Technology Limited'.

## 4.4 Alarm Status

The screenshot shows the 'Alarm Status' page of the AT5000 TRANSMITTER WEB Manager. The left sidebar contains a menu with options: Device Status, Device Settings, Alarm Status (highlighted), Alarm Properties, Network Settings, Change Password, and Reset Settings. The main content area is titled 'Alarm Status' and displays a table with the following data:

Index	Parameter Name	Alarm Status
1	Tamper Status	Nominal
2	Box Temp	Nominal
3	Drive Level	Nominal
4	Input RF level	LO
5	Laser Temp	Nominal
6	Laser BIAS	Nominal
7	Laser Opt-output	Nominal
8	Laser TEC	Nominal
9	DC +3.3V	Nominal

The footer of the page reads 'Copyright © 2011-2018 Ascent Communication Technology Limited'.

## 4.5 Alarm Properties

**ASCENT** Communication Technology **AT5000 TRANSMITTER WEB Manager**

Device Status  
Device Settings  
Alarm Status  
**Alarm Properties**  
Network Settings  
Change Password  
Reset Settings

Alarm Properties

Index	Parameter Name	HIHI	HI	LO	LOLO	Deadband	Action
1	Box Temp (C)	<input checked="" type="checkbox"/> 85	<input checked="" type="checkbox"/> 70	<input checked="" type="checkbox"/> 0	<input checked="" type="checkbox"/> -5	2	Set
2	Drive Level (dBuV)	<input checked="" type="checkbox"/> 120	<input checked="" type="checkbox"/> 110	<input checked="" type="checkbox"/> 70	<input checked="" type="checkbox"/> 60	1	Set
3	Input RF level (dBuV)	<input checked="" type="checkbox"/> 100	<input checked="" type="checkbox"/> 90	<input checked="" type="checkbox"/> 70	<input checked="" type="checkbox"/> 60	1	Set
4	Laser Temp (°C)	<input checked="" type="checkbox"/> 40.0	<input checked="" type="checkbox"/> 35.0	<input checked="" type="checkbox"/> 15.0	<input checked="" type="checkbox"/> 10.0	1.0	Set
5	Laser BIAS (mA)	<input checked="" type="checkbox"/> 150.0	<input checked="" type="checkbox"/> 120.0	<input checked="" type="checkbox"/> 20.0	<input checked="" type="checkbox"/> 10.0	1.0	Set
6	Laser Opt-output (mW)	<input checked="" type="checkbox"/> 40.0	<input checked="" type="checkbox"/> 38.0	<input checked="" type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 0.5	0.1	Set
7	Laser TEC (A)	<input type="checkbox"/> 3.00	<input type="checkbox"/> 2.00	<input type="checkbox"/> -2.00	<input type="checkbox"/> -3.00	0.10	Set
8	DC +3.3V (V)	<input checked="" type="checkbox"/> 4.1	<input checked="" type="checkbox"/> 3.8	<input checked="" type="checkbox"/> 2.8	<input checked="" type="checkbox"/> 2.5	0.1	Set

Index	Parameter Name	Control	Action
1	Tamper Status	EnableMajor	Set

Copyright © 2011-2018 Ascent Communication Technology Limited

## 4.6 Network Settings

Set MAC Address, IP Address, etc.

**ASCENT** Communication Technology **AT5000 TRANSMITTER WEB Manager**

Device Status  
Device Settings  
Alarm Status  
Alarm Properties  
**Network Settings**  
Change Password  
Reset Settings

Network Settings

Device MAC: D8 : 29 : 16 : 57 : 04 : 5D  
Update Identifier: OTD138S001  
Agent Version: V1.5.0  
Static IP Address: 192 . 168 . 0 . 63  
Subnet Mask: 255 . 255 . 255 . 0  
Default Gateway: 192 . 168 . 0 . 1  
Trap Address 1: 255 . 255 . 255 . 255  
Trap Address 2: 0 . 0 . 0 . 0  
Trap Address 3: 0 . 0 . 0 . 0  
Trap Address 4: 0 . 0 . 0 . 0  
Trap Address 5: 0 . 0 . 0 . 0  
Trap Address 6: 0 . 0 . 0 . 0  
Trap Address 7: 0 . 0 . 0 . 0  
Trap Address 8: 0 . 0 . 0 . 0  
Read Community: public  
Write Community: public  
Trap Community: public  
SNMP Version: V1

Copyright © 2011-2018 Ascent Communication Technology Limited

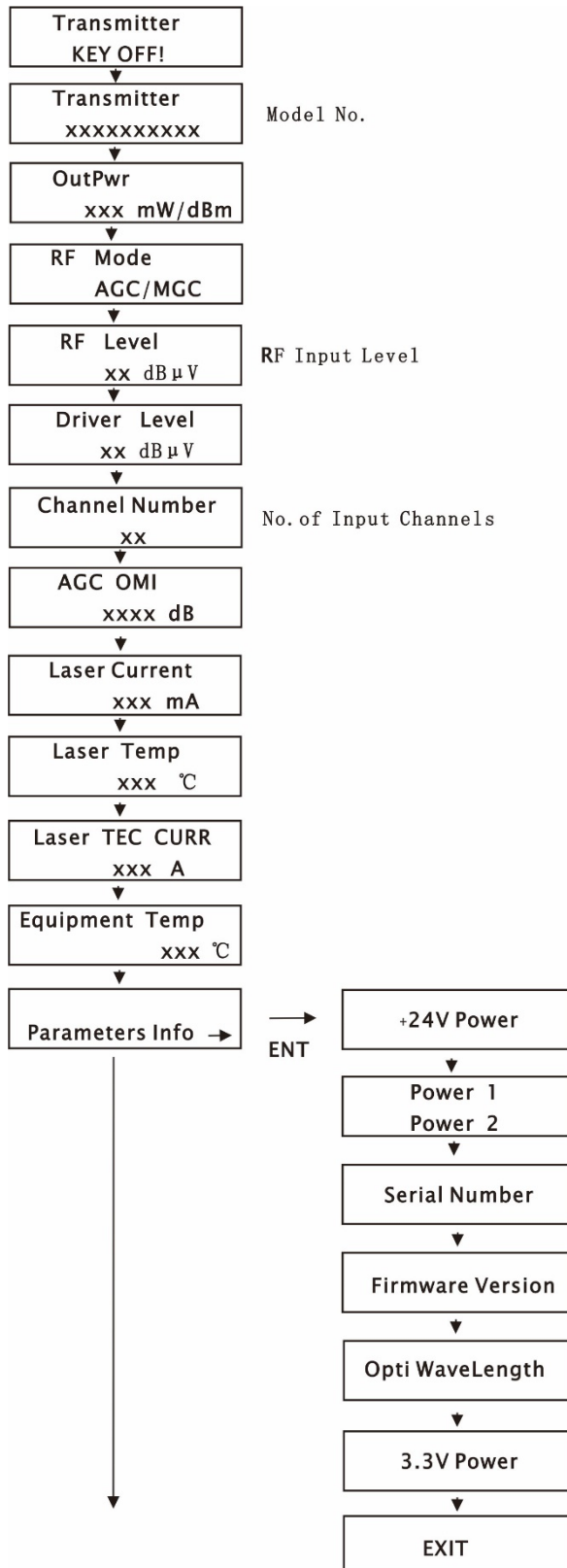
## 4.7 Change Password

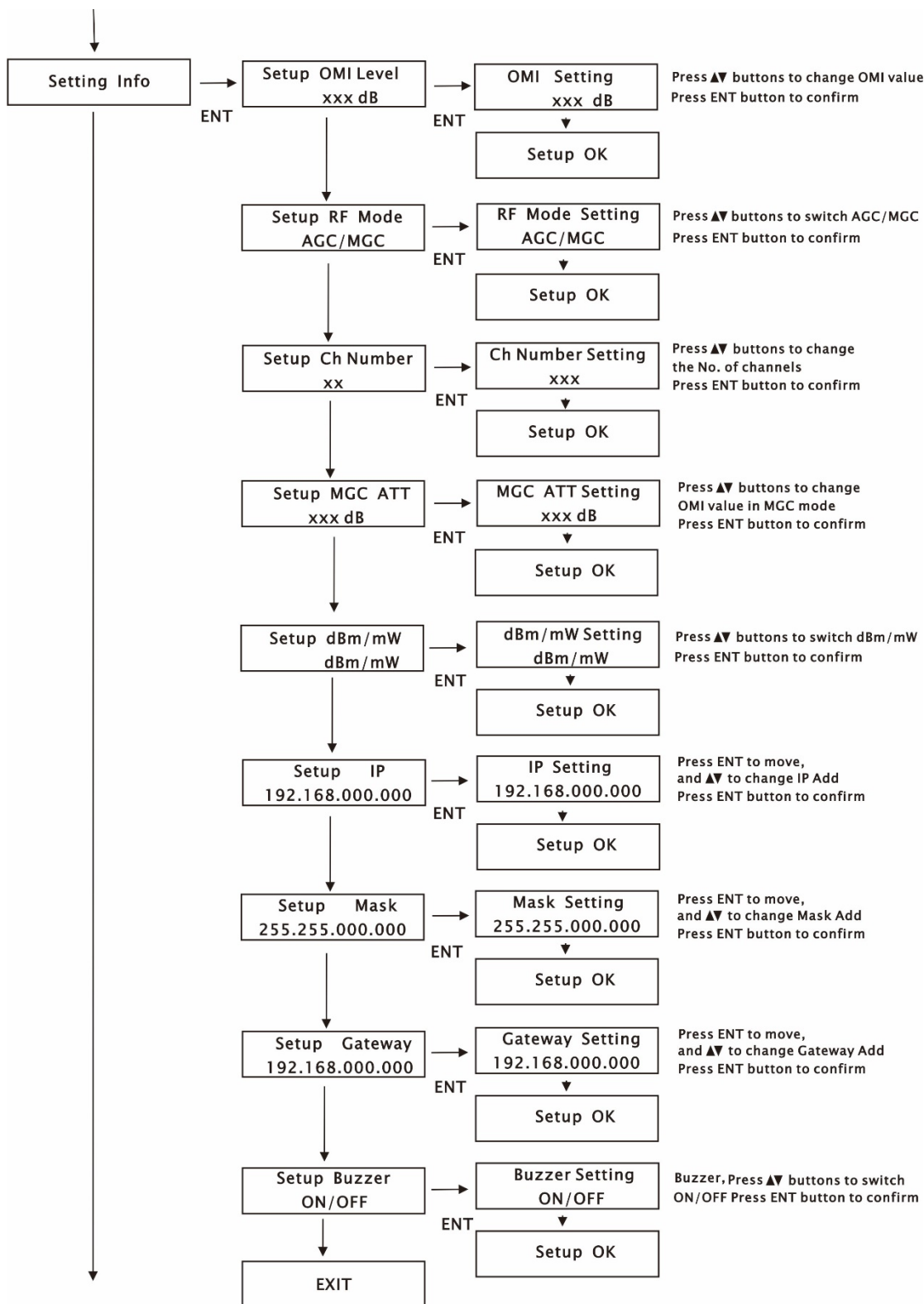
The screenshot shows the 'Change Password' page in the AT5000 Transmitter Web Manager. The page has a dark blue header with the 'ASCENT Communication Technology' logo and the text 'AT5000 TRANSMITTER WEB Manager'. On the left, a navigation menu lists: Device Status, Device Settings, Alarm Status, Alarm Properties, Network Settings, Change Password (highlighted), and Reset Settings. The main content area is titled 'Change Password' and contains the following fields: Username, Password, New Username, New Password, and Confirm Password. Below these fields are 'Submit' and 'Reset' buttons. At the bottom right, there is a footer with the text 'Copyright © 2011-2018 Ascent Communication Technology Limited'.

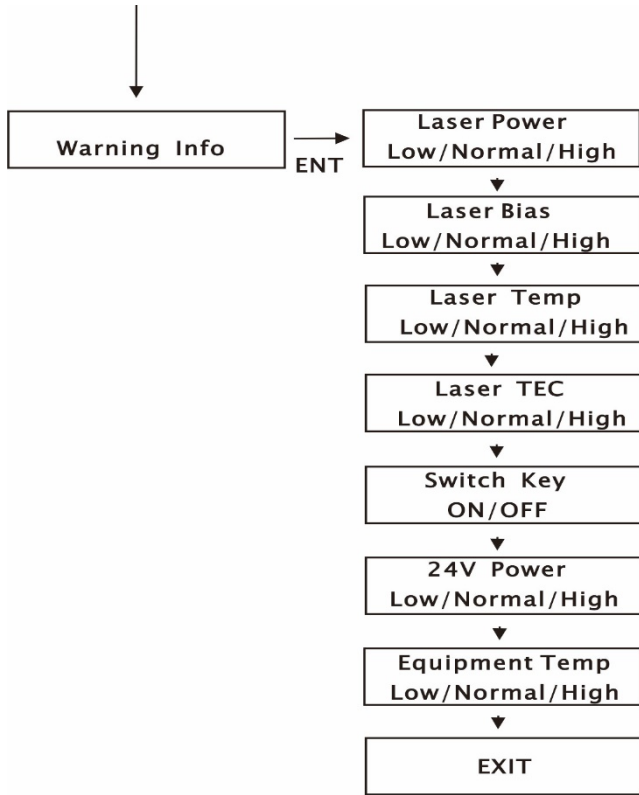
## 4.8 Reset Settings

The screenshot shows the 'Reset Settings' page in the AT5000 Transmitter Web Manager. The page has a dark blue header with the 'ASCENT Communication Technology' logo and the text 'AT5000 TRANSMITTER WEB Manager'. On the left, a navigation menu lists: Device Status, Device Settings, Alarm Status, Alarm Properties, Network Settings, Change Password, and Reset Settings (highlighted). The main content area is titled 'Restore settings and Reboot device' and contains three sections: 1. 'Reboot device' with a 'Reboot device' button. 2. 'Restore factory settings' with a red warning message: 'Warning!! Click the restore button, all parameters will be restored to factory default.' and a 'Restore Factory' button. 3. 'Restore Net parameters' with a list of default values: IP Address: 192.168.1.8, Subnet Mask: 255.255.255.0, Gateway Address: 192.168.1.1, TRAP Address 1: 192.168.1.200, and TRAP Address 2: 255.255.255.255. Below this list is a 'Restore net' button. At the bottom right, there is a footer with the text 'Copyright © 2011-2018 Ascent Communication Technology Limited'.

## 5 Setup Menu







## 6 Input Signal Level

The total RF analog input level depends on the number of analog channels in your system and is identical for the type of system (NTSC, PAL, CENELEC) used. Use the following equation to determine the optimum RF input level per channel when the rated channel loading is not being used:

$$\text{Analog Input Level (dBmV)} = A + 10\log(N/M) + 10\log(W1/W2)$$

A: Manufacturer's recommended nominal drive level for optical transmitter/module;

N: The number of channels corresponding to A;

M: Actual number of loaded channels

W1: The bandwidth corresponding to A;

W2: The actual bandwidth

For example, if the product datasheet give the following parameters:

75 dB $\mu$ v @ 59 PAL channels

If the customer actually has: 40 NTSC channels, the drive level will be:

$$\text{Actual drive level} = 75 + 10\log(59/40) + 10\log(8/7) = 75 + 10 * 1.69 + 10 * 0.06 = 75 + 1.7 + 0.6 = 77.3 \text{ (dB}\mu\text{V)}$$

For digital channels, if the digital signal level is 6 dB lower than the analog signal level, then 4 digital channels are equal to 1 analog channel; if the digital signal level is 10 dB lower than the analog signal level, then 10 digital channels are equal to 1 analog channel. In the actual calculation, first calculate the number of digital channels as the number of analog channels, and then use the above formula. For example, with 20 analog channels, 20 digital channels, and with the digital channel being 6 dB lower than the analog channel level, then the total number of channels is:

$$20 + 20/4 = 25 \text{ (channels)}$$



## 7 Troubleshooting

### 7.1 Fiber Optic Maintenance

Any time the fiber leads to the amplifier are disconnected, there is the potential for contamination of the ends of the fiber connectors. Dirt or other contaminants on these components can reduce the amplifier’s performance and can result in permanent damage to the device. It is recommended that the fiber connectors be cleaned prior to connection, or reconnection, to the system.

### 7.2 Troubleshooting Conditions

<b><i>No lights ON</i></b>	Is the power on? Is the fuse OK?
<b><i>In LED displays the right optical power, but not enough by test meter</i></b>	Check optical meter setting Check input optical power within the range ( -3 dB to +10 dB) Check loss in the test pigtail Check if there is dust in the connectors
<b><i>Pout fail ON</i></b>	Check the optical output power and pump parameters on the LCD. Contact ACT Technical Support.

## Appendix 1: Conversion of Optical Power

mW	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
dBm	0.0	3.0	4.8	6.0	7.0	7.8	8.5	9.0	9.5	10.0	10.4	10.8	11.1	11.5	11.8	12.0
mW	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>25</b>	<b>32</b>	<b>40</b>	<b>50</b>	<b>63</b>	<b>80</b>	<b>100</b>	<b>125</b>	<b>160</b>	<b>200</b>
dBm	12.3	12.5	12.8	13.0	13.2	13.4	14	15	16	17	18	19	20	21	22	23



**GERMANY**

Langwiesenweg 64-71  
75323 Bad Wildbad, GERMANY  
Phone: +49 (0) 7081 / 17 02 0

**WEB:** [www.polytron.de](http://www.polytron.de)



**Ascent Communication Technology Ltd**

**AUSTRALIA**

140 William Street, Melbourne  
Victoria 3000, AUSTRALIA  
Phone: +61-3-8691 2902

**HONG KONG SAR**

Unit 9, 12<sup>th</sup> Floor, Wing Tuck Commercial Centre  
177 Wing Lok Street, Sheung Wan, HONG KONG  
Phone: +852-2851 4722

**CHINA**

Unit 1907, 600 Luban Road  
200023, Shanghai CHINA  
Phone: +86-21-60232616

**USA**

2710 Thomes Ave  
Cheyenne, WY 82001, USA  
Phone: +1-203 816 5188

**WEB:** [www.ascentcomtec.com](http://www.ascentcomtec.com)

**EMAIL:** [sales@ascentcomtec.com](mailto:sales@ascentcomtec.com)

Specifications and product availability are subject to change without notice.  
Copyright © 2021 Ascent Communication Technology Limited. All rights reserved.  
Ver. ACT\_1RU\_AT51-F3ST\_QRG\_V1b\_Mar\_2019