



**AON126S
CATV and
SAT- IF
Receiver**

**Quick Reference
Guide**

Revision A

ACT AON126S CATV and SAT-IF Receiver

Quick Reference Guide

ACT Document Number: ACT AON126S Optical Receiver QRG

Quick Reference Guide Revision A

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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.

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Revision History

Revision	Date	Reason for Change
A	08/05/2018	Initial release

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1 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.

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.

General Reminders and Warnings

Review these reminders and warnings before you inspect and clean your fiber-optic connections.

Reminders



- **Always turn off any laser sources before you inspect fiber connectors, optical components, or bulkheads.**
- Always make sure that the cable is disconnected at both ends and that the card or pluggable receiver is removed from the chassis.
- **Always wear the appropriate safety glasses when required in your area. Be sure that any laser safety glasses meet federal and state regulations and are matched to the lasers used within your environment.**
- Always inspect the connectors or adapters before you clean.
- Always inspect and clean the connectors before you make a connection.
- Always use the connector housing to plug or unplug a fiber.
- **Always keep a protective cap on unplugged fiber connectors.**
- Always store unused protective caps in a resealable container in order to prevent the

possibility of the transfer of dust to the fiber. Locate the containers near the connectors for easy access.

- Always discard used tissues and swabs properly.

Warnings



- Never use alcohol or wet cleaning without a way to ensure that it does not leave residue on the endface. It can cause damage to the equipment.
- **Never look into a fiber while the system lasers are on.**
- Never clean bulkheads or receptacle devices without a way to inspect them.
- Never touch products without being properly grounded.
- **Never use unfiltered handheld magnifiers or focusing optics to inspect fiber connectors.**
- **Never connect a fiber to a fiberscope while the system lasers are on.**
- Never touch the end face of the fiber connectors.
- Never twist or pull forcefully on the fiber cable.
- Never reuse any tissue, swab, or cleaning cassette reel.
- Never touch the clean area of a tissue, swab, or cleaning fabric.
- Never touch any portion of a tissue or swab where alcohol was applied.
- Never touch the dispensing tip of an alcohol bottle.
- Never use alcohol around an open flame or spark; alcohol is very flammable.

2 Introduction

2.1 Overview

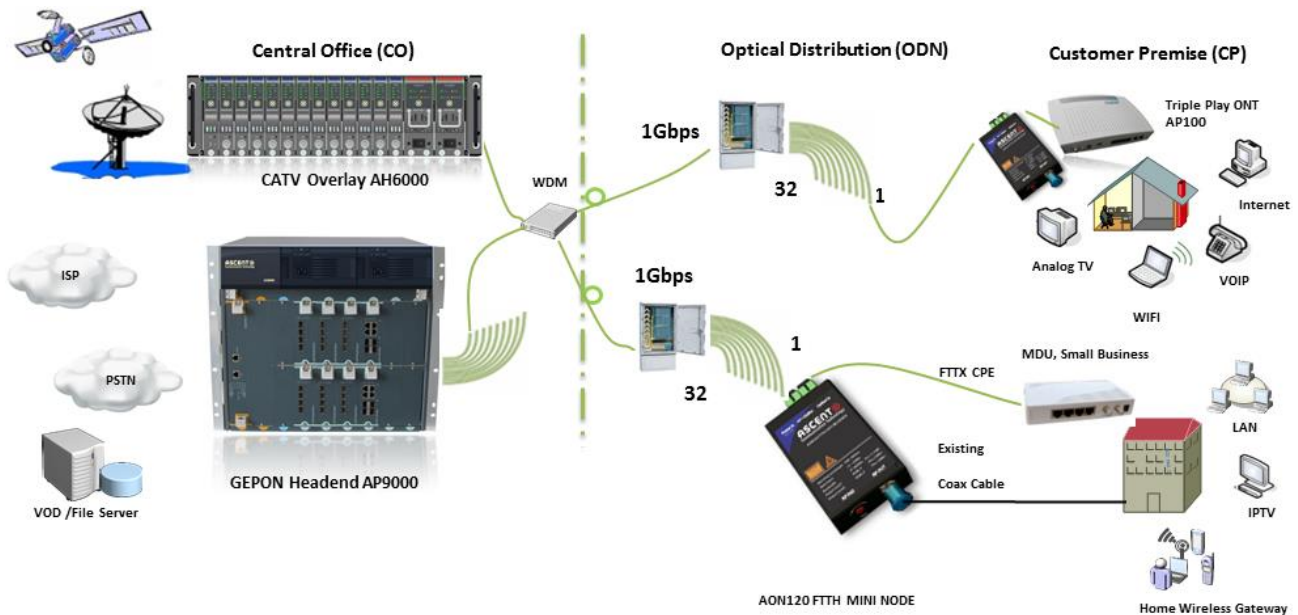
AON126S 2.6 GHz CATV and SAT-IF Optical Receiver series is a cost-effective high-performance optical network unit which is designed and optimized to work in traditional CATV and satellite applications or for advanced Fiber-to-the-Home (FTTH) architecture networks. The wide RF spectrum supports both the CATV spectrum and satellite IF spectrum up to 2.6GHz.

The AON126S optical receiver makes it possible for cable operators to protect their existing network investments and continue the deployment of FTTH networks for internet and VoIP delivery together with IPTV and Video On Demand systems.

The AON126S optical node designed with 1550 nm forward-path RF signals and optional WDM which allows for a video overlay over FTTH network topology and incorporates a low-noise optical receiver. An optional PON upgrade port combines these wide band 2.6 GHz CAVT and SAT-IF signals across a 1310/1490 nm EPON/GPON network, providing MSOs with a flexible platform to migrate from existing HFC systems to a PON FTTH network.

2.2 Features

- 2.6 GHz RF spectrum
- Wide band: 45 MHz to 862 MHz & 950 MHz to 2600 MHz
- High-performance and cost-effective CATV & SAT-IF ONU solution for FTTX networks
- Small form factor and low power consumption
- Optional integrated WDM to pass through PON signals to ONU in an FTTH network
- Powered directly using the power adaptor
- Compact and sturdy enclosure fits easily in wiring closets or network termination boxes



2.3 Specifications

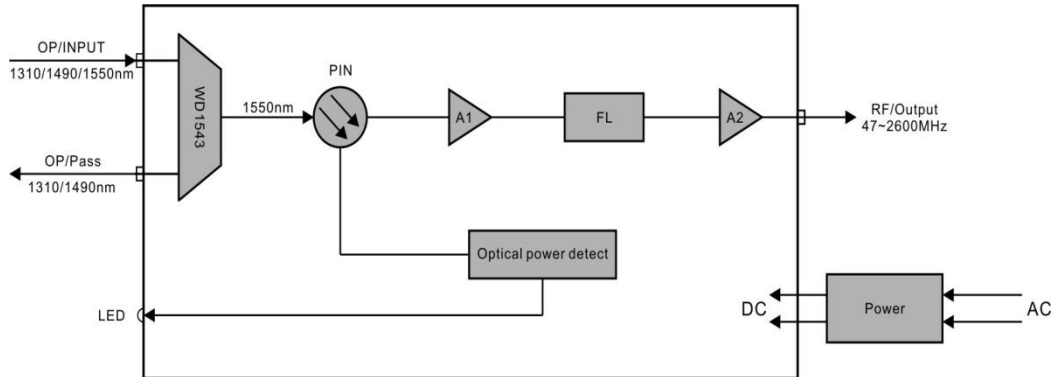
AON126S CATV & SAT-IF Optical Network Unit

Parameter	Description
Downstream Receiver	
Wavelength	1290 nm to 1600 nm
Optical Input Power	-13 dBm to 0 dBm
Optical Return Loss	≥45 dB
Optical Connector	LC/APC or SC/APC (specified by customer)
RF	
Bandwidth	47 MHz to 862 MHz
Output Level	66 dBμV to 86 dBμV @ 0 dBm
Flatness	±1.5 dB
Output Impedance	75 Ω
Return Loss	≥10 dB
RF Type	F-5 (Imperial)
Qty of Output Ports	2 (identical)
Link Performance¹	
CNR	≥51.0 dB
CTB	≥61.0 dB
CSO	≥60.0 dB
SAT-IF	
Frequency Range	950 MHz to 2600 MHz
Flatness	±2.5 dB
IMD	-40 dBc
Output Impedance	75 Ω
General Characteristics	
Power Supply	12 VDC
Power Consumption	≤4 W
Operating Temperature	0 to +50 °C
Storage Temperature	-20 °C to +85 °C
Relative Humidity	20 % to 85% RH (non-condensing)
Dimensions (L × W × H)	135 mm × 100 mm × 126 mm
Weight	0.3 kg

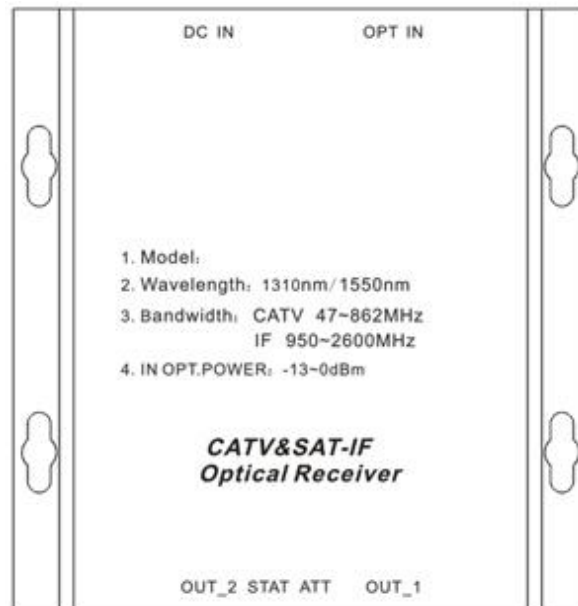
Notes:

1. Testing Conditions: 60 channels (PAL-D), input signal 0 dBm. At the condition of 5 dB noise factor, 3-class EDFA transmission is 65 km, OMI 3.5%.

2.4 Block Diagram



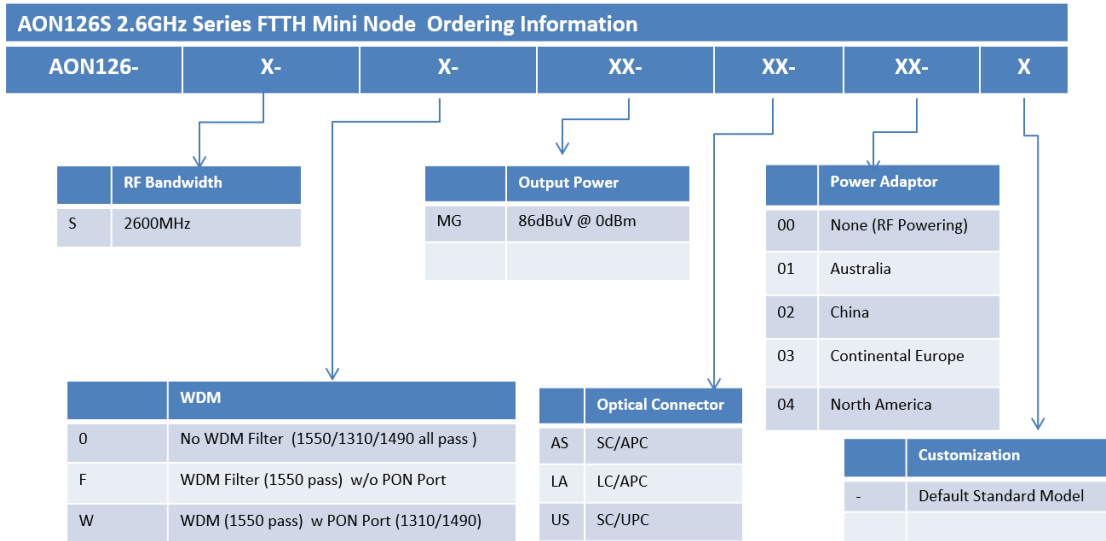
2.5 Interface



Light	Classification	Color	Condition	Light Meaning
STAT	Power	Red/Green	ON	Powered
			OFF	No power
	Optical Light		Green ON	Fiber in ≥ -12 dBm
			Red ON	Fiber < -12 dBm or no input

Fiber	Types	Classification	Remarks
DC IN	Power supply	Power Supply Input	DC12v
OPT IN	Fiber Port	Optical Input	1310nm/1550nm Input
OUT_1, OUT_2	RF Port	RF Output	Connect to client
ATT	Level adjustment	Screw	Manual Gain range 0 to 20 \pm 1

2.6 Models and Options



3 Configuration and Installation

This chapter introduces AON126S setup and installation. Before installing the equipment, please read this chapter thoroughly.

3.1 Housing

The AON126S is packaged in sheet metal housing. The top housing contains the Optical connection ports and the bottom housing contains the RF connection ports.

Four Cabinet Mount Holes are equipped which allow the optical node to be pedestal mounted.

3.2 Equipment Inventory

On receiving your new AON126S unit, 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 AON126S should consist of the following:

Qty	Description
1	AON126S Mini Node
1	Optional Quick Reference Guide (Ref: Online version)
1	Universal 12 V _{DC} power supply plug-pack

3.3 Power and Cooling Requirements

The AON126S requires an external supply of 11 V DC to 16 V DC. The maximum power consumption of the unit is 3 W. A universal 12 V DC power supply plug-pack is supplied with the unit, and is suitable for 95 V AC to 265 V AC 50/60 Hz with selectable mains pins for Australia, Continental Europe, United Kingdom and United States.

The AON126S is specified for operation between 0 °C to +50 °C. Ensure that the unit is mounted in such a way as to permit airflow around the front and sides at all times.

3.4 Mounting

The AON126S has four mounting holes to fix the unit to the inside of a wiring closet or meter box. The AON126S is designed to be a flexible and environmentally-friendly unit and as such can be mounted in a number of ways to suit individual setup scenarios; however it is important to permit free air flow across the front and sides of the unit.

3.5 Setting up the AON126S



Warning

Exposure to class 1M laser radiation is possible. Access should be restricted to trained personnel only.

1. Ensure that the unit is complete with all expected equipment
2. If you are mounting the unit in a wiring closet or meter box, do this **before** connecting the optical and coaxial cables. Keep in mind appropriate clearances for these cables, air flow etc.
3. Connect the RF OUT port to the RF signal output.
4. Optical Input Port: Connect to forward fiber with SC/APC connector
5. PON Pass Port: Connect to PON signal fiber with SC/APC connector.
6. Connect CATV+PON and PON Pass to the CATV Coaxial network and the ONU.
7. Connect power to the unit via the power port
8. Ensure that the Power Status Alarm LED is green. Off is no power.
9. Check that the Optical Status LEDs is on. Optical input power is within -12 ~ 0dBm
10. User can adjust the RF Output power by the adjustable attenuator: Output level adjustment range of 0 to 20 dB.

4 Three-Wavelengths WDM Module

4.1 Features

- Low insertion loss
- Low return loss
- High channel separation
- High stability and reliability
- No plastic optical path

4.2 Applications

- Light circuit terminal, optical network unit
- FTTH
- Optical transceiver
- Cable TV systems
- WDM systems

4.3 WDM Specifications

Absolute Maximum Ratings (Tc = 25 °C)

Parameter	Symbol	Value
Saturation power	Ps	2.0 mW
Forward current	If	2.0 mA
Reverse voltage	Vr	15 V
Operating temperature	Top	-40 °C to +85 °C
Storage temperature	Tstg	-40 °C to +125 °C

Optical and Electrical Characteristics (Tc = 25 °C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remarks
Pass Channel Wavelength Range	λ		1550		nm	
Reflect Channel Wavelength	λ		1310		nm	
	λ		1490		nm	
Responsibility	R	0.93			A/W	$\lambda = 1550 \text{ nm}, P_o = 0\text{DB}$
Isolation						
Pass Channel	Iso	30			dB	
Reflect Channel	Iso	22			dB	
Polarization Dependent Loss						
Pass Channel	PDL			0.05	dB	
Reflect Channel	PDL			0.05	dB	
Directivity		50			dB	
Return loss	RL	45			dB	

Insertion Loss

Pass Channel	IL	0.8	dB
Reflect Channel	IL	0.7	dB

5 Troubleshooting

POWER LED off

Ensure that the unit is connected to a suitable power source. The power adapter for this equipment has an input of 220 V and an output of 12 V DC. If the STATUS LED is still off, the unit is likely to be faulty and should be returned to Ascent Communication Technology for repair.

OPT. IN LED showing red

The optical level entering the unit is too low or too high and must be adjusted externally to the unit, for optimal performance.

If the optical level entering the unit is too high, it could cause permanent damage to the unit. The signal should be disconnected and attenuated to an appropriate level, before reconnection to the AON126S. If the unit does not function as specified it is possible that the unit has been damaged and should be returned to Ascent Communication Technology for repair.

No RF output

Ensure that a forward-path signal is present on the system, at the correct wavelength for the AON126S to receive. If the signal is present, but not at the desired level, adjust the RF ATT control.

Keep the optical connector clean, a poor link will reduce the RF output level.



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