

Proposal of
Distributing 4 SAT IF Signals
To 209 Homes within 3Km
Over Fiber Cable

Shufeng Yang
Greatway Technology Co., Ltd
Web: www.greatwaytech.com

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1.0 Project Description

There are four satellite antennas in the community center where 209 homes locate in the radius of 3Km. Each home has at least 3 satellite receivers and each satellite receiver should receive any of the four satellite antenna signals.

2.0 Project Schedule

2.1 Each satellite dish installs the attached LNB so that each satellite antenna just has one RF output.

ASU13 - UNIVERSAL SINGLE LNB F

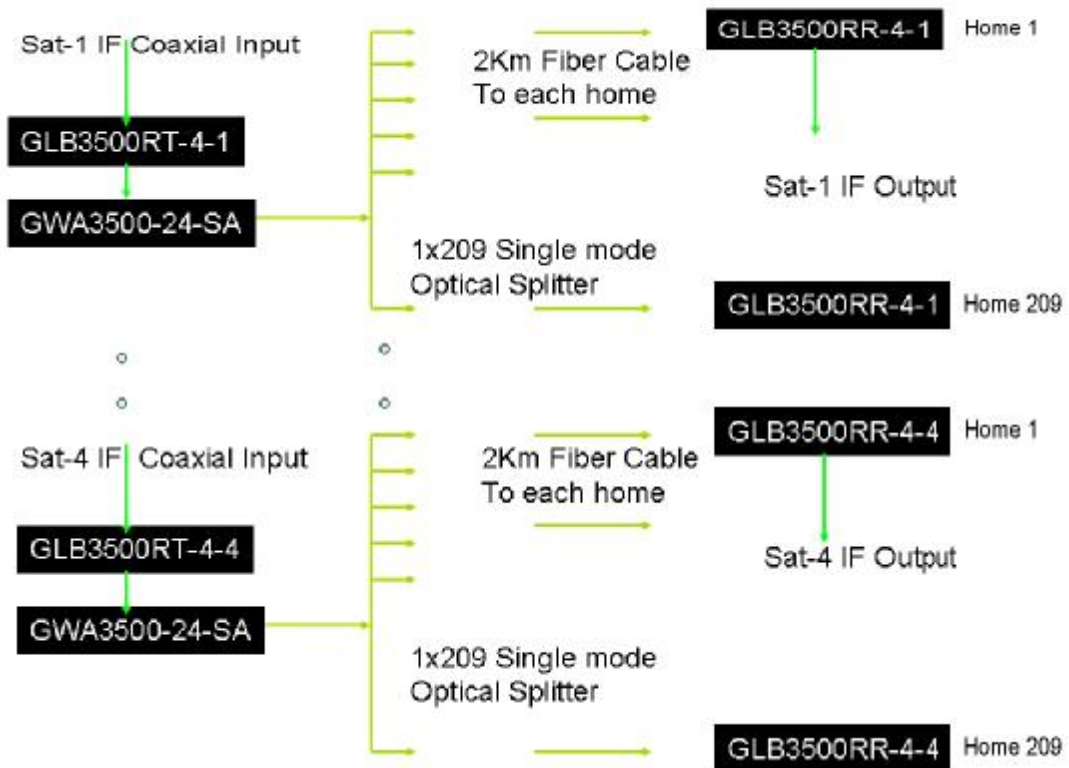


ITEM	SPECIFICATIONS
I/P Frequency Range	10.7 GHz ~ 12.75 GHz
O/P Frequency Range	950 MHz ~ 2150 MHz
L.O. Initial Accuracy	± 1.0 MHz (@25° C)
L.O. Temperature Drift	± 2.0 MHz (-30 ~ + 60° C)
L.O. Phase Noise	-50dBc/Hz@1KHz offset(Max.)
L.O. Phase Noise	-60dBc/Hz@10KHz offset(Max.)
L.O. Phase Noise	-100dBc/Hz@100KHz offset(Max.)
L.O. Spurious	-45 dBm (Max.)
Noise Figure	1.0dB (Max.) @25° C
Conversion Gain	50~62dB
Gain Variation (over operating band)	5dB p-p (Typ.)
Gain Flatness	± 0.5dB/27MHz
Isolation	20 dB (Min.)
Image Rejection	40 dB (Min.)
P1dB	0dBm (Min.)
Output VSWR	2.5:1(Max.)
DC Current Consumption	120 mA(Max.)
Polarization Switching Voltage	V:11.5~14V, H:16~19V
Band Switching	Low:0KHz, High:22±4KHz
Water Proof Test	+60° C water for 5 minutes
Operation Temperature	-30° C ~ + 60° C
Output connector	75 Ω F type

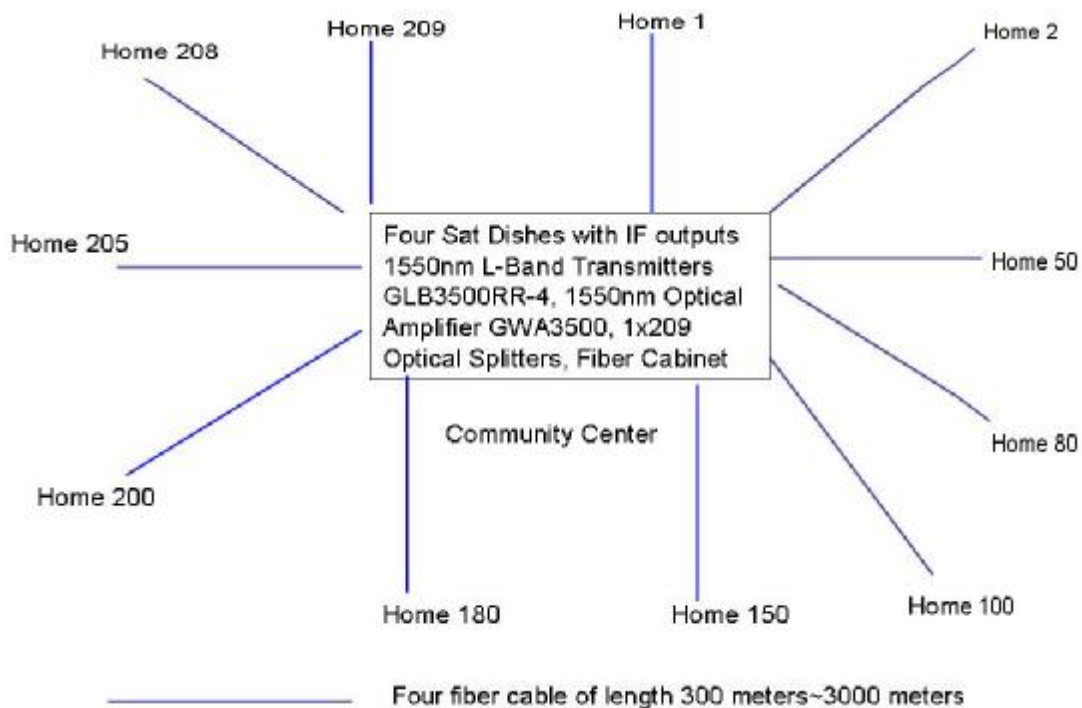
There are four independent SAT IF inputs from the four satellite antennas.

2.2 Each SAT IF is connected to one SAT IF transmitter and the SAT IF transmitter has one 1550nm SM fiber output. There are four independent 1550nm SAT IF transmitters in one GLB3500RT-4 19" 1U rack. One GLB3500RT-4 can transmit the RF signals from four satellite antennas via four fibers.

Distribution Four Sat IF to 209 Homes over Single Mode Fiber

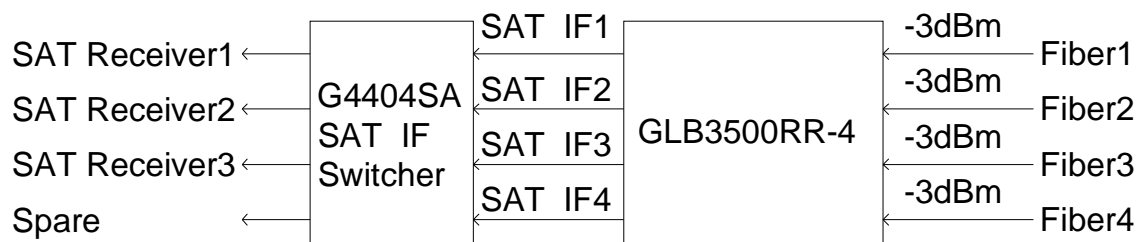


- 2.3 To distribute satellite signals to 209 homes, optical amplifier and optical splitters are necessary. Each 1550nm optical laser output of GLB3500RT-4 acts as the input of optical amplifier GWA3500-24 (24dBm optical output power). The one fiber of 24dBm laser beam is distributed evenly by 7(MPFS15-7-T-SA) fibers first and secondly to 224 fiber ports by 7 unit 1x32 standard fiber splitters. 209 of the 224 ports shall be connected to 209 homes by fiber cable. The 1550nm laser power at each of the 224 ports should be around 0dBm. 4 EDFA will have 896 (4x224) ports.
- 2.4 Fiber cabinet and fiber patchcords are necessary for the fiber cable management. Each home will be connected by four fibers carrying the four different SAT IF signals. There are 209 four-core fiber cables linked to 209 homes. The length of fiber cable is 300m to 3Km depending on the distance. The number of fiber patchcord is suggested as 836 (4x209) pcs.



2.5 At the subscribers' home, four optical signals are converted to four independent SAT IF signals by GLB3500RR-4 optical receiver. The four SAT IF signals are then inputted to G4404SA SAT IF Switcher, the switcher has four outputs, where each output can receive any of the four SAT IF signals by the control signal from SAT receiver. In this way any satellite receiver at any of 209 home can select any channel from any satellite antenna.

Subscriber Home



3.0 **Price and Term**

Part Number	Description	Qty	Location
GLB3500RT-4	4 1550nm IF Transmitters in 19" 1RU indoor housing	1	Community Center
GWA3500-24-SA	1550nm Optical Amplifier, 24dBm, SC/APC, 19" 1U	4	Community Center
MPFS15-7-T-SA	1x7 optical splitter in 19" 1RU, SC/APC	4	Community Center
MPFS15-32-T-SA	1x32 optical splitter in 19" 1RU, SC/APC	28	Community Center
	Fiber Cabinet between Optical Splitter and Cable		Community Center
GSA-SA-10	SC/APC-SC/APC Fiber Patchcord, 10 Meter	836	Community Center
GLB3500RR-4	4 IF Receivers in 19" 1RU indoor housing	209	Home
GSA-SA-5	SC/APC-SC/APC Fiber Patchcord, 5 Meter	836	Home
G4404SA	4 SAT IF Switcher, 4 IF Ouputs	209	Home

4.0 **Datasheet Attachments**

4.1 GLB3500 Satellite Fiber Link

4.2 GWA3500 Erbium Doped Fiber Amplifier

4.3 SAT IF Switcher

GLB3500 L-Band Fiber Optic Link

GLB3500 L-Band Satellite Transport System is a 1550nm fiber link between satellite antenna and receiver equipment. Working with Greatway Technology's high power Erbium Doped Fiber Amplifier (EDFA) GWA3500, GLB3500 can distribute up to four satellite dish signals to hundreds of subscribers. GLB3500 allows single mode fiber transmission distances to 25 km at 1550 nm.

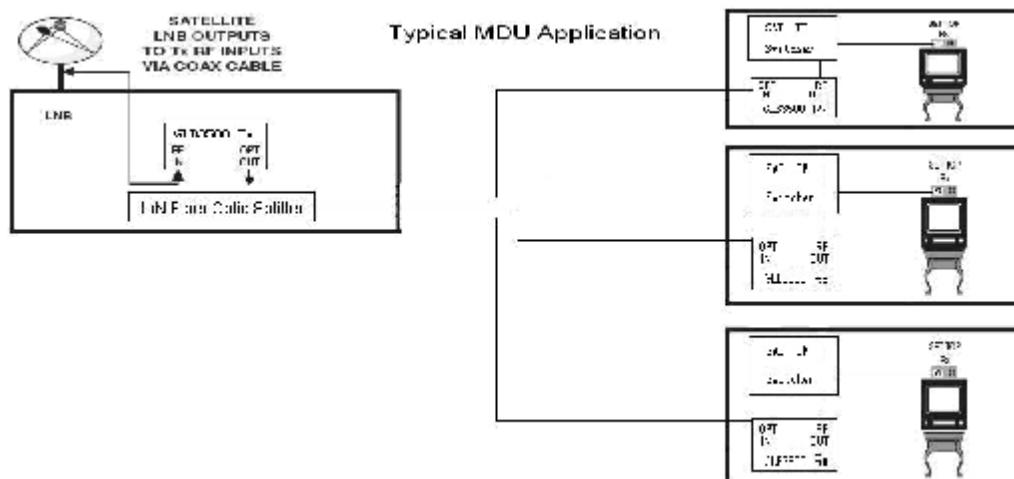
GLB3500 has two versions: outdoor waterproof Aluminum Die Casting version GLB3500U and indoor 19" 1RU rack version GLB3500R. The outdoor version has capacity for two optical transmitters or two optical receivers. The indoor version has capacity for four optical transmitters or four optical receivers.



Features:

- | 950MHz to 2150MHz L-Band Fiber Link
- | 1550nm Single Mode Fiber Distance up to 25Km
- | Fiber Dense Distribution to hundreds of Subscribers with EDFA
- | Satellite Dish distributed over fiber and coaxial cable
- | Waterproof outdoor version and indoor version available

Applications:



Specifications:

L-Band RF and Optical Characteristics

Parameter	Min	Typ	Max	Units
Laser Wavelength		1550		nm
Laser Output Power	0	+3	+4	dBm
Rx Optical Input Power	-6	-3	+3	dBm
Tx Input RF Return Loss	10	13		dB
Rx Output RF Return Loss		13	15	dB
System Gain (0 dB Opt. Loss)	16	18	20	dB
System Gain variation over temp	-2		2	dB
Amp. Flatness (950-2150 MHz)		+/-1.5	+/-2.0	dB
Group Delay (950-2150 MHz)		0.5	1	ns
Noise Figure (0 dB opt. loss)		22	24	dB
Tx RF Input Range	-60		-15	dBm

Electrical/Optical Characteristics

Parameter	Optical Performance
RF Connector	F-Type
RF Impedance	75 Ohm
Fiber	9 μ m / 125 μ m Single Mode Fiber
Fiber Connector	SC/APC

Physical and Environmental Characteristics

Parameter	Optical Performance
Power Supply	100~240V AC
Power Consumption	< 30W
Dimension	325×225×128 (mm) (Outdoor Version) 480×325×44 (mm) (Indoor Version)
Weight	<5Kg (Outdoor Version) <8Kg (Indoor Version)
Operating Temperature	-40~+60 °C
Storage Temperature	-40~+85 °C
Relative Humidity	5~95 % (non-condensing)

Ordering Information

GLB3500AT-B L-Band Optical Transmitter

GLB3500AR-B L-Band Optical Receiver

A (Housing): U-Outdoor Version; R-Indoor Version

B (Tx or Rx Number): 1 or 2 or 3 or 4

GWA3500 Series 1550nm Fiber Amplifier

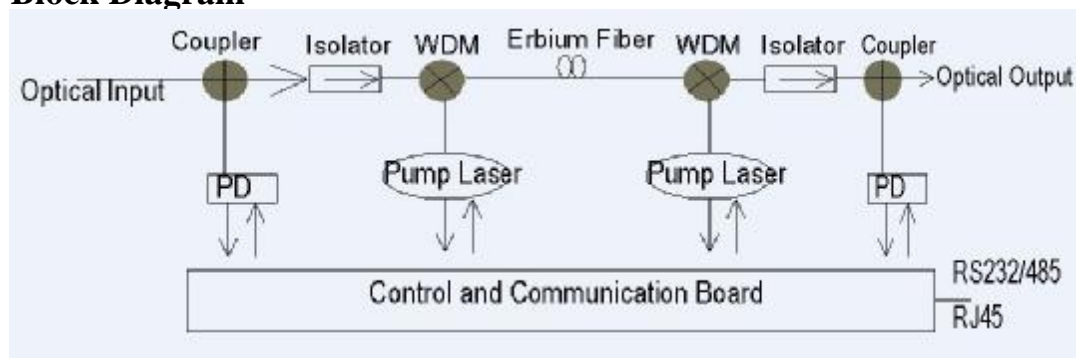


GWA3500 series Erbium Doped Fiber Amplifier (EDFA) is important 1550nm relay transmission equipment for TV signals, digital video, telephony and data long haul transmission. With well-qualified optical and electronic circuits design, GWA3500 keeps the excellent optical and electrical performance by using high quality devices. All materials applied in GWA3500 EDFA meet RoHS requirement.

Features

- l 19" 1U standard housing with LCD display
- l High quality low noise 980nm/1480nm pump lasers
- l High quantum efficiency Erbium Doped Fiber
- l Built-in microprocessor real time control lasers and the amplifier
- l LCD on the front panel displays accurate working parameters
- l RS232/RS485 or RJ45 interface available
- l RoHS Compatible

Block Diagram



Specifications

Optical Parameter

Wavelength: 1540 ~1560nm

Optical Input Power: -6.0 ~ +10dBm

Saturated Output Power: 14 ~ 27dBm

Optical Return Loss: > 55dB

Pump Laser Wavelength: 980nm or 1480nm

Noise Figure: \leq 4.5dB (17dBm)

\leq 4.7dB (20dBm)

\leq 5.0dB (22dBm)

\leq 5.3dB (23dBm)

Power Supply

Power Supply: AC: 100V~240V (50/60 Hz) or -48V DC

Power Consumption: \leq 25 W (20dBm lower), \leq 30 W (20dBm higher)

Environment

Working Temperature: 0~45°C

Storage Temperature: -20~65°C

Humidity: 95% non-condensing

Physical Parameters

Weight: \leq 10Kg

Dimensions (mm): 483 × 320 × 44

Customer Interface

RS232/RS485 network interface or RJ45 Ethernet interface

SC/APC or FC/APC fiber connector

Ordering Information

GWA3500-AB-CD-EF

AB: The optical power in dBm from 14dBm up to 27dBm

CD: FC_FC/APC

SC_SC/APC

EF: none _220V AC

48_-48V DC power supply

MULTI-SUBSCRIBER SATELLITE MULTISWITCHES

Sheet Metal Housing

5X4, 13/18V & 22kHz Multiswitches W/Level Adjuster:

Model 4404A

(Built-in linear power supply)

Model 4404SA

(Built-in switching power supply)



Features:

- 4 satellite IF & 1 terrestrial TV inputs to 4 outputs for satellite receivers
- Built-in amplifications circuit to compensate cable loss
- 4 satellite IF & 1 terrestrial TV inputs with level adjuster
- Sheet metal housing with plastic holder

Specifications:

Model		4404A	4404SA
Frequency Range	SAT (MHz)	950~2150	
	Terr. (MHz)	47~862	
Gain	SAT (dB)	0	
	Terr. (dB)	2	
Attenuation Adjustment Range (dB)		Terr.: 0~8; SAT: 0~10	
Switching Isolation (dB)		25	
Isolation (dB)		25	
Rejection (dB)		30	
Return Loss (dB)		10	
SAT Output Level (dBuV)		95@35dB IMA ₃ EN50083-3	
Terr. Output Level (dBuV)		85@60dB IMA ₃ EN50083-5	
Built-in Power Supply		230V/50Hz	180~264V/47~63Hz
Dimension (mm)		265x125x70	

5X6, 13/18V & 22kHz Multiswitches W/Level Adjuster:

Model 4406A

(Built-in linear power supply)

Model 4406SA

(Built-in switching power supply)



Features:

- 4 satellite IF & 1 terrestrial TV inputs to 6 outputs for satellite receivers
- Built-in amplifications circuit to compensate cable loss
- 4 satellite IF & 1 terrestrial TV inputs with level adjuster
- Sheet metal housing with plastic holder

Specifications:

Model		4406A	4406SA
Frequency Range	SAT (MHz)	950~2150	
	Terr. (MHz)	47~862	
Gain	SAT (dB)	0	
	Terr. (dB)	2	
Attenuation Adjustment Range (dB)		Terr.: 0~8; SAT: 0~10	
Switching Isolation (dB)		25	
Isolation (dB)		25	
Rejection (dB)		30	
Return Loss (dB)		10	
SAT Output Level (dBuV)		95@35dB IMA ₃ EN50083-3	
Terr. Output Level (dBuV)		85@60dB IMA ₃ EN50083-5	
Built-in Power Supply		230V/50Hz	180~264V/47~63Hz
Dimension (mm)		265x125x70	