GNSSRK-M-V

- **Full GNSS Band Repeater Kit**
- **GPS booster**
- **Installation and user guide**

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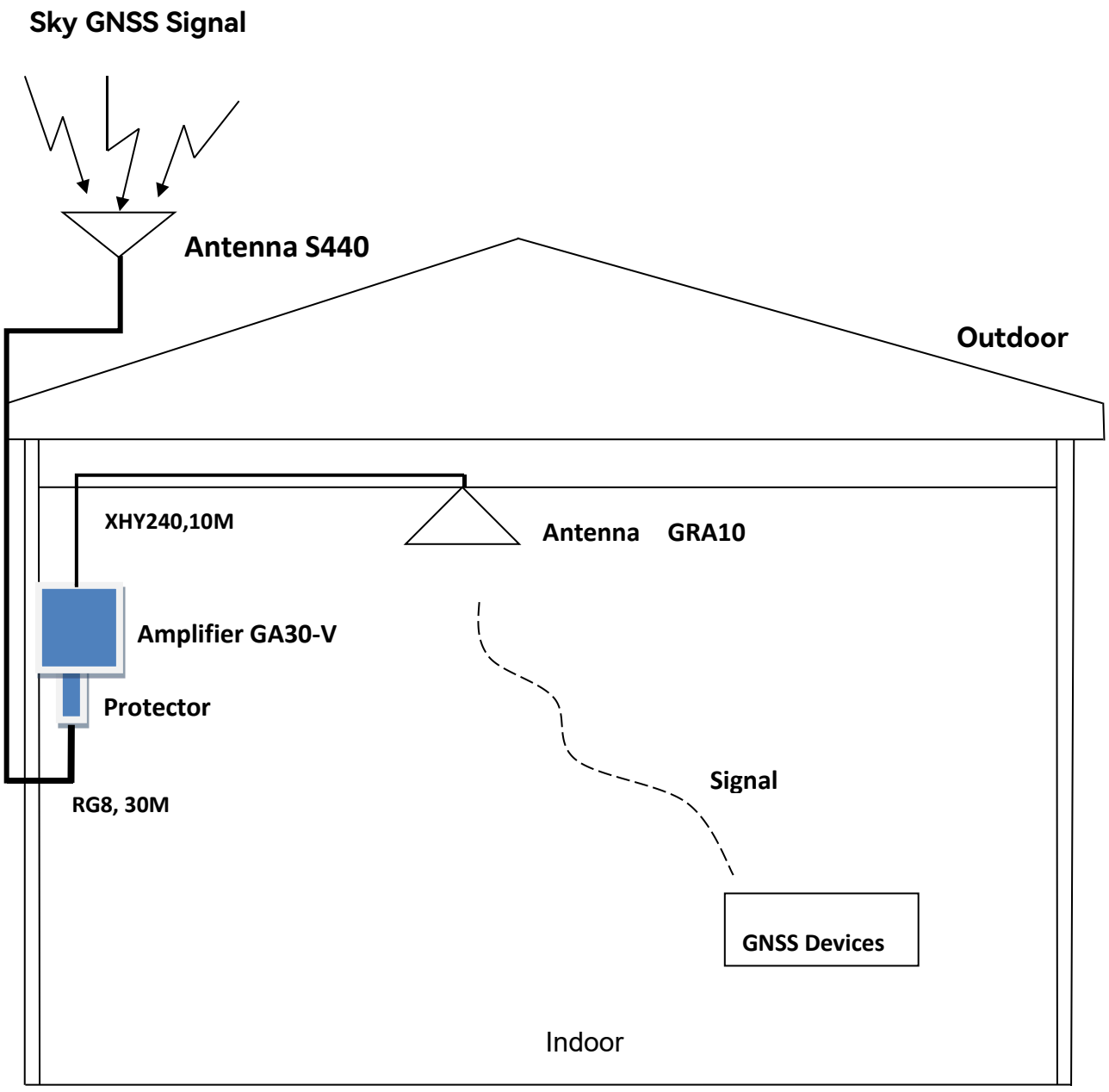
Contents

GNSS Repeater Kit GNSSRK-M-V

- ✧ **Satellite Systems Suppoted: GPS/GLONASS/Beidou/Galileo/IRNSS/QZSS/SBAS/NAVIC;**
- ✧ **Antenna Frequency Range:1556~1623 and 1164~1288 MHz;**
- ✧ **Conver Distance: Up to 20 Meters**



Quality Commitment

All products have been strictly inspected, all are qualified products.

We promise one-year guaranty and 5-year available.

Under warranty, products gone wrong which be identified not be human factor, can be replaced free or repaired. Shipping costs to be shared by both parties.

Return Policy

Our product and its packaging have LOGO and Serial-number, you should not tear up them, as we will depend on them to deal with the return product.

Service phone:86-755-29644311 or email to: sales@gemsnav.com.

Description

GNSSRK-M-V is a repeater/GPS booster/GPS signal amplifier operates by receiving GPS/GLONASS/Beidou2/Galileo… satellite signals with an antenna located outside the building and re-radiating the signals into the indoor area or covered space where satellite signal cannot reach.Achieve GPS indoor coverage.

GNSSRK-M-V is a single point GPS/GLONASS/Beidou2/Galileo… repeater/GPS booster/GPS signal amplifier, one transmitting antenna transmit GPS/GLONASS/Beidou2/Galileo signal. Indoor GPS coverage can be achieved by such a way.

This solution offer adjustable test signal to receiver.

If need extend the system, you can add assemblies and sending antennas, so as to cover satellite signal indoor large area and more rooms or buildings.

Typical Application

✧ For GPS/GNSS products testing

For testing the cell- phone with GPS, PND, car navigators, tracker, survey products, etc.

✧ For the purpose of GPS/GNSS signal covering

Car parks, lab, aviation manufacturing hangar, trade shows, Emergency-, safety vehicles, public transportation etc.

Configurations

- ✧ Gain Control Amplifier: GA30-V ,1 ea;
- ✧ Receiving Antenna: S440,1 ea;
- ✧ Cable Assembly: RG8,30M, 1ea;
- ✧ Cable Assembly: XHY240,10M,1 ea;
- ✧ Re-radiate Antenna: GRA10, 1 ea;
- ✧ Lighting-protector: N-JKG, 1 ea;

The cable components can be selected according to the customers' environment and can communicate with our technicians.

Gain Control Amplifier GA30-V

Function

Used to adjust system gain,0-30 dB adjustable, you can control when needed. (with AC220/9V power adapter, supply power to system and itself.)

① input ②output, connect to cable assembly, N female(Can be customized).

③ this knob can control gain value.Anticlockwise: lower.Clockwise: higher

When finished the installation, you can adjust the knob, usually from high to low, the best position is when your receiver's SNR begin to weak.

Specification

Parameter			Conditions	Min	Typ	Max	Units
Freq. Range			In- Output ports, 50Ω	1164		1616	MHz
In &Out Imped.			In, all output ports		50		Ω
Gain	1227MHz		In- Output ports -45dBm Input Level	28	30	32	dB
	1575MHz			28	30	32	
Adjustable gain	1227MHz	Max		29	30	31	
		Min		-4	-2	0	
	1575MHz	Max		29	30	31	
		Min		-2	0	1	
Input SWR						2.5:1	-
Output SWR						2.5:1	-
Nois Figure						2	dB
Gain Flatness						3	dB
Current balance						0.5	dB
Phase Balance						1.0	deg
Group Delay Flatness						1	ns
Device current						16	mA
DC IN			The DC input on the input or output port	3	5	16	VDC
AC supply					220		AC
Max RF Input			Maximum lossless RF input			0	dBm
Operating temperature				-40		85	℃

Antennan S440

Systems Supported:

- **GPS:L1,L2,L5;**
- **Glonass:G1,G2;**
- **Galileo: E1,E2,E5a,E5b;**
- **Beidou2:B1,B2,B3.**
- IRNSS
- QZSS
- SBAS
- NAVIC

Specifications:

Frequency [MHz]	**1556~1623 and 1164~1288**
Impedance	**50Ω**
Gain [dBi]	**40±2(LNA include)**
Polarization	**right-hand circular polarized（RHCP)**
Axial ratio [dB]	**＜3**
Elevation Coverage	**360°**
output（VSWR)	**≤2.0**
Maximum gain	**5.5dBi**

LNA Specifications:

Gain (dB)	**40±2**
Noise Figure (dB)	**≤2dB**
Gain flatness (dB)	**±2 dB**
Out(VSWR)	**≤2.0**
Input（VSWR)	**≤2.0**
Pout at 1dB gain compression point	**≥0dBm**
Voltage	**DC 3—15V**
DC Current(mA)	**DC ≤45mA**

Mechanical characteristic:

Dimension	**Φ174 x 63**
Connector	**TNC-C-K**
Operation Temperature [℃]	**-40~+85**
Reposition Temperature [℃]	**-55~+85**
Humidity	**95% non-condensin**

Transmiting Antenna GRA10

Antenna Specifications

- **Frequency Range [MHz]** **1.15-1.8GHz**
- **Gain 3 dBi**
- **Polarization** **Vertical polarization**
- **Input（VSWR）** **≤1.45**
- **Intermodulation** **< -110dBm**
- **Input impendence** **50Ω**
- **Max power** **50W**
- **Connector** **N(Female) or SMA(Female),**

Mechanical Specifications

- **Lightning Protection** **DC Ground**
- **Radome material** **UV-Protected ABS**
- **Dimension [mm]** **Ø186×85**
- **Weight [g]** **400**
- **Operating Temperature [℃]** **-40~+60**
- **Limit Temperature [℃]** **-55~+70**
- **Operating Humidity [%]** **5~95**
- **Circumstance** **Indoor**

Cable Assembly

RG8

RG8(LMR400),30M is usually used for connecting to GNSS antenna and the lighting protector. You can calculate the length according to your actual environment, also 60m or 90 be selected.

The attenuation value is 0.18 dB/m; Thus, you can assess the system, or contact with our sales to select proper configuration.

XHY240

XHY240(LMR240),10M is usually used to connect GA30-V and GRA10.
The attenuation value 0.32dB/M.

Select Connectors you need

Connectors are industrial standard component, below are selectable:

SMA Connectors (Male - Female)

BNC Connectors
(Male & Female)

N Connectors (Male - Female)

TNC Connectors (Male & Female)

GNSS Antenna Installation

Choose the edge of the barrier, where haven't construction higher than 3 meters, around the antenna 10ms at radius.

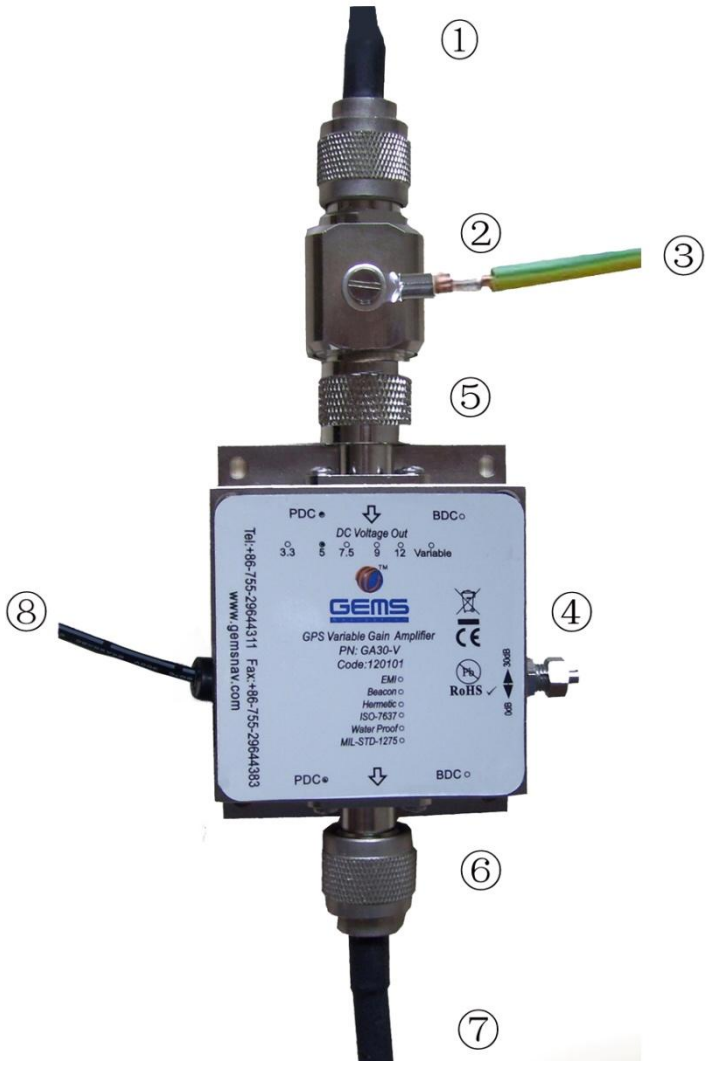
Lighting Protection

Usually, outdoor antenna is fixed under the range of building lighting-protection. If antenna is higher than this area or out of the range, set up lighting rod is wisdom.

Lighting rod, installation of attention as below:

1) **The height of lightning rod is apply with the position of antenna, much high than antenna(0.5~1m higher and more)**
2) **Lighting rod wield with the building circuit line, ensure ground resistant less than 10Ω.**
3) **Can directly wield rough sheet iron to building lightning-protecting ground.(as shown above)**

Connect to Protector and Gain Control Amplifier



As Shown at Left:

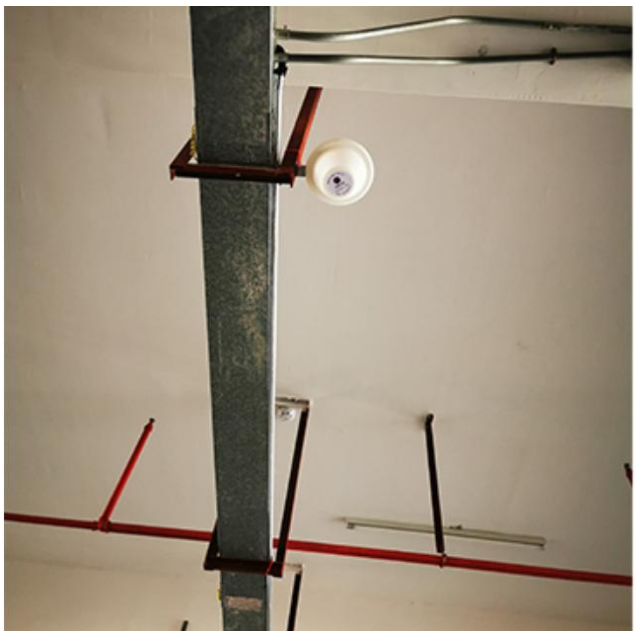
① **Cable assembly: connect to roof antenna;**
② **Protector;**
③ **Connect to the ground;**
④ **Adjustable knob;**
⑤ **Gain control amplifier: GA30-V;**
⑥ **Cable assembly: connect to transmitting antenna, as GRA10,L1P etc.**
⑦ **Connect to the indoor antenna GRA10**
⑧ **Power supply.**

Notice for installing protector:

Earth resistance is assured less than 10Ω;

One end of the lighting-protection line should connect to grounding ears, the other one is wielded to the nearest building to assure grounding.

Installation Indoor Antenna GRA10



Troubleshooting

GPS repeater/GPS booster/gps signal amplifier fault location and remove:

First: Check the adapter of GA30-V, whether it connects to the power supply and power-up to GA30-V as GA30-V hasn't power light. You can test the voltage between input axis and shell, if it's about 5V,power supply was ok,GA30-V was also works ok. Or else, check the power socket to assure the contact was ok.

Second: If it's 5V at the input of Gain Controller, you need to check whether the fixing is steady between GRA10 and the cable.

Third: If the below two step were ok, please check the outdoor antenna Timing4200.You can screw the port which connect Timing4200 and cable(carefully screw, not unplug strongly).Notice: when screwing the cable connector, you should make sure to screw the iron pipe, maintain the antenna and cable moveless, which avoid to screw off the cable. After riving, check the voltage between axis of the cable connector and the outer shielding layer to make sure it's 5V.If no voltage, the circuit has fault, please contact our technical support. If 5V,the antenna Timing4200 can be suspected.(In fact, this case hasn't appear in our engineering projects.