

GPS-Repeater AS47 CS

Manual 3.7 English Language

Repeater GPS-System AS47/48



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Manual for AuCon GPS- Repeater AS47 / 48

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1. General:

AS-47/48 is a L1-Signal GPS- Repeater with two antennas for real-time GPS-data receiving in buildings. The system consists of a High-Gain GPS-antenna for outdoor, a precisely amplifier with a helix-typ GPS- sending antenna and an integrated electronic power regulator. This enables all kinds of L1-band GPS- systems to receive an good signal indoor. The repeated signal could be used for system test, initialisation, and product demonstartion. The input signal power at the receiving antenna is approximately 130dBm (spreading over 2 MHz), so the desired signal is below the thermal noise floor.

Please read this manual before installing and working with the system.

For any questions please contact the technical support from aucon by Email: info@aucon.de

2. Safety

This product is conform to the EU-standarts.
Please note the advices below before working.

Symbols used in the description:



Please refer to the manual! This note is very important!



Please note.

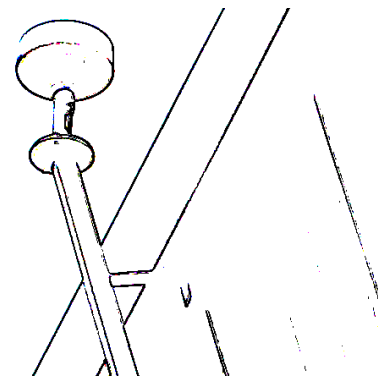
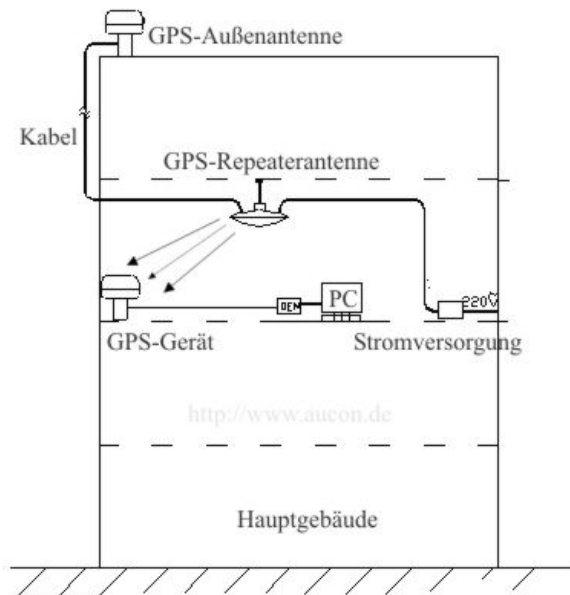
- This system should only be used by the configuration from the manufacturer.
- Before turning on the system please always check the voltage.
- Due to current regulatory considerations, GPS repeater kits are available for work in shielded environment. Please ask your federal offices if you have any questions about regulations about in your country.
- Please not that electrostatic discharge could damage your system, so only work under ED-proved conditions.
- Please also install the system in a dry environment.

3. Installation

3.1 Installation in a building

The GPS- Repeater AS47/48 consists of a receiving gps antenna which has to be located outdoors on the roof of a building, a special HF-cable with configured length and a sending gps antenna for distributing the signal indoor. The amplifier is integrated in the antenna and works with 230 V AC, or 7,5 to 9 Volts, depending on your countrys power supply.

Scheme for GPS- Repeatersystems AS47 / AS48:



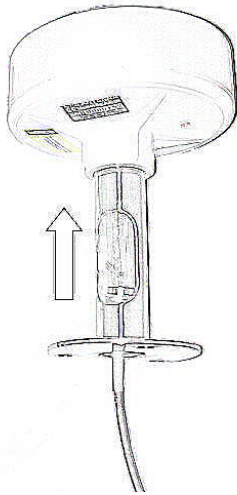
The gps repeater system should only be operated in the configuration of the manufacturer. So do not change shorten or extend the cables, because otherwise any guarantee is lost. This also applies for the scheme with one or more gps splitters.

3.1.1 Installation of outdoor antenna

Before installing the gps outdoor antenna please check the quality of gps signal on different days, so that you could be sure to receive a good signal on this location. You should only use an location with bright view to the sky.



Please note that the outdoor antenna should not be installed in sight to the sending antenna because of interferences. This interferences could shut down the hole system.



The GPS outdoor antenna (white) should be mounted on a flat surface on the top of a roof, or if mounting on a roof is not possible, it could be mounted on a facade (holder available optional).

Pull the cable through the holder of antenna, before mounting. Then bolt the connector of cable together to the antenna.

Mount the antenna on the metal stand.

Mount the metal stand on a flat surface

3.1.2 Laying of cables

If you install the cable, please note that there should be no strain on the cable. The cables should be mounted in a cable channel or with clamps. Ensure also that the cables have a bending radius which is big enough. A big, heavy cable with a big diameter (like f.e. AIRCOM Plus or ECOFLEX 10/15) should not give a compressive load to other parts of the system like splitter(see below). So tighten the cables on the connectors to the splitters that the compressive load is minimized.



Use the right cables depending on the scheme of your special configured gps repeater system, do not exchange the specific cables. Ensure that the holes for the cables are big enough because the connectors are mostly bigger than the cables.



Example:

Connecting an Aircom Plus cable to an GPS splitter by TNC-connector.

Tighten the connectors only by hand, do not use a spanner.

If you install the system on a building which has no lightning protection yet, we also offer a lightning protection to be installed into the cable by connectors.



Please use UV-protection for the part of cable which is mounted directly outside the building with a free view to the sky, to protect the cover from aging.

Bending radius of HF-cables in comparison:

Nr	Typ of cable	Diameter in mm	B-Radius
1	RG58/U	5,00	25 mm
2	Aircell 5	5,00	25 mm
3	Aircell 7	7,30	25 mm
4	Ecoflex 10	10,20	40 mm
5	Ecoflex 10 H	10,20	40 mm
6	Aircom Plus	10,30	55 mm
7	Ecoflex 15 H	15,00	55 mm
8	H-155	5,50	35 mm
9	RG214-XL	10,80	50 mm
10	CFD200	4,95	25 mm
11	CFD240	6,10	30 mm
12	CFD400	10,30	50 mm

3.1.3 Installation of sending antenna:

Locate and mount the repeater antenna with its cylinder facing against the ceiling or against the testing bench. Note that the signal could be attenuated easily because of the high frequency. Only your hand in front of the repeater can attenuate the gps signal clearly.

You can use a small conduit for mounting the repeater on a balk(see picture) or you can also use metal bracket holder.

Example in a hangar:

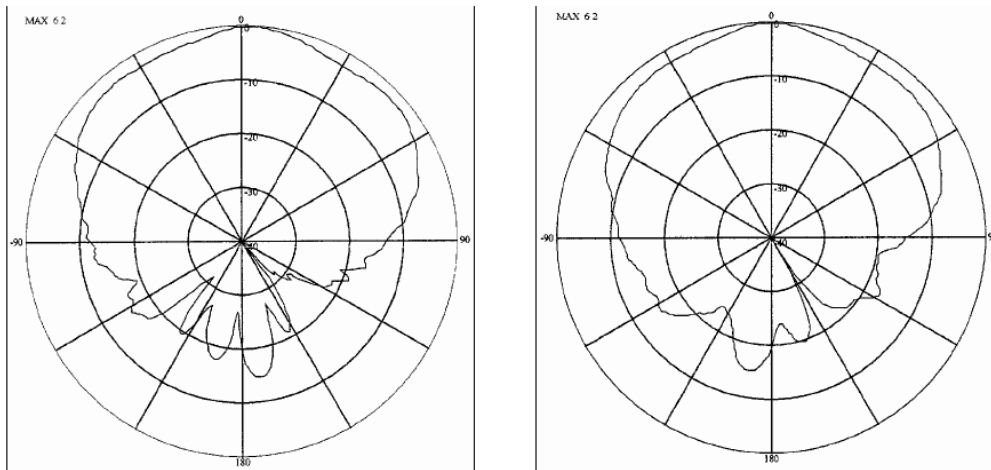


Installation site:

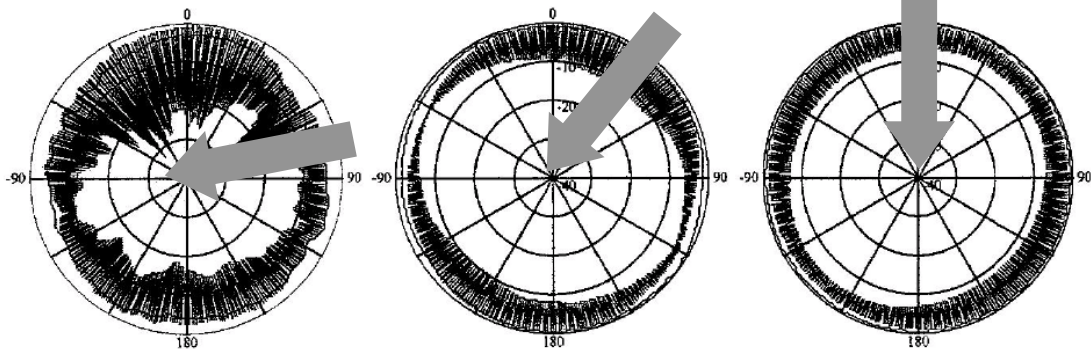
Please see the important notes on the additional flyer which is added to every gps repeater set.

Radiating characteristics:

Vertical (in sending direction)



Horizontal (vertical to sending direction)



bei 80°

bei 40°

bei 0°

Note for mounting indoor:

Do not mount the sending antenna(repeater) behind a heating system or something like that. Do not mount the antennas in a direct circle to WLAN or GSM-Repeaters.

Connection to the power supply:

Use the power supply for 230 V AC which is standart in european countries. If you need to adapt the system to your countries power supply only use 7,5 to 9 V DC to power up the sending antenna. Use an ON/OFF Switch to power up the system and shut-off the system if you do not need it.

Please note that the repeater antenna is only for indoor mounting.



The GPS- Repeatersystem needs several minutes to send with full transmitting power.

If not enough transmitting power is reached after several minutes please check the installation of the outdoor antenna if there is free sight to the sky. Also check the indoor antenna of the right adjustment to the gps testing bench in the room. Also check the connetcors of the cable. The sending antenna should not be mounted in sight to the outdoor antenna.

Activation and general conditions:

Please ask your federal offices if you have any questions about regulations about gps repeaters in your country.

For prejudice only the customer is liable for.

4. Delivery Content of AS47/48

1 x GPS- outdoor antenna white(IP66)



1 x metal stand for antenna

1 x GPS- Repeater AS-47 or AS-48



1 x 40 m cable Typ RG 58 with connector TNC and SMA
(depending on your requirement)



1 x Power supply 230 V for gps repeater



1 x Manual

Some Optional accessoires:

GPS- splitter 1 in 2/1 in 4 / 1 in 8



GPS- Attenuator/ GPS-Amplifier



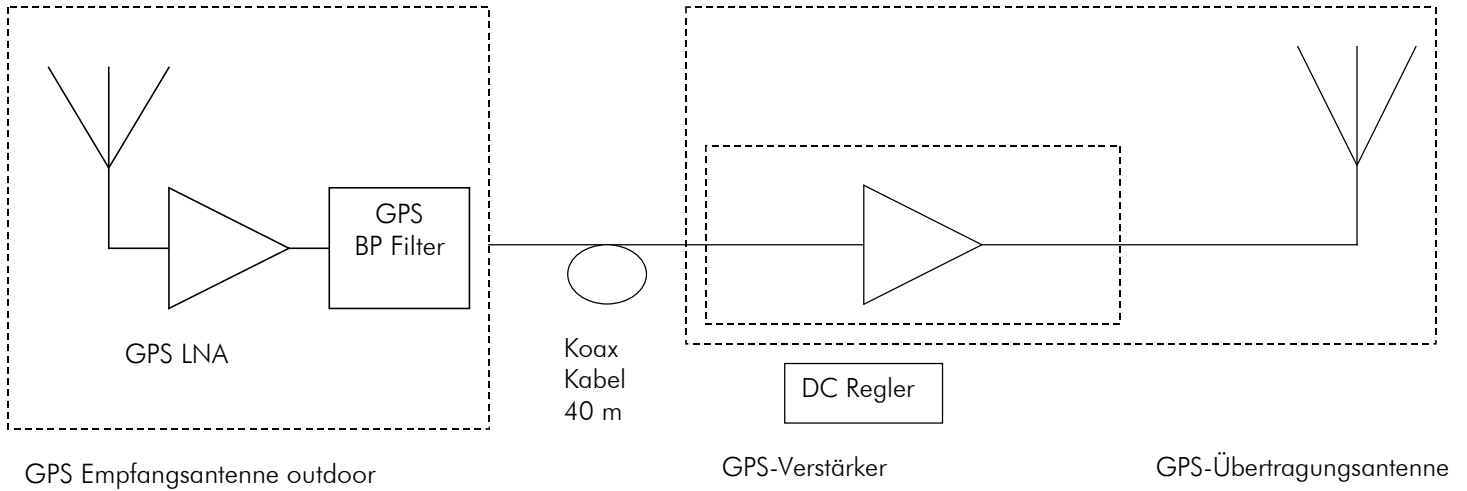
Rack-Mount Splitter 1 in 18/36



GPS-Antennas for L1/L2/L5/GLONASS

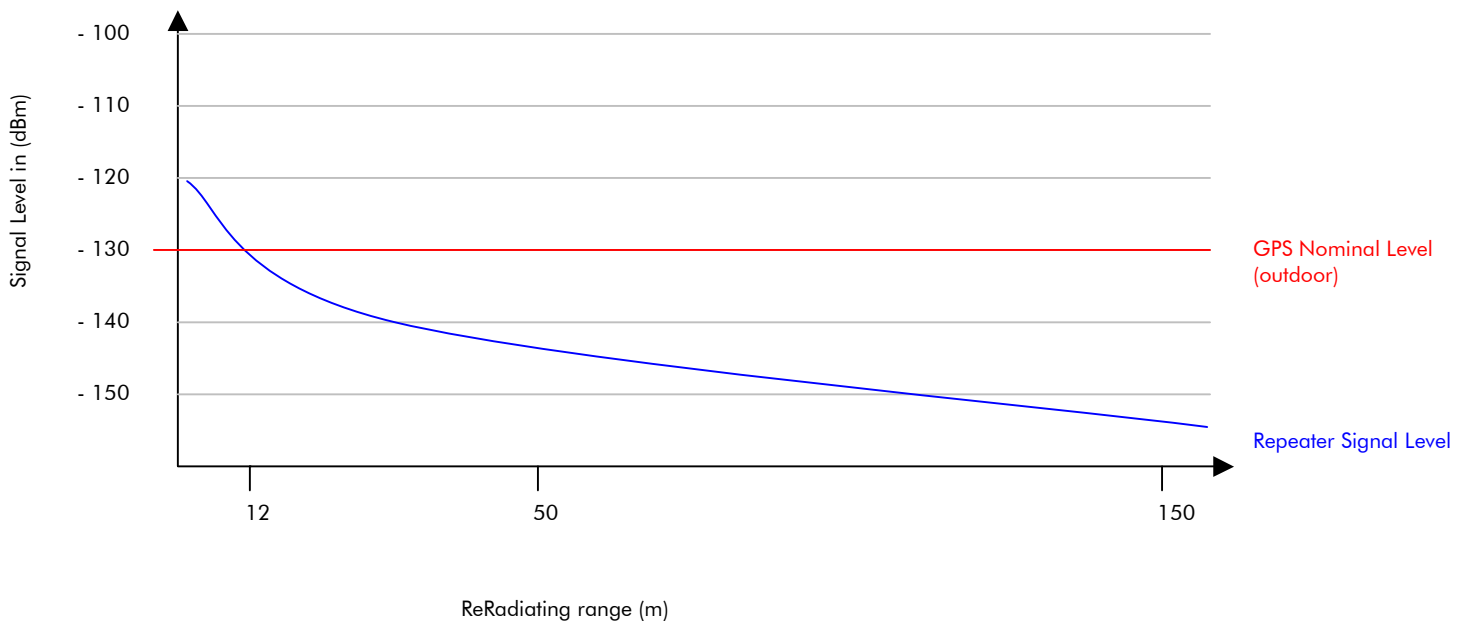


5. Scheme of the GPS- Repeatersystem



Please note that the cable length and cable kind on the respective system is tuned on. Therefore it may not be extended or shortened. If you need a bigger cable length between outdoor antenna and indoor antenna you should contact us. Then we could offer to you our special HF cables with especially low damping values, e.g., after MIL specification, stiffly or highly adaptably or for special outdoor suitability. Then with it bigger lengths can be also bridged without loss in signal strength or signal quality.

Signal Level Structure of GPS- Repeater AS-47



Minimal Signal power for a modern GPS-Receiver(like SIRF 3) is about – 155 dBm.

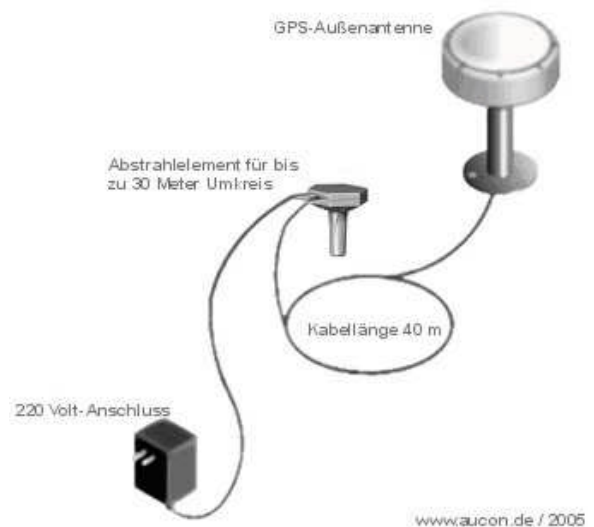
6. Technical Specification of the AS47 RR- GPS- System

Specification					
External Antenna Electrical Specifications, TA=25°C (Cable=40m)					
Description	Parameter	Min	Typ	Max	Units
Frequency	L1 band		1.575		GHz
Bandwidth			50		MHz
Amp Gain			28		dB
Noise Figure			1.3		dB
Output SWR			2.0:1		ratio
DC Input		4.5		5.5	Vdc
Reradiating Antenna System Electrical Specification, TA=25°C					
Description	Parameter	Min	Typ	Max	Units
Frequency	L1 band		1.575		GHz
Bandwidth			20		MHz
Impedance			50		ohm
Gain			30		dB
Noise Figure			2.0		dB
Output SWR			1.6:1		ratio
Element	Helix type				
Polarization	RHCP				
RF Out	at 1dB gain compression		-2.0		dBm
DC Input		+6		+30	Vdc
Consumption			55		mA
ReRadiating Range: 10-12 m					

Housing of the outdoor antenna is Polycarbonat waterresistent by IP66.

Operating temperature: -30 ° bis 85 ° C

Operating humidity: 95 %



7. Technical Specification of the AS48 RR- GPS- System

Specifications					
External Antenna Electrical Specifications, TA=25°C (Cable=40m)					
Description	Parameter	Min	Typ	Max	Units
Frequency	L1 band		1.575		GHz
Bandwidth			50		MHz
Gain			27		dB
Noise Figure			1.3		dB
Output SWR			2.0:1		ratio
Connectortyp			TNC		
DC Input		4.5		5.5	Vdc
Dimensions	Dia.: 113 x 74				mm
Weight			237 g		
Re-Radiating Antenna System Electrical Specification, TA=25°C					
Description	Parameter	Min	Typ	Max	Units
Frequency	L1 band		1.575		GHz
Bandwidth			20		MHz
Impedance			50		ohm
Gain			--		dB
Noise Figure			2.0		dB
Output SWR			1.6:1		ratio
Element	Helix type				
Polarization	RHCP				
RF Out	at 1dB gain compression		-2.0		dBm
Connectortyp			SMA		
DC Input		+6		+30	Vdc
Consumption			55 @ 7,5 V		mA
Dimensions	37(L)x35(W)x71 (H)				mm
Weight			48 g		
ReRadiating Range: 30 m					

Housing of the outdoor antenna is Polycarbonat waterresister

Operating temperature: -30 ° bis 85 ° C

Operating humidity: 95 %



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8. Glossary and Imprint

GPS- Repeater a reradiating system which receives gps signal outdoor, amplifies and sends the signal to a testing bench indoor

Interferenz In physics, **interference** is the addition (superposition) of two or more waves that result in a new wave pattern.

Shortcuts

GLONASS russian satellite navigation system, **GLO**balnaya **NA**avigationaya **S**putnikova **S**istema in short GLONASS

IGS International **GPS-Service** – <http://navcen.uscg.gov>

Conformity

This product was tested by AuCon and meets the requirements of the R&TTE Directive 1999/5/EWG: 07KFE007949-A-01.

The hole text you can get from aucon.

Identification:



Limitation of guarantee

For accuracy of this manual AuCon could not guarantee. For any mistakes or comments please contact us.

Imprint

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