



The Synchronization Experts.



SETUP GUIDE

ADU/GPS-1-12

GPS Antenna Distribution Unit

December 19, 2022

Meinberg Funkuhren GmbH & Co. KG

Table of Contents

1	Imprint	1
2	Change Log	2
3	Copyright and Liability Exclusion	3
4	Introduction	4
5	Presentation Conventions in this Manual	5
5.1	Conventions for the Presentation of Critical Safety Warnings	5
5.2	Secondary Symbols Used in Safety Warnings	5
5.3	Conventions for the Presentation of Other Important Information	6
5.4	Generally Applicable Symbols	6
6	Important Safety Information	7
6.1	Appropriate Usage	7
6.2	Product Documentation	8
6.3	Safety when Installing the Device	9
6.4	Safety when Maintaining and Cleaning the Device	10
7	Important Product Information	11
7.1	CE Marking	11
7.2	UKCA Marking	11
7.3	Ensuring the Optimum Operation of Your Device	11
7.4	Disposal	12
8	ADU/GPS-1-12 Connectors	14
8.1	Antenna Input: GPS-AV	15
8.2	GPS Antenna Output – Master	16
8.3	GPS Antenna Output – Slave	16
9	Installation of a GPS Antenna	17
10	Before you start	22
10.1	Required Tools	22
10.2	Preparing Installation	22
10.3	Contents of Delivery	23
11	System Installation	24
11.1	Connecting the System	25
12	Technical Appendix	26
12.1	Technical Specifications: Chassis	26
12.2	Technical Specifications: MBG S-PRO Surge Protector	28
12.2.1	MBG S-PRO: Physical Dimensions	30
12.2.2	Installation and Grounding	30
12.3	Technical Specifications: Antenna Cable	30
13	RoHS Conformity	31
14	Declaration of Conformity for Operation in the European Union	32

1 Imprint

Meinberg Funkuhren GmbH & Co. KG
Lange Wand 9, 31812 Bad Pyrmont, Germany

Phone: + 49 (0) 52 81 / 93 09 - 0

Fax: + 49 (0) 52 81 / 93 09 - 230

Website: <https://www.meinbergglobal.com>

Email: info@meinberg.de

Date: December 13, 2022

2 Change Log

Version	Date	Revision Notes
1.0	07/23/2021	Initial version
1.01	12/15/2022	Revision based on new standardized setup guide structure

3 Copyright and Liability Exclusion

Except where otherwise stated, the contents of this document, including text and images of all types and translations thereof, are the intellectual property and copyright of Meinberg Funkuhren GmbH & Co. KG ("Meinberg" in the following) and are subject to German copyright law. All reproduction, dissemination, modification, or exploitation is prohibited unless express consent to this effect is provided in writing by Meinberg. The provisions of copyright law apply accordingly.

Any third-party content in this document has been included in accordance with the rights and with the consent of its copyright owners.

A non-exclusive license is granted to redistribute this document (for example, on a website offering free-of-charge access to an archive of product manuals), provided that the document is only distributed in its entirety, that it is not modified in any way, that no fee is demanded for access to it, and that this notice is left in its complete and unchanged form.

At the time of writing of this document, reasonable effort was made to carefully review links to third-party websites to ensure that they were compliant with the laws of the Federal Republic of Germany and relevant to the subject matter of the document. Meinberg accepts no liability for the content of websites not created or maintained by Meinberg, and does not warrant that the content of such external websites is suitable or correct for any given purpose.

While Meinberg makes every effort to ensure that this document is complete, suitable for purpose, and free of material errors or omissions, and periodically reviews its library of manuals to reflect developments and changing standards, Meinberg does not warrant that this specific document is up-to-date, comprehensive, or free of errors. Updated manuals are provided at www.meinbergglobal.com.

You may also write to techsupport@meinberg.de to request an updated version at any time or provide feedback on errors or suggested improvements, which we are grateful to receive.

Meinberg reserves the right to make changes of any type to this document at any time as is necessary for the purpose of improving its products and services and ensuring compliance with applicable standards, laws & regulations.

4 Introduction

This Setup Guide is a systematically structured guideline to assist you with the set-up of your Meinberg product.

ADU/GPS-1-12 is an antenna splitter which distributes the intermediate frequency of 35.4 MHz coming from a Meinberg GPS antenna to up to 12 Meinberg GPS reference clocks via individual coaxial antenna connections. The ADU/GPS-1-12 must be mounted inside a building and connected to a Meinberg GPS antenna via a coaxial cable (included when ordering a GPS antenna).

The ADU/GPS-1-12 system requires an externally supplied voltage to supply the connected antenna for operation. The voltage is supplied via the master output, which must be connected to a running reference clock (e.g. in an IMS system).

The system is suitable for retrofitting existing Meinberg GPS systems. The following GPS reference clocks are suitable for use with ADU/GPS-1-12:

- IMS GPS reference clocks (e.g. IMS-GPS182, GNS181-UC)
- GPS slot cards (e.g. GPS180PEX)
- GPS top-hat rail systems (e.g. GPS180XHS)

Older reference clocks are also supported:

- GPS163
- GPS164
- GPS165
- GPS167
- GPS168
- GPS169
- GPS170



Information:

The GPS166 is **not** supported.

Manual Revisions

Meinberg products are subject to ongoing development even after their market release, with new features and enhancements added on a regular basis. Meinberg also revises its product manuals to account for these feature updates.

5 Presentation Conventions in this Manual

5.1 Conventions for the Presentation of Critical Safety Warnings

Warnings are indicated with the following warning boxes, using the following signal words, colors, and symbols:



Caution!

This signal word indicates a hazard with a **low risk level**. Such a notice refers to a procedure or other action that may result in **minor injury** if not observed or if improperly performed.



Warning!

This signal indicates a hazard with a **medium risk level**. Such a notice refers to a procedure or other action that may result in **serious injury** or even **death** if not observed or if improperly performed.



Danger!

This signal word indicates a hazard with a **high risk level**. Such a notice refers to a procedure or other action that will very likely result in **serious injury** or even **death** if not observed or if improperly performed.

5.2 Secondary Symbols Used in Safety Warnings

Some warning boxes may feature a secondary symbol that emphasizes the defining nature of a hazard or risk.



The presence of an "electrical hazard" symbol is indicative of a risk of electric shock or lightning strike.



The presence of a "fall hazard" symbol is indicative of a risk of falling when performing work at height.

5.3 Conventions for the Presentation of Other Important Information

Beyond the above safety-related warning boxes, the following warning and information boxes are also used to indicate risks of product damage, data loss, and information security breaches, and also to provide general information for the sake of clarity, convenience, and optimum operation:



Important!

Warnings of risks of product damage, data loss, and also information security risks are indicated with this type of warning box.



Information:

Additional information that may be relevant for improving efficiency or avoiding confusion or misunderstandings is provided in this form.

5.4 Generally Applicable Symbols

The following symbols and pictograms are also used in a broader context in this manual and on the product.



The presence of the "ESD" symbol is indicative of a risk of product damage caused by electrostatic discharge.



Gleichstrom (*Symboldefinition IEC 60417-5031*)



Wechselstrom (*Symboldefinition IEC 60417-5032*)



Erdungsanschluss (*Symboldefinition IEC 60417-5017*)



Schutzleiteranschluss (*Symboldefinition IEC 60417-5019*)

6 Important Safety Information



The safety information provided in this chapter as well as specific safety warnings provided at relevant points in this manual must be observed during every installation, set-up, and operation procedure of the device, as well as its removal from service.

Any safety warnings affixed to the device itself must also be observed.

Any failure to observe this safety information, these safety warnings, and other safety-critical operating instructions in the product documentation, or any other improper usage of the device may result in unpredictable behavior from the product, and may result in injury or death.

Depending on your specific device configuration and installed options, some safety information may not be applicable to your device.

Meinberg accepts no responsibility for injury or death arising from a failure to observe the safety information, warnings, and safety-critical instructions provided in the product documentation.

It is the responsibility of the operator to ensure that the product is safely and properly used.

Should you require additional assistance or advice on safety-related matters for your product, Meinberg's Technical Support team will be happy to assist you at any time. Simply send a mail to techsupport@meinberg.de.

6.1 Appropriate Usage



The device must only be used appropriately in accordance with the specifications of the product documentation! Appropriate usage is defined exclusively by this manual as well as any other relevant documentation provided directly by Meinberg.

Appropriate usage includes in particular compliance with specified limits! The device's operating parameters must never exceed or fall below these limits!

6.2 Product Documentation

The information in this manual is intended for readers with an appropriate degree of safety awareness. The following are deemed to possess such an appropriate degree of safety awareness:

- skilled persons with a familiarity with relevant national safety standards and regulations,
- instructed persons having received suitable instruction from a skilled person on relevant national safety standards and regulations



If there is any safety information in the product documentation that you do not understand, **do not** continue with the set-up or operation of the device!

Read the product manual carefully and completely before you set the product up for use.

Safety standards and regulations change on a regular basis and Meinberg updates the corresponding safety information and warnings to reflect these changes. It is therefore recommended to visit the Meinberg website at <https://www.meinbergglobal.com> regularly to download up-to-date manuals.

Please keep all product documentation, including this manual, in a safe place in digital or printed format to ensure that it is always easily accessible.

Meinberg's Technical Support team is also always available at techsupport@meinberg.de if you require additional assistance or advice on safety aspects of your LANTIME system.

6.3 Safety when Installing the Device

This rack-mounted device has been designed and tested in accordance with the requirements of the standard IEC 62368-1 (*Audio/Video, Information and Communication Technology Equipment—Part 1: Safety Requirements*). Where the rack-mounted device is to be installed in a larger unit (such as an electrical enclosure), additional requirements in the IEC 62368-1 standard may apply that must be observed and complied with. General requirements regarding the safety of electrical equipment (such as IEC, VDE, DIN, ANSI) and applicable national standards must be observed in particular.

The device has been developed for use in industrial or home environments and may only be used in such environments. In environments at risk of high environmental conductivity ("high pollution degree" according to IEC 60664-1), additional measures such as installation of the device in an air-conditioned electrical cabinet may be necessary.



If the unit has been brought into the usage area from a cold environment, condensation may develop; in this case, wait until the unit has adjusted to the temperature and is completely dry before setting it up.

When unpacking & setting up the equipment, and before operating it, be sure to read the information on installing the hardware and the specifications of the device. These include in particular dimensions, electrical characteristics, and necessary environmental conditions.

Fire safety standards must be upheld with the device in its installed state.

The device with the highest mass should be installed at the lowest position in the rack in order to position the center of gravity of the rack as a whole as low as possible and minimize the risk of the rack tipping over. Further devices should be installed from the bottom, working your way up.

The device must be protected against mechanical & physical stresses such as vibration or shock.

Never drill holes into the device to mount it! If you are experiencing difficulties with rack installation, contact Meinberg's Technical Support team for assistance!

Inspect the device housing before installation. The device housing must be free of any damage when it is installed.

6.4 Safety when Maintaining and Cleaning the Device

Only use a soft, dry cloth to clean the device.

Never use liquids such as detergents or solvents to clean the device! The ingress of liquids into the device housing may cause short circuits in the electronic circuitry, which in turn can cause a fire or electric shock!



Neither the device nor its individual components may be opened. The device or its components may only be repaired by the manufacturer or by authorized personnel. Improperly performed repairs can put the user at significant risk!

In particular, **never** open a power supply unit or module, as hazardous voltages may be present within the power supply device even after it is isolated from the upstream voltage. If a power supply unit or module is no longer functional (for example due to a defect), it can be returned to Meinberg for repair.

Some components of the device may become very hot during operation. **Do not touch these surfaces!**

If maintenance work is to be performed on the device and the device housing is still hot, switch off the device beforehand and allow it to cool.

7 Important Product Information

7.1 CE Marking

This product bears the CE mark as is required to introduce the product into the EU Single Market.



The use of this mark is a declaration that the product is compliant with all requirements of the EU directives effective and applicable as at the time of manufacture of the product. These directives are listed in the EU Declaration of Conformity, appended to this manual as Chapter ??.

7.2 UKCA Marking

This product bears the British UKCA mark as is required to introduce the product into the United Kingdom (excluding Northern Ireland, where the CE marking remains valid).



The use of this mark is a declaration that the product is in conformity with all requirements of the UK statutory instruments applicable and effect as at the time of manufacture of the product. These statutory instruments are listed in the UK Declaration of Conformity, appended to this manual as Chapter ??.

7.3 Ensuring the Optimum Operation of Your Device

- Ensure that ventilation slots are not obscured or blocked by dust, otherwise heat may build up inside the device. While the system is designed to shut down automatically in the event of temperature limits being exceeded, the risk of malfunctions and product damage following overheating cannot be entirely eliminated.
- The device is only deemed to be appropriately used and EMC limits (electromagnetic compatibility) are only deemed to be complied with while the device housing is fully assembled in order to ensure that requirements pertaining to cooling, fire safety, electrical shielding and (electro)magnetic shielding are upheld.

7.4 Disposal



Important!

Do not dispose of the product or batteries via the household waste. Inquire with your local waste disposal company or authority on how to best dispose of the product or battery if necessary.

Disposal of the Device



This product falls under the labeling obligations of the Waste Electrical and Electronic Equipment Directive 2012/19/EU ("*WEEE Directive*") and thus bears this WEEE symbol. The presence of this symbol indicates that this electronic product may only be disposed of in accordance with the following provisions.

It can be returned to Meinberg for disposal. In this case, the shipping costs are to be borne by the customer, while Meinberg will cover the costs for disposal. If you wish for Meinberg to handle disposal for you, please get in touch with us. Otherwise, please use the return and collection systems provided within your country to ensure that your device is disposed of in a compliant fashion to protect the environment and conserve valuable resources.

This product is considered to be a "**B2B**" product for the purposes of the WEEE Directive and is also classified as "**IT and Telecommunications Equipment**" in accordance with Annex I of the Directive.

Disposal of Batteries

Please consult your local waste disposal regulations for information on the correct disposal of batteries as hazardous waste.

Disposal of Packaging Materials

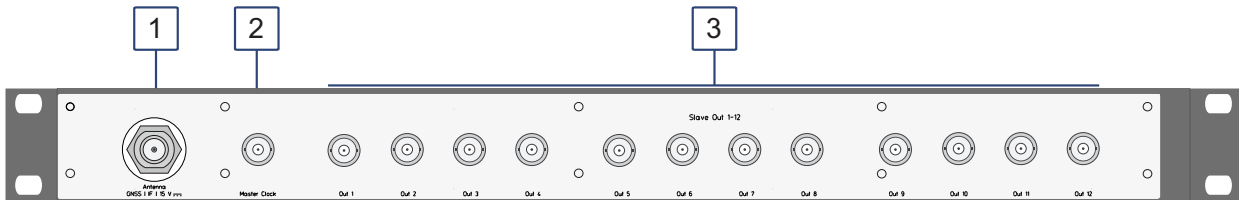


The packaging materials that we use are fully recyclable:

Material	Use for	Disposal
Polystyrol	packaging frame/filling material (polystyrene peanuts, bubble wrap)	Recycling Depot
PE-LD Polyethylene low density	accessories packaging	Recycling Depot
Cardboard	shipping packaging, accessories packaging	Paper recycling

For information on the proper disposal of packaging materials in your specific country, please inquire with your local waste disposal company or authority.

8 ADU/GPS-1-12 Connectors



Information:

The numbering in the drawing above relates to the relevant subsection in this chapter.

8.1 Antenna Input: GPS-AV

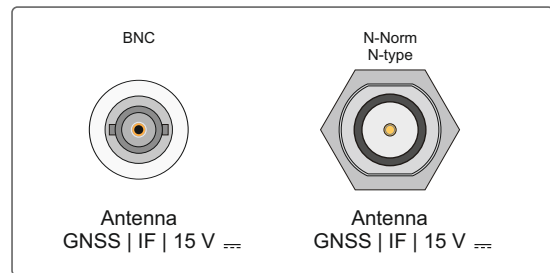
Mixing Frequency

Reference Clock to Antenna
(GPS Converter): 10 MHz ¹

Intermediate Frequency

Antenna (GPS Converter)
to Reference Clock: 35.4 MHz ¹

¹ These frequencies are transferred via the antenna cable



Power Requirements

of the Antenna: 15 V, 100 mA (via antenna cable)

Connection Type: BNC Female/Type-N Female

Cable Type: Coaxial Cable, Shielded

Danger!

Do not work on the antenna system during thunderstorms!

Danger of death from electric shock!

- Do not carry out any work on the antenna system or the antenna cable if there is a risk of lightning strike.
- Do not carry out any work on the antenna system if it is not possible to maintain the prescribed safe distance to exposed lines and electrical substations.



8.2 GPS Antenna Output - Master

Output signal: Distributed 35.4 MHz of the GPS antenna

Power Supply: 15 V DC (from a active reference, clock at "Master Clock" only)

Cable length signal output to reference clock: max. 300m with RG58,
max. 700m with RG213

Input Current: @ 20 mA

Connector: BNC female



Important!

The output labeled "Master Clock" must be connected to a "running" reference clock, as this supplies the ADU/GPS-1-12 with the necessary operating voltage via this connection.

8.3 GPS Antenna Output - Slave

Output signal: Distributed 35.4 MHz of the GPS antenna

Cable length signal output to reference clock: max. 300m with RG58,
max. 700m with RG213

Input Current: @ 20 mA

Connector: BNC female



9 Installation of a GPS Antenna

Danger!



Do not mount the antenna without an effective fall arrester!

Danger of death from falling!

- Ensure that you work safely when installing antennas!
- Never work without an effective fall arrester!

Danger!



Do not work on the antenna system during thunderstorms!

Danger of death from electric shock!



- Do not carry out any work on the antenna system or the antenna cable if there is a risk of lightning strike.
- Do not carry out any work on the antenna system if it is not possible to maintain the prescribed safe distance to exposed lines and electrical substations.

Selecting the Antenna Location

To avoid difficulties with synchronization, select a location that allows for an unobstructed view of the sky so as to ensure that enough satellites can be found. The line of sight between the antenna and satellites should not be obstructed in any way. The antenna must also not be installed under power lines or other electrical lighting or power circuits.

Installation Conditions for Optimum Operation:

- clear view of 8° above the horizon or
- clear view towards equator (if clear view of 8° not possible) or
- clear view between 55th north and 55th south parallels (satellite orbits).

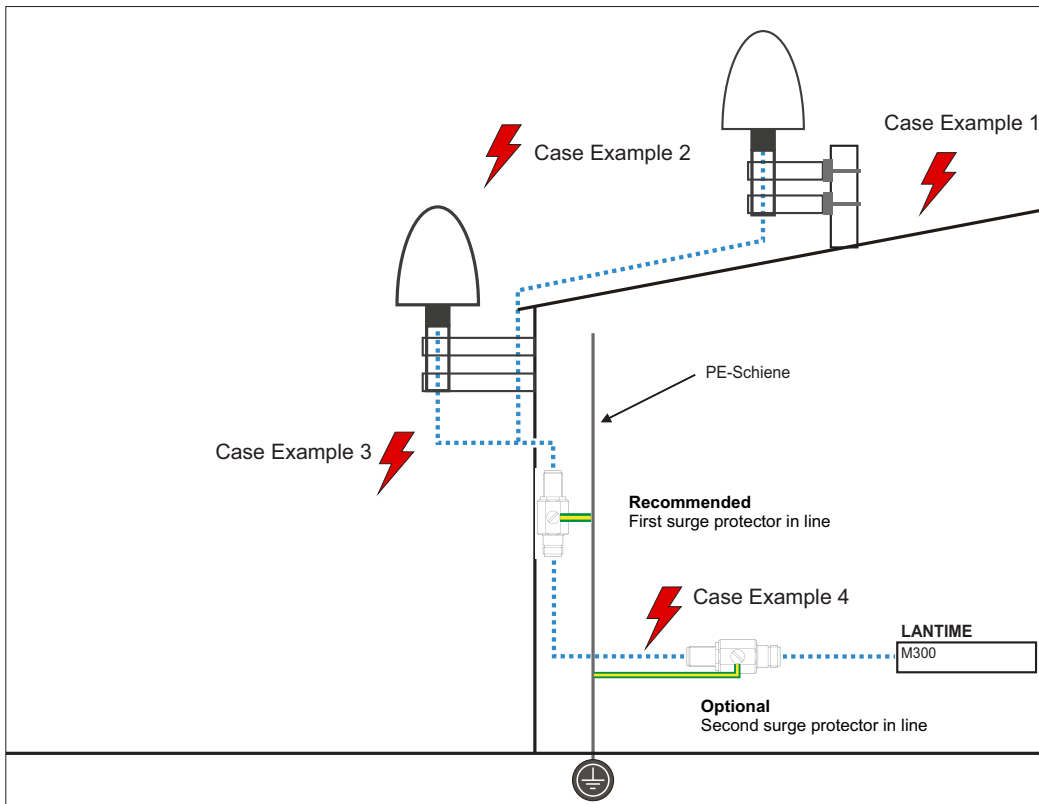


Information:

Problems may arise if all of these views are obstructed, as four satellites must be located to calculate a new position.

Important Information Regarding Surge Protection

The following illustration is a visual representation of where there is a risk of hazardous voltage surges in the cable route (from antenna to Meinberg system). The examples below explain how you can protect your Meinberg system from these.



Case Example 1:

An indirect lightning strike near the antenna or coaxial cable may induce transient voltages ("spikes" or "surges"). These spikes can be carried via the coaxial cable to the inside of the building and consequently to the system's receiver. It is therefore strongly recommended to have the surge protector installed at the point directly after the cable enters the building.

Case Example 2:

In the event of a direct lightning strike on the antenna, the resultant transient voltage may be discharged via the PE busbar (GNS L1 antenna only). This prevents the transient voltage from being carried to the coaxial cable and subsequently to the system's receiver.

Case Example 3:

If the length of the coaxial cable between the antenna and point of entry into the building is rather long (e.g., 10 meters), there is a greater risk of transient voltages being introduced into the antenna cable as a result of lightning strike. So the installation of a surge protector immediately after the point of entry into the building is also strongly recommended here.

Case Example 4:

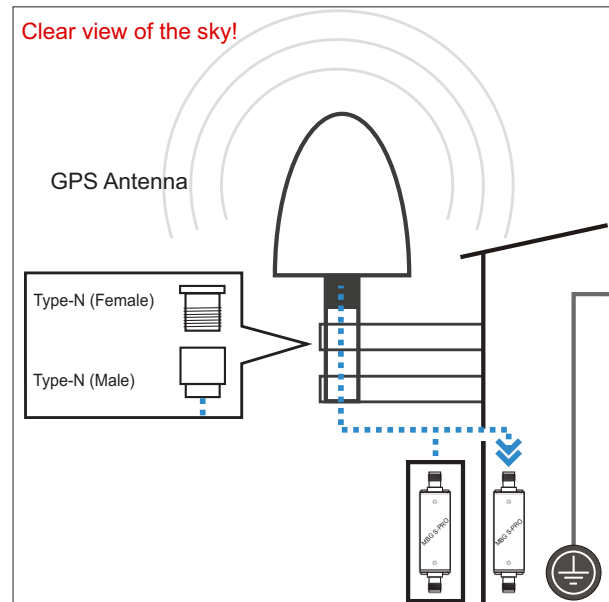
If the cable leading from the point of entry into the building to the Meinberg system is laid together with other cables (for example in a cable duct alongside high-voltage cables), transient voltages may "leak" into the antenna cable, causing damage to your system. To prevent this, a second surge protector can optionally be installed in the line just before the device.

Mounting the Antenna

1.

Use the included mounting kit to mount the antenna at a distance of 50 cm from other antennas, either on a vertical pole of a diameter of no more than 60 mm, or directly onto a wall.

The antenna cable should then be connected to the Type-N connector of the antenna. Feed the other end of the cable into the building through the wall.



Information:

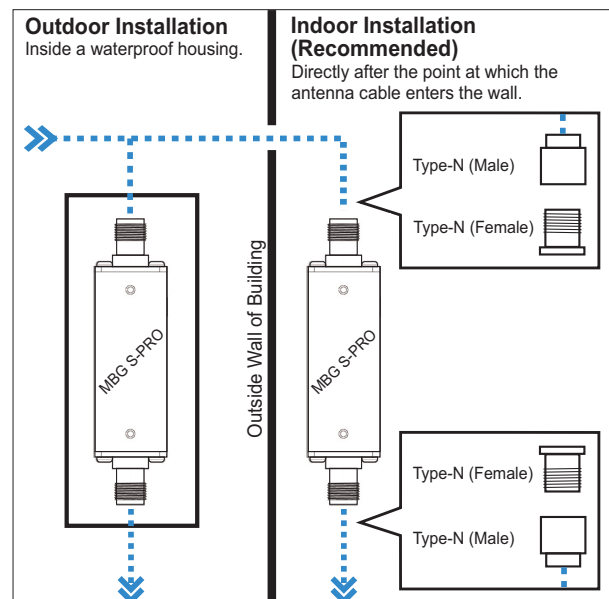
Make sure that the maximum cable length is not exceeded when installing the antenna cable between the antenna and receiver. The maximum length will depend on the type of cable used (RG213, RG58) and its attenuation factor.

2.

Voltage surges (e.g., caused by lightning strike) may be transmitted along the antenna cable and cause damage to the receiver. Using a MBG S-PRO surge protector can help to protect your receiver against such surges.

If installed in a waterproof housing, the MBG S-PRO can be installed outdoors. However, Meinberg recommends installing the surge protector indoors—as closely to the entrance point of the antenna cable as possible—in order to minimize the risk of surge damage (such as that caused by lightning strike).

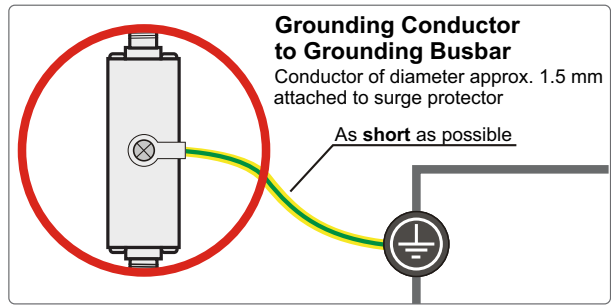
Connect the other end of the antenna cable to the female connector of the surge protector.



3.

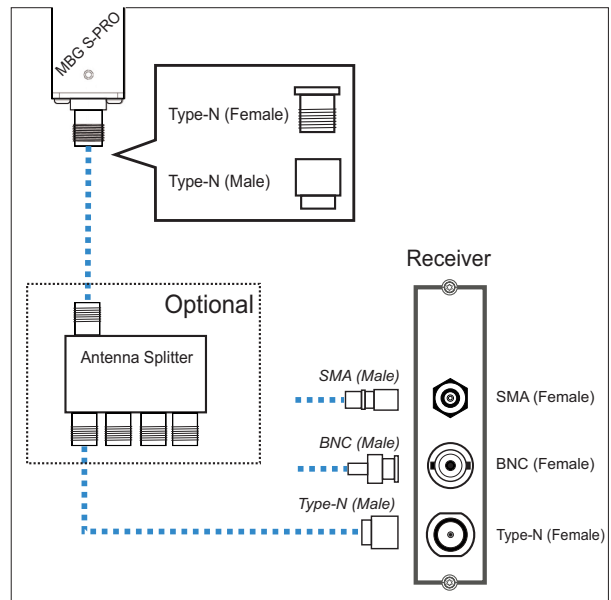
To ground the antenna cable, connect the surge protector to a grounding busbar using a grounding conductor (see illustration).

Once installation is complete, connect the other end of the antenna cable to the surge protector female connector.



4.

The next step is to connect the supplied coaxial cable from the surge protector to the receiver.



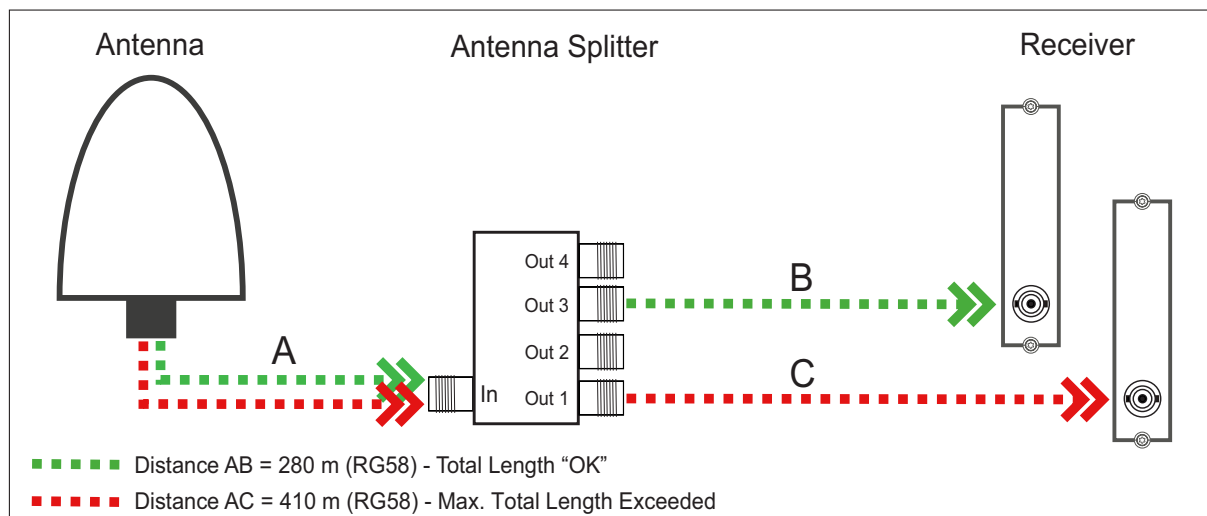
Optional Antenna Splitter

Multiple receivers can be connected to one antenna using the antenna splitter. When doing so, be aware that the total distance, comprising the cable from the antenna to the splitter, and from there to the receiver, must not exceed the maximum cable length. The splitter may be installed at any location between the surge protector and the receivers.



Information:

Please note for installation purposes that GNSS L1 components cannot be directly connected to or used with a Meinberg GPS antenna distributor.



Compensating for Signal Propagation Delay in the Antenna Cable

To enable the connected receiver to compensate for the signal propagation delay inherent in the antenna cable, you will need to enter either the length of your antenna cable in meters or the offset time in nanoseconds into your receiver.

Antenna Cable Length (m):

The satellite signal reception is delayed as a result of coaxial cable used.

Cable	Delay	Usage
RG58U	5 ns/m	For GPS and GNS-UC receivers
H155	4 ns/m	For GNS and GNM receivers

The cable length entered (from antenna to receiver) is used by the system to calculate the delay time and to automatically compensate for propagation delay. A value of 20 m is set by default.

When using a different type of coaxial cable, please use the "By Delay" option. You will need to calculate the delay yourself using the information provided in the product specifications provided by the manufacturer of your coaxial cable.

10 Before you start

10.1 Required Tools

For mounting bracket: TORX T20



10.2 Preparing Installation

The ADU/GPS-1-12 is designed for installation in 19-inch racks. Rack systems come with all necessary accessories like mounting brackets, screws (except rackmount screws), adapters for power supply (if needed).

Before unboxing the system, make sure that there is sufficient space in the built-in cabinet to ensure safe ventilation of the system. Avoid dirt and dust during installation.



Caution!

To avoid damage to the system and personal injury, please make sure to follow the instructions of the safety chapter 6 "Important Safety Information" and 7 "Important Product Information" in this manual.

10.3 Contents of Delivery

Unpack the ADU/GPS-1-12 carefully and check the contents of the delivery against the enclosed packing list to ensure that no parts are missing. If any of the listed items are missing, please contact our sales department: sales@meinberg.de

Check that the product has not been damaged in transit. If the product is damaged or fails to operate upon installation, please contact Meinberg immediately. Only the recipient (the person or company receiving the system) may file claims or complaints against the forwarder for damage caused in transit.

Meinberg recommends that you keep the original packaging materials in case the product needs to be shipped or transported again at a later date.

11 System Installation

19 inch rackmount

Mounting brackets and fixing screws are included in the scope of delivery of a rackmount system. If the system is supplied with an antenna and antenna cable, it is advisable to first mount the antenna in a suitable location see chapter 9 ("Installation of a GPS Antenna") and lay the antenna cable.

For systems with power supply

The power supply cable should also be available at the installation site before the system is installed. Make sure that all necessary adapters for connecting the device are available. Make sure that the voltage is disconnected from the power source during installation.

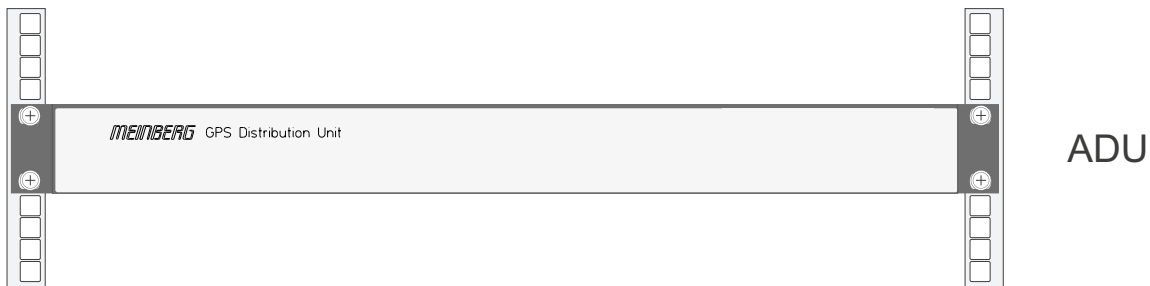


Illustration: ADU rack mount. The screws for rack mounting are not shipped with the product.

11.1 Connecting the System

The maximum permissible cable length between a Meinberg Antenna-/Converter unit and the GPS-receiver merely depends on the characteristics of the antenna cable. Only coaxial cable with an impedance of $50\ \Omega$ can be used in principle, because the impedance of the cable has to match the output and input impedance of the Antenna/Converter unit and the receiver.

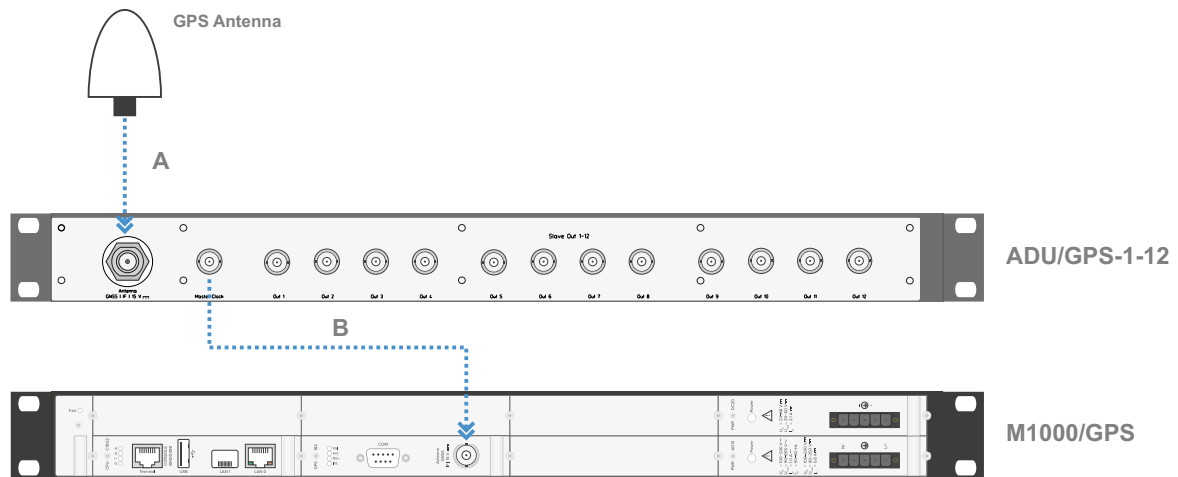


Figure: Connection scheme ADU/GPS-1-12 to M1000 with GPS reference clock as master

The length of the antenna cable from the antenna, via the ADU distributor, to the respective receiver must not exceed 300 meters when using cable type RG58.

Information about maximum GPS antenna cable lengths can be found here:
<https://www.meinbergglobal.com/english/specs/gpscable.htm>

The signal propagation time of the antenna cable (route A + B) can be compensated by configuration of the GPS reference clock in the web interface, see chapter 9 ("Installation of a GPS Antenna")

The "Antenna Faulty" and "Antenna Short-Circuit" warnings, generated by the GPS receiver, will only work if there is interference on the cable between ADU/GPS-1-12 and the connected GPS receiver. Disturbances on the cable to the antenna can only be detected by loss of the received satellites, the GPS receiver changes to the "Warm Boot" operating mode.

12 Technical Appendix

12.1 Technical Specifications: Chassis

Chassis Type: 19" Multipac Chassis, 1U

Chassis Material: Sheet Steel

Temperature Range

Ambient Temperature: 0 °C to 50 °C (32 °F to 122 °F)

Storage Temperature: -20 °C to 70 °C (-4 °F to 158 °F)

Relative Humidity

Operation: Max. 95 % (non-condensing) at 40 °C (104 °F)

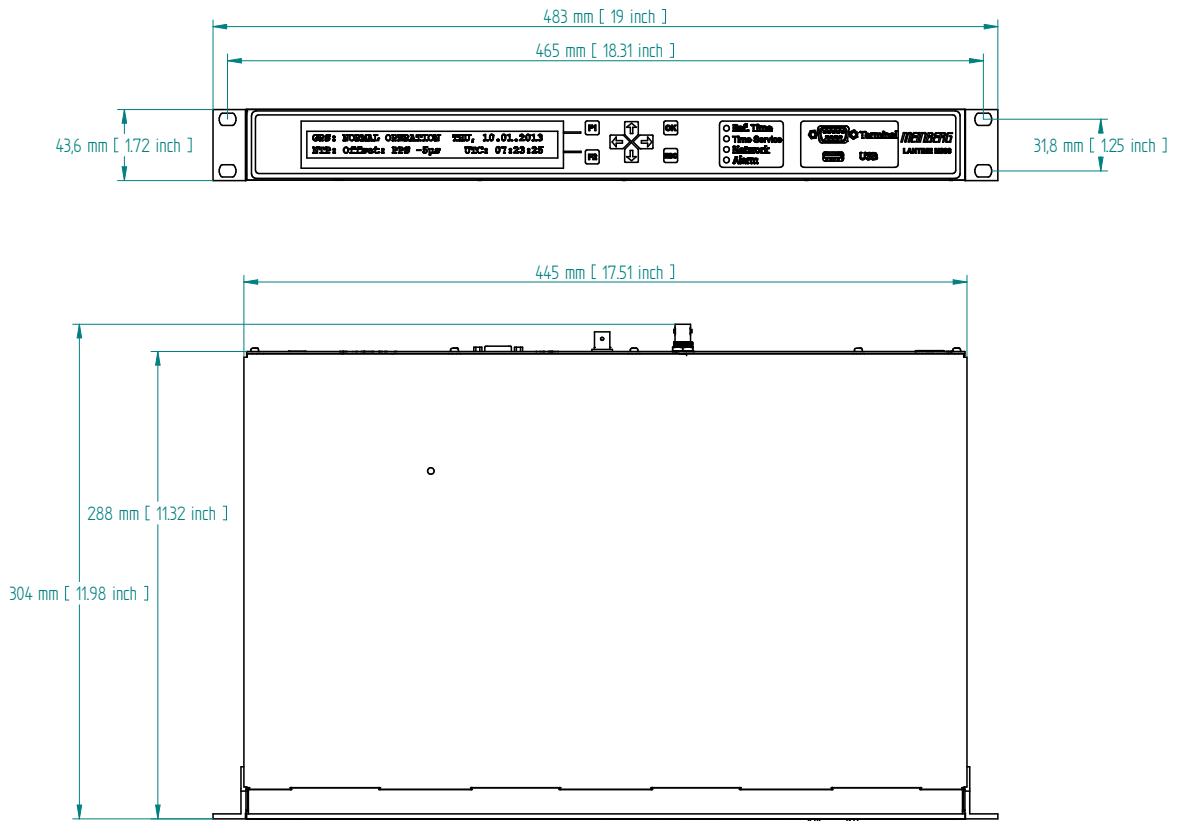
Operating Altitude

Operation: Max. 4,000 m (13123 ft) (Above Sea Level)

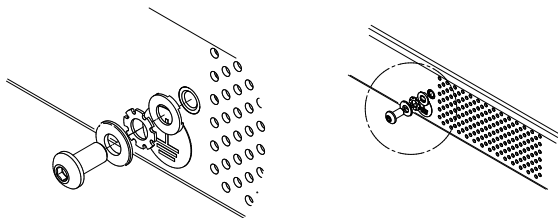
Acoustic Emissions: 0 dB (A)

IP Rating: IP30

Chassis Dimensions



External Ground Conductor Terminal on Chassis



12.2 Technical Specifications: MBG S-PRO Surge Protector

Adapter plug with replaceable gas discharge tube for coaxial signal connections.

Connector Type: Type-N connector female/female. The MBG S-PRO set includes a surge protector (Phoenix CN-UB-280DC-BB), a pre-assembled coaxial cable, and a mounting bracket.

The coaxial cable surge protector must be installed on the antenna line. The shielding is grounded using a conductor that is short as possible. The CN-UB-280DC-BB is equipped with two Type-N female connectors and has no dedicated input/output polarity and no preferred installation orientation.



Phoenix CN-UB-280DC-BB

Features:

- High RF Performance
- Multiple Strike Capability
- 20 kA Surge Protection
- Bidirectional Protection

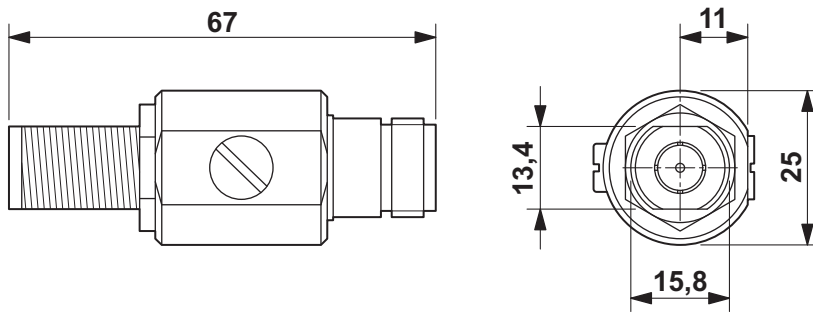
Installation Method:	Connector Type-Specific Adapter Plug	
Direction of Action:	Line Shield/Earth Ground	
Maximum Continuous Operating Voltage:	UC (Wire-Ground) 195 V AC	280 V DC
Rated Current:	IN	5 A (25 °C)
Effective Operating Current:	IC at UC	≤ 1 μA
Rated Discharge Current:	In (8/20) μs (Core-Earth) In (8/20) μs (Core-Shield)	20 kA 20 kA
Total Surge Current:	(8/20) μs (10/350) μs	20 kA 2.5 kA

Max. Discharge Current:	I_{\max} (8/20) μ s Maximum (Core-Shield)	20 kA
Rated Pulse Current:	I_{an} (10/1000) μ s (Core-Shield)	100 A
Impulse Discharge Current:	(10/350) μ s, Peak Value I_{imp}	2.5 kA
Output Voltage Limit:	At 1 kV/ μ s (Core-Earth) spike At 1 kV/ μ s (Core-Earth) spike	≤ 900 V ≤ 900 V
Response Time:	t_A (Core-Earth) t_A (Core-GND)	≤ 100 ns ≤ 100 ns
Input Attenuation:	aE, asym.	Typically 0.1 dB (≤ 1.2 GHz) Typically 0.2 dB (≤ 2.2 GHz)
Cut-Off Frequency:	f_g (3 dB), asym. (Shield) in 50 Ω System	> 3 GHz
Standing Wave Ratio:	VSWR in a 50 Ω System	Typically 1.1 (≤ 2 GHz)
Permissible HF Power:	P_{\max} at VSWR = xx (50 Ω System)	700 W (VSWR = 1.1) 200 W (VSWR = ∞)
Capacitance:	(Core-Earth) Asymmetric (Shield)	Typically 1.5 pF Typically 1.5 pF
Surge Current Resistance:	(Core-Earth)	C1 - 1 kV/500 A C2 - 10 kV/5 kA C3 - 100 A D1 - 2.5 kA
Ambient Temperature:	(During Operation)	-40 °C ... 80 °C
Supported Altitude:		≤ 2000 m (above sea level)
IP Rating:		IP55
Housing Material:		Nickel-Plated Brass Colored Nickel
Dimensions:		Height 25 mm, Width 25 mm, Depth 67 mm
Connection Type:	IN OUT	Type-N Connector 50 Ω Type-N Connector, Female Type-N Connector, Female
Standards/Regulations:		IEC 61643-21 2000 + A1:2008 EN 61643-21 2001 + A1:2009

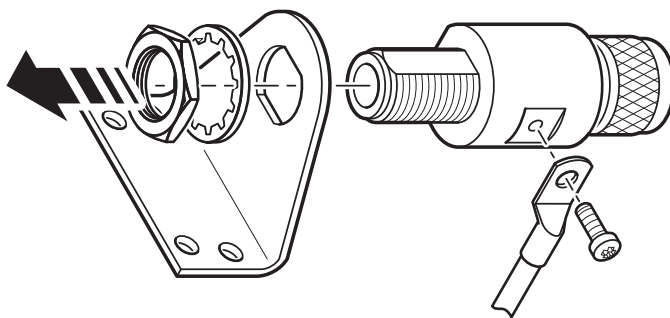
The original product page of the supplier (see link) of the CN-UB-280DC-BB surge protector is the source of the specifications above. Please refer to the manufacturer's product page at the following link for detailed specifications as well as a variety of product-specific documents:

<https://www.phoenixcontact.com/online/portal/gb/?uri=pxc-oc-itemdetail:pid=2818850>

12.2.1 MBG S-PRO: Physical Dimensions



12.2.2 Installation and Grounding



12.3 Technical Specifications: Antenna Cable

The table below shows which coaxial cable types and lengths are supported by Meinberg for each of the receiver types. If you need to purchase a replacement cable at any time, please refer to this table to ensure that you select cable with suitable cutoff frequency and attenuation properties.

Cable Type	Cable Diameter (mm/in)	Attenuation at 100 MHz (db)/100 m/328 ft	Max. Cable Length (m/ft)	Used for Receiver Type
RG58/CU	5/0.2	17	300/984	GPS/GNS-UC/DCF/PZF
RG213	10.3/0.41	7	700/2297	GPS/GNS-UC
H155	5.4/0.21	9.1	70/230	GNM/GNS
H2010 Ultraflex	7.3/0.29	5.8	150/492	GNM/GNS

Please refer to the data sheet of the cable in question for further specifications.

13 RoHS Conformity

Conformity with EU Directive 2011/65/EU (RoHS)

We hereby declare that this product is compliant with the European Union Directive 2011/65/EU and its delegated directive 2015/863/EU "Restrictions of Hazardous Substances in Electrical and Electronic Equipment".

We warrant that our electrical and electronic products sold in the EU do not contain lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls (PBBs), polybrominated diphenyl ethers (PBDEs), bis(2-ethylhexyl)phthalat (DEHP), benzyl butyl phthalate (BBP), dibutyl phthalate (DBP), or diisobutyl phthalate (DIBP) above the legal limits.



