

Installation and operating instructions

GNSS Receiver AG-200



Version: V2.20200623



3030247701-02-EN

Read and follow these instructions. Keep these instructions in a safe place for later reference. Please note that there might be a more recent version of these instructions on the homepage.

Company details

Document	Installation and operating instructions Product: GNSS Receiver AG-200 Document number: 3030247701-02-EN Original instructions Original language: German
Copyright ©	Müller-Elektronik GmbH Franz-Kleine-Straße 18 33154 Salzkotten Germany Phone: ++49 (0) 5258 / 9834 - 0 Fax: ++49 (0) 5258 / 9834 - 90 Email: info@mueller-elektronik.de Homepage: http://www.mueller-elektronik.de

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1 For your safety

1.1 Basic safety instructions



Please read the following safety instructions carefully before using the product for the first time.

- Do not make any unauthorized modifications to the product. Unauthorized modifications or use may impair safety and reduce the service life or operability of the unit. Modifications are considered unauthorized if they are not described in the product documentation.
- Comply with road traffic rules. Stop the vehicle before operating the receiver or connected components.

1.2 Intended use

The product is intended for accurate positioning of agricultural vehicles.

The product is only intended for use in the agricultural sector. The manufacturer shall not be held responsible for any other use of the system.

The operating instructions form part of the product. The product may only be used in accordance with these operating instructions.

The manufacturer cannot be held liable for any personal injury or property damage resulting from such non-compliance. All risk arising from improper use lies with the user.

1.3 Layout and meaning of warnings

All safety instructions found in these Operating Instructions are composed in accordance with the following pattern:

	WARNING
	This signal word identifies medium-risk hazards, which could potentially cause death or serious physical injury, if not avoided.

	CAUTION
	This signal word identifies hazards that could potentially cause minor or moderate physical injury or damage to property, if not avoided.

NOTICE

This signal word identifies hazards that could potentially cause damage to property, if not avoided.

There are some actions that need to be performed in several steps. If there is a risk involved in carrying out any of these steps, a safety warning appears in the instructions themselves.

Safety instructions always directly precede the step involving risk and can be identified by their bold font type and a signal word.

Example

- 1. NOTICE! This is a notice. It warns that there is a risk involved in the next step.**
2. Step involving risk.

1.4

Disposal



When it has reached the end of its service life, please dispose of this product as electronic scrap in accordance with all applicable waste management laws.

1.5

Cleaning

Do **not** clean the product with a high pressure cleaner to prevent moisture from entering the connector.

2 Product description

2.1 About the GNSS receiver



The smart AG-200 GNSS receiver is designed for agricultural applications where high availability is required, e.g. for section control, variable rate control, assisted guidance and field navigation. The universal magnetic mount allows quick and easy installation on any machine. Various interfaces allow future-proof communication with the receiver, either via CAN bus or serial.

2.2 Meaning of the LED lights

The GNSS receiver has an LED light that displays the current state of the receiver.

Possible statuses of the LED light

Colour	Status	Autonomous	SBAS/SBAS+
Red	Lit	Start, error	
	Slowly flashing	Update in progress	
	Rapidly flashing	Start	
Orange	Rapidly flashing	No position	No position
	Slowly flashing		Autonomous, no SBAS signal
	Lit		Autonomous, SBAS signal available
Green	Rapidly flashing		DGPS, no SBAS signal, using outdated corrections
	Slowly flashing		DGPS, no SBAS signal, using current corrections
	Lit	Autonomous position	DGPS, SBAS signal available

2.3 Function overview

The receiver supports the following satellite systems and correction signals:

Function	Transmission	Accuracy	Range	Costs
GPS Designation of the American global satellite navigation system.			Worldwide	Free of charge
GLONASS Designation of the Russian global satellite navigation system.			Worldwide	Free of charge
GALILEO Designation of the European global navigation system.			Worldwide	Free of charge
BeiDou Designation of the Chinese global navigation system.			Worldwide	Free of charge
EGNOS/WAAS/MSAS/GAGAN Is a free correction signal that is transmitted by satellite. It is used for more simple field work, e.g. spraying, soil tillage, fertiliser spreading, slurry spreading and harvesting.	Satellite	Pass to pass: <25 cm	Europe, USA, Japan, India	Free of charge
ViewPoint RTX Is a satellite-based correction service that is available virtually worldwide for Trimble-L1 GNSS receivers.	Satellite	Pass to pass: 15 cm	Worldwide	Licence fees

SBAS+

The receiver also supports SBAS+. Satellites that cannot be corrected via SBAS are still used to determine the position using SBAS+. This additionally increases the resistance to signal losses in case of shadowing.

3 Mounting and configuration

3.1 Mounting the GNSS receiver



NOTICE

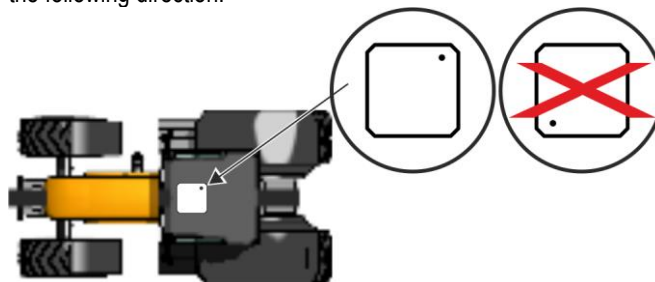
The receiver needs an open view of the sky.

- Mount the receiver on the roof of the vehicle cab.
- Avoid shadowing the receiver's view of the sky.

Procedure

To mount the receiver:

1. Identify a suitable location on the roof of the vehicle: as far forward as possible, and in the centre of the vehicle.
2. Use alcohol to clean the position on which you will mount the receiver.
3. Expose the adhesive surface of the magnetic plate. The notch in the magnetic plate must face in the following direction:



4. Place the GNSS receiver onto the magnetic plate so that it locks. The connection must thus face away from the direction of travel.

⇒ You have now mounted the receiver onto the roof of the vehicle.

⇒ You can now connect the receiver to a terminal.

3.2 Connecting the GNSS receiver to a terminal

NOTICE

Terminal connector supplying power

Potential damage to the terminal from a short-circuit.

- Switch the terminal off before plugging in or removing the connector.

Procedure

This is how you connect the receiver to a terminal:

1. Switch off the terminal.
2. Guide the cable of the receiver into the vehicle cab.

3. Find the appropriate RS232 connection on the terminal. Refer to the operating instructions for the terminal to find out which connection this is. For the majority of terminals from Müller-Elektronik, this is going to be port .

⇒ You have now connected the receiver to the terminal.

3.3

Activating the driver of the GNSS receiver on a terminal

Before you can use the receiver with a touch terminal, you have to activate a driver.

You can read how to activate a driver in the operating instructions for the terminal.

3.4

Configuring the GNSS receiver

You can configure various receiver parameters through the terminal.

Information on the available parameters and how they are configured can be found in the terminal operating instructions.

3.5

Activating licenses for the GNSS receiver

If you want to use ViewPoint RTX as an additional correction signal, you need an additional license.

The license is available through your dealer or through the Trimble online shop at:
<https://positioningservices.trimble.com/>

You can read how to activate a license in the operating instructions for the terminal.

4 Technical specifications

4.1 Technical specifications of the receiver

GNSS receiver specifications

Receiver type	L1 multi-constellation GNSS receiver
GNSS signals	GPS, GLONASS, Galileo, BeiDou, QZSS
Satellite tracking	58 GNSS satellites 1 SBAS satellite 1 MSS/L band correction satellite
SBAS support	WAAS, EGNOS, GAGAN, MSAS
MSS band support	ViewPoint RTX correction service
Cold start	<60 s (no almanac, position and time)
Warm start	<30 s (almanac, approximate position and time, no ephemeris)
Hot start	<10 s (ephemeris, approximate position and time)
Maximum speed	515 m/s (1,854 km/h)
Minimum speed	0.3 km/h
Maximum height	18,000 m (48,600 ft)
Installation	Universal magnetic mount
Humidity	5-100 % condensing
Shock resistance	ISO 15003
Input/Output protection	Overvoltage and short-circuit protection
Dimensions	180 mm diameter, 74 mm height
Weight	640 g (22.6 oz)
LED	Multi-color LED
Connector	Deutsch DTM-12P (Coding A)

Power

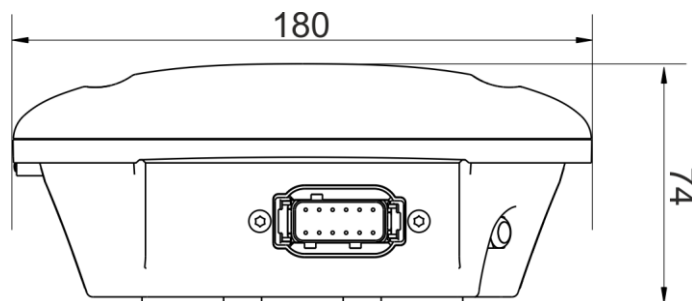
Input voltage	9-16 V DC
Power input	3.0 W
Current consumption	250 mA @ 12 V

Environmental conditions

Operating temperature	-30 °C - + 70 °C
Storage temperature	-40 °C - + 85 °C
Ingress protection code	IP66

Connectivity

Serial interfaces	2 serial interfaces (4,800-115,200 bps)
CAN interfaces	2 full duplex CAN interfaces with 120 Ohm termination, NMEA 2000, J1939
Analog/Digital inputs and outputs	Emulated radar output (speed out)
NMEA 0183 output frequency	1, 5, 10 Hz



Schematic illustration

4.2

Pin assignment

Pin assignment 12-pin Deutsch connector

Pin	Signal
1	CAN_1_H
2	RS-232-TX
3	RS-232_RX
4	AD I/O_1 (Default) / PPS (Firmware selectable)
5	Signal 0 VE
6	CAN_2_H
7	CAN_2_L
8	RS-232_2_TX
9	AD I/O / RS-232_2_RX (Default) (Resistor selectable)
10	V+ In/Out
11	V- In/Out
12	CAN_1_L

5 Item overview

Item number	Item name
3030247701	AG-200 GNSS receiver with magnetic plate and 6m connector cable
3030247702	AG-200 GNSS receiver with magnetic plate and 12m connector cable
3130247701	AG-200 GNSS receiver
3130247702	Magnetic plate for the AG-200 GNSS Receiver