Instruction Manual
GEO-MICHEL®

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Alberding GmbH

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1.4	30.09.2025	Chapters 7.3.6 and A.1 added

Software releases

Software	Version
GEO-MICHEL®	69469

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1. Notes about this document

1.1. Legal provisions

The information and indications in this document are the property of Alberding GmbH. Publication, in whole or in part, requires the written consent of Alberding GmbH. Reproduction for internal use or proper application is allowed and does not require authorisation.

1.2. Terms of use and disclaimer of liability

The Alberding A08-RTK GEO-MICHEL® is a complex sensor developed by Alberding GmbH for high-precision satellite-based positioning applications. When developing the system, we prioritised the selection and the best possible quality of the system components. We are convinced that you have chosen an efficient and affordable measuring system.

Since Alberding GmbH cannot monitor compliance with the operating instructions and safety warnings, nor the conditions and methods of operation and use of the sensor, Alberding GmbH accepts no responsibility for any loss, damage, direct or indirect costs arising from or in any way connected with the use of the sensor, improper operation or incorrect use.

The sensor can be activated via the GEO-MICHEL® configuration page after accepting the terms of use and the general terms and conditions of Alberding GmbH.

Please note the following information:

1. Alberding GmbH is not liable for any damage or consequential damage resulting from the use of the GEO-MICHEL®. The maximum liability is limited to the amount of the purchase price.

2. The GEO-MICHEL® is supplied to business customers (B2B) with a manufacturer's warranty of 12 months. Repairs may only be carried out by the manufacturer or by a specialist company authorised by the manufacturer. Unauthorised opening of the sensor immediately voids the warranty.

3. The Alberding GEO-MICHEL® contains a powerful lithium polymer battery with a high charge density. Only charge the sensor with the recommended chargers in a protected environment. As with smartphones, the battery may be damaged when charging the sensor. Alberding GmbH is not liable for damage and consequential damage caused by charging the sensor in an unprotected environment.

4. According to the housing manufacturer, the Alberding GEO-MICHEL® has an IP65 protection class. The system is protected against dust and splash water, but not against submersion of the sensor in water. Handle the system with care.

5. We have ensured that the integrated sensor components cover an extended temperature range. Please note that the sensor can become very hot due to direct sunlight (e.g. behind a car windscreen). Protect the sensor from the influence of extreme temperatures.

6. The GNSS positioning accuracy stated on the data sheet was specified by the manufacturer of the integrated GNSS RTK module. The achievable positioning accuracy depends on several factors (availability of suitable RTK correction data, measurement conditions on site, etc.). As Alberding GmbH has no influence on these factors or the RTK algorithms, we cannot guarantee these accuracies.

7. Furthermore, Alberding GmbH is not liable for damage caused by incorrect information provided by the customer, unless this is due to our fault or the fault of our representatives. The manufacturer reserves the right to make changes to the product, technical data or user manual without prior notice.

1.3. Terms of use ALPOS® service

The Alberding GEO-MICHEL® is sold with the ALPOS® service from Alberding GmbH. The ALPOS® service initially includes a SIM card with data volume, the transmission of GNSS correction data and support from Alberding GmbH for technical assistance requests. The service will later be expanded to include optional services related to precise spatial referencing.

The following terms of use apply to the ALPOS® service:

1. Alberding GmbH is not liable for damages and consequential damages resulting from the failure of the ALPOS® service. The maximum liability amount is limited to the annual flat rate.

2. The GNSS correction data is provided by third-party providers. Alberding GmbH does not guarantee the suitability and continuity of the GNSS correction data provided by third-party companies.

3. Alberding GmbH uses special SIM cards for the ALPOS® service. The network providers do not guarantee the uninterrupted availability of mobile internet in Germany. Alberding GmbH is not liable for dead spots or temporary outages in individual service areas.

4. The data volume provided by Alberding GmbH is 150 MB per month. You will receive a warning message if the data volume is exceeded. If the data volume is exceeded, you will be charged subsequently.

5. The support hours for the ALPOS® service are limited to the office hours of Alberding GmbH (weekdays from 08.00 - 12.00 and from 13.00 - 17.00). The internet-based tools, such as the configurator or the optional map display, are generally available 24 hours a day. Alberding GmbH is not liable in the event of a service failure.

6. The ALPOS® service is valid for one year after activation of the system. The service is automatically extended for a further year if it is not cancelled by either party at least one month before the end of the contract.

7. During the validity of the service contract period for the ALPOS® service, we store personal data to inform you about innovations, limitations of availability and general experiences. You consent to the processing of your data (customer, contact person, contact details) by ticking the box. This data will be deleted by Alberding GmbH after termination of the service and the expiry of any legally prescribed retention periods.

1.4. Scope of validity

This document applies to the following product types:

Alberding A08 version **GEO-MICHEL®**

1.5. Target group

This document is intended for users of the Alberding A08-RTK GEO-MICHEL®.

1.6. Additional information

For more details, visit: https://www.alberding.eu/

1.7. Abbreviations and Acronyms

GNSS	Global Navigation Satellite System
GSM	Global System for Mobile Communications
LTE	Long Term Evolution
Ntrip	Networked Transport of RTCM via Internet Protocol
RTK	Real Time Kinematic
tbd	to be defined

2. Safety information

2.1. Intended use

The GEO-MICHEL® version of the Alberding A08 sensor is intended for mobile applications for high-precision satellite-based positioning.

2.2. Safety instructions

⚠ Warning!

When using electrical equipment, basic safety precautions must always be followed to reduce the risk of fire, electric shock and personal injury.

1. Before using the device, read this manual carefully.
2. Only clean with a dry cloth.
3. Install according to the manufacturer's instructions
4. Do not install the device near any heat sources such as radiators, heat registers, ovens or other apparatus (including amplifiers) that produce heat.
5. Do not expose the appliance to fire or heat.
6. Only use attachments or accessories specified by the manufacturer.
7. Do not open or modify the casing.
8. If used improperly, liquid may leak from the battery; in this case, avoid any contact with the liquid. If you accidentally come into contact with liquid from the battery, wash the affected area thoroughly with water. In addition, consult a doctor if liquids get into your eyes. Liquids leaking from the battery can cause skin irritation and burns.
9. The battery may only be replaced by the manufacturer and certified dealers.
10. Do not allow liquids to get onto or into the device.
11. Only use data or antenna cables with a maximum length of 3 metres.
12. Only use the USB power adapter or a high-power USB port that complies with at least the USB 2.0 standard for charging.

3. System specifications

The Alberding GEO-MICHEL® is a powerful and scalable sensor for high-precision satellite-based positioning. Under suitable conditions, the integrated multi-frequency GNSS RTK receiver provides centimetre-accurate coordinates of the receiving antenna after just a few seconds. When developing the system, we placed great emphasis on its compact design and intuitive operation. By pre-configuring the sensor, the measurement can be started conveniently at the touch of a button.

The GNSS correction data is received automatically via the integrated 4G LTE modem and the Ntrip client software. The centimetre-accurate positions can either be stored internally or transmitted wirelessly in standardised NMEA format to a smartphone or tablet PC for further processing with an app. Real-time transmission of the positions to a server via mobile communication is also supported.

The user is provided with information about the measurement process via LEDs and the highly legible e-paper display. The (Fn) button can be customised in the software for specific tasks (e.g. saving and sending positions or recording raw data).

The GEO-MICHEL® was primarily developed for users outside the surveying sector who need to acquire precise positions quickly, easily and cost-effectively. With a suitable GNSS antenna on the rover rod, surveyors can also benefit from the system.

The GEO-MICHEL® integrates the following system components in one housing:

- Multi-frequency GNSS RTK receiver
- 4G-LTE Cat M1 modem with GSM/GPRS fallback
- Bluetooth/WLAN module
- Memory (SD card, 32 GB)
- Power supply (Li-ion battery with 3.2 Ah)
- Additional sensors (inertial, temperature, pressure)
- Processor with Ntrip client functionality

The following external connections are provided by the GEO-MICHEL®:

- USB-C socket
- SMA socket (GNSS antenna)
- Optional: Second SMA socket for heading applications

3.1. Technical specifications

Physical properties

Dimensions (LxBxH):	16,7 cm x 8,2 cm x 4,1 cm (6,57" x 3,23" x 1,61")
Weight:	308 g (0,68 lb)
Status indicators (LEDs):	Battery, mobile communication, Bluetooth, GNSS status, data transfer
Buttons:	“Power”, “Function”
GNSS antenna connectors:	SMA female connector (optional second female connector for heading)

Communication

Bluetooth v4.2 + EDR:	Range: ~5 m, SPP protocol
Mobile communication:	LTE Cat M1/NB2, GSM/GPRS Fallback
Data/Power:	USB-C

Electrical properties

Power supply:	5 V max. 2 A
Power consumption:	Typ. 1,8 W
Max. battery life:	6 h at 20 °C
Rechargeable battery:	3,7 V, 3,2 Ah
Charging power:	max. 8 W, 0 °C to +45 °C
Charging time:	~2,5 h with LED status display
Protections:	Short circuit Current limitation Overcurrent charge and discharge Overvoltage charge (overcharge) Temperature

Data and memory

Data storage:	Integrated memory card
Wireless data output:	Bluetooth, mobile Internet
Wireless data input:	Bluetooth, mobile Internet
Wired data output:	Serial USB-C
Wired data input:	Serial USB-C

Environmental compatibility

Operating temperature:	-10 °C to +55 °C
Max. storage temperature:	-20 °C to +60 °C
Recommended storage temperature:	-20 °C to +25 °C
Humidity:	up to 80 %
Ingress protection:	IP65
Enclosure material:	ABS plastic (UL94 HB), TPE seal
Compliance:	CE, RoHS und lead-free EMC: EN 55032:2015 (CISPR 11, Class B)

Optional accessories

1. USB-C power supply max. 15 W
2. Pole mount
3. SMA 45 °Angle Adapter

3.2. GNSS manufacturer specifications (u-blox F9P)

Satellite systems

GNSS signals:	
GPS	L1C/A & L2C code and carrier phase
GLONASS	L1OF & L2OF code and carrier phase
BeiDou	B1I & B2I code and carrier phase
Galileo	E1-B/C & E5b
QZSS	L1C/A & L2C
SBAS	L1C/A
Channels:	184
Update rate:	RTK: 10 Hz
	RAW: up to 20 Hz

Horizontal accuracy (RMS)

Autonomous:	1,5 m
RTK[1] [2]:	0,01 m +1 ppm
RTK initialisation time:	< 10 s

Time to First Fix

Cold start:	24 s
Warm start:	2 s
Signal re-acquisition:	2 s

[1] Depending on baseline length, number of satellites in view, satellite geometry, GNSS antenna, multipath effects and atmospheric conditions

[2] ppm is limited for baselines up to 20 km

3.3. Schematic structure

The display, the on/off button, the function button and the five status LEDs are located on the front of the GEO-MICHEL® (see Fig. 1).

Figure 1: Front side

On the front (top) there is an SMA female connector for the GNSS antenna (see Fig. 2) and on the front (bottom) there is a USB-C port with dust protection (see Fig. 3). The universal holder for a wide range of mounting options (see Fig. 4) is located on the back.

Figure 2: GNSS antenna connection

Figure 3: USB-C port

Figure 4: Back side with universal holder

4. Start-up procedure

Before using the GEO-MICHEL® for the first time, it must be fully charged. This requires the GEO-MICHEL® to be connected to a USB-C power supply of at least 10 watts. The charging process starts automatically and is indicated by the red status LED. As soon as the status LED lights up green, the battery is fully charged. For continuous operation, the USB power supply must remain connected permanently. The GEO-MICHEL® starts the loading process automatically. Charging can be carried out during operation or by pressing the on/off button for at least 1 second in standby mode. For optimum battery life, an ambient temperature of 10 °C to +35 °C is recommended.

Carefully connect the GNSS antenna to the SMA socket.

ATTENTION: The GNSS antenna only needs to be lightly attached. Tightening it too firmly can loosen the connector.

The GEO-MICHEL® is switched on by pressing the on/off button for at least 1 second. The status LEDs light up and the status indicator appears on the display. The start-up process is completed after approx. 3 seconds.

The GEO-MICHEL® is switched off by pressing the on/off button for at least 1 second. For a hard reset, the on/off button must be pressed and held for at least 4 seconds.

4.1. ePaper display

The GEO-MICHEL® has an ePaper display on which the most important status information is shown (see Fig. 5). The individual items of information are described in the following table.

Figure 5: Status display

Abbreviation	Value	Description
GSM	...	Initialisation
	1/5	Very poor mobile network reception
	2/5	Poor mobile network reception
	3/5	Medium mobile network reception
	4/5	Good mobile network reception
	5/5	Very good mobile network reception
BT/WLAN	OK	Bluetooth/WLAN active
	x	Number of Bluetooth/WLAN connections
	OFF	Bluetooth/WLAN deactivated
	SECU	WLAN password incorrect
	SSID	WLAN network out of range or WLAN name incorrect
	...	Bluetooth/ WLAN initialisation
Corr	x s	Correction data age in seconds
	-empty-	No correction data
	...	Correction data is not used
	N/B/W	N - Ntrip, B - Bluetooth, W - WLAN
Ntrip	xxx	HTML error code from server
Batt	x %	Remaining capacity in %
	OFF	Undervoltage detection

Sat	x / y	x - Number of satellites for position determination y - Number of receiving satellites
Temp	x °C	internal device temperature (does not correspond to the ambient temperature)
UTM zone	x N x S	UTM North zone UTM South zone
N	x.x m	North value (in metres)
E	x.x m	East value (in metres)
h (ell)	x.x m	Ellipsoidal height (in metres)
H (NHN)	x.x m	Usable height (in metres NHN) if NHN is displayed
σ	x.x m	Horizontal standard deviation (in metres)
	□□□□□ ■□□□□ ■■□□□ ■■■□□ ■■■■□ ■■■■■	No position Without correction data DGNSS corrections PPS fix RTK float RTK fix

In the field for displaying the UTM zone and the coordinates when uploading a new firmware, “Load FW: x%” and a load bar are displayed.

4.2. LED indicators

The following table explains all possible LED indicators of the GEO-MICHEL® (see Fig. 6).

Figure 6: LED indicators

LED	Colour and property	Explanation
Power	Off Red Green Red - green flashing	No power supply Battery is charging Battery fully charged Battery defective
Mobile communication	off Green Green flashing	Wireless modem deactivated Data transmission active Initialisation
Bluetooth	off Green Green flashing	Bluetooth deactivated Bluetooth active Initialisation
GNSS	off Green Green flashing	GNSS deactivated GNSS active Initialisation
Data transfer	off Green Green flashing	No data transfer tbd Data transfer active

5. Features

The A08-RTK GEO-MICHEL® can measure and find positions (stake out).

5.1. Measuring positions

To measure positions, the *Positionsfinder mode* in the ALPOS® Service Tool must be set to *Off*. See chapter 7.3.5 A08-RTK menu on page 34 for a description of how to set and adjust this.

Press the FN button on the A08-RTK briefly (for approximately 1 second) to trigger a point measurement. The coordinates of your device's current position are recorded. The stored point is composed of an average of ten measurements. The measurement process is indicated on the A08-RTK display by a progress bar.

To measure a polyline, press and hold the FN key for approximately three seconds. From this moment on, all movements of the device are recorded. You can recognise this status on the A08-RTK display by the word *TRACK* appearing on the right-hand side (see Fig. 7). To stop recording the polyline, press the FN key for approximately one second. Once the measurement has been completed successfully, the word *TRACK* will no longer be displayed.

You can perform any number of point and polyline measurements in succession. These are displayed in the ALPOS® Service Tool in the *Measurements* menu. How to retrieve the measurements is described in Chapter 7.3.7 Measurements menu on page 36.

Figure 7: Measure polyline

5.2. Finding positions – Stakeout

To use the A08-RTK to find positions, they must first be created and sent to the device.You can read about this process in Chapter 7.3.8 Find position menu on page 38. In addition, the *Positionsfinder Mode* must be set to either *Coordinates* or *Directions*. Chapter 7.3.5 A08-RTK menu on page 34 explains where to find these settings.

To stake out a position, switch from the start screen (see Fig. 5) to the positionsfinder screen (see Figs. 8 and 9). You can switch between these screens (and back again) by pressing and holding the FN key for approximately three seconds. The positionsfinder screen always shows the distance to the required point in metres in the top left-hand corner. In the top right-hand corner, an arrow indicates the direction in which the point is located. The point number (*Nr*) is shown in the middle of the display. Up to ten points can be transferred. You can switch between the different points by briefly pressing the FN key. Below the point number, you will find precise directional information to help you locate the point. This information varies depending on the *Positionsfinder Mode* selected (see p. 34).

If the *Positionsfinder Mode* is set to *Coordinates*, you will receive directional information in northerly (*dN*) and easterly (*dE*) directions (see Fig. 8). If the distance value is negative, you must walk in a southerly or westerly direction to find the point. In addition to the distances, a small *N* will appear in the top right corner above the direction arrow. This indicates that the arrow is pointing north and showing the direction to the point. In this mode, the user must therefore know where north is in order to find the point.

Figure 8: Coordinates mode

If the *Positionsfinder Mode* is set to *Directions*, the distance information will be shown in *Fr/Ba*

and *Le/Ri* (see Fig. 9). These abbreviations stand for Front/Back and Left/Right. The reference point of the arrow in the upper right corner is the position of your device. This means that the arrow points exactly in the direction of the point. You will need to move the device so that the arrow points in the correct direction. In this mode, it is not essential for the user to know where north is.

Figure 9: Directions mode

If existing points, such as boundary stones, are found with the Positionsfinder, the current position can be recorded with the GEO-MICHEL®. To do this, switch to the start screen by pressing and holding the FN button for approximately three seconds. Here, you can start the point measurement process by pressing the FN button briefly (for approx. 1 second). The measurement process is shown on the A08-RTK display by a progress bar (see Section 5.1).

6. Connections

The following sections describe the various data transmission options. The configured NMEA data sets are output via the respective communication interfaces.

6.1. Bluetooth connection

Once the A08-RTK GEO-MICHEL® is ready for operation, it will appear in your Bluetooth settings. Pair the A08-RTK with your device. Under Windows, the A08-RTK GEO-MICHEL® will install itself as a serial port (COM-Port, 115200, 8-N-1). No code or driver is required.

In Windows operating systems, you can find the appropriate COM port as follows:

*Control Panel > View devices and printers > Alberding-*SN* (double-click) > Services*

Supported devices/operating systems:

- Devices with Bluetooth 2.0 standard or higher
- Apple systems (BLE only)
- Android systems

From firmware version 60018 onwards, it is possible to use three Bluetooth connections in parallel with the A08-RTK GEO-MICHEL® . One connection is possible for classic transmission (BT Classic) of NMEA data, except for iOS, and two connections are possible for Bluetooth LE (Low Energy).

Compared to Bluetooth Classic, Bluetooth Low Energy (BLE) is the power-saving version. With BLE, data is not transmitted 1:1, but via created profiles. The profile used here is called Standard LN (Location & Navigation). The transmitted values include position, UTC time, and heading parameters (if a heading system is used).

6.2. USB connection

Once the device is ready, connect the GEO-MICHEL® to your PC using the USB-C cable. The required USB driver will be installed automatically by the Windows system.

Once the driver has been successfully installed, the GEO-MICHEL® will appear as a virtual COM port (115200, 8-N-1). The appropriate COM port is displayed as follows in Windows operating systems:

Control Panel > *Device Manager* > *Ports (COM & LPT)* > *STMicroelectronics Virtual COM Port*

7. ALPOS® Service Tool

This is a browser application that is independent of the operating system and can be used to configure the A08-RTK GEO-MICHEL®. Registration is required before the A08-RTK can be used. Device registration can be accessed via the following link:

https://a08webconfig.gnssonline.eu/

7.1. New user

Enter your contact details, device information, and login details for the configuration tool and ALPOS® service in the *User data* form. You can enter a comment of up to 25 characters for each receiver. You can also add or change this information after registration (see chapter 7.3.11). Then click *Next*.

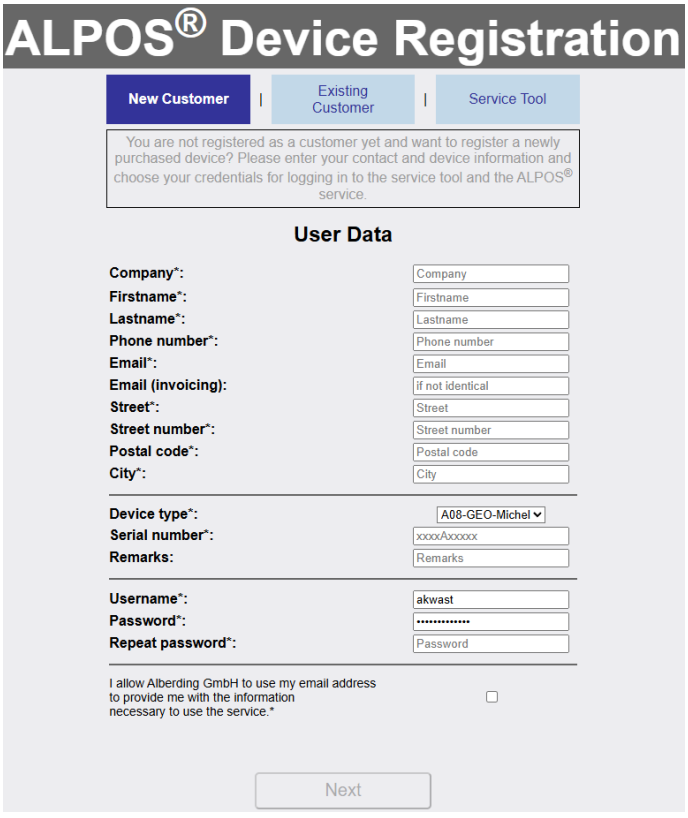
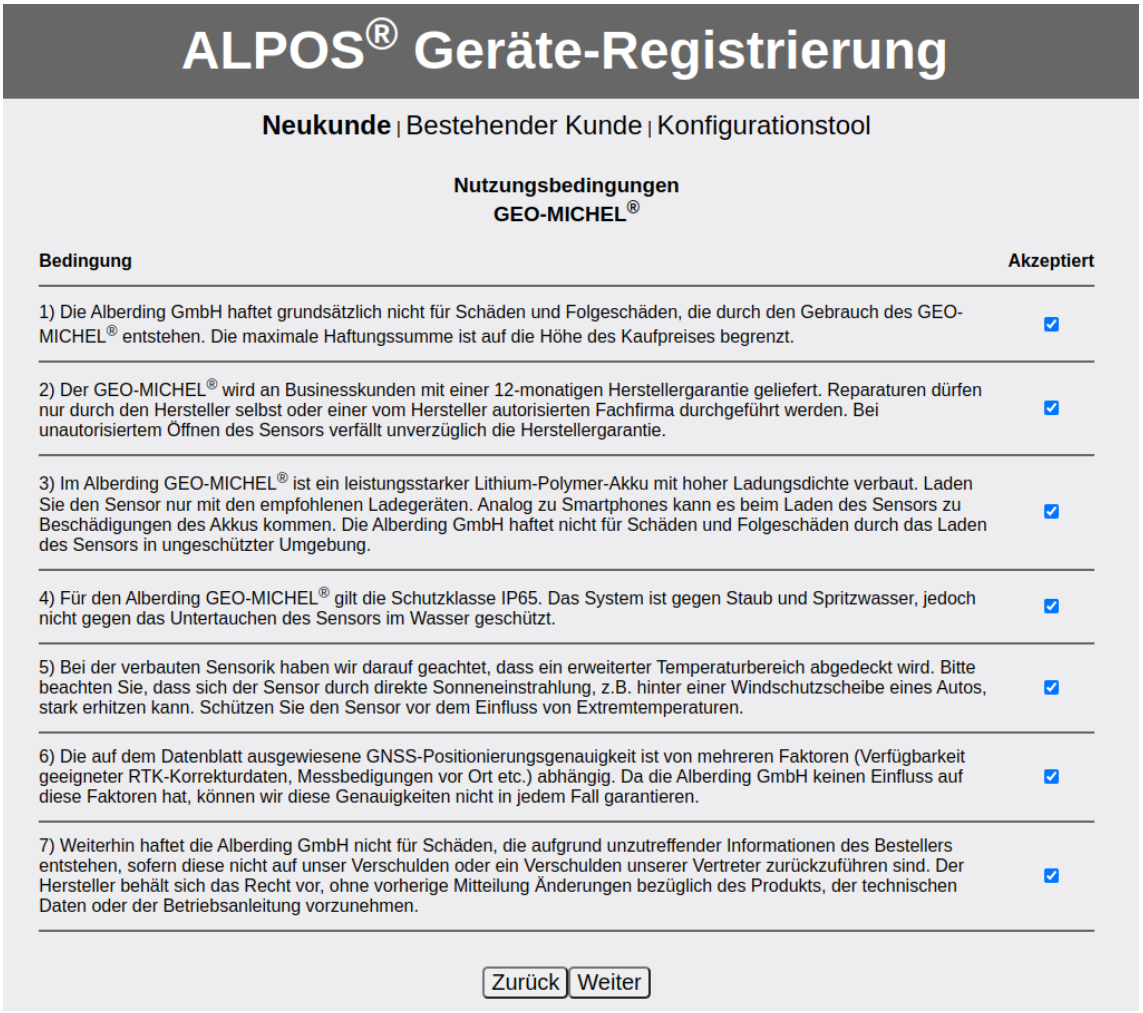


Figure 10: Device registration

The terms of use for the GEO-MICHEL® and ALPOS® services must be accepted on the following two pages. Click the *Register* button to complete the registration process.



ALPOS® Geräte-Registrierung

Neukunde | Bestehender Kunde | Konfigurationstool

Nutzungsbedingungen
GEO-MICHEL®

Bedingung	Akzeptiert
1) Die Alberding GmbH haftet grundsätzlich nicht für Schäden und Folgeschäden, die durch den Gebrauch des GEO-MICHEL® entstehen. Die maximale Haftungssumme ist auf die Höhe des Kaufpreises begrenzt.	☑
2) Der GEO-MICHEL® wird an Businesskunden mit einer 12-monatigen Herstellergarantie geliefert. Reparaturen dürfen nur durch den Hersteller selbst oder einer vom Hersteller autorisierten Fachfirma durchgeführt werden. Bei unautorisiertem Öffnen des Sensors verfällt unverzüglich die Herstellergarantie.	☑
3) Im Alberding GEO-MICHEL® ist ein leistungsstarker Lithium-Polymer-Akku mit hoher Ladungsdichte verbaut. Laden Sie den Sensor nur mit den empfohlenen Ladegeräten. Analog zu Smartphones kann es beim Laden des Sensors zu Beschädigungen des Akkus kommen. Die Alberding GmbH haftet nicht für Schäden und Folgeschäden durch das Laden des Sensors in ungeschützter Umgebung.	☑
4) Für den Alberding GEO-MICHEL® gilt die Schutzklasse IP65. Das System ist gegen Staub und Spritzwasser, jedoch nicht gegen das Untertauchen des Sensors im Wasser geschützt.	☑
5) Bei der verbauten Sensorik haben wir darauf geachtet, dass ein erweiterter Temperaturbereich abgedeckt wird. Bitte beachten Sie, dass sich der Sensor durch direkte Sonneneinstrahlung, z.B. hinter einer Windschutzscheibe eines Autos, stark erhitzen kann. Schützen Sie den Sensor vor dem Einfluss von Extremtemperaturen.	☑
6) Die auf dem Datenblatt ausgewiesene GNSS-Positionierungsgenauigkeit ist von mehreren Faktoren (Verfügbarkeit geeigneter RTK-Korrekturdaten, Messbedingungen vor Ort etc.) abhängig. Da die Alberding GmbH keinen Einfluss auf diese Faktoren hat, können wir diese Genauigkeiten nicht in jedem Fall garantieren.	☑
7) Weiterhin haftet die Alberding GmbH nicht für Schäden, die aufgrund unzutreffender Informationen des Bestellers entstehen, sofern diese nicht auf unser Verschulden oder ein Verschulden unserer Vertreter zurückzuführen sind. Der Hersteller behält sich das Recht vor, ohne vorherige Mitteilung Änderungen bezüglich des Produkts, der technischen Daten oder der Betriebsanleitung vorzunehmen.	☑

Zurück Weiter

Figure 11: Terms of Use GEO-MICHEL®

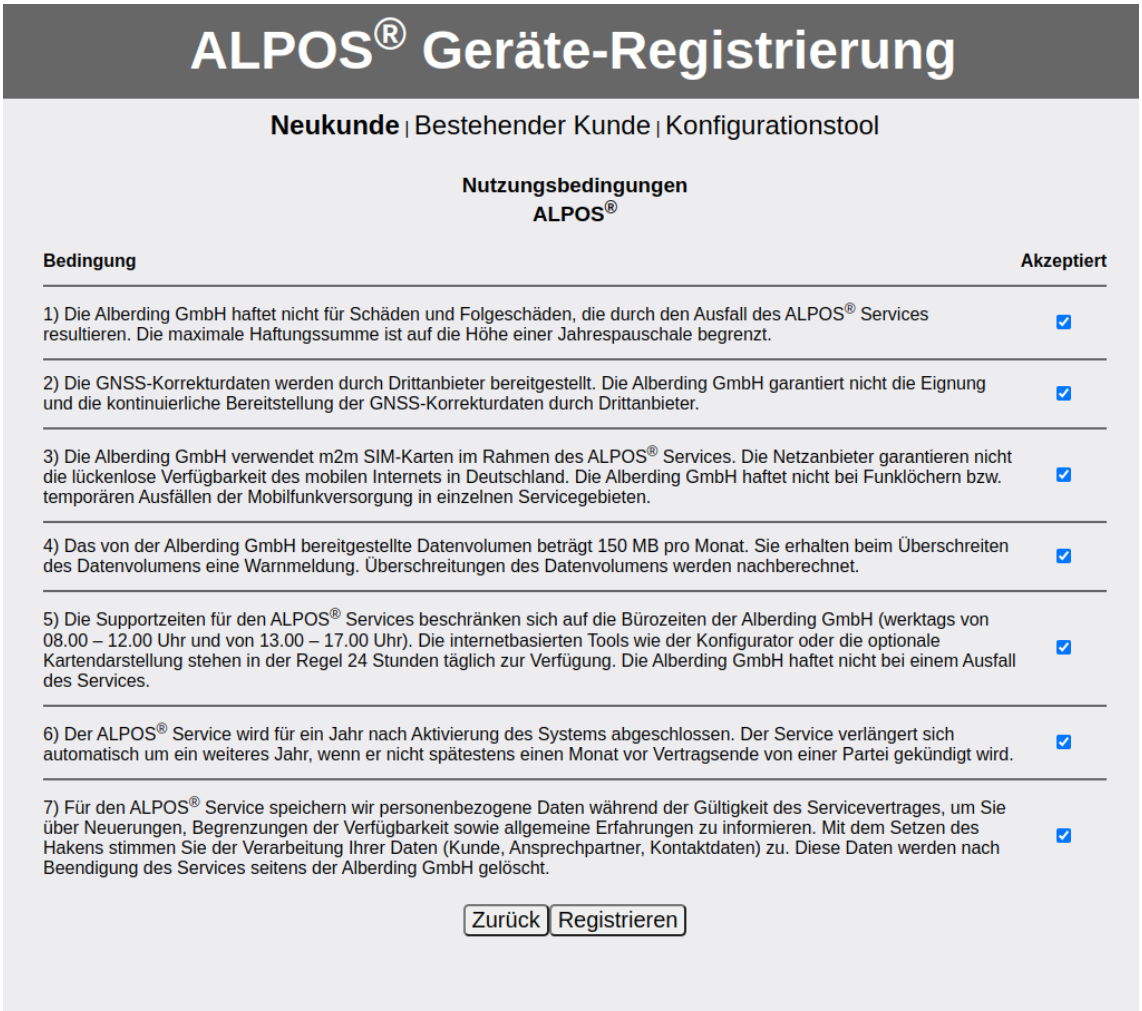


Figure 12: Terms of Use ALPOS®

Note: Access to the ALPOS® service will be granted as soon as your data has been verified and confirmed by our staff. Alberding GmbH will carry out this process via email during office hours (8 a.m. to 12 p.m. and 1 p.m. to 5 p.m., Monday to Friday).

7.2. Existing customer

If you want to add another device to a user profile, click on *Existing customer*. Enter your username and password, as well as the serial number of the receiver. Then click on the *Register device* button.

If you have forgotten your password, you can also generate a new one. Simply click *Did you forget your password?* and follow the instructions.

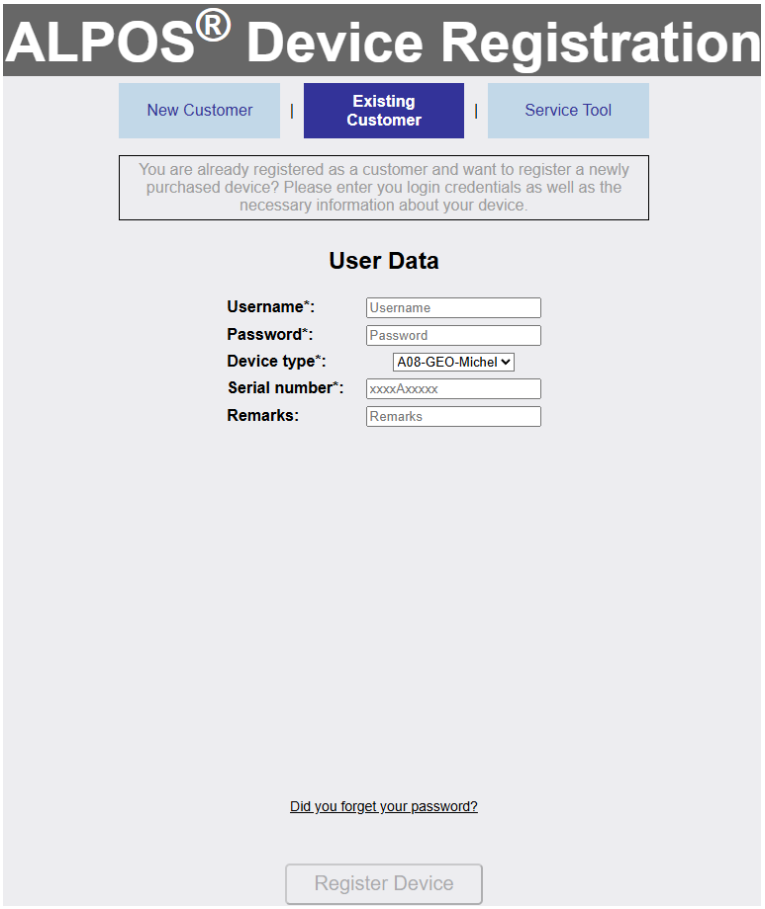


Figure 13: Existing customer – Add receiver

7.3. Service Tool

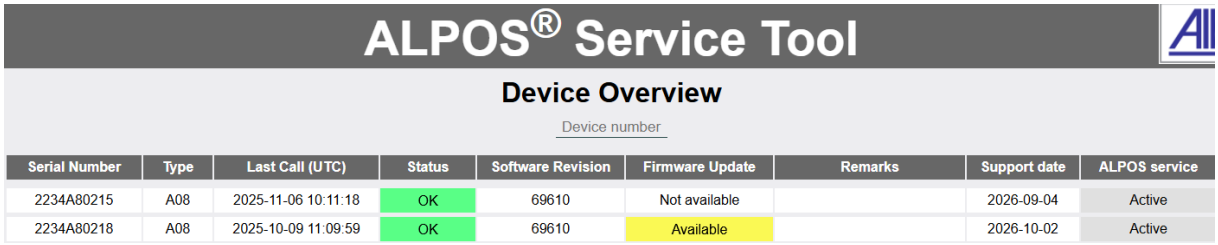
The A08-RTK GEO-MICHEL® can be configured in the *Service Tool* menu. You can also update your personal details (see chapter 7.3.11) or download the user manual.

In the *Options* menu bar, you can switch between the following menu items: *SAPOS Access*, *User Data*, *Manual*, *German Version*, *Terms of Use* and *Logout*.

7.3.1. Device overview

The *Device overview* displays all GEO-MICHEL® devices assigned to the login (see Fig. 14). The web page automatically reloads and displays the current configuration *Status*. If the field is

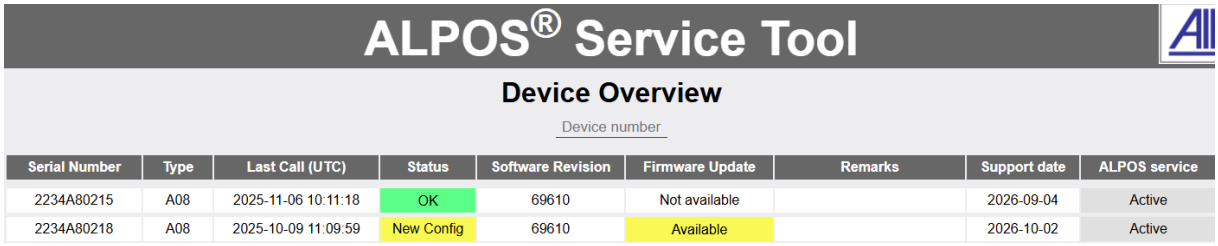
yellow with the note *New config*, the receiver must be restarted to receive the new configuration (see Fig. 15). The field will then automatically turn green again once the receiver has successfully received the configuration.



Serial Number	Type	Last Call (UTC)	Status	Software Revision	Firmware Update	Remarks	Support date	ALPOS service
2234A80215	A08	2025-11-06 10:11:18	OK	69610	Not available		2026-09-04	Active
2234A80218	A08	2025-10-09 11:09:59	OK	69610	Available		2026-10-02	Active

Figure 14: Device overview

In addition, the (*Last call (UTC)*) field displays the last time the device communicated with the configuration server, and the *Software revision* field displays the GEO-MICHEL® software version. The *Firmware update* column informs you when a firmware update is available. The field will change from white to yellow with the text *Available* displayed (see Fig. 15). You can then carry out the update yourself (see chapter 7.3.10). This is followed by the *Remarks* column for the receiver, the support date, and the ALPOS service status.



Serial Number	Type	Last Call (UTC)	Status	Software Revision	Firmware Update	Remarks	Support date	ALPOS service
2234A80215	A08	2025-11-06 10:11:18	OK	69610	Not available		2026-09-04	Active
2234A80218	A08	2025-10-09 11:09:59	New Config	69610	Available		2026-10-02	Active

Figure 15: Device overview – Messages

7.3.2. Configuration menu

Clicking on the serial number opens the A08-RTK GEO-MICHEL® configuration menu (see Fig. 16). Here, you can configure the correction data connection (*NTRIP*), the *GNSS* settings (NMEA data sets and elevation), the internal A08-RTK GEO-MICHEL® configurations, and the *WLAN* connection. Point and line measurements are visualised in the *Measurements* menu. To perform stakeouts with the A08-RTK, positions must be sent to it via the *Find position* menu. The *Firmware Update* menu only appears when new firmware is available. Not all menu items and options are enabled for all users.

A small arrow is displayed at the top right of the menu items. This allows you to show or hide the menu bar.

Figure 16: Configuration menu

If you want to make changes to the NTRIP, GNSS, A08-RTK **and** Find position settings, it is recommended that you confirm these together (see chapter 7.3.9). This saves you from having to restart the receiver several times. You can switch between the menu items at any time without losing changes that have already been sent. Changes that have not yet been confirmed are indicated by an asterisk * after the relevant term.

7.3.3. NTRIP menu

Clicking on *NTRIP* allows you to view the access data specific to the RTCM correction data (see Fig. 17). The ALPOS® service includes support for the Caster service. To receive this support, you must set up one or more SAPOS accesses on the *SAPOS accesses* page. To do this, click on the *Set up SAPOS accesses* button or go to the *SAPOS accesses* menu in the top left-hand corner (*Options*).

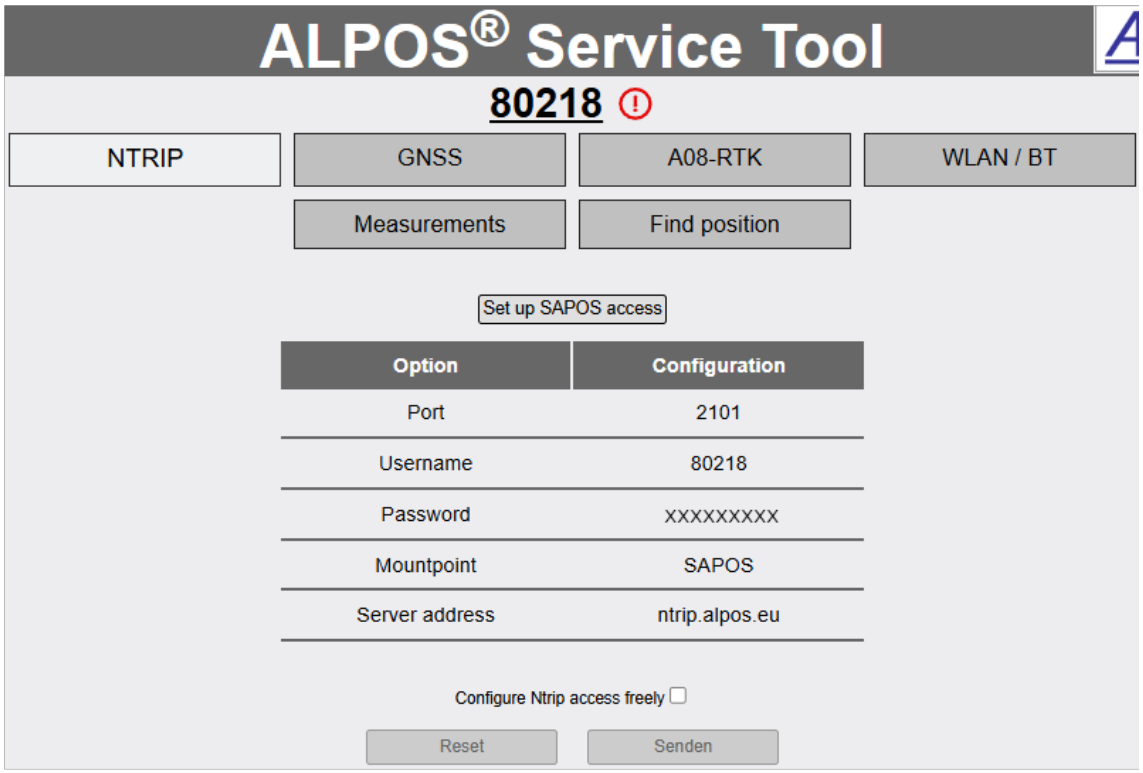


Figure 17: NTRIP settings

Click on the federal state corresponding to your SAPOS access on the map (see Fig. 18). The relevant data for the federal state is displayed to the right of the map. You cannot change the port and mountpoint. In some federal states, correction data can be obtained via different server addresses. Select the server address from the drop-down list. Enter your *Username* and *Password*, then click *Submit*. You can obtain access data from the relevant federal state's SAPOS services. The validity of your SAPOS access will be checked, after which the data will be automatically entered on the Alberding Caster. The federal states entered are displayed in green on the map.

To configure access to the *Central SAPOS Office*, click the *Set up central SAPOS office* button.

If you have set up multiple SAPOS access points, the system will **automatically** switch between them when you cross a state border. The same applies to ongoing measurements.

Please contact us if you cannot access any of the options (server address, port or mountpoint).

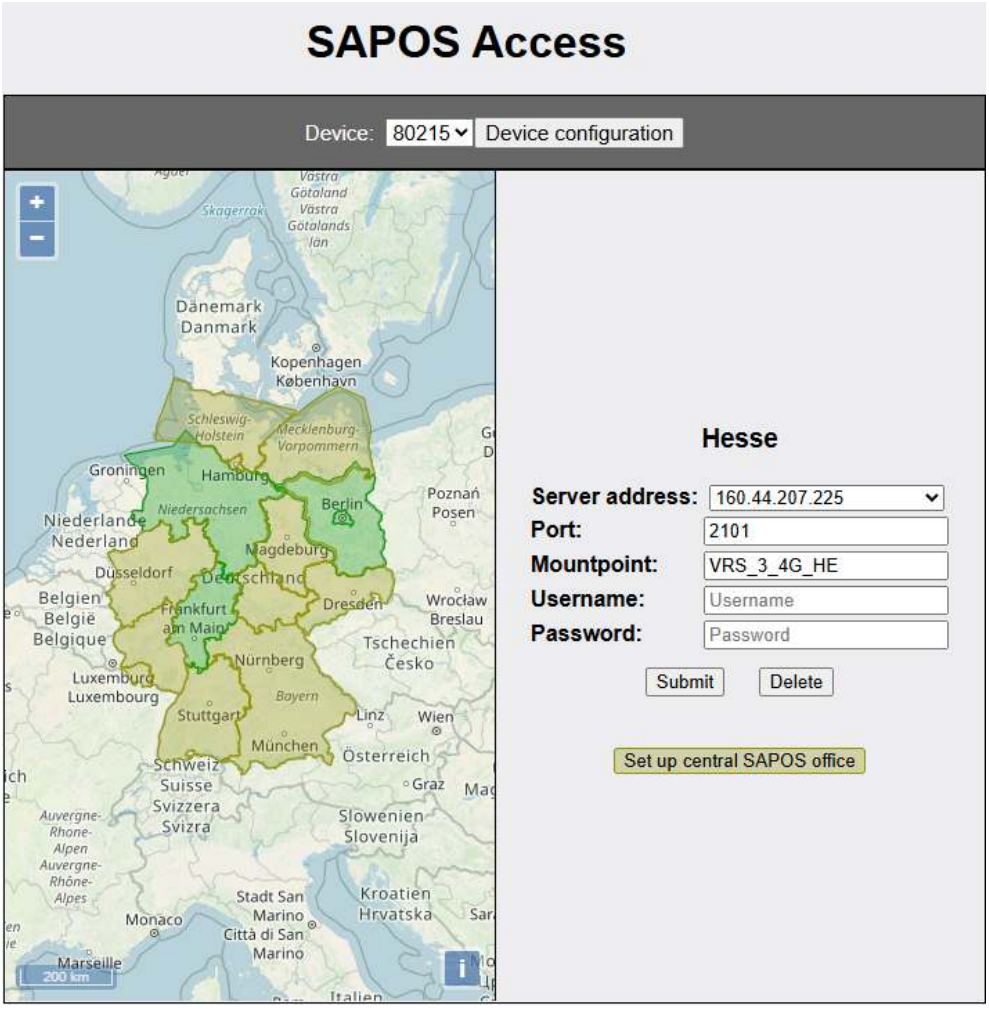


Figure 18: Configuring SAPOS access

You can also freely configure NTRIP access. To do this, tick the box labelled *Configure Ntrip access freely* in the *NTRIP* menu (see Fig. 17). You must confirm the following message with *OK*:

Note: You will lose support from Alberding GmbH for the Caster service if you activate this option.

In the third column, you can now enter your access details for the correction data service (see Fig. 19). In this mode, you can create, save and load profiles for accessing correction data. If you want to use our Caster again, simply untick the box.

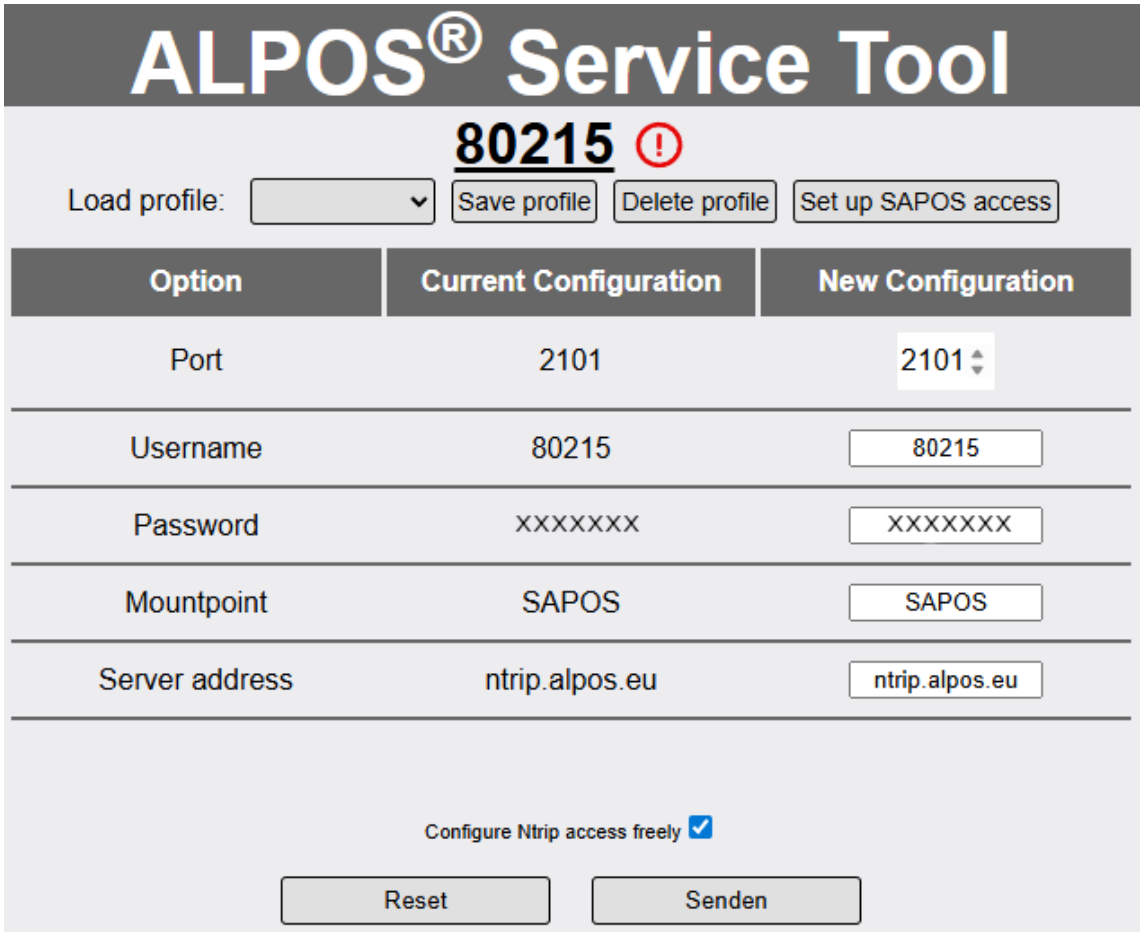


Figure 19: Freely configure SAPOS access

7.3.4. GNSS menu

Various NMEA data sets and transmission intervals can be configured in the GNSS settings. A selection of these data sets is available for this purpose. These can be activated by selecting the corresponding checkbox. The required transmission interval can be selected from the adjacent drop-down menu (see Fig. 20). For the GGA and RMC message types, 2 Hz and 5 Hz intervals are also available. However, if these options are selected, **only** the GGA and RMC message types can be transmitted. With very high transmission intervals, it cannot otherwise be guaranteed that all data will be transmitted reliably. To restore the default settings, click the *Reset* button. The default setting (*Default* button) transmits message types for use with GIS applications.

The set elevation is displayed under the NMEA data settings. Finally, click the *Send* button to send the new settings and view a summary of the changes (see chapter 7.3.9).

Figure 20: GNSS settings

7.3.5. A08-RTK menu

Receiver-specific settings can be configured in the *A08-RTK* menu.

Note: The user's own display may differ. These options are activated by Alberding GmbH. This depends on how the GNSS system is used and the firmware version. Please contact us if you have any questions.

The first line allows you to change the coordinate display on the A08-RTK GEO-MICHEL® display. You can choose between *UTM coordinates*, *degree decimals*, *degree minutes* and *degree minutes seconds*. The *UTM coordinates* system is preset.

The *FN short (1s)* and *FN long (3s)* options are used to change the FN key assignments on the A08-RTK. The default settings are *Point* and *Track*. This means that a short press (approximately 1 second) starts a point measurement, while a long press (approximately 3 seconds) starts a track or line measurement. If stakeout points are stored in the *Find position* menu, the FN key function changes automatically (short: Next Page; long: Standard Screen).

In the *Find position Mode*, you can adjust the display settings for the find position on the A08-RTK. You can choose between *Off*, *Coordinates* and *Directions*. If you do not want to find or stake out positions, but rather measure points or polylines, you must select *Off* mode. In *Coordinates* mode, the distance to the point is displayed in north and east directions from the A08-RTK. The *Directions* mode displays the distance to the point in the front/back and left/right directions on the A08-RTK. This mode automatically switches from *Off* to *Coordinates*, when you save stakeout points in the *Find position* menu.

The *Protocol for correction data* can be received by the A08-RTK GEO-MICHEL® via *Ntrip* or *Bluetooth*. This option is only available from firmware version 68391 onwards, and must be used in conjunction with the *Alberding DAB+ Box*. On the A08-RTK display, reception is indicated by an *N* or *B* in the *Corr:* line.

Finally, the new settings are sent using the *Send* button after which a summary of the changes opens (see chapter 7.3.9).

Figure 21: A08-RTK settings

7.3.6. WLAN/BT menu

The *WLAN/BT* menu can be used to configure a WLAN input connection. To receive correction data via a WLAN hotspot, first enter an IP address in the *IP correction data* field and a port in the *Port correction data* field. We recommend using port *8889*. The mobile hotspot also requires a network name (*SSID/WLAN name*) and a password (*WLAN passwort*), which the receiver will need to connect to the hotspot. In the *A08-RTK* menu (see chapter 7.3.5), select **WLAN** as the reception method in the *Protocol for correction data* line. The letter **W** will then be displayed in the *Cor:* line on the GEO-MICHEL® display (see chapter 4.1).

Finally, select the *Send* button to send the new settings and view a summary of the changes (see chapter 7.3.9).

An example is provided in the appendix, chapter A.1.

Figure 22: WLAN/BT settings

Note: 'Measuring positions' (see chapter 5.1) and measuring existing points in 'Find position' mode (see chapter 5.2) are not available when correction data is received via WLAN. However, stakeouts can be carried out.

7.3.7. Measurements menu

The *Measurements* menu displays all the point and polyline measurements taken using the FN key. However, this is only possible if correction data (*NTRIP*) has been configured via the Alberding GmbH caster.

First, select a time period (*Start* and *End*) and a measurement *Type* (*Point* or *Polyline*). You can then enter an antenna height in the *Antenna (cm)* field. This will then be applied directly to the heights in the table and in the export files (CSV and Kirchner). Then click the *Show* button.

If there are any measurements available for the selected time period, they will be displayed on the map, as well as in a table below the map containing additional information (see Fig. 23). Clicking on a point on the map highlights the corresponding row in the table in blue or red (if there are fewer than 10 measurement periods), and vice versa.

The information in the map window supplements the information in the table. You can assign an *Alias* in the last column. To do this, double-click on the cell and enter the alias in the pop-up window. Confirm your entry with *OK*. The *CSV Export* button enables you to download a CSV file containing all the point information. The *Kirchner Export* button allows you to download a CSV file adapted for import into the Kirchner software.

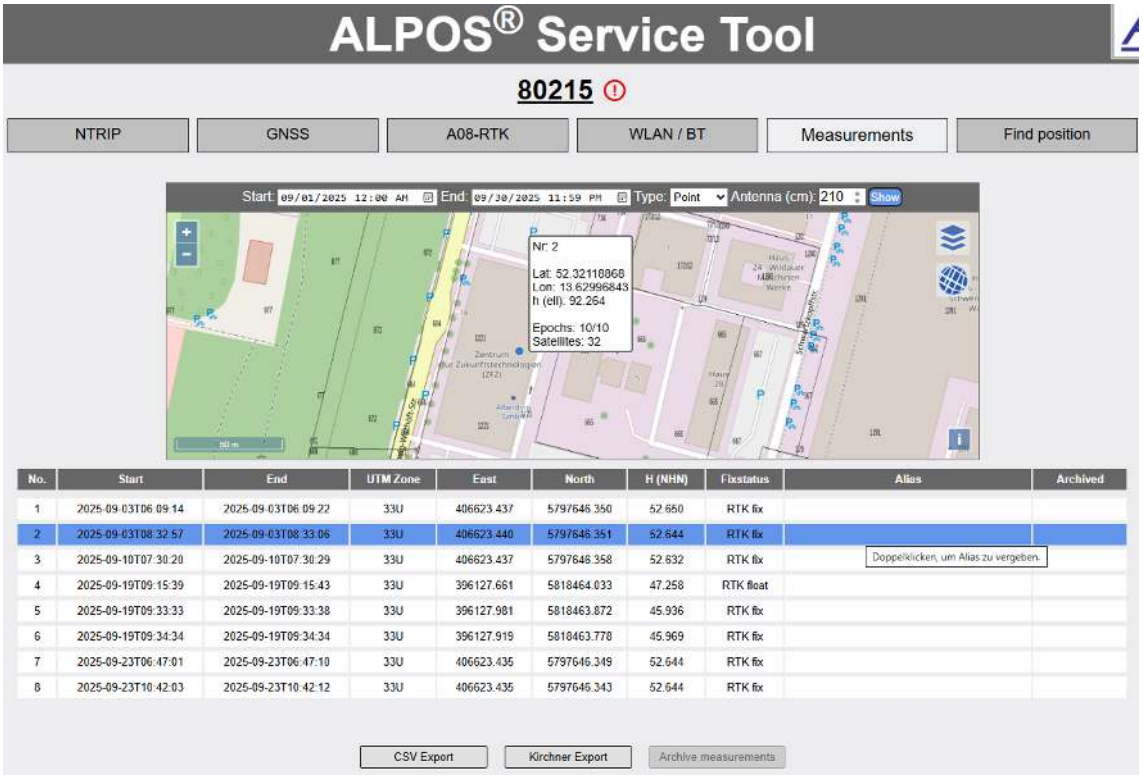


Figure 23: Measurements menu - Point

The polyline *Type* behaves in the same way as the point *Type*. The number of points measured is listed in the *Points* column. If an asterisk (*) appears after the number, the measurement is incomplete. This message is also displayed when you hover over it. In the final *CSV/Kirchner* column, you can download CSV files containing data (coordinates, timestamps, etc.) for the selected line.

To document the entire table overview, click the *CSV Export* button below the table.

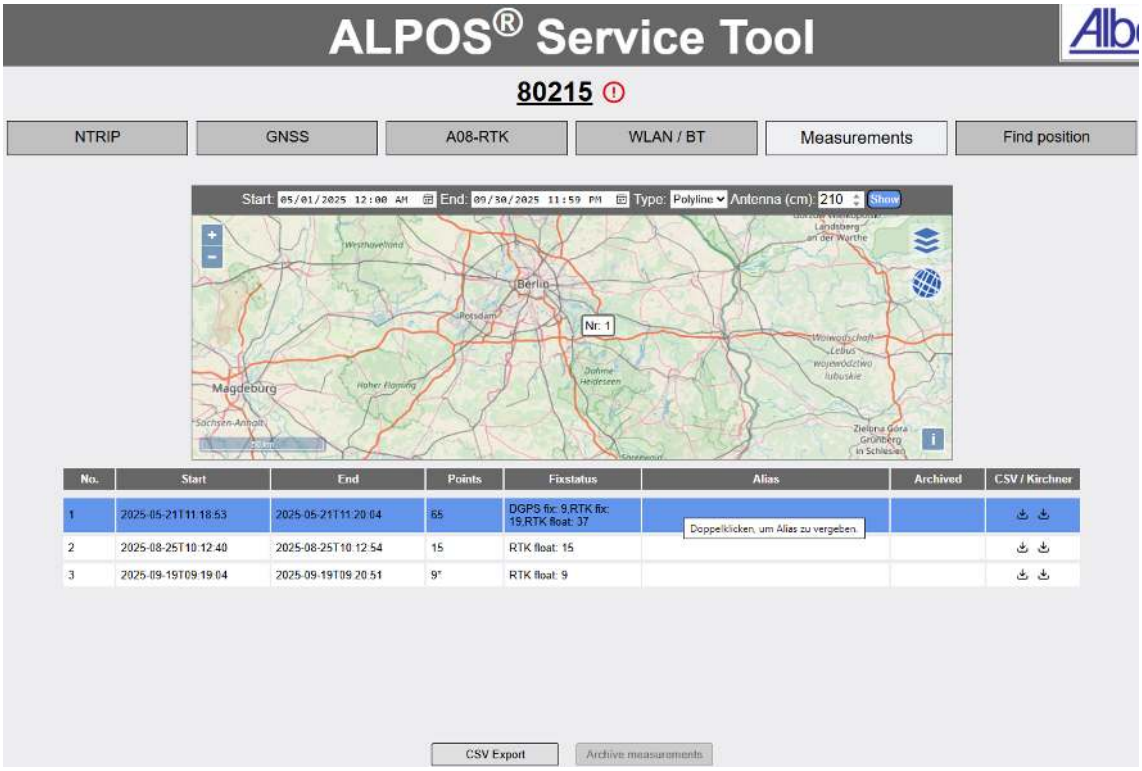


Figure 24: Measurements menu - Track/Polyline

7.3.8. Find position menu

In the *Find position* menu, you can create or import new positions. These positions are displayed on the map and can be edited, exported and sent to your A08-RTK GEO-MICHEL®.

First, select a coordinate system for entering the coordinates. This selection can be found on the right, under the map. You can enter *UTM* or *geographic* coordinates. You can also switch between coordinate systems while creating a position (see Fig. 25).

Figure 25: Find position menu

To create new positions, simply click on the map to create a freehand point, or click on the plus sign in the *New Configuration* field at the bottom left to enter existing coordinates. Enter the coordinates in the newly created row according to the selected coordinate system for the point (see Fig. 25, point number 3). To confirm, click the tick in the *Options* column. The positions are displayed on the map as markers with the corresponding number (1, 2, etc.) from the table. You can then either edit the position's coordinates in the *Options* column or delete the row completely. To delete a row, click on the trash can icon. To edit a position, click on the pencil icon. Only numbers, commas and points are permitted. To ensure consistent notation, commas are automatically converted to points. If you have created more than one point on the map, you can use the up and down arrows in the *Options* column to change the order of the points in the table and on the map.

Each configuration is saved and can be used for later stakeouts. To do this, open the *Configuration from:* drop-down menu to the left of the map and select an entry. The positions from the selected day are listed in the table and displayed on the map with grey markers. The point numbers are preceded by an *H* to distinguish them from the current points.

Click on the icon in the *Transfer* column to add individual points to the current configuration. This enables you to edit these positions and send them to your A08-RTK GEO-MICHEL® again. The marker will then be displayed on the map with both point numbers. When you move the mouse over the marker, the corresponding rows are highlighted in colour (see Fig. 26).

Figure 26: Find position menu - Add configurations

Use one of the two methods to add up to 10 positions to the *New Configuration* table. Click on the *Print Coordinates* button to print or download a list of points with the map section. Then click on the *Send* button to transfer the positions to your receiver. The current and new configurations will then be displayed (see Fig. 27). Click *Confirm* to create the configuration. Switch on the A08-RTK to receive the configuration.

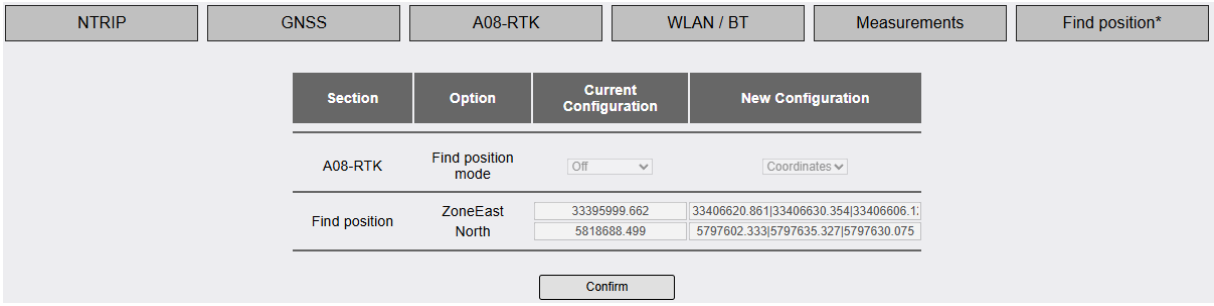


Figure 27: Find position menu - Send generated positions to A08-RTK

If you do not want to transfer the configured positions to your receiver but instead want to save them in a CSV file, press the *CSV Export* button. You can also import existing positions from a CSV file into the Find position. To do this, use the *CSV Import* button. You can import exported CSV files from the *Measurements* menu, or CSV files that you have created yourself. The format of these files must correspond to the format of export files from the *Find position* menu. Simply download a file for reference.

The *Reset* button deletes your configured positions from the table and map.

7.3.9. Changes overview and confirmation

Before the new configurations are transferred to the A08-RTK GEO-MICHEL®, you can review them (see Fig. 28). Click *Confirm* to transfer the new configurations.

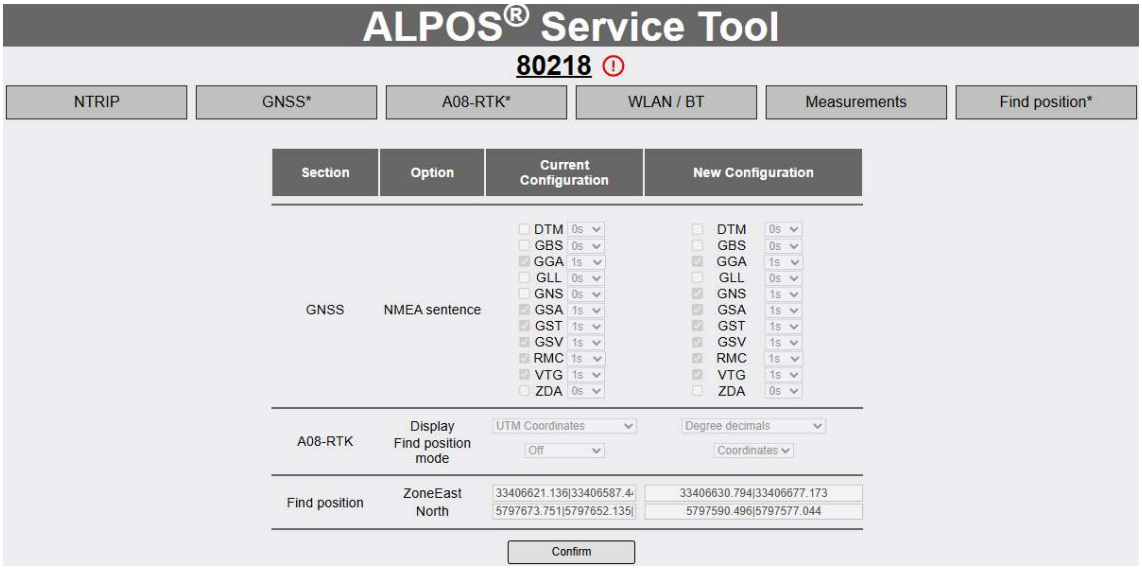


Figure 28: Checking the settings

Note that the A08-RTK must be restarted for the new settings to take effect. Clicking the *Confirm* button opens the *Device overview*.

The status field displays *New config* to indicate that a new configuration for the A08-RTK is stored on the server (see Fig. 15). This will only be indicated by the status *OK* when the transfer is active again and the new configuration has been transferred (see Fig. 14).

7.3.10. Firmware update

If an update is available, this is indicated in the *Device overview* in the *Firmware update* column with the yellow comment *Available* (see Fig. 29).

Note: Check the battery level of your A08-RTK GEO-MICHEL® before activating the firmware update. The battery level should be at least 25 percent to ensure a safe update process.

Click on the yellow *Available* field to go directly to the *Firmware Update* menu. The revision and change log will then be displayed (see Fig. 30).

Figure 29: Device overview - Messages - Firmware update

Click on the *Update* button and the firmware update will be carried out after your receiver has restarted.

Note: After switching on or restarting the A08-RTK GEO-MICHEL®, it may take a few minutes for the update to become available. Leave the device switched on during this time.

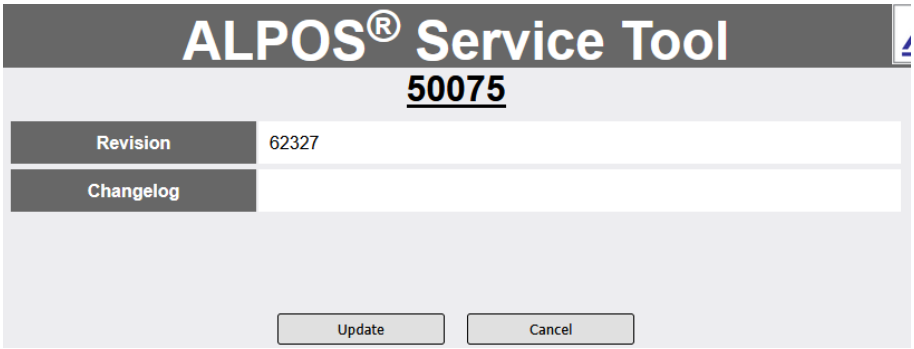


Figure 30: Confirm firmware update

In the *Device overview*, the Status field will display *New Config* until you have restarted the receiver. The firmware update has only been successfully transferred when the status is *OK* and the revision number in the *Software revision* field has increased.

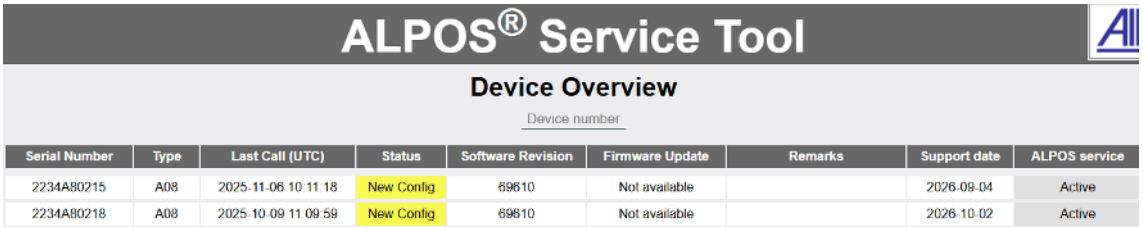


Figure 31: Status Firmware update

7.3.11. User data

The *User Data* menu displays user data and registered receivers. Click on the *Change my data* button to activate the text boxes (see Fig. 32). Here, you can also enter *Remarks* for each receiver. These comments will then be displayed in the *Device overview*. Finally, click on *Apply Changes*.

Figure 32: User data

7.3.12. Manage users

In the *User Data* menu, you can manage user data and create sub-users. Assign a *Username* and *Password* for each sub-user. Both numbers and letters are permitted. Then click on the *Select* button in the *Receiver* column. This will display a list of all receivers assigned to the main account. Select at least one receiver and click *Save* in the same column. To create the sub-account, click the *Add* button at the end of the line.

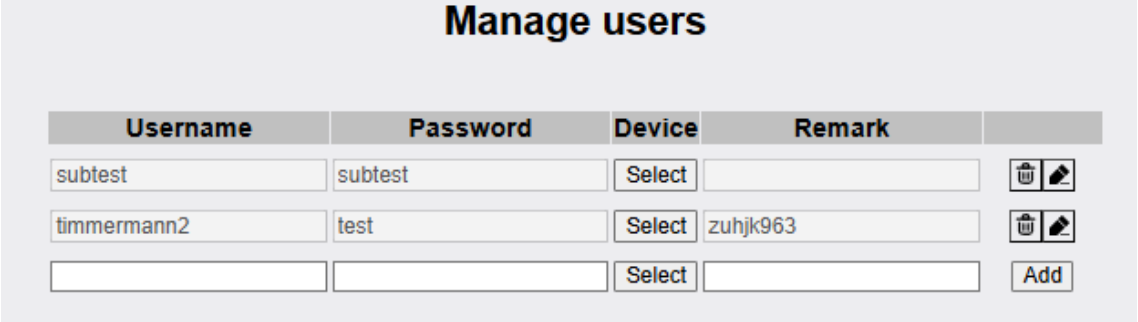


Figure 33: Manage users

Click on the *Pencil* at the end of the line, followed by the serial number, to manage access rights (see Fig. 34). You can also change the password and entries in the Remark field here. Once created, the assigned receiver has the same access rights as the main user, except for *Firmware* and *SAPOS access*. Change the sub-user's access rights by clicking on the 'circles' in the individual sections, then click *Save* (see Fig. 35).

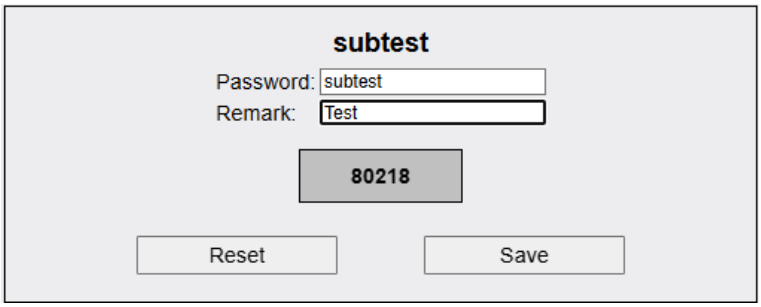


Figure 34: Manage access rights - Receiver selection

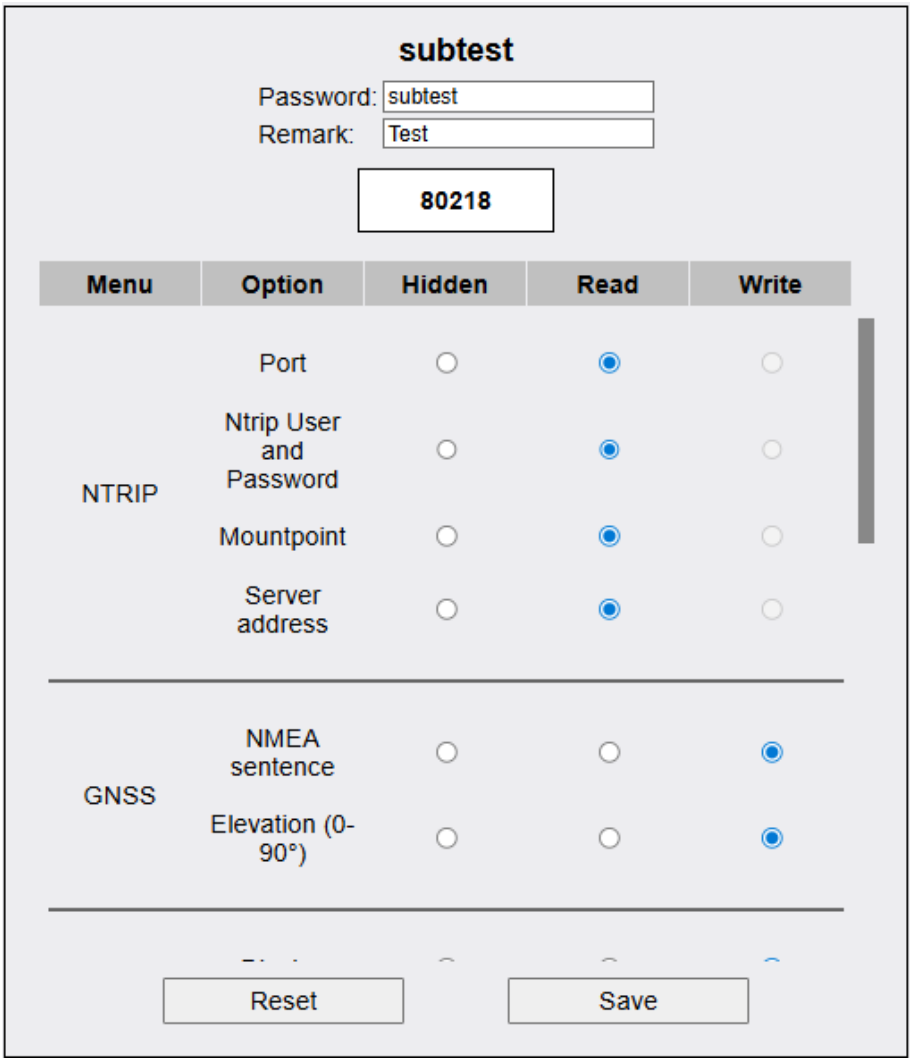


Figure 35: Manage access rights

Note: In the *Find position* menu, sub-users only see the stakeout points that they have set themselves. A distinction has **not** yet been implemented in the *Measurements* menu.

8. Declaration of conformity

EU DECLARATION OF CONFORMITY

The manufacturer bears sole responsibility for issuing this declaration.

Manufacturer	Alberding GmbH Ludwig-Witthöft-Str. 14 15745 Wildau GERMANY
Product	**Type:** A08-RTK **Name:** GEO-MICHEL® **PN:** TBD **SN:** xxxxA8xxxx

The object of the above declaration complies with the relevant Union harmonisation legislation:

- Radio Equipment Directive 2014/53/EU and Electromagnetic Compatibility 2014/30/EU
- RoHS Directive 2011/65/EU
- WEEE Directive 2012/19/EU

Article of the Directive 2014/53/EU	**Identification number**
3.1a Health and safety	DIN EN IEC 62368-1 VDE 0868-1:2021-05
3.1b Electromagnetic compatibility	EN 55032:2015 (CISPR 11, Class B)

Alberding GmbH keeps the technical documentation required by Article 21 of the Directive under document number A08-00003.

Wildau, 13. October 2022

Jürgen Alberding (ja@alberding.eu)
Managing Director

A. Appendix

A.1. Example GEO++® SSR2OSR

The *Geo++® SSR2OSR* application converts the SSRZ data stream to RTCM format. The resulting RTCM correction data can then be sent to the GEO-MICHEL® via a WLAN hotspot. We provide the *SSRZ-* and *Ephemeris input* via our Ntrip Caster.

1. Configure the A08-RTK GEO-MICHEL® (see chapter 7.3.6)
2. Configure the *Geo++® SSR2OSR* app data inputs (see Fig. 36)
   - Your *Username* and *Password* will be provided when you log in to the ALPOS®-Service. These are displayed in the *Ntrip* menu (see chapter 7.3.3). Add an **S** to the end of the username.
   - The *TCP Port Number* (*RTCM Output* section) corresponds to the port configured for *Correction Data Port* in the ALPOS® Service tool (see chapter 7.3.6).
3. Activate location services on your smartphone or tablet
4. Activate the mobile hotspot
5. Start the *Geo++® SSR2OSR* service in *Statistics*

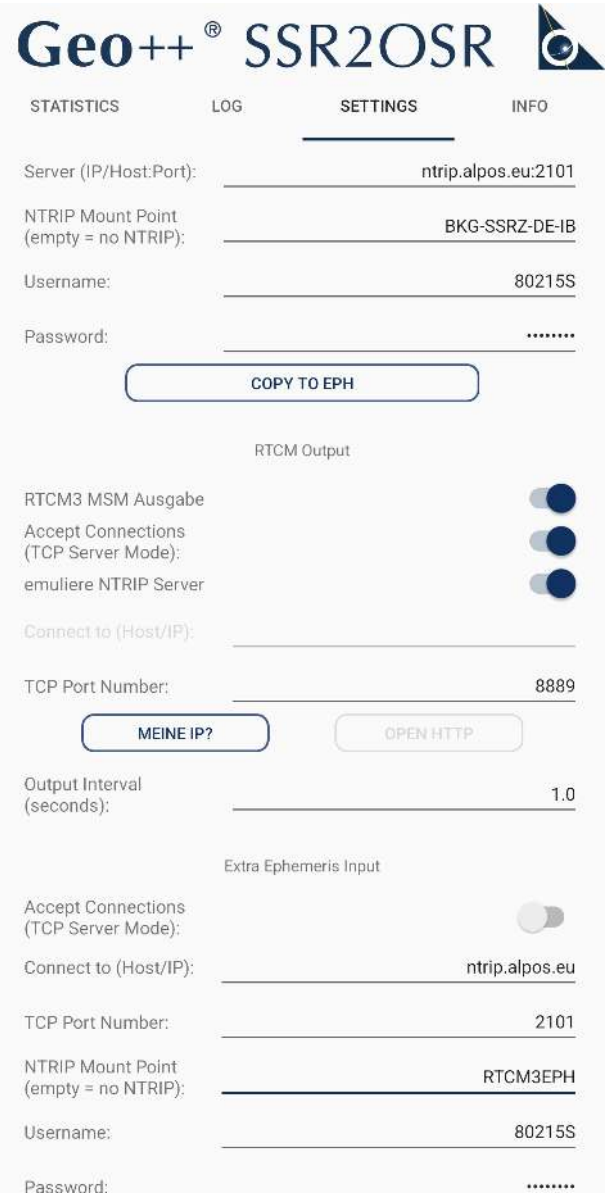


Figure 36: Data input settings