PicoAPRS V4

CE

Engineered by Taner Schenker
DB1NTO

Usermanual

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1. PicoAPRS V4

PicoAPRS V4 is one of the smallest, if not the smallest radio in the world with this range of functions! As the "V4" in the name already suggests, this is already the fourth generation of the "tiny one".

In this version, PicoAPRS has been completely revised and, despite its tiny dimensions, has received many new functions.

Below:

- **Colorscreen** with 240x240 pixel.
- **Bluetooth®** (Classic) for use as TNC.
- **WiFi®** for use as iGate, for configuration & softwareupdates without using a PC
- **Speaker, Michrophone** and **PTT** for FM voice communication
- **5 way button** for easy usage
- **On screen keyboard** easy text input
- **USB-C** connector for charging and communication

In addition, PicoAPRS V4 is currently available in three different variants.

1. VHF variant. This module offers the largest range of functions. It enables the use of APRS in the 2m band as well as operation as an iGate without a PC (via WiFi®), Bluetooth TNC and voice radio on the 2m amateur radio band. The transmission power is a maximum of 1 watt.

2. LoRa variant. The LoRa module enables the use of LoRA-APRS in the 70cm band (433 MHz) and the iGate function without a PC.
The built-in speaker and microphone are not used.

3. Shortwave receiver variant. With this it is possible to receive SSB (USB/LSB) on amateur radio bands (80m to 10m) and FM radio (88 MHz - 108 MHz). APRS can only be used via WiFi connection.

Measuring only approx. 35mm x 66mm x 25mm, the PicoAPRS resembles a matchbox. The VHF variant (without antenna) weighs just 60 grams.

Ideal for always having the device with you, e.g. when hiking, cycling, motorcycling, skiing, on a boat or in the air.

1.1 Optional equipment

PicoAPRS comes without antenna and charger.

Order. Nr.

35055	Secondary battery 3,6V/850mAh
35061	USB-charger
42854.02	Adapter SMA-(male)/BNC(female), ultra short, black

1.2 Recommended plug-on antennas

Manufacturer	**DIAMOND**	**DIAMOND**	**DIAMOND**
Type	**SRH-805**	**SRH-815S**	**SRH-36**
Frequency range	**144-148 MHz**	**144-148 MHz**	**144-148 MHz**
Connector	**SMA**	**SMA**	**SMA**
Gain	**0dBi**	**2dBi**	**3dBi**
Length	**4.5cm**	**13cm**	**36cm**
Order nr.	**17023**	**17021**	**17022**

Recommended Magnetfic mount antennas

Order. Nr.	
20117.SMA	DIAMOND MR-77S Magnetic mount antenna, 4m cable, foot 65mm diameter
20119.SMA	DIAMOND MR-75S Magnetic mount antenna, 3m cable, foot 30mm diameter
20111.SMA	No-Name Magnetic mount antenna, 3m cable

1.3 Safety instructions

Please keep your PicoAPRS away from children!
Warning: Small parts that can be swallowed!

- The device is not waterproof and is not protected against the ingress of splashing water. Please only use it in dry environment!

- Do not expose the device to excessive heat (e.g. parked vehicle in strong sunlight).

- Do not use damaged components.

The battery used stores energy with a high density. Improper handling of the battery can lead to dangerous situations. Please note the following information on safety when handling the battery.

- Do not open the battery or try to repair it
- Do not short-circuit the connections
- Do not expose the battery to high temperatures or burn it
- Do not bring the battery into contact with liquids or immerse it
- Do not charge the battery when the battery is warm or near heat sources.
- Stop using a defective or damaged battery
- Do not charge the battery with third-party chargers
- Do not place the device on a flammable surface
- Remove the battery from your PicoAPRS if you will not be using the device for a long time
- Tape off the battery contacts when storing them outside of the device to avoid accidental short circuits.

Battery Disposal Instructions

In connection with the sale of batteries or the delivery of devices containing batteries, the provider is obliged to inform the customer of the following:

As the end user, the customer is legally obliged to return used batteries. He can return old batteries, which the Provider has or has had in its range as new batteries, free of charge to the Provider's shipping warehouse (shipping address). Batteries and rechargeable batteries must not be disposed of with household waste.

The symbol according to §17 paragraph 1 BattG and the characters according to §17 paragraph 3 BattG
have the following meaning:
Pb = battery contains more than 0.004% lead by mass
Cd = battery contains more than 0.002 percent by mass of cadmium
Hg = battery contains more than 0.0005 percent by mass of mercury

1.4 Important note on the antenna socket

Due to its construction, the SMA antenna socket is not suitable for high mechanical loads! Stressing (bending) an antenna mounted on the PicoAPRS V4 can severely damage the device!

2. Operation

2.1 Installing and removing the battery

1. Unlock the battery cover by pulling the tab on the cover down with your fingernail.

2. Remove the battery cover.

3. Remove the battery from the device at the rear end of the battery (recessed grip).

Insert in reverse order, please note the alignment of the battery contacts to the **contacts** in the PicoAPRS.

2.2 Device overview

2.3 General information

- PicoAPRS V4 can only be operated with an inserted battery.
- A charging process is only displayed when the device is switched on. However, the battery is also charged when the device is switched off.

Turn ON

- To turn on, **please press the PTT for at least 3 seconds** until you hear a tone.

Software updates

Since the PicoAPRS software is constantly being developed and improved, we recommend checking for updates regularly!

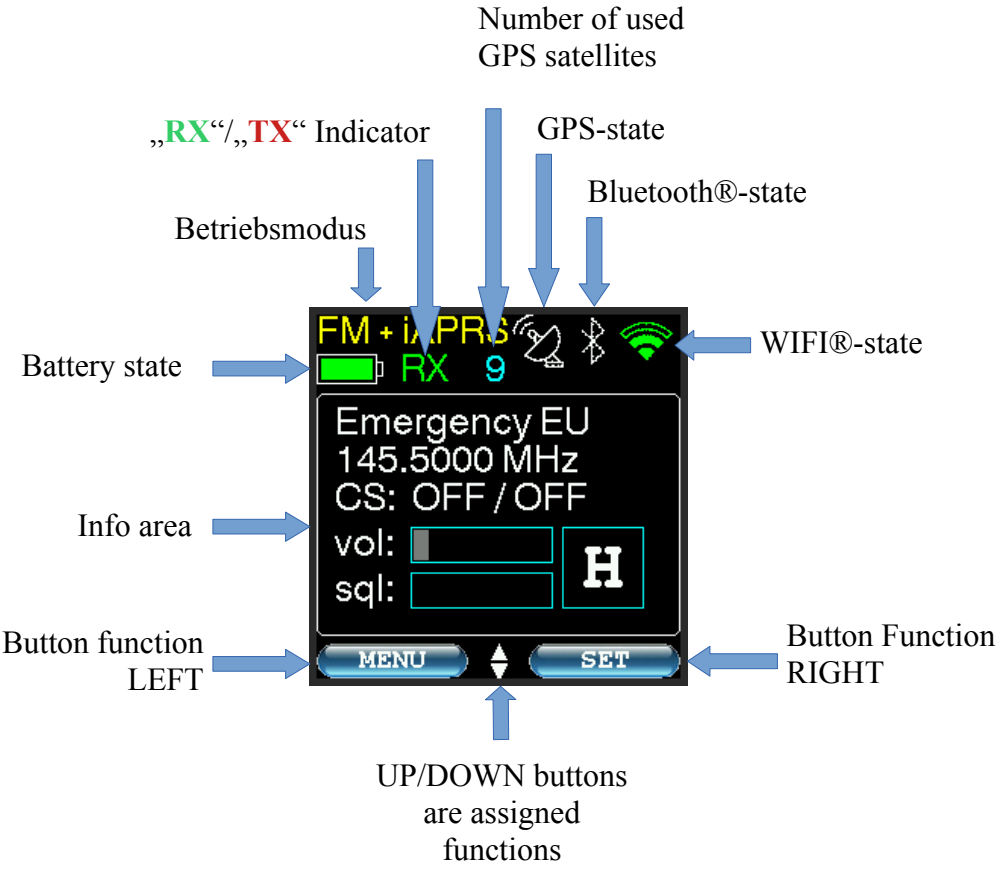
To do this, the WLAN connection must be configured once. Available software updates can then be regularly checked and updated directly in the device menu. No computer is required for this!

2.4 Mainscreen

The content of the main screen changes depending on the set operating mode.
The screen has no touch function. The "soft buttons" shown (in light blue, here "MENU" and SET") indicate the situation-dependent function of the left and right button of the 5-way button.

If there are small triangles (see image below) pointing up and down between the “soft keys”, it means that the up and down keys have a function at that moment.

The following information is displayed on the main screen:



Explanations of the exemplary main screen display in 2m APRS operation:

- the built-in lithium ion battery is fully charged. The battery icon is completely filled in green. A red triangle appears when charging 

- To the right of the battery, "**TX**" appears in red when transmitting, while "**RX**" is green when receiving, or there is no indicator when neither transmitting nor the squelch is open.

- Currently **10** satellites are used for position determination, GPS and Bluetooth are active.

- Your own call sign with SSID and the APRS symbol used
- Time (UTC) 15:16:40 (hours:minutes:seconds)
- The speed is 1kp/h

The GPS icon flashes during GPS search.
If the GPS receiver has been temporarily deactivated to save energy (see "**GPS Powersave**"), no GPS symbol will appear at this point.
A small "**D**" to the right of the number means that "Differential GPS" (WAAS/EGNOS) is used via SBAS signal and the precision of the GPS position is more accurate.

5-Way button

Left button

You can access the menu by pressing the navigation button to the left (labeled “Menu” on the display) while PicoAPRS is displaying the main screen.

Right button

The right button on the main screen is assigned the most important functions depending on the situation. So you don't have to search in submenus.

OK button (mid)

Different functions depending on the situation.

Up / Down buttons

Different functions depending on the situation.

On-screen keyboard

PicoAPRS has an on-screen keyboard for easier information entry.
The keyboard will appear automatically as soon as character input is required (e.g. when entering text messages, call sign, WIFI password..)

Example images of the on-screen keyboard.
Depending on the situation, you can with the key **"abc - ABC - !?/"** (bottom left in the image), switch between upper case letters, lower case letters and special characters.

Mainscreen in APRS modes

*The left button takes you to the main menu.
* Right button takes you to APRS settings (chapter 3.11).
* The OK button sends a current position beacon even if you have not changed your location and the set interval time has not elapsed.

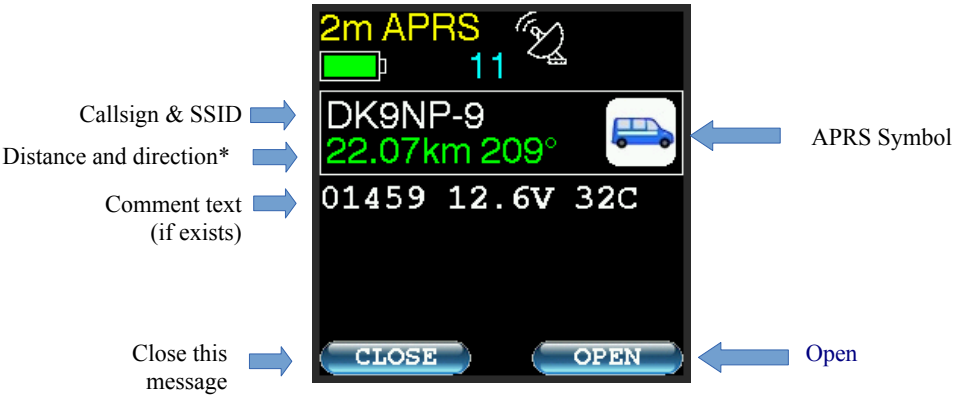
Mainscreen in FM modes

* Left button takes you to the main menu.
* With the right button you get to the FM settings (chapter 3.12).
* The OK button emits a 1750Hz tone for 3 seconds.
* Use the Up/Down buttons to change the volume.

Automatic display of received APRS packets in APRS modes

When an APRS packet is received, the packet will automatically be displayed unless you are within the menu or a message is displayed.

- Received position report



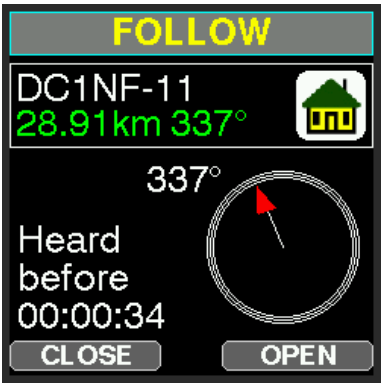
*Distance and direction to the displayed station in degrees.
Distance depending on the set unit either in km or miles.
The values appear in **green** if they are currently receiving a current GPS position.
If no valid GPS position is known (e.g. inside buildings, tunnels or if GPS is deactivated due to energy saving functions), a "~" appears in front of the distance information and the data is displayed in **orange**. Distance is then calculated using your last known GPS position.

OPEN

"OPEN" opens a page with three options

- „**Follow**“
- „**WHO IS**“
- „**Show QR Code**“
- „**Send Message**“

- „FOLLOW“



shows you the distance and direction to that station.

The same applies here: **Green** writing means that your GPS position is up-to-date and the distance was calculated using this data. **Orange** writing means that your GPS data is not up-to-date and is calculated from your last known position.

If you are moving at more than 5 km/h, you will be shown the direction IN RELATION to your own driving direction.

You can recognize this by a **green** arrowhead.

This means if you are moving directly towards the tracked station, the arrow will point straight up.

If you are not moving, you will be shown the absolute direction in degrees.

For example, up means the station is north of you.

You can recognize this by a **red** arrowhead as in the image on the left.

Should new position data be received for the station being tracked, this display will be updated automatically.

"OPEN" takes you back to the selection menu.

- „WHO IS“

Sends a text message to the "Who is" service requesting the displayed callsign.

The "Who is" service then sends you information such as the name and address of the user of the call sign. However, you can only receive the answer as a text message if you send the request via an iGate which can also send out APRS packets (TX iGate) or is in WIFI-APRS mode.

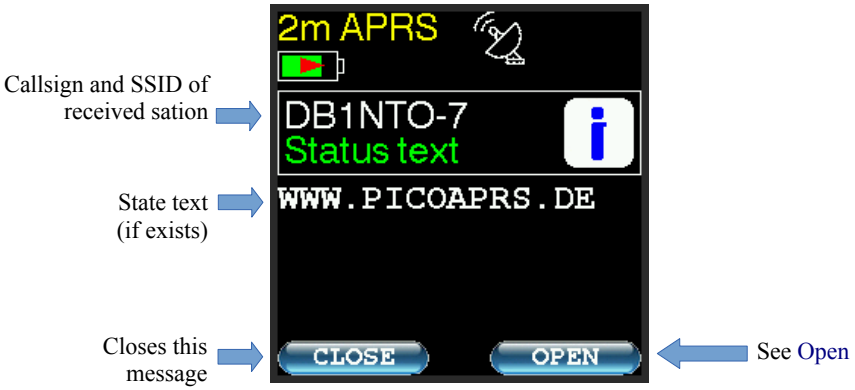
- „Show QR code“

Shows you a QR code with a link to http://aprs.fi for the selected call sign, which you can open with a smartphone, for example.

- „Send message“

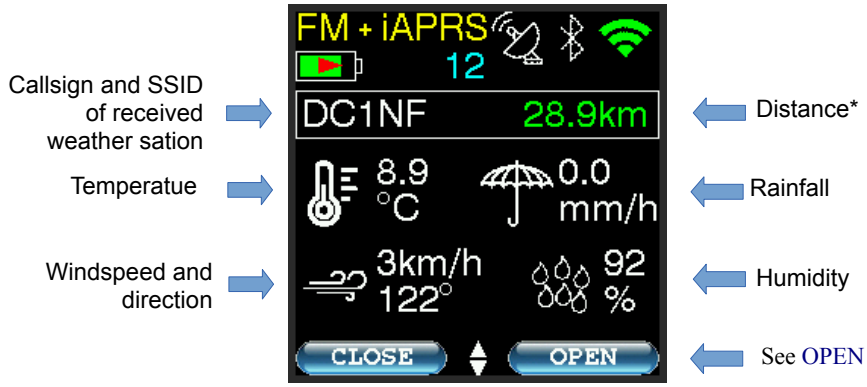
With the selection "Send Message" you go directly to the menu for sending a message and only have to enter the message text. The destination call sign and SSID are taken from the displayed station. For more see "New Message".

- Received status message



- Received textmessage („SMS“)

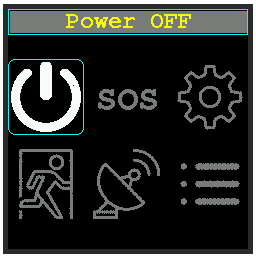
- Received weather packet

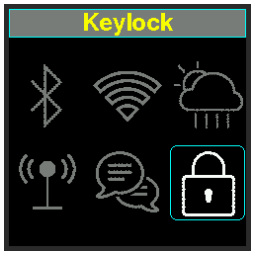


Not every weather station sends all values.
It is possible that only individual values are displayed and a "0" appears for the other values.

*There are weather reports with or without position data. If weather data without position data is received, no distance is displayed.

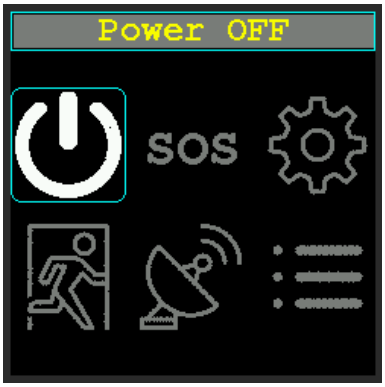
3 Menu





- Power OFF
- SOS
- Settings
  - Device Mode
  - Brightness
  - Softwareupdate
  - GPS Powersave
  - Beep
  - Units
  - Time Offset
  - Device Info
- Exit
- GPS
  - GPS Satellites
  - GPS data
  - GPS Coordinates
  - GPS Compass
  - My Home
  - My Car
  - My Location
  - GPS Deviation
  - Speedometer
- Last Heard
- Bluetooth
- WIFI
  - WIFI Setup
  - WIFI Status
  - RX WIFI APRS
  - Webconfig
  - WIFI reconnect
- Last Weather data
- Radio Settings
- Messages
  - Received messages
  - Sent messages
  - New Messages
  - Set Bulletin
- Keylock

3.1 Power OFF



Press the middle button to turn off the PicoAPRS.

3.2 SOS

To send an “APRS EMERGENCY” (emergency) message, press and hold the center button for about 5 seconds.

Your PicoAPRS then automatically switches to APRS mode if this is not currently activated, sets the transmission power to 1 watt and transmits an EMERGENCY message with your position via the APRS network every full minute.

If you use the VHF variant of the PicoAPRS, the loudspeaker and the microphone are also activated. In this case, you can then speak, listen and send APRS emergency messages on the APRS frequency at the same time.

To disable Emergency Mode, you must turn off your PicoAPRS.As long as this mode is active and the battery is sufficiently charged, an emergency message with the latest GPS position is sent every full minute.

WARNING! An "EMERGENCY CALL" generates an alarm tone on most APRS receivers. Only use this function in emergencies!

WARNING: There is no guarantee that your emergency call will be received or heeded! Only use this emergency call message if you have no way of making the emergency call via established channels (e.g. telephone)!

3.2 Settings

- Device Mode
- Brightness
- Softwareupdate
- GPS Powersave
- Beep
- Units
- Time Offset
- Device Info (2. page)

Device mode

- APRS
- RX iGate
- GPS
- FM-Voice
- FM + WIFI APRS
- Fill in Digi
- TNC
    - *USB-C
    - *TCP
    - *Bluetooth
    - *Bluetooth LE

Available devicemodes

- APRS: Pure APRS transmission and reception via VHF resp. LoRA®
- RX iGate: Forwards received APRS packets to the APRS IS network. This requires an internet connection via WIFI.
- GPS: Forwards the data from the GPS receiver via USB or Bluetooth.
- FM-Voice: Pure FM radiotelephone operation via VHF.
- FM + WIFI APRS: FM radiotelephone operation via VHF and APRS usage via the WIFI internet connection.
- Fill in Digi: PicoAPRS retransmits APRS packets received over VHF if they were received with the path "WIDE1-1, ..."

- TNC: In TNC mode you have three options.

1. Via USB-C Virtual Com Port
2. TCP. PicoAPRS supports DNS-SD Discovery
3. Bluetooth (Classic)
4. Bluetooth Low Energy (BLE)

In all three variants, your PicoAPRS works as a "KISS" TNC.

To use a Bluetooth “Classic” connection, you must pair your PicoAPRS with your smartphone, tablet or PC. Your PicoAPRS will be visible for 4 minutes after activating TNC mode. If a connection to the PicoAPPRS via Bluetooth is not established within this time, the Bluetooth function of the PicoAPRS switches off to save energy. You can then reactivate Bluetooth using the Bluetooth icon in the main menu.

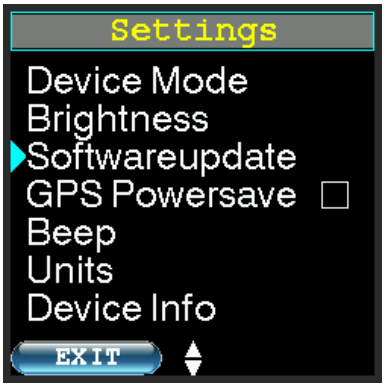
With Bluetooth Low Energy (BLE), no prior pairing with your smartphone, tablet or laptop is necessary or possible! In this case, your PicoAPRS will not be displayed at all when searching for Bluetooth devices. That is normal! Please open your application (e.g. RadioMail® or aprs.fi® app) on your smartphone, tablet or PC and simply select your PicoAPRS there without prior pairing.

Brightness

Brightness controls the display brightness. The gray bar shows the set brightness. Brightness is adjusted with the up and down buttons.

A low brightness lowers the power consumption and thereby extends the battery life slightly.

GPS Powersave



„GPS Powersave“ defines whether the GPS receiver should be switched off automatically when GPS is not needed.
"**OFF**" turns off the power saving function and
"**ON**" enables this function.

If the external power supply is connected via USB, GPS is activated regardless of this setting!

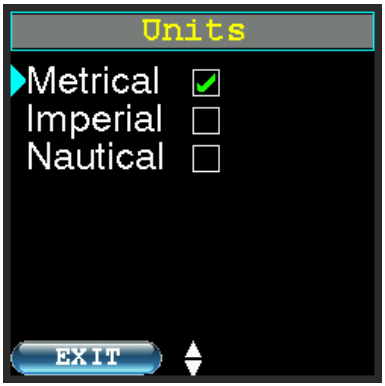
If the GPS receiver is deactivated cyclically, this saves energy and extends the battery life. On the other hand, the GPS speed may not be displayed correctly on the main screen. In addition, the distance to other stations is then only calculated and displayed using the last known GPS position.

Beep

Set when you want your PicoAPRS to play a beep.

"**Messages**" For incoming text messages
"**Keypress**" When a key is pressed
"**Packets**" For received APRS packets
"**Morse Msg**" If you activate this item, incoming text messages will be forwarded to you as Morse code.

Units



Setting the displayed units of measurement for speed, distance and temperature, amount of precipitation

Metrical → km/h, km, Degrees Celsius, mm/h
Imperial → mp/h, Miles, Degrees Fahrenheit, in/h
Nautical → Knots, Nautical Meiles, Degrees Celsius, mm/h

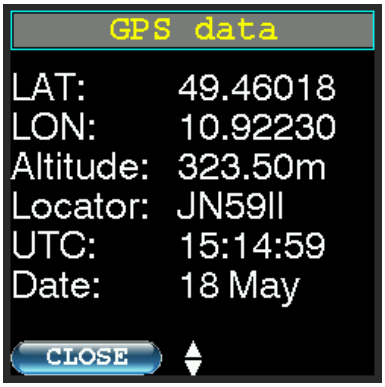
3.3 Exit

Try it, you will be surprised ;-)

3.4 GPS

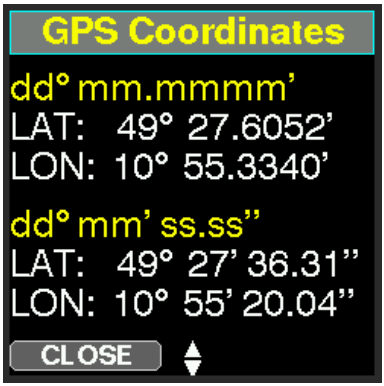
Pressing the right button "**ok**" takes you to the GPS data shown below

GPS data



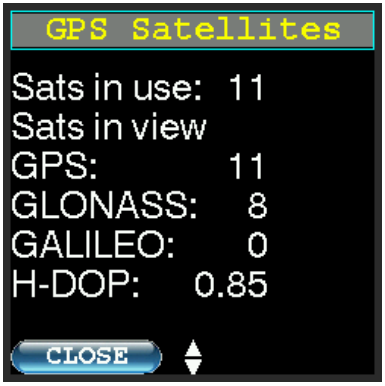
Pressing the up or down button takes you to the next page of GPS information as shown in the images below.

GPS Coordinates



Different formats of your current location.

GPS Satellites

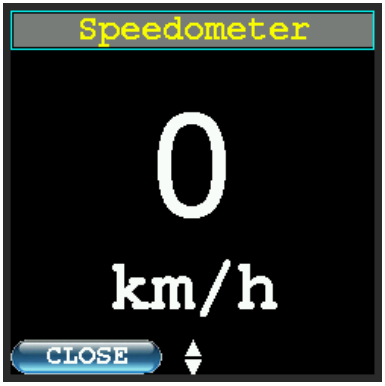


Sats in use shows the number of satellites actively used for position determination.

Sats in view shows the number of visible GPS, GLONASS and GALILEO satellites.

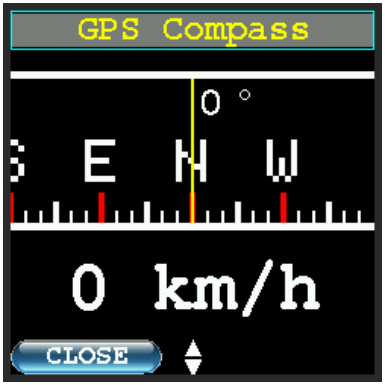
H-DOP stands for horizontal position accuracy. The smaller the number, the more accurate the position.

Speedometer



Shows your speed over ground as measured by GPS.

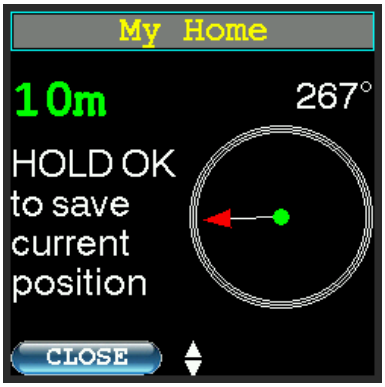
Compass



compass rose

Shows your current speed measured by GPS and from approx. **5 km/h**, your direction of movement.

My Home



Save your "home" position here, for example, by holding down the "OK" button when GPS reception is available.
You can overwrite this position again at any time.

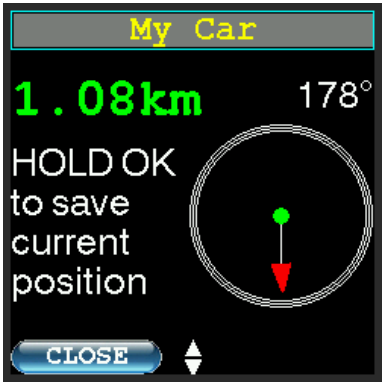
When you call up this menu item, the distance (as the crow flies) and the compass direction to the saved position are displayed.

This can be very useful, for example, when traveling or in unfamiliar areas to find your tent, hotel, etc. again.

If you are moving below about 5km/h, the arrowhead turns red and shows you the absolute direction (so up means north).

If you are moving over 5km/h, the arrowhead will turn green and show you the direction relative to your moving direction.
This means if you are moving straight towards the target, the arrow will point up. If you move away from this location, the arrow will point down.

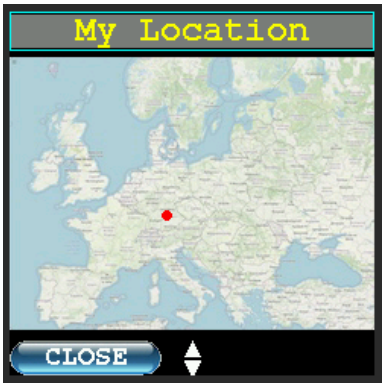
My Car



This menu item offers you an additional storage space for certain locations such as "My Home".

Here you can, for example, save the parking space of your vehicle in foreign areas to find it more easily.

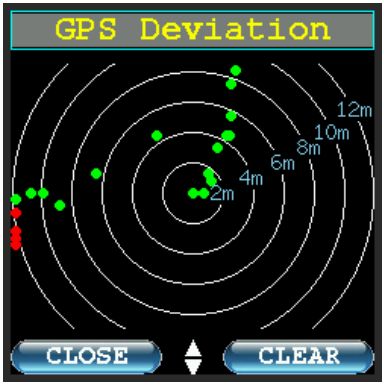
My Location



Visually indicates your position on a map with a small red dot.

The map changes automatically depending on the region. Due to the internal memory size, no more maps can be loaded into the device!

GPS Deviation



Visually indicates the inaccuracy of your GPS position.

Each line corresponds to a deviation of two meters.

When starting this menu item and after pressing the right button ("CLEAR"), the center is used as a reference.

Red dots on the edge mean that the deviation is outside the displayable range (> 12 meters).

3.5 Last Heard

The stations last received are displayed here.

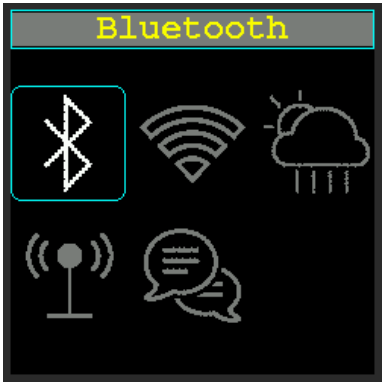
At the top right of the picture you can see the number of stations received so far and which station is displayed (station 1 of 12).

Stations that have already been received are updated when they are received again. Exit the menu with "**CLOSE**".

„**OPEN**“ see open

A maximum of 20 of the stations last listened to are saved.
When all 20 memory locations are occupied, the entry is overwritten again, starting with the first.
The list is deleted when you switch off.

3.6 Bluetooth



Reactivates the Bluetooth connection again if it was deactivated to save energy after the connection was lost.

The Bluetooth connection can only be used in TNC mode and switches on automatically when you switch to TNC mode.

3.7 WIFI®

WIFI setup

Starts a scan for WiFi® networks.

You will then see all the available networks as shown in the next image as an example.

Select the desired network with the up or down button and then press the right "SELECT" button to select.

Enter your WiFi® password here.

WIFI status

Shows you the network name, the IP and MAC address of your PicoAPRS as well as the WiFi® field strength and the WiFi® transmission power.

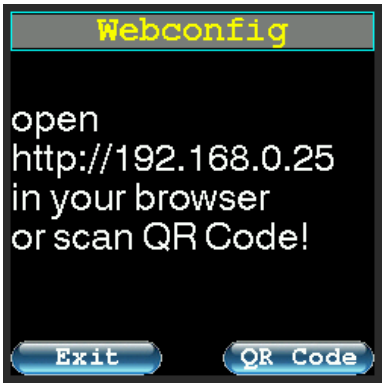
The transmission power is adjusted depending on the reception field strength.

RX WIFI APRS

If this function is activated, APRS data packets are also received and displayed via the Internet connection when using APRS connections via WiFi®.

E.g. in iGate operating mode. Deactivate this function if you do not want any data packages from the Internet to be displayed. This is useful, for example, if you want your PicoAPRS to work unattended as an iGate.

Webconfig



Here you can see the web address of your PicoAPRS.
You can call this up with a browser on a computer within the same WLAN network in order to conveniently edit the frequency memories via the browser.
The right button "QR Code" shows you this address as a QR code, which you can scan with a smartphone.

Below is an example of what the "Webconfig" page looks like in a computer browser.

PicoAPRS Memory List

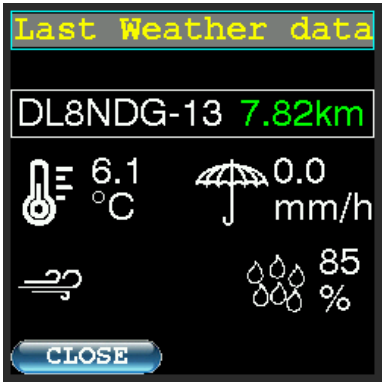
Nr.	Name	TX Frequency	RX Frequency	TX Tone	RX Tone	Scan	
1	Emergency EU	145,5000	145,5000	OFF	OFF	☑	Save
2	APRS	144,8000	144,8000	OFF	OFF	☐	Save
3	DB0FUE	145,0375	145,6375	OFF	OFF	☑	Save
4	Moritzberg	145,1500	145,7500	77.0Hz	OFF	☑	Save
5	Stadt	145,0500	145,6500	OFF	OFF	☑	Save
6	Bamberg	145,0250	145,6250	OFF	OFF	☑	Save
7	Ansbach	145,1875	145,7875	OFF	OFF	☑	Save
8	Herzogenaurach	144,9875	145,5875	88.5Hz	OFF	☐	Save
9	Zugspitze	145,1250	145,7250	88.5Hz	OFF	☑	Save
10	Hersbruck	145,1625	145,6625	OFF	OFF	☑	Save
11	Greding	145,1750	145,7750	OFF	OFF	☑	Save
12	Schneeberg	145,0000	145,6000	OFF	OFF	☑	Save
13	Muenchen	144,9750	145,5750	OFF	OFF	☑	Save
14	VFO	145,4000	145,4000	OFF	OFF	☑	Save
15	VFO 2	145,5125	145,5125	OFF	OFF	☑	Save
16	---	145,0000	145,0000	OFF	OFF	☐	Save
17	---	144,0000	144,0000	OFF	OFF	☐	Save
18		144,3500	144,0500	OFF	OFF	☐	Save
19	---	144,0000	144,0000	OFF	OFF	☐	Save
20	---	144,0000	144,0000	OFF	OFF	☐	Save
21	VFO	144,0250	144,0250	OFF	OFF	☐	Save

Set your APRS COMMENT text: PicoAPRS by DB1NTO — Save
Set your APRS STATUS text: PicoAPRS - World's smallest APRS Transceiver by DB1NTO! — Save
Restore a backup file: Datei auswählen — Keine ausgewählt — Restore
Download backup file — Download

WIFI Reconnect

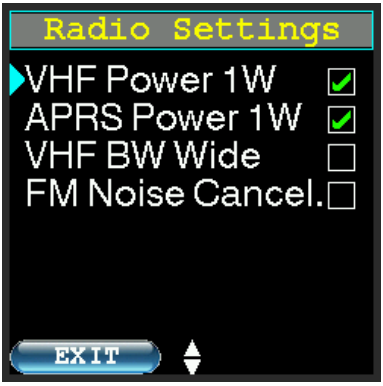
The WiFi® connection requires a lot of energy.
Therefore, the WiFi® connection will be disabled if the connection to the configured network is lost for more than one minute.
With "Wifi Reconnect" you restart the connection to your network without changing the configuration or operating mode.

3.8 Last Weather



At this point you can display the weather data last received, if available.

3.9 Radio Settings



Here you can switch the **transmission power** in APRS or VHF operating mode between 0.5 or 1 watt. Green tick means 1 watt.

VHF BW Wide sets the channel bandwidth to 25kHz. If this item is not activated, the channel width is 12.5KHz.

F**M Noise Cancel**. Enables noise reduction.

3.10 Messages

Opens the text message menu

Received Messages

Opens submenu for received text messages.

The list is deleted when you switch off.

If there are received text messages, previously closed messages can be read again and replied to here.

Callsign & SSID of the sender

Message text

Sent Messages

The list is deleted when you switch off.
If you have previously sent text messages, you can view them again here.
The **green tick** in the example on the left means that the delivery has been confirmed by the recipient.

If a number appears there, the number indicates the remaining delivery attempts. A maximum of 5 delivery attempts are made for each new message.

If no acknowledgment of receipt is received, a **red X** will appear there.
But that doesn't mean your message hasn't arrived. There can be various reasons why you do not receive the confirmation.

By pressing the right button "resend" you can send this message again.

Use the Up and Down buttons to scroll through all received text messages.

New Message

Creates a new text message.

New Message → Destination

Enter the call sign and then the SSID of the recipient. To enter the SSID, you can confirm the selection "OK" (bottom right in the picture) or select the "hyphen" (-).

New Message → Destination SSID

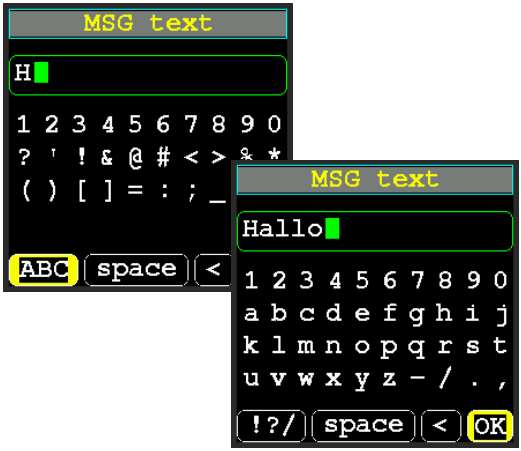
Use the up and down buttons to select an SSID between 0 and 15.
The input of letters is not intended here.

TIP: You can also use this to send an e-mail to any e-mail address on the APRS network! To do this, please enter the destination **EMAIL-2** as the recipient. Then enter the target e-mail address in the text field first, followed by a space and then your message text.

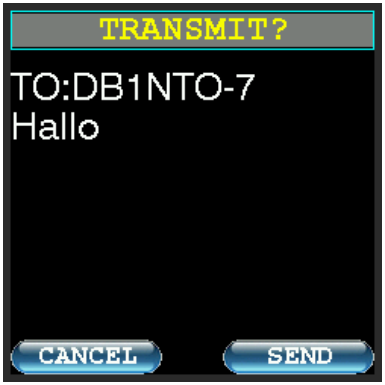
New Message → Text

Enter the message text here.

"**Space**" inserts a space.
"**<**" deletes the last character
"**OK**" ends the text input and leads to the next step

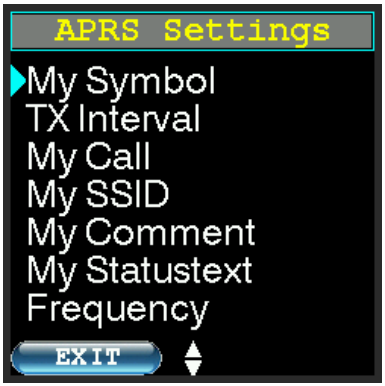


New Message → Confirm

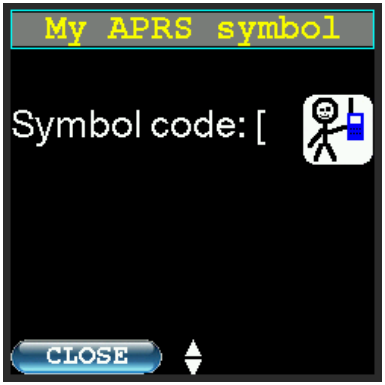


At this point you have the option to check your message and cancel ("**cancel**") or confirm ("**send**") the sending of the message.

3.11 APRS Settings



APRS Symbol



Here you set your own APRS symbol which should be displayed to other receivers.
The symbol is displayed as ASCII characters (according to the table) and also graphically for most symbols.
Not every graphic symbol is present in the PicoAPRS.

The primary table is always used!

A translation table can be downloaded e.g. from http://wa8lmf.net/aprs/APRS_symbols.htm.

TX Interval

Specify the intervals at which position reports should be sent. Please note that the interval set here only applies if your position has changed by at least 50* or 100 meters!
*50 meters only with very high GPS accuracy and slow movement speed.

MyCall

Here you set your own call sign. **This is the most important setting you have to make!** A valid call sign is **at least 4 digits** long.

It is used to send position reports and receive personal text messages.

If previously set, the currently set call sign is displayed here.

To delete or correct the entry, press the virtual key "<".

MySSID

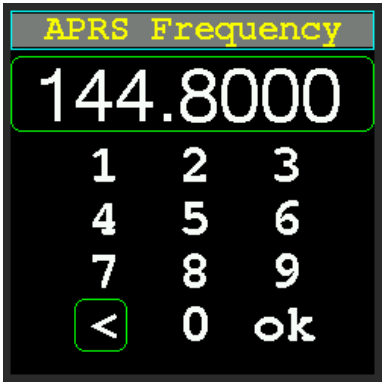
Set your SSID here using the up or down button. Values from 0-15 are available.

The SSID is used to differentiate between the APRS station types.

The convention for the SSID is (source: http://aprs.org/aprs11/SSIDs.txt)

-0 Your primary station usually fixed and message capable
-1 generic additional station, digi, mobile, wx, etc
-2 generic additional station, digi, mobile, wx, etc
-3 generic additional station, digi, mobile, wx, etc
-4 generic additional station, digi, mobile, wx, etc
-5 Other networks (Dstar, Iphones, Androids etc)
-6 Special activity, Satellite ops, camping or 6 meters, etc
-7 walkie talkies, HT's or other human portable
-8 boats, sailboats, RV's or second main mobile
-9 Primary Mobile (usually message capable)
-10 internet, Igates, echolink, winlink, AVRS, APRN, etc
-11 balloons, aircraft, spacecraft, etc
-12 APRStt, DTMF, RFID, devices, one-way trackers*, etc
-13 Weather stations
-14 Truckers or generally full time drivers
-15 generic additional station, digi, mobile, wx, etc

APRS Frequency



The frequency is preset to the usual US frequency of 144.3900 MHz and normally does not have to be changed.

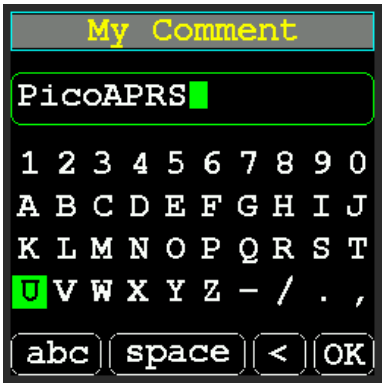
If you want to change the frequency, use "<" to delete the current frequency up to the desired position and then enter the new frequency.

The following frequencies are used in other parts of the world for 1200 baud FM APRS:

USA:	**144.390 MH**
Japan:	**144.660 MHz**
Europe:	**144.800 MHz**
Australia:	**145.175 MHz**
Thailand:	**145.525 MHz**
ISS (Space Station):	**145.825 MHz**

The APRS path is set to WIDE1-1, WIDE2-2
If you set the frequency to 145.8250MHz, the path will open automatically ARISS, WIDE2-1 converted.
To use APRS via the International Space Station (ISS), it is sufficient to set the frequency.

My Comment



Enter a comment text under "My Comment", which is sent as a comment with every position package. The text is limited to 40 characters.

3.12 FM Voice Settings

- VFO: Allows quick switching to an unsaved frequency. Here you can type in a frequency which is set identically as TX and RX frequency. At the same time, the frequency is stored in the memory (memory list) at position 21. If required, you can set additional settings in memory such as CTCSS or DCS tones for this frequency.

- Memory List: Here you can save, select and edit frequencies.

Including the name of the memory location, the TX and RX frequency, TX and RX subtone as well as the setting for a "scan stop".
These settings can be conveniently edited on a computer using the "Webconfig" function.

- Memory Scan starts a search over the stored frequencies that were specified for a "Scan Stop".

- TX power 1W switches the transmission power for FM radiotelephone operation between 1 watt (green tick) and 0.5W (no tick).

You can also change this setting in the "Radio Settings" menu. The transmission power for APRS operation can be set separately in the "Radio Settings" menu item.

- SQL: Here you can set the response threshold for the squelch between a value from 0 (SQL open) to 8.

3.13 Device Info

Under "Device Info" you will see some information about your PicoAPRS.

Software version of the device and the radio module (modem version), as well as the ID of the device.

4. Technical specifications

Frequency range **RX** worldwide:	136.000 MHz – 174.000 MHz (from firmware V13)
Frequency range TX EU market:	144.000 MHz – 146.000 MHz
Frequency range TX US market:	144.000 MHz – 148.000 MHz
TX power:	Maximum 1 Watt
Modulation:	FM / AFSK
Baudrate AX.25:	1200 Baud
TNC Packet size (MTU):	1024 Bytes.
Baurate USB (virtual COM port):	115200 Baud
Operating voltage über USB:	5.0V DC
Battery:	3,7V - 850mAh Li-Ion
GPS:	The GPS receiver used works up to an altitude of 18,000 meters (60,000 feet).
Current consumpt. at the USB-port:	Maximum 500mA
Dimensions: approx.	35 mm x 67 mm x 25 mm
Weight:	ca. 60 grams
Operating temperature range:	-10°C to +45°C

5. Troubleshooting

If your PicoAPRS shows a malfunction, please remove the battery and, if applicable, the USB power supply for a few seconds and then reinsert the battery.

6. Manufacturer information

WiMo Antennen und Elektronik GmbH

Am Gäxwald 14
76863 Herxheim

Germany

Tel. +49 (0) 7276 9668-0

http://www.wimo.com

e-mail: info@wimo.com

7. EU CE Declaration of Conformity

In accordance with EU Directives and Regulations 2014/53/EU, 2011/65/EU und 2015/863/EU

WiMo Antennen und Elektronik GmbH
Am Gäxwald 14, 76863 Herxheim, Germany

as the manufacturer, hereby declares under our sole responsibility that

Product: APRS Data and FM Transceiver
Model name: PICO-APRS is in conformity with the essential requirements of the RE Directive 2014/53/EU:

Radio	EN 301 783 V2.2.1 (2016-01)
	EN 300 328 V2.2.2. (2019-07)
	ETSI EN 303 413 V1.2.1 (2021-04)
Article 3.2	EN 300 440 V2.1.1 (2017-03)
EMC	ETSI EN 301 489-1 V2.2.3 (2019-11)
	ETSI EN 301 489-15 V2.2.1 (2019-04)
	ETSI EN 301 489-17 V3.2.4 (2020-09)
	ETSI EN 301 489-19 V2.2.1 (2022-09)
Article 3.1(b)	EN 301 489-3 V2.1.1 (2017-03)
Safety	EN IEC 62368-1:2020+A11:2020
Health	EN 62311:2008
	EN 50566:2017
	EN 62209-1:2016
	EN 62209-2:2010/A1:2019
	EN 62479:2010; EN 50663:2017
ROHS	EN IEC 63000:2019-05

The notified body Bay Area Compliance Labs Corp.(BACL)
(EU Identification Number: 1313) performed a conformity assessment according to Annex III, Module B.
Signed on behalf of WiMo Antennen und Elektronik GmbH

Name: Volkmar Junge
Title: Certification Supervisor Signature
Tel: +49 7276 96680 Mail: info@wimo.com (V. Junge)
Date: October 23, 2022

CE

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