USER MANUAL FOR HOLFUY WEATHER STATIONS

V4.7 2023/12/01

CONTENTS

Thank you for choosing Holfuy products!

Please read and study the following user manual carefully before installation! We hope that your weather station will serve you with quality data for a long time.

WARNING: The LI-ION batteries in the station may get hot, explode or ignite and cause serious injury if exposed to abuse conditions. Be sure to follow the safety warnings listed below:

- Do not connect the positive terminal and negative terminal of the battery to each other with any metal object (such as wire).
- Do not throw the station or the batteries in the trash!
- Do not pierce the battery with nails, strike the battery with a hammer, step on the battery or otherwise subject it to strong impacts or shocks.
- Do not expose battery to water or salt water, or allow the battery to get wet.
- Do not charge unattended, and over 4.2V
- Never throw the batteries nor the station in the general waste.
- Connect only original Holfuy batteries (3.7V) to your station. Other type of battery packs may damage your station!

HOW TO SET UP YOUR STATION

As a first step please study the right figure about your main board at **Appendix 1: The Holfuy main board**

TOOL LIST, WHAT YOU WILL NEED DURING THE INSTALLATION

1. A SIM card with mobile internet subscription (for 2G,3G or NB-IoT).
2. Philips (cross, +) screwdriver
3. M13 wrench
4. M10 wrench
5. Mobile phone/ laptop / tablet to check the data.

INSERT A PIN CODE FREE SIM CARD

1. Unscrew the four screws on the top of the box, open it carefully.
2. Check with a mobile phone if your SIM card has a PIN code. If it asks for a SIM PIN code after startup, please disable the SIM PIN code in your mobile phone's settings.
3. Insert the SIM card to the SIM socket on the station's main board (right orientation drawing is above the SIM connector). You will need a Micro SIM card for V5.X boards or above, and a Standard size SIM card for stations with a V4.X main board or below.

POWER ON THE STATION

1. Plug in the battery's connector to the main board (only for board rev. V6.X or above)
2. Turn the mini ON-OFF switch (**7**) to ON state. (only for board rev. V5.X or above)
3. (only for board rev. V4.X or below) Pull (disconnect) the BLUE+**BLACK** jumpers (**7**) Rotate them with 90°, take them back.

4. Now your station is ON and the red-green lights (**2, 3**) start to blink.

SET THE APN (IF THE RIGHT APN IS PRELOADED YOU CAN SKIP THIS STEP, FOR 2G, 3G ONLY)

Note: If you have a **NB-IoT** station please skip this step, as SMS functions are working only with 2G and 3G stations.

Please search first for the right APN name (user name, password) for your mobile operator. Every mobile operator use a unique Access Point Name (APN), and optionally a user name and password. You can search for this with the help of Google, or you can ask directly your mobile operator from who you have bought the SIM card.

If the APN is not the same which is factory loaded in your station (written on the mini manual), you will need to send the right APN settings for the station with a mobile phone.

- Type in the Station's SIM card's phone number and the APN setter SMS (below) to your phone, but do not send the message yet.

  H*station number***APN:***your apn* **->** e.g: „**H102APN:internet**”

  if your operator need a user name and a password as well:

  H*station number***APN:***your apn*,*user_name*,*password*

- Turn OFF the station
- Press and hold the button (**1**) on the main panel
- Turn ON your station → both lights will turn ON
- Release the button immediately after the lights turned off.
- Wait while the station is connecting to the network (There will be random blinking during the initialization)
- After the start up the lights will flash alternately for 3 minutes
- You will need to send the SMS during this 3 minutes period

If the station successfully got the SMS the alternate flashing will stop and the Station will connect to the server.

Video about the APN settings is available at our Youtube channel:

https://www.youtube.com/channel/UCWAhXNJNYKPdlw-SbA-nuIw

SET UP WIFI (IF THE RIGHT SSID IS PRELOADED GO TO THE NEXT STEP, **FOR WIFI ONLY**):

Note: Only for Holfuy stations with a WIFI modem.

If the SSID is not preloaded to your station please follow these steps.

- Turn OFF the station
- Press and hold the button (**1**) on the main panel
- Turn ON your station → both lights will turn ON
- Release the button immediately after the lights have been turned OFF.
- Wait while the Station is setting up a WiFi AP (There will be random blinking during the initialization)
- After the start up the lights will flash alternately for 3 minutes (RED-GREEN-RED-GREEN….)
- Connect to the station’s WiFi network with a smartphone or a computer.
  Station’s network name (STATION_ID is your station’s ID, e.g. 100):

  Holfuy_*STATION_ID*
- After connecting to the station’s WiFi network a “captive portal” should open in a web browser automatically. (If it doesn’t happen in few seconds please open a web browser and type the following IP address to the URL field: 192.168.4.1 and open the page.)
- Click on the “Configure WiFI” button, select your local network’s SSID from the list.
- Type in the network’s password. (Leave the password field empty is the network is open).
- Click on the “save” button.

- If you gave all data correctly, your station should restart and connect to the given local WiFi network automatically.

CHECK IF THE STATION IS ONLINE

After the station connected to the Holfuy server it sends a RESTARTED state message, and the first weather data packet follows in about a minute later. Status messages are shown at the left side of the station's info page, under the battery voltage graph.

FIX THE ROTOR, VANE (FOR DAVIS ANEMOMETER ONLY)

Place the rotor on the thinner metal shaft at the bottom of the wind sensor, fix it with an imbus screw (the imbus tool is in the plastic packet with other screws for mounting). Place the vane on the shaft at the top of the sensor, fix it with an imbus screw as well. The small imbus screws are already in the cupst and vane parts.

MOUNTING

You can mount your station to any mast under 48mm diameter with the included clamps. Or to flat surfaces with extra screws.

Important Note: As a primary protection against lightning damage **please mount the weather station and every sensor minimum 1-2 meters below the highest point of the mast/pole/rod!** So please do not mount the wind sensor at the top of the pole. You can also extend the pole with a 1-2m long thinner, well grounded lightning rod to reach the minimum 1-2 meters extra pole height above the sensors.

1. Release the M8 nut on the station's mounting arm.
2. Set your station's mounting arm angle to the **marked position** (black sign points to the ideal hole).
3. Screw back the M8 nut on the station's mounting arm.
4. Fix the wind sensor holder on the mast.
5. Fix your station to the pole. **The solar cell has to look to South–South East (North-North East at the Southern Hemisphere)!**
6. Make sure that all wire entering points (cable glands) are faced to the ground at the bottom part of the station's enclosure after mounting. And none of them are pointing towards the sky.
7. If your station has extra sensors, mount them also on the pole (rain sensor, solar radiation shield, solar sensor, etc.)

8. Roll up the extra cables and fix them to the pole e.g. with a cable tie.

Mounting of the wind sensor: proper (right), wrong (left, as wind sensor is at the highest point)

DIRECTION OFFSET FOR THE WIND SENSOR

For the Davis wind sensor:

If the arm of the Davis wind sensor is pointing to North you can skip this step!

- Rotate the wind vane to **North** and hold it during the whole process.
- Press the button on the main panel → both LEDs will turn on.
- Release the button immediately after the LEDs turned off.
- Both LEDs will flash 3 times, then you can check the new null direction offset at your station's setup page.

Note: You can adjust the direction sensor at your station's setup page also (direction offset field). E.g. if the arm of the Davis wind sensor is pointing to East, just type 90° to the direction offset field and the direction readings will be accurate. More info:

https://holfuy.com/en/support/set-the-direction-offset

CLOSE THE BOX

Don’t forget to plug in the T-Plug (red) connector of the solar panel before closing the box!

Make sure that the gasket is in good shape in its slot at the sides of the solar cover.

Close the box properly with the 4 screws.

Proper sealing is very important as wet air inside the enclosure may damage the station!

RECOMMENDED MOUNTING SEQUENCE

1. Install the SIM card (only for 2G, 3G and NB-IoT versions)
2. Turn ON the station
3. Wait till the first weather data packet arrives to the Holfuy system.
4. Configure your station's properties at holfuy.com in the “MyStations” menu after logging in.
5. Test the station at least for few hours at your home/office.
6. Plug in the solar cell's connector to the main board.
7. Check the gasket and close the box carefully.
8. Now you can go with the station to the final installation location.
9. Fix the plastic mount base (Davis wind) to the pole / mast.
10. Set the station's mounting kit's angle to the marked position.
11. Fix the station to the pole with a clamp, the **solar cell** has to look to **S-SE (N-NE at South Hemisphere)**.
12. Fix the wind sensor in its plastic mounting base.
13. Adjust the North position of the wind sensor.
14. (Optional) Fix the solar radiation shield and other optional sensors to the pole under the station’s box with a clamp(s).
15. Roll up the extra cables and fix them to the pole e.g. with a cable tie.
16. Check all screws twice, if they were tighten.
17. Check the data e.g. with your mobile phone, if the station was still offline.
18. Take a photo about the station at its final location and send it to us by email to activate warranty.

PHOTO ABOUT THE STATION AFTER INSTALLATION

The proper mounting is very important in case of outdoor devices like a Holfuy weather station. Improper mounting can lead to a hardware fault after few months of operation due lightning activity, or if water could enter to the station's enclosure.

To ensure proper mounting at the station's final location, we ask you to send us a photo about the station after the installation. Thanks to it we can check if you have done it correctly and we can warn you if you have done any mistake.

Please note that it is your responsibility to mount the station correctly, and to send us the photo after installation. The warranty does not cover any damage due wrong mounting.

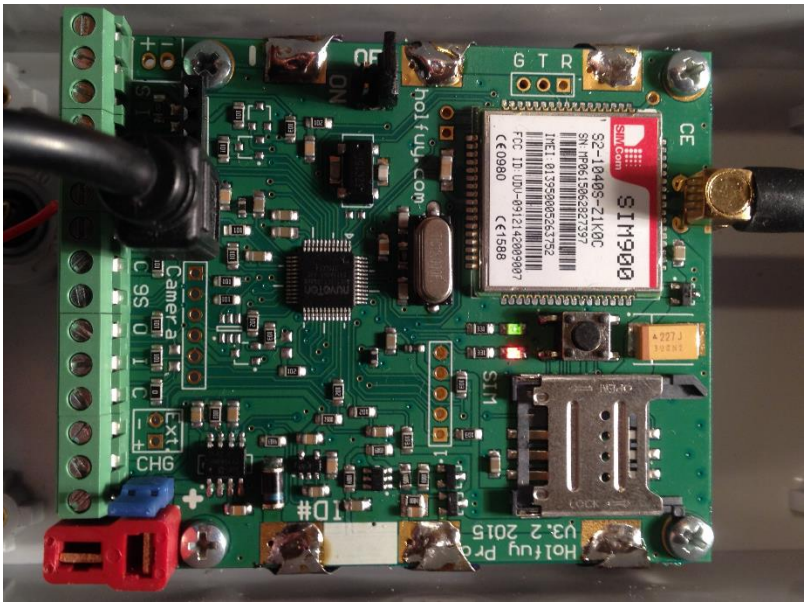
CHARGING

If your station gets discharged, and you don't want to wait till the next sunny day, you can recharge it with any Micro USB charger (eg. mobile phone chargers).

IMPORTANT: Never charge the station's batteries when the batteries' temperature is below 0°C!

CHARGING WITH A STANDARD MICRO USB CHARGER

1. The battery pack has to be connected to the main board. (only for board rev. V6.X or above)
2. The station has to be turned ON during the charging. (only for board rev. V5.X or below)
3. Disconnect the solar cell from the station (plug out the solar connector (**9**)).
4. Connect a 5V DC USB charger to the Micro USB port of the station (**5**).
5. (only for board rev. V4.X or below) Remove the blue jumper from the ON-OFF pins (**7**), connect it to the CHG Pins (**8**).
6. Wait till the station voltage goes over **4.0V**. You can monitor your station's voltage next to your station's name in the MyStations menu.
7. You don't have to wait till 100% charge, you can stop charging at any time.
8. Disconnect your charger cable from the Micro USB port (**5**)
9. (only for board rev. V4.X or below) Disconnect the blue jumper from the Charge SW (**8**) and take it back the ON-OFF pins!
10. Don't forget to reconnect the solar cell's red connector to the main board (**9**)!



USB charging JUMPER manual for boards below version V5.X

SMS FUNCTIONS (ONLY FOR 2G, 3G)

Note: The SMS functions below are **not** supported by NB-IoT or WIFI stations.

INCOMING SMS FORWARDING

If your station gets an SMS it will forward it to the Holfuy server. The message will be shown at the bottom of the station's control page.

Please note that the station won't forward any "command" SMS to the server. So command messages won't be visible at the station's info page.

Please don't add any extra special characters like whitespace to the command SMS messages. Otherwise the station won't process the command, but forward the SMS to the server.

RESET

Command: H*station number*RESET

Example: H102RESET

Function: Station will perform a software reset.

Reply: RESET message at the station's control page.

TEST

Command: H***station number***T

Example: H102T

Function: Station will send a test SMS.

Reply: A test SMS with battery voltage, temperature, network signal strength, firmware.

Warning: Test SMS doesn't work in deep sleep mode.

APN

Command: **H*station number*APN:*your apn***

Example: **H102APN:internet** or **H102APN:internet,user_name,password**

Function: Station will save the APN to its nonvolatile memory.

Reply: New APN message at the station's control page.

Warning: Be careful with this command! If you send a wrong APN to the station it won't send any data. Use this command only during the station setup or for error handling!

Note: With the **H*station number*APN?** command your station will reply the actual APN settings in an SMS.

SMS FOR SMS

Command: **H***station number***SMS:***phone number*,*message*

Example: **H102SMS:1234567,test**

Function: Station will send the ***message*** ('test' in the example) as an SMS to the ***phone number*** (1234567 in the example).

Note: This feature is available with firmware V7.00 or above!

DIRECTION OFFSET

Command: **H***station number***DIR**

Example: H102DIR

Function: Station will save the actual position of the wind vane as North (0°).

Reply: NULLDIR message at the station's control page.

NORMAL OPERATION TESTS

During normal operation when the station is sending weather data to the server, it is normal that the station is flashing shortly with its red and green light periodically. Next to it you can do the following tests with the button (**1**).

STANDARD TEST

If you press the button for a moment, then release it immediately, the green light will flash 1 time if the station is in normal operation state.

TEST THE NETWORK SIGNAL

If you press and hold the button until both lights (red, green) turn ON then immediately release it -> the station will flash the current network signal strength, then a single green flash will close the sequence:

signal strength = 10x double (red-green together) flashes + 1x single red flashes

E.g. you get 2 double flashes, then 6 single red and finally one single green after you released the button it means 10x2+6 = 26

The maximum network signal strength is 31, so the 26 in the example means very good reception.

ERROR HANDLING

When an error occurs the station stays in low power sleep mode until the error has not been resolved. In every 5-30 minutes (depends on the power state and error's type) the station will wake up automatically and will try to reconnect.

HOW TO GET THE ERROR CODE:

1. Keep the station turned ON (for at least 5 minutes after the last reset).
2. Wait while the lights are still and not blinking at all for 60 seconds.
3. Press the button
4. The **Green** light will flash 1 time.
5. The Red or the Red and the **Green** lights together will flash the error code.
6. The **Green** light flashes 1 time.

ERROR CODES:

1: Module error:

The controller can't communicate with the communication module, please contact us.

2: APN error (only for 2G, 3G, or NB-IoT):

2G, 3G, NB-IoT: The station can't connect with the actual APN to the Holfuy server. You can send the right APN with an APN setter SMS.

3: Empty battery:

The batteries are empty. Wait till few sunny days, or recharge the batteries manually.

4: Weak network strength:

2G, 3G or NB-IoT: Please restart your station outdoors or at another location with better reception. You can also try a different SIM card from a different mobile operator.

WIFI: You can try a better antenna or install the WIFI router and or the Station closer to each other.

5: Registration error:

2G, 3G, NB-IoT: Station can't register to the network. Please check the SIM card with a mobile phone, or check if your SIM card is still active, and has enough balance for mobile internet access.

WIFI: Station can't connect to the configured network (SSID, password pair).

6: Low battery:

The batteries are low. Station sends only one LIFESIGNAL message in every day.

7: Can't connect to server:

2G, 3G, NB-IoT: The station can't connect to the Holfuy server. Please check the APN, and contact us.

10: SIM card not inserted (only for 2G, 3G, or NB-IoT):

2G, 3G, NB-IoT: Please insert a SIM card without SIM LOCK (the SIM PIN code has to be disabled). If a SIM is already inserted, please try the SIM card with your mobile phone. If it starts up without the need of entering the PIN CODE and works fine, please contact us.

HARDWARE RESET

Please note that your station restarts itself periodically when it is in error/low-power mode. If you don't want to wait for the next automatic restart (5-30 minutes), you can try a hardware reset.

1. Turn OFF the station.
2. Disconnect the Solar panel's red T-connector from the main board.
3. Press the button for 1 second (then release it)
4. Turn ON the station
5. Plug back the solar connector.

CONTACT

If you have other question or problem please feel free to contact us!

EMAIL:

info@holfuy.hu

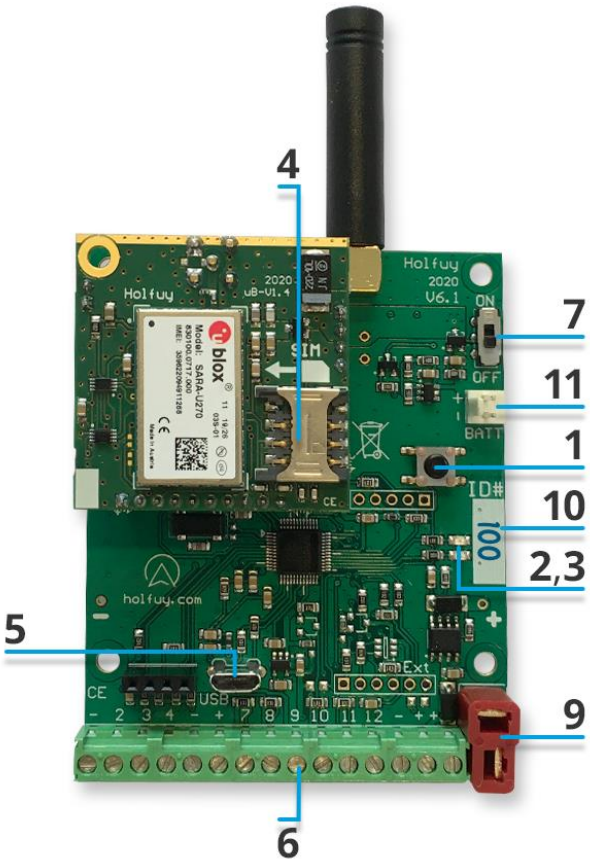
WEB:

https://holfuy.com

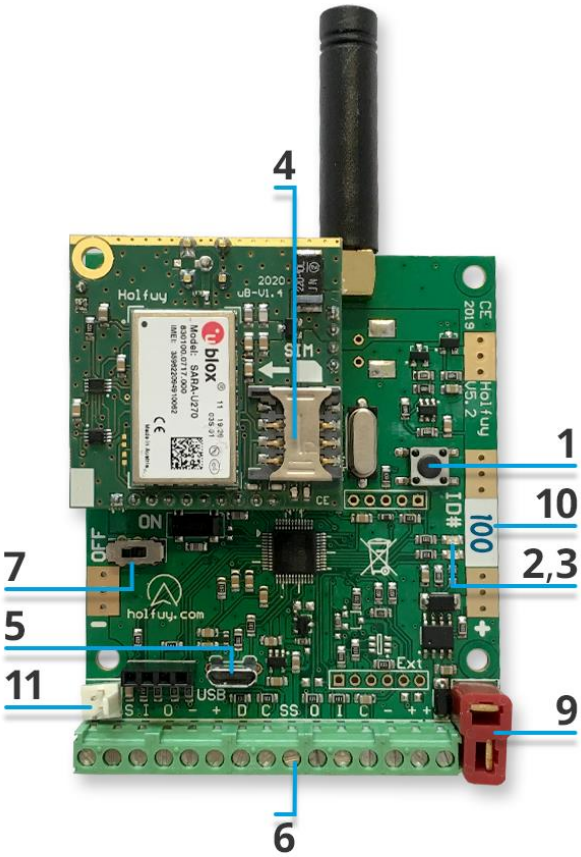
SKYPE

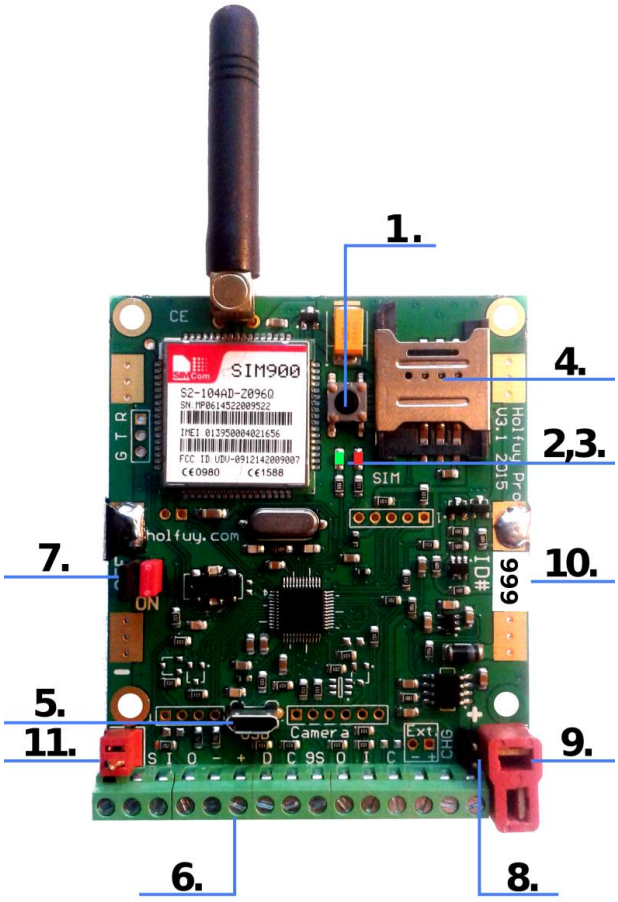
holfuy

APPENDIX 1: THE HOLFUY MAIN BOARDS



- 1: PUSH BUTTON
- 2: GREEN LIGHT
- 3: RED LIGHT
- 4: SIM CARD SOCKET
- 5: MICRO USB PORT
- 6: SENSOR WIRE TERMINAL
- 7: POWER SWITCH
- 8: CHARGE SWITCH (BELOW V5.X)
- 9: SOLAR COVER CONNECTOR
- 10: STATION'S ID
- 11: BATTERY CONNECTOR





APPENDIX 2: PINOUT FOR SENSORS

Wire connection guide for the green screw terminal (**6**) of the Holfuy main board.

Note: PIN's with '-' sign are all GND/grounds (1,5,13) so the wires are interchangeable between these pins. PIN's with '+' sign are all power supplies (6,14,15) so the wires are interchangeable between these pins.

Sign (board V6.X or above)	-	2	3	4	-	+	7	8	9	10	11	12	-	+	+	Color codes
Sign (board V5.X or below)	-	S	I	O	-	+	D	C	SS	O	I	C	-	+	+	G reen
Wind (Davis 6410)	R	B	G											Y		W hite
Wind Thies Combi	1	2	5										6	4		
Wind ATMOS 22 Ultrasonic	B		O											Br		
Wind PeetBros	B	Y	G										R			
Wind LCJ Ultrasonic	B		Br			G										
Temperature				Y	B	R										B lack
Humidity & Temperature					B	G	Y	Br								Y ellow
Rain (Holfuy)												G	B			Br own
Rain (Davis)												G	R			R ed
Soil Moisture& Temperature*									Br	G	Y		W			O range
Solar radiation (Davis 6450)										G			R		Y	Gr ay
2nd Temperature sensor**				Y				Y					B		R	Pi nk
Leaf Wetness (LWS)									W		O,R		B			

*If you would connect a soil moisture & temperature sensor together with a solar radiation or LWS sensor to your station, please contact us first for further information!

**If your station has a humidity sensor, the yellow wire of the 2nd temperature sensor should go to PIN4, otherwise to PIN8.