

WEATHER STATION Model: GARNI 281 User manual





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GARNI 281

1. PARTS LIST

- 1) Main unit
- 2) Wireless sensor WH32F-3
- 3) DC adaptor
- 4) User manual

2. OVERVIEW

- 1) Outdoor temperature (°F or °C) and humidity (%RH)
- 2) Indoor temperature (°F or °C) and humidity (%RH)
- 3) Possibility to connect up to 3 wireless sensors for measuring temperature and RH in different places
- 4) Memory for maximum and minimum measured values of relative humidity
- 5) Memory for maximum and minimum measured temperature values
- 6) Barometric pressure value (inHg, mmHg, or hPa)
- 7) Weather forecast icons based on monitoring changes in barometric pressure
- 8) Time and date controlled by radio signal DCF-77 with the possibility of manual setting
- 9) 12 or 24 hour time display format
- 10) Date
- 11) Alarm clock with snooze function
- 12) Moon Phases
- 13) Possibility of permanent display illumination
- 14) Possibility of hanging or positioning the main unit and wireless sensor
- 15) Wireless sensor included
- 16) Receipt of measured values from all connected wireless sensors

Main unit





3. INSTALLATION AND SETUP

3.1 Install batteries

NOTE: To avoid operating problems, please take note of battery polarity before/when inserting batteries. For the main unit use high-quality alkaline batteries. It is recommended to use lithium batteries that resist low temperatures well for the wireless sensor. Do not use rechargeable batteries that have a lower voltage and are not suitable for low temperatures.

First, connect the main unit to the power supply, and then insert the batteries into the wireless sensor.

 The main unit can be powered by batteries (display illumination will be possible for a short time) or by an AC adapter (display can be illuminated permanently). Remove the battery door of the main unit and insert 3 x AAA size batteries, plug the adapter provided to the power jack at the back of the main unit. The display lights up and all display segments are displayed briefly. The main unit will automatically enter sensor searching mode.

up to 3 minutes to search for the wireless sensor signal. Close the battery compartment.

- 2) Remove the battery door of the sensor.
- 3) Use the channel slide switch to set the channel number for the sensor (e.g. Channel 1). Make sure that every used sensor will use a different channel.
- 4) Insert 2 x AA size batteries into the battery compartment according to the polarity information marked on the battery compartment and close the battery door. Signal transmission is indicated by an icon on the wireless sensor display.
- 5) Wait for a few seconds until outdoor temperature and relative humidity values will be displayed on the main unit display. **During this time do not push any button.**
- 6) Once the connection between the main unit and the wireless sensor is established, place the main unit and the wireless sensor in the desired location within range of the wireless sensor signal.
- 7) Press the °C / °F button located under the battery door on the back side of the wireless sensor to toggle between Celsius or Fahrenheit temperature display on a wireless sensor display.
- 8) Repeat the steps above when using multiple wireless sensors.

Each time the batteries are replaced, the connection process must be repeated.

NOTE: the DCF-77 signal receiver for time and date setup is integrated into the wireless sensor, so the wireless sensor must be placed outside to ensure good DCF-77 signal reception. DCF-77 signal reception is indicated by an icon on the wireless sensor display.



Channel slide switch

After inserting the batteries into the main unit, all display segments will be displayed for about 3 seconds and then the main unit will start receiving the signal from the wireless sensor. Set the channel on the wireless sensor and insert the batteries. The wireless sensor sends a signal to the main unit. Once the connection is established, the wireless enters the DCF-77 radio signal reception mode to set the time and date. It may take up to 5 minutes to receive this signal. Data from the wireless sensor will not be sent during this time.

If the DCF-77 signal is not received during this time, reception will be interrupted and repeated every 6 hours until the DCF-77 signal is successfully received.

When the signal is successfully received, the icon **Yill** will appear on the wireless sensor display and the icon \mathbf{W} will appear on the main unit display.

NOTE: The connection between the main unit and the wireless sensor is being established for 3 minutes after the batteries are inserted. Do not press any buttons during this time. Once the connection is established and the outdoor temperature and relative humidity values appear on the display of the main unit, it is possible to make any settings of the main unit (eg. time if it is not adjusted automatically by the DCF-77 signal).

If you press a button before the connection is established, then it is necessary to disconnect the power supply and remove the batteries from the main unit and the wireless sensor, wait about 10 seconds and insert the batteries again and repeat the connection process.

TIME CONTROLLED BY THE DCF-77 RADIO SIGNAL

The weather station is equipped with the DCF-77 time/date control signal receiver, the signal is broadcasted by a transmitter from Frankfurt am Main, Germany, with a range of about 1500 km. When outside this range, the time and date can be adjusted manually. The time and date are adjusted every day. If no signal is received, the DCF-77 signal reception icon will not appear on the display. If the signal is received successfully, the receive icon will be displayed permanently.

If the time and date have been set manually, the time and date will be adjusted automatically when receiving the DCF-77 signal.

DESCRIPTION OF THE MAIN UNIT DISPLAY

- 1 DST 1. Day Light Saving time
- 2 Time controlled by DCF-77 radio signal
- 3 DCF-77 signal reception icon
- 4 Abbreviation for day name / time zone
- 5 Date
- 6 Moon Phase
- 7 Weather forecast icon
- 8 Indication of absolute (ABS) or relative (REL) barometric pressure
- 9 Barometric pressure value
- 10 Wireless sensor signal reception icon
- 11 Sensor channel number from which the measured values are displayed
- 12 Outdoor temperature
- 13 Maximum outdoor temperature value
- 14 Minimum outdoor temperature value
- 15 Outdoor relative humidity
- 16 Min outdoor relative humidity value
- 17 Max outdoor relative humidity value
- 18 Indoor temperature
- 19 Maximum indoor temperature value
- 20 Minimum indoor temperature value
- 21 Indoor relative humidity
- 22 Min indoor relative humidity value
- 23 Max outdoor relative humidity value
- 24 Daily MAX / MIN value icon



MEASUREMENT ACCURACY VERIFICATION

Place the wireless sensor and the main unit side by side. Leave in place for about 30 minutes to stabilize the values. The difference between the measured values on the main unit and the wireless sensor should not be greater than 10% for relative humidity and 2 °C for temperature.

PLACEMENT OF THE WEATHER STATION

Main unit

Select the location of the main unit away from direct sunlight. Test the connection to the wireless sensor before final installation. If there is a problem with the signal reception, select another location. There is a mounting hole for suspension on the rear of the main unit. You may also put the main unit on a flat surface using the folding support. Placement near TVs, monitors, computers, etc. may negatively affect the reception of the DCF-77 signal and the wireless sensor signal.

Wireless sensor

Place the wireless sensor away from direct sunlight not to compromise the measurement. Placement outdoors, at the northern wall is recommended. Obstacles such as walls, concrete, metal structures and large objects reduce the signal range. Position the wireless sensor vertically for optimum signal transmission. Maximum open space signal range is 100 meters.

The signal range may be affected by obstacles (walls, trees) and other electrical devices (TVs, monitors, etc.).



The weather station is controlled by five buttons - TEMP. / +, ALARM, BARO / -, SET / CH and LIGHT / SNOOZE.

There are four modes - Set Mode, Alarm, Calibration and Max / Min Mode (display of maximum and minimum values).

Any mode can be quit at any time by pressing the **LIGHT / SNOOZE** button, or it can be terminated automatically after 30 seconds if no button is pressed.

Button	Mode	Settings
press SET / CH	enter setting mode, beep	press TEMP. / + or BARO. / - to turn OFF or ON
for 2 seconds		the beep when the button is pressed and the low
		outdoor temperature indication
press SET / CH	RST - automatic reset of max and min	press TEMP. / + or BARO. / - to turn OFF or ON
	measured values at 0:00	
press SET / CH	time zone setting (Time Zone, TZ)	press TEMP. / + or BARO. / - to change the time
		zone (Czech Republic GMT +1)
press SET / CH	12/24 hour format	press TEMP. / + or BARO. / - to change between
		12 or 24 hour time format display
press SET / CH	hour	press TEMP. / + to increase the value or
		BARO. / - to decrease the set value
press SET / CH	minute	press TEMP. / + to increase the value or
		BARO. / - to decrease the set value
press SET / CH	D-M/M-D date format	press TEMP. / + or BARO. / - to change the date
		format
press SET / CH	year	press TEMP. / + to increase the value or
		BARO. / - to decrease the set value
press SET / CH	month	press TEMP. / + to increase the value or
		BARO. / - to decrease the set value
press SET / CH	day	press TEMP. / + to increase the value or
		BARO. / - to decrease the set value
press SET / CH	temperature unit	press TEMP. / + to change the temperature unit -
		°C or °F
press SET / CH	barometric pressure unit	press TEMP. / + to change the unit of barometric
		pressure - inHg, mmHg or hPa
press SET / CH	barometric pressure calibration	the default value of the relative barometric
		pressure is 1013 hPa; press TEMP. / + to
		increase the value or BARO. / - to decrease the
		set value
press SET / CH	northern hemisphere (NTH) or	press TEMP. / + to select the northern or southern
	southern hemisphere (STH) select	hemisphere
press SET / CH	exit setting mode	

NOTE: hold down the **TEMP. / + or BARO. / -** button for 3 seconds while setting the value to increase or decrease the value faster.

Switching between wireless sensor channels

If more than one wireless sensor is paired with the main unit, press the **SET / CH** button to display the temperature, relative humidity and maximum / minimum measured values of the sensors on each channel.

To switch channels automatically, press the **SET / CH** button until the icon appears next to the channel number on the display of the main unit. Channels will switch automatically after 5 seconds.

Display of barometric pressure values

In normal mode, press the **BARO**. / - button to display the measured values of barometric pressure for the last 12 hours. Press the **BARO**. / - button repeatedly to display the measured average barometric pressure value over the last 24 hours, 48 hours and 72 hours, respectively.

To switch between absolute (ABS) and relative (REL) barometric pressure display, hold down the **BARO.** / - button in normal mode for 2 seconds.

Barometric pressure (atmospheric pressure) is the force exerted by the Earth's atmosphere on a unit area at a given location. Barometric pressure gradually decreases with increasing altitude.

Meteorologists use barometers to measure barometric pressure. Fluctuations in barometric pressure are affected by the weather, and therefore it is possible to predict the weather by measuring its changes.

NOTE:

- 1) The default relative barometric pressure is 1013 hPa (29.91 inHg), which is the average barometric pressure.
- 2) The built-in barometer records changes in absolute barometric pressure. Based on the collected data, it forecasts the weather for the next 12 to 24 hours. Therefore, the weather forecast icons may change one hour after the weather station was powered up.
- 3) The relative barometric pressure is based on conversion to sea level and will change together with changes in absolute barometric pressure one hour after the meteorological station is put into operation.

Display of dew point value

To display the dew point of the selected channel, press the **TEMP. / +** button. To end the dew point display, press the TEMP. / + button again. If you do not press any button for 30 seconds, this mode will exit and the main unit will return to the normal mode.

Dew point (dew point temperature) is the temperature at which the air is maximally saturated with water vapor (relative humidity reaches 100%). If the temperature drops below this point, condensation occurs. The dew point temperature is different for different absolute humidity.

The dew point temperature is determined by the temperature & humidity data from wireless sensor.

Setting the alarm time and low outdoor temperature alert

In normal mode, press the **ALARM** button to display the set alarm time. Hold down the **ALARM** button for 2 seconds to start setting the alarm time:

- 1) press the TEMP. / + or BARO. / button to set the hour,
- 2) press the SET / CH button to confirm and skip to minute setting, press the TEMP. / + or BARO. / button to set the minute,
- press the SET / CH button to confirm and skip to next setting; press the TEMP. / + or BARO. / button to turn the alarm ON or OFF,
- 4) press the **SET / CH** button to confirm and skip to next setting; press the **TEMP. / +** or **BARO. / -** button to turn the low outdoor temperature alert ON or OFF,
- 5) press the SET / CH button to confirm and exit setup mode.

When clock reach the alarm time, alarm sound will start. Press **LIGHT / SNOOZE** button to enter snooze and the alarm will sound again after 5 minutes. To turn off the alarm, press any button except **LIGHT / SNOOZE**. Alarm will activate again in the next day at the set time.

Low outdoor temperature alert

When the outdoor temperature drops between 2 ° C and -3 ° C,

the icon flashes on the display.

NOTE: If the beep sound function was activated during setup, it will turn on when the outdoor temperature drops to $2 \degree C$ to $-3 \degree C$.



When the low outdoor temperature indication beep sound turns on, press any button to turn it off. The beep sound will be reactivated when the outdoor temperature drops again to 2 °C to -3 °C.

Calibration Mode

If the meteorological station shows signs of inaccurate measurements, the individual measured values can be calibrated.

To enter the weather station calibration mode, in normal mode hold press and hold the **SET / CH** and **BARO. / -** buttons for 5 seconds. Calibration takes place in the following sequence:

- 1) CH1 Outdoor temperature calibration,
- 2) CH1 Outdoor relative humidity calibration,
- 3) CH2 Outdoor temperature calibration,
- 4) CH2 Outdoor relative humidity calibration,
- 5) CH3 Outdoor temperature calibration,
- 6) CH3 Outdoor relative humidity calibration,
- 7) Indoor temperature calibration,
- 8) Indoor relative humidity calibration,
- 9) Absolute barometric pressure calibration.

In calibration mode, press **TEMP. / +** and **BARO. / -** buttons to adjust offset values, then press **SET / CH** to confirm and proceed to next parameter. Press the **ALARM** button to cancel offset values.

To exit the calibration mode, press the LIGHT / SNOOZE button.

DISPLAY OF MAXIMUM AND MINIMUM MEASURED VALUES

The maximum and minimum measured values are displayed below the current outdoor / indoor temperature and outdoor / indoor humidity measured value. The red number in the lower left frame shows the maximum measured value, the blue number in the lower right frame shows the minimum measured value. Press and hold the **TEMP. / +** button for 2 seconds to clear the stored measured maximum and minimum values.





Max temperature Min temperature

Max rel.humidity Min rel.humidity

The maximum and minimum measured values are automatically deleted every day at midnight, the icon is displayed . This setting can be turned off (see table Weather station settings, step no. 2), the icon disappears.

WEATHER FORECAST

This weather station is learning, leave it in the same place for 30 days to ensure the most accurate weather forecast. The prediction is based on the change in barometric pressure, in general, if the barometric pressure rises, the weather improves and vice versa.

The weather forecast uses six icons – sunny, partly cloudy, cloudy, rainy, stormy and snowy.



NOTE: Snowy icon will appear in place of rainy and stormy icons when the outdoor temperature is below 0 °C.

MOON PHASE

The weather station shows the various phases of the moon based on a calendar date. Moon phase display for the northern hemisphere:

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new Moon (Moon is not visible)	waxing crescent	half- Moon (first quarter)	gibbous (waxing)	full Moon	gibbous (waning)	half-Moon (last quarter)	waning crescent	new Moon (Moon is not visible)

Moon phase display for southern hemisphere:

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new Moon (Moon is not visible)	waxing crescent	half- Moon (first quarter)	gibbous (waxing)	full Moon	gibbous (waning)	half-Moon (last quarter)	waning crescent	new Moon (Moon is not visible)

TREND INDICATORS OF INCREASING / DECREASING OUTDOOR TEMPERATURE / HUMIDITY

The weather station updates the trend indicators every 30 minutes to reflect the changes that have taken place in the last 3 hours of measurement.

The outdoor temperature or	The outdoor temperature or	The outside temperature or
relative humidity has increased	relative humidity has not	relative humidity has dropped
in the last 3 hours	changed in the last 3 hours	in the last 3 hours
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TREND INDICATORS OF INCREASING / DECREASING BAROMETRIC PRESSURE

The weather station updates the trend indicators every 30 minutes to reflect the changes that have taken place in the last 3 hours of measurement.

Barometric pressure is rising,	The barometric pressure	Barometric pressure drops,	
the weather will improve	remains unchanged	weather will be worse	
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RESTORING THE CONNECTION BETWEEN THE MAIN UNIT AND WIRELESS SENSOR

If the connection between the main unit and the wireless sensor is lost, press the **SET / CH** and **TEMP. / +** buttons simultaneously in normal mode for 5 seconds to re-establish the connection

If multiple wireless sensors are used:

if the automatic channel switching mode is on, press and hold the **SET / CH** and **TEMP. / +** buttons simultaneously for 5 seconds to register the wireless sensors on channels CH1, CH2 and CH3. If channel CH1 is displayed, press and hold the **SET / CH** and **TEMP. / +** buttons simultaneously for 5 seconds to register the wireless sensor on channel CH1. Repeat the procedure for channel CH2 or channel CH3.

The connection will be re-established after a few minutes, do not press any button during this time. If the connection fails, remove and re-insert the batteries in the main unit.

TROUBLESHOOTING

problem / situation	solution
intermittent connection between the main unit and the wireless sensor	reduce the distance between the main unit and the wireless sensor or relocate them
between the main unit and the wireless sensor there are metal structures, frames etc.	relocate the main unit and the wireless sensor so that there are minimum obstacles between them which reduce the signal range
the main unit or the wireless sensor are located close to other electrical devices	relocate the main unit and the wireless sensor further away from other electrical devices to prevent signal interference
The LCD display has low contrast	replace the batteries
the temperature reading from the wireless sensor is too high	place the sensor away from direct sunlight and heating

SAFETY PRECAUTIONS

- Do not expose the device to excessive force, shocks, dust, temperature and humidity
- Do not cover the ventilation holes with any objects like newspapers, curtains, etc.
- Never immerse the device in water. If you spill liquid on it, dry it immediately with a soft, lint-free cloth
- Do not clean the device with abrasive or corrosive substances
- Do not handle the internal components of the device, as this will void your warranty

- Use only fresh batteries. Never mix fresh and old batteries
- Do not recharge the batteries. Place the station and its parts outside the reach of children
- Do not throw old batteries to unsorted municipal waste, but use the designated areas
- Dispose of this product in accordance with applicable regulations
- · Use only accessories specified by the manufacturer
- Do not interfere with the internal circuits of the device, as this may void the warranty
- The technical specifications are subject to change without notice

TECHNICAL PARAMETERS

Main unit

Power supply: Batteries lifetime: Temp. measurement range: Accuracy of measurement: Resolution: Rel. humidity measur. range: Accuracy of measurement: Resolution: Absolute barometric pressure measurement range: Accuracy of measurement: Resolution: Dimensions: Wireless sensor WH32F-3	3 x AAA 1.5V Alkaline batteries (not included) or 6V DC adaptor (incl.) about 12 months -9.9°C to +60°C +/- 1°C 0,1°C 1% to 99% +/- 5% 1% 300 hPa to 1100 hPa +/- 3 hPa 0,1 hPa 160 x 85 x 20 mm
Power supply:	2 x AA 1.5V Alkaline batteries (not included)
Batteries lifetime:	about 24 months
Temp. measurement range:	-40°C to +60°C
Accuracy of measurement:	+/- 1°C
Resolution:	0,1°C
Rel. humidity measur. range:	1% to 99%
Accuracy of measurement:	+/- 5% (from 20% to 90%)
Resolution:	1%
Data transmission frequency:	868 MHz
Number of channels:	3
Data transfer interval:	61s for channel No.1; 62s for channel No.2; 63s for channel No.3
Wireless sensor signal range:	up to 100 m (in open space)
Dimensions:	122 x 42 x 16 mm

DECLARATION OF CONFORMITY

GARNI technology a.s. hereby declares that the type of the radio equipment - weather station type GARNI 281 conforms to the Directive 2014/53/EU. The full EU Declaration of Conformity is available on the following website: www.garni-meteo.cz

Instruction translated, edited and processed: GARNI technology a.s. Copying this manual or its parts is forbidden without the author's permission





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