



## W410 DISPLAY UNIT

### MANUAL

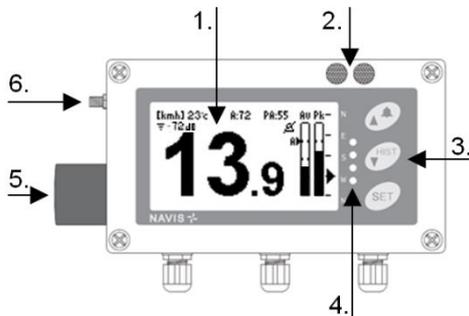
Models: W410/D, W410XB/D, W410XW/D, W410EX/D

#### PREFACE

Thank you for purchasing the Navis anemometer. This manual provides information for the best performance and safe application of the anemometer display unit. This manual does not cover the anemometer sensors for which the manuals will come separately. Read this manual carefully before starting the installation. Keep this manual after installation for future reference.

#### INTRODUCTION

W410 models are long-range receiver/display units which receive data from NAVIS wind sensors, display various wind data, and use internal and external alarms for warnings about excess wind speed. Smartphone compatibility (W410XB/D model) allows real-time wind data monitoring on smartphones or tablets. Wi-Fi compatibility (W410XW/D model) allows real-time wind data monitoring on "Navis Live Data" web interface. The optional 4-20 mA output allows connection to external devices.



1. Display
2. Red and Yellow alarm lights
3. Keys
4. Relays signal lights
5. Buzzer
6. SMA antenna connector

Figure 1. (W410 display unit – front panel)

The W410 display is compatible with NAVIS sensors: WS 010-1 (wind speed sensor, standard range), WS 011-1 (wind speed sensor, extended range), WSD 010-1 (wind speed/direction sensor, standard range), WSD 011-1 (wind speed/direction sensor, extended range).

#### MOUNTING

Select the position where the signal reception is strong enough under all conditions. Use remote antenna if necessary. Display unit can be mounted onto the ferrous surface with four mounting magnets (optional accessories) or with mounting screws (not enclosed) to any flat surface.

Mounting the display unit with screws:

Unscrew all 4 plastic screws and remove the front panel. Note that the screws can be pulled out only at the correct angle. Place the rear panel of the display unit to the final mounting position and mark the position for the bores. Remove the casing and drill holes for the mounting screws. Place the rear panel of the display unit in position and tighten the mounting screws. Attach the front panel of the display unit with 4 plastic screws.

#### ANTENNA CONNECTION

Connect the enclosed antenna to the SMA connector on the display unit only when the power supply is switched OFF.

#### WIRING

Please note! Switch off the power before connecting the power supply to the display unit.

Unscrew all 4 plastic screws and remove the front panel. Connect the 12-24 V DC power supply. For using external alarm devices, connect them to the relay connection terminals. For using 4-20mA outputs, connect the connection terminals to external devices. Place the front panel into position and tighten the screws. Do not use excessive force to plastic screws.

Switch ON the power supply and check the operation.

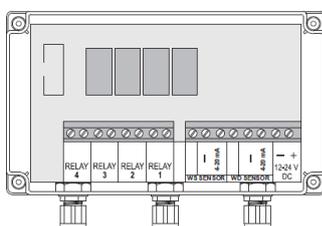


Figure 2. (rear panel)

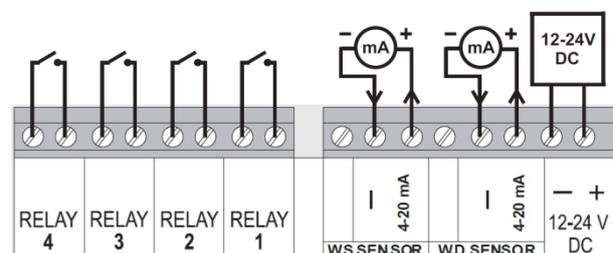


Figure 3. (rear panel wiring connection)

## OPERATION

If the display unit is delivered as a set, with the sensor included, the correct sensor address is already set.

Otherwise please set the correspondent sensor address first. Check the address settings procedure in the chapter "SETTINGS".

Turn the sensor ON by rotating the sensor cups (see sensor manual).

Fresh wind data are received every two seconds. If data are not received for more than 30 seconds, the "No data" notification appears on the display.

## DISPLAY

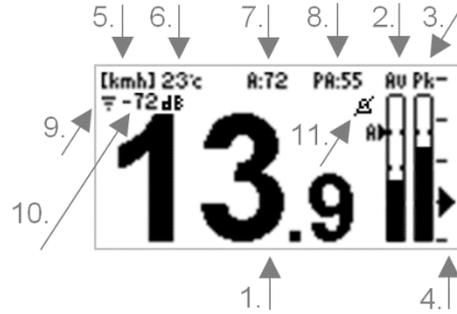
Switching between pages:

With short presses of the HIST key you can open pages 2 and 3 to see the wind speed and "Max alarm" history respectively.

The display will return to the first page by holding down the HIST key for 3 seconds or automatically after 1 minutes of inactivity.

1<sup>st</sup> page:

1. Current wind speed
2. Current wind speed bar graph  
(set max alarm level is always on ¾ bar height)
3. Peak wind speed in the last 2 minutes bar graph  
(set max alarm level is always on ¾ bar height)
4. 10 seconds average wind direction indicator (only at WSD sensor)
5. Unit of wind speed measurement
6. Temperature at sensor
7. Max Alarm value
8. Pre alarm value
9. Received data package indicator
10. Signal strength value (in dB)
11. Sound alarm OFF icon



2<sup>st</sup> page:

8-hour peak wind speed history graph.

Each column represents peak wind speed during the 5-minutes interval

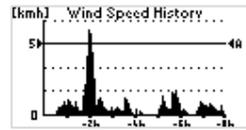


Figure 5. (Display – 2<sup>nd</sup> page)

3<sup>st</sup> page:

8-hour "Max alarm" history graph with 5-minutes intervals

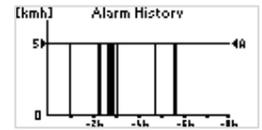


Figure 6. (Display – 3<sup>d</sup> page)

## SIGNAL RECEPTION

The reception symbol blinks when the display unit receives a signal from the sensor (every 2 seconds if the reception is good).

Signal strength is numerically shown in dB:

- -105 dB is approximately the limit where display unit stops receiving
- -100 dB and lower means very weak signal
- -95 ... -90 dB is considered as still acceptable
- -85 dB and higher is a good signal

When the sensor doesn't send data (in the OFF state) or when the signal is lost for a more than 30 seconds, the "No data" notification appears on the display, indicating that the receiver doesn't receive data from the sensor (sensor OFF or out of range).

## RANGE

Connection between the sensor and display unit works on a free 868 MHz band. The range is up to 500 meters (1300 meters with an extended range sensor) when the sensor is mounted at a height of 10 meters and when there is no obstacle between the sensor and the display unit. Inside buildings the range is much smaller. Normally the signal can be received through two to three walls.

## ALARMS

The alarms consist of internal signalization (red and yellow alarm lights + sound signal) and four relays which control optional external alarm devices.

Relays 1, 2 and 3 are dedicated to wind speed alerts. Relay 4 can be set for alerting that the receiver has no data from the sensor or as 2-zone wind direction alarm.

## OPERATION OF ALARMS

Pre-alarm 1: when set value is exceeded, relay 3 will activate.

Pre-alarm 2: when set value is exceeded, relay 2 will activate, the yellow light will start blinking, and the buzzer will sound with short interruptions.

Max alarm: when set value is exceeded, relay 1 will activate, the red light will flash, and the buzzer will sound continuously.

## SOUND ALARM

By holding-down the upper key for 2 seconds you can switch the sound alarm ON and OFF.

The sound alarm is active each time the display unit is turned ON.

In the settings menu, the sound alarm can be disabled permanently.

## RESET OF DISPLAY UNIT

With upper button pressed at power ON, RESET is performed (all settings except »Sensor Address«, »WS Cal. Factor« and »WD Cal.« go to default values).

## **APPLICABLE ONLY FOR W410XB/D MODEL:**

### **SMARTPHONE COMPATIBILITY**

A data packet is transmitted over Bluetooth every second. With the free "Windy Anemometer" application you can read the data of the current, average, and maximum wind speed, as well as wind direction and temperature, or view history graphs on your smartphone. In the application settings menu, always set the address corresponding to the address of the W410 sensor. The range is up to 40 meters. Inside a building, the range is much smaller. The range also varies with the type of smartphone or tablet.

Application "WINDY ANEMOMETER" can be downloaded from Google Play or Apple Store.

Android: Applications requires device with Android 4.3 or newer with Bluetooth Low Energy (BLE).

Apple: In iOS settings for the Windy Anemometer application configure parameter "Allow Location Access" to "While Using the App".

## **APPLICABLE ONLY FOR W410XW/D MODEL:**

### **WI-FI COMPATIBILITY**

When W410XW/D receive data from wind sensor, data packet is transmitted through Wi-Fi connection to "Navis Live Data" web interface. On Navis "Live Data" web interface it can be observed data of current, average and maximum wind speed, wind direction, temperature or view history graphs.

### **NAVIS LIVE DATA WEB INTERFACE**

For registering W410XW/D to Navis "Live Data" web interface please see "Navis Live Data" web interface user manual.

### **SETTINGS: WI-FI PARAMETERS**

PARAMETER: Scan for Wi-Fi

To search nearby Wi-Fi networks select parameter "Scan for Wi-Fi".

If there are Wi-Fi networks available use UP, DOWN and SET keys to select desire Wi-Fi.

For enter password use UP and DOWN keys for select individual character and SET key to confirm selected character.

After entering password, confirm with OK.

If there is no password, leave input field blank and confirm with OK.

PARAMETER: Wi-Fi

For manual entry of Wi-Fi network SSID select parameter "Wi-Fi" and use UP and DOWN keys for selecting individual character and SET key to confirm selected character. After entering Wi-Fi network SSID, confirm with OK.

For enter password use UP and DOWN keys for select individual character and SET key to confirm selected character.

After entering password, confirm with OK.

If there is no password, leave input field blank and confirm with OK.

### **SERIAL NUMBER**

S/N parameter show Wi-Fi serial number of W410XW/D receiver unit.

### **"WI-FI" ICON**

W410XW/D display unit is connected to WiFi network when "WiFi" icon is displayed on main screen.

W410XW/D display unit sent data to Navis "Live Data" portal when "WiFi" icon blinks on main screen.

If there is no "WiFi" icon displayed on main screen please check your Wi-Fi connection or Wi-Fi parameters of W410XW/D display unit.

## SETTINGS: SETTINGS PROCEDURE

1. Hold down the SET key to enter the settings menu. If password protection is active, enter the correct password. The group of settings displays on the display.
2. Select the group by using the up and down keys and press the SET key to view the selected group.
3. Using the up and down keys select the parameter you wish to adjust and press the SET key to view the selected parameter. The adjustable parameter blinks.
4. With the up and down keys, adjust the parameter value. Press SET to enter the new value and move to the next parameter.
5. Exiting the settings menu: hold down the SET key to move back one level.  
The anemometer also returns to the main screen after 2 minutes of inactivity.

## SETTINGS: SETTINGS LIST

Max Alarm	select to set Max Alarm parameters
Pre Alarm 2	select to set Pre Alarm 2 parameters
Pre Alarm 1	select to set Pre Alarm 1 parameters
No Signal/WD alarm	select to set No Signal or Wind Direction alarm parameters
General	select to set general parameters
Wi-Fi*	select to set Wi-Fi parameters * applicable only for W410XW model

### Settings: Max Alarm (Relay 1, RED ALARM LIGHT, continuous sound)

	Factory preset:	Setting range:	Description:
Wind Speed:	72 km/h	1 - 50 m/s	Max Alarm limit
ON Delay:	0 s	0 - 600 s	Minimum time of excess wind speed to activate the Max alarm
OFF Delay:	0 min	0 - 60 min	Alarm switch OFF delay after wind speed drops below preset level
Relay:	Normal	Normal/Inverted	Inverted operation of relay

### Settings: Pre Alarm 2 (Relay 2, YELLOW ALARM LIGHT, interrupted sound)

	Factory preset:	Setting range:	Description:
Wind Speed:	52 km/h	1 - 50 m/s	Pre Alarm 2 limit
ON Delay:	0 s	0 - 600 s	Minimum time of exceed Wind speed to activate the Pre Alarm 2
OFF Delay:	0 min	0 - 60 min	Alarm switch OFF delay after wind speed drop below preset level
Relay:	Normal	Normal/Inverted	Inverted operation of relay

### Settings: Pre Alarm 1 (Relay 3)

	Factory preset:	Setting range:	Description:
Wind Speed:	42 km/h	1 - 50 m/s	Pre Alarm 1 limit
ON Delay:	0 s	0 - 600 s	Minimum time of exceed Wind speed to activate the Pre Alarm 1
OFF Delay:	0 min	0 - 60 min	Alarm switch OFF delay after wind speed drop below preset level
Relay:	Normal	Normal/Inverted	Inverted operation of relay

### Settings: No Signal / Wind Direction Alarm (Relay 4)

	Factory preset:	Setting range:	Description:
Alarm:	No Signal	No Signal/Direction	Type of Alarm: No signal alarm or wind direction alarm
Relay:	Normal	Normal/Inverted	Inverted operation of relay
Zone1:	From 315° to 45° *	0° - 359°	Zone of wind direction alarm ON. *In clockwise direction.
Zone2:	From 135° to 225° *	0° - 359°	Zone of wind direction alarm ON. *In clockwise direction.
ON Delay:	0 s	0 - 600 s	Minimum time of wind direction inside the alarm zone to activate the alarm
OFF Delay:	0 min	0 - 60 min	Alarm switch OFF delay after wind direction leaves the alarm zone

### Settings: General

	Factory preset:	Setting range:	Description:
Sensor Address:	Enclosed sensor	1 - 255	Set the sensor address of wind sensor
WS Averaging:	2 s	2, 10 or 30 s	Averaging period for displayed wind speed
WS units:	km/h	m/s, km/h, mph, knot	Unit for displaying wind speed
Temperature units:	°C	°C or °F	Unit for displaying Temperature
20 mA Output*	180 km/h	10 - 50 m/s	Wind speed at 20 mA output 4 mA = 0 km/h 20 mA = set wind speed value  * applicable only for model with additional 4-20 mA outputs
Password:	NO	NO / YES - 0000 to 9999	Activation of password protection and setting the password
Sound Alarm:	ON	ON/OFF	Switching sound alarm ON and OFF
Language:	English	English/French	Language selection
WS Cal. Factor	+0,0%		Calibration factor for wind speed (-15,0 ...+15,0% in 0,5% steps)
WD Cal.:	0°	-180° ... +180°	Calibration angle for wind direction (-180° ...+180° in 1° steps)
Bluetooth*	ON	ON/OFF	Power ON/OFF Bluetooth transmitter * applicable only for W410XB/D model

### Settings: Wi-Fi (applicable only for W410XW model)

	Factory preset:	Setting range:	Description:
Scan for Wi-Fi:			Scan for nearby Wi-Fi
Wi-Fi:			Enter Wi-Fi network manually
S/N			Wi-Fi serial number of W410XW/D receiver unit

