

PAIR

ATIS DATA LOGGER SERVER IN COOPERATION WITH UNITEK LLC.



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MetTech

Meteorológiai eszközgyártó és forgalmazó Bt

The PAIR automatic meteorological data logger station forwards the meteorological data of small airports to the crew of airplanes being in the zone of the airport. Reporting can be initiated by the crew of the airplane through the airplane's radio. The PAIR ATIS (Automated Terminal Information Service) will answer to the request with voice report.

The PAIR mobile station can be easily and quickly installed at the desired location.

The central unit of PAIR polls the connected VAISALA WXT520 meteorological sensor through RS485 serial port. Data are stored in MySQL data base. PAIR makes a voice report from the current data, which is transferred on request.

Main components of PAIR

- Vaisala Weather Transmitter WXT536
 - Ultrasonic wind speed and wind direction sensors
 - Air temperature and relative humidity sensor
 - Air pressure sensor
 - Precipitation detector
- LINUX based micro-computer
- YAESU FTA-310 radio transceiver
- Power supply

The station operates with 230V~ line power. Without line power supply the station can operate 2-6 hours using the integrated batteries.
- WiFi
- LED obstacle light

The WXT536 is mounted on a ~50cm long cross arm. The radio transceiver unit and the antenna are mounted on the top of the mast.



The data logger, power supply and the batteries are mounted on the mast at cca. 1,5m height.



Operation of PAIR data logger

The data logger polls the report of WXT536 at every minute through the RS485 port, the measurement data are stored in the MySQL data base (→MySQL configuration).

The micro controller, integrated into the data logger, monitors the operation of the program and - if necessary - restarts the Linux micro computer.

Operation of ATIS

Automatic reporting can be initiated by the crew of the airplane by pressing the radio's transfer starter button four times for ~0,5s with ~0,5s pauses on the radio frequency of ATIS (currently 119.00MHz). Detecting this, ATIS server forwards the report of current meteorological data.

The content of the report:

- Site of the station
- Time of measurement (UTC)
- Wind speed (kts)
- Wind direction (°)
- Gust (kts)
- Air temperature (°C)
- Dew point (°C)
- Relative humidity (%)
- QFE pressure at the level of the station (hPa)

Sample for the text report

(site: *Nyíregyháza*, time of measurement: *12:34 UTC*, wind speed *8 kts* with *307° 12 kts* gust, air temperature *-8°C*, dew point *-13°C*, relative humidity *65%*, QFE *1029 hPa*)

This is Nyíregyháza One Two Three Four UTC weather information.

Wind Eight knots at Three Zero Seven degrees, gust One Two knots.

Temperature minus Eight Celsius, dewpoint minus One Three Celsius, humidity Six Five percent.

QFE One Zero Two Nine hectopascal.

End of information.

Displaying program

The measurement data can be viewed and the most important settings can be done with the help of the Web-server running on the Linux micro-computer. Wireless connection to the Web-server is available with the help of WiFi AP placed into the caisson of the data logger.

Main page

The name of the current site is displayed in the middle of the header.

- ⇒ **The site can be changed after pressing “Beállítások” (Settings) Password must be entered to get access to “Beállítások” (Settings) page!**

The clock is displayed on the right edge of the footer (the clock shows the tablet's time).

The wind direction and the wind speed is displayed on the left of the page.

The blue arrow shows the current wind direction. The wind direction in degrees and according to directions is displayed in the middle.

- ⇒ **If the wind speed is less than $0,5\text{ms}^{-1}$ then the value of the wind direction will be in brackets and the directions display will be VRB (variable), indicating that the wind direction measurement is uncertain.**

The value of the wind speed is written on the bottom row of the display.

By pressing the “Mértékegység váltás” (Change Unit) button, which is on the right side of the footer, the unit of wind speed display can be changed.

⇒ **The unit of wind speed display can be kts→ms⁻¹→kmh⁻¹**

Data displayed on the right side:

- Magnitude of gust
- Air temperature
- Relative humidity
- Dewpoint
- Pressure at QFE station level
- Pressure converted to QNH sea level
 - **If the elevation of the station is >300m, then the QNH data is not calculated!**
- On the bottom row of the display the time of measurement is showed.
 - **If the time of the last valid measurement is older than 5 minutes, then the “Régi adatok!” (Old Data!) sign will be displayed. In this case check the RTC clock of the data logger (→Beállítások /Settings/) and if the WXT520 is connected correctly.**

Trend pages

By pressing the “Hőfok” (Temperature) button on the footer the trend graph of the temperature and humidity data is displayed; by pressing the “Szél” (Wind) button the trend graphs of the wind and pressure data is displayed.

Settings page

⇒ **When pressing the “Beállítások” (Settings) button on the main page you gain access to the log in page. Enter your user name and password (user name: admin; password: admin01)**

In the top line of the settings page time of the data logger’ clock is displayed.

The webpage reads the clock of the data logger only once, when updating.

In the second line the clock of the tablet is displayed.

If the clock of the station shows different time than the station’s it can be set by pressing the “Óra beállítása” (Clock Setting) button.

⇒ **The confirming screen appearing after pressing the button will disappear after 4 seconds and the setting screen will be seen again.**

The most important parameters of the current site are displayed under the line.

If you wish to change the parameters, press the “Paramétert változtat” (Change Parameters) button. (Station setting screen).

You can return to the main page from the settings screen by pressing the “Kilépés” (Log Out) button.

With the help of the “Új felhasználó” (New User) button you can create a new user.

By pressing the “Leállítás” (Shut Down) button, you can shut down, by pressing the “Újraindítás” (Restart) button you can restart the data logger.

- **Do not turn off the data logger by pressing the main switch! It can cause data loss or program failure. If you wish to turn off the station, then shut down the data logger by pressing the “Leállítás”(Shut Down) button and turn off the main switch only after the data logger was shut down entirely!**

Station setting page

The station's parameters can be changed on this page.

- Site - Name displayed on the main screen
- Coordinates
- Elevation of the runway - for QNH calculation
- Height of the station - Height of the station correlated with the runway (for QFE calculation) **IMPORTANT!**
- Sound file - Site identification sound file played in the voice message

If you wish to change parameters then enter the values into the relevant boxes and press the "Paraméterek mentése" (Saving Parameters) button.

⇒ **The confirming screen appearing after pressing the button will disappear after 4 seconds and the station setting screen will be seen again.**

By pressing the "Vissza" (Back) button you return to the setting screen.

WiFi settings

Connection to the automat is available by the help of the integrated WiFi AccessPoint. Every automat has its own net identification (SSID).

(Default) network parameters

Automat	SSID	WiFi AP IP address	Site IP address
PAIR1	PAIR1	192.168.111.99	192.168.111.1

The APs are configured with WPA protection, the password of access is "SecurePa1r"

MySQL configuration

Configuration of station sites and measurement data and also the measurement data are stored in an MySQL data base.

Name of data base:	pair	
Main tables:	Locations	Parameters of the stations
	CurrLoc	Current location
	P_adat, p_muszer, p_allomas	Parameter tables of the measurement data
	Online data, archive data	Measurement data

To get access to the pair data base enter the user name: pair; and password: pair

Technical data

Power supply input: 230V~
Capacity: Max. 20W

Dimensions:
Data logger 160x250x120mm
Radio 120x170x55mm

Weight
Data logger 3kg
Radio 500g