



• AIRPORT

Small Airport Weather Observation System (SAWOS or AWOS)

• HELIPOINT

HELIPOINT Weather Observation System (HAWOS or AWOS)



Auto-METAR every 30min + auto-SPECI reports

METARlogGSM

Wireless meteorological data logger with GSM or LTE data transmission in addition to over wire serial data communication. It features auto-METAR generation including SPECI report generation when there is significant change in airport weather conditions.

Auto-METAR and SPECI generation per ICAO guidelines:

- WMO – No.49, Technical Regulations, Volume II – Meteorological Service for International Air Navigation. Edition 2016.

Analog Inputs

8

- Single Ended (12bit) 4x 0 ... 2.5V
- Differential (24bit) 4x $\pm 19\text{mV} \dots \pm 2.5\text{V}$
- Accuracy 0.1% SE | 0.05% DIFF
- Input Noise cca 0.2 μV ef
- Input Offset 0.5 μV max
- Statistics Avg, Min, Max, StDev

Digital Inputs

4

- Input Range 0...2kHz
- Configurable to:
 - Frequency (wind speed)
 - Time period (sunshine duration)
 - Counter (rain gauge)
 - Statistics Avg, Min, Max, StDev

PT100 Inputs

3 (+ 1 reference)

- Ratiometric measurements (for 4 wire PT100 precision connection)
- Excitation for PT100 cca 0.5mA
- Statistics Avg, Min, Max, StDev

Serial Sensors

8 (RS-485 or RS-232)

- Baud Rate 300...115kBaud
- Measurement Interval 1...3600 s
- Logging Interval 1...3600 s
- Statistics Avg, Min, Max, StDev

Interface ports

2 (PLC, SCADA, PC...)

- RS232 data connection
- RS485 / RS232 selectable (8 sensors)

Remote Data Transfer

Full support for GPRS email and FTP data transfer

Affordable STARTER Solution

For small private or civil airports and heliports with VFR flight rules and limited air traffic, a minimum set of sensors is required. METAR is supplied wirelessly via GSM or LTE to enable quick and easy certification of the weather monitoring system installation on airport grounds without the need for special permits. A special independent stand-alone barometric pressure sensor with display for your air tower is also available for dual-redundancy.

Minimum required sensor parameters (set of sensors) for limited METAR:

- Wind speed & wind direction
- Relative humidity
- Air temperature
- Barometric pressure

High reliability wired data

For systems requiring a wired data connection, RS-485 MODBUS RTU and serial ASCII real-time data streams are available for integration with existing airport infrastructure.

FUTURE Proof and expandable for future growth

For systems requiring full METAR report generation and triple-redundant pressure sensors for IFR airports the connection and configuration of additional sensors like a ceilometer for cloud base identification is easily performed due to METARlogGSM's proven user friendly interface.

Full lightning & power protection

For high system reliability and up time, METARlogGSM can be equipped with AWOS Power-Protect and AWOS Power-Protect Plus. AWOS Power-Protect features full triple-level lightning protection on all sensor data and power lines, low-level power protection and fault isolation, intelligent battery power management and smart solar charger, plus other safety features for error-proof in-the-field AWOS installation and operation.

For VFR heliports & airports where future scalability is important.

UPGRADE TO SIMPLE-TO-USE HARDWARE

based on hardware which is in service in over 2000 locations worldwide for 10+ years





Memory

Internal Memory	4MB
Data Storage Medium	512MB
<i>Industrial SD memory card (FAT32) is standard and upgradeable.</i>	

Realtime Clock

Time Synchronization network	over cellular
Time synchronization frequency	1/day
Time Zone worldwide	
Backup Battery	3V lithium

Power Consumption

Sleep	40µA max
Measuring	7mA typ
Transmitting	signal strength dependent

Battery Management

Battery type <i>(lead-acid)</i>	12V Pb
Deep discharge protection	
Overcharge protection	

Power Options

DC source with battery charging	5V ...12VDC
DC source without battery	4V... 20VDC
Solar power	12V system
Portable battery power	6xAA batteries

Environmental Operating Range

Temperature Range	-30°C ...+60°C
Protection	IP65

Visual Indicators

Indication	3 LEDs
<i>Green = Busy, Red = Status, Blue = Charger</i>	

Customization

Available per request
New sensor drivers for RS485 or RS232, MODBUS configuration of registers, data types, units, ...

METARlogGSM

All-in-one auto-METAR solution for private airports requiring VFR & IFR flight rules. This stand alone solution offers you superior flexibility and freedom of choice, both in long and short term.

This Automatic Weather Observation Station (AWOS) with both wired serial and wireless cellular GSM / LTE data output provides direct METAR and SPECI message generation in text format to any PC, FTP server or email of your choice. Available parts of METAR & SPECI message are limited only by the sensors of your choice.

Automatic METAR & SPECI message generation

Simple, accurate, reliable and meeting strict operative and technical aspects of small airports. This METAR generation system can be operated as stand alone equipment at unmanned airports or integrated into local infrastructure and software at a manned airports.

Meeting the standards

METARlogGSM AWOS is developed in accordance with ICAO and WMO regulations. The system features hardware based auto METAR/SPECI message generation for stable real-time responsiveness to changing weather conditions.

Real-time meteorological data

Raw live meteorological data for external systems can be read out via a serial connection in ASCII text format or via MODBUS RTU for integration with your existing airport infrastructure and software.

Minimize components, ease installation for reliable performance

METARlogGSM can be adapted to meet the requirements of different heliports and airports, from small unmanned to a manned complex domestic and international airports.

Reliable and future-proof expandable hardware

METARlogGSM is a system based on proven hardware and offers a reliable, flexible and future-proof solution for airports and heliports. It is at the forefront of AWOS systems on the market in terms hardware flexibility.

TECHNICAL FEATURES:

- Easy expandability to a full suite of sensors for full METAR report generation.
- Built-in watchdog timers and low-level intelligence ensure reliable operation which has been verified over the years.
- Analog sensor front end offers 4 inputs with 12 bit resolution (relative humidity, wind direction...) and 4 inputs with 24 bit resolution for precision measurements (temperature, solar radiation, pressure...).
- Each of the 4 digital inputs can be user configured to measure frequency (wind speed), time period (sunshine duration) or as a counter (rain gauge).
- In addition to the serial RS-232 data port for connection to PC or 3rd party devices, this data logger features a user selectable RS232/485 port for connecting smart sensors and other intelligent devices.
- All inputs are software configurable and offer basic statistics - average, minimum, maximum and standard deviation. 16 user defined polynomes (polynomials) are used for calculation to convert raw sensor values to engineering units.
- Internal memory of about 4MB and reliable industrial SD memory card are used for data recording and storage.
- Real time clock with 3V lithium backup battery. Time precision is achieved by time synchronization once a day over GPRS network with worldwide time zones.
- Remote data transfer is supported by software via email or FTP using integrated quad-band GSM/GPRS modem (LTE coming soon).

Reach your Gold Standard of measurement with BARANI sensors. ISO:9001 quality.





METAR & SPECI report format of wireless GPRS or LTE output

Example METAR messages follow (over GSM or wire):

METAR LZJS 071600Z AUTO CALM //// //// 25/09 Q0977=
 METAR LZJS 121140Z AUTO VRB05KT //// //// 06/04 Q0965=
 METAR LZJS 121220Z AUTO 22007KT 160V290 //// //// 06/03 Q0964=

Example SPECI reports follow (over GSM or wire):

SPECI LZJS 080925Z AUTO 22012G24KT 160V290 //// //// 07/03 Q0975=
 SPECI LZJS 081039Z AUTO 22015G34KT 150V280 //// //// 08/04 Q0975=

METAR & SPECI report detailed format is derived from available sensors. //// are used where sensor data is unavailable.

SPECI is an aviation special weather report issued when there is significant deterioration or improvement in airport weather conditions, such as significant changes of surface winds, visibility, cloud base height and occurrence of severe weather.

Real-time wired data output over MODBUS RTU or over Serial ASCII

MODBUS RTU:

IEEE754 32 bit float numbers (standard).

Response: Last measured values from OUT1...OUT32. Each number is a float number (4 Bytes and made of two Modbus registers, Hi & Lo)

Map example:

OUTPUT	MODBUS REGISTER	
	Dec	hex
OUT1 MSW	100	0x64
OUT1 LSW	101	0x65
OUT2 MSW	102	0x66
OUT2 LSW	103	0x67
OUT3 MSW	104	0x68
OUT4 LSW	105	0x69
...		
OUT32 MSW	162	0xA2
OUT32 LSW	163	0xA3

Read input registers uses 0x04 query.

The number of read out registers has to be even.

Logger RS-485 address range from 00...99.

SERIAL ASCII OUTPUT DATA FORMAT:

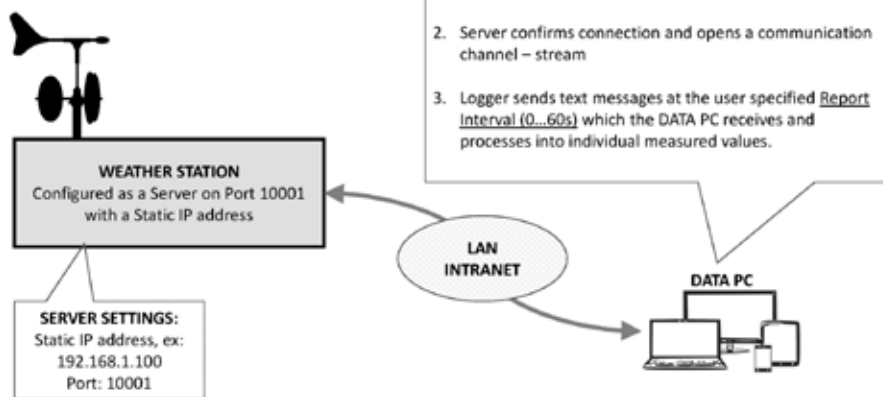
Date Time Data1 Data2 Data3... CRLF

Example: (space delimited format)

07.06.2017 04:43:39 3.117 13.839 99.043 -61.000
 07.06.2017 04:43:39 3.117 13.839 99.043 -61.000

If required, CSV data format can be set:

07.06.2017,04:43:39,3.117,13.839,99.043,-61.000



Ethernet connectivity instructions:

HOW TO CONNECT A PC TO THE WEATHER STATION VIA ETHERNET:

1. The RS-232 to Ethernet converter inside METARlogGSM is configured as a Server, which is listening on Port 10001. It has a fixed IP address. IP address and port are both user configurable. (Example:192.168.0.100:10001)
2. The internal Ethernet converter starts actively listening on Port 10001 immediately after METARlogGSM is powered on.
3. When it receives a request to connect from a DataPC via the Ethernet connection, together they create an open bi-directional data stream. (This connection can be verified by setting up a connection on 192.168.0.100:10001 in HyperTerminal on the DataPC.)
4. Weather station and DataPC are connected and sending live data. (In HyperTerminal you should see text messages of measured values.)
5. DataPC must collect the data that it receives.
6. In case of an interruption in the connection with METARlogGSM, the connection will remain closed until it receives a request to reconnect from the DataPC.

