

Mobile Climate Weather Station



Main features

- Digital connection with [ITS 402](#) via I2C
- Contains 2 digital inputs and 1 power output for the Climate Sensors and the Barometer.
- Contains 1 analog input for the solar radiation sensor (Pyranometer)
- The Rain Gauge sensor sends the accumulated rainfall data.
- The Anemometer sensor sends the speed and direction of the wind.
- The Thermo-hygrometer sensor sends the temperature and humidity of the environment.
- The Pyranometer sensor sends the level of solar radiation that strikes the location.
- The Barometer sensor sends atmospheric pressure.
- Sensor to measure UV and Lux levels

Applications

- Solution for integrators with specific needs for reading climate sensor data for environmental monitoring
- Data integration for monitoring the following physical and climatic parameters:
 - Average wind speed
 - Wind gust
 - Wind direction
 - Accumulated rainfall
 - Temperature
 - Relative humidity
 - Luminosity
 - UV index
 - Solar radiation
 - Atmospheric pressure

Overview

The Mobile Climate Weather Station integrates interfaces for climate sensors, enabling the connection of devices with wireless communication.

The solution consists of a central processing module, responsible for reading, decoding, and forwarding the information collected from the sensors to the [ITS 402](#) (in charge of transmitting the data over the wireless network).

The agribusiness and smart city sectors are the markets most focused on this product.

The system is the result of identifying the needs of clients and partners who need to monitor the types of magnitudes of this project.

Model

Khomp provides the "Mobile Climate Weather Station" specified below:

Model	Description
Mobile Climate Weather Station	Contains 2 digital inputs and 1 analog input for the solar radiation sensor (Pyranometer). It has 1 power output for the climate sensors and the barometer.

Technical specifications

Components

- IoT EndPoint ([ITS 402](#))
- Modular Weather Extension (EM W104)
- 680–2700 MHz omni-directional outdoor antenna
- Weather Sensors
- Barometer sensor
- Magnetic contact sensor
- PWM charge controller
- 10W photovoltaic panel
- Solar panel fixing bracket
- Cabinet
- 2 Metal brackets for fixing the cabinet
- 2 Metal clamps for fixing the cabinet
- Battery fixing kit

Photovoltaic panel

- 3.2 mm tempered glass, high transmissivity and low iron
- Panel with 36 polycrystalline silicon photovoltaic cells
- Waterproof protection rating (protected against dust and water jets)
- Module weight: 1.34 kg
- Dimensions: 245 x 375 x 25 mm
- Cable length: 1.5 m

PWM Charge Controller

- Model ECP 1024
- INMETRO 007859/2019 Certificate
- Battery Type (Stationary): Sealed Lead Acid Battery
- Overvoltage Protection
- USB Output Power Only, 5 V, 1 A
- Operating Temperature -10 °C to +55 °C

Power supply in the Mobile kit

- Powered by the [ITS 402](#) through the [10W Solar Photovoltaic Panel](#) and the [XB 1270 battery](#)

Physical/Environmental

- Outdoor installation
- Product dimensions:
 - Without antenna: 348x314x160 mm
 - With antenna: 348x534x160 mm
- Packaging dimensions: 364x364x170 mm
- Gross weight: 3.35 kg
- Net weight: 3.15 kg
- Operating temperature: -10 °C to +60 °C
- Operating humidity: 0–90% (non-condensing)

Outdoor case

- IK10 protection rating
- Waterproof
- Dimensions: 348x314x160 mm
- Weight: 2850 g

Antenna

- Frequency: 680–2700 Mhz
- Gain: 4 dBi
- Impedance: 50 Ohms
- Maximum power: 50 W
- Polarization: vertical
- VSWR: 1.5:1
- Dimensions: 220x25 mm
- Weight: 113 g

Cabinet fixing bracket

- Material: Carbon steel
- Weight: 628 g
- Dimensions: 250x70x45 mm

Photovoltaic panel support

- Material: Carbon steel
- Weight: 628 g
- Dimensions: 250x70x45 mm

Warranties and certifications

- Total warranty (legal + Khomp): 1 year
 - Legal warranty: 90 days
 - Khomp warranty: 9 months
- ISO 9001 certified industry



- The battery is an optional item.
- The customer/integrator can request the battery at the time of purchase.
- **We do not recommend using the Weather Station V2 without the battery!**

Climate Sensor Specifications

Physical/Environmental

- Dimensions: 135x97x26 mm
- Weight: 805 g
- Operating temperature: -40 to +60 °C
- Operating humidity: 10–90% (non-condensing)

Rain gauge

- Records the accumulated rainfall level (in millimeters)
- Has a bird protection grid
- Rainfall level accuracy:
 - Less than 15 mm: ± 1 mm
 - From 15 mm to 6553.5 mm: $\pm 7\%$

Wind speed and direction sensor

- Records wind speed (average and gust) and angular direction
- Wind direction: 0–359°
- Wind direction accuracy: 45° (8 points)
- Wind speed: 0–180 km/h (0–50 m/s)
- Wind speed accuracy:
 - 2–0 m/s (± 3 m/s)
 - 10–56 m/s ($\pm 10\%$)

Temperature and humidity sensor

- Records temperature and humidity at the operating location
- Humidity range: 10–99% (1% resolution)
- Humidity level accuracy: $\pm 5\%$
- Temperature range: -40°C to +60°C
- Temperature accuracy: $\pm 1^\circ\text{C}$

Illumination sensor

- Resolution: 1 lux
- Units of measurement: lux
- Range: 0–128000 lux
- Accuracy: $\pm 15\%$

Ultraviolet sensor

- UVB and UVA, index scale accuracy: ± 1 level

Battery specifications

- Model: [XB 1270](#)
- Dimensions: 151x100x65 mm
- Weight: 2.0 kg (tolerance of $\pm 4\%$)
- Operating temperature:
 - Discharge: -20 °C to +60 °C
 - Charge: 0 °C to +50 °C
 - Storage: -20 °C to +60 °C
- Number of cells: 6
- Total battery voltage: 12 V
- Capacity: 7.0 Ah @ 20h up to 1.75 V (final voltage) per cell at +25 °C
- Maximum discharge current: 70 A (5 seconds)
- Internal resistance $\approx 30 \text{ m}\Omega$
- Float recharge voltage: 13.6 VDC to 13.8 VDC
- Recommended maximum recharge current: 2.1 A
- Service cyclic and equalization: 14.4 VDC to 15 VDC
- Considering the use of the system with a transmission every 5 minutes (default configuration) and being powered only by the battery, the approximate estimated operating time of the equipment is:
 - LoRa Weather Station → 9 months



- The battery is an optional item.
- The customer/integrator can request the battery at the time of purchase.
- **We do not recommend using the Weather Station V2 without the battery!**

ITS 402 Specifications

Modem:

- Frequency bands:
 - Cat M1 (LTE-FDD): B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85.
 - NB-IoT (LTE-FDD): B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85.
 - EGPRS: 850/900/1800/1900 MHz.

Bluetooth Low Energy:

- Version: 5.1.
- Power: 4 dBm.
- Maximum distance (approximate): 10 m.

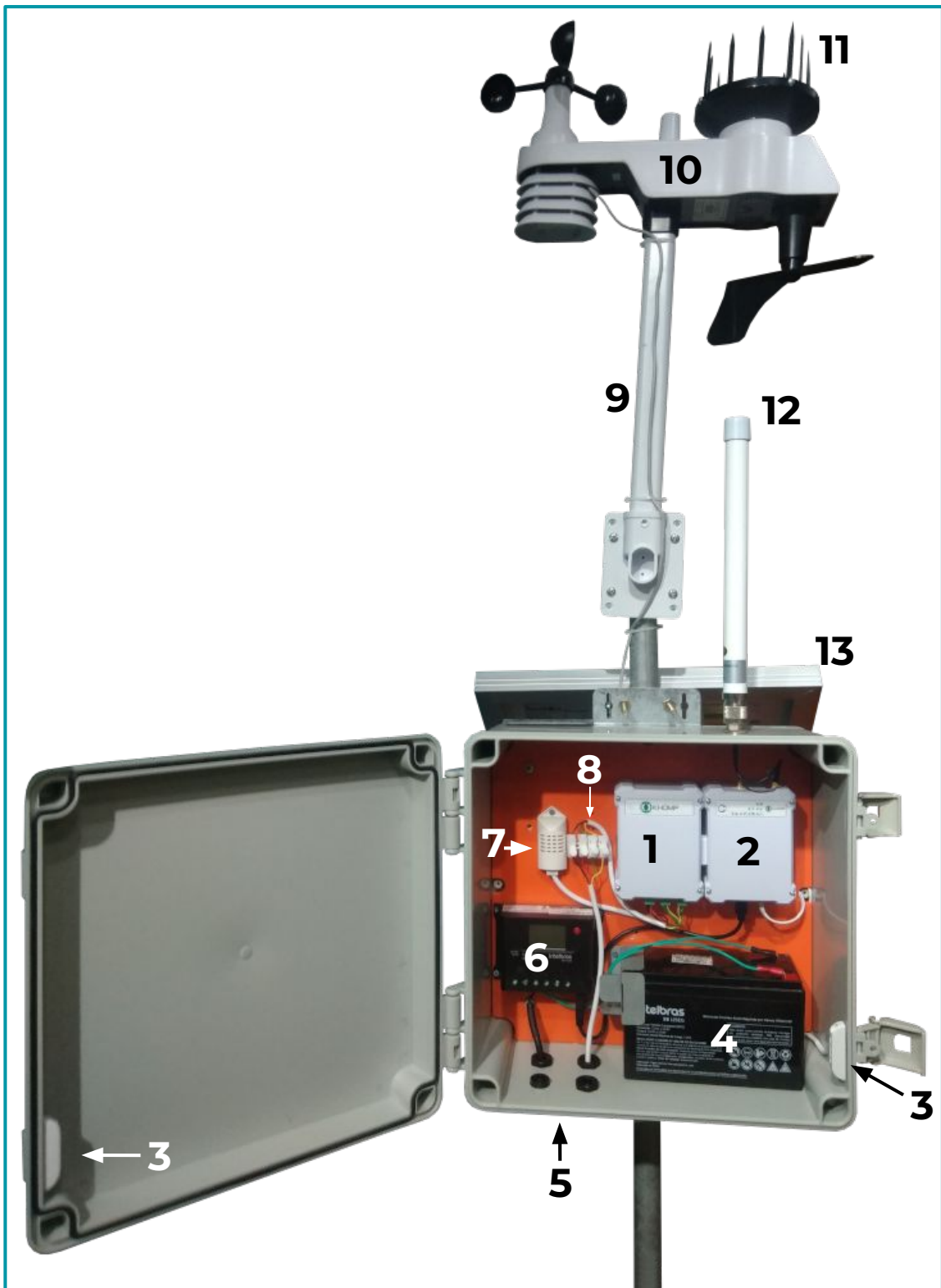
Monitoring period:

- Sensors: Minimum period of 60 seconds and maximum of 3600 seconds.
- GPS: Minimum period of 60 seconds and maximum of 3600 seconds.

Communication:

- Communication with server via MQTT (Message Queuing Telemetry Transport).

Other images of the product



Legend: Image of the V2 Mobile Weather Station installed on the pole with the cabinet open for observation.

- | | |
|--|--|
| 1. Modular Climate Extension (EM W104). | 8. Harness with connector plug to integrate the Climate Sensors and the Barometer. |
| 2. ITS 402. | 9. Pole and base for mounting the Climate Sensors on the pole. |
| 3. Magnetic contact sensor (inside and on the case lid). | 10. Climate Sensors. |
| 4. Battery. | 11. Anti-Nest Spike. |
| 5. Three cable glands and a ventilation valve. | 12. Outdoor antenna. |
| 6. PWM charge controller. | 13. 10W photovoltaic solar panel. |
| 7. Barometer. | |

Note: The equipment is installed on a metal pole (3/4" to 1.1/4" pipe).

Other images of the product



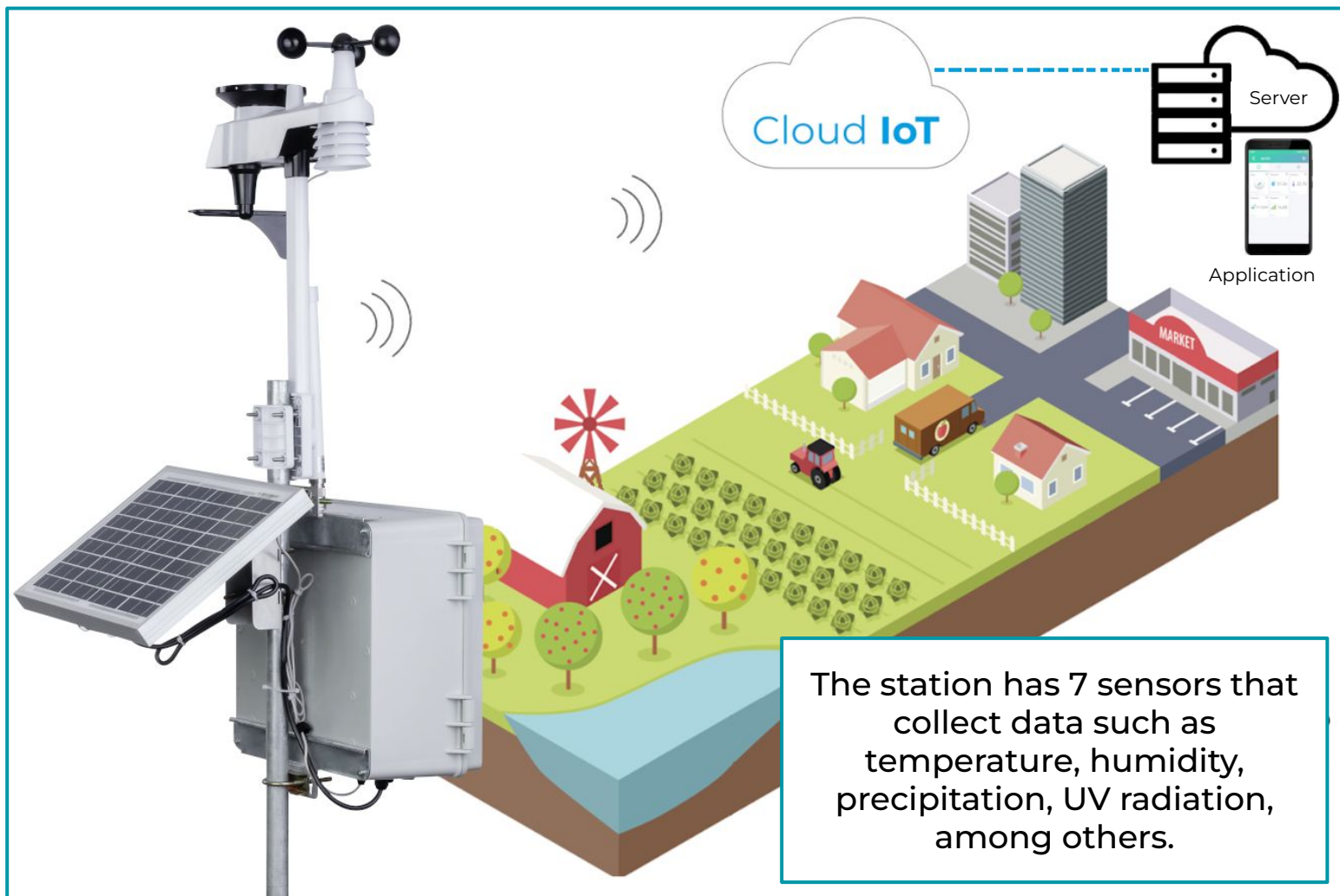
Legend: *Weather Station sending farm weather data for monitoring at the [ITS](#).*

Other images of the product



Legend: Weather Station sending city weather data for monitoring at the [ITS](#).

Application model



Legend: The V2 Weather Station is sending farm weather data for monitoring.



Note

- The Meteorological Station V2 is responsible only for collecting data from the climate sensors and transmission (via [ITS 402](#), in this example).
- The analysis and development of the application to which the equipment will be subjected is the sole responsibility of the client/integrator.