W-MASTER and W-POINT

The W-Master and W-Point wireless nodes are CAE's solution for monitoring landslides, embankments, structures or any other element to be monitored, based on the concept of a distributed sensor network (Wireless Sensor Network) deployed in the field.

W-Master is the mesh network management module installed at a Mhaster station and is the access point to sensor networks deployed in the field for both the normal term assets (polling towards the W-Point in the field, merging and data entry at the station, data Rescue, etc), and for interactive activities such as applying for instantaneous measurements and sending programming commands and network maintenance.

A station Mhaster can manage multiple W-Master devices, thereby increasing the monitoring modularity and redundancy.

The W-Point are the backbone of field networking, to which you can connect all common analog and digital sensors (depth gauges, inclinometers, soil moisture, GPS, etc).

These devices are extremely modular and versatile with easy and rapid installation, equipped with an autonomous power supply battery system or a small solar panel (W-PS).

In addition to traditional geotechnical sensors, each W-Point is equipped with integrated diagnostics sensors (shock detector, internal temperature, battery charge) to which you can add a thermo-compensated clinometer (W-CL) to measure changes in inclination of the structures on which the node is installed.

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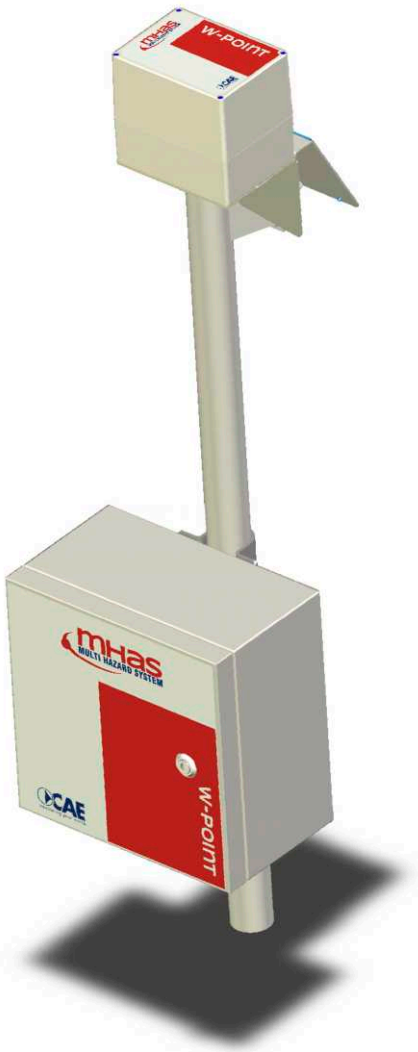
The W-Point modules manage and power the field sensors, acquire and locally record samples at configurable intervals, transmit data to the W-Master, and recognize and report any asynchronous alarms with respect to the polling time.

W-Point can also be used with only the function of a single repeater to ensure redundancy of routes the data travels, and increase the distance of the connections from the periphery to the Mhaster station, without precluding the integration with sensors in a second moment.



TECHNOLOGY AND OPERATION

The W-Master and W-Point wireless nodes both use a wireless communication module, Xbee PRO 868 MHz, which allows the creation of a mesh type wireless network through a dedicated protocol.

In this mode, the rotation of the data packets, their routing and formation procedure, as well as the network modification, are managed automatically by the protocol itself.

The following are the main characteristics of the network operations:

- Self healing: each node can join or leave the network at any time
- peer-to-peer architecture: there are no hierarchical relationships between network nodes, except for W-Master nodes
- Route Discovery: the data routes are identified and updated only when necessary
- Sleep Mode: low-power mode with wake up synchronization, supported with sleep and wake up programmable themes
- Multi-hop: each node acts as a repeater for other devices to transmit over long distances to the Mhaster station
- Alarms: recognition and real-time notification of alarm conditions

W-MASTER and W-POINT

SPECIFICATIONS

MESH network

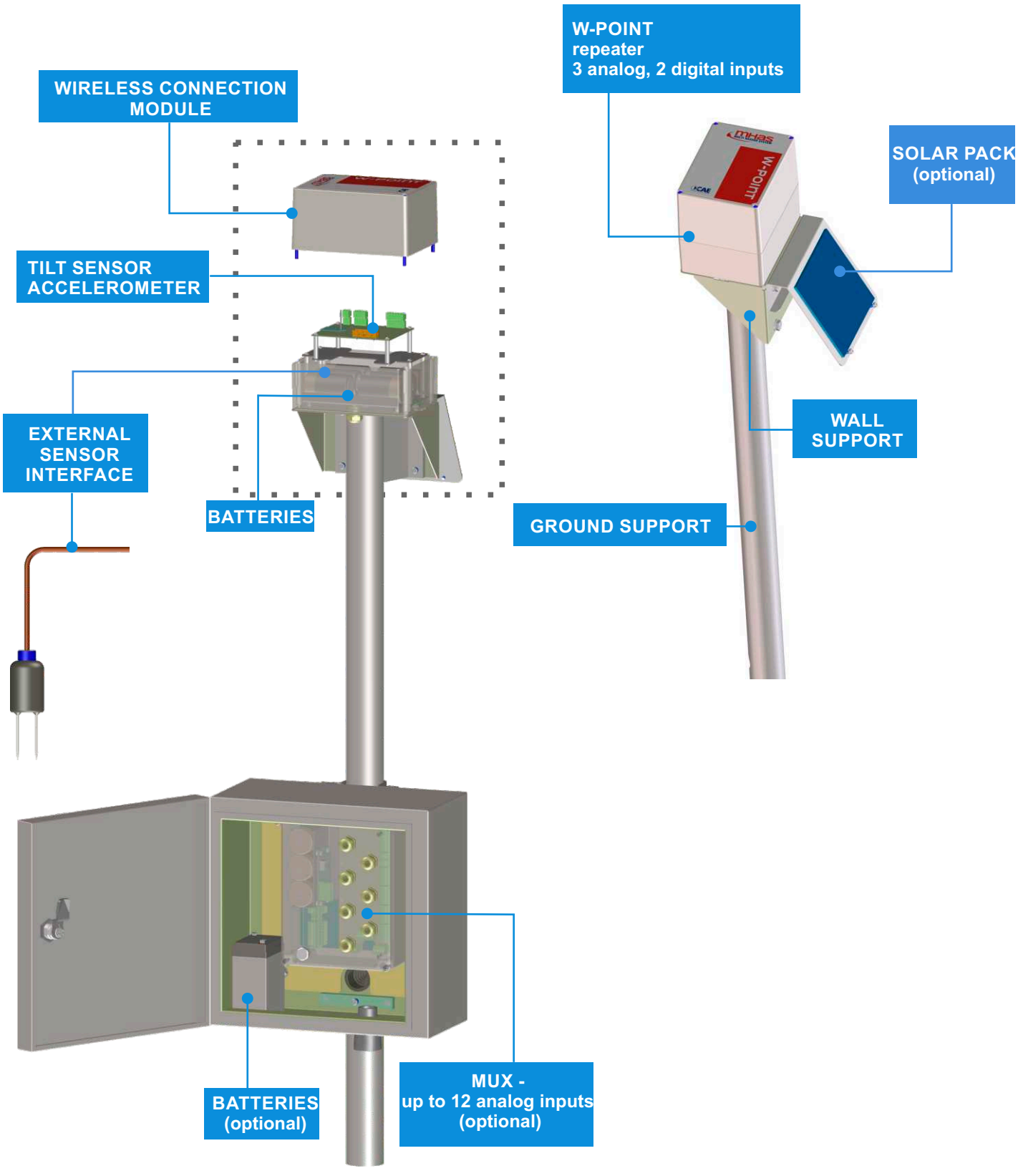
- Number of devices per network: up to 32 W-POINT for each W- MASTER
- Number of measurements per node: up to 20 measurements
- Number of measurements per network (managed by a W- MASTER): up to 250 measurements
- Polling time: configurable up to a minimum of 10 minutes
- Alarm timer: depends on the network impulse (eg 30s)

W-Master

- Output Frequency: 863-870 MHz
- Transmission range: 3 Km
- Output Power: up to 15 dBM (32 mW)
- Receiver sensitivity: -113 dBm
- Signal inputs: 3 analog inputs and 2 digital inputs / outputs
- Internal memory for data storage: 4 MB
- Power supply: Mhaster station

W-Point

- Output Frequency: 863-870 mHz
- Transmission range: 3 Km
- Output Power: up to 15 dBm (32 mW)
- Receiver sensitivity: -113 dBm
- Signal inputs: from 3 to 12 analog inputs (W- MUX) and 2 digital inputs / outputs
- Digital protocol: Mudbus RTU
- Internal memory for data storage: 4 MB
- Power supply: lithium batteries 10.8V (maximum capacity 26 Ah) or solar cell (W- PS)
- Medium battery: more than 12 months



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CAE S.p.A-Via Colunga 20
40068 San Lazzaro di Savena (BO) - Italy
tel.: +39 051 4992711|fax: +39 051 4992709
www.cae.it