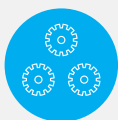


# Automatic Weather Station

*Meteorological Monitoring*



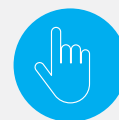
**Modular and scalable platform**



**Multimode data communication**

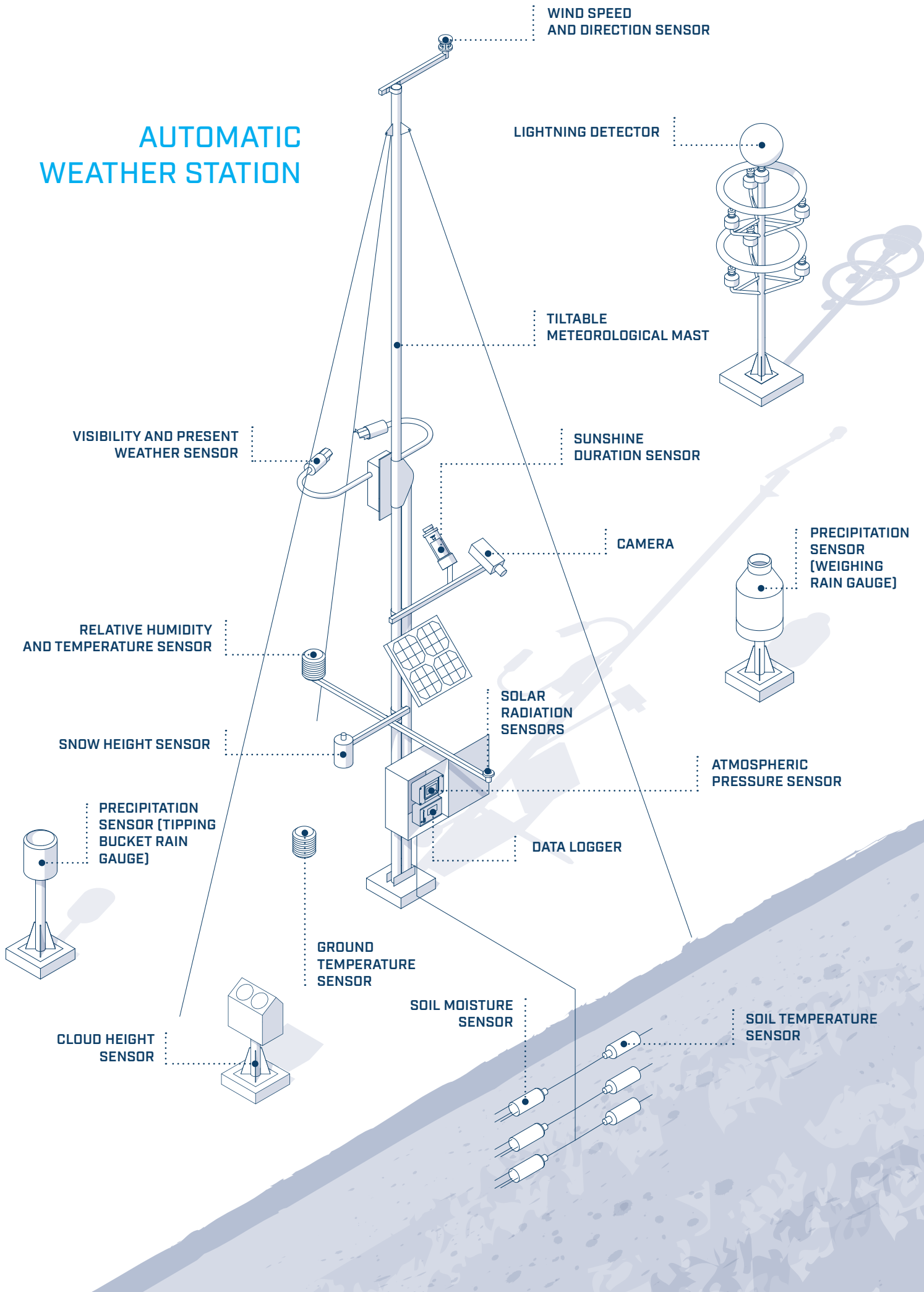


**Statistics, alerts and notifications**

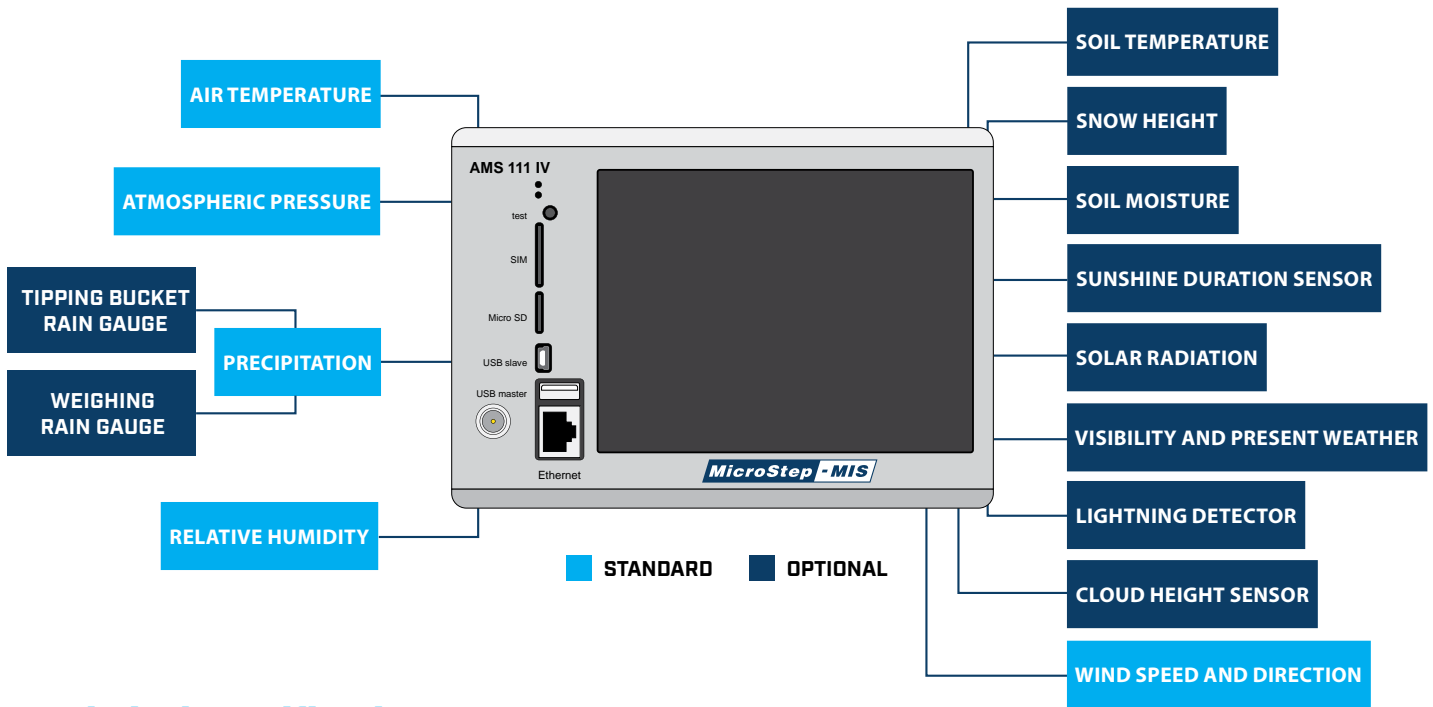


**Customizable web interface**

# AUTOMATIC WEATHER STATION



## Sensor configuration modules



## Technical specifications

### Data Logger AMS 111 IV

- Internal 128 MB Flash memory
- Internal 128 MB DRAM memory
- Secure digital card up to 64 GB
- External USB mass storage up to 256 GB
- Real time clock (backup with Lithium battery)



### Communication I/O ports

- 3x RS-232 port (baud rate: 300 to 115200), 1x UART
- 2x RS-485 port
- Interface for GSM / Wifi / Radio module
- Ethernet 10/100 Mbit
- USB master, USB slave
- 2x SDI-12

### Supported Protocols

FTP server, FTP client, HTTP server, telnet, SMTP, SMTPS, MODBUS RS-485, MODBUS, NTP Ethernet

**P4-4G modem**

<b>Data rates</b>	<ul style="list-style-type: none"> <li>• LTE-FDD Max 100 Mbps (DL) Max 50 Mbps (UL)</li> <li>• LTE-TDD Max 61 Mbps (DL) Max 18 Mbps (UL)</li> <li>• DC-HSPA+ Max 42 Mbps (DL) Max 5.76 Mbps (UL)</li> <li>• UMTS Max 384 Kbps (DL) Max 384 Kbps (UL)</li> <li>• TD-SCDMA Max 4.2 Mbps (DL) Max 2.2 Mbps (UL)</li> <li>• CDMA Max 5.4 Mbps (DL) Max 14.7 Mbps (UL)</li> <li>• EDGE Max 236.8 Kbps (DL) Max 236.8 Kbps (UL)</li> <li>• GPRS Max 85.6 Kbps (DL) Max 85.6 Kbps (UL)</li> </ul>
<b>Operating temperature range</b>	-40 °C to +85 °C
<b>Environmental conditions</b>	Operating temperature range: -40 °C to +70 °C Operating humidity range: 0 to 100 %

**P4-GSM modem**

<b>Specification</b>	<ul style="list-style-type: none"> <li>• Quad Band GSM/GPRS/3G modem E-GSM 850/900/1800/1900</li> <li>• Class 4 (2 W at 900 MHz)</li> <li>• Class 1 (1W at 1800 MHz)</li> <li>• Data, SMS</li> <li>• Fax and data transmission without extra hardware</li> </ul>
<b>Operating temperature range</b>	-40 °C to +85 °C
<b>Environmental conditions</b>	Operating temperature range: -40 °C to +70 °C Operating humidity range: 0 to 100 %

**Air temperature sensor**

<b>Measurement range</b>	-65 °C to +75 °C
<b>Accuracy</b>	±0.2 (-40 to +60) °C

**Atmospheric pressure sensor**

<b>Pressure range</b>	500 to 1100 hPa (or custom)
<b>Measurement principle</b>	piezoresistive transducer
<b>Accuracy</b>	±0.3* hPa (-40 °C to +60°C) *custom range or accuracy available upon request
<b>Long-term stability</b>	±0.2 hPa / year

**Ground temperature sensor**

<b>Measurement range</b>	-65 °C to +75 °C
<b>Accuracy</b>	±(0.1 + 0.00167 x  temperature ) °C
<b>Long-term stability</b>	< 0.1 °C / year

**Precipitation sensor****Tipping bucket rain gauge**

<b>Catch area</b>	200 cm <sup>2</sup>		
<b>Output</b>	pulses - switching contact		
<b>Resolution</b>	0.1 mm	0.2 mm	0.5 mm
<b>Measuring range</b>	0 to 600 mm/h	0 to 900 mm/h	0 to 2500 mm/h

**Measurement error for different rainfall**

intensity < 20 mm/h → measurement error < 1 %  
intensity 20 to 600 mm/h → measurement error < 2 %

**Weighing rain gauge**

<b>Orifice area</b>	200 cm <sup>2</sup>	500 cm <sup>2</sup>	200 cm <sup>2</sup>	400 cm <sup>2</sup>
<b>Range or precipitation</b>	750 mm	250 mm	1500 mm	750 mm
<b>Accuracy</b>	0.1 %			
<b>Maximum rain intensity</b>	120 mm / min			
<b>Resolution</b>	0.001 mm			

**Snow height sensor**

<b>Measurement range (snow depth or water level)</b>	0 m to 10 m
<b>Resolution</b>	1 mm
<b>Accuracy</b>	±0.5 cm or ±0.2 % of measured value whichever is greater

**Soil moisture sensor**

<b>Accuracy</b>	± 0.03 m <sup>3</sup> .m <sup>-3</sup> (3 %)
<b>Soil moisture measurement range</b>	full range 0 to 1.0 m <sup>3</sup> .m <sup>-3</sup>
<b>Salinity range</b>	50 to 1000 mS.m <sup>-1</sup>

**Soil temperature sensor**

<b>Measurement range</b>	-65 °C to +75 °C
<b>Accuracy</b>	±(0.1 + 0.00167 x  temperature ) °C
<b>Long-term stability</b>	< 0.1 °C / year

**Solar radiation sensor**

<b>Classification to ISO 9060: 1990</b>	Secondary Standard
<b>Sensitivity</b>	7 to 14 μV/W/m <sup>2</sup>
<b>Maximum operational irradiance</b>	4000 W/m <sup>2</sup>
<b>Detector type</b>	Thermopile
<b>Spectral range (20 % points)</b>	270 to 3000 nm
<b>Non-stability (change/year)</b>	< 0,5 %
<b>Non-linearity (100 to 1000 W/m<sup>2</sup>)</b>	< 0,2 %

**Relative humidity sensor**

<b>Measurement range</b>	0 to 100 %RH
<b>Accuracy (@ 25 °C)</b>	±1 %RH
<b>Short term hysteresis</b>	< 0.6 %RH
<b>Accuracy over temperature range</b>	1 +  t - 25  * (0.008 + 0.00052 *RH)
<b>Typical long-term stability</b>	±1.0* % per year
<b>Sensor type</b>	thin film capacitive

\* dependent on operating environment

**Visibility and present weather sensor**

<b>Range</b>	default 10 m to 75 km
<b>Measurement error</b>	$\leq 4.5\%$ at 600 m $\leq 5.0\%$ at 1,500 m $\leq 5.1\%$ at 2 km $\leq 12.5\%$ at 15 km $\leq 20\%$ at 30 km
<b>Measurement resolution</b>	10 m (default), 1 m (optional)
<b>Present weather output</b>	WMO Table 4680 codes

**Wind sensor****Wind speed**

<b>Range</b>	0 to 60 m/s (116 knots)
<b>Accuracy</b>	$\pm 2\%$ @ 12 m/s
<b>Resolution</b>	0.01 m/s (0.02 knots)
<b>Response time</b>	0.25 seconds
<b>Threshold</b>	0.01 m/s

**Wind direction**

<b>Range</b>	0 to 359° (no dead band)
<b>Accuracy</b>	$\pm 2^\circ$ @ 12 m/s
<b>Resolution</b>	1°
<b>Response time</b>	0.25 seconds

**Tiltable meteorological mast**

<b>Length</b>	10 m
<b>Material</b>	aluminium alloy
<b>Color</b>	white, red / white red RAL3000 / white RAL9016
<b>Load</b>	200 km/h, 250 km/h optional