

TempCast

Vaisala Cast™ Sensor



Features

- Wireless NB-IoT communication
- Self-powered with 3-year battery lifetime
- Measures:
 - Air temperature
 - Relative humidity
 - Dew / frost point
 - Surface temperature (optional)
- Reports observations with enhanced point forecasts
- Installation to existing pole and lattice mast structures
- Maintenance-free operation
- Easy sensor replacement from ground level
- Data available through Vaisala Wx Horizon or API

Vaisala TempCast is an easy and affordable way to monitor key temperature parameters from any critical location. The wireless, pole-mounted sensor has different variants to measure air temperature, relative humidity, and surface temperature.

Monitor frost formation on roads

Surface and dew point temperatures are important when assessing the risk for frost formation on the roads. TempCast reports high-quality observations and enhanced point forecasts so that you can be prepared for what is ahead within the next 72 hours. This information allows you to make the right treatment decisions and act at the right time.

Get measurements from locations not feasible before

TempCast is wireless and mounts to existing infrastructure allowing flexible installation to various locations. External powering is not required. This makes it a cost-effective solution for covering data gaps in your existing weather observation network and an ideal starting point for gaining access to local weather observations.

Sensor replacement takes 5 minutes

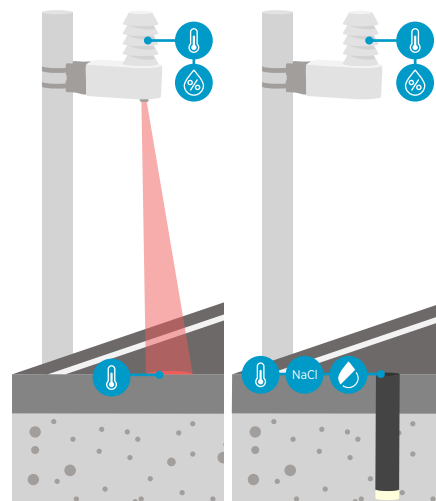
The sensor does not need any maintenance during its lifetime. At the end of its life, the sensor is replaced with a new one. There is no need for a crane or a ladder to access the sensor. The replacement takes 5 minutes by a single person from ground level by using a telescopic rod. The sensor is secured to its mounting bracket with a convenient twist-lock mechanism. This ensures that the replacement process is fast and safe.

Easy access to data

Measurement data from TempCast is automatically available in Vaisala Wx Horizon. Wx Horizon combines local sensor observations, radar data, and alerts in one subscription package for enhanced road weather forecasts. For integration to other systems, the Wx Horizon API can be used.

Best performance with Vaisala GroundCast

TempCast with remote surface temperature measurement is a convenient product for frost monitoring. When you want to monitor ice formation as well and further enhance your road weather forecast, you can co-locate TempCast with Vaisala GroundCast.



Technical data

Measurement performance

Air temperature

Measurement range	-40 ... +70 °C (-40 ... +158 °F)
Measurement accuracy	±0.15 °C (0.27 °F) at 0 °C (32 °F) ±0.25 °C (0.45 °F) over full range

Relative humidity

Measurement range	0 ... 100 %RH
Measurement accuracy	±1.5 % at 0 °C (32 °F) / <90 %RH ±3.5 % over full range

Surface temperature (optional)

Measurement range	-40 ... +70 °C (-40 ... +158 °F)
Measurement accuracy ¹⁾	±0.5 °C (0.9 °F) at 0 °C (32 °F) ²⁾ ±1 °C (1.8 °F) over -20 ... +60 °C (-4 ... +140 °F)

¹⁾ Accuracy specification of used infrared component manufacturer in stable laboratory conditions. In real outdoor conditions, additional errors may include nighttime cold sky reflections and sunlight-based large temperature differences between sensor and road.

²⁾ Accuracy is valid if ambient temperature is similar for road and sensor.

Operating environment

Operating temperature	-40 ... +70 °C (-40 ... +158 °F)
Storage temperature ¹⁾	Recommended max. +30 °C (+86 °F)
Operating humidity	0 ... 100 %RH
IP rating	IP55

¹⁾ Recommendation from the battery manufacturer.

Communication and data collection

Communication standard	Narrowband IoT (NB-IoT)
SIM card type	Micro-SIM (3ff), provided by Vaisala
Local connection for sensor setup	NFC and Bluetooth
Software for sensor setup	Vaisala Android application
Data message interval	Every 10 minutes
Data storage location	Vaisala cloud
Data access options	Vaisala Wx Horizon UI Vaisala Wx Horizon API Vaisala RoadDSS® UI

TempCast models

TempCast for air temperature, relative humidity, and surface temperature measurement FMP103

TempCast for air temperature and relative humidity measurement FMP102

Mechanical specifications

Sensor and bracket

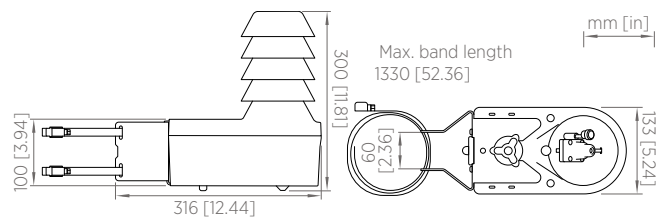
Device material	Glass fiber reinforced polycarbonate
Installation bracket material	AISI 316 stainless steel
Weight	Sensor 1.4 kg (3.1 lb) Bracket 0.6 kg (1.3 lb)

Battery

Type	Lithium-thionyl chloride
Lithium metal content	7.6 g (0.017 lb) per sensor, sensor includes 2 removable batteries (3.8 g / 0.008 lb each)

Installation

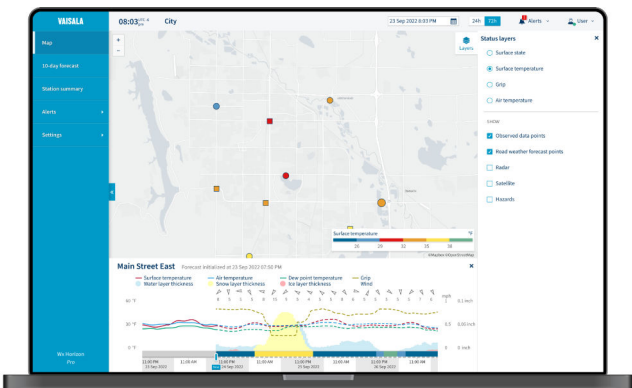
Pole mast with 60 ... 425 mm (2.36 ... 16.73 in) diameter	Standard installation bracket for vertical masts
Lattice mast or traffic sign structures	Optional universal bracket for horizontal structures



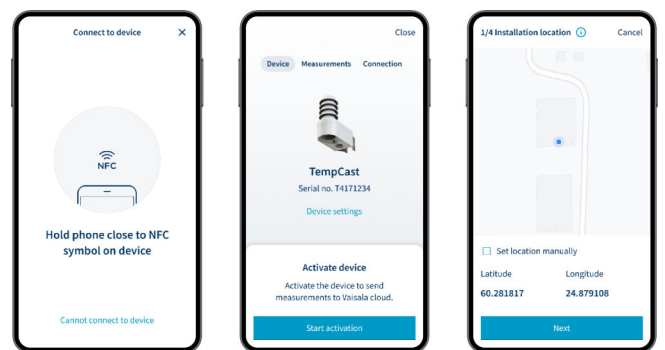
Compliance

EU directives and regulations	RED, RoHS
EMC compatibility	EN 61326-1, basic electromagnetic environment CISPR 32 / EN 55032, Class B
Radio compatibility	EN 301 489-1, -17 ¹⁾ , -52 EN 300 328 EN 301 908-1
Electrical safety	IEC 62368-1
Cold	IEC 60068-2-1
Dry heat	IEC 60068-2-2
Vibration (sinusoidal)	IEC 60068-2-6
Vibration (random)	IEC 60068-2-64
Change of temperature	IEC 60068-2-14
Shock	IEC 60068-2-27
Damp heat, cyclic	IEC 60068-2-30
Damp heat	IEC 60068-2-78
Compliance marks	CE, UKCA

¹⁾ Exception on the minimum performance level: Bluetooth Low Energy packet error rate (PER) may be more than 10 % between 2.1 ... 2.3 GHz.



Sensor data visualization in Vaisala Wx Horizon



Vaisala Cast Connect application (Android)