



Making Airport Runways and Roads Safer



THE ACTIVE **ROAD AND RUNWAY** **CONDITION SENSOR** – FRENOR® MKII

Frensor® is a patented system solution for an exact detection of the freezing point temperature on roads and runways. The Frensor is by far more accurate and reliable than traditional 'Bridge Freeze First' warnings.

The Frensor can be installed in the road or as a mobile unit collecting road surface freezing temperatures in real time along the road. The Frensor can also be connected to any host system via a serial port.

Frensor® uses a Peltier element to heat and cool the fluid on the sensor head to determine the exact freezing point, and is independent of the de-icing fluid used. The correct freezing point is detected, without special calibration, even if the fluid is contaminated with unknown chemicals. Typical applications are roadside applications, bridge sprayer systems and runways where correct and precise information is essential. Frensor® can also be used as a mobile application.

By placing up to 4 sensor heads at different

locations on the road or runway, it is possible to get a reliable freezing point value, representative for a road or runway section. For road installations it is recommended to do a climate mapping to find the most significant place, before installing Frensor® systems.

By using the Mobile Frensor® it is possible to perform freezing point mapping for a certain area. The information can then be used to determine the amount of de-icing fluid (e.g. salt) to be spread at different sections of the road.



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DE-ICING CHEMICAL

Detects freezing point for any de-icing fluid. For example NaCl, CaCl₂, Urea, Clearway, Safeway etc

ROAD STATUS

Dry, wet, freezing point temperature.

FREEZING POINT TEMPERATURE DETECTION RANGE

-20°C to 0°C, accuracy ± 0.7°C.

ENVIRONMENT CONDITION TO GET FREEZING POINT TEMPERATURE

-40°C to 20°C.

FREEZING AND ENVIRONMENT TEMPERATURE CONDITION TO GET FREEZING POINTS

< 20 °C.

ENVIRONMENT TEMPERATURE FOR ELECTRONICS *

-40°C to +60 °C. Sensors will be in standby when environment temperature is too hot (above 20 °C) or too cold (below -40 °C).

OUTPUT AND INPUT

Serial RS232 command interpreter (open protocol) and one 4-20 mA output.

OPTIONAL OUTPUT

Analogue 4-20 mA. A single mean value for all connected sensors.

DETECTION TIME

Normally 10 to 30 seconds. 3 seconds up to several minutes depending on environment conditions. Mobile version is faster.

LOGGING

10 minute values can be stored up to 3 months in Flash memory.

MODEM SUPPORT

Siemens TC35 and standard PSTN modems

POWER REQUIREMENTS

12V 3.5A (Up to 5A depending on the sensor model)

SIZE OF SENSOR

Ø 40 mm, height 40 mm

SENSOR TYPE

Cu sensor body, weight approx. 300 gram each

SIZE OF CONTROLLER CARDS

2 single Euro size circuit boards, size 160 x 100 mm each. Complete size approx 100 x 200 x 40 mm. One board is the computer and the other is the driver for the sensors. Computer boards are mounted in an aluminum housing.

ELECTROMAGNETIC COMPATIBILITY

The Frensor fulfills the EU EMC directives: EN 50081, EN 50082.

Specifications subject to change without notice

Middle photo on first page is used by courtesy of Swedish National Road Administration. Photos: Kerstin Ericsson