ENVIRONMENT

METEOROLOGY

# DROAD 100

## ROAD SURFACE CONDITION SENSING

## GENERAL CHARACTERISTICS

The **DRoad 100** is an important component of RWIS (Road Weather Information System) systems, providing information about the condition and local behaviour of the road surface (dry/wet, presence of dissolved salt, temperature on the surface and at depth).

The sensor makes a series of measurements, aimed to assess the potential for ice forming on the road; it also outputs alarms which can be used to send gritting vehicles to the site.

The **DRoad 100** is an essential tool for programming and controlling road maintenance in the winter, and for enabling operators to provide up to date information and alerts to road users.

The **DRoad 100** is a ground sensor, sunk into the road surface, made of materials specified to respond to thermal stress, in the same way as the road surface itself does.

The sensor is thermally passive: it does not change the temperature of the road surface, to prevent compromising its own measurement process.

It is rated for at least 2 years of service with traffic of 15,000 vehicles/day, unaffected by variations in the weather and the use of chemical antifreeze.

To minimise the potential for malfunction, part of the electronics is housed remotely in the control module, mounted on a post at the side of the road.

This makes maintenance particularly simple, since there is no need to service the sensor itself during its period of use (such as regular cleaning of the surface exposed to traffic, etc.).

## PRINCIPAL CHARACTERISTICS

- Detects the temperature above and under the road surface
- Detects the condition of the road surface
- Detects the saline saturation of the film of fluid covering the road
- Electronics housed separately from the sensor itself (pre-processing and interfacing with the local control unit)

## TECHNICAL SPECIFICATIONS

### ROAD SENSOR

#### TRANSDUCERS

- 3 aluminium electrodes
- 2 Pt100 thermo-resistors, class 1/3 DIN (4 wire)

#### MEASUREMENT RANGE

- -40 °C ... 60 °C for the road temperature (on the surface and at -4 cm depth).
- -25 °C ... 0 °C for the freezing temperature
- Typical precision: 0,2 °C
- 0 ... 100 % for the saline gradient
- 6 classes of road surface condition (dry, damp, wet, wet with salt, frost, ice)

### MICS MODULE FOR CONNECTING THE SENSOR TO THE LOCAL CONTROL UNIT

The MICS intelligent module is controlled by a micro-controller which reads the analogue signals output by the ground sensor sunk into the road surface layer.
The module interprets, partially processes and converts the signals to digital, and sends them to the control unit in numerical form, with a range of up to 1,2 km.
This means that the sensors can be installed remotely, thus preventing electrical disturbance of the signal output by the ground sensor.
The MICS module interfaces with the local control unit by a special BUS (SCAD-BUS). It is possible to connect up to 10 modules - and hence 10 ground sensors.

#### TECHNICAL SPECIFICATIONS

- CMOS technology
- Remotely powered with a single voltage
- Microprocessor controlled
- Reads and interprets the signals from the ground sensor
- SCAD-BUS interface for connection to the local control unit

**Famas System S.p.A.** Via degli Artigiani sud, 19 I-39044 EGNA (Bz) T +39 0471 827100 F +39 0471 827199 info@famassystem.it **www.famassystem.it**