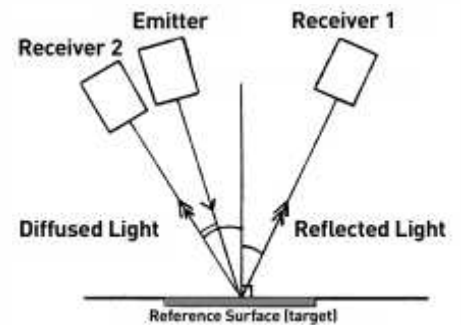




SOLIA

- SOLIA sensor determines the state of the ground, indicates the occurrence of freezing precipitations and measures the height of snow. It can be used in synoptic (SYNOP) and aeronautical applications (automatic METAR) or road (alarms).
- SOLIA consists of a light source and two receivers installed at approximately at one meter above the ground. The axis of the receivers is located in the same vertical plan and is cut in the center of the reference area (target) enlightened by the transmitter. One of the receivers is sensitive to the light returned by specular reflection by the target; the other receives the diffused retro light. The measurement of two luminous flows allows discriminating various surface qualities of the horizontal black flagstone placed at the ground. The temporal analysis of the signals allows detecting precipitations. The accurate measurement of the temperature of the target allows to distinguish certain states from solid water which have the same optical signature than other states of liquid water.
- The modular concept (transmitting and receiving heads separated, independent protected box), the local user interface and the easy to use and sure ergonomics of the IHM allow a fast installation and a simple use of the equipment. The self calibration (compensation of the ageing and moisture of the target) and the monitoring of the operating conditions (status) allow to reduce the number of intervention on the sensor, which does not require any special equipment for its fitting. The configuration of the parameters, the remote control and the software updates can be also carried out remotely, via the connection RS232 and/or integrated modem FSK.



● Functionality

Acquisition :

- Every 0.5 seconds, luminous energies emitted, reflected and retrodiffused by the target are measured using silicon photodiodes and an analogical/digital converter 12 bits, through an analogical chain self calibrated with 3 gains and automatic selection.
- Precise measurement of the temperature by platinum probe (PT100Ω 4 wires).
- Auxiliary data (Luminance , Air temperature)

Data processing :

- Synchronous demodulation.
- Elimination of the aberrant data (median) and the nonrealistic sudden variations. Standardization compared to the measurement of emitted flow.
- Slipping average from 30s to 3 mn on the valid data.
- KALMAN filter to eliminate problems from noise (in the presence of strong sunshine for example) and inconsistent measurements.

Measurement validation after control of the following elements :

- Lamp voltage, supply voltages, flow wiring, emitted light flux, abnormal dust contamination of the optics and the target, validity of the parameters and the software, temperature of the optical heads, quality of measurements, periodicity of maintenance or calibration exceeded. Process of auto diagnosis on the local IHM, sending of alarms and warnings on distant concentrator.

Bi directional transmission of data :

- Local point to point: RS232 – 1200 to 19200 Bds.
- Distant point to point: modem V23 FSK isolated (4 wires) – 1200 bds (option).
- Distant multipoints : RS485 isolated (2 wires) – 1200 to 19200 bds (option).

Man Machine Interface:

- Alphanumeric backlight LCD 16 characters. 3 keypads.
- Possibility to consult and control data or information, do maintenance or calibration operations, modify parameters.
- These functions are also available through a computer via the serial link

● Characteristics

Principle of measurement	Analysis of reflected and retro diffused signals by a target enlightened by a light source modulated at 20 Hz
States of the ground identified	Dry, humid, wet, snow cover, partial snow cover, ice ground , frost (parts of codes tables 901 et 975 combined)
Measurement of snow height	5 mm to 650 mm, resolution 1 mm
Detection of freezing precipitation	Issued from table code 4680
Lifetime of light source	25 000 h (3 years)
Minimum maintenance period and calibration	6 months
Monitoring of optics	Dust contamination detection on the emitter window and occlusions on the optical beams
Nature of light source	Halogen white light from 400 nm to 700 nm
Reflexion angle	40°
Retrodiffused angle	6°
Reference surface	Granulous target out of vibrated cement black
Measurement period	500 ms
Integration period	30s to 3 mn
Processing period	30s
Transmission period	10s to 10 mn
Accuracy on flow measurement	0.1%
Accuracy on temperature me	0.2°C
Power supply	230 V+/- 10%, 50 Hz, 100 VA
Electromagnetic compatibility	NF EN 50081-1 et NF EN 50082-1 (CE)
Operation temperature range	-15°C to + 55°C
Relative humidity, air speed	4% to 100%, up to 50 m/s
Weight, Height	48 kg, 1200 mm
Maximum snow height measurement	700 mm

DEGREANE HORIZON reserve the right to change above mentioned specifications without prior notice.

