DEGREANE HORIZON

TP320

Forward scatter sensor / Present weather diagnostic

The « all in one » Visibility and Present Weather sensor TP320 is designed for aeronautical applications in accordance with ICAO recommendations and WMO definitions.
It can also be used for synoptic networks and road meteorology.

Principle

The TP320 sensor uses two dedicated instrumental bases:

- A forward scattermeter, very reliable sensor, used in major national Meteorological Service Networks, which discriminates obscurations (smoke, haze, fog). It measures visibility (MOR, AV and RVR) in conformity with WMO and ICAO requirements up to category III;
- A real laser disdrometer which detects and distinguishes precipitations (drizzle, rain, snows, snow grains, hail, mixtures) following strictly WMO definitions. Implemented algorithms merge data and allow a very reliable analysis of different phenomena.

Unique performances

The sensor provides:

- Accurate visibility measurements of AV and RVR for aeronautical messages coding, and of MOR for synoptical messages coding.
- Present and past weather diagnosis (more than 50 WMO codes 4680 and 4678, including the critical « freezing » characteristics).
- An accurate quantification of precipitation intensity measurement, thanks to a unique calibration procedure

Implementation

- Its modular design, user interface and ergonomics enable a rapid installation and user friendly operating of the sensor.
- Integrated demister heaters, "lookdown" optics and housing avoid precipitation impacts and dust deposit.
- Monitoring of working conditions and automatic intensive failure diagnosis (status) significantly reduce the amount of servicing on the sensor.
- Maintenance can be easily performed thanks to the tilting pole which gives a comfortable access to the optoelectronics parts.
- Parameter configuration, data reading, remote control and firmware update can be done remotely using either RS232/485 link or integrated FSK modem.

> Technical characteristics

Visibility measurements

Measurement principle	Lateral forward scattering, white light, measurement every second
MOR measurement range	From 5 m to 70 000m, 1m resolution
MOR accuracy :	+/- 10 % for 90 % of measurements up to 5 Km +/- 15 % for 90 % of measurements from 5 to 20 Km +/- 25 % above 20 km
Computed data	1mn MOR, 10mn MOR, Luminance, Aeronautical Visibility (AV), RVR, contamination rate
Using temperature	- 15°C to + 55°C - 30°C to + 55°C (option)

Present weather diagnostic

Measurement principle	Data fusion from forward scattermeter and disdrometer information. Diagnostic every 30 seconds
Detection	From 0.005mm/h, in 99 % of the events
Identification	No precipitation, haze or smoke, mist, diamond dust, fog (freezing), precipitations, drizzle (freezing), drizzle and rain (freezing), rain (freezing), drizzle and/or rain and snow, snow, snow grains, ice crystals, small hail and/or snow pellets, hail.
Distinction	> 97%, between: no precipitation, drizzle, rain, snows and hail.
False alarms rate	> 2%
Precipitation intensity measurement range	From 0.005 mm/h to 1200 mm/h, accuracy 5%
Coding reports	Present weather (wawa SYNOP, more than 50 codes from WMO 4680 table), Significant present weather (ww' , METAR, codes from WMO 4678 table and NWS), Past weather (Wa1Wa2, SYNOP, codes from WMO 4531 table).

Generality

Data access	- RS232 1200 to 19200 Bauds serial link or/and isolated and protected RS485 2 wires (option),. - Additional 1200 Bauds isolated and protected 4 wires FSK Modem CIBUS link (option) - Local user-friendly interface (16 digits LCD display with 3 buttons keyboard)
Main power supply	230 V +-10% 50 Hz 150 VA, 280 VA with high power heating option
Electromagnetic compatibility	NF EN 61000-4-2/4/5/6 and NF EN 61000-4-3 (CE)
Operating temperature	From -15°C to + 55°C, from -35 to +55 °C with high power heating
Humidity, wind speed	From 0 % to 100 %, up to 60 m/s
Size, weight	~ 3000 mm * 1200 mm * 400 mm , ~ 50 Kg
Accessories	Calibration kit LU320 background luminance sensor

DEGREANE HORIZON
730, rue de l'initiative - 83390 CUERS - FRANCE
+33(0) 498 163 163 +33(0) 498 163 164 contact@degreane-horizon.fr www.degreane-horizon.com