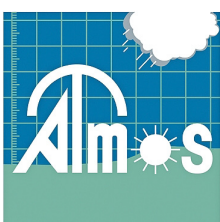# *CIR-13*

Day and Night !
Cloud cover monitoring

A reference instrument for day and night monitoring of cloud cover.

CIR 13 provides :

- Cloud fraction global and per cloud altitude class.

- Ceiling evaluation.

- Cloud cover or thermal map of the sky dome.

ATMOS sarl
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Principles and fields of use

Airport activity

For take off and landing clearance ICAO regulation requires cloud cover data in terms of cloud fraction and ceiling. CIR-4V can provide real time data to dispatchers and allow the automatic implementation of cloud data in METAR and SYNOP meteorological messages.

Climatological study

Up to now cloud data for meteorological forecast are mostly supplied by human observers every 3 hours. This method show a lack of sampling frequency and a lack of repeatability compared to CIR technology.


Solar radiation research

Due to atmospheric pollution and ozone depletion, the energy balance between earth and atmosphere is a growing field of concern and research around the world. This phenomenon has impact with skin cancers and green house effect and is directly linked to the cloud spatial distribution which could be retrieved through CIR-4V data.


Instrument description
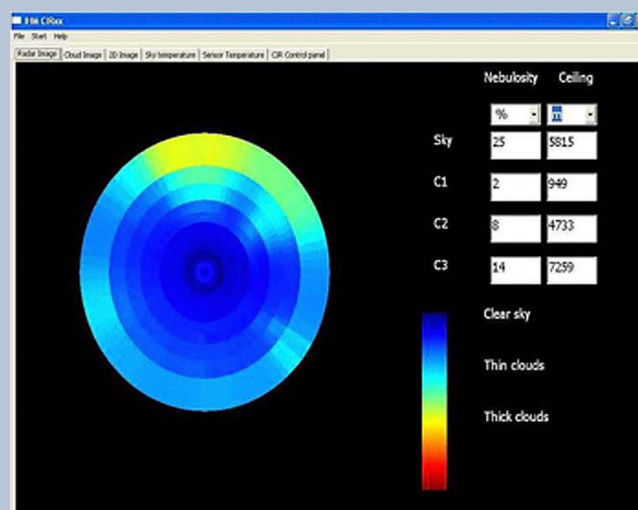
CIR-13 is a self-sufficient instrument with a software package. It contents an instrument and a comprehensive software Windows 7 or XP compatible. Numerical data are archived on the one hand, under a text format in a daily file and on the other hand, pictures are under a compressed jpeg format. The storage path could be defined for any storage unit of a server. In order to allow, post and reprocess of data, raw brightness temperature could be stored on the hard drive of the computer.

The software interface allows different views of the sky dome :
 - Radar thermal diagram (as shown on the previous page)
 - Radar cloud / clear sky diagram 2D cloud / clear sky diagram
In addition to some other windows allow you to monitor numerically :
 - Brightness temperatures
 - Turret position
 - Safe functional parameters of instrument.
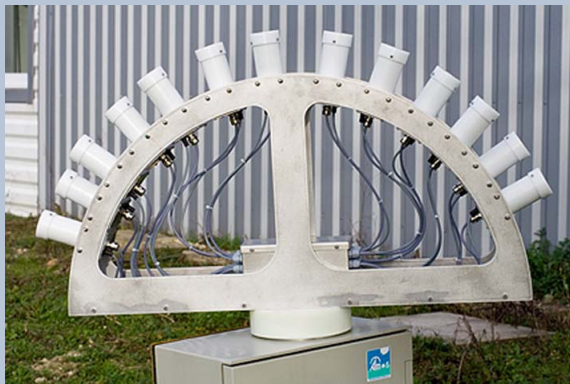
CIR 13 is a multiple sensors scanning instrument. The number and the position of the 13 detectors have been carefully defined by numerical simulations and checked during inter comparison campaigns around the world.

The instrument provides a complete scan every one and half minute approximately. The global field of view of the instrument is 140°. If the free obstacles area at deployment location lower is smaller, you can set up in the software configuration.

Its design ensures a greater accuracy than a single detector moving site and azimuth due to the cloud layer kinetic. Sensors have been modified to provide an high resolution to each sensor with the adjunction of an individual blower creating per detector a continuous ventilation improving accuracy of measurements.

Moreover this air blow allows to keep optical inlets cleaner than with natural ventilation.

Technical data
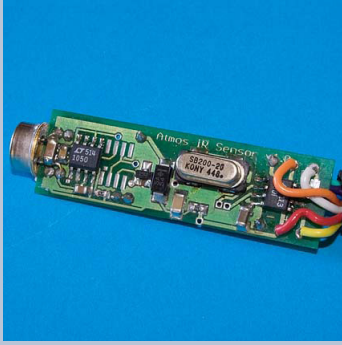
Pyrometric measurement technique has been widely developped for high temperature measurements.
ATMOS developped a rugged technique allowing measurement of low temperature from room temperature up to -50°C.
The ruggedness of the system is also ensured with the use of a mineral optical inlet more environmentally stable than polymeric devices.

Specifications

Nebulosity (cloud fraction)	Range : 0 à 100% Accuracy : +/-6%
Data output	RS 485
Ceiling	Range : 0 – 8000m Accuracy : +/-6%
Power supply	100-240VAC 50/60Hz
Mounting	Portable tripod or fixed mounting road
Baud Rate	38400 bauds, 8 data bits, 1 stop bit, no parity (2 serial lines)
Dimensions	1726*983*983mm (including mounting post)
Data archive	Delimited text files for numeric data

CIR-13 on site :

CIR 13 deployment to IASB / BIRA main facility