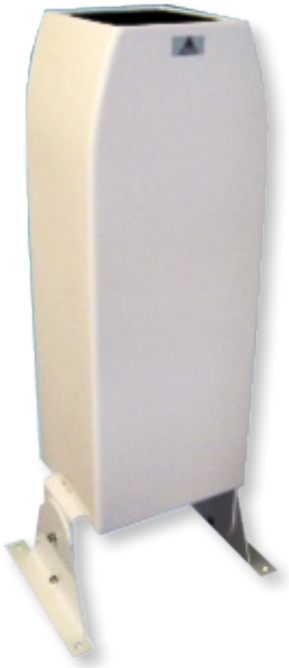
Laser Ceilometer
5600-82CH

The 5600-82CH Ceilometer is a compact instrument designed for fixed and tactical installations where accurate and reliable cloud height information is required. The measurement is based on the LIDAR principle.

The light emitting component is a low power diode laser with the output power limited to an eye-safe level whilst advanced optics and signal processing techniques extend the range from near ground level to over 26000 ft.



FEATURES

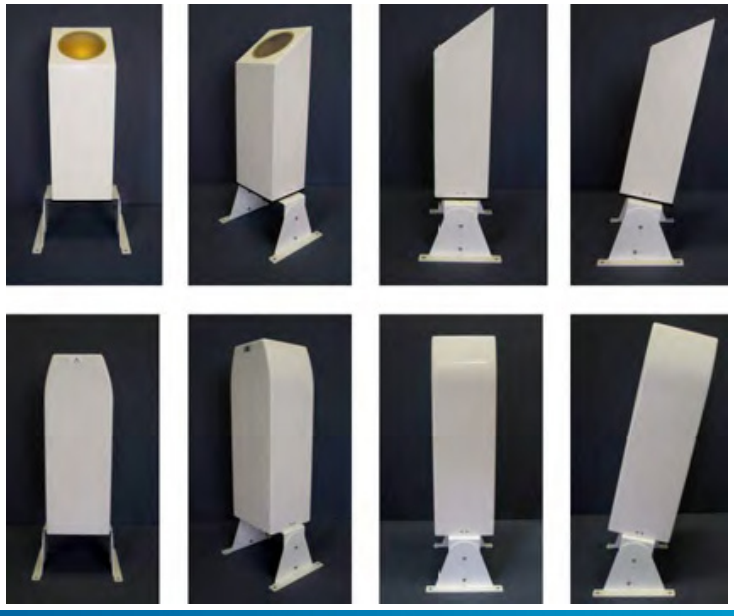
- Highly reliable operation.
- Easy installation and maintenance.
- Very long laser life
- 26 000 ft [8000 m] measuring range.
- Low weight and low power consumption.
- Fixed or portable design.
- Easy to interface, RS232 or RS422
- A low-power laser light transmitter uses a highly reliable gallium arsenide diode to transmit the pulse signal to the cloud base
- The receiver is a silicon avalanche photodiode that incorporates an optical band pass filter to prevent interference from other light sources.
- An array of self-tests executed in the background during sensor operation detects any sensor errors & reports them along with the replaceable module associated with the fault.

SPECIFICATIONS	
Subject to change without notice	
Parameters	**Specifications**
Range	0 — 26, 650 ft (0 – 8,200 m)
Scan Time	1 – 300 seconds (User Configurable)
Reporting Resolution	10ft (3m)
Accuracy	< ± 25 ft (against reflector)
Scan Time / Scan Rate	55 µs / 10,000 Scans/Sec. (User Configurable)
Laser	InGaAs Laser Diode
Laser Wavelength	905 nm
Laser safety	Class 1m AS2211/ Z136.1/ IEC-825
Detector	SiAPD (Silicon Avalanche Photo Diode)
Analog to Digital Converter	16 bit / 49.192 MSPS (Mega Samples/Sec.)
Microprocessor	32 bit ARM processor with 32MB memory
Signal Processing Engine	FPGA for accumulation, correlation, filtering, backscatter wavelet analysis and signal to noise measurement; 56 bit precision with 106 samples
Standard Communications	Data Port 1 (Data): RS-232, RS-422 Data Port 2 (Maintenance): RS-232

ORDERING	
5600-82CH	Ceilometer, compact instrument designed for fixed & tactical installations where accurate, reliable cloud height data is required
OPTIONS	
8200-BLOWER-110	110 VAC Powered Blower with cover (800 x 300 x 300 mm)
8200-BLOWER-240	230 VAC Powered Blower with cover (800 x 300 x 300 mm)
8200-BLOWER-DC	12 VDC Powered Blower with cover (800 x 300 x 300 mm)
8200-TACTICAL	Tactical version with adjustable feet. (No solar radiation cover)
8200-EFILTER	Equatorial filter (Factory Installed)
8200-BATTERY	Internal 12 VDC Backup Battery. (Factory Installed)
8200-POLEMOUNT	50cm Fixed Pole Mount
8200-SHOCK	Shock Absorber mounting kit for deployment on a seagoing vessel.
8200-BIRDSPIKE	Bird Deterrent Kit

Specifications continued next page

Standard Communications	Data Port 1 (Data): RS-232, RS-422 Data Port 2 (Maintenance): RS-232
Optional Communications	RS-485, Ethernet, FSK Modem, DSL Modem, Fiber Modem
Output data	Cloud Bases (1 – 4) Cloud Thickness Cloud Amount: (0-8 oktas at up to 4 layers) Vertical visibility, Sensor Status, Sky Condition
Data Formats	21 Standard Messages. 19 optional data output formats available.
Report Rate	1 – 3600 seconds (User Configurable)
Output Mode	Automatic or Polled (User Configurable)
Operation Temperature	Standard configuration -40 to +60 °C
Operation Humidity	0 – 100% RH
Wind Load	60 m/s – With Solar Radiation Cover, 80 m/s – Measurement unit only.
IP Rating	IP66 (IEC60529)
MTBF	275,072 Hours
Power supply (electronics)	115/230 VAC, 45 — 65 Hz, 50VA or 12VDC 4A
Power supply (heated blower)	115/230 VAC, 45 — 65 Hz, 200VA
Window	Anti-Reflective Filter Coated and Heated Glass
Optics Solar Protection	Anti-Reflective Window, Anti-Reflective Lens, Narrow Band-pass APD Filter
Weight	10.5 kg (measurement unit without stand or solar cover) 22.0 kg (complete unit with cover and stand) 45.0 Kg (Packed in standard wooden export transit case)
Height	On stand – 1020 mm [permanent installation with solar radiation Cover]
	On ground – 750 mm [portable / tactical unit]
Footprint	300mm Wide x 250mm Deep
Stand	Adjustable – Vertical & Tilts in both directions (+/- 12 Degrees)
Solar Radiation Cover Colour	White (Standard Colour), Black, Military Olive Drab, Aviation Red/White, Custom.
Measurement Enclosure Color	White (Powder-Coated, Standard Colour), Military Olive Drab (Powder-Coated) Black (Anodized)



Measurement Technique

Ceilometer uses a biaxial single main lens design providing very low interference and enhanced near field performance. The well-defined laser pulse shape and real time digitizing techniques utilise the latest high speed, high dynamic range scan converter.

This, combined with interlaced scan techniques gives excellent resolution and accuracy. The 5600-82CH has a powerful 32 bit Microprocessor and Field Programmable Gate Array (FPGA) performing advanced signal processing algorithms to detect multiple cloud bases and sky condition.

Environmental Performance

The 5600-82CH performs in all environmental conditions from desert to the wet equatorial tropics. The heated windows and the double skinned design with internal heating and cooling maintain the internal systems at stable temperature and eliminate internal condensation under all conditions. The internal optical components are protected from direct solar radiation by an optical solar filter. There are no internal moving parts as seen in inferior ceilometer designs. All electrical connections to the unit are surge protected. During rain and snow or in the absence of a detectable cloud base the vertical visibility is reported.

Data Presentation

The Data port provides standard data formats via RS232 and RS422 standards. Cloud layer detection algorithms are built in to the instrument firmware and the 8200-CHS can be easily connected to Graphical Cloud analysis software for a workstation.

Where required, the signal return profile can be obtained for each scan. The internal RS-232C and RS422 interfaces support local and remote control, test and data acquisition. Ethernet, wireless radio, microwave, conventional or DSL modem options can also be used.