



Lufft CHM 8k Ceilometer

Highest confidence under low clouds

Confident detection of low clouds with minimum False Alarm Rate (FAR) and an outstanding Probability of Detection (POD) even at extreme conditions

Maximum sensor uptime and data availability thanks to integrated data storage and a robust battery backup (-40 °C to 60 °C)
Minimum maintenance from self-cleaning construction: Snow gets melted, water flows down and washes dust away
Safe and certified operation in compliance with UL50e (North America), TÜV (Europe), ICAO GRF
Easy installation and handling thanks to self-contained design - no additional computer needed
High flexibility from support of multiple communication protocols and software standards

The new Lufft CHM 8k ceilometer empowers meteorologists at weather services and airports to make the right decisions with highest confidence and minimal maintenance. Especially in the critical height below 1 km, the Lufft CHM 8k detects cloud bases in any place and season with outstanding precision and reliability. Internal data storage and a battery backup enable unmatched sensor uptime and data availability even at the harshest conditions.

Using Lidar technology, the CHM 8k measures aerosol backscatter profiles to detects cloud bases, cloud penetration depths, and aerosol structures in multiple layers. The ceilometer also outputs vertical visibility and a sky condition index within an operating range of up to 8,000 m (26,200 ft).

The CHM 8k is equipped with an integrated controller offering a fully embedded real-time calculation of all target parameters via intuitive user interfaces.

High optical sensitivity for exact results

Accurate results in day and night time are obtained by:

- a pulsed diode laser with long life-time
- · an optimized field of view design
- a highly sensitive photo receiver

Reliable operation in any climate

The CHM 8k is prepared to work throughout the year and in any climate. The double cased structure combined with a window blower and automatic heating system, ensures measurements are resistant to fogging, precipitation, freezing, and overheating.



ME-LU-WT-ds-Ceilometer_CHM8k-EN-230222

Technical Specifications

The data outputs

- 1. Standard data output
 Output interval, date, time,
 unit, sky condition index, total
 cloud cover, cloud layers, cloud
 penetration depths, VOR, max.
 detection range, quality index
 aerosol layer, aerosol layer
 heights, status, checksum
- 2. Extended data output
 Standard output combined
 with additional status
 messages and device specific
 parameters
- 3. Raw data output
 Extended output with
 measured raw data (in NetCDF
 format)
- Custom data output
 Can be programmed by the user (programming language is xml)

Description Range Filme resolution Reported range resolution Quality and auxiliary values External and internal term window status, laser status, internal receiver status, in	eilometer CHM 8k		
Range 5 m 10 km (16 32.808 Time resolution 2 600 s Reported range resolution 5 30 m in 5 m steps Quality and auxiliary values External and internal temp window status, laser statu receiver status, internal rF Cloud base height cloud penetration depth, aerosol layer height ±5 m (±16 ft) ±5 m (Measuring Principle & Parameters	Measuring principle	Lidar (optical, time of flight)
Range 5 m 10 km (16 32.808 Time resolution 2 600 s Reported range resolution 5 30 m in 5 m steps Quality and auxiliary values External and internal temp window status, laser statu receiver status, internal rh (cloud penetration depth, aerosol layer height 45 m (±16 ft) 45 m (±16 f		Description	Aerosol backscatter profile $\beta_{att}(r)$
Reported range resolution Quality and auxiliary values External and internal term window status, laser statu receiver status, internal rh receiver status, internal rh receiver status, internal rh cloud base height, cloud base height, cloud penetration depth, aerosol layer height 45 m (±16 ft) Accuracy (measured on hard target in 8 km distance) Additional quantities Cloud cover, vertical visibil Sky Condition Index Communication Standard interfaces Communication Standard interfaces DSL modem Power supply 230 VAC or 115 VAC, ±10 % Power consumption 250 W (without housing heate UPS functionallity (opt.) Internal backup battery for electronics, > 1 hrs Laser-optical Parameters Light source Wavelength Pulse energy Vavelength Pulse repetition frequency Filter Bandwidth Field of view receiver 1.1 mrad Operating Safety Environmental compliance Laser protection class IM, IEC 60825-1:2014 Protection level housing Field of view receiver General safety Field 6010.1 (TüV Rheinland or UR 56101.1 (Australia and Ne CAN/CSA-C22.2 No.61010-1 (TOPerating Conditions Temperature range Relative humidity 0 100 % Wind 60 m/s		Range	5 m 10 km (16 32.808 ft)
Quality and auxiliary values Quality and auxiliary values External and internal temp window status, laser stature receiver status, internal rI- Cloud base height, cloud penetration depth, aerosol layer height Accuracy (measured on hard target in 8 km distance) Additional quantities Cloud cover, vertical visibil Sky Condition Index Communication Standard interfaces Communication Standard interfaces Coptional interfaces DSL modem Power supply 230 VAC or 115 VAC, ±10 % Power consumption 250 W (without housing he day of With housing head head of With housing head of With housing head of With housing head head head head head head head head		Time resolution	2 600 s
Quality and auxiliary values Quality and auxiliary values External and internal temp window status, laser stature receiver status, internal rI- Cloud base height, cloud penetration depth, aerosol layer height Accuracy (measured on hard target in 8 km distance) Additional quantities Cloud cover, vertical visibil Sky Condition Index Communication Standard interfaces Communication Standard interfaces Coptional interfaces DSL modem Power supply 230 VAC or 115 VAC, ±10 % Power consumption 250 W (without housing he day of With housing head head of With housing head of With housing head of With housing head head head head head head head head		Reported range resolution	5 30 m in 5 m steps
cloud penetration depth, aerosol layer height Accuracy (measured on hard target in 8 km distance) Additional quantities Cloud cover, vertical visibil Sky Condition Index Communication Standard interfaces RS-485 (ASCII communicat LAN (web interface, (S-)FTP, DSL modem Electrical Parameters Power supply Power consumption UPS functionality (opt.) Laser-optical Parameters Light source Wavelength Pulse energy Pulse repetition frequency Filter Bandwidth Standard interface Sex-485 (ASCII communicat LAN (web interface, (S-)FTP, DSL modem 450 W (without housing heater date with the supply of the supply		, ,	External and internal temperatu window status, laser status, receiver status, internal rH
target in 8 km distance) Additional quantities Cloud cover, vertical visibil Sky Condition Index RS-485 (ASCII communication Standard interfaces RS-485 (ASCII communication) Poperating Safety Power supply Power consumption UPS functionality (opt.) Laser diode Wavelength Pulse energy Pulse repetition frequency Filter Bandwidth Field of view receiver Laser protection class Internal backup battery Pulse repetition frequency R kHz Filter Bandwidth So nm Field of view receiver Laser protection class My IEC 60825-1:2014 Protection level housing IEC 60529: IP66 UL 50/50E: Typ 4X CSA C22.2 94.1/94.2 : Typ 4 CSA C22.2 94.1/94.2 : Typ 4 General safety CAN/CSA-C22.2 No.61010-1 (Operating Conditions Temperature range AG 61010-1 (TÜV Rheinland of CAN/CSA-C22.2 No.61010-1) Pelative humidity O 100 % Wind Wind O 100 %	Target Parameters	Quantities given in layers	cloud penetration depth,
Communication Standard interfaces RS-485 (ASCII communicat LAN (web interface, (S-)FTP, Optional interfaces) DSL modem Electrical Parameters Power supply 230 VAC or 115 VAC, ±10 % Power consumption 250 W (without housing heater of the standard process of the sta		_	±5 m (±16 ft)
LAN (web interface, (S-)FTP, Optional interfaces DSL modem Electrical Parameters Power supply 230 VAC or 115 VAC, ±10 % Power consumption 250 W (without housing he 450 W (with housing heater 450 W (with housi		Additional quantities	Cloud cover, vertical visibility, Sky Condition Index
Electrical Parameters Power supply Power consumption 250 W (without housing he 450 W (with housing heater 450 W heater 450 W (with housing heater 450 W heater 450 W (with housing heater 450 W heater 450 W (with housing heater 450 W heater 45	Communication	Standard interfaces	RS-485 (ASCII communication), LAN (web interface, (S-)FTP, NetToo
Power consumption 250 W (without housing heated 450 W (with housing heated 450 W hard 450 W hatery for electronics, > 1 hrs Laser-optical Parameters		Optional interfaces	DSL modem
450 W (with housing heate UPS functionality (opt.) Internal backup battery for electronics, > 1 hrs Laser-optical Parameters Light source Laser diode Wavelength 905 nm Pulse energy <2 μJ Pulse repetition frequency 8 kHz Filter Bandwidth 25 nm Field of view receiver 1.1 mrad Operating Safety Environmental compliance ISO 10109 - 11 Laser protection class 1M, IEC 60825-1:2014 Protection level housing IEC 60529: IP66 UL 50/50E: Typ 4X CSA C22.2 94.1/94.2 : Typ 4 CSA C22.2 94.1/94.2 : Typ 4 General safety EC 61010-1 (TÜV Rheinland on UL 61010-1 (TÜV SÜD certifie AS 61010.1 (Australia and Ne CAN/CSA-C22.2 No.61010-1) Operating Conditions Temperature range -40 60 °C Relative humidity 0 100 % Wind 60 m/s	Electrical Parameters	Power supply	230 VAC or 115 VAC, ±10 %
electronics, > 1 hrs Laser-optical Parameters Light source Wavelength Pulse energy Pulse repetition frequency 8 kHz Filter Bandwidth 25 nm Field of view receiver 1.1 mrad Operating Safety Environmental compliance Laser protection class 1M, IEC 60825-1:2014 Protection level housing IEC 60529: IP66 UL 50/50E: Typ 4X CSA C22.2 94.1/94.2 : Typ 4 CSA C22.2 94.1/94.2 : Typ 4 General safety Figure 4S 61010-1 (TÜV Rheinland on UL 61010-1 (TÜV Rheinland on UL 61010-1 (TÜV SÜD certiffle AS 61010.1 (Australia and Ne CAN/CSA-C22.2 No.61010-1) Operating Conditions Temperature range Relative humidity 0 100 % Wind 60 m/s		Power consumption	250 W (without housing heater) 450 W (with housing heater)
Wavelength 905 nm Pulse energy <2 µJ Pulse repetition frequency 8 kHz Filter Bandwidth 25 nm Field of view receiver 1.1 mrad Operating Safety Environmental compliance ISO 10109 - 11 Laser protection class 1M, IEC 60825-1:2014 Protection level housing IEC 60529: IP66 UL 50/50E: Typ 4X CSA C22.2 94.1/94.2 : Typ 4 General safety EC 61010-1 (TÜV Rheinland of UL 61010-1 (TÜV SÜD certiffe AS 61010.1 (Australia and Ne CAN/CSA-C22.2 No.61010-1) Operating Conditions Temperature range -40 60 °C Relative humidity 0 100 % Wind 60 m/s		UPS functionality (opt.)	Internal backup battery for electronics, > 1 hrs
Pulse energy <2 µJ Pulse repetition frequency 8 kHz Filter Bandwidth 25 nm Field of view receiver 1.1 mrad Operating Safety Environmental compliance ISO 10109 - 11 Laser protection class 1M, IEC 60825-1:2014 Protection level housing IEC 60529: IP66 UL 50/50E: Typ 4X CSA C22.2 94.1/94.2 : Typ 4 CSA C22.2 94.1/94.2 : Typ 4 General safety EC 61010-1 (TÜV Rheinland of UL 61010-1 (TÜV SÜD certifie AS 61010.1 (Australia and Ne CAN/CSA-C22.2 No.61010-1 (Operating Conditions Temperature range -40 60 °C Relative humidity 0 100 % Wind 60 m/s	Laser-optical Parameters	Light source	Laser diode
Pulse repetition frequency 8 kHz Filter Bandwidth 25 nm Field of view receiver 1.1 mrad Operating Safety Environmental compliance ISO 10109 - 11 Laser protection class 1M, IEC 60825-1:2014 Protection level housing IEC 60529: IP66 UL 50/50E: Typ 4X CSA C22.2 94.1/94.2 : Typ 4 General safety EC 61010-1 (TÜV Rheinland of UL 61010-1 (TÜV Rheinland of UL 61010-1 (TÜV SÜD certifie AS 61010.1 (Australia and Ne CAN/CSA-C22.2 No.61010-1 (Operating Conditions Temperature range -40 60 °C Relative humidity 0 100 % Wind 60 m/s		Wavelength	905 nm
Pulse repetition frequency 8 kHz Filter Bandwidth 25 nm Field of view receiver 1.1 mrad Operating Safety Environmental compliance ISO 10109 - 11 Laser protection class 1M, IEC 60825-1:2014 Protection level housing IEC 60529: IP66 UL 50/50E: Typ 4X CSA C22.2 94.1/94.2 : Typ 4 General safety EC 61010-1 (TÜV Rheinland of UL 61010-1 (TÜV SÜD certifie AS 61010.1 (Australia and Ne CAN/CSA-C22.2 No.61010-1) Operating Conditions Temperature range -40 60 °C Relative humidity 0 100 % Wind 60 m/s		Pulse energy	<2 µJ
Field of view receiver 1.1 mrad Operating Safety Environmental compliance Laser protection class 1M, IEC 60825-1:2014 Protection level housing IEC 60529: IP66 UL 50/50E: Typ 4X CSA C22.2 94.1/94.2 : Typ 4 General safety EC 61010-1 (TÜV Rheinland of UL 61010-1 (TÜV SÜD certifie AS 61010.1 (Australia and Ne CAN/CSA-C22.2 No.61010-1 (Operating Conditions) Temperature range Relative humidity 0 100 % Wind 60 m/s		Pulse repetition frequency	
Operating Safety Environmental compliance Laser protection class 1M, IEC 60825-1:2014 Protection level housing IEC 60529: IP66 UL 50/50E: Typ 4X CSA C22.2 94.1/94.2: Typ 4 General safety EC 61010-1 (TÜV Rheinland of UL 61010-1) (TÜV SÜD certifie AS 61010.1) (Australia and Ne CAN/CSA-C22.2 No.61010-1) Operating Conditions Temperature range Relative humidity 0 100 % Wind 60 m/s		Filter Bandwidth	25 nm
Laser protection class 1M, IEC 60825-1:2014 Protection level housing IEC 60529: IP66		Field of view receiver	1.1 mrad
Laser protection class 1M, IEC 60825-1:2014 Protection level housing IEC 60529: IP66	Operating Safety	Environmental compliance	ISO 10109 - 11
Protection level housing IEC 60529: IP66 UL 50/50E: Typ 4X CSA C22.2 94.1/94.2 : Typ 4 General safety EC 61010-1 (TÜV Rheinland or UL 61010-1 (TÜV SÜD certifie AS 61010.1 (Australia and Ne CAN/CSA-C22.2 No.61010-1 (Operating Conditions Temperature range -40 60 °C Relative humidity 0 100 % Wind 60 m/s		•	1M, IEC 60825-1:2014
General safety EC 61010-1 (TÜV Rheinland or UL 61010-1 (TÜV Rheinland or UL 61010-1 (TÜV SÜD certifie AS 61010.1 (Australia and Ne CAN/CSA-C22.2 No.61010-1 (Operating Conditions Temperature range -40 60 °C Relative humidity 0 100 % Wind 60 m/s		Protection level housing	UL 50/50E: Typ 4X
Operating Conditions Temperature range -40 60 °C Relative humidity 0 100 % Wind 60 m/s		General safety	EC 61010-1 (TÜV Rheinland certified UL 61010-1 (TÜV SÜD certified) AS 61010.1 (Australia and New Zeala CAN/CSA-C22.2 No.61010-1 (TÜV SÜ
Wind 60 m/s	Operating Conditions	Temperature range	
Wind 60 m/s		Relative humidity	0 100 %
Physical Dimensions 500 x 500 x 1.550 mm		•	60 m/s
	Physical	Dimensions	500 x 500 x 1.550 mm
			70 kg (130 kg incl. packaging)
Maximum operating altitude 5.000 m		9	J. J. J.

Optional components:

Adapter bracket AW15, Adapter bracket AW05, Simulator, Battery backup (currently available in Europe and Asia)





