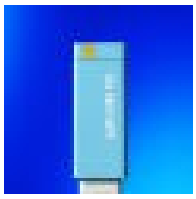
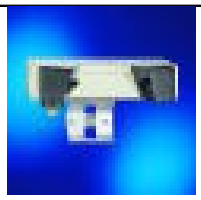
LUFFT OPTINIŲ SAVYBIŲ MATAVIMO PRIETAISAI

Eil. Nr.	Pavadinimas	Aprašymas
1.	 8350.00 Ceilometer CHM 15k „NIMBUS“ Measurement of Cloud height / aerosol profiles / visibility Great measuring range up to 15 km (50 000 ft), Enhanced multiple cloud layer detection, Simple and eye-safe routine	**Description:** Reliable operation in any climate! The CHM 15k series is prepared to work throughout the year and in any climate. Due to their double case structure combined with a window blower and an automatic heating system, the ceilometers are not interfered with fogging, precipitation, freezing or overheating. **Supplementary description:** High optical sensitivity for exact results! Accurate results in day- and nighttime are obtained by a solid state laser source with long lifetime, small bandwidth filters and a highly sensitive photo receiver. **Special features:** • Great measuring range up to 15 km (50 000 ft) • Enhanced multiple cloud layer detection • Simple and eye-safe routine operation • Service-friendly modular device setup • Various data telegrams, including raw data • GUI software for device control and display of measured backscatter data in NetCDF format Download - product data sheet
2.	 8365.10 Snow depth sensor SHM 30 Measurement of Snow height A compact laser sensor with RS232, 10m cable	**Description:** Compact, reliable and cost-efficient. The SHM 30 snow depth sensor reliably determines snow depths up to 10 meter within seconds and with Millimeter precision. Based on an opto-electronic distance sensor emitting visible eye-safe laser light, the SHM 30 allows probing distances up to 30 meter to detect the surface level. Unlike snow depth sensors using ultrasonic methods, the laser distance measuring technique is Independent of temperature changes. Even if the measuring process is impaired by precipitation, the SHM 30 reliably finds the snow surface due to its mode of operation. Further evaluation of the transmitted signal strength allows discrimination between snow and grass. **Supplementary description:** A compact laser sensor with RS232, 10m cable **Special features:** • Determination of snow depth over long distances using opto-electronic measuring technique • MTBF (meantime between failure) >40.000h (duty cycle 30% 3 measurements/min) • The build in heater does mainly keep the build in laser diode in specs to ensure a long lifetime • Very compact and weatherproof housing • Efficient background light suppression • Allows discrimination between snow and grass Download - product data sheet
3.	 8365.11 Snow depth sensor SHM	**Description:** Compact, reliable and cost-efficient. The SHM 30 snow depth sensor reliably determines snow depths up to 10 meter within seconds and with Millimeter precision. Based on an opto-electronic distance sensor emitting visible eye-safe laser light, the SHM 30 allows probing distances up to 30 meter to detect the surface level. Unlike snow depth sensors using ultrasonic methods, the laser distance measuring technique is Independent of temperature changes. Even if the measuring process is impaired by precipitation, the SHM 30 reliably finds

	30 Measurement of Snow height A compact laser sensor with RS232, ext. heat off, 10m cable	the snow surface due to its mode of operation. Further evaluation of the transmitted signal strength allows discrimination between snow and grass. **Supplementary description:** A compact laser sensor with RS232, ext. heat off, 10m cable **Special features:** • Determination of snow depth over long distances using opto-electronic measuring technique • MTBF (meantime between failure) >40.000h (duty cycle 30% 3 measurements/min) • The build in heater does mainly keep the build in laser diode in specs to ensure a long lifetime • Very compact and weatherproof housing • Efficient background light suppression • Allows discrimination between snow and grass Download - product data sheet
4.	 8365.20 Snow depth sensor SHM 30 Measurement of Snow height A compact laser sensor with RS422, 10m cable	**Description:** Compact, reliable and cost-efficient. The SHM 30 snow depth sensor reliably determines snow depths up to 10 meter within seconds and with Millimeter precision. Based on an opto-electronic distance sensor emitting visible eye-safe laser light, the SHM 30 allows probing distances up to 30 meter to detect the surface level. Unlike snow depth sensors using ultrasonic methods, the laser distance measuring technique is Independent of temperature changes. Even if the measuring process is impaired by precipitation, the SHM 30 reliably finds the snow surface due to its mode of operation. Further evaluation of the transmitted signal strength allows discrimination between snow and grass. **Supplementary description:** A compact laser sensor with RS422, 10m cable **Special features:** • Determination of snow depth over long distances using opto-electronic measuring technique • MTBF (meantime between failure) >40.000h (duty cycle 30% 3 measurements/min) • The build in heater does mainly keep the build in laser diode in specs to ensure a long lifetime • Very compact and weatherproof housing • Efficient background light suppression • Allows discrimination between snow and grass Download - product data sheet
5.	 8365.50 Snow depth sensor SHM 30 Measurement of Snow height A compact laser sensor with RS422, 5m cable	**Description:** Compact, reliable and cost-efficient. The SHM 30 snow depth sensor reliably determines snow depths up to 10 meter within seconds and with Millimeter precision. Based on an opto-electronic distance sensor emitting visible eye-safe laser light, the SHM 30 allows probing distances up to 30 meter to detect the surface level. Unlike snow depth sensors using ultrasonic methods, the laser distance measuring technique is Independent of temperature changes. Even if the measuring process is impaired by precipitation, the SHM 30 reliably finds the snow surface due to its mode of operation. Further evaluation of the transmitted signal strength allows discrimination between snow and grass. **Supplementary description:** A compact laser sensor with RS422, 5m cable **Special features:** • Determination of snow depth over long distances using opto-electronic

		measuring technique • MTBF (meantime between failure) >40.000h (duty cycle 30% 3 measurements/min) • The build in heater does mainly keep the build in laser diode in specs to ensure a long lifetime • Very compact and weatherproof housing • Efficient background light suppression • Allows discrimination between snow and grass Download - product data sheet
6.	 8366.U50 Visibility sensor VS20-UMB • Measurement of Visibility • 10...2000m measurement range, Calibration kit (optional), Forward light scattering technique	**Supplementary description:** Measures visibility up to 2000m Ideal for road traffic applications Analog output 4...20 mA Digital UMB protocol (RS485 interface) Calibration device available (optional) **Special features:** • 10...2000m measurement range • Calibration kit (optional) • Forward light scattering technique Download - product data sheet
7.	 8366.U60 Visibility sensor VS20-UMB • Measurement of Visibility • 10...3000m measurement range, Calibration kit (optional), Forward light scattering technique	**Supplementary description:** Measures visibility up to 3000 m Ideal for road traffic applications Analog output 4...20 mA Digital UMB protocol (RS485 interface) Calibration device available (optional) **Special features:** • 10...3000m measurement range • Calibration kit (optional) • Forward light scattering technique Download - product data sheet
8.	 8365.80 Snow depth sensor SR50A without heating Measurement of Snow height For snow and water depth measurements	**Description:** The SR50A was designed to meet the stringent requirements of measuring snow depths and uses a multiple echo processing algorithm to help ensure measurement reliability. The SR50A is compatible with all current Campbell Scientifi c dataloggers as well as many other data acquisition systems. An air temperature measurement is required to correct for variations of the speed of sound in air. Either the SR50AT or an existing on-site air temperature sensor can be used. The SR50A is available with a heater option for locations where rime ice is a problem. The SR50AT is an identical unit to the SR50A with the addition of an external temperature sensor. The temperature sensor comes with a standard ten foot lead and requires a 6-plate gill radiation shield. The SR50AT will Output a temperature corrected distance reading, eliminating the need for further post-processing, as well as a separate temperature reading. An optional stainless steel chassis is available in sensor models SR50A-316SS and SR50AT-316SS. The stainless steel chassis is meant to operate in environments where corrosion is a concern (i.e. marine). **Supplementary description:** For snow and water depth measurements **Special features:** • Rugged enough for harsh environments • User-selectable options for output

		• Uses a multiple echo processing algorithm to help ensure measurement reliability • Compatible with most Campbell Scientific dataloggers Download - product data sheet
9.	 8365.85 Snow depth sensor SR50AH with heating Measurement of Snow height For snow and water depth measurements	**Description:** The SR50A was designed to meet the stringent requirements of measuring snow depths and uses a multiple echo processing algorithm to help ensure measurement reliability. The SR50A is compatible with all current Campbell Scientifi c dataloggers as well as many other data acquisition systems. An air temperature measurement is required to correct for variations of the speed of sound in air. Either the SR50AT or an existing on-site air temperature sensor can be used. The SR50A is available with a heater option for locations where rime ice is a problem. The SR50AT is an identical unit to the SR50A with the addition of an external temperature sensor. The temperature sensor comes with a standard ten foot lead and requires a 6-plate gill radiation shield. The SR50AT will Output a temperature corrected distance reading, eliminating the need for further post-processing, as well as a separate temperature reading. An optional stainless steel chassis is available in sensor models SR50A-316SS and SR50AT-316SS. The stainless steel chassis is meant to operate in environments where corrosion is a concern (i.e. marine). **Supplementary description:** For snow and water depth measurements **Special features:** • Rugged enough for harsh environments • User-selectable options for output • Uses a multiple echo processing algorithm to help ensure measurement reliability • Compatible with most Campbell Scientific dataloggers Download - product data sheet
10.	 8365.90 Snow Water Equivalent Sensor Measurement of Snow height Non-contact measurement	**Description:** The CS725 measures snow water equivalent (SWE) by passively detecting the change in naturally occuring electromagnetic energy from the ground after it passes through snow cover. The measurement area of the CS725 is 50-100 square meters, an excellent replacement sensor for the traditional snow pillow and snow scale. The sensor is powered using 12VDC and can either operate in a standalone mode, or be easily interfaced to a datalogger. With the addition of a wireless communication option, SWE values can be transmitted in real-time from remote sites. **Supplementary description:** Non-contact measurement **Special features:** • Does not cause the melt of light snow (as with a snow pillow) • Greatly reduces need for site visits • Not affected by snow bridging • No site preparation or earthworks required for set-up 5-10 times the measurement area of the nearest competitor • No fencing required (sensor typically mounted 3m above surface) • Will not cause snow drifting • 7 year maintenance free • No antifreeze chemicals used (i.e. glycol) Download - product data sheet

11.	 8366.20 Visibility sensor Measurement of Visibility 0..16 km measurement range, Optional simulation device, Forward Scatter process	**Description:** Fog and visibility measurement on motorways. Measurement of the impairment to vision caused by fog, rain, snow, dust and smoke. **Supplementary description:** Measures visibility under all conditions Simple installation and maintenance Forward Scatter measurement principle The SENTRY visibility sensor measures visibility up to 16 km. A measurement range up to 3,000 meters is usually sufficient for road traffic applications. The visibility sensor is connected to the OPUS-GMA module via the 4..20 mA interface. A device that simulates a defined visibility is available as an option. **Special features:** • 0..16 km measurement range • Optional simulation device • Forward Scatter process
12.	 8350.SIM CHM Simulator Measurement of Cloud height The Lufft CHM Simulator simulates the cloud height for the ceilometer CHM 15k in order to check its measurement accuracy.	**Description:** The Lufft CHM Simulator simulates the cloud height for the ceilometer CHM 15k in order to check its measurement accuracy. The simulator has to be deployed on the top of the ceilometer covering the laser inlet. One of the five LEDs receives the laser impulse emitted by the ceilometer and, after a certain time has passed, sends an optical signal back to the ceilometer simulating it via the 4 other LEDs. The time span between receiving and sending the signal as well as the time of flight of the return signal going back to the ceilometer shall correlate with a signal of an actual cloud. The characteristics of this simulated cloud can be determined by using the included CHM Simulator Application. Using the app, which shall be installed on a standard android based tablet, the user can select the cloud height and depth according to its preference. The app communicates via Bluetooth with the CHM Simulator. Furthermore, the strength of the d.c. light/background light can be chosen in order to check how the ceilometer can manage disturbances caused by background light. The results of this ceilometer-check can be read out directly at the ceilometer instrument. Some of the results are also given out by the app (laser frequency) or can be accessed via the embedded UMB protocol.
13.	 8350.SW CHM Data Viewer - Software The CHM Data Viewer is a special visualization software with an easy to use interface. The software allows a representation	**Description:** The CHM Data Viewer is a special visualization software with an easy to use interface. The software allows a representation of the data, which are measured with the Laserceilometer CHM 15k. The data is previously stored as raw data in NetCDF format and can be visualized and saved as an image file with the Data Viewer.