USH-9

Ultrasonic level sensor

Continuous water-level and snow depth measurements are very important in water resource management and avalanche risk forecast.

The USH-9 is a continuous measurement device for the contact-free determination of water level and snow depth. It measures the transit time of an ultrasonic signal between a variable surface and the USH-9 sensor, and translates it to a level or distance. An integrated processor compensates the detected signal for temperature and filters interfering reflections of precipitation within the measurement path.

The USH-9 sensor contains an additional feature to sense precipitation and thus offers the option to detect the settling of snow. Therefore, the sensor may also be implemented in observation systems that monitor road conditions.

Versions

Art	Version
21069	USH-9 standard version including sensor mount (Art 21068), sensor cable (Art 20789) and USB to RS-485 converter cable (Art 21150)
20233	USH-9 standard version excl. sensor mount and cables

Scope of delivery

Item
USH-9 sensor
Manual on USB stick

Accessories

Art	Accessory
21068	Mast mount for USH-9
20789	MAIN sensor cable SQ/USH-9, 10 m
20791	MAIN sensor cable SQ/USH-9, 20 m
20488	Commander software V1.0
21150	USB to RS485 isolated converter cable
20968	RS-485 (RTU) Modbus - PROFIBUS converter for RQ/SQ/SSG/USH/IDS
20971	Bundle Modbus - PROFIBUS Konverter for RQ/SQ/SSG/USH/IDS, incl. connector and cable 30 cm
20986	RS-485 (RTU) Modbus - CANOpen converter for RQ/SQ/SSG/USH/IDS
20987	RS-485 (RTU) Modbus - PROFINET converter for RQ/SQ/SSG/USH/IDS
20996	RS-485 (RTU) Modbus - EtherCat converter for RQ/SQ/SSG/USH/IDS

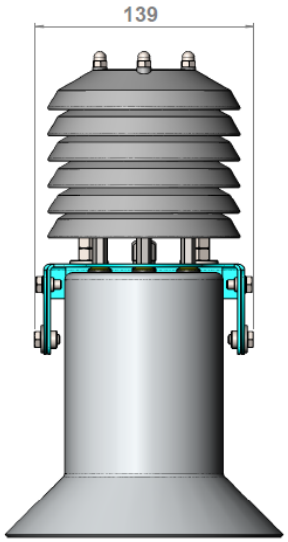
Specifications

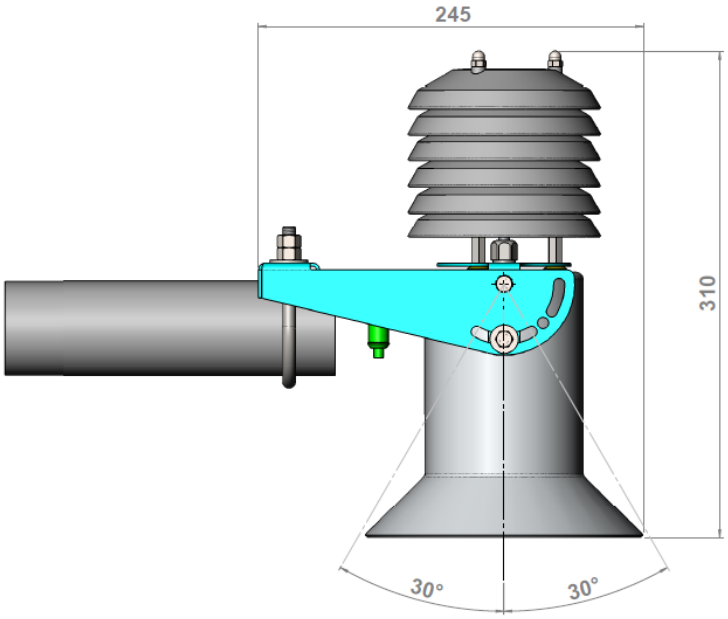
Physical and environmental	
Power supply	9...28 VDC; Reverse voltage protection, overvoltage protection
Power consumption at 12 VDC	Sleep mode: <0.4 mA Active measurement: typically 40 mA (max. 300 mA for 0.05 s) Shield heating (optional): 1 A
Outputs	RS-485 ASCII / Modbus RTU SDI-12 2 Analog outputs 4...20 mA (14 bit, max. load 250 Ω)
Operating temperature	-40...60 °C (-40...140 °F)
Storage temperature	-40...60 °C (-40...140 °F)
Environmental humidity	0...100 %rH
Protection rating	IP 64
Lightning protection	Integrated protection against indirect lightning with a discharge capacity of 0.6 kV peak
Housing material	Anodized aluminium
Mounting bracket	Ø32...60 mm
Size Ø x H	Ø180 x 320 mm
Weight	1.2 kg

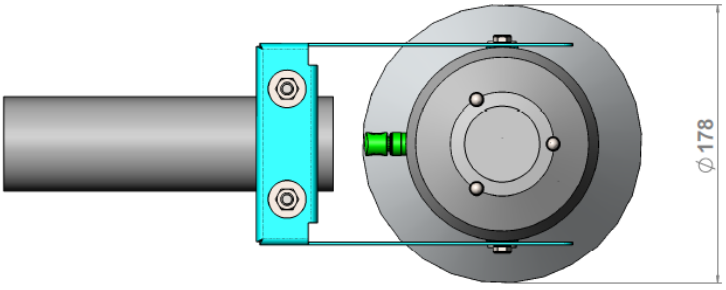
Snow depth measurement	
Measurement range	0.7...10 m
Near blanking distance	0.7 m
Accuracy	max. ± 1cm; typically 0.1% FS
Resolution	1 mm
Non-linearity	≤0.15%

Measurement duration	2…20 s
Measurement interval	20 s…3 h
Measurement principle	Ultrasonic (frequency 50 kHz)
Beam aperture	12°

Temperature measurement	
Temperature sensor	Pt1000 with radiation shield
Measurement range	-40…60 °C (-40…140 °F)
Accuracy	0.3 °C
Resolution	0.01 °C







LOMBARD & MAROZZINI

Via Alberico Albricci 9/11 - 00135 Roma
Tel: +39 06 36301456 / 06 3293698
Email: info@lombardemarozzini.com
www.lombardemarozzini.com