- RingID:
  - Counts from 0.
  - All channels are sorted in descending order of vertical angles, corresponding to the channel numbers in the SDK for point cloud data analysis.

Each channel has an intrinsic angle offset, both horizontally and vertically. The offset angles are recorded in this lidar unit's angle correction file (see Section A.2 Angle correction file).

1.4 Specifications

SENSOR

Scanning method	1-D rotating mirror (hybrid solid-state)
Number of channels	116
Instrumented range	0.5 to 198 m
Ranging capability	1 to 200 m (at 10% reflectivity)
Ranging accuracy	±5 cm (typical)
Ranging precision	3 cm (1σ)
FOV (H × V)	120° × 18.3° (-12.4° to +5.9°)
ROI (H × V)	120° × 8.8° (-4.1° to +4.7°)
Horizontal resolution	0.08° (10 Hz)
Vertical resolution	**ROI** 0.1° **Non-ROI** Approx. 0.2°
Frame rate	10 Hz
Return mode	**Single Return:** Last/Strongest (default)

MECHANICAL/ELECTRICAL/OPERATIONAL

Wavelength	905 nm
Laser class	Class 1 Eye Safe
Ingress protection	IP6K7 & IP6K9K
Dimensions ①	102 × 102 × 30 (WDH, mm)
Rated voltage range ②	DC 9 to 16 V
Power consumption ③	10 W
Operating temperature ④	-40°C to 85°C
Storage temperature ④	-40°C to 105°C
Weight ①	355 g

DATA I/O

Data transmission	Automotive Ethernet, 100BASE-T1, slave mode
Measurements	Distance, azimuth angle, and reflectivity
Valid point rate ⑤	**Single Return** 1 740 000 points/sec
Point cloud data rate ⑥	**Single Return** 64.6/71.7 Mbps (avg/peak)
Total data rate ⑦	**Single Return** 66.0/73.3 Mbps (avg/peak)
Clock source	gPTP (802.1AS AUTOSAR)
PTP clock accuracy	⩽10 µs
PTP clock drift ⑧	⩽50 µs/s

Specifications are subject to change. Please refer to the latest version of this manual.

Notes to specifications

① **Dimensions and weight**	• May be different for customized models. • The mechanical drawings and data exclusively provided for customized models shall prevail.
② **Rated voltage range**	Nominal voltage: 12 V
③ **Power consumption**	• Typical value, not including accessories such as the connection box. • The external power supply should be able to provide at least 36 W.
④ **Operating temperature and storage temperature**	Both refer to ambient air temperature. • During operation, the lidar's surface and internal temperatures may exceed the ambient air temperature. • To obtain the real-time temperatures of the lidar's internal modules, refer to Get Lidar Status (0x09) in the TCP API Reference Manual.
⑤ **Valid point rate**	• Defined as the point cloud data points (number of returns) generated per second. • In **Single Return Mode**: ◦ Given: horizontal FOV (120°), horizontal resolution (0.08° at 10 Hz), number of channels (116), and frame rate (10 Hz). ◦ At 10 Hz, each channel generates 120/0.08 = 1500 points per frame; all channels generate 1500 × 116 = 174 000 points per frame and 1 740 000 points (10 frames) per second. • The actual horizontal FOV of each mirror surface is slightly larger than 120°, so the actual point rate is slightly more than the valid point rate.
⑥ **Point cloud data rate**	• In **Single Return Mode**: ◦ Given: horizontal FOV (120°), horizontal resolution (0.08° at 10 Hz), frame rate (10 Hz), size of a Point Cloud Data Packet (1076 bytes) and the number of blocks in each packet (2) ◦ At 10 Hz, one return is generated for each 0.08° azimuth; thus 1500 (120°/0.08°) returns for each frame and 15 000 returns (10 frames) per second.

	◦ Each Point Cloud Data Packet contains two blocks, and each block stores one return. ◦ Therefore, 15 000/2 = 7500 packets are transmitted per second, totaling 7500 × 1076 bytes. ◦ With unit conversion, point cloud average data rate = 7500 × 1076 × 8 × 1E-6 = 64.6 Mbps. • Because the duty cycle for point cloud data transmission is approximately 90%, the peak data rate is approximately 1.11 times the average data rate in the table.
⑦ **Total data rate**	Include additional Ethernet transmission overhead in the calculation.
⑧ **PTP clock drift**	Defined as the drift at a constant temperature after the lidar (slave clock) loses connection to the PTP master.