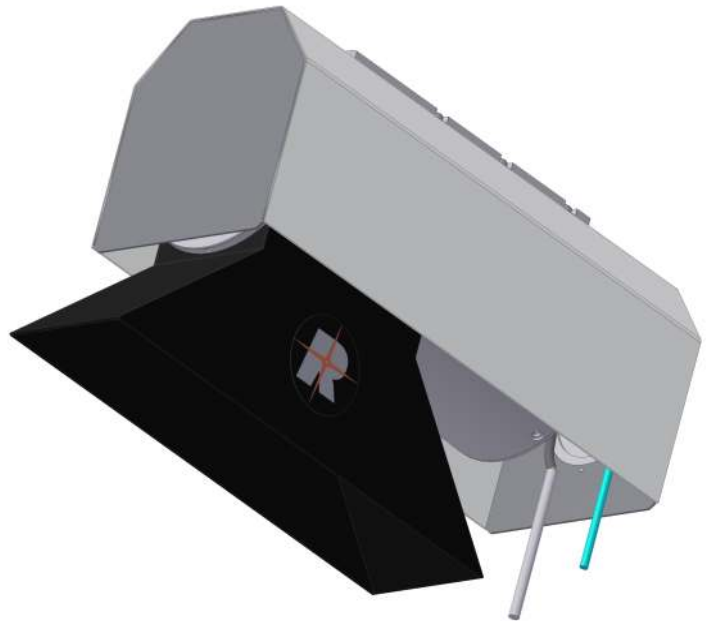


Industrial 2D LASER SCANNER LMS-Q120ii

The *RIEGL* LMS-Q120ii 2D - laser scanner provides accurate non-contact line scanning using a narrow infrared laser beam. The instrument makes use of the precise time-of-flight laser range measurement principle and fast line scanning by means of a high-speed opto-mechanical scan mechanism, providing fully linear, unidirectional and parallel scan lines.



The rugged overall system design makes the *RIEGL* LMS-Q120ii exceptionally well suited for installation in harsh industrial environments and is specially designed for long-term operation without the necessity of frequent maintenance. The instrument needs only one power supply and provides line scan data via the integrated TCP/IP Ethernet interface. The binary data stream can easily be post-processed by any user-designed software using the available software library.

- **Maximum range 120 m @ only 10 % target reflectivity**
- **Ranging accuracy 20 mm**
- **Data rates up to 10 000 meas. / sec.**
- **Scanning rates up to 100 scans / sec.**
- **Scan angle range 80°**
- **Perfectly linear scan**
- **Rugged IP64 housing**
- **Integrated TCP/IP Ethernet interface**

Typical applications include

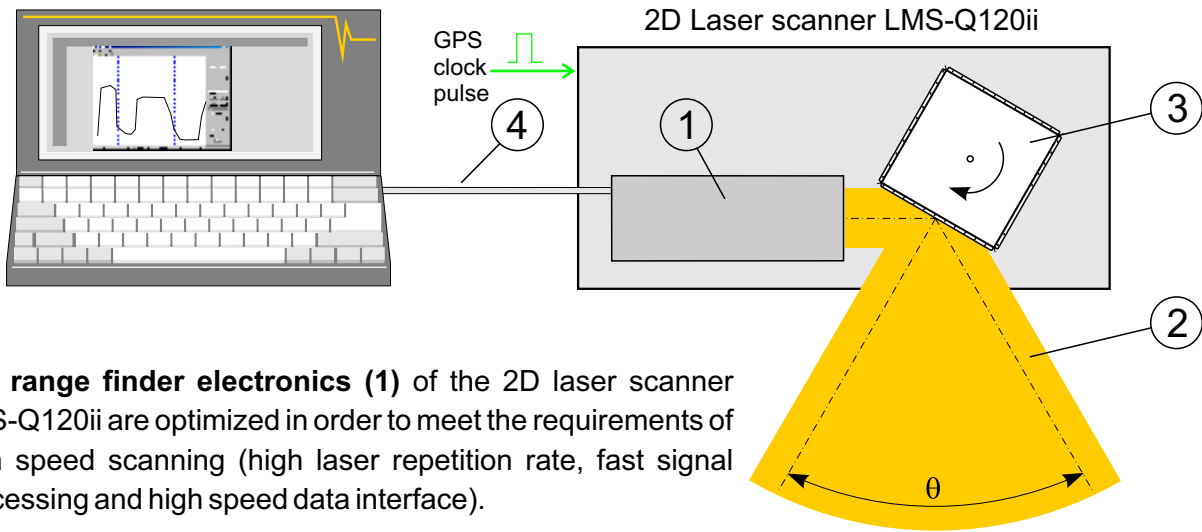
- **Process monitoring and automation**
- **Measurement of bulk material**
- **Industrial profile measurement**

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LASER MEASUREMENT SYSTEMS

Principle of Operation RIEGL LMS-Q120ii

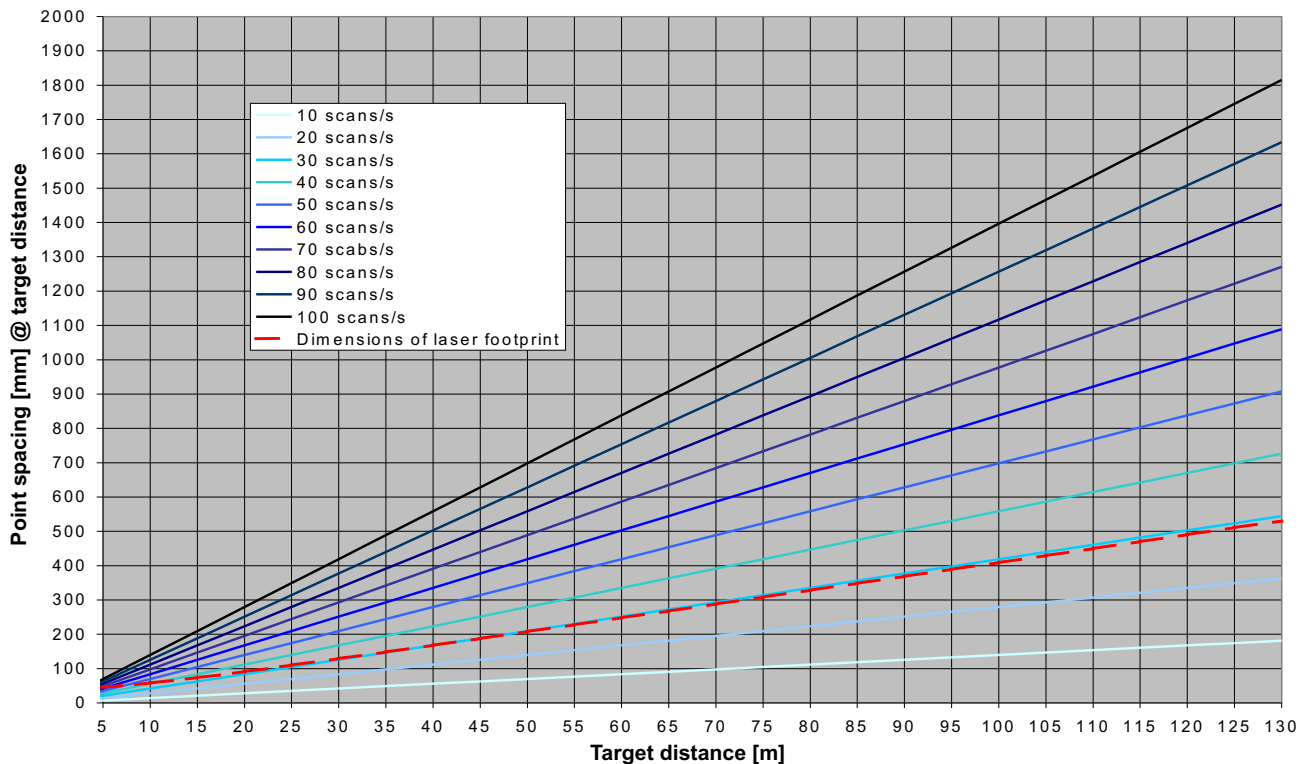


The **range finder electronics (1)** of the 2D laser scanner LMS-Q120ii are optimized in order to meet the requirements of high speed scanning (high laser repetition rate, fast signal processing and high speed data interface).

The angular deflection of the **laser beam (2)** is realized by a **rotating polygon (3)** with a number of reflective surfaces. It continuously rotates at an adjustable speed to provide unidirectional scans within an angular range of $\theta = 80^\circ$.

For every measurement **RANGE**, **SCAN ANGLE**, **SIGNAL AMPLITUDE**, and optionally a **TIMESTAMP** are provided via a **TCP/IP Ethernet interface (4)**. The LMS-Q120ii is designed to accept a TTL-signal (i.e., 1 pulse per second) from, e.g., a GPS receiver, to reset an internal timer, which is used to timestamp every measurement.

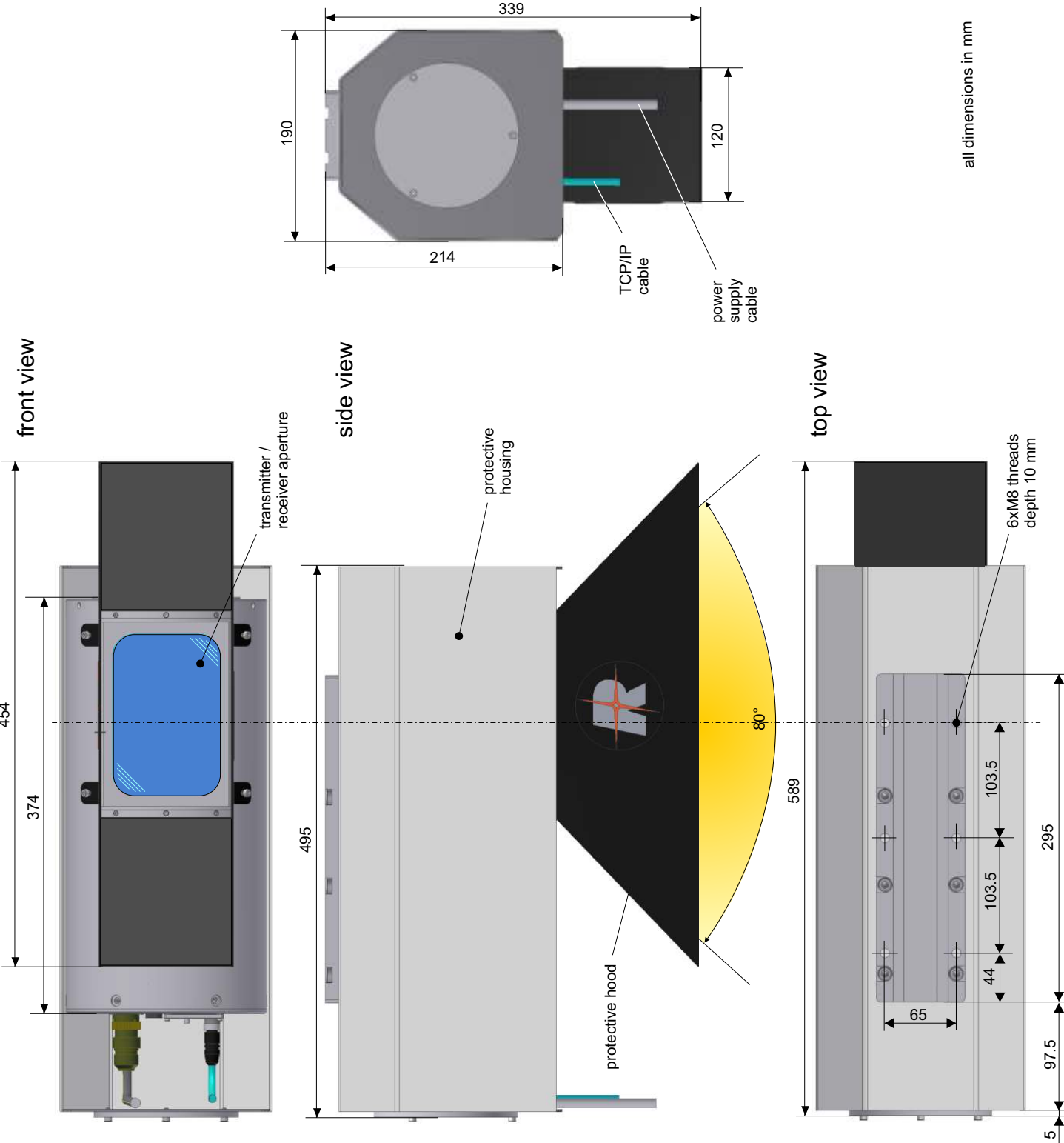
Point Spacing vs. Target Distance



- Overlapping laser footprints < 30 scans/sec.
- Laser footprints side by side at 30 scans/sec.
- Gaps between laser footprints > 30 scans/sec.

Dimensional Drawings of RIEGL LMS-Q120ii

with protective hood and protective housing



Technical Data of *RIEGL* LMS-Q120ii

Rangefinder Performance¹⁾

Laser Product Classification according to IEC60825-1:1993+A1:1997+A2:2001

The following clause applies for instruments delivered into the United States: Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001.



Maximum measurement range for natural targets, reflectivity 10 % ²⁾	up to 120 m
Minimum range	2 m
Accuracy ^{3) 5)}	20 mm
Precision ^{4) 5)}	15 mm
Laser Pulse Repetition Rate	30 000 Hz
Effective measurement rate	10 000 measurements/sec.
Laser wavelength	near infrared
Laser beam divergence ⁶⁾	4 mrad x 2.7 mrad

- 1) First or last target mode selectable. Maximum measurement range and accuracy is defined below for a visibility >1km, overcast sky or night.
- 2) Diffuse reflectivity in excess of 10%. Beam incidence perpendicular to target. Size in excess of laser beam diameter. Maximum measurement range for an extended flat target of 10 % reflectivity will drop to 70 m for an angle of incidence of 45°.
- 3) Accuracy is the degree of conformity of a measured quantity to its actual (true) value.
- 4) Precision, also called reproducibility or repeatability, is the degree to which further measurements show the same result.
- 5) One sigma @ 50 m range under *RIEGL* test conditions.
- 6) 1 mrad correspond to 10 cm increase of beam width per 100 m of range.

Scanner Performance

Scan angle range ⁷⁾	± 40° = 80° total
Scanning mechanism	rotating polygon mirror
Scan speed	5 to 100 lines / sec
Angular step width ⁷⁾ between consecutive laser shots	0.04°
Angle measurement resolution	0.01°
Internal Sync Timer	Option for GPS-synchronized time stamping of scan data
Scan Sync	Option for synchronizing scan lines to external timing signal

7) Scanning parameters can be set via TCP/IP configuration interface.

General technical data

Data interface	TCP/IP Ethernet, 10/100 MBit/sec		
Inclination sensor interface	to optional external inclination sensors		
Input voltage range	18 - 32 V DC, 24 V DC nominal		
Current consumption	approx. 2 A @ 24 V DC approx. 3.5 A with internal heater		
Main dimensions	180 x 374 mm (diameter x length)	497 x 180 x 324 mm (L x W x H) with protective hood	589 x 190 x 339 mm (L x W x H) with protective housing & hood
Weight	approx. 7 kg	approx. 8 kg with protective hood	approx. 13 kg with protective housing & hood
Temperature range	-20°C up to +50°C (operation) -20°C up to +60°C (storage)		
Protection class	IP64		
Mounting	M8 steel thread inserts		

Information contained herein is believed to be accurate and reliable. However, no responsibility is assumed by *RIEGL* for its use. Technical data are subject to change without notice. Preliminary data sheet, LMS-Q120ii/1, 06/03/2009



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