2D LASER SCANNER
LMS-Q20

The *RIEGL* LMS-Q20 2D laser scanner provides accurate non-contact profile measurements. 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 and unidirectional scan lines.

The rugged overall system design makes the *RIEGL* LMS-Q20 exceptionally well suited for installation even in very harsh industrial environments, and the compactness of the housing allows installation under limited space conditions. 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 user-designed software using the available software library RiScanLib.

- ***Maximum range 20 m @ only 10 % target reflectivity***
- ***Data rates up to 11 250 meas. / sec***
- ***Scanning rates up to 100 scans / sec***
- ***Scanning range 90°***
- ***Perfectly linear scan***
- ***Rugged IP64 housing***
- ***Integrated TCP/IP Ethernet interface***

Typical applications include

- ***Measurement of bulk material on conveyor belts***
- ***Industrial profile measurement***
- ***Surveillance***

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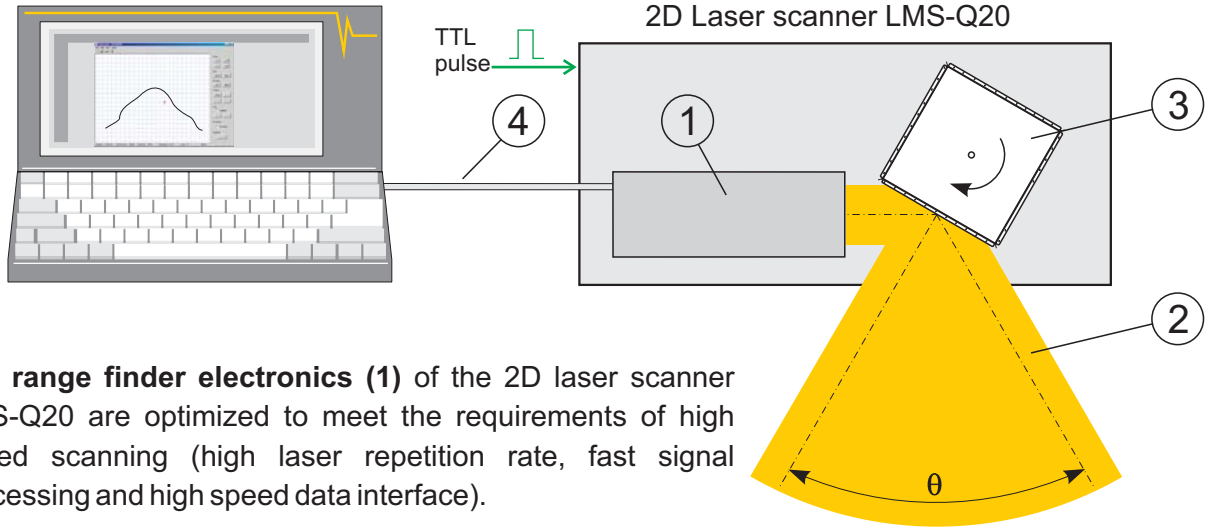
www.riegl.com

RIEGL
LASER MEASUREMENT SYSTEMS

Principle of Operation *RIEGL* LMS-Q20

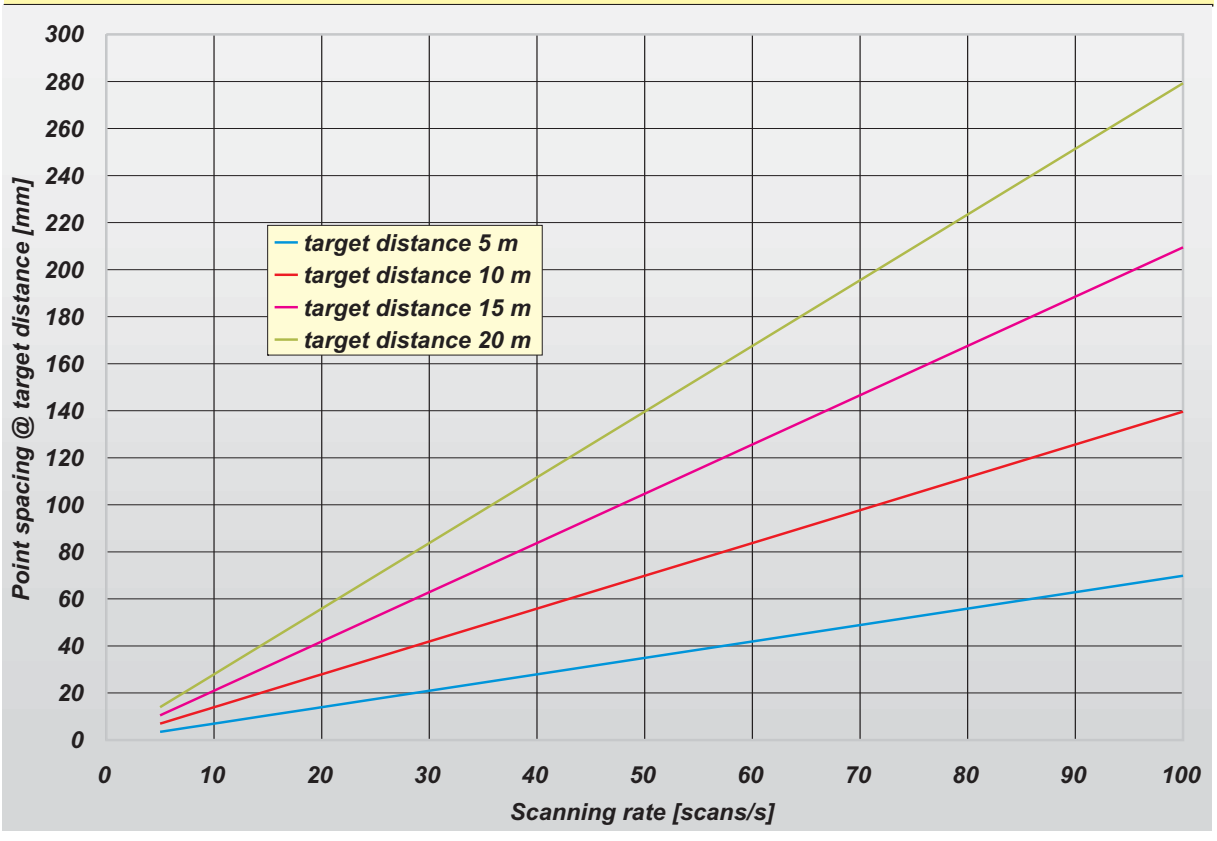


The **range finder electronics (1)** of the 2D laser scanner LMS-Q20 are optimized to meet the requirements of high speed scanning (high laser repetition rate, fast signal processing and high speed data interface).

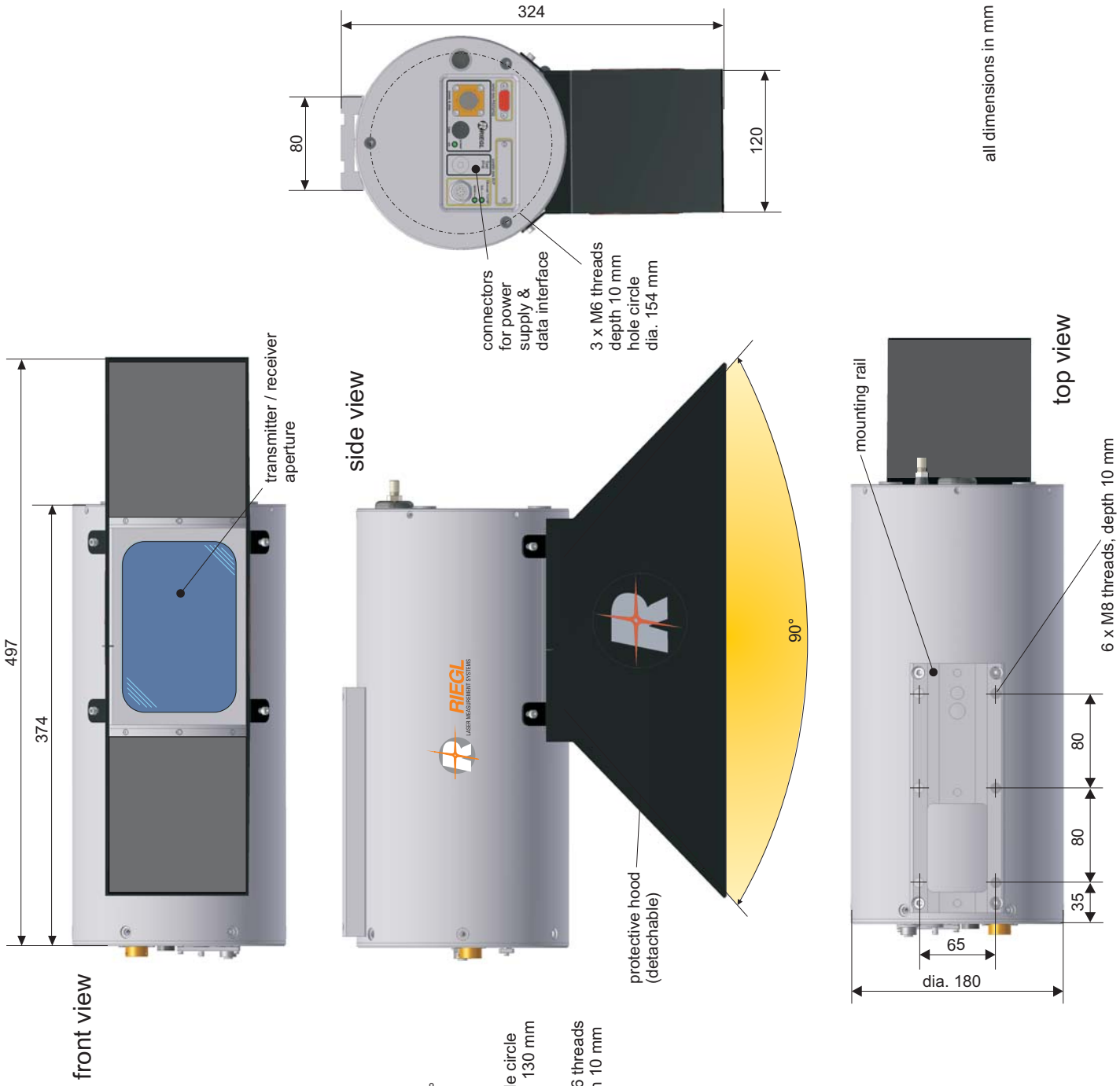
The angular deflection of the **laser beam (2)** is realized by a **rotating polygon (3)** with a number of reflective surfaces. It continuously rotates at an adjustable speed to provide unidirectional scans within an angular range of $\theta = 90°$.

For every measurement RANGE, SCAN ANGLE, SIGNAL AMPLITUDE, and TIMER are provided via a **TCP/IP Ethernet interface (4).** The LMS-Q20 is designed to accept an external TTL pulse to reset an internal timer, which is used to timestamp every measurement.

Point Spacing vs. Scanning Rate



Dimensional Drawings of *RIEGL* LMS-Q20



Technical Data of *RIEGL* LMS-Q20

Rangefinder performance

Laser product classification according to IEC60825-1:2007 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 June 24, 2007.	 laser class 1
Maximum measurement range [1]	
for natural targets, ρ ≥ 10 %	≥ 20 m
for natural targets, ρ ≥ 5 %	≥ 10 m
Minimum range	0.5 m
Accuracy [2) 4)]	16 mm
Precision [3) 4)]	8 mm
Effective measurement rate	11 250 measurements/sec.
Laser wavelength	near infrared
Laser beam dimensions	30 x 35 mm @ 5 m, 60 x 70 mm @ 20 m

1) The following conditions are assumed: target is larger than footprint of laser beam, perpendicular angle of incidence, average ambient brightness
2) Accuracy is the degree of conformity of a measured quantity to its actual (true) value.
3) Precision, also called reproducibility or repeatability, is the degree to which further measurements show the same result.
4) One sigma @ 10 m range under *RIEGL* test conditions.

Scanner performance

Scan angle range [5)]	± 45° = 90° total
Scanning mechanism	rotating mirror
Scan speed	5 to 100 scans / sec
Angular step width Δ [5)] between consecutive laser shots	Δ 0.04°
Angle measurement resolution	0.01°

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

General technical data

Data interface:	TCP/IP Ethernet, 10/100 MBit/sec
Input voltage range	18 - 32 V DC, 24 V DC nominal
Current consumption	approx. 2 A @ 24 V DC approx. 3.3 A with internal heater
Main dimensions	180 x 374 mm (diameter x length) (without protective hood)
Weight	approx. 7 kg
Temperature range	-20°C up to +50°C (operation) -20°C up to +60°C (storage)
Protection class	IP64
Mounting	M6 and M8 steel thread inserts

Data Sheet LMS-Q20, 28/07/2010

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LASER MEASUREMENT SYSTEMS
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