The RIEGL VZ-400i is a 3D Laser Scanning System which combines an innovative new processing architecture and internet connectivity with RIEGL’s latest Laser Scanning Engine technology.

This real-time data flow is enabled through dual processing platforms: a dedicated processing system for data acquisition, waveform processing and system operations, and a second processing platform which enables real-time data registration, geo-referencing, filtering and analysis to be executed simultaneously. The VZ-400i harnesses this power by streaming it in real-time via the integrated LTE 3G/4G modem, WiFi, and Ethernet communications hardware.

With its integrated gyroscope, accelerometer, compass and barometer, the VZ-400i’s 1200kHz pulse repetition rate can be fully utilized in nearly any environment and orientation. The system provides a high range of flexibility by supporting numerous external peripherals and accessories via its integrated USB Ports and stable mounting points.

Typical applications include:
- As-Built Surveying
- Architecture & Facade Measurement
- Archaeology & Cultural Heritage Documentation
- City Modelling
- Tunnel Surveying
- Civil Engineering
- Forestry
- Research
- Monitoring

visit our website www.riegl.com
Operating Elements and Connectors RIEGL VZ®-400i

Communication and Interfaces

- LAN port 10/100/1000 MBit/sec within base
- integrated WLAN interface with high-gain MIMO antennas
- integrated multi-mode cellular module with MIMO LTE 4G/3G antennas
- GigE and USB 3.0 for connecting an external digital camera
- connector for GNSS antenna
- two external power supply ports
- connector for external GPS synchronization pulse (1PPS)
- connector for external GNSS receiver

Scan Data Storage

- internal 256 GBytes SSD (Solid State Disc)
- external storage devices (SDXC cards up to 512 GBytes or USB 3.0 flash drives)
The following conditions are assumed:

- flat target larger than footprint of the laser beam
- perpendicular angle of incidence
- average brightness
- ambiguity resolved by post processing with RiMTA TLS

MTA zones:

- **MTA 1**: no ambiguity / 1 pulse „in the air“
- **MTA 2**: 2 pulses „in the air“
Technical Data RIEGL VZ®-400i

Laser Product Classification

Class 1 Laser Product 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.

Range Performance

<table>
<thead>
<tr>
<th>Laser Pulse Repetition Rate PRR (peak) 2)</th>
<th>100 kHz</th>
<th>300 kHz</th>
<th>600 kHz</th>
<th>1200 kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Measurement Rate (meas./sec) 3)</td>
<td>42,000</td>
<td>125,000</td>
<td>250,000</td>
<td>500,000</td>
</tr>
<tr>
<td>Max. Measurement Range  4)</td>
<td>800 m</td>
<td>480 m</td>
<td>350 m</td>
<td>250 m</td>
</tr>
<tr>
<td>natural targets p ≥ 90 %</td>
<td>400 m</td>
<td>230 m</td>
<td>160 m</td>
<td>120 m</td>
</tr>
<tr>
<td>natural targets p ≥ 20 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Number of Targets per Pulse</td>
<td>15</td>
<td>15</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

Accuracy 5) 8)  
Precision 7) 6)
Minimum Range 1.5 m
Laser Wavelength near infrared
Laser Beam Divergence 6)

Scanner Performance

- Vertical (Line) Scan total: 100° (+60° / -40°)
  - rotating multi-facet mirror
  - 3 lines/sec to 240 lines/sec
  - 0.0007° ≤ Δ θ ≤ 0.6° 9)
  - better 0.0007° (2.5 arcsec)

- Horizontal (Frame) Scan total: 360°
  - rotating head
  - 1/sec to 150/sec 10)
  - 0.0015° ≤ Δ ϕ ≤ 0.62° 9)
  - better 0.0005° (1.8 arcsec)

- Integrated 3-axis accelerometer, 3-axis gyroscope, 3-axis magnetometer (compass), barometer
- Integrated GPS, GLONASS, Beidou
- Integrated orientation sensors (MEMS) 3-axis accelerometer, 3-axis gyroscope, 3-axis magnetometer (compass), barometer

General Technical Data

- Power Supply Input Voltage 11) 32 V DC
- Power Consumption typ. 58 W (max. 80 W)
- Weight approx. 9.7 kg (with antennas)
- Humidity max. 80 % non condensing @ +31°C
- Temperature Range Storage Operation Low Temperature Operation 11)
  - -10°C up to +50°C
  - 0°C up to +40°C: standard operation
  - -20°C: continuous scanning operation if instrument is powered on while internal temperature is at or above 0°C and still air
  - -40°C: scanning operation for about 20 minutes if instrument is powered on while internal temperature is at or above 15°C and still air

1) With online waveform processing.
2) Rounded values.
3) Typical values for average conditions. Maximum range is specified for flat targets with size in excess of the laser beam diameter, perpendicular angle of incidence, and for atmospheric visibility of 23 km. In bright sunlight, the max. range is shorter than under overcast sky.
4) Ambiguity of stationarily acquired scan data to be resolved by post-processing with RiMTA TLS.
5) Accuracy is the degree of conformity of a measured quantity to its actual (true) value.
6) Precision, also called reproducibility or repeatability, is the degree to which further measurements show the same result.
7) One sigma (σ) 100 m range under RIEGL test conditions.
8) Measured at the 1/e 2 points. 0.35 mrad corresponds to an increase of 35 mm of beam diameter per 100 m distance.
9) Selectable.
10) Frame scan can be disabled, providing 2D scanner operation.
11) Insulating the scanner with appropriate material will enable operation at even lower temperatures.

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Preliminary Data Sheet, RIEGL VZ-400i, 2016-04-28

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.