

RiSOLVE

combined with the

RIEGL VZ-400i



Combined with the one-touch workflow of the RIEGL V-Line Terrestrial Laser Scanners, RiSOLVE enables fully automatic registration and colorization of scan data. This streamlined process is the fastest solution to acquire, register, and colorize outdoor 3D scan data.



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The Ultimate 3D Scene Capture Solution

Typical Applications

- Accident Investigation
- Architecture
- Rapid Deployment Scene Capture
- Emergency Management Planning
- Local Area Mapping
- Utility Asset Mapping
- City Modeling
- Archaeology



Scan this QR code to watch the RiSOLVE video.

www.riegl.com



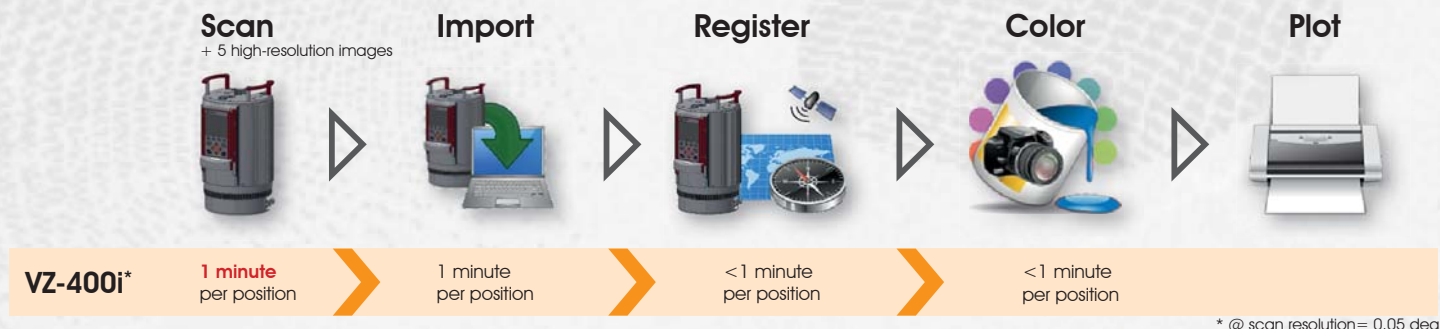
RIEGL LMS GmbH, Austria

RIEGL USA Inc.

RIEGL Japan Ltd.

RIEGL China Ltd.

RiSOLVE Workflow



Main Features

- fully automatic registration
- fastest true-color scanning workflow
- convenient calibration, registration, and filtering tools
- one-touch solutions
- 2D measurable PDF plots
- simple data import and export
- photorealistic 3D scans

Automatic Registration Methods

- Direct Georeferencing
- GNSS Backsighting
- Backsighting
- Automatic Coarse Registration (ACR)

RiSOLVE in Practice



Dave Foster, one of the first working with RiSOLVE and the RIEGL VZ-400 laser scanner as Senior Collision Investigator UK Police, relays his real-world experience, "Results to date suggest a registration time of around 1 minute per scan position, or even slightly faster, with minimal button pressing. Think of this workflow: Import scan data >press registration >put kettle on >have biscuit >registration completed >apply color >finish cup of tea >produce scale plan from scan data."

Foster continues: "I'm sure there are other tasks which could easily be completed as the registration/coloring process is under way, but that is the point; I'm doing other tasks and processing the data, without having to work on it directly. The relative simplicity of this workflow will make broader deployment of laser scanning in the field more acceptable."



Reduction of Costs & Time Exposure

Metropolitan Police UK is working with RiSOLVE and RIEGL VZ-400 laser scanners since 2012. The instruments and the software have made a big impact on the investigative process for UK police officers who have made a significant investment in the technology. A year after the introduction of the scanners they conducted an audit to determine real-world performance of the systems. The audit found that on scenes where VZ-400s were utilized, roads were opened an average of 44 minutes earlier than with traditional technologies. Even in forensics, time is money! In 2011 the UK Department for Transportation estimated that each hour of road closure caused economic losses of £50,000.* As police forces around the globe test and validate the experience of the UK CLEAR project, they are concluding similar findings: **The RIEGL solution is proven, effective and cost efficient.**

* Source: Review of Investigation and Closure Procedures for Motorway Incidents

Our Motivation - Saving Time in the Field



After serious road traffic collisions it is standard practice to accurately document forensic evidence in an objective and timely manner. This evidence recovery process can be stressful and time-consuming, especially in conditions where hundreds or thousands of vehicles are lined up and waiting.

The software is designed to utilize all of the measurement inputs from the *RIEGL* VZ-Line scanner to enable a fully automatic workflow. Utilizing technological know how and real-world feedback from investigation officers and field experts, *RIEGL* has produced a one button solution for data processing. RiSOLVE accurately and automatically combines, adjusts, and colorizes the data collected in the field. The final results are a detailed point cloud and easy to use plot features which enable production of accurately scaled orthographic images exportable as measurable PDFs, TIFFs, JPGs and bitmaps.

The Output of RiSOLVE is a photorealistic 3D scan.



Leading Technology in Software and Hardware

RiSOLVE - Operating Principle

RiSOLVE takes the complexity out of the registration process by utilizing positioning information provided by sensors integrated into VZ-Line scanners. The combination of basic position estimation utilizing this onboard sensor data along with a new algorithm for aligning scans **without reflectors or precise positioning** enables a final fine adjustment of all scans to produce a seamless, fully registered point cloud.

User Interface








The software features a very simple interface which is crucial for reducing training time and improving adoption rates for police forces. With oversized buttons for the automatic tasks, RiSOLVE makes the transition from tradition to state-of-the-art effortless.

RIEGL VZ-400i - 3D Terrestrial Laser Scanner Highlights

- ultra high speed data acquisition with up to 500,000 meas./sec, survey-grade accuracy ≤ 5 mm, 0.5 m - 800 m measurement range
- easy to use / easy to train: user-friendly touchscreen interface, single touch operation, etc.
- high accuracy, high precision ranging based on echo digitization, online waveform processing, and multiple-time-around processing
- new, innovative processing architecture for data acquisition and simultaneous geo-referencing, in real-time
- MEMS IMU for pose estimation
- advanced flexibility through support for external peripherals and accessories, e.g. external Bluetooth GNSS receiver on top
- cloud connectivity via Wi-Fi and 3G/4G LTE
- various interfaces (LAN, WLAN, USB 3.0)
- integrated Human-Machine Interface (HMI) for stand-alone operation



RIEGL VZ-400i Technical Data

-  eye safe operation at Laser Class 1
-  pulse repetition rate PRR (peak) 1.2MHz
-  optional digital camera
-  Wi-Fi and 3G/4G LTE
-  max. measurement range 800m
-  multiple target capability
-  online waveform processing

Eye Safety Class	Laser Class 1*
Max. Range Target Reflectivity 90%	800 m
Max. Range Target Reflectivity 20%	400 m
Minimum Range	0.5 m
Accuracy / Precision	5 mm / 3mm
Effective Measurement Rate	up to 500,000 meas./sec
Scan Angle Range	vertical: 100° horizontal: 360°

*Class 1 Laser Product according to IEC60825-1:2007
Further information about the RIEGL VZ-400i in the appropriate datasheet.



Typical Applications for RiSOLVE



• City Modeling



• Architecture



• Archaeology



• Disaster Response



• Construction Site Monitoring



• Accident Investigation



RIEGL VZ-400i Data Sheet



RiSOLVE Data Sheet



Watch the RiSOLVE video! youtube.com/rieglms

References:

Review of Investigation and Closure Procedures for Motorway Incidents - Preliminary Report

Department of Transport, Highways Agency, Association of Chief Police Officers, Home Office
PDF document accessed through: webarchive.nationalarchives.gov.uk/20120607153510/http://assets.dft.gov.uk/publications/review-of-investigation-and-closure-procedures-for-motorway-incidents-preliminary-report/review-of-investigation-closure-procedures-motorway-incidents.pdf, March 29, 2013

Visit our website to read the data sheets, and get further information, also about the broad RIEGL Product Line.

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