Basic Configuration Package

Scanner Basic Configuration RIEGL VUX-1HA

Part-No. HW-VUX1-01-000-01

The *RIEGL* VUX-1HA (High Accuracy) is a very lightweight and compact laser scanner, meeting the challenges of emerging survey solutions, both in measurement performance as in system integration.

Typical applications:
*) indoor and outdoor laser mapping
*) tunnel profile measurements
*) railway applications like clearance analysis, etc.

Detailed technical specifications, interfaces and laser classification according to the preliminary datasheet *RIEGL* VUX-1HA.

Main Features

*) compact (227x180x125 mm, without cooling fan device), lightweight (3.6 kg), and rugged
*) easily mountable to whatsoever type of moving platform
*) scan data storage on internal 240 GByte SSD Memory
*) highest and survey-grade accuracy / precision, typ. 5 mm / 3 mm
*) scan speed up to 250 scans / second
*) Laser Pulse Repetition Rate PRR > 1 MHz
*) Max. Range @ Target Reflectivity 80%: 400 m
*) field of view up to 355° for practically unrestricted data acquisition
*) regular point pattern, perfectly parallel scan lines
*) cutting edge *RIEGL* technology
providing:
- echo signal digitization
- online waveform processing
- multiple-time-around processing
*) multiple target capability - practically unlimited number of target echoes

Mechanical and Electrical Interfaces

*) mechanical and electrical interface for IMU mounting
*) electrical interfaces for GPS data string and Sync Pulse (1PPS)
*) LAN-TCP/IP interface

Cables

- Multi Purpose Power and Signal Cable for VUX, 3m, new version
  (Part-No. HW-VUX-03-005-00)
- USB Debug Cable for VUX, 1.5m
  (Part-No. HW-VUX-03-000-00)
- USB extension Cable for USB 2.0 mass storage media, for VUX, 1.5m
  (Part-No. HW-VUX-03-001-00)

Cooling fan device

(Part-No. HW-VUX-06-001-00)
Lightweight structure with two axial fans providing forced air convention for applications where sufficient natural air flow cannot be guaranteed.
Dimensions / weight of VUX-1 with cooling fan device: 227 x 208 x 129 mm / 3.85 kg

Connection Board for VUX

(Part-No. HW-VUX-06-000-00)

Embedded RiACQUIRE UAS Software, embedded in VUX-1 or VQ-XXX Scanner

(Part-No. SW-VQXX-02-000-00)

RiACQUIRE-Embedded is designed to run on *RIEGL* devices used in remotely controlled systems.

Features:

- running directly on *RIEGL* VUX-1
- scan data are stored on the internal SSD drive and written to a RiPROCESS project structure
- prepares monitoring trajectory and scanner data for data transfer
- Get control via pulse control interface (TTL) & UDP interface
  *) listens to and executes commands from ground-based RiACQUIRE
- controls image acquisition for GigE interfaces
- enables internal memory manager for INS-GNSS data

Single User License RiMTA

(Part-No. SW-GP-02-030-00)
for detecting the correct MTA zone for each measurement automatically for instruments with multiple-time-around- capability (MTA).

- automatic resolution of range ambiguity in time-of-flight ranging
- unlimited number of MTA zones
- processes data acquired with instruments with multiple-time-around- capability (MTA)
- smoothly integrated in the *RIEGL* data processing workflow

RiVSTARTUP

(Part-No. SW-GP-07-005-00)
Tool for first start up operation of *RIEGL* V-Line Laser Scanners.

RiVLib - Scandata Interface Library

(Part-No. SW-GP-07-006-00)

Library enabling smooth integration of *RIEGL*`s V-Line Laser Scanners into user applications.The library allows 2D real-time data interfacing and includes tools to create and to query 2D databases containing measurement data and meta information. The library is available in shared library format for Linux (x86) and Windows operating systems.

1 license included.

Software Maintenance for 12 months

(Part-No. SW-VQXX-12-000-00)

- Free software updates
- E-mail and telephone support

User`s Manual (in English language)

"Technical Documentation & Operating Instructions"

including, between other things, instructions for: Safety, Installation, Operation, etc.

RIEGL Software Packages / Modules

Single Scanner License RiACQUIRE

Part-No. SW-GP-02-020-00

Data Acquisition Software for *RIEGL* Airborne & Mobile Scanner Systems

- Controlling *RIEGL* airborne and mobile laser scanners semi-automatically or manually
- Supported *RIEGL* Laser Scanners: LMS-Q1560, LMS-Q780, LMS-Q680(i), LMS-Q560, LMS-Q240(i), LMS-Q120(i)(ii), LMS-Z420i, LMS-Z620, and *RIEGL* V-Line Laser Scanners
- Generic support of digital cameras
- Supported INS/GNSS Systems: IGI AEROcontrol, Applanix POS AV/LV/MV, OxTS RT Family, GGS AeroDIDOS, IXSEA AIRINS/LANDINS, NovAtel SPAN
- Highly simplified system status feedback for fast recognition by the operator
- Easy access for the operator to configure system parameters
- Quality assurance with a detailed history of events, system parameters and operator‘s interactions stored for analysis later on
- Monitoring data via UDP, TCP, and RS232 Interface
- For operating systems Windows 7, Windows VISTA, Windows XP, and Linux

Single User License RiPROCESS

Part-No. SW-GP-02-023-00

- Project-oriented managing software for processing of *RIEGL* airborne and mobile laser scanner data from raw data to point-cloud-based data in WGS84 or projection (e.g. UTM) utilizing RiANALYZE and RiWORLD in remote control mode
- Fast access to data for visual inspection in a large variety of visualization formats, ranging from color-coded raster data to digitized echo data for every laser measurement (depending on used laser scanner)
- System calibration and scan data adjustment based on matching data acquired on flat objects
- Statistical analysis of matching quality of scan data; comparison of laser data to surveyed reference objects
- Interface to further post-processing tools via LAS, Terrasolid, and ASCII data exchange
- Operation in a multiple-workstation environment enhancing data post-processing throughput by parallel computing
- For operating systems Windows 7 Professional, Windows VISTA Professional, and Windows XP Professional

Single User License RiWORLD

Part-No. SW-GP-02-025-00

Geo Referencing Software for *RIEGL* Scan Data

- Transformation of laser data into the coordinate system of the position and orientation data set, usually WGS84
- Makes use of geometrical system description and calibration information
- Support of different formats of position and orientation data by software tool POF-Import
- Compatible with different definitions of the navigation frames, e.g., east-north-up (ENU) or north-east-down (NED)
- Provides information for subsequent transformation into a local, levelled, north-east-aligned coordinate system for accurate visualization based on single-precision numbers
- Processes a large number of files for unattended operation in batch mode
- Provides different data output formats including LAS format
- Smoothly integrated into RiPROCESS
- For operating systems Windows 7 Professional, Windows VISTA Professional, and Windows XP Professional

Accessories

Scanner Carrying Case for RIEGL VUX-1 scanner series

Part-No. HW-VUX-05-000-00

splash-proof, foam lined to fit shape of scanner, cables, etc.

Services

RIEGL Software Training

Part-No. ST-GP-11-009-00

RIEGL Software Training for RiACQUIRE, RiPROCESS, RiANALYZE (GPU), RiMTA and RiWORLD

Duration: 4 working days, in Horn, Austria or at the customer's site
max. number of participants from side of the end customer: 4 persons

Notes:
*) Travelling and accommodation expenses of the *RIEGL* engineer(s) are not included and to be invoiced separately.
*) Training is limited to putting the complete system into first operation and exemplary data processing, but does not cover managing and processing of real airborne surveying projects.
*) Participants require a laptop for the training
*) Additional training days are to be charged at additional costs of EUR 1.600,--/day plus accommodation costs.