



RS50 User Documentation 1.1

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Legal Information

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Contacting support

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RS50

Technical Description

Overview of RS50

With RS50 rotating stage scanner, a line imaging push-broom hyperspectral camera can be easily used to scan an image of a stationary target or scenery in the lab and field.

RS50 can be attached directly to a standard tripod with a 3/8" screw. The spectral camera is attached to the rotating scanner with an adapter that is equipped with a special bayonet, enabling the quick installation and release of the spectral camera.

RS50 has one connector for both the operating voltage (+24 VDC) and the scanner control (serial RS232 interface). A cased Spectral Camera can be electrically connected directly to the RS50, without any additional power supply and serial cable to the computer. For an OEM type Spectral Camera, RS50 is delivered with a separate power supply/serial cable. There is a switch for immediate stop of the scanner operation in emergency.

RS50 can be controlled for scanning speed and angle with the Specim Lumo Scanner data acquisition software. The maximum scanning angle of the scanner is limited to 180 degrees with electrical limit switches. There is also an option for 270 degree scanning angle.

Scanner Parts

Different parts of the Rotary Stage 50 are presented in the picture below.

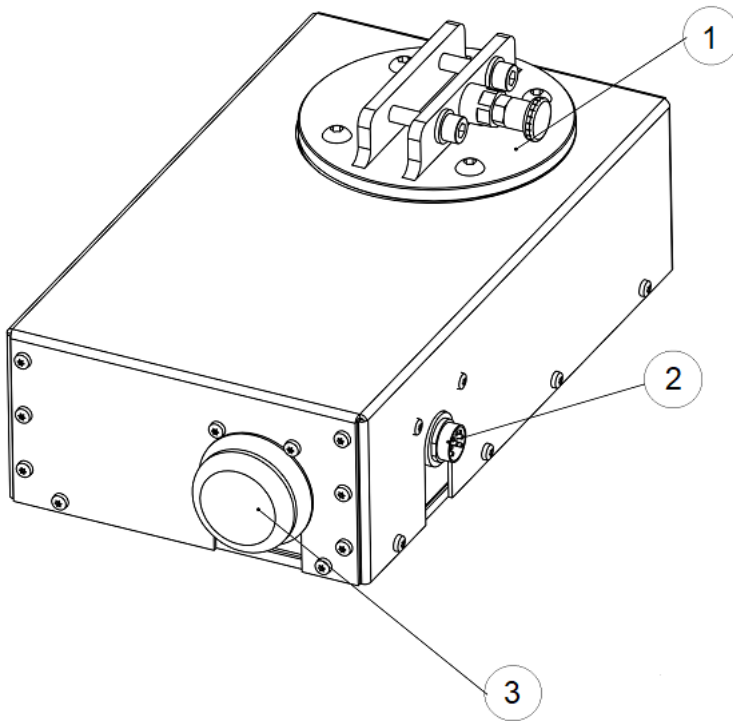


Figure 1: Parts of the RS50

Table 1: Parts of the RS50

	name
1	Rotational Stage with quick lock adapter
2	Power and RS232 connector
3	Emergency stop switch

Mechanical Specifications

This section provides the mechanical specifications for RS50.

Table 2: Mechanical Specifications for Rotary Stage 50

Characteristic	Description
Dimensions (L x W x H)	261.5 x 143.5 x 94
Weight	3.8 kg with Quicklock
Construction	Anodized aluminum

RS50 dimensions

The following figure depicts RS50 dimensions.

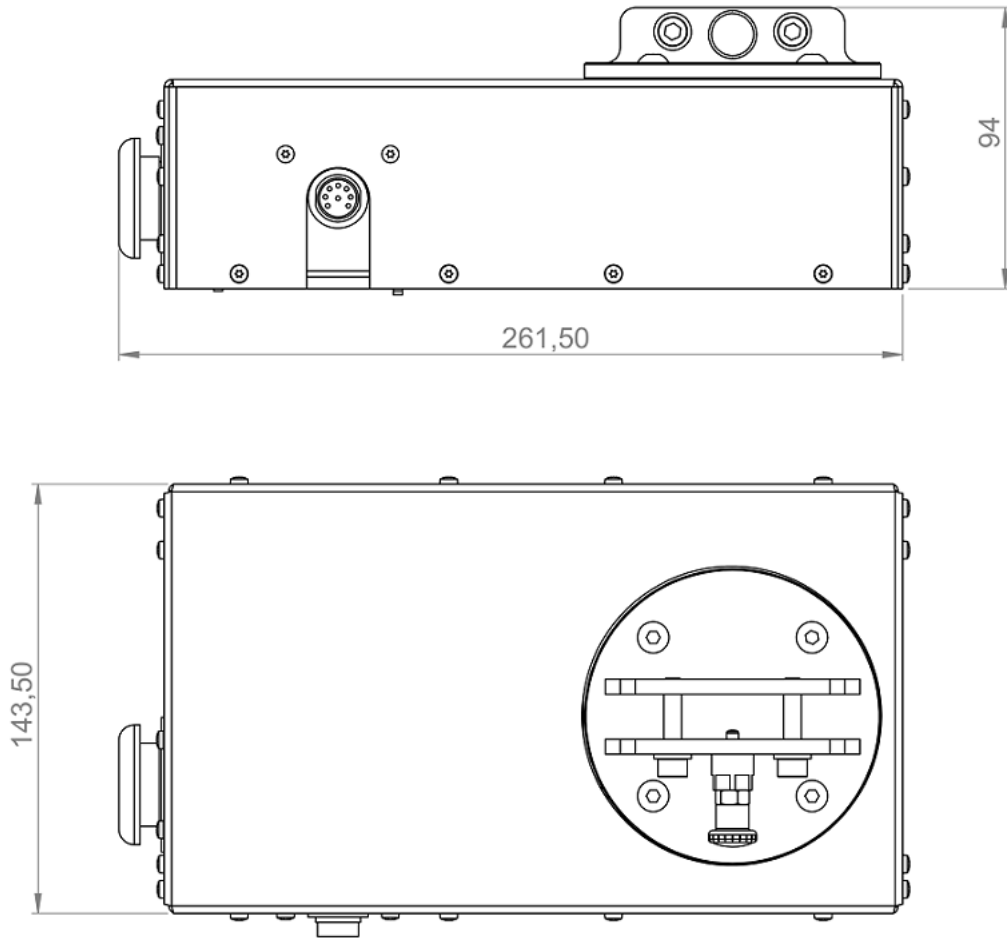


Figure 2: RS50 dimensions

Electrical Specifications

This section provides the electrical specifications for the scanner.

Table 3: Electrical Specifications

Characteristic	Description
Power supply current requirement	2A 24VDC
Scanner type	Stepper motor with encoder

Performance Specifications

This section provides the Performance specifications for RS50.

Table 4: Performance Specifications for RS50

Characteristic	Description
Applied load capacity / maximum payload	50 kg

Characteristic	Description
Output torque	0.64 Nm (peak, without gear) 36*0.64 Nm (with gear, efficiency approximately 85 %)
Gear Ratio	36:1
Encoder Resolution / error	512 lines, 2048 counts per revolution
Repeatability / Reproducibility	< 0.01°
Increment	0.005 arc-min
Scanning angular velocity	0.01 - 25 °/s
Scanning angle / angular scan range	~ 180° (~270° optional)

Environmental Specifications

This section provides the environmental specifications for the scanner.

Table 5: Environmental Specifications

Characteristic	Description
Operating temperature	+10 ... +40°C, non-condensing
Storage temperature	-20 ... +50°C
IP class	3X
RoHS compliant	Yes

Installation Instructions

Mounting RS50

This section describes how to mount RS50.

1. Unpack the device.
2. Check that all parts have been delivered.
3. If you want to mount the scanner on a tripod or another mount, in the horizontal or vertical position, proceed as follows:

On a tripod:

1. Make sure that the scanner power cable is not connected.
2. Use camera screw at the bottom of the scanner to mount the scanner on the tripod.
3. Tilt the tripod in a way that the target is in front of the scanner.

On another mount:

1. Make sure that the scanner power cable is not connected.
2. Use the fixing pattern (M6) at the bottom of the scanner to fix the scanner on the mount.

See the fixing pattern image in the Appedix.

3. Position the mount so that the target is in front of the scanner.
4. If you want to mount the scanner on the quick lock, proceed as follows:

- a) Pull and rotate the index plunger on the female quick lock adapter so that it gets stuck outside the mounting hole.
 - b) Connect the male quick lock to the camera fixing bracket.
 - c) Place the male quick lock adapter with the camera on top of the female quick lock adapter and push it so that they are both centered.
 - d) Release the index plunger and tighten the screws positioned next to the index plunger.
5. Connect one end of the scanner control cable to the scanner connector.
 6. Connect the other end of the cable to the RS232 source and DC power unit.
 7. Plug in the power cable and ensure that emergency switch is not pressed down.
 8. The scanner is ready for use.

Before you use Rotary Stage 50 check that:

- There is enough space for the cables so that they can move freely during scanning.
- Cables are not in the way of the scanner.
- The camera is mounted properly to avoid damage.
- The weight of the scanned object does not exceed 50 kg.

Scanner Control Cable Pins

The scanner control cable pins are depicted in the figure below:

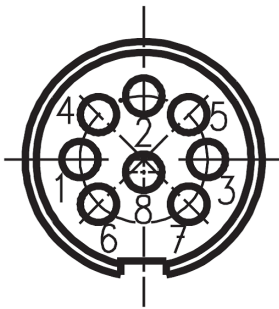


Figure 3: Scanner Control Cable Pins

Table 6: Pins of the Scanner Control Cable

Pin	Description
1	NC
2	RS232 TX
3	RS232 RX
4	NC
5	GND
6	NC
7	+24V
8	-24V

Maintenance Guide

Maintenance Guide

Keep the moving parts of the scanner clean of dirt and dust. Moving parts are:

- Emergency break switch
- Rotational stage

Troubleshooting

Problem	Solution
The scanner does not respond to commands sent by the Lumo Scanner software.	<ul style="list-style-type: none"> • Check if the emergency switch is pressed. If yes, turn the switch clockwise to reset. • Check that the power cord is connected. • Check if the power supply cable is damaged. Do not use the scanner with damaged cables. • Check the mains connection for a damaged plug.
The scanner makes abnormal sounds.	<ul style="list-style-type: none"> • Carry out the initialization procedure again from the Lumo Scanner software. • Make sure that nothing is blocking the movement of the camera or the rotational stage.

Appendix

RS50 Fixing Pattern

The figure below depicts the fixing pattern in bottom of the RS50. Use this pattern if fixing the rotary stage on a mount other than a tripod.

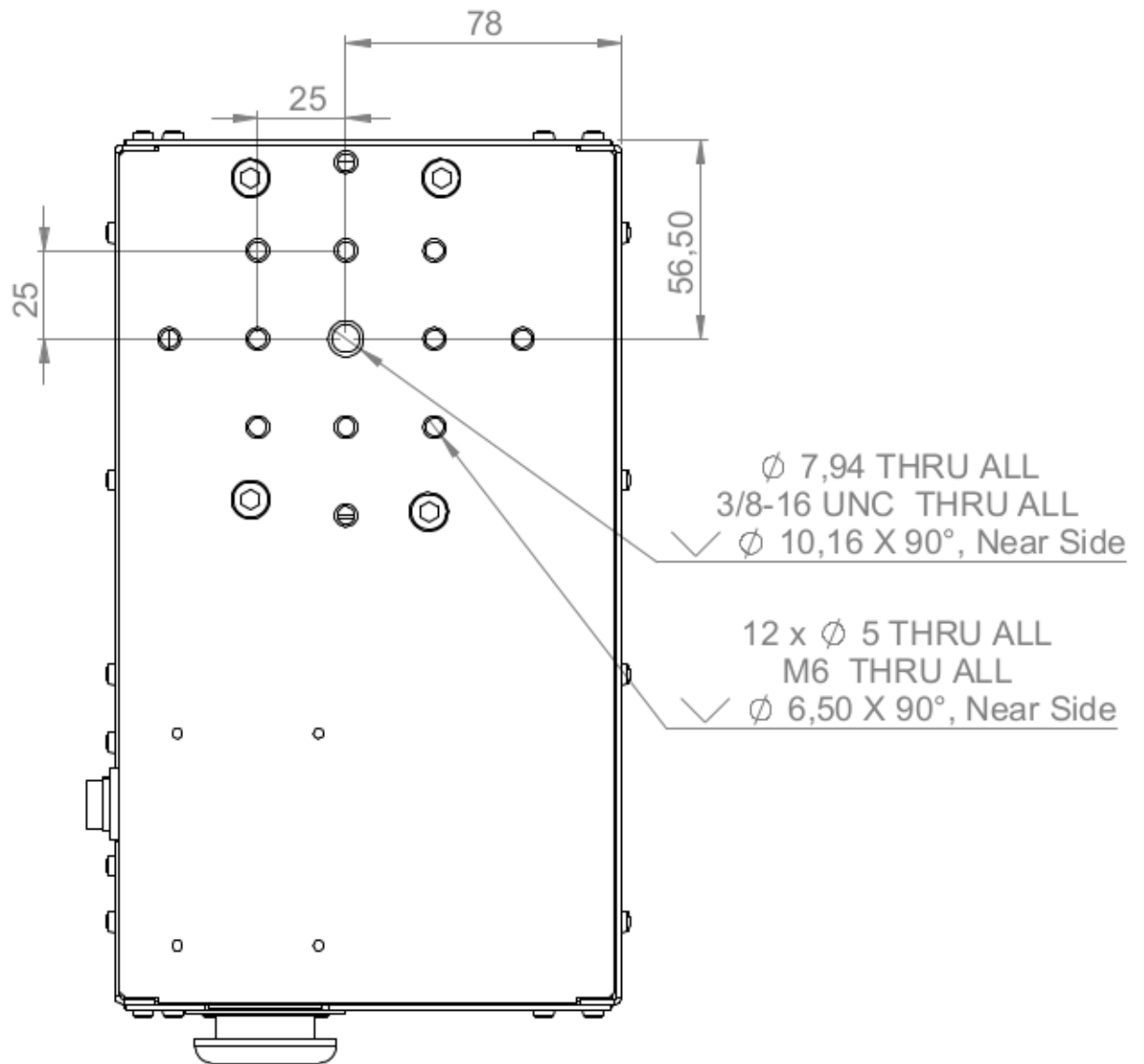


Figure 4: RS50 fixing pattern

Change History

Date	Version	Description
9 November 2018	1.0	First version
20 February 2020	1.1	Typo corrections