INSCOPER

User Guide

Device Controller

v1.0

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1. Device Controller

1.1 Inscoper Device Controller

The Inscoper system architecture decouples the two primary functions of traditional acquisition software: user interaction and device control. By separating these roles, the system ensures optimal performance, stability, and control across diverse microscopy setups.

- **User Interaction (Inscoper Imaging Software):** Configures the acquisition sequence, receives and displays the acquired images, and saves the experimental data.
- **Device Control (Inscoper Device Controller):** Communicates directly with the microscopy hardware to execute the acquisition sequence with precise hardware timing.

The Inscoper Device Controller acts as a dedicated hardware appliance and serves as the central communication hub between the workstation and the microscope's components.

Mermaid Diagram

By offloading real-time device management to the Device Controller, the Inscoper Imaging Software operates completely independently of hardware constraints. Consequently, regardless of the microscope's complexity, the user interface remains streamlined, intuitive, and focused on experimental requirements rather than underlying hardware limitations.

1.2 Warning and cautions

1. Always ensure that the Inscoper Device Controller is powered on before starting the computer. If uncertain, restart the computer.
2. The equipment can only be powered through Safety Extra Low Voltage that also complies with the limits of 6.3.1/6.3.2 of IEC 61010-1:2010.
3. Never use cables longer than 3 meters to connect devices (except for the Ethernet cable).
4. Using the Inscoper Device Controller in any manner not specified by Inscoper may compromise its safety protections.

1.3 Specifications

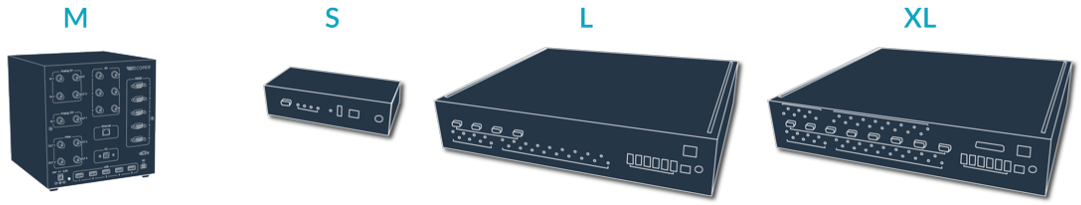
1.3.1 Operating specifications

Parameter	Current Version	Next Versions		
Device Controller Model	**M**	**S**	**L**	**XL**
Weight	3.050 kg (6.724 lb.)	1.150 kg (2.20 lb.)	4.450 kg (8.82 lb.)	4.650 kg (8.88 lb.)
Dimensions (LWH)	230 * 230 * 230 mm (9.06 * 9.06 * 9.06 in.)	120 * 200 * 65 mm (4.72 * 7.87 * 2.55 in.)	420 * 434 * 84 mm (16.53 * 16.93 * 3.15 in.)	420 * 434 * 84 mm (16.53 * 16.93 * 3.15 in.)
Power input	24 VDC @ 2.5 A	24 VDC @ 2.5 A	24 VDC @ 3.75 A	24 VDC @ 3.75 A
Operation temperature range	From 10 to 40 °C (from 50 to 104 °F)	From 10 to 40 °C (from 50 to 104 °F)	From 10 to 40 °C (from 50 to 104 °F)	From 10 to 40 °C (from 50 to 104 °F)
Altitude	Maximum 2000 m (6561.68 feet)	Maximum 2000 m (6561.68 feet)	Maximum 2000 m (6561.68 feet)	Maximum 2000 m (6561.68 feet)
Operating humidity range (non-condensing)	From 30 to 85 %	From 30 to 85 %	From 30 to 85 %	From 30 to 85 %
Storage temperature range	From 0 to 50 °C (from 32 to 122 °F)	From 0 to 50 °C (from 32 to 122 °F)	From 0 to 50 °C (from 32 to 122 °F)	From 0 to 50 °C (from 32 to 122 °F)
Storage humidity range (non-condensing)	From 30 to 85 %	From 30 to 85 %	From 30 to 85 %	From 30 to 85 %

Warning

Indoor use only!

1.3.2 Input & outputs



	Current Version	Next Versions		
TYPE	**M**	**S**	**L**	**XL**
ANALOG OUTPUTS	2x (0-5V), 1x (0-12V)	1	8	16
	DAC resolution 12 bits, No Programmable Output range	DAC resolution 14 bits, Sample rate 180 MS/s, Output range ±10 V, 0-5 V, +-5 V	DAC resolution 14 bits, Sample rate 180 MS/s, Output range ±10 V, 0-5 V, +-5 V	DAC resolution 14 bits, Sample rate 180 MS/s, Output range ±10 V, 0-5 V, +-5 V
ILDA	Via External Controller (MaxILDA)	-	-	1
ANALOG INPUTS	2x (0-5V), 1x (0-12V)	-	-	16
	ADC resolution 12 bits, No Programmable Input range	-	-	ADC resolution 16 bits, Sample rate 1 MS/s, Input range ±2.5 V, ±5 V, ±10 V, ±12.5 V
I/O	6	4	18	18
SERIAL PORTS	5	1	4	8
USB host	5	1	6	6
Computer	Windows 7/10/11	Windows 7/10/11	Windows 7/10/11	Windows 7/10/11
	1920 x 1080 px	1920 x 1080 px	1920 x 1080 px	1920 x 1080 px

1.4 System requirements

	Minimum requirements
Operating System	Windows 10 / 11 64 bit
RAM	32 GB
Hard disk drive	1 TB NVMe SSD
Processor	Intel 14th Gen (minimum 8 cores)
Graphics Card	NVIDIA GeForce RTX 2000 Series
Screen	1920 x 1080 resolution - Dual screens or a large 32-inch screen (2560 x 1440 (QHD)) highly recommended

1.5 Installation

The Inscoper Imaging Software should only be installed by Inscoper staff or authorized representatives. The customer and/or user can participate in the installation process if an Inscoper representative provides explicit consent. In the event of modification to the microscopy system using Inscoper equipment or software without Inscoper's consent, the company declines all responsibility for any resulting consequences.

To request the installation of the Inscoper Imaging Software on a microscope, you must complete the following three steps:

1. Send a list of all devices connected to the microscope to contact@inscoper.com or via the dedicated form available at www.inscoper.com.
2. Provide the Inscoper team with three days of access to install the system.
3. Test the microscope with your team: acquire images of your research samples, and compare them with previous results.

1.6 Legal

1.6.1 FCC/IC certification

Any changes or modifications to this equipment not expressly approved by Inscoper may cause harmful interference and void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device must be professionally installed.

1.6.2 Copyright

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- US Patent No. US10330911,
- EP Patent No. EP3123149,
- FR Patent No. FR3019324,

This product is updated periodically, and revisions will be incorporated into new editions of the user documentation.

1.6.3 Disclaimer

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