

From Eye to Insight



LAS X

for Widefield Research

Release Notes LAS X 3.11.2

Release documentation for LAS X 3.11.2

This document describes the 3.11.2 release of the Leica Application Suite X imaging and analysis software for life science research. You should read this document before installing your copy of this software.

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1. Technical Requirements and Installation

1.1 Warnings

LAS X 3.11.2 is a **Widefield Research release supporting Viventis SCAPE**.
Do not install on Confocal systems nor Applied Microscopy systems.

Attention: NVIDIA's latest driver has discontinued support for the GeForce GTX 1080 Ti.

Users with GTX 1080 Ti must manually install the latest supported driver version 581.80.
Please note that this driver is not tested anymore with LASX.

Further information: <https://www.guru3d.com/story/nvidia-has-ended-windows-support-for-maxwell-and-pascal-gpus-with-driver-59144/>

The following hardware will not work with Windows Core Isolation:

- **Maerzhaeuser Tango Desktop (SCAN plus IM 130x85)**
- **Maerzhaeuser Tango Pilot (Motorized stage 75x50)**
- **Tokai Hit Climate Control**
- **Lumen Dynamics X-Cite XLED1**

Systems with Hamamatsu Flash camera: updating from LAS X versions below 3.10.0 requires configuring the Flash camera in the Hardware Configurator once again.
Otherwise, it will not be loaded.

1.2 Operating System

LAS X 3.11.2 is a genuine 64-bit program and runs on **Windows 11 and Windows 10**.

Windows 11 N and Windows 10 N versions require the Windows Media Feature Pack to be installed before starting LAS X. For installation of Windows Media Feature Pack please follow the procedure described below:

Check Windows Version:

- Windowskey+R and run "Winver" or
- Settings/System/Info

Windows 11 N: Select the Start button, then select Settings > Apps > Optional features. Select View features next to Add an optional feature, and then select the Media Feature Pack in the list of available optional features.

Windows 10 N: Select the Start button, then select Settings > Apps > Apps & features > Optional features > Add a feature. Then locate the Media Feature Pack in the list of available optional features.

1.3 Cybersecurity Advices

Leica Microsystems recommends the installation of all available security updates and hotfixes for Microsoft Windows.

Please check the regularly updated Leica Microsystems Product Security web page to get the latest information and recommendation regarding product security vulnerabilities and detailed mitigation strategies:

www.leica-microsystems.com/company/product-security/

A detailed privacy and security manual can be found at

<https://www.leica-microsystems.com/products/microscope-software/p/leica-las-x-ls/downloads/>

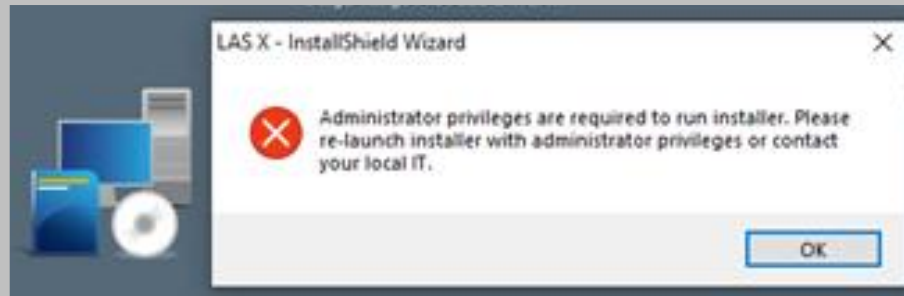
If you need further information or are not sure about security fixes suggested by a system component manufacturer, please contact us via www.leica-microsystems.com/service/

If a vendor of a PC system component announces severe security vulnerability, it is also recommended to update the drivers/software as suggested by the vendor (i.e. graphic card drivers).

1.4 Policy Restrictions

Address company specific IT policy restrictions

Note: If you observe the following message during installation:



Dependent on your IT policy you might miss rights for a proper SW installation.

Potential workaround:

Log in with a local administrator account (outside domain)

Install LASX from this account.

1.5 PC Requirements

Recommended PC Configuration:

Operating System:	Win11 Pro64
Processor:	Intel Core i7-13700 2.1GHz, 16Cores
Main Memory:	32GB DDR5 4800 ECC RAM
Graphics Board:	NVIDIA RTX A2000 12GB 4mDP GFX
System Drive:	512GB PCIe 2280 M.2 SSD
Temp Drive:	1TB PCIe 2280 M.2 SSD
Data Drive:	4TB 7200 SATA Enterprise 3.5" HDD
Workstation size:	mid tower

High-speed triggered sCMOS cameras or high-speed Navigator experiments require an SSD NVMe hard disk.

PC minimum requirements

Operating System: Win10 64bit
Processor: Core i5-13600 (2.7GHz, 24 MB cache, 14 cores)
Main Memory: 16GB RAM DDR5 4800
Graphics Board: NVidia T400 (4 GB)
System/Temp.Drive: 512GB SSD
Data Drive: 2TB HDD

1.6 Graphics Card Drivers

NVIDIA RTX A5000 (Ada), RTX 4500 Ada, A4000 (Ada), A2000:

581.80-quadro-rtx-desktop-notebook-win10-win11-64bit-international-dch-whql.exe

NVIDIA Quadro T1000, T400:

591.44-desktop-win10-win11-64bit-international-dch-whql.exe

Attention: NVIDIA's latest driver has discontinued support for the GeForce GTX 1080 Ti.

Users with GTX 1080 Ti must manually install the latest supported driver version 581.80. Please note that this driver is not tested anymore with LASX.

Further information: <https://www.guru3d.com/story/nvidia-has-ended-windows-support-for-maxwell-and-pascal-gpus-with-driver-59144/>

2. Compatible Microscopes and Cameras

2.1 Compatible Microscopes

Microscope/ System	Compa- tibility	Comments
<u>Inverted Microscopes</u>		
DMi8	YES	
DMi8 C/ A	YES	
DMI6000 B/ with AFC	NO	
DMI4000 B	NO	
DMI3000 B	NO	
DM IL	YES	
<u>Upright Research Microscopes</u>		
DM4 B	YES	
DM6 B	YES	
DM6 B Synapse supported	YES	
DM6000 B	YES	stands with production date >=2008 only
DM5500 B	YES	stands with production date >=2008 only
DM5000 B	YES	stands with production date >=2008 only
DM4500 B	YES	stands with production date >=2008 only
DM4000 B	YES	stands with production date >=2008 only
<u>Fixed Stage Microscopes</u>		
DM6 FS	YES	
DM6 FS Synapse supported	YES	
DM6000 FS	YES	
<u>Stereos and Macroscopes</u>		
M205 C/ A/ FA/ FCA	YES	
M165 C/ FC	YES	
<u>Upright Routine Microscopes</u>		
DM3000 / LED	YES	
DM2000 / LED	YES	
DM1750	YES	
DM1000 / LED	YES	
<u>Educational Microscopes</u>		
DM750	YES	
DM500	YES	

EZ4E	NO	
EZ4W	NO	
<u>Infinity Port Modules</u>		
Infinity TIRF	YES	
Infinity TIRF HP	YES	
Infinity Scanner	YES	
Infinity Scanner FS	YES	
WF FRAP	NO	
Combination PLU and WSU	YES	
<u>Viventis SCAPE</u>	YES	
<u>TIRF and GSD Systems</u>		
AM TIRF MC	NO	
AM TIRF MC with AFC	NO	
SR GSD	NO	
<u>THUNDER Imagers</u>		
THUNDER Imager Tissue	YES	
THUNDER Imager Cell	YES	
THUNDER Imager Model Organism	YES	
THUNDER Imager EM Cryo CLEM	NO	
THUNDER Imager Nano	YES	

2.2 Compatible Cameras

Supplier	Camera Type	Comments
Leica	DFC7000 T	Ext. Trigger
	DFC7000 GT	Ext. Trigger
	K8	Ext. trigger only with Advanced Sequencer functionality
	K7	Ext. trigger only with Advanced Sequencer functionality
	K5	Ext. Trigger
	K5C	
	K3C	Ext. trigger only with Advanced Sequencer functionality
	K3M	Ext. trigger only with Advanced Sequencer functionality
	DFC9000 GT	Ext. Trigger
	DFC9000 GTC	Ext. Trigger
	DFC3000 G	Ext. Trigger
	DMC2900	
	DMC4500	
	DMC5400	
	FLEXACAM C1	
	Flexacam C3	Firmware above 302z is not supported.
	DMC6200	
	IC90E	USB only
	ICC50W	USB only
	ICC50E	USB only
Andor	iXonUltra 888	Ext. Trigger
	iXonUltra Life 897	Ext. Trigger
	iXonUltra 897	Ext. Trigger
Hamamatsu	Flash 4.0 V2 CL	Ext. Trigger
	Flash 4.0 V2 USB	Ext. Trigger
	Flash 4.0 V3 CL	Ext. Trigger
	Flash 4.0 V3 USB	Ext. Trigger
	Fusion	Ext. trigger only with Advanced Sequencer functionality
Photometrics	Prime 95B PCIe	Ext. Trigger
	Prime 95B USB3	Ext. Trigger
	Kinetix22 PCIe	Ext. trigger only with Advanced Sequencer functionality
	Kinetix22 USB3	Ext. trigger only with Advanced Sequencer functionality

USB3 cameras:

Leica USB3 cameras K3C, K3M, K5C, DMC2900/4500/5400, DFC3000/7000 T/GT are tested with USB3 PCIe cards from DeLock. These cards have a Renesas PD720202 chipset. Leica strongly recommends using these cards. The majority of the Leica USB3 cameras are delivered with this USB3 PCIe card.

If you plan to use a different card or an onboard-USB port with a different chipset, please make sure you have the latest drivers from the card manufacturer and the latest Windows updates

installed. Leica does not assume any liability when not using the recommended USB3 PCIe card.

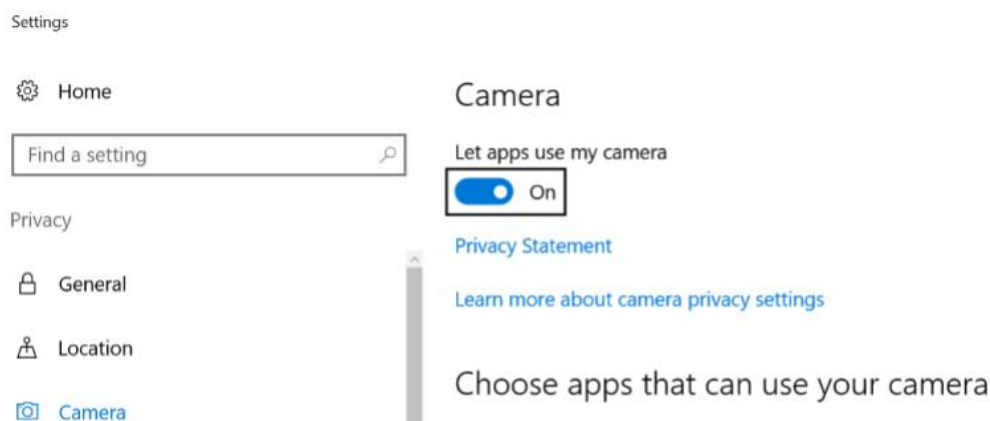
Please also branch the internal power supply when using a card.

Due to the high-power demands of some cameras, and the large amounts of data they deliver, Leica recommends using each camera on a separate card. Leica recommends not to use other instruments with high power requirements, such as external hard drives, on the same USB socket.

Some computers have a USB3 charging port (USB3 with a flash sign). We do not recommend using this port, since the camera will never power off and can prevent the computer from rebooting.

2.3 Camera Privacy Settings:

Microsoft introduced since Windows 10 build 1803 „Camera Privacy Settings“. There is the possibility to disable/enable the usage of UVC cameras. Please ensure when using ICC50 W/E, IC90 E, Flexacam C1/C3 that “Let apps use my camera” is enabled.



2.4 Compatibility with the former LAS X Versions and LMD

Compatibility to former LAS X Versions

Former LAS X versions on widefield research systems can be upgraded with LAS X 3.11.2

Compatibility to Leica LMD Laser Microdissection

LAS X is fully compatible to Leica LMD systems and can be installed on the same workstation.

Attention! LMD must be installed prior to LAS X installation. If LMD is installed after LASX, the camera module for drivers must be ran again.

Important note: Use only one software at a time. The LMD application software and LAS X software cannot be used simultaneously.

LMD application software V8.1 and higher support Win10.

LMD application software V8.4 and higher support Win10 and Win11.

2.5 Installing the Correct Firmware Versions

In most cases, the LAS X installation takes care of installing the required microscope firmware. However, in some cases, the updating of the firmware may not take place. The firmware then must be updated manually via the LAS X Hardware Configurator.

The correct versions of firmware for use with LAS X 3.11.2 are:

DMI 8:

DMi8 Master II (STM32H743XI_MASTER.DMi8.HEX)	V03.31.9999
DMi8 Master II FPGA (LFE5UM-45F-7BG554C_MASTER.HEX)	V01.19
DMi8 Master II FPGA (LFE5U-45F-7BG554C_MASTER.HEX)	V01.19
DMI8 Master (XE167FH200F100L_MASTER.HEX)	V03.70.99999
DMI8 Master FPGA (XP2_17_MASTER.HEX)	V210
SCAPE Galvo (STM32H563RI_MOTCONTROLGALVO_LIGHTSHEET.HEX)	V01.11
SCAPE Galvo Config (STM32H563RI_MOTCONTROLGALVO_LIGHTSHEET_CONFIG.HEX)	V01.14
SCAPE LS Wheels (STM32H563RI_MOTCONTROLTMC_SCAPELSWHEELS.HEX)	V01.00
SCAPE LS Wheels Config (STM32H563RI_MOTCONTROLTMC_SCAPELSWHEELS_CONFIG.HEX)	V00.08
SCAPE Mirrors (STM32F446RE_MOTCONTROL_MIRRORS.HEX)	V02.06
SCAPE Mirrors Config (STM32F446RE_MOTCONTROL_MIRRORS_CONFIG.HEX)	V01.12
SCAPE Power Distributor (STM32F303CC_POWERA_SCAPE.HEX)	V01.29
SCAPE Power Distributor Config (STM32F303CC_POWERA_SCAPE_CONFIG.HEX)	V01.03
Water Dispenser (STM32F446RE_WATERDISPENSER_1.HEX)	V01.40
Water Dispenser Config (STM32F446RE_WATERDISPENSER_1_CONFIG.HEX)	V01.13
Status Indicator (STM32F303CC_LIGHT_STATUS.HEX)	V01.28
Status Indicator Config (STM32F303CC_LIGHT_STATUS_CONFIG.HEX)	V01.01
Power Distributor (STM32F303CC_PWRDISTRIBUTOR_1.HEX)	V01.31
Power Distributor Config (STM32F303CC_PWRDISTRIBUTOR_1_CONFIG.HEX)	V01.02
SBM I2C (DSPIC33FJ128_SBM_I2C.HEX)	V01.01
WF Scanner (DSPIC24HJ064_STEPPER.HEX)	V01.20
LSU LaserModule (STM32H563RI_LASERMODULE_LSU.HEX)	V01.00
LSU LaserModule Config (STM32H563RI_LASERMODULE_LSU_CONFIG.HEX)	V00.01
LSU LaserModule FPGA (ECP5_LASERMODULE_LSU.HEX)	V01.02
Sequencer 2 (STM32F303CCTX_SEQUENCER2.HEX)	V01.02
Sequencer 2 FPGA (XP2_17_SEQUENCER2.HEX)	V01.29
T-House Splitter (DSPIC33FJ128_DC_TURRETII_B.HEX)	V01.05
motCORR (DSPIC33FJ128_MOT_CORR.HEX)	V01.11
AFCX (TMS320F28335_AFCX.HEX)	V03.10
AFC FPGA (XP2_30_AFC.HEX)	V03.01
LED Module (STM32F303CC_LEDMODUL_LSU.HEX)	V01.80
LED Module Config (STM32F303CC_LEDMODUL_LSU_CONFIG.HEX)	V01.00
LED Module FPGA (ECP5_LEDMODUL_LSU.HEX)	V01.06
SmartMove (TMS320F28023_SMARTMOVE.HEX)	V01.10
Sideports (DSPIC33FJ128_DC_TURRETII.HEX)	V01.07

Touch Panel 2nd Generation (TPC-G2.exe)	2.20.0.10
Z Axis (DSPIC24HJ064 STEPPER.A.HEX)	V01.20
XY Axes (DSPIC24HJ064 STEPPER.A.HEX)	V01.20
Buttons Left (DSPIC33FJ128 BUTTONS LEFT.HEX)	V01.08
Buttons Right (DSPIC33FJ128 BUTTONS RIGHT.HEX)	V01.04
Nosepiece 2 positions (DSPIC33FJ128 NOSEPIECE_2POS.HEX)	V01.01
Nosepiece (DSPIC33FJ128 NOSEPIECE.HEX)	V01.17
Lamphouse (STM32F301K8 LAMP2.HEX)	V01.03.9999
IL Turret (DSPIC33FJ128 DC TURRET.II.HEX)	V01.07
Mag. Changer (DSPIC33FJ128 DC TURRET.II.HEX)	V01.07
DIC (DSPIC33FJ128 STEPPER.B.HEX)	V01.05
IL Diaphragms (DSPIC33FJ128 STEPPER.B.HEX)	V01.05
DMi8 Master II (STM32H743XI MASTER.DMi8.HEX)	V03.31.9999
DMi8 Master II FPGA (LFE5UM-45F-7BG554C MASTER.HEX)	V01.19
DMi8 Master II FPGA (LFE5U-45F-7BG554C MASTER.HEX)	V01.19
DMI8 Master (XE167FH200F100L MASTER.HEX)	V03.70.99999
DMI8 Master FPGA (XP2_17 MASTER.HEX)	V210
SCAPE Galvo (STM32H563RI MOTCONTROLGALVO LIGHTSHEET.HEX)	V01.11

Compound (except DMI 8):

Master Module (DM6 2020) (XE167FH200F100L MASTER.DM.HEX)	V02.00.9999
Master Module (DM6, DM5000, DM5500, DM6000) (SYS.HEX)	V02.60.12940
Master Module (DM4, DM4000, DM4500) (BM-16Bit.HEX)	V03.00.9999
Master Module (DMI6000, DMI5000, DMI4000) (DMI.HEX)	V02.91.12940
Master Module (DM8000, DM12000) (DM8_12000.HEX)	V02.30.12940
Master Module (DM4000, DM4500, DM5000) (MAN1.HEX)	V01.31
DM Master FPGA (XP2_17 MASTER.HEX)	V210
SBM I2C (DSPIC33FJ128 SBM_I2C.HEX)	V01.01
motCORR (DSPIC33FJ128 MOT_CORR.HEX)	V01.11
SmartMove (TMS320F28023 SMARTMOVE.HEX)	V01.10
Z Axis (DSPIC24HJ064 STEPPER.A.HEX)	V01.15
XY Axes (DSPIC24HJ064 STEPPER.A.HEX)	V01.15
Nosepiece 2 positions (DSPIC33FJ128 NOSEPIECE_2POS.HEX)	V01.01
Nosepiece (DSPIC33FJ128 NOSEPIECE.HEX)	V01.17
IL Turret (DSPIC33FJ128 DC TURRET.II.HEX)	V01.07
Mag. Changer (DSPIC33FJ128 DC TURRET.II.HEX)	V01.07
TL Diaphragms (DSPIC33FJ128 STEPPER.B.HEX)	V01.05
DIC, ZHw, Tub (DSPIC33FJ128 STEPPER.B.HEX)	V01.05
IL Diaphragms (DSPIC33FJ128 STEPPER.B.HEX)	V01.05
Zoom (DSPIC33FJ128 STEPPER.B.HEX)	V01.05
Lamphouse (STM32F301K8 LAMP2.HEX)	V01.03.9999
Sequencer 2 (STM32F303CCTX SEQUENCER2.HEX)	V01.02
Sequencer 2 FPGA (XP2_17 SEQUENCER2.HEX)	V01.27
IL Module DM (STM32F303CCTX ILMODULEDM.HEX)	V01.11
Condenser 2 DM (STM32F303CCTX CONDENSER2DM.HEX)	V01.02.9999
Touch Panel 2nd Generation (TPC-G2.exe)	2.20.0.10
Condenser Module (PH/DIC) (KONDSCH.HEX)	V01.06
Condenser Module II (PH/DIC) (KONDSCH01.HEX)	V01.01
Condenser Module III (PH/DIC) (KONDSCH02.HEX)	V01.03
Leica Screen Module (DM5000) (MAN2.HEX)	V01.07
XYZ Module (DM6000, DM5500) (XYZ_DIS.HEX)	V01.10
Master Module LED4000 (LED4_7000.HEX)	V01.04.12940
LED7000 (LED7000.HEX)	V01.04.12940
Advanced XYZ Module (XYZ_ADV.HEX)	V03.40.12940
Advanced Z Module (Z_ADV.HEX)	V03.40.12940
LMD 6000 Head (LMD_6000.HEX)	V01.24.12940
PIC motCORR (PIC_Corr.HEX)	V01.03

Stereo:

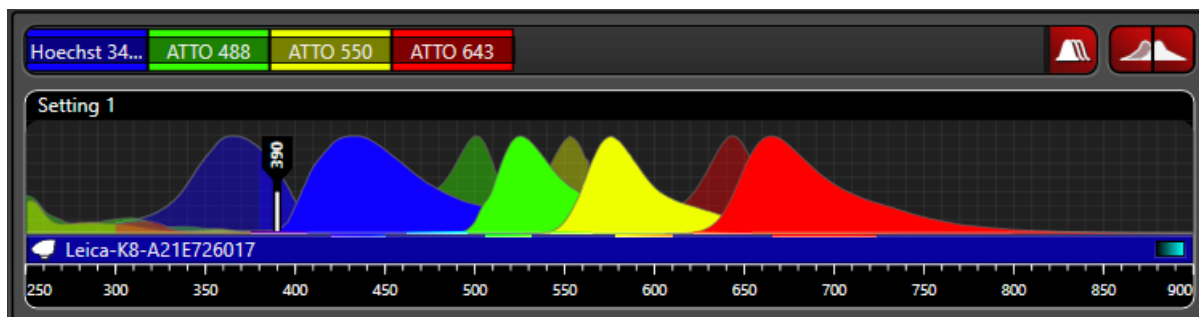
DVM6-Base	V5.00.484890	(DVM6_Base.bin)
DVM6-Base BOOT	V5.00.377379	(DVM6_Base_BootLoader.bin)
DVM6-Base BOOT	V5.00.377379	(DVM6_Base_BootUpdater.bin)
DVM6-LED	V5.00.533950	(DVM6_LED.bin)
DVM6-LED BOOT	V5.00.377379	(DVM6_LED_BootLoader.bin)
DVM6-LED BOOT	V5.00.377379	(DVM6_LED_BootUpdater.bin)
DVM6-MCU	V5.00.381414	(DVM6_MCU.hex)
DVM6-MCU BOOT	V5.00.387276	(DVM6_MCU_BootLoader.hex)
DVM6-MCU BOOT	V5.00.400733	(DVM6_MCU_BootUpdater.hex)
DVM6-Zoom	V5.00.569227	(DVM6_Zoom.bin)
DVM6-Zoom BOOT	V5.00.377368	(DVM6_Zoom_BootLoader.bin)
DVM6-Zoom BOOT	V5.00.377368	(DVM6_Zoom_BootUpdater.bin)
M205-D	V5.00.656739	(M205_D.bin)
MAZ1	V5.00.458206	(MAZ1.bin)
MAZ1 BOOT	V5.00.437655	(MAZ1_BootLoader.bin)
MAZ1 BOOTUPDATE	V5.00.437655	(MAZ1_BootUpdater.bin)
MDG30	V4.01.338410	(MDG30.hex)
MDG30 BOOT	V4.01.263201	(MDG30_CANBoot.hex)
MDG30	V4.01.338410	(MDG30_FULLL.hex)
MDG43	V5.00.446074	(MDG43.bin)
MDG43 BOOT	V5.00.439523	(MDG43_BootLoader.bin)
MDG43 BOOTUPDATE	V5.00.439523	(MDG43_BootUpdater.bin)
MDG41i	V4.01.438080	(MDG4x.bin)
MEB109	V3.01.212854	(MEB109_V51.hex)
MEB109 BOOT E	V3.01.117634	(MEB109_V51_CANBoot_Updater.hex)
MEB110	V3.01.128263	(MEB110_V51.hex)
MEB110 BOOT E	V3.02.126882	(MEB110_V51_CANBoot_Updater.hex)
MEB111	V3.01.267922	(MEB111_C30.hex)
MEB111 BOOT	V4.00.290100	(MEB111_C30_CANBoot_Updater.hex)
MEB112	V3.01.136125	(MEB112_C30.hex)
MEB113	V3.01.136125	(MEB113_C30.hex)
MEB115	V3.01.591555	(MEB115_C30.hex)
MEB115 BOOT	V4.00.290100	(MEB115_C30_CANBoot_Updater.hex)
MEB122	V3.01.162839	(MEB121_122_C30.hex)
MEB124	V3.01.408218	(MEB124_C30.hex)
MEB124 BOOT	V4.00.291245	(MEB124_C30_CANBoot_Updater.hex)
MEB125	V3.01.267778	(MEB125_C30.hex)
MEB125 BOOT	V4.00.290100	(MEB125_C30_CANBoot_Updater.hex)
MEB127	V3.01.386468	(MEB126_127_C30.hex)
MEB126 BOOT	V4.00.290100	(MEB126_127_C30_CANBoot_Updater.hex)
MEB128	V3.01.218256	(MEB128_C30.hex)
MEB129	V3.01.216808	(MEB129_V51.hex)
MEB129 BOOT E	V3.01.117634	(MEB129_V51_CANBoot_Updater.hex)
MEL82-DCI	V4.01.320196	(MEL82DCI.bin)
	V5.00.479890	(MEL90.bin)
	V5.00.474771	(MEL90_BootLoader.bin)
	V5.00.474771	(MEL90_BootUpdater.bin)
MFS17	V3.03.255036	(MFS17.hex)
MFS17 BOOT E	V3.02.147234	(MFS17_CANBoot_Updater.hex)
	V5.00.644974	(MFS17_r1.bin)
MFS17	V3.03.255036	(MFS17_V51.hex)
MFS17 BOOT F	V4.00.254686	(MFS17_V51_CANBoot_Updater.hex)
MHS3	V2.12	(MHS3.hex)
MHS5	V3.01.119315	(MHS5.hex)
MHS5 BOOT E	V3.01.117634	(MHS5_CANBoot_Updater.hex)
MHS6	V5.00.537513	(MHS6.chex)
MHS7	V3.01.267191	(MHS7.bin)
	V5.00.560185	(MRE18_r1.bin)

	V5.00.559591	(MRE18_r1_BootLoader.bin)
	V5.00.559591	(MRE18_r1_BootUpdater.bin)
MRE17/18/19	V4.00.320268	(MRE18_V51.hex)
MRE17/18 BOOT E	V3.02.207905	(MRE18_V51_CANBoot_Updater.hex)
MST 31/34	V1.32	(MST31.hex)
MST51	V3.02.492813	(MST51_V51.hex)
MST51 BOOT E	V3.02.126882	(MST51_V51_CANBoot_Updater.hex)
MST5x-DCI	V4.01.782974	(MST5XDCI.bin)
	V6.00.780774	(MST5x_r1.bin)
	V5.00.519383	(MST5x_r1_BootLoader.bin)
	V5.00.517630	(MST5x_r1_BootUpdater.bin)
MTI91	V3.01.167675	(MTI91.hex)
MTI91-DCI	V3.01.133449	(MTI91DCI.hex)
MTI91DCI BOOT E	V3.01.117634	(MTI91DCI_CANBoot_Updater.hex)
MTI91-DCI	V3.01.133449	(MTI91DCI_FULLL.hex)
MTI91 BOOT E	V3.02.147234	(MTI91_CANBoot_Updater.hex)
	V5.00.715203	(Mxxx_FA_r1.bin)
	V5.00.532274	(Mxxx_FA_r1_BootLoader.bin)
	V5.00.532274	(Mxxx_FA_r1_BootUpdater.bin)
M205FCA-F	V3.03.481710	(Mxxx_FA_V51.hex)
M205FA-F BOOT E	V4.00.217862	(Mxxx_FA_V51_CANBoot_Updater.hex)
	V5.00.559889	(Mxxx_FC_r1.bin)
	V5.00.532274	(Mxxx_FC_r1_BootLoader.bin)
	V5.00.532274	(Mxxx_FC_r1_BootUpdater.bin)
M165FC-F	V3.01.120368	(Mxxx_FC_V51.hex)
	V5.00.560177	(Mxxx_r1.bin)
	V5.00.559779	(Mxxx_r1_BootLoader.bin)
	V5.00.559779	(Mxxx_r1_BootUpdater.bin)
M205FCA	V4.00.400935	(Mxxx_V51.hex)
M Zoom BOOT F	V4.00.217723	(Mxxx_V51_CANBoot_Updater.hex)
Z16APOA	V4.01.281758	(ZxxAPOA.hex)
ZxxAPOA BOOT E	V3.02.128967	(ZxxAPOA_CANBoot_Updater.hex)
Z16APOA	V4.01.281758	(ZxxAPOA_V51.hex)
ZxxAPOA BOOT F	V4.00.231498	(ZxxAPOA_V51_CANBoot_Updater.hex)

3. New Features

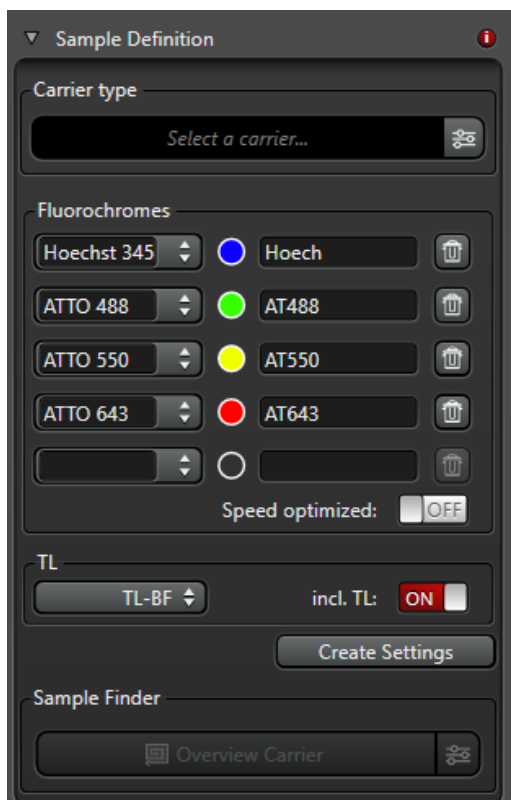
3.1 Spectrum Viewer

If fluorochromes are entered in the Sample Definition panel, excitation and emission spectra can be displayed in the Spectrum Viewer.



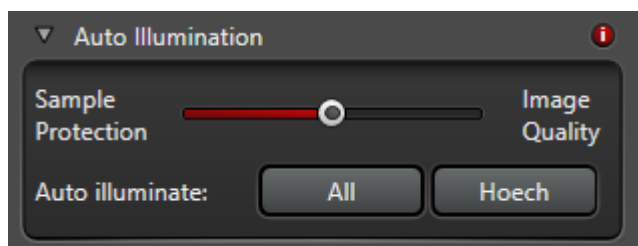
3.2 Automatic Channel Setup

Channels can automatically be set up based on the dyes entered in the Sample Definition panel. The speed optimized option will prioritize acquisition speed over crosstalk optimization. If TL is activated, a TL channel with the selected TL method will be created in addition. The settings can be manually overwritten. Channel positions can be changed, and additional channels can be added manually. Automated Channel Setup only works with multiline LED light sources. Automated Channel Setup is not available on Stereo microscopes.



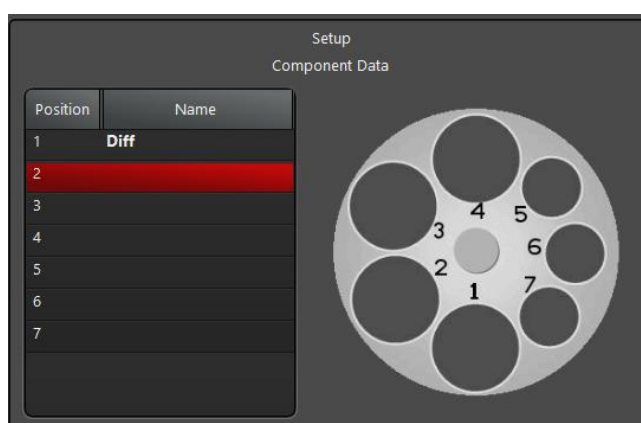
3.3 Auto Illumination

It is possible to auto illuminate all acquisition channels or the active acquisition channel. Auto Illumination will adjust light intensity, exposure and gain (if applicable) to depending on the slider position selected by the user (Sample protection vs Image quality). Default is the middle position. The settings can be manually overwritten. Automated Illumination only works with multiline LED light sources. Automated Illumination is not available on Stereo microscopes.



3.4 Sample Overview with Diffuser

DMi8 configurations without flip condenser can use objectives below 10x for sample overview acquisition if diffuser 11505216 is taught into the condenser turret.



3.5 pE300 White: Revised Light Source Behavior

In LAS X 3.11.2 the pE300 White is working in two operating modes:

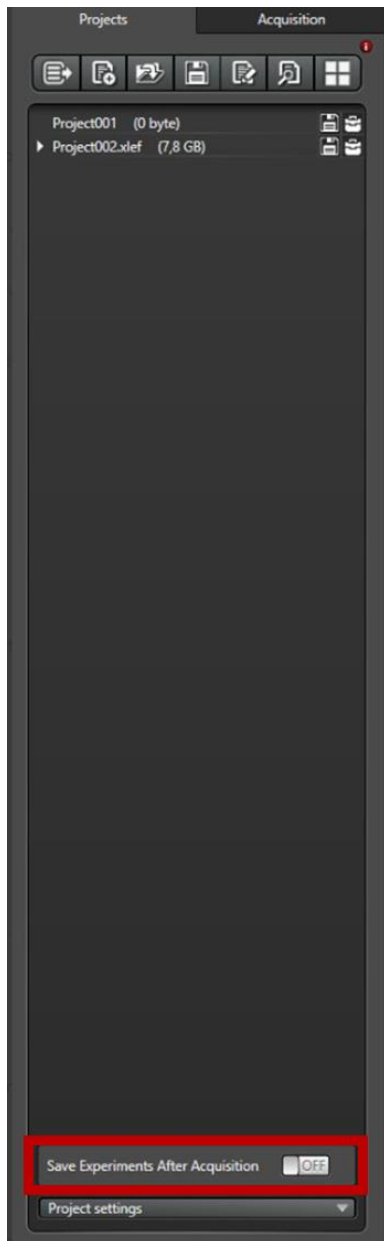
1. Sequencer controlled mode: IL shutter control only via control pod. Control via LAS X is disabled.
2. Software-only mode: the light source is exclusively controlled by LAS X. In software-only mode, control via the microscope touch panel is not available, and the configuration is indicated as "Software Only" in the Hardware Configurator. In Software-only mode the pE300 White can be used with Automatic Channel Setup and Auto Illumination.

3.6 Viventis SCAPE: "Raw Data Mode" changed to "Deskewing" with toggle "ON/OFF" in UI



3.7 Viventis SCAPE: Auto-Save Optional for Experiments

- User can now choose whether experiments should trigger automatic saving after acquisition is finished or not.
- The corresponding auto-save toggle is displayed at the bottom of the project tree.
- If auto-save is disabled, acquired data will only exist as temporary data in the defined temp data location and will need to be manually saved.
- The auto-save behavior is applied consistently across the entire SCAPE system: when enabled, all experiments — including WF experiments and experiments without size limits — are automatically saved after acquisition, and vice versa.
- Single acquisitions and Capture acquisitions are not affected by this setting and will never be auto-saved.
- The auto-save option defaults to “Off” each time LAS X is started.
- Changing the auto-save setting during an active experiment immediately takes effect for the running acquisition



4. New Hardware Support

4.1 Objective HC PL APO 20x/0.70 motCORR

11506441 Objective HC PL APO 20x/0.70 motCORR

5. End of Life: unsupported Hardware

none

6. Important Information

- **FIXED:** If "Start THUNDER after acquisition automatically" is OFF, the THUNDERed data will not be available in the project tree.
- **FIXED:** If Single Image or Capture is pressed the THUNDERed data will not be available in the project tree no matter if "Start THUNDER after acquisition automatically" is ON or OFF. Repetitive pressing of Single Image or Capture while THUNDER On The Fly is active can create a new project in the project tree.
- **FIXED:** Individual Z stacks are not possible in LAS X 3.11.1. "Same Stack Size for all Regions" is always ON.
- **FIXED:** LUT does not change when changing channels in Live mode
- **FIXED:** In rare cases the Z interface disappears. An LAS X restart will bring the Z interface back again.
- **FIXED:** pE300 white using LED IL shutter from sequencer: if fluo channels use different pE300 LEDs the LED is switched off when changing to the other channel. This only happens in live mode. Acquisition is working properly.
- **FIXED:** pE300 white global shutter closes when moving the intensity slider
If pE300 white shutter is controlled via external IL shutter command, the shutter always closes when moving the intensity slider. Only DM6 B and DMi8 with sequencer board are affected.
- **FIXED:** Acquisition ROI in Navigator did not work.
- **FIXED:** Phase Contrast and DIC does not change with objective
When changing contrasting method to Phase Contrast or DIC, the condenser turret moves correctly in position. If within Phase Contrast or DIC an objective is changed, the condenser turret does not move to the corresponding position. The bug only affects DMi8 with CTR Advanced Plus.
- **FIXED:** Multi-LED Lightsource: Activate LED. Switching to a cube which does not support the selected LED -> After cube change non valid LED remains on.
- **FIXED:** Project Tree -> Right Mouse click -> Overlay was only possible for a maximum of two channels.
- **FIXED:** Timestamp is reset to zero after 4 days and 23 hours. Fix only for systems with Master 2 Firmware.

- **FIXED:** Viventis SCAPE - Camera alignment with 0.35x is now working properly.
- **FIXED:** Viventis SCAPE – Screening profile is now applied when activated.
- **FIXED:** Viventis SCAPE - Projects are saved now automatically to E hard disk instead of C when option "Save Experiments after acquisition" is activated.
- **FIXED:** Viventis SCAPE - New project is always created as xlef on SCAPE systems. using the save icon when saving a project for the first time should open the save as dialog to choose save path.
- **FIXED:** Viventis SCAPE - New project is always created as xlef on SCAPE systems.
- **FIXED:** Viventis SCAPE - Save data to copy has now a cancel option
- **FIXED:** Viventis SCAPE – Slice of Live now updating also if started with one camera disabled
- **FIXED:** Viventis SCAPE – Progress for merge of tile scan now shown until merge process is finished
- **FIXED:** Viventis SCAPE - Deskewed t-series always deliver the expected number of time stamps
- **FIXED:** Viventis SCAPE – Experiment timer now only running max a few seconds longer than the experiment
- **FIXED:** Viventis SCAPE - Edit VOI now works after multiple acquisitions
- **FIXED:** Viventis SCAPE - Stripes in last plane do no longer occur
- **FIXED:** Viventis SCAPE - It is no longer possible to switch between settings when Slice of Live is activated
- **FIXED:** Viventis SCAPE - Max Projection in Acquisition Viewer now also works with files >60GB
- **FIXED:** Viventis SCAPE - maximum sweep range of -175 to 175, can no longer be exceeded
- **FIXED:** Viventis SCAPE - SCAPE cameras are now set to default 12-bit and no binning at every LAS X restart,
- **FIXED:** Viventis SCAPE: Galvo step size smaller than allowed can no longer be set in software
- **FIXED:** Live now works with delayed start function

- **FIXED:** Vivnetis SCAPE – wrong volume rate no longer shown in live mode
- Viventis SCAPE - Image properties in LAS X are different to those shown in the channel viewer and those in the properties of the 3D viewer: Currently the LAS X Image Property Page shows the sizes of the outer edges (i.e. leftmost voxel's left edge to rightmost voxel's right edge) while the 3D viewer shows the distance between the centers of the outer voxels (i.e. the leftmost voxel's center to rightmost voxel's center). This is a difference of one voxel size in each direction. We will harmonize the image properties in a subsequent release.
- Viventis SCAPE - LAS-X becomes unresponsive if experiment is run with >2000 positions.
- Viventis SCAPE - Dimmer last image in continuous mode: The scans acquired in continuous mode show a final frame that is dimmer than the preceding frames, whereas scans acquired in stop-and-go mode do not exhibit this behavior.
- For the 0.35x and 0.5x configurations, the darker region appears at the bottom of the image, while for the 1x configuration it appears at the top.
- Viventis SCAPE – No default enablement of both cameras during camera alignment step: When starting the Camera Alignment wizard after disabling one of the cameras in SCAPE and switching back to WF, the disabled camera remains disabled in the second tab and cannot be activated because the light path is greyed out.
- Viventis SCAPE - Setup VOI needs to be closed twice
- Viventis SCAPE - During Scape Camera Alignment Calibration the exposure slider option for T camera disappears: During SCAPE camera alignment, in the step where the exposure settings for the different cameras should be adjusted, the exposure slider disappears in the T camera tab after switching from the R camera tab to the T camera tab. As a workaround, switching back to the R camera tab and then again to the T camera tab makes the slider reappear.
- Viventis SCAPE - No t interval calculated with 0.35X C-Mount and only one camera on: When setting up a minimized timelapse experiment with one camera disabled, the time interval is not calculated correctly, and the experiment cannot be started; the interval is only calculated after enabling the second camera.
- Viventis SCAPE – Camera Alignment Wizard Cancel Button not responsive: If the Camera Alignment wizard fails, a full software restart is required before performing mechanical realignment of the cameras in order to complete the calibration successfully.
- Viventis SCAPE - Edit VOI does not react on VOI changes that happen outside of Setup VOI
- Viventis SCAPE - system optimized mode with full camera frame acquisition can result in an out-of-GPU-memory error.

- Viventis SCAPE - Auto exposure -> When activated in WF mode, remains active also in SCAPE: When returning from WF mode to SCAPE mode after using TL-BF auto exposure in WF, the auto exposure settings remain active in SCAPE and apply excessively long camera exposure times beyond the user-adjustable range, with no option to disable auto exposure directly in SCAPE mode.
- Viventis SCAPE – Choosing widefield settings in SCAPE leads to critical error and software crash
- Viventis SCAPE – Free space estimation can become incorrect if acquisitions are aborted and restarted repeatedly in quick succession.
- Viventis SCAPE - Bright edge / artifact after decon at wedge boundary of deskewed data
- pE300 White in software mode: When switching temporarily to TL-BF, the IL shutter closes and does not reopen automatically. In mixed experiments (e.g., FLUO + TL-BF), fluorescence channels are correctly illuminated in the first cycle but remain unilluminated from the second cycle onward after TL-BF acquisition.
- The Water Dispenser does not appear in the LAS X UI. Objectives with Adaptive immersion are not affected.
- In rare cases deleting a filter cube via Inplace Configuration can make the UI freeze.
- Pause function in LAS X user interface is not available
- Kinetix22: bright samples might result in overexposed images when using auto illumination.
- After installation of LAS X 3.11.2, systems with two or more cameras need to get the emission filter wheel assigned to a camera port. Otherwise, the emission filter wheel cannot be used. This does not affect LAS X system with one camera only.
- Process tab-> Crop tool-> ROI is missing.
Workaround: go to acquisition tab and back to process -> Crop ROI is available again.
- Experiments with “Wait for Trigger IN” must use shutter mode “After each image”. If shutter mode “Always open” is used, the shutter stays open after experiment start.
- Acquisition with an auto-immersion objective: the stage acceleration must be set to “acceleration for liquid medium” or to a maximum of 200mm/s². Otherwise, the water drop of auto immersion objectives will not be following the stage movement.
- In some cases the multi-channel viewer only shows the first tile of a tilescan experiment.
Workaround: go to Quantify tab and back to Acquisition tab.

- Images of the same region are differentiated by specifying the nth image in brackets, e.g. R1 (2). If this name is changed, e.g. to R1 (2)_MOD a renaming error occurs.

Workaround: Remove the brackets in the image name before renaming.

- THUNDER On The Fly-> Extract Center plane extracts the first plane instead of the center plane.

Workaround: uncheck “extract center plane” and crop the THUNDERed center plane post acquisition.

- Systems with Hamamatsu Flash camera: updating from LAS X versions below 3.10.0 requires configuring the Flash camera in the Hardware Configurator once again. Otherwise, it will not be loaded.

- K8 and Kinetix22 camera, streaming mode: Images are acquired correctly but some of the images are missing their histogram and thus appear almost black. This can happen as well with sequencer controlled Fusion camera with 1ms exposure, minimized time.
Workaround: scale images manually instead of using autoscaling.

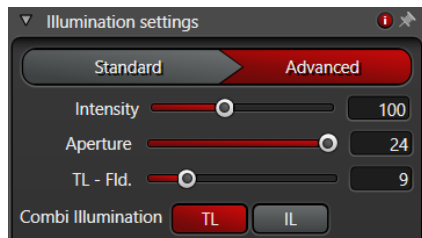
- Export interface: Multipage TIF files are exported individually for each selected channel.

- Images containing parallax acquired in Navigator first need to be merged before EDOF (Extended Depth of Focus) is applied.

- M205 FC and FCA: when performing a multi-channel time lapse sequence, one of the filters included must be located in filter turret position 1.
Position 1 of the turret contains a sensor that prevents the turret drifting over time.



- Using AFC and software autofocus during experiments on DMi8 requires sequencer being activated.
- Experiments using RFC (Relative Focus Correction): always switch to the first channel before starting the experiment. Otherwise the RFC applies wrong offsets.
- When using multi line LEDs, the shutter delays in the “hardware configurator->File->AF System Settings->IL Shutter Delay” must be set to 1ms. A longer delay time will make the shutter stay open during time intervals.
- Do not create Excel reports without installed Excel.
- Fluo-DIC and Fluo-Ph Combi Mode on DM6 and DM4: Combi Illumination within the Illumination Settings panel needs to be switched to TL before activating a live image. Otherwise the TL illumination will be missing in the Combi Mode. The missing TL illumination only affects the live image but not image acquisition.



- M205 FCA multichannel timelapse experiment with shutter control modes optimized and after each image: all images are acquired properly but light shortly switches on and off again after each cycle.
- M205 FCA multichannel experiment with Lambda then Z acquisition: all images are acquired properly but light switches on too early.
Workaround: use Z then Lambda for acquisition.
- High-speed triggered sCMOS cameras or high-speed Navigator experiments require the temp file being located on an SSD NVMe drive. Temp file on a normal SSD disk may cause the experiment to stop without being completed.
- Experiments with high-speed autofocus and camera in global reset require the experiment to start with a selected acquisition channel. Starting the experiment with a selected autofocus channel can lead to underexposed images.
- When installing LAS X from USB-Stick, Trend Micro blocks the AUTORUN.inf.
Workaround: start setup.exe manually.
- HDR acquisition with camera: only 8 bit, high-speed acquisition not supported
- Stopping a running mark and find experiment may cause loss in data. This does not happen in M&F t-series, even if the experiment is stopped before the first cycle is completed.
Workaround: wait till mark and find experiment is finished.
- Do not stop an experiment with remaining manipulation steps in the Scan Sequencer. If stopped, the remaining manipulation steps cannot be deleted from the Infinity Scanners memory. All subsequent manipulations will trigger the remaining manipulations and not the actual definition.
- The scan sequencer works with AFC in continuous mode but not with the image based autofocus (HSAF).
- Z-stack acquisition with finefocus in combination with "AFC on demand" is not supported.
- Do not change hold position during AFC on demand while AFC is activated.
- In high speed multi-channel T-series with shutter always open light intensity might differ between live image and acquired image.
Workaround: use shutter mode "after each image".

- When zooming into an image with measurement lines the measurement lines are not zooming accordingly.
Workaround: perform measurements after zooming.
- If LAS X is to be installed on the same workstation as the LMD application software, install first the LMD application software and then the LAS X Software afterwards.
Important note: Use only one software at a time. The LMD application software and LAS X software cannot be used simultaneously.
- If an objective is changed via LAS X Inplace Configuration it can happen that in the AFC Panel the AFC cannot be set to “HOLD FOCUS POSITION” or “USE AFC”. The checkbox might be grayed out.
Workaround: Close LAS X and use the HW configurator to teach in the objectives again followed by power cycle the microscope. Then start the LAS X again.
- After acquiring an image with FLUO-PH or FLUO-DIC the illumination panel disappears.
Workaround: switch to a different contrasting method (not FLUO-PH or FLUO-DIC).
- The Leica Lamphouse for TL illumination works only in highspeed with I2C connection. BNC Connection is not supported for highspeed.
- XLED light source in combination with sequencer advanced and t-series with image streaming and high-speed autofocus: if acquisition channel and HS-AF channel both use the 365nm or 460 nm line, the HS-AF images are illuminated properly, but there is no light on the sample for the acquisition channels.
- When using DFC9000 GT with exposure time < 1,5ms and light source X-LED with 460nm, some images in an external triggered time series may not be illuminated correctly.
- Hardware Configurator: TIRF cube alignment: After power up of the microscope - the first start of the TIRF cube alignment can accidentally terminate the Hardware Configurator application. In this case a restart Hardware Configurator application and a rerun of the TIRF cube alignment procedure is recommended.
- Hardware Configurator: If you teach in a new TIRF cube or replace an existing one with another type in the Hardware Configurator, please do not forget to fine-tune afterwards. Otherwise, the software may use incorrect TIRF fine-tune information.