

From Eye to Insight



Leica SR GSD 3D

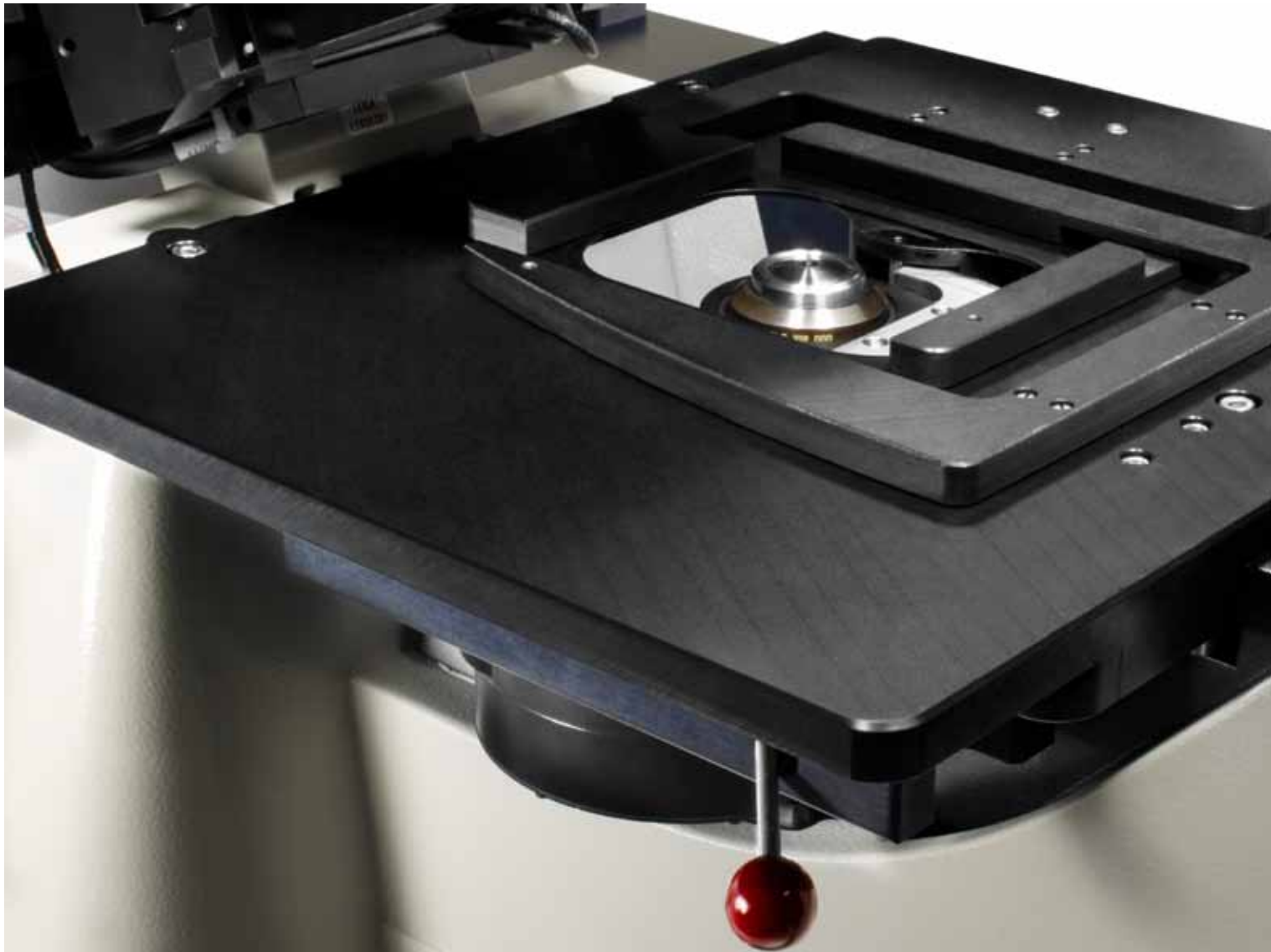
Technical Data – September 2017



Redefine the Limits of Microscopy

Widefield super-resolution with ground state depletion

- ≡ **Maximum resolution in X,Y down to 20 nm**
- ≡ **Maximum resolution in Z down to 50 nm**
- ≡ **The SuMo Stage, with Suppressed Motion technology, minimizes drift for accurate localization of molecules**
- ≡ **Online super-resolution image projection – see results as they are acquired**
- ≡ **Full application flexibility offered by combining super-resolution with TIRF and epifluorescence on a multi-purpose live cell imaging system**
- ≡ **Standard fluorochromes can be used – no need to change protocols**
- ≡ **Powerful lasers for the highest flexibility in fluorochrome selection**
- ≡ **Large set of powerful image processing tools**



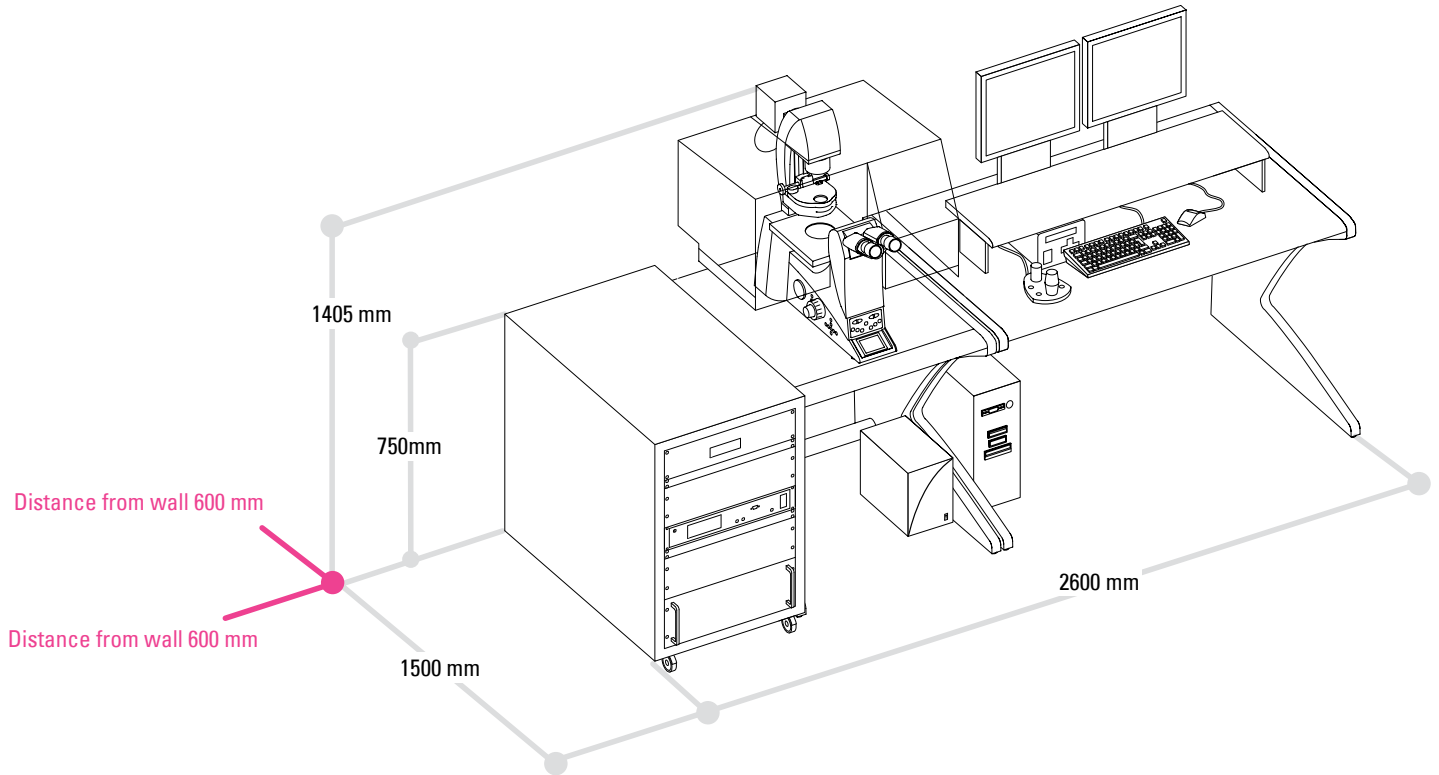
Technical Specifications

Hardware		
Microscope stand	Leica DMI8 / AM TIRF MC	<ul style="list-style-type: none"> • Right sideport obligatory: used for camera Andor iXon3 897 • Left sideport optional for additional camera • Bottom port not supported
Sample stage	SuMo Stage 11888439	<ul style="list-style-type: none"> • Special stage for GSD super-resolution • Different stages for standard applications can be exchanged by customer
Objective (GSD)	HCX PL APO 160x/1.43 Oil CORR GSD	<ul style="list-style-type: none"> • Mounted at SuMo stage • Needed for 3D GSD super-resolution imaging
Objectives (additional)		<ul style="list-style-type: none"> • DIC prism pairs for GSD systems • Mounted to nosepiece with 7.5 mm adapter ring
Lasers: Wavelength / Power	405 nm / 30 mW 488 nm / 300 mW 532 nm / 500 mW or 561 nm / 500 mW 642 nm / 500 mW	<ul style="list-style-type: none"> • TIRF + EPI-Fluorescence: All lasers for fluorescence imaging, regulated down to max. 50mW • GSD super-resolution: 488, 532, 561, 642 nm for widefield/TIRF 405 nm for backpumping (control of single molecule switching behavior)
Condenser	Condenser head 0.55 S28 Condenser S1/S28, mot./fix	<ul style="list-style-type: none"> • Mandatory for any GSD system
Filter cubes		<ul style="list-style-type: none"> • Special filter cubes available for GSD imaging
General Specifications		
Contrast methods	GSD super-resolution, TIRF, EPI-Fluorescence, Bright Field, DIC	
TIRF functionality	Fully integrated	<ul style="list-style-type: none"> • Fully automated calibration • System can be used in standard TIRF and EPI mode (standard LAS X GUI environment) • GSD super-resolution: TIRF and EPI mode available, fixed ROI 18 x 18 µm/40 x 40 µm
Software	LAS X Release 1.1 or higher	<ul style="list-style-type: none"> • Standard TIRF functionality supported • GSD implemented in integrated software wizard
GSD Super-resolution		
Lateral resolution	Maximum 20 nm, typical 40 nm	<ul style="list-style-type: none"> • Proper sample preparation obligatory • Relevant for performance qualification / warranty • Reachable under ideal imaging conditions
Axial resolution	Maximum 50 nm, typical 70-100 nm	
Cameras	Andor iXon Ultra 897	<ul style="list-style-type: none"> • EM-CCD, necessary for GSD imaging
Objective lens	HCX PL APO 160x/1.43 Oil CORR TIRF PIFOC	<ul style="list-style-type: none"> • Special TIRF lens for GSD super-resolution,
Field of view with GSD objective	18 x 18 µm: 40 x 40 µm: 51 x 51 µm: 90 x 67 µm: Up to 156 µm:	GSD, high power mode GSD, large field of view mode TIRF + GSD preview: Andor cameras DFC365 FX, 1x C-Mount (optional for standard TIRF/fluor. Imaging) Supported visual field, depending on configuration
SR image processing	Real-time, various post-processing options	
Supported Dyes	Alexa Fluor® 488, Atto 488, Rhodamine-6G, Atto 532, Alexa Fluor® 532, Alexa Fluor® 546, Alexa Fluor® 555, Atto 565, Atto 568, Alexa Fluor® 647, Alexa Fluor® 668, YFP, Abberior Star 512, etc.	



- ① Laser rack
- ② Inverted research microscope Leica DMi8
- ③ Active anti vibration table
- ④ Anti vibration table
- ⑤ Leica EL6000 external light source
- ⑥ Leica CTR advanced + control box
- ⑦ Computer workstation
- ⑧ Piezo controller
- ⑨ TIRF/GSD Module

Additional DIC objectives		Order number
HC PL APO	10x/0.40	11506284
HXC PL FLUOTAR L	20x/0.40	CORR 11506242
HC PLAN APO	20x/0.70	11506166
HXC PL FLUOTAR L	40x/0.60	CORR 11506201
HXC PL APO	40x/1.30	OIL 11506329
HXC PL FLUOTAR L	63x/0.70	CORR 11506216
HXC PL FLUOTAR	63x/0.90	CORR 11506223
HXC PL APO CS UVIS	63x/1.20	W CORR 11506355
HXC PL APO	63x/1.30	GLYC 11506398
HXC PL APO	100x/1.40-0.70	OIL 11506220
HXC PL APO CS	100x/1.44	OIL CORR 11506325
HXC PL APO	100x/1.47	OIL 11506318



Maximum footprint of the Leica SR GSD with antivibration table, laser rack and system desk.

Installation Requirements

Environment	Room temperature: +15 to + 30° C Air condition required, but avoid proximity to GSD system Protect from dust Room darkening recommended Humidity max 80%, non condensing Temperature stability $\pm 1^{\circ}\text{C}$ ($\pm 1.8^{\circ}\text{F}$) ; $\Delta T < 0.5^{\circ}\text{C}/15\text{min}$
Electricity supply	The system requires two mutually independent fuse circuits. One fuse circuit for the main system and the second for the laser rack. 2x Supply voltage 115 VAC $\pm 10\%$: 15 Ampere 2x Supply voltage 230 VAC $\pm 10\%$: 12 Ampere
Heat load	System: approx. 2 kW Climate controller: approx. 300 W Cooling capacity: max. 2.5 kW waste heat
Crating (width, depth and height in mm)*	Pallets: 2x 1200/800/1400, 1x 750/750/1100 max weight: 450 kg (if optional work desk and/or antivibration table is included)
	Pallets for other hardware components

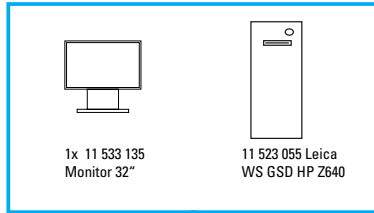
* maximum numbers for the Leica SR GSD Systems

Leica SR GSD 2D/3D

2017-09-22

- 11 600 220 Keyboard US
- 11 600 221 Keyboard UK
- 11 600 223 Keyboard Italian
- 11 600 224 Keyboard German
- 11 600 225 Keyboard Spanish
- 11 600 222 Keyboard Swedish
- 11 600 219 Keyboard French

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Cameras

- 11 541 510 1.0x C-mount adapter
- 11 541 543 0.7x C-mount adapter
- 11 532 913 Andor iXon Ultra 897 EM CCD back illuminated*
- 11 547 101 Trigger cable Andor iXon Ultra 897
- 11 547 108 GSD/PCO Edge 4.2 Camera Package
- 11 547 004 Leica DFC365 FX
- 11 600 243 Trigger cable DFC Cameras
- 11 547 003 Leica DFC345 FX
- 11 600 243 Trigger cable DFC Cameras
- 11 547 002 Leica DFC310 FX
- 11 600 243 Trigger cable DFC Cameras
- 11 640 270 Hamamatsu 9100-02 EM-CCD high speed set
- 11 600 246 Trigger cable Hamamatsu cameras
- 11 600 239 Hamamatsu 9100-13 EM-CCD back illuminated
- 11 600 246 Trigger cable Hamamatsu cameras
- 11 600 266 Hamamatsu Orca R² CCD
- 11 600 267 Trigger cable Hamamatsu Orca R²
- 11 532 798 Photometrics Evolve Camera EM CCD
- 11 547 100 High speed trigger cable for Evolve cameras

* Default cameras - always needed for GSD

Peripheral triggering

- 11 525 363 System trigger 4 channels (i...)

Software Options, 64 Bit Version

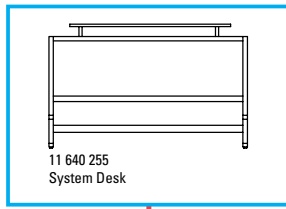
Acquisition Modules	Advanced Modules
11 640 878 LAS X Core	11 640 868 Calcium Imaging (Requires Multi-Channel Acquisition, Time-Lapse)
11 640 879 Dongle for LAS X Extensions	11 640 867 Live Data Mode
11 640 874 LAS X Multi-Channel Acquisition	11 640 854 3D Visualization Basic
11 640 873 LAS X Time-Lapse	11 640 853 3D Visualization Advanced
11 640 872 LAS X Z-Control and Software Autofocus**	11 640 820 3D Analysis (Requires 3D Vis. Basic and Advanced)
11 640 871 LAS X Mark and Find*	11 640 866 Colocalization
11 640 870 LAS X Stitching*	11 640 865 3D Deconvolution
11 640 869 LAS X Camera Driver Non-Leica Cameras	11 640 864 2D Deconvolution
	11 640 863 Dye Finder
	11 640 862 FRET Software (Requires Multi-Channel Acquisition, Time-Lapse)

Packages

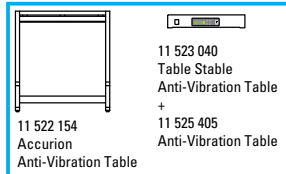
- 11 640 858 LAS X Expert incl. PC (LAS X Core, Dongle, Multi-Channel, Time-Lapse, Z-Control, 3D-Visualization)
- 11 640 857 LAS X Expert without PC

* Only available for configurations with motorized stage ** Requires motorized z-drive

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High-Speed Mic Box

11525209 CTR Box advanced+ (4xUSB, 8xI2C, 1xRS232) Sequenzer board 11 525 213

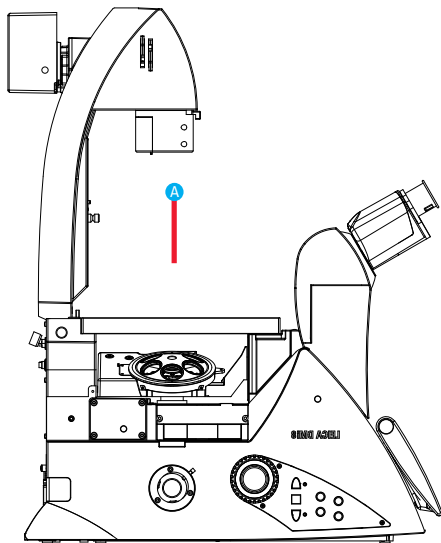
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EL 6000

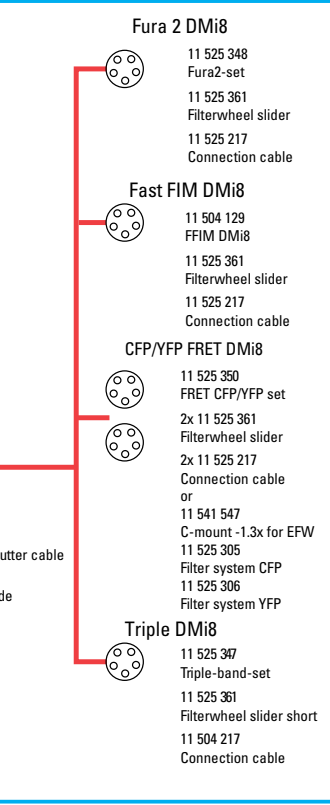
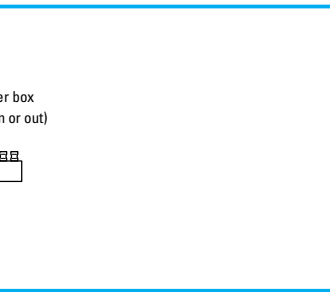
- 11 504 115 EL 6000
- 11 500 336 High Speed shutter cable
- 11 504 116 Liquid light guide

EL 6000 + Leica External FW

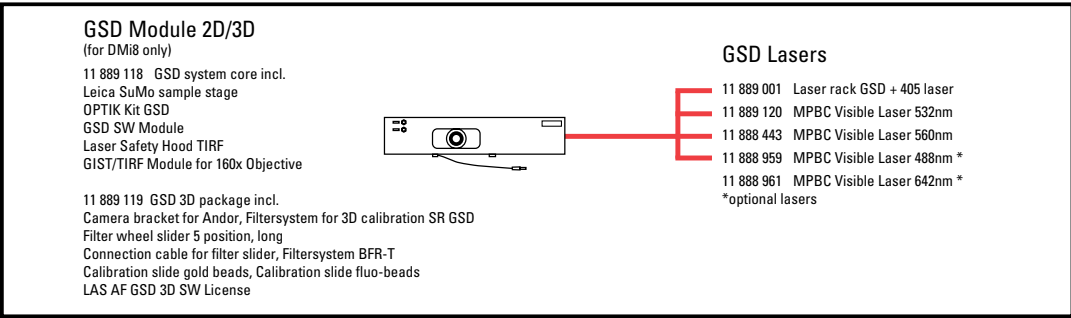
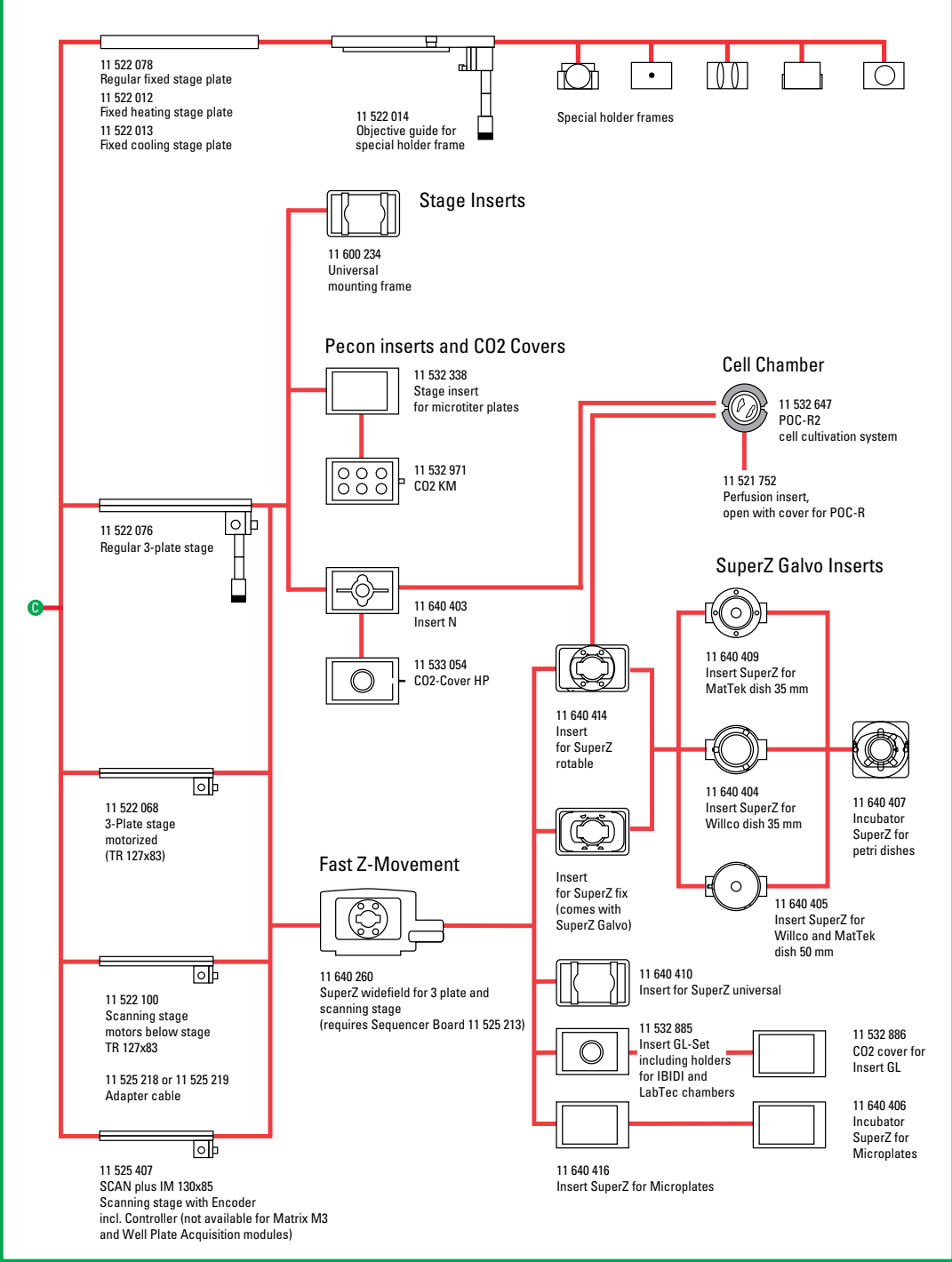
- 11 504 115 EL 6000
- 11 500 336 High Speed Shutter cable
- 11 504 116 Liquid light guide
- 11 640 266 Holder for two FW sliders



Leica DMI8



Optional stages for system used as imaging platform (exchange of GSD stage with following stages possible)



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