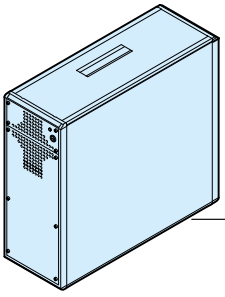
Specification LSM 700

Microscopes	
Upright stands	Axio Imager.Z1, Axio Imager.M1, Axio Examiner, Axio Scope mot for LSM
Inverted stands	Axio Observer.Z1 (SP) Axiovert 200M (SP)
Z drive, smallest increment	Axio Imager.Z1, Axio Imager.M1, Axio Observer.Z1: < 25 nm; Axio Examiner: < 30 nm; fast piezo objective or stage focus accessory; Definite Focus for inverted microscopes; XY stage, option: motorized XY scanning stage, with Mark & Find function (XYZ) and tile (mosaic) scan
Accessories	AxioCam digital microscope camera; integration of incubation chambers
Scanning module	
Scanning module	1 or 2 reflection/fluorescence (R/FL) detection channels, each with highly sensitive PMT detectors, prepared for lasers of wavelengths 405, 445, 488, 555 and 639 nm; option: 1 external transmitted-light channel (DIC-capable)
Scanners	Two independent galvanometer mirrors with ultrashort line and frame flyback
Scan resolution	4 × 1 up to 2048 x 2048 pixels, also for two channels, continuously variable
Scan speed	Up to 5 fps of 512 x 512 pixels (and, e.g., 27 fps with 512 x 96 pixels, or 154 fps with 512 x 32 pixels) in two channels, selection of 26 speed levels
Line scan mode	Scaleable from 4 to 2600 lines/s with 512x1 pixels
Scan zoom	0.5x to 40x, digitally variable by increments of 0.1
Scan rotation	Free 360° rotation, variable by increments of 1°, free XY offset
Scan field	18 mm field diagonal (max.) in the intermediate image plane, with full pupil illumination
Pinhole	Motorized master pinhole, continuously variable diameter
Beam conduction	Main color beamsplitter, outstanding laser line suppression
Spectral detection	Simultaneously in two confocal reflection channels, with high-sensitivity, low-noise PMTs, adjustable (increment 1 nm)
Data depth	Selectable between 8, 12 and 16 bit
Laser modules	
Laser modules (VIS, V)	Pigtail-coupled solid-state lasers with polarization-preserving single-mode fibers; up to 4 V/VIS lasers directly connectable to the scanning module
Laser lines	405 nm 5 mW or 445 nm 5 mW; 488 nm 10 mW; 555 nm 10 mW; 639 nm 5 mW (each at the fiber output end). Fast (pixel-precise) individually variable intensity setting of all laser lines (direct modulation). Automatic power down of lasers not in use

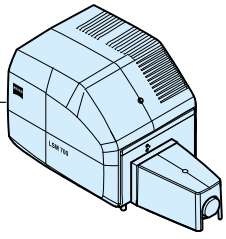
Electronics module	
	Real-time electronics integrated in PC; communication with PC via PCI Express
	Control of microscope, lasers, scanning module and accessory components; monitoring of data acquisition and synchronization
	Oversampling read-out logics for best sensitivity and twice the SNR; online data extraction possible already during image acquisition
	User PC generously equipped with main memory and hard-disk capacity; ergonomic, high-resolution 16:10 TFT flat-panel display
	Many accessories; Windows VISTA operating system, multi-user capability
	Ethernet connection to local area network

Standard software ZEN	
	Configuration of all motorized functions of microscope, scanning module and lasers Configurable and savable workspace (user interface) Saving and restitution of application-specific configurations (ReUse)
	System self-test: Calibrating and testing tool for automatic system checking and adjustment
	Smart Setup; Automatic setting of the system according to a selection of dyes
	Acquisition modes: Spot, Line/Spline, Frame, Z stack, Lambda Stack, Time Series and all combinations (XYZ | t)
	Online computation and presentation of ratio images; averaging and summation (linewise, framewise, configurable), Step Scan (for higher frame rates)
	Crop function: Convenient selection of scan areas (zoom, offset, rotation simultaneously); RealROI Scan, Spline Scan, scan of up to 99 ROIs of any shape, pixel-precise laser blanking; scan along a freely defined line
	ROI Bleach: Localized bleaching in up to 99 bleaching-ROIs for applications such as FRAP or Uncaging; use of different speeds for bleaching and image acquisition, use of different laser lines for different ROIs.
	Multitracking: Fast change of excitation lines when acquiring multiple fluorescences, for minimizing signal crosstalk Lambda Scan: Sequential acquisition of image stacks with spectral information for every pixel Linear Unmixing: Generation of crosstalk-free multifluorescence images with simultaneous excitation; online or offline unmixing, automatically or interactively; advanced unmixing logic with reliability statement
	Presentation: XY, Orthogonal (XY, XZ, YZ), Cut (3D section), 2.5D for time series of line scans

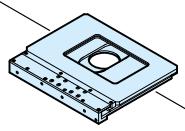
System Overview LSM 700



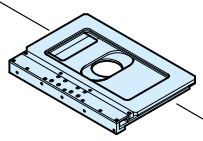
Electronics and laser module
for LSM 700
(4x pigtailed laser 405-639 nm)



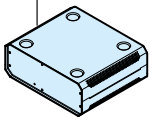
1-2-channel scanning module LSM 700



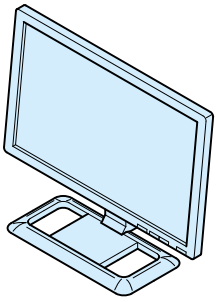
Scanning stage 130x85 PIEZO
for upright stand



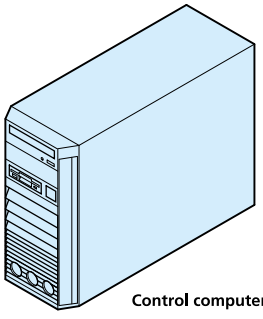
Scanning stage 225x85 PIEZO
for upright stand



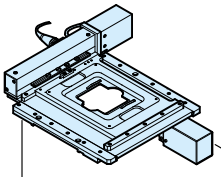
XY-stage controller PIEZO
XY-joystick
for stage controller PIEZO



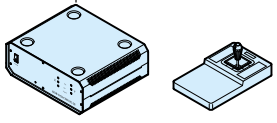
LCD TFT flat screen monitor 30"
16:10 flat screen monitor 24"



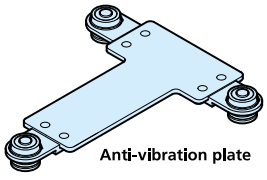
Control computer



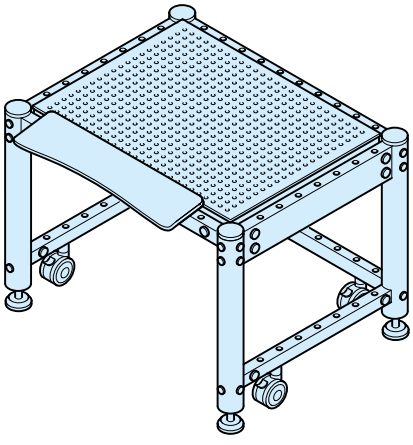
Scanning stage DC 120 x 100
for inverted stand



Controller incl. joystick



Anti-vibration plate



System table with breadboard
Wide: 1000x750mm (1200x950 overall)
Narrow: 750x1000mm (950x1200 overall)

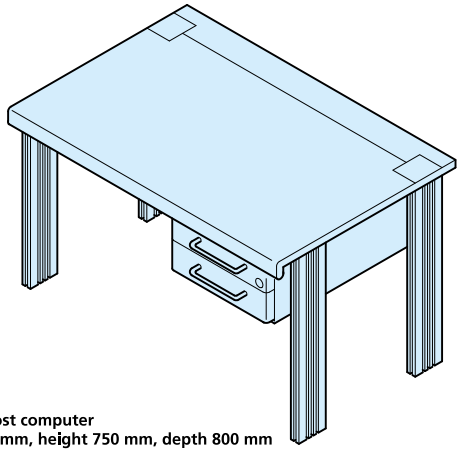
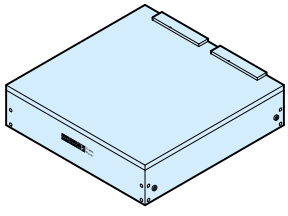
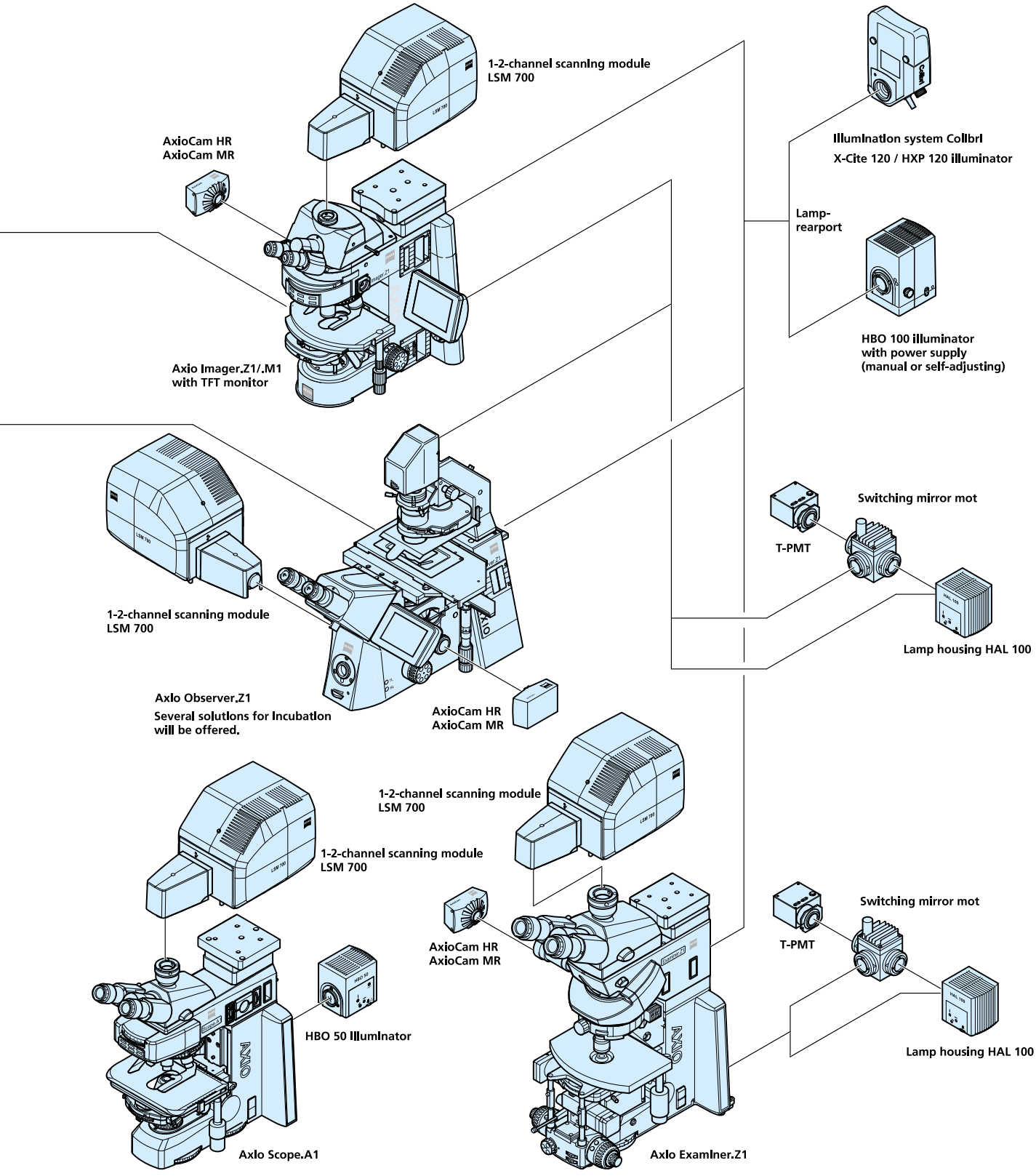


Table for host computer
width 1200 mm, height 750 mm, depth 800 mm



MOD-1M active antivibration system
table surface: 40 cm x 40 cm

MOD-1L active antivibration system
table surface: 60 cm x 60 cm


1-2-channel scanning module
LSM 700
AxioCam HR
AxioCam MR
Illumination system Colibri
X-Cite 120 / HXP 120 illuminator
Lamp-
rearport
HBO 100 illuminator
with power supply
(manual or self-adjusting)
Axio Imager.Z1/.M1
with TFT monitor
1-2-channel scanning module
LSM 700
Switching mirror mot
T-PMT
Lamp housing HAL 100
Axio Observer.Z1
Several solutions for Incubation
will be offered.
AxioCam HR
AxioCam MR
1-2-channel scanning module
LSM 700
1-2-channel scanning module
LSM 700
AxioCam HR
AxioCam MR
Switching mirror mot
T-PMT
HBO 50 Illuminator
Lamp housing HAL 100
Axio Scope.A1
Axio Examiner.Z1