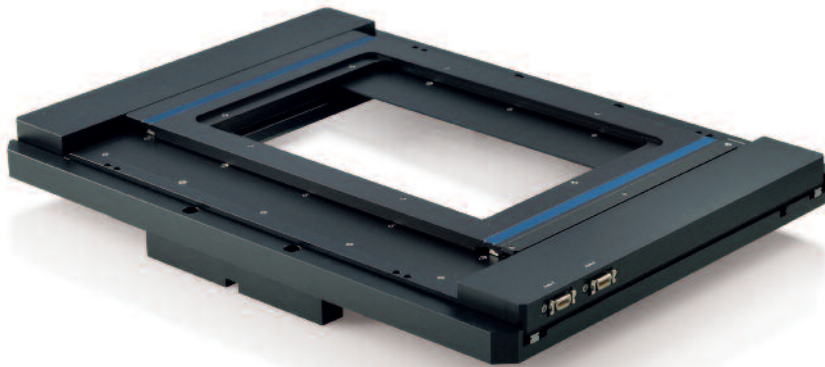# XY Microscope Stage with PILine® Motor, Controller and Joystick

STABLE, DYNAMIC, LOW PROFILE

M-687

- Highest stability
- 0.1 µm resolution
- Travel range up to 135 x 85 mm
- For inverted microscopes, free rotation of turret
- Suitable Z sample scanner available

Reference-class XY microscope stage
Controller and joystick included. 160 × 110 mm clear aperture. Versions for inverted microscopes:

- Nikon Eclipse Ti-E/Ti-U/Ti-S (M-687.UN)
- Olympus IX2 (M-687.UO)

High-resolution piezo linear drive
Self-locking at rest. Low noise. Highest stability due to low thermal load and no need for lubricants. Large dynamics range of 10 µm/s to 100 mm/s, ideal for operation via joystick and automated high-content methods

Direct-metrology linear encoder
High resolution and repeatability

User software
PIMikroMove. PI General Command Set (GCS). Drivers for LabVIEW. compatible with µManager, MetaMorph, MATLAB

Accessories
M-687.AP1 plain plate for slide holder and petri dish holder

Fields of application
For inverted microscopes made by Nikon and Olympus, versions for other microscopes are available on request. For super-resolution microscopy, tiling, automated scanning microscopy
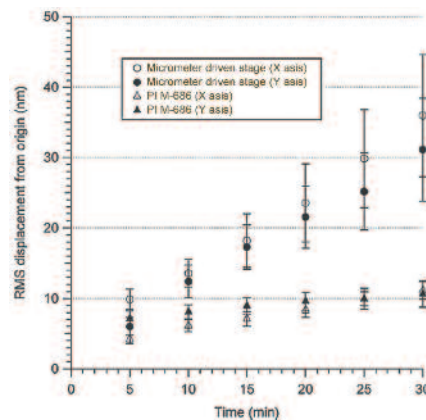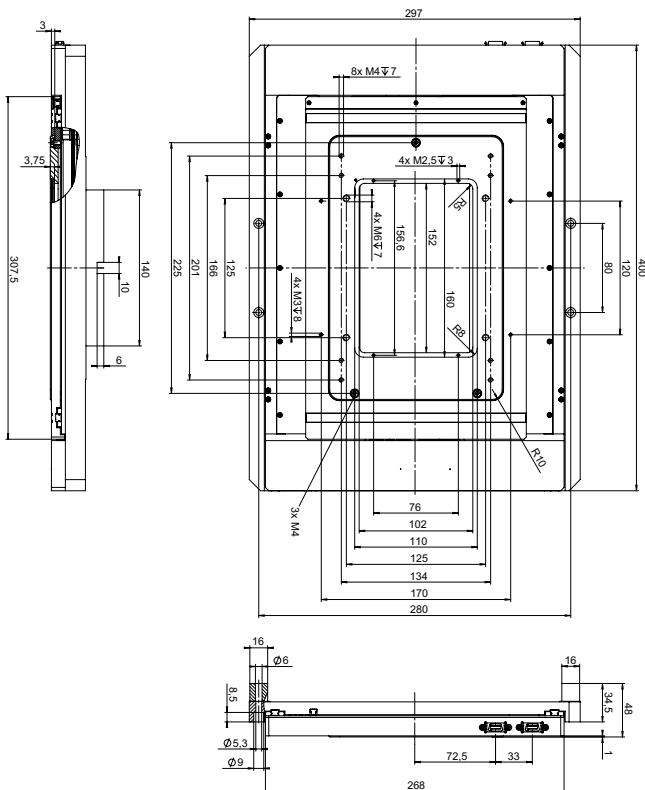

Stability of an M-686 XY stage in comparison to a stage with micrometer screw. Source: S.C. Jordan/P.C. Anthony: Design Considerations for Micro- and Nanopositioning: Leveraging the Latest for Biophysical Applications, Current Pharmaceutical Biotechnology, 2009, 10, 515-521
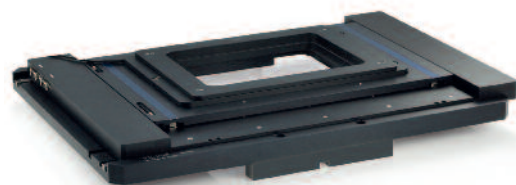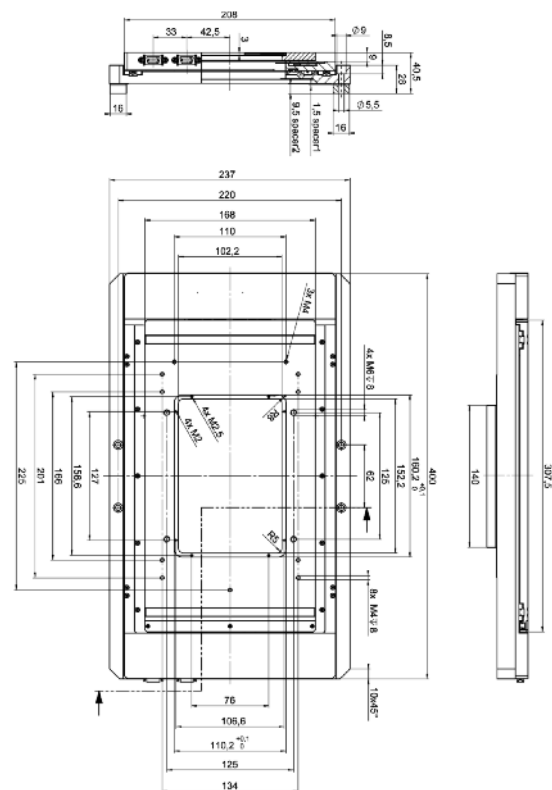

Suitable Z piezo stage with 200 µm stroke and 60 x 110 mm clear aperture available on request

	M26821LNJ	M26821LOJ	Units	Tolerance
	System with M-687.UN for Nikon microscopes	**System with M-687.UO for Olympus microscopes**		
Active axes	X, Y	X, Y		
Motion and positioning				
Travel range	135 x 85	100 x 75	mm	
Integrated sensor	Linear encoder	Linear encoder		
Sensor resolution	0.1	0.1	µm	
Bidirectional repeatability	0.4	0.4	µm	
Pitch / Yaw	±300	±300	µrad	typ.
Max. velocity	120	120	mm/s	
Reference point switches	Optical, 1 µm repeatability	Optical, 1 µm repeatability		
Limit Switches	Hall-effect	Hall-effect		
Mechanical properties				
Max. load	50	50	N	
Max. push / pull force	7	7	N	
Miscellaneous				
Operating temperature range	20 to 40	20 to 40	°C	
Material	Al (black anodized)	Al (black anodized)		
Mass	3.2	3.8	kg	±5 %
Piezomotor controller	C-867.262 with USB joystick (included in delivery)			
Communication interfaces	USB, RS-232, Ethernet			
I/O Connector	4 analog/digital in, 4 digital out (Mini-DIN, 9-pin)			
	digital: TTL; analog: 0 to 5 V, USB joystick			
Command set	PI General Command Set (GCS)			
User software	PIMikroMove			
Software drivers	LabVIEW drivers, GCS-DLL, dynamic link libraries for Windows (DLL) and Linux			
Supported functionality	Start-up macro, macro, data recorder / trace memory, MetaMorph, µManager, MATLAB			
Controller dimensions	320 x 150 x 80.5 mm (including mounting rails)			

Linear Actuators & Motors

Nanopositioning & Piezoelectrics

Nanometrology

Hexapod Systems

Linear Stages Multi-Axis

Appendix

M-687.UN for Nikon Microscopes, dimensions in mm

M-687.UO for Olympus Microscopes, dimensions in mm