

## Miniature Linear Stage

With DC or Stepper Motor



### L-402

- Travel range 13 mm
- Unidirectional repeatability to 0.5  $\mu\text{m}$
- Velocity to 5 mm/s
- Load capacity to 1 kg
- Integrated reference point and limit switch

### Standard-class linear stage

Miniature stage with very compact dimensions, only 22.5 mm width. Zero-backlash fine-threaded spindle. Linear crossed roller guides. Directly mountable XY and XYZ combinations. Optical reference points and limit switches.

### Versions

- DC servo motor with rotary encoder on the motor shaft
- 2-phase stepper motor, for minimum incremental motion with microsteps
- Versions with backlash-compensated ball screw on request
- Vacuum-compatible versions to  $10^{-6}$  hPa on request

### Crossed roller guide

With crossed roller guides, the point contact of the balls in ball guides is replaced by line contact of the hardened rollers. Consequently, they are considerably stiffer and need less preload, which reduces friction and allows smoother running. Crossed roller guides are also distinguished by high guiding accuracy and load capacity. Force-guided rolling element cages prevent cage creep.

### Application fields

Precision microassembly, Research, Automation, Vacuum

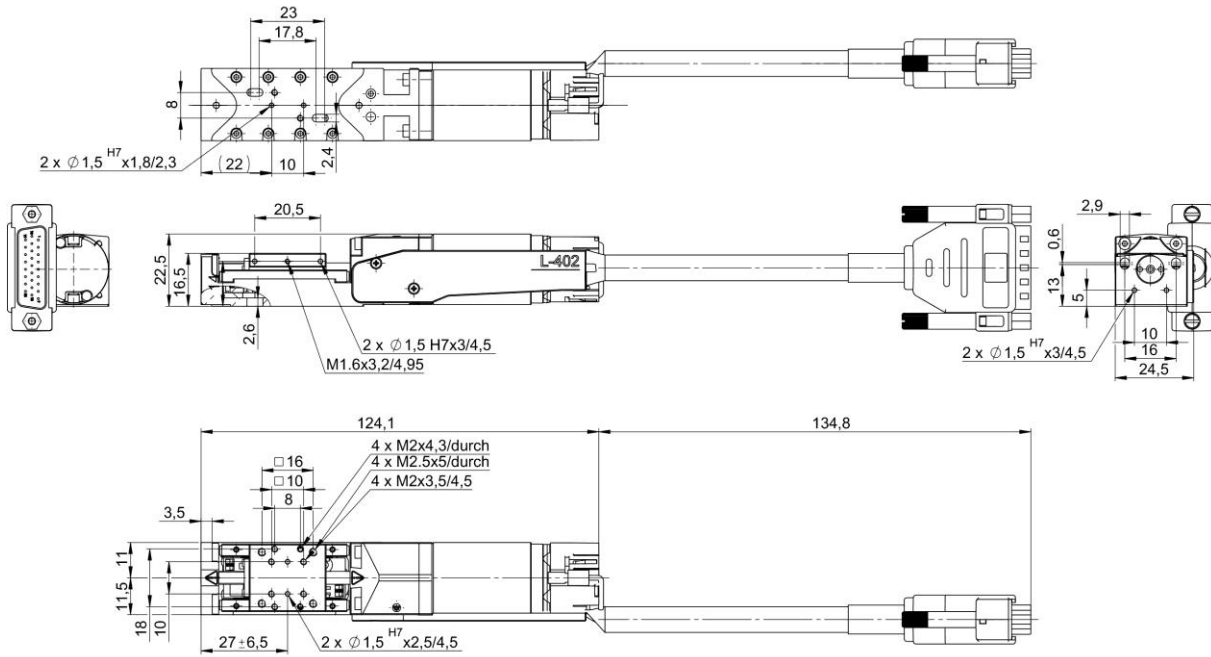
## Specifications

	L-402.10DD	L-402.10SD	Unit	Tolerance
<b>Motion and positioning</b>				
Travel range	13	13	mm	
Integrated sensor	Rotary encoder with A/B quadrature signal transmission	–		
Design resolution	0.122	2.5 (full step)	μm	
Sensor resolution rotary encoder	4096	–	Cts./rev.	
Minimum incremental motion	1	0.5	μm	typ.
Unidirectional repeatability	1	0.5	μm	typ.
Bidirectional repeatability	±5	±5	μm	typ.
Pitch	±175	±175	μrad	typ.
Yaw	±125	±125	μrad	typ.
Straightness	±3	±3	μm	typ.
Flatness	±3	±3	μm	typ.
Velocity	5	5	mm/s	max.
Reference and limit switches	Optical	Optical		
<b>Mechanical properties</b>				
Drive screw	Leadscrew	Leadscrew		
Drive screw pitch	0.5	0.5	mm	
Load capacity	10	10	N	max.
Push/pull force	10	10	N	max.
Holding force	10	10	N	max.
Permissible lateral force	5	5	N	max.
Permissible torque in $\theta_x, \theta_y, \theta_z$	1	1	N·m	max.
<b>Drive properties</b>				
Motor type	DC motor	2-phase stepper motor		
Step resolution	–	200	Full steps/rev.	
Operating voltage, nominal	24	24	V	nom.
Operating voltage, max.	48	48	V	max.
<b>Miscellaneous</b>				
Operating temperature range	5 to 40	5 to 40	°C	
Material	Aluminum, anodized, stainless steel	Aluminum, anodized, stainless steel		
Mass	0.16	0.15	kg	
Cable length	0.135	0.25	m	±10 mm
Connector	HD Sub-D 26 (m)	HD Sub-D 26 (m)		
Recommended controllers	C-863 (single axis) C-884 (up to 6 axes) C-885 with C-863.20C885 (to 40 axes) ACS modular controller	C-663.12 (single axis) SMC Hydra (double axis) C-885 with C-663.12C885 (up to 20 axes) ACS modular controller		

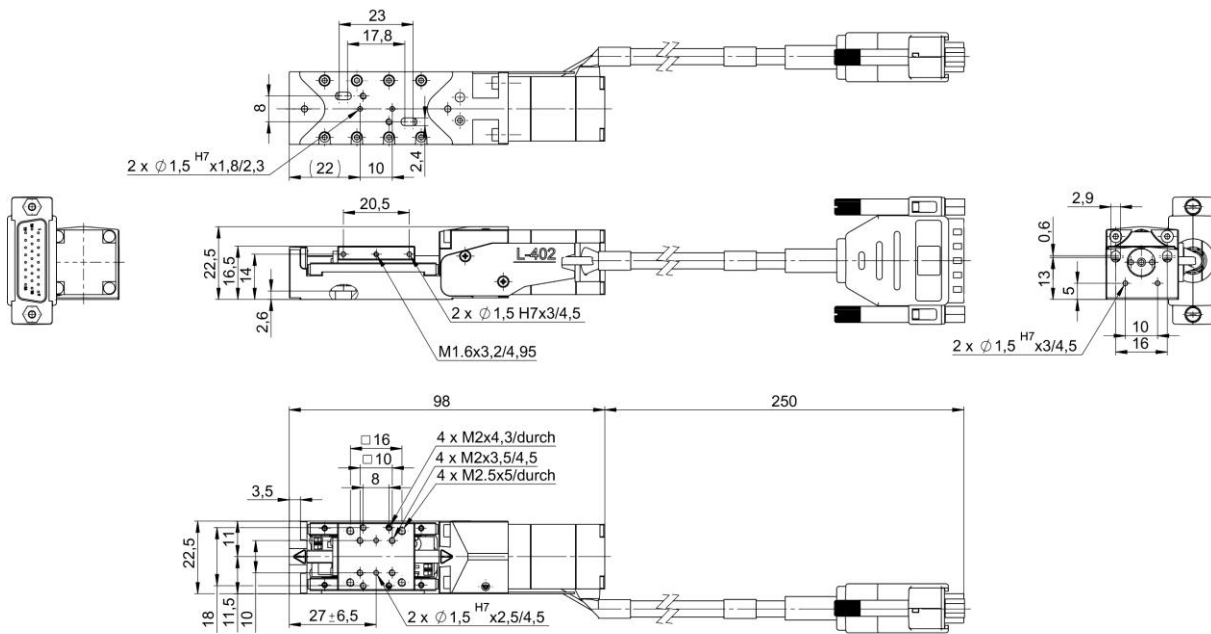
All cables required for operation with the recommended controller are included in the scope of delivery. The cable length is 3 m. Cable for connecting to other controllers can be ordered as accessory.

Ask about customized versions.

## Drawings / Images



L-402.10DD, dimensions in mm



L-402.10SD, dimensions in mm



*L-402.10DD with DC motor*

## Ordering Information

### **L-402.10DD**

Miniature linear stage, 22 mm width, 13 mm travel range, DC motor, rotary encoder, 0.135 m cable length

### **L-402.10SD**

Miniature linear stage, 22 mm width, 13 mm travel range, stepper motor, 0.25 m cable length