

**F-140**

**XYZ Motorized & Piezoelectric  
Photonics Alignment Systems**

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**Application  
Examples**

- Photonics packaging
- Optical device testing
- MEMS positioning/alignment
- Fiber alignment
- Micromachining
- Micromanipulation (life sciences)
- Semiconductor test systems
- For non-photonics applications see the M-126, p. 7-32

- **25 mm Motorized Travel**
- **1 nm Resolution**
- **Closed-Loop Piezo Drives Available**

F-140 are compact computer-controllable XYZ alignment and positioning systems combining the advantages of ultra-high-resolution piezo drives with the long travel range of motorized stages.

They are based on the M-126 micropositioning stages (p. 7-32) and the P-611 Rapid Piezo NanoAlignment units (page 8-16).

The F-140 is available in 4 different versions, with DC-motor "coarse" drives and open- and closed-loop piezoelectric "fine" drives.

The motor drives provide 0.1 and 0.2  $\mu\text{m}$  minimum incremental motion over a travel range of 25 mm. The piezo fine drives feature a 100  $\mu\text{m}$  travel range in X, Y and Z, with zero-stiction, zero-friction flexure guiding systems and 1 nm resolution.

The C-880 multi-axis automation platform (page 9-6) is recommended as driving system.

**Ordering  
Information**

**F-140.SPD**

XYZ Alignment System, 25 mm, 100  $\mu\text{m}$ , ActiveDrive Motor/Encoder, C/L Piezo

**F-140.SDG**

XYZ Alignment System, 25 mm, 100  $\mu\text{m}$ , DC Motor Gearhead/Encoder, C/L Piezo

**F-140.OPD**

XYZ Alignment System 25 mm, 100  $\mu\text{m}$ , ActiveDrive Motor/Encoder, O/L Piezo

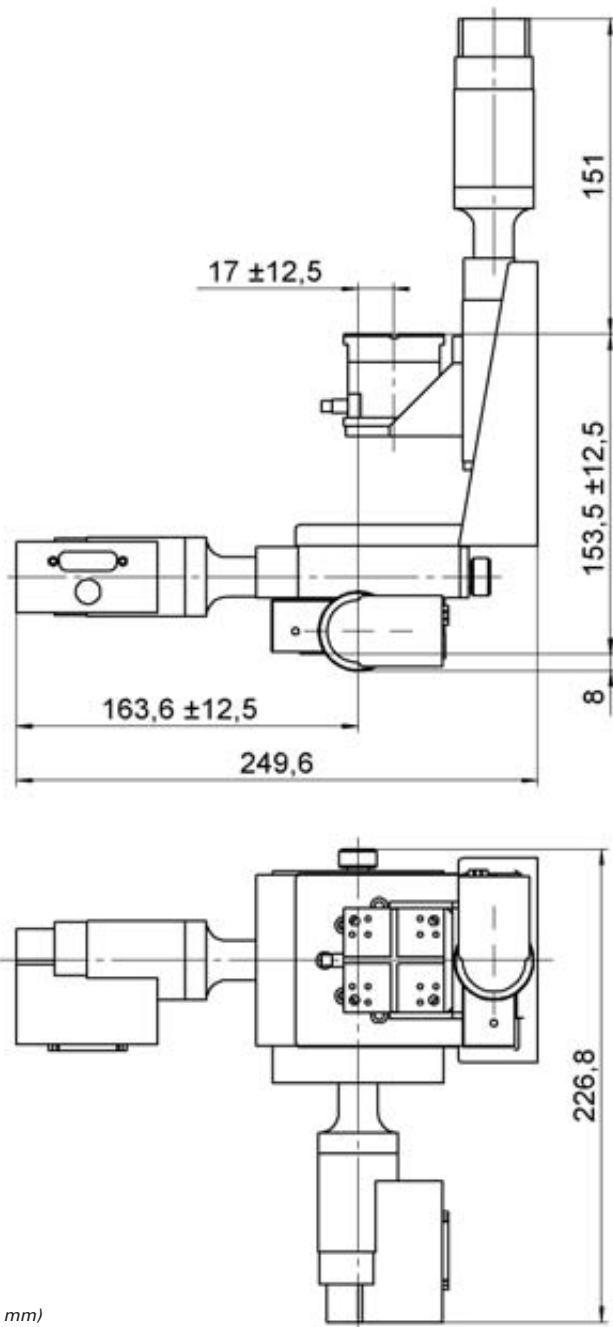
**F-140.ODG**

XYZ Alignment System, 25 mm, 100  $\mu\text{m}$ , DC Motor Gearhead/Encoder, O/L Piezo

**Custom Designs  
for Volume Buyers**



F-140.SPD XYZ Alignment System, 25 x 25 x 25 mm, 1 nm resolution, with optional F-603.22 ferrule holder.



F-140 dimension (in mm)

The C-880 Multi-axis automation platform is recommended as controller for the F-140.



## Technical Data

Models	F-140.SPD	F-140.SDG	F-140.OPD	F-140.ODG	Units	Notes see p. 7-96
Key features	ActiveDrive closed-loop DC motors, closed-loop PZT drives	DC motor gearhead/ encoders, closed-loop PZT drives	ActiveDrive closed-loop DC motors, open-loop PZT drives	DC motor gearhead/ encoders, open-loop PZT drives		
Active axes	X,Y,Z	X,Y,Z	X,Y,Z	X,Y,Z		
Motorized travel range (XYZ)	25	25	25	25	mm	
Piezo travel range (XYZ)	100	100	100	100	µm	
Design resolution (motor)	0.125	0.0085	0.125	0.0085	µm	A3
Min. incremental motion (motor)	0.2	0.1	0.2	0.1	µm	A4
Closed-loop / open-loop resolution (PZT)	2/1	2/1	- / 1	- / 1	nm	
Motorized stage	M-126.PD	M-126.DG	M-126.PD	M-126.DG		see p. 7-32
PZT drive	P-611.3SF	P-611.3SF	P-611.3OF	P-611.3OF		see p. 8-16
Material	Al	Al	Al	Al		L
Recommended controllers (see page 9-6)	C-880	C-880	C-880	C-880		