5-Axis Fiber Alignment System

Ideal for Array Devices

F-122

- Angle optimization by goniometer
- Safety due to integrated sensor technology
- Long travel ranges to 25 mm respectively 10°
- Maximum velocity of 20 mm/s respectively 15°/s

Robust and precise drives

The XYZ setup of the fiber alignment system consists of three motorized linear stages from the M-122 series for linear motion, and the WT-85 and WT-100 goniometers for angular motion. All stages are distinguished by their high precision and robustness. Because all drives are equipped with position sensors, it is possible for example, to reliably prevent collisions with expensive silicon wafers.

Extensive software package

The fiber alignment system is supplied with an extensive software package including the PIMikroMove graphic user software for startup and operation of all PI systems.
Programming interfaces are included in the software package that allow the user to integrate a PI controller into their own user programs. The control of the positioning system therefore becomes part of the user program. Interfaces are available for all common programming languages including NI LabVIEW and MATLAB.
Furthermore, there is an option to purchase the C-990.FA1 software. It provides a particularly convenient method for setting up the axes for scanning, performing the scans, and displaying the results.

Automatic alignment

In conjunction with the C-884.6DC and the optional C-990.FA1 software, it is possible to use the F-122.5DC 5-axis alignment system system for fully automatic alignment of light-transmitting components. For this purpose, the optical intensity signal is made directly available to the controller via its analog input.

Application fields

Alignment of optical components, qualification of optical components in silicon photonics

Specifications

Motion and positioning	F-122.5DC	Unit
Active axes	X, Y, Z, θ_X, θ_Y	
Travel range in X, Y, Z	25, 25, 25	mm
Travel range in θ_X, θ_Y	10, 10	°
Typical minimum incremental motion X, Y, Z	0.75	µm
Minimum incremental motion θ_X, θ_Y, typ.	17.5	µrad
Design resolution X, Y, Z,	0.1	µm
Design resolution θ_X, θ_Y	3.5 (WT-100) 4.65 (WT-85)	µrad
Unidirectional repeatability X, Y, Z,	0.3	µm
Unidirectional repeatability θ_X, θ_Y	70	µrad
Backlash X, Y, Z	1	µm
Max. velocity X, Y, Z	20	mm/s
Max. velocity θ_X, θ_Y	15	°/s

Mechanical properties	F-122.5DC	Unit
Load capacity	2	N
Drive screw type	Ball screw	

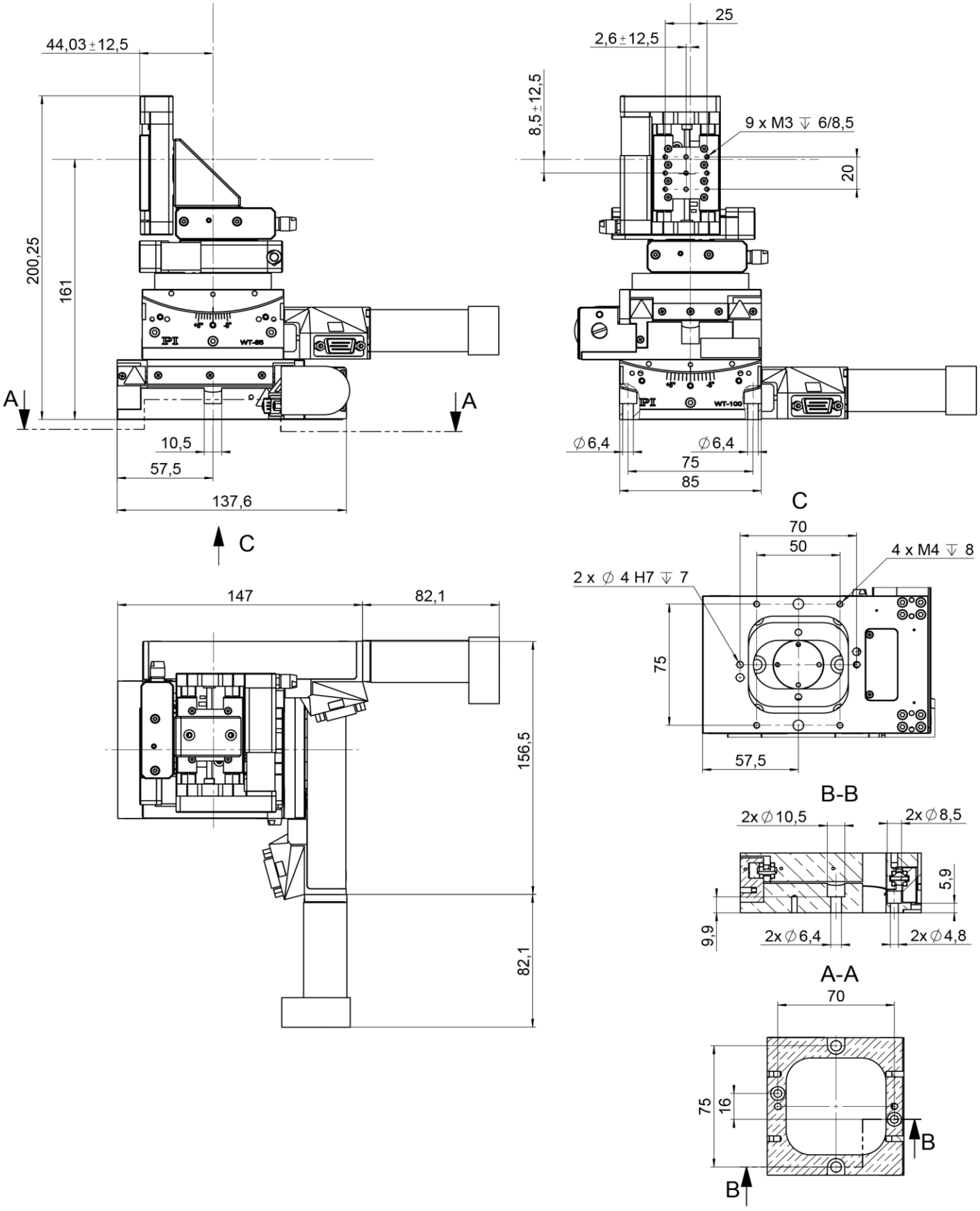
Alignment	F-122.5DC	Unit
Scanning time for spiraled area scan 500 µm Ø, 20 µm line distance	<5*	s
Scanning time for spiraled area scan 100 µm Ø, 10 µm line distance	<2*	s

Drive properties	F-122.5DC	Unit
Motor type	DC motor	
Operating voltage	0 to ± 12 (M-122) 0 to ± 24 (WT-85 / WT-100)	V

Miscellaneous	F-122.5DC	Unit
Operating temperature range	10 to 40	°C
Material	Aluminum, steel	
Mass	3.6	kg
Cable length	3	m
Recommended controller	C-884.6DC	

Technical data specified at 20±3 °C.
* Typical time span for scanning the entire area and moving to the highest intensity
Ask about customized versions.

Drawings / Images



F-122.5DC, dimensions in mm. Note that the decimal points are separated by a comma in the drawings.

Ordering Information

F-122.5DC
Fiber alignment system consisting of stacked M-122 linear stages and WT-85/WT-100 goniometers, travel ranges to 25 mm / 10°, DC motor

Accessories

C-990.FA1
PI FA1 Alignment Tool, software for aligning optoelectronic components; for use with the C-884 controller for motorized axes and the E-727.AS controller with fast alignment routines (spiraled area scan) for piezo axes with strain gauge sensor.

F-603.BNC
Adapter set for BNC connectors, consisting of F131B0002 adapter box, D-sub 25 to 4 x BNC and K040B0329 Y cable, D-sub 25 (f) to D-sub 15 (m) and HD D-sub 26 (m).

C-887.MC2
Manual control unit for hexapods, USB connector with 3 m connection cable, rotary knobs for all Cartesian axes, buttons for motion stop and referencing, position display