

## Z drive for microscope → preliminary data sheet



### Pecker-15

- OEM PiezoMotor driven system
- max travel range is 15mm
- Maximum operation speed 10mm/sec
- 100mm/s fast move
- 1µm start/stop <1ms
- Force 25N
- High stiffness and fastest response
- Material Stainless steel; Titan or INVAR.
- optical *zero drift encoder* with 0,5nm resolution with Zerodur® similar scale
- optional dual encoder for highest precision
- 1nm bidirectional repeatability at the objective
- two integrated Quick lock systems
- free Apertur M32x0,75
- compact and robust system

The Z-drive product is designed for highest resolution with zero drift, zero warming and fastest response. It has a long stroke of 15mm and is available in stainless steel, titan or INVAR material together with different linear encoder systems developed by NANOS Instruments. The stiff and robust design with cross roller bearings in steel or ceramic guarantee a smooth and highly accurate movement in the range of sub nanometers. The optical sensor only generates 20mW in the stage and has a special cooling profile. This results in practically zero drift with highest resolution from the first minute. The system has two limit sensors and also the homing position with the ABZ encoder. On request we could build with two magnetic encoders also an absolute encoder system.

Another benefit is the double-quick – one quick-look for the stage and one for the objective. It lets you change your objective without losing it within a second. It is a specially designed adapter with high clamping repeatability that fits to the standard adapter. It has an M32\*0,75 free aperture. The maximum diameter of the objective is 37mm.

This stage is designed for standard- and customized microscopes. It can be mounted at the backsite plate or over the microscope adapter on top. It is also possible to mount the objective on the other side in the microscope adapter.

### Specifications:

Pecker-15		
	MC101	LEGS-Drive®-Ultra
Driver electronic	MC101	LEGS-Drive®-Ultra
Travel range (N)	15	15
Force	25	25
fast move 1µm and 10µm	6ms/ 15ms	<1ms/ 4ms
fast move 1µm and 10µm with 250g objective mass	10ms/ 15ms with gravity 15ms/ 20ms against gravity	<1ms/ 4ms with gravity 1ms/ 4ms against gravity
operation speed (mm/s)	8	12

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fast movement** (mm/s)	10	100
Hybrid encoder V2 (nm) with ABZ, 18mA @ 5V ***	61	10
Hybrid encoder V3 (nm) with ABZLL, 18mA @ 5V ***	61	10
Hybrid encoder V4 (nm) with ABZ, 3mA @ 5V ****	10	10
Optical Encoder with ABZ ; 4mA @5V (nm)***** glass/robax scale Casting Stainless/ Invar	0,5	0,5 or 0,2
Bidirectional Repeatability at the tip of the objective(Encoder counts)	2	2

\*\* Fast movement is possible for a short time with the LEGS-Drive®-Ultra Controller  
note the maximum Encoder sending frequency at highest resolution

\*\*\* take a look at the datasheet Hybrid encoder V2, V3. 10nm Resolution is possible with  
the LEGS-Drive®-Ultra Controller

\*\*\*\* take a look at the datasheet Hybrid encoder V4

\*\*\*\* 0,2 nm resolution is possible with two optical encoders and with the LEGS-Drive®-  
Ultra Controller

### Order code for this stage:

(please call for support, we will help you to find the right solution)

#### Pecker\_15-S-M

S = Sensors

V3_61;	61nm resolution(magnetic encoder)
V3_O	10nm resolution (LEGS-Drive®-Ultra Controller; magnetic encoder)
V4_10	10nm resolution (magnetic encoder)
1O-G	0,5nm resolution (1 optical encoder with glass scale in stage material)
2O-G	0,2nm resolution or 0,5nm with double accuracy (2 optical encoder with glass scale in stage material, for LEGS-Drive®-Ultra Controller)
1O-R	0,5nm resolution (1 optical encoder with Robax scale in stage material)
2O-R	0,2nm resolution or 0,5nm with double accuracy (2 optical encoder with Robax scale in stage material, for legsdrive ultra Controller)

M = significant material for stage and encoder case.

S = Stainless steel for all parts (zero drift at constant temperature)

T = Titan and ceramic guiding (nonmagnetic)

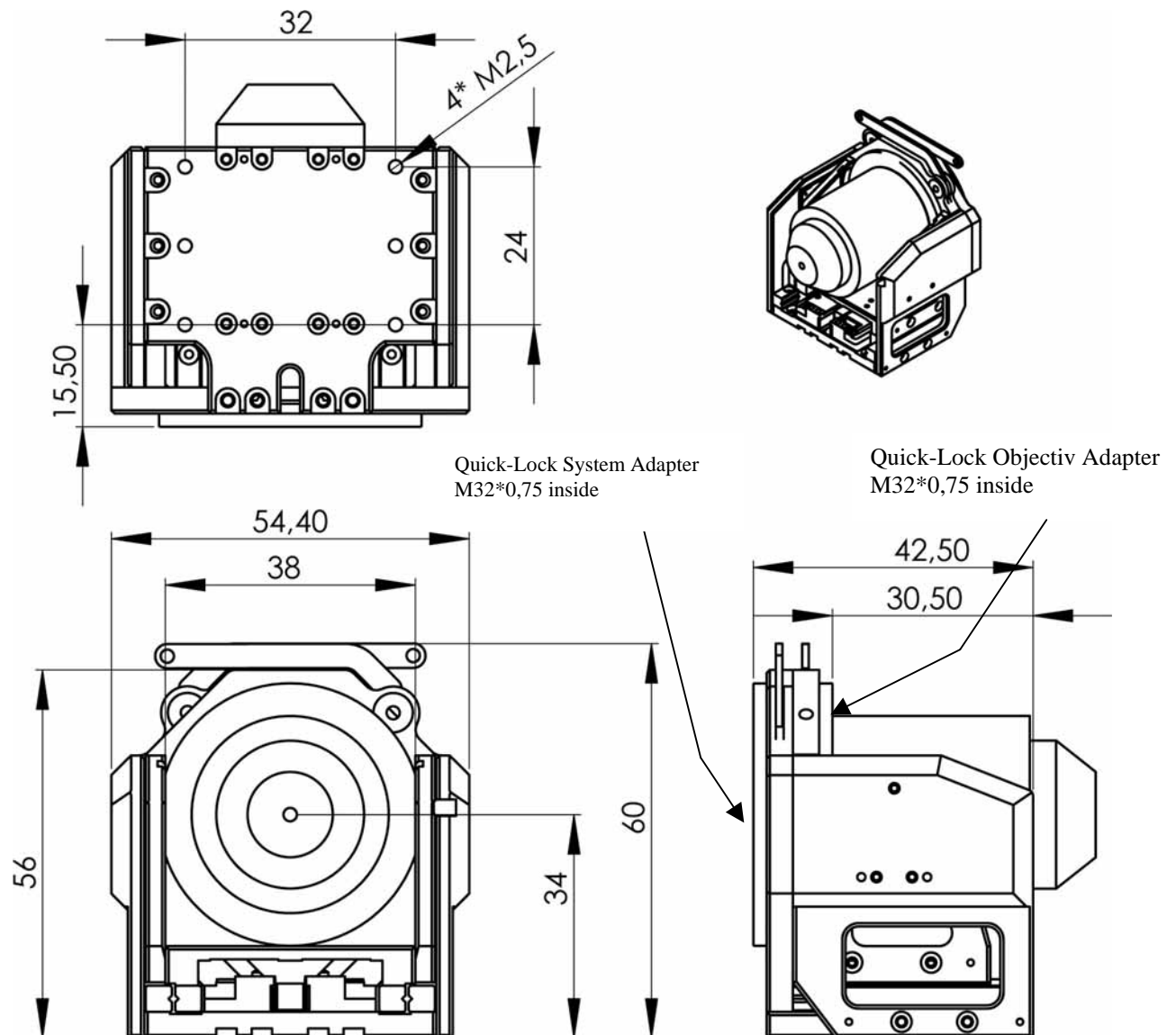
I = Invar and ceramic guiding (smallest drift over the temperature range)

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So the order code could be for example: **Pecker\_15-10R-I**

- The microscope stag has on optical encoder wit Roabx scale and the stage is complete in Invar. The cross roller bearings are in ceramic.

### Dimensions:



Zerodur® is a Trademark from Schott  
Note: zero Drift means very small drift but not zero (endless small)