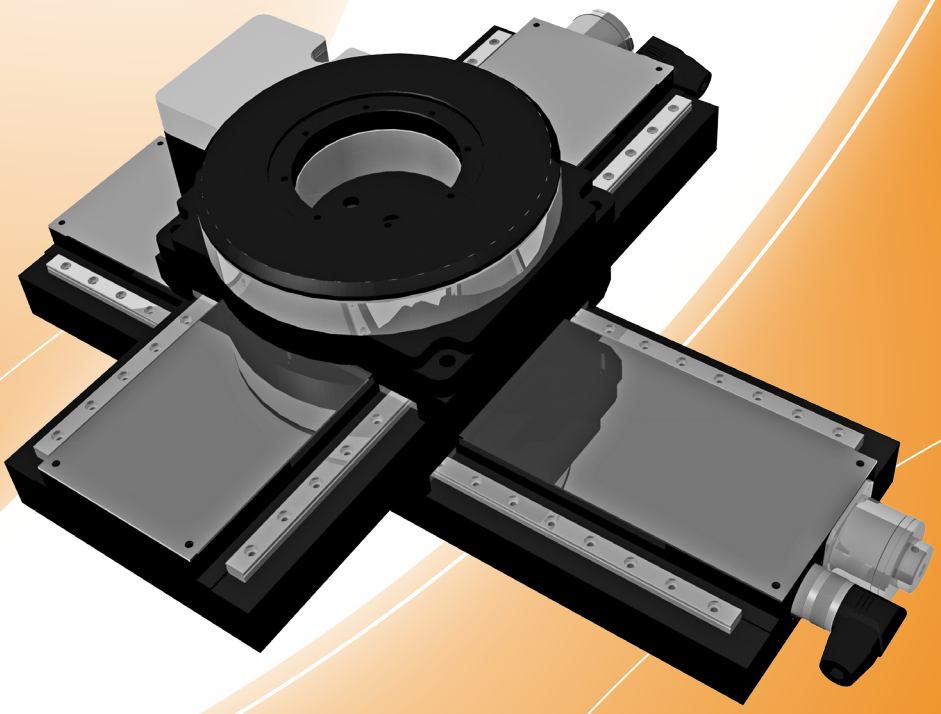
CYBERTRON®

µMove-/pMove Axis System



µMove/pMove Axis System

µMove Axis System

The µMove Axis System is the smallest in its class and distinguishes itself through a particularly compact design. A short overall length coupled with a long stroke, low overall height and wide guide spacing permits the installation of the axis system in compact equipment or machines.

Drive, measurement system, ground ball screws, guides and interface elements are all combined together in the base body.
The system is wired ready to plug in for the connection to a servo motor control.

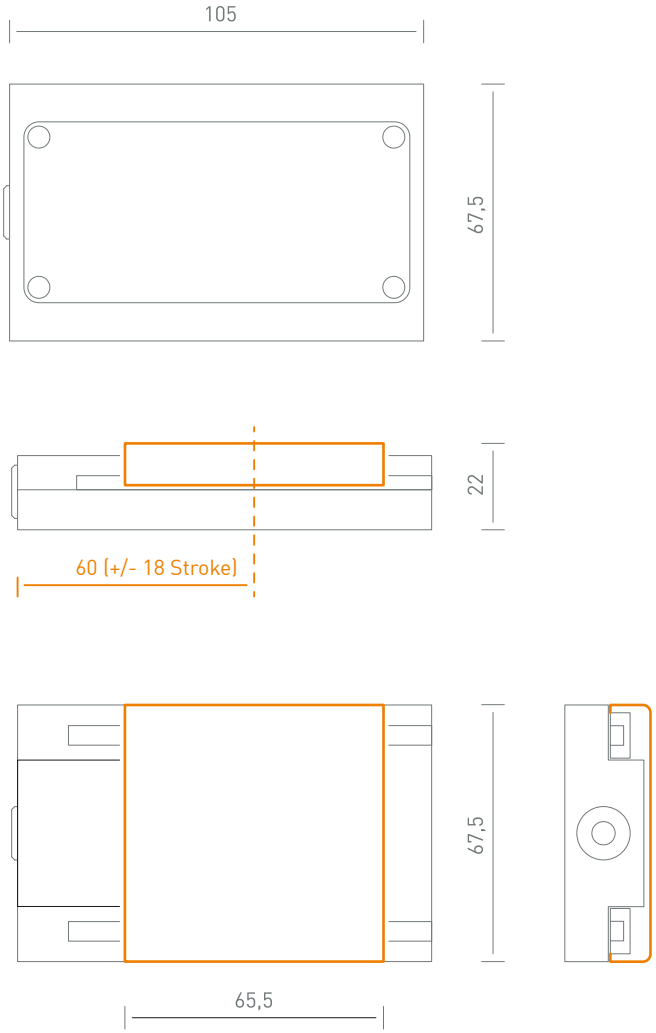
Areas of application are to be found there where precision positioning tasks must be carried out, for example, for measurement, inspection or assembly tasks in micromechanics or for the focusing of lenses in laser technology.

Technical Data

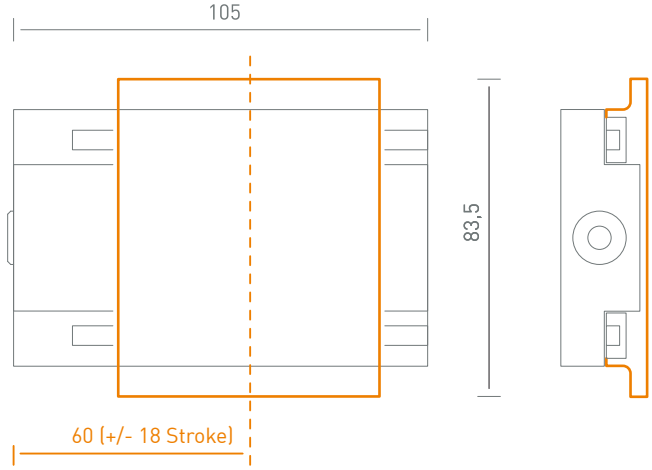
Drive:	DC Servomotor
Repeat Accuracy:	8 µm
Speed:	max. 25 mm/s
Acceleration:	max. 10 ms^{-2}
Stroke:	36 mm
Safe Working Load:	1,0 kg
Weight:	280 g

This precision axis system is also well suited as a Z-stroke for, for example, our Pipette Heads.

Variant 1 - narrow slides



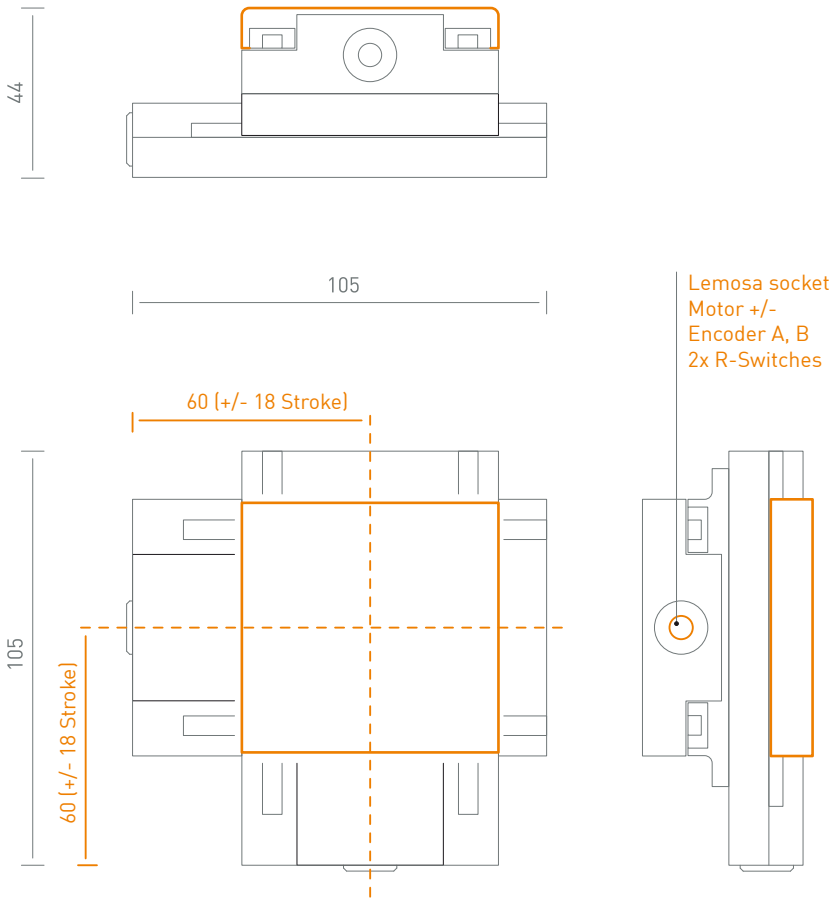
Variant 2 - wide slides



Dimensions in mm

µMove Cross-axis System

Installation Variant 1 and 2



For simple installation as a cross-axis system, both wide and narrow slides are available.

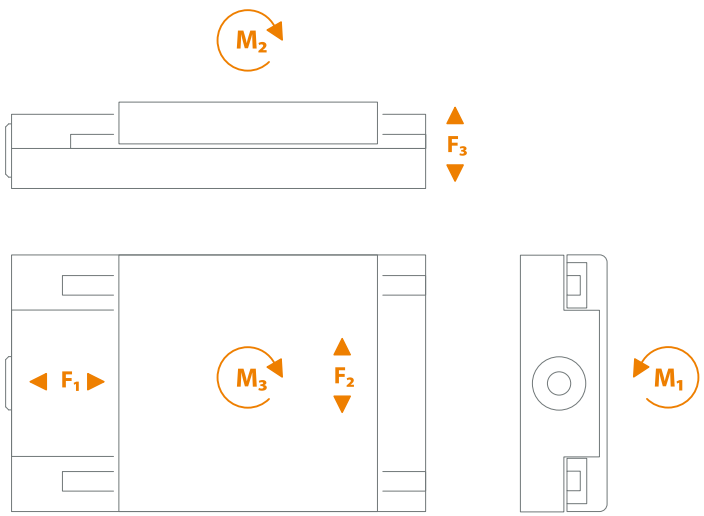
With the use of the wide slide, appropriate threads in the axis body enable simple installation without an intermediate plate.

The recirculating ball slideways permit high loads. Two carriages per track, that is four carriages per slideway, can withstand high forces and moments.

In addition to a high-quality DC motor with an incremental encoder the axis system has two reference switches.
The electrical connections are led to the outside via an industrial connector socket from the company Lemosa.

The motor and spindle lie parallel to each other in the axis body and are coupled by a toothed belt.

Forces and Moments



Slide Force (F_1):	20 N
Load (F_2):	50 N
Load (F_3):	45 N
Moment Load (M_1):	6 Nm
Moment Load (M_2):	4 Nm
Moment Load (M_3):	4 Nm

pMove Axis System

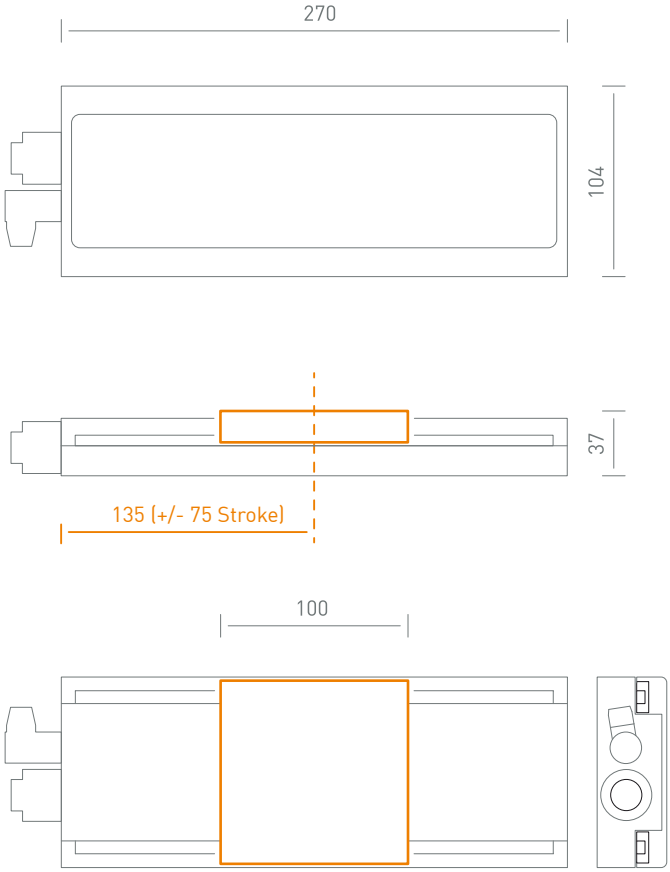
Variant 1 - narrow slides

The pMove linear axis system is distinguished by an especially compact design.
A short overall length coupled with a long stroke, a low overall height and wide guide spacing permit the space-saving installation of the axis system in compact machines and equipment.

Drive, measurement system, spindle, guides and interface elements are all combined together in the base body.
Individual cables for measurement systems, reference switches and motor power supply are reduced via integrated electronics to a compact Binder connector. The system is wired ready to plug in for the connection to a controller.

Areas of application are to be found there where precision positioning tasks must be carried out, for example, for handling systems for measurement, inspection or assembly tasks or for handling samples.

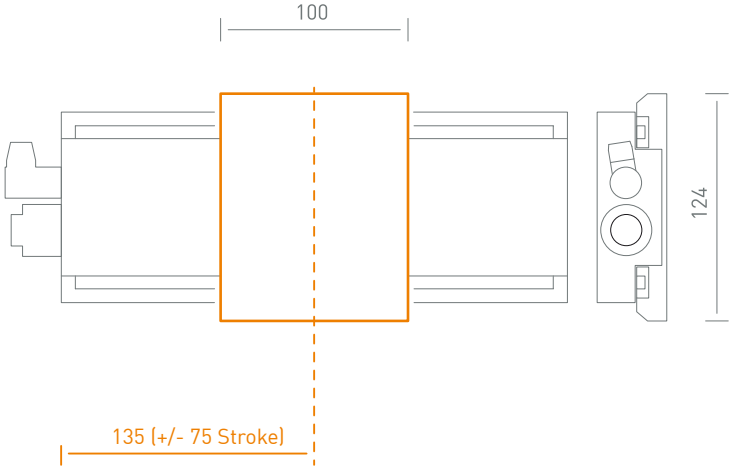
The axis system in the right-hand illustration shows, as an example, a stroke of 150 mm.



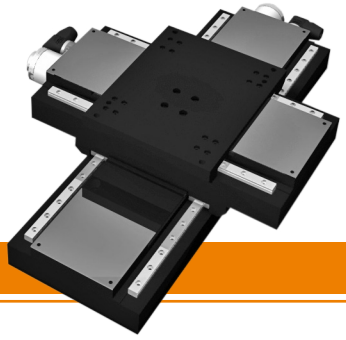
Technical Data

Drive:	DC Servo motor
Repeat Accuracy:	8 µm
Speed:	max. 60 mm/s (P1)
	max. 120 mm/s (P2)
Acceleration:	max. 20 ms^{-2} (P1)
	max. 10 ms^{-2} (P2)
Hub:	80, 150, 200 mm (Standard)
Safe Working Load:	10 kg (P1), 5kg (P2)
Weight:	980 g (80 mm Hub)

Variant 2 - wide slides

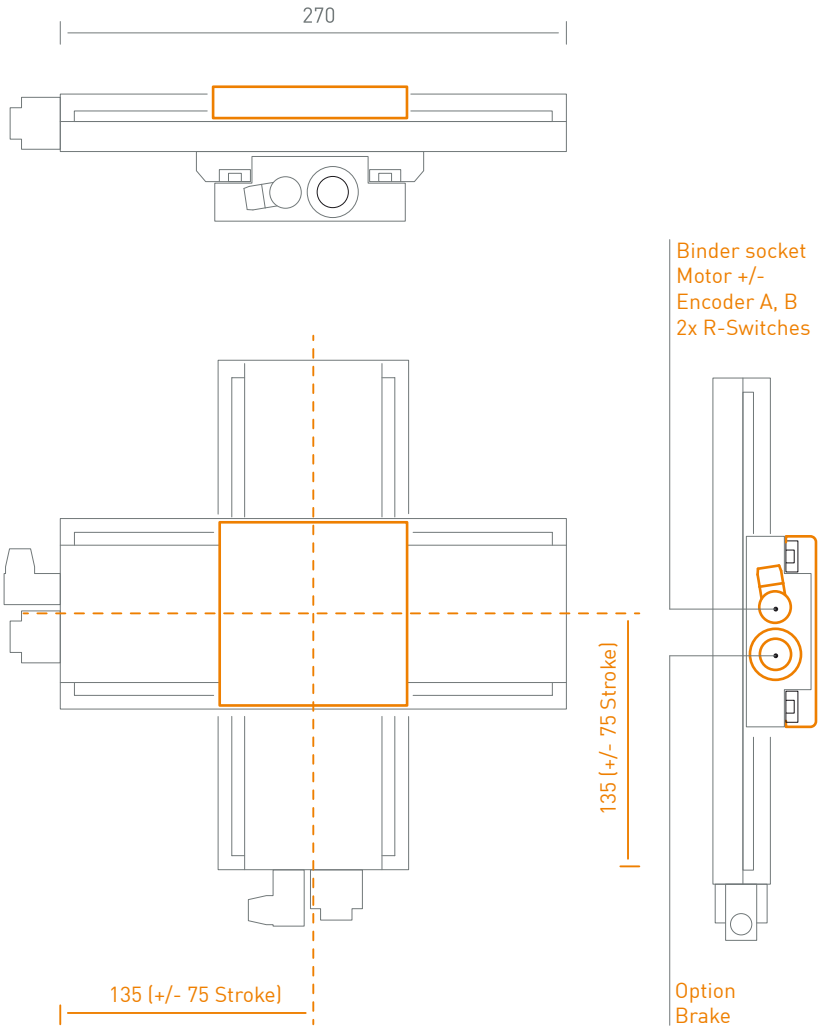


Dimensions in mm



pMove Cross-axis System

Interconnection Variant 1 and 2



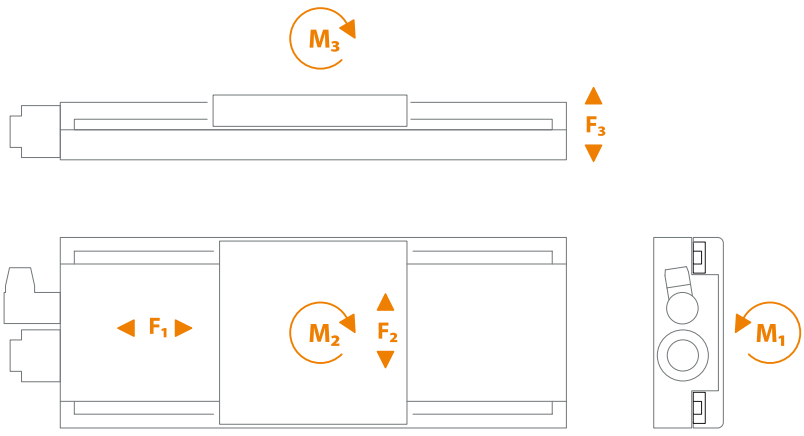
For simple installation as a cross-axis system, both wide and narrow slides are available.
With the use of the wide slide, appropriate threads in the axis body enable the simple installation without an intermediate plate.

The recirculating ball slideways permit high loads. Two carriages per track, that is four carriages per slideway, can withstand high forces and moments.

In addition to a high-quality DC motor with an incremental encoder the axis system has two reference switches.
The electrical connections are led to the outside via an industrial connector socket from the company Lemosa.

The motor and spindle lie parallel to each other in the axis body and are coupled by a toothed belt.

Forces and Moments



Slide Force (F_1):	100 N
Load (F_2):	600 N
Load (F_3):	600 N
Moment Load (M_1):	25 Nm
Moment Load (M_2):	15 Nm
Moment Load (M_3):	15 Nm

Dimensions in mm

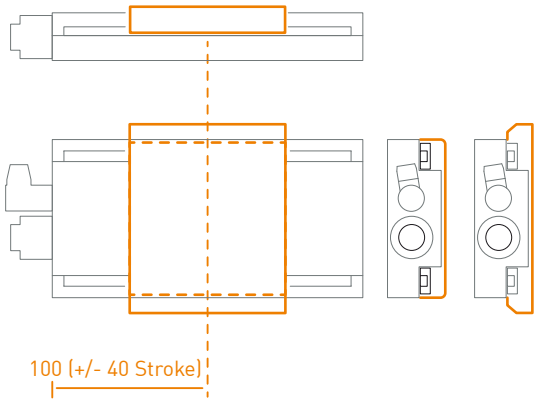
pMove Standard Strokes

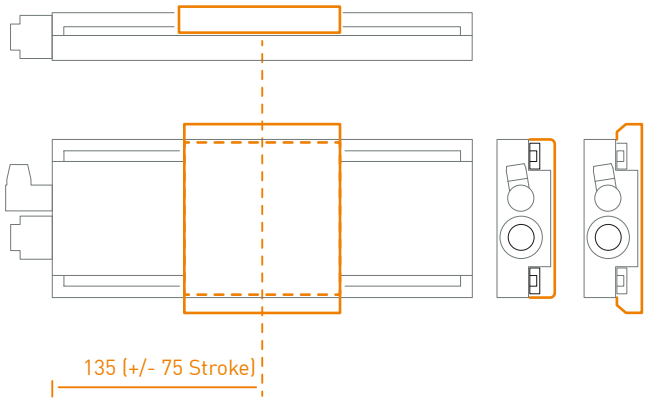
80 mm, 150 mm and 200 mm strokes are available as standard.
For larger quantities or for additional effort, all strokes are available as possible options, the largest stroke is, however, 200 mm.

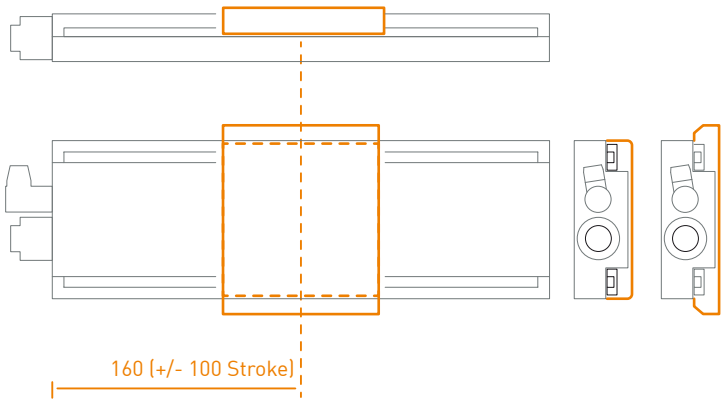
If the accuracy for individual applications is not high enough, there is the possibility of equipping the axis with a direct position sensor system.

Other spindle pitches, for example, P4, are equally possible. From a stroke of 150 mm, the integration of a servo motor control for simple point to point travel is possible.

Should path movements or complex contours have to be followed, we recommend our newest, most modern ST1000 control.
The technical characteristics of this can be found on **Page 10** of this brochure.

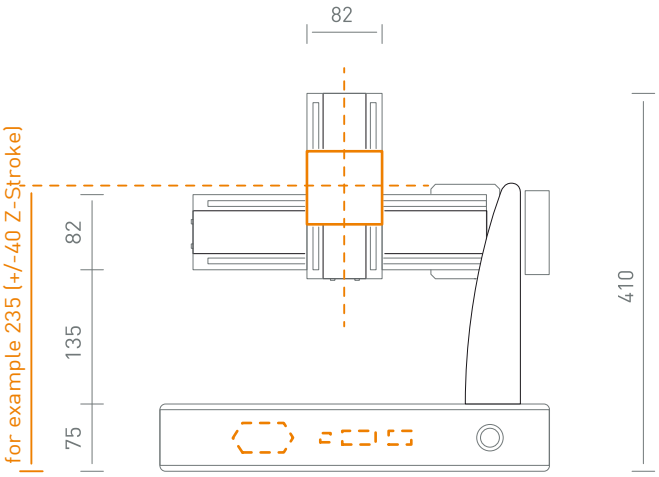






Dimensions in mm

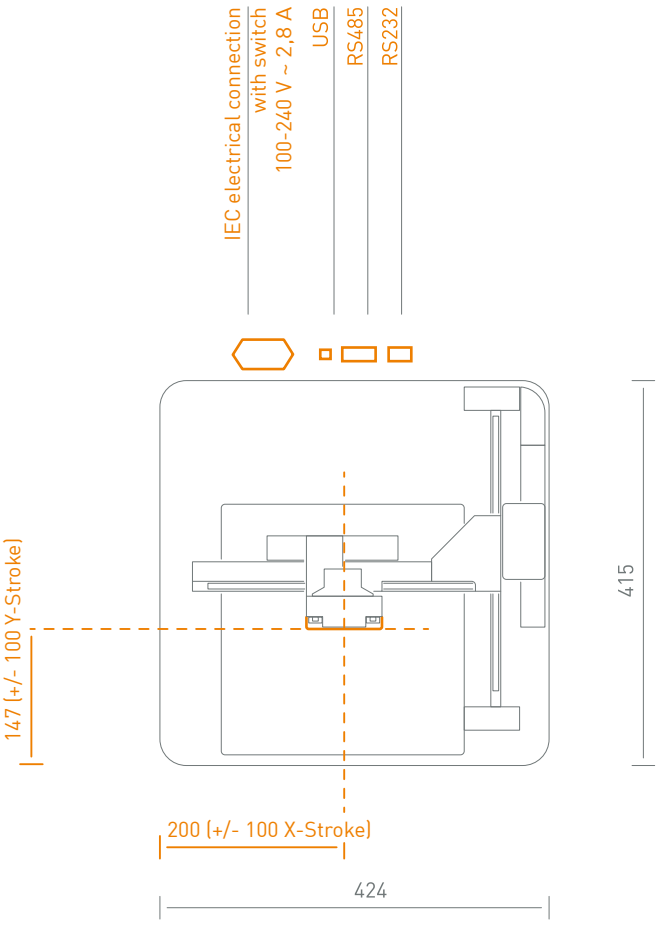
pMove- xyz Benchtop Kinematics

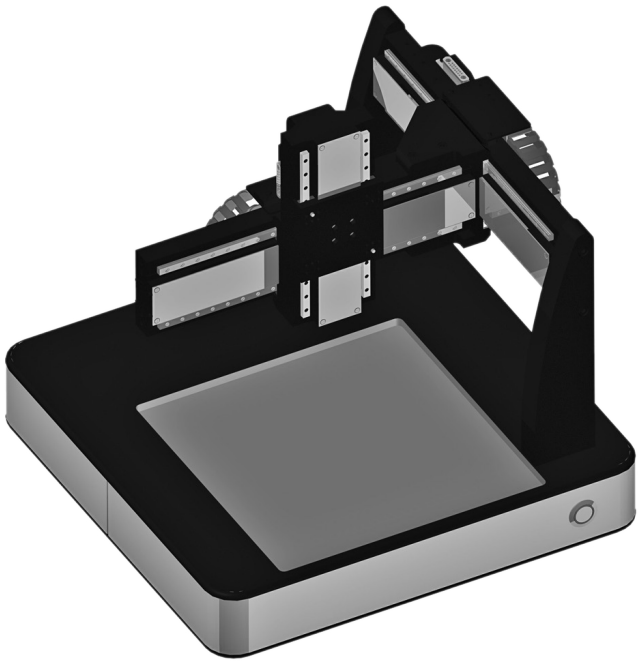


The illustrated Benchtop Kinematics is a universally deployable 3 axis kinematics in an overhead design.
The important advantages of this system construction lie in the good access to the working area and the good capability for substructures (transfer belts, OEM modules, rotation units, etc.).

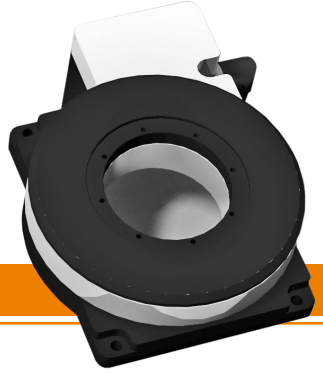
As opposed to the standard pMove axes, the individual axes are in narrow design.
In addition to a wide range power supply, the robust industrial construction is equipped with the 4 axis ST 1000 servo motor control. The fourth servo motor output and various inputs / outputs are available for the control of individual peripherals.

The **Benchtop Kinematics** is switched on via a button on the front of the unit. Communication is preferably made via the provision of a PC.





pMove Phi- Rotation Unit

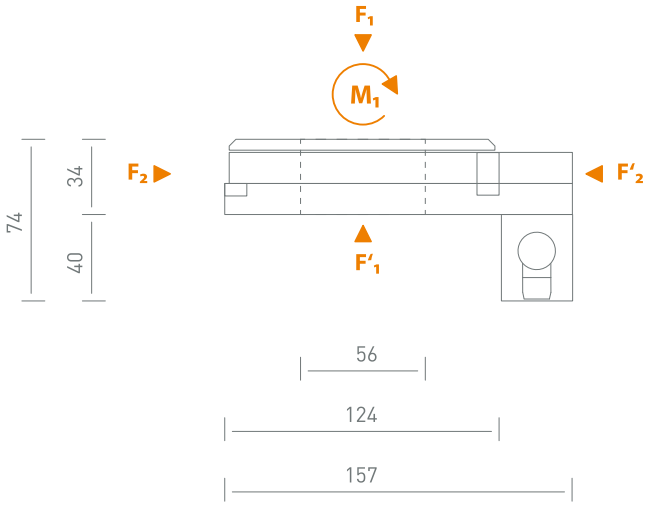


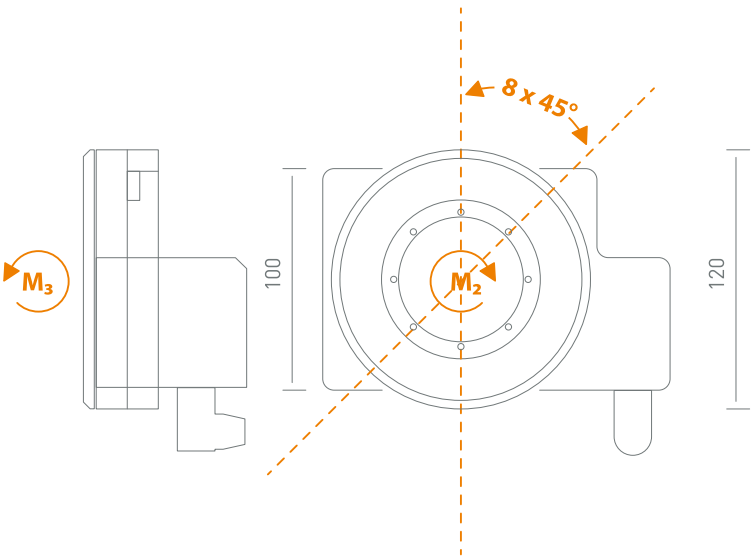
The pMovePhi Rotation Unit can also be used as a stand-alone unit.

In the centre of the rotation unit there is a bored hole with a diameter of 56 mm. With this, the rotation unit is prepared for optical applications or underfloor lighting.

Servo motor, toothed belt drive and measurement system are all combined together in the base body. Troublesome individual cables for the measuring system, reference switches and motor power supply are reduced to the connections of a compact Binder connector.

The rotation unit can be practically used for rapid, dynamic rotation with medium loads.

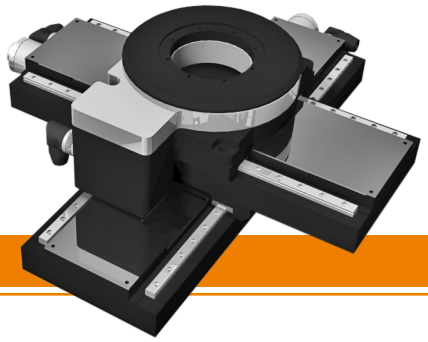




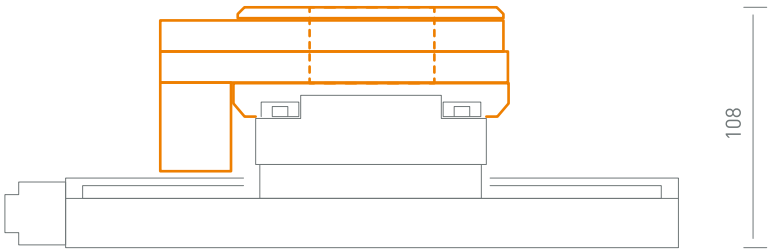
Forces and Moments

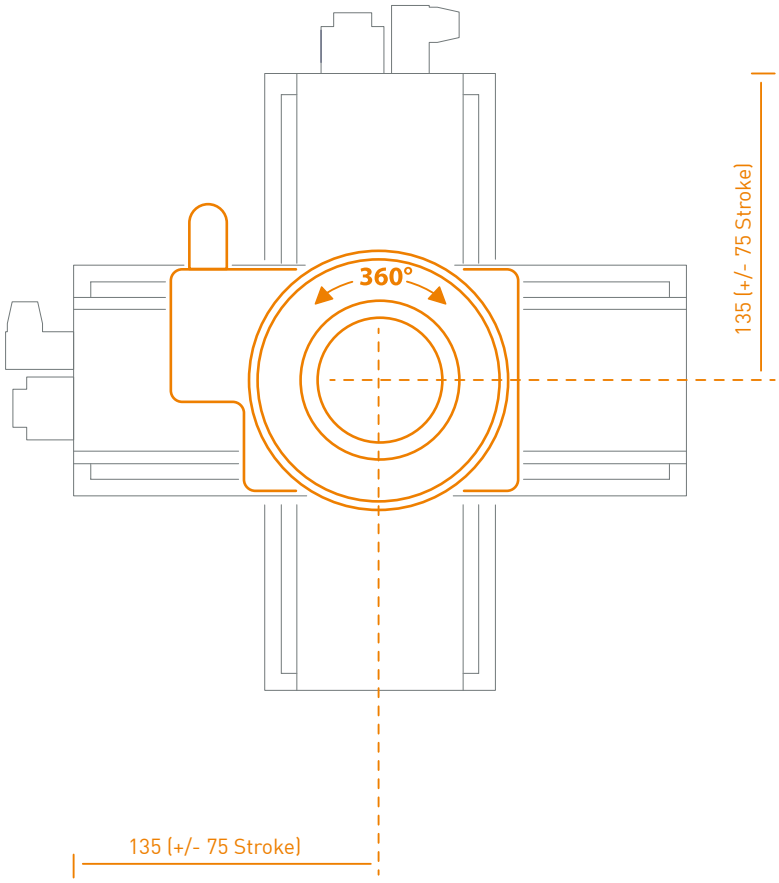
Load (F_1):	300 N
Load (F'_1):	100 N
Load (F_2):	300 N
Moment Load (M_1):	10 Nm
Drive Torque (M_2):	0,5 Nm
Moment Load (M_3):	10 Nm

Dimensions in mm



pMove Phi- Rotation Unit

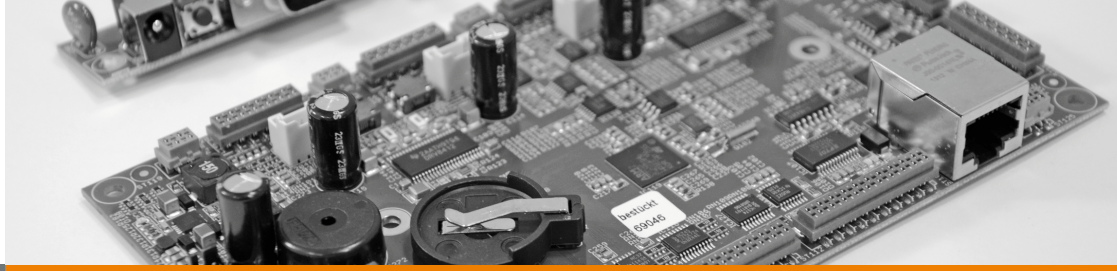




The pMove axis system can be retrofitted with a servo rotation unit.
In addition to Cartesian movements, with it an overlaid rotation movement can be realized.

The consistent with the linear axis constructed rotation unit can carry out rotary motions > 360°. Since the rotation is limited by no mechanical stop in the module, an almost infinite rotation is possible.

Control



Electrical Supply

- 24 VDC (+/- 10%)

Dimensions

- 150 x 90 x 16 mm^3
- max. H: 25mm (with connecting plugs)

Memory Features

- 1 MB Flash-Rom
- 192 KB internal SRAM
- 16 MB SRAM, with battery back-up
- 32 KB NV-RAM

Inputs

- 8 Inputs 24V
- 4 Inputs 5V as reference switching inputs
- 3 Inputs analog 0… 5V
- 4 Inputs incremental encoder 5V with index input

Outputs

- 8 Outputs 24 VDC, 500 mA
- 3 PWM Outputs 5V
- 2 Analog outputs 0… 5V
- 4 Motor-PWM outputs 2 A constant/ 5 A Peak
- Piezo beeper

Interfaces

- 10/100 MBit Ethernet
- RS232
- USB
- 2x RS485
- I^2C
- CAN
- DCF77 for radio controlled clock
- USB host for the connection of USB-memory sticks

The ST1000 is a compact 4 axis DC servo motor control which combines a variety of interfaces and 4 DC motor output stages on a printed circuit board of an area with only 150 x 90 mm^2.

The core of the control is a 168 MHz clocked Cortex-M4F controller from ST which is equipped with a generous memory for complex control tasks, too. The controller can be programmed within an easy to use development environment (Eclipse) in C. The interfaces and the complete peripherals can be addressed via library functions. There is a wide range of commands available for the motor configuration and motor positioning. Programming in BASIC for simple applications is in development.

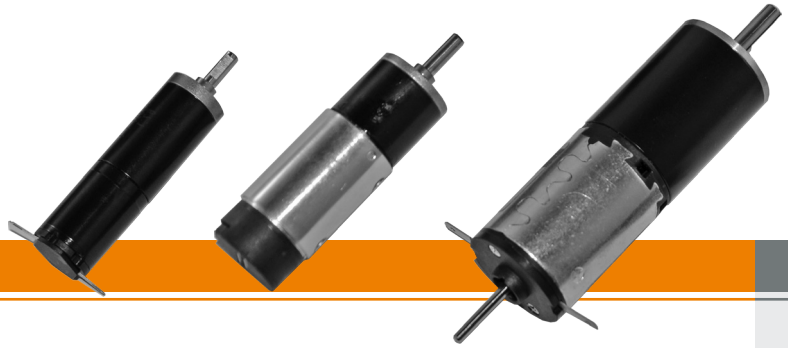
Complex peripheral equipment allows itself to be easily controlled with the extensive range of inputs and outputs. The digital and analog inputs and outputs enable the connection of various sensors and actuators. A piezo beeper is integrated in the control system.

Serial interfaces (RS232, 2x RS485, I^2C, CAN, and USB) and parallel inputs and outputs (8x 24 V inputs, 8x 24 V outputs) are available as interfaces. In addition the control system has a 10/100 MBit Ethernet connection. Via an additional board, the most important interfaces can be relocated for better operator accessibility. If the internal FLASH memory, for example, for data storage, is insufficient, then a USB stick can be connected as a data store.

Up to 4 DC servo motors are driven via PWM output stages with a PWM frequency of 20 kHz and a constant current of maximum 2 A, and a maximum peak current of 5 A.

With the help of a boot loader the programmes created on the PC are transferred to the controller.

The controller can be obtained from us as a printed circuit board for self-installation in equipment or housed complete with power supply.



Drive Options

Which drives do we use:

- Linear motors
- Spindle drives
- Piezo drives
- Toothed belt drives
- Rack and pinion drives

We move and position:

- linearly
- rotationally
- in curves

We prefer:

- Servo motors

alternatively

- stepper motors

In addition to the equipping of our axis systems with direct position sensors, additional limit switches, brakes and the equipping with other spindle pitches and guides, we develop your individual axis system.

Our µMove and pMove axis systems represent only a possible example of costeffective precision axis systems. In addition to spindle axis systems we can also develop linear motor, toothed belt or rack and pinion drives for you.

Even the different spindle variants available on the market permit nearly all speed, accuracy and price levels.

For higher speeds and medium accuracy we preferentially design systems using reasonably priced toothed belt drives. Above all we can also reproduce every desired motion in a kinematic system and are looking forward to your assignment.

Whether stepper or servo motor drives, please ask us!

We have a variety of sample solutions available.

CYBERTRON®

CYBERTRON
Gesellschaft für Kinematische Systeme
und Laborautomation mbH

Am Borsigturm 100 · 13507 Berlin
Telephone: 0049 (0)30 830 309 350
Telefax: 0049 (0)30 830 309 351

m.arndt@cybertron.email
www.cybertron.berlin

Our company is certified according to
DIN EN ISO 13485 and DIN EN ISO 9001

20190221-Achssysteme-S1-12-englisch-web