



Superior Clamping and Gripping



Product Information

Pan-tilt actuator PW V6

Bus capable. Precise. Compact.

Pan-Tilt Actuator PW

Servo-electric pan-tilt actuator with precision gear and integrated electronics

Field of application

all-purpose, ultra-flexible pan-tilt actuator for clean and slightly contaminated environments, for use as a component of handling or positioning system for cameras, laser scanners or as a wrist module on robots

Advantages – Your benefits

Two independently moveable axes integrated into a single housing for complete flexibility in the swiveling motion in addition to the compact design

High torque and velocity for rapid acceleration and short cycle times

Fully integrated control and power electronics for creating a decentralized control system

Versatile actuation options for simple integration into existing control concepts via PROFIBUS-DP, or CAN

Standard connecting elements and integrated control concept for extensive combination possibilities with other mechatronic modules



Sizes
Quantity: 2



Weight
1.8 .. 3.4 kg



Torque
12 .. 23 Nm



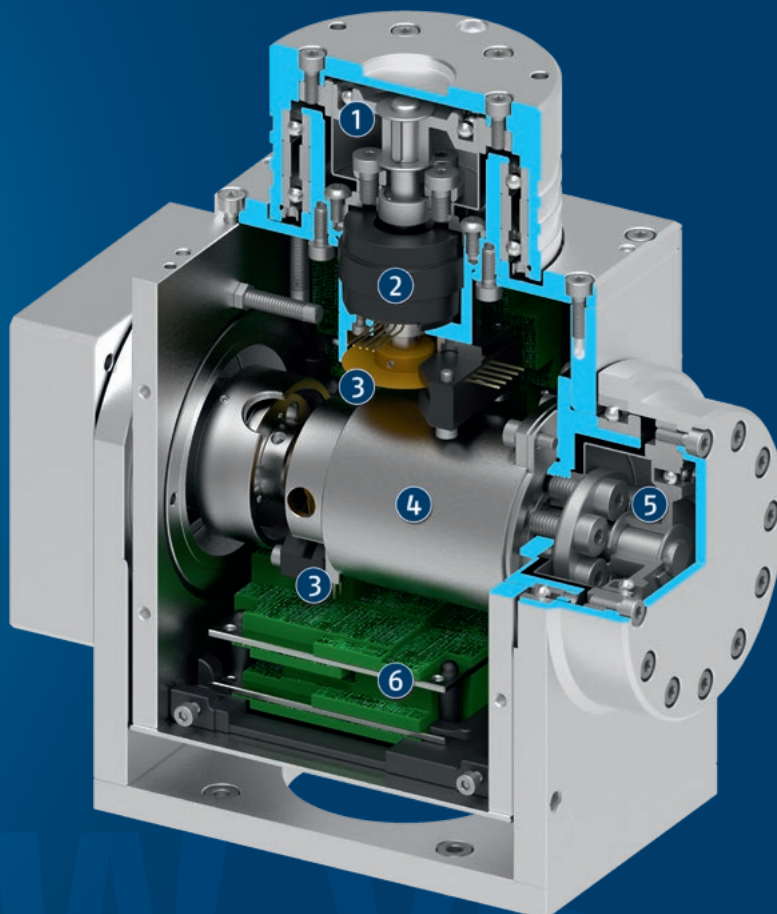
Repeat accuracy
0.004°



Angle of rotation
±105 .. 120°

Functional description

The rotary pan-tilt actuator has two brushless DC servomotors with Harmonic Drive® precision gear, which can be actuated independently of one another.



① **Axis 2**
for endless rotations

② **Drive axis 2**
Brushless DC servomotor

③ **Encoder**
for position evaluation

④ **Drive axis 1**
Brushless DC servomotor for maximum torques

⑤ **Axis 1 with integrated brake**
for rotations up to $\pm 120^\circ$ and position maintenance at a standstill

⑥ **Control electronics**
integrated control and power electronics

General notes about the series

Housing material: Aluminum alloy, coated

Actuation: servo-electric, via brushless DC servomotor

Operating principle: Harmonic drive® gear driven directly via brushless DC servomotor

Scope of delivery: DVD with SCHUNK software and commissioning assistant, includes assembly and operating manual, declaration of incorporation, functional module for control via Siemens S7.

Warranty: 24 months

Swiveling times: are purely the times of the module to rotate from rest position to rest position. Relay switching times or PLC reaction times are not included in the above times and must be taken into consideration when determining cycle times. Load-dependent rest periods may have to be included in the cycle time.

Repeat accuracy: Is defined as the spread of the target position after 100 consecutive positioning cycles.

Nominal currents: can be permanently actuated. With regard to all the currents which are ranging above the nominal current up to the maximum current, the notes of the individual product documentation has to be respected.

Electrical brake: The installed, electric holding brake serves to fix and hold the position in case of power failure up to the rated torque. It cannot cover any complete safety functions.

Peak torque: The peak torques serve as short-term drive reserves when accelerating and delaying.



Application example

Electrical swivel gripping unit for flexible handling, turning and tilting of workpieces.

① Servo-electric rotary pan Tilt actuator PW V6

② Servo-electric 2-finger parallel gripper PG

SCHUNK offers more ...

The following components make the product PW V6 even more productive – the suitable addition for the highest functionality, flexibility, reliability, and controlled production.



Universal gripper



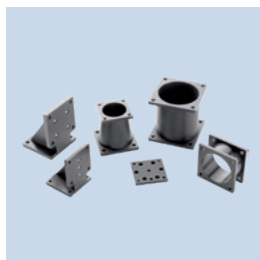
Long-stroke gripper



Rotation unit



Drive



Connecting element



Connection cap



Linear module

① For more information on these products can be found on the following product pages or at schunk.com. Please contact us: SCHUNK technical hotline +49-7133-103-2696

Options and special information

Electrical control of the PW is carried out by the fully integrated control and power electronics. Hence, the module does not require any additional external control units.

There is a varied range of interfaces available, such as PROFIBUS DP or CAN as types of communication. This enables the assembly of industrial bus networks and ensures easy integration into existing control concepts. For transmission of power supply and data communications, we offer various cables.

Further PowerCube modules are available for creating combined systems (e.g. gripping/rotary units).

Control types: Position control, rotational speed control, power control

Monitoring functions: I²t monitoring, current monitoring, power failure detection, contouring error monitoring, software end position monitoring, position monitoring

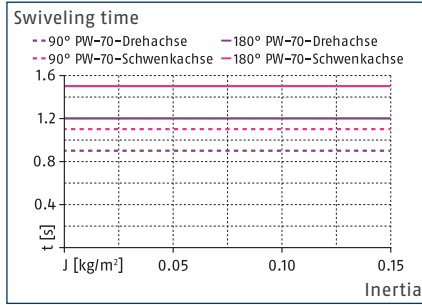
IP protection class: The indicated protection class can only be achieved in conjunction with a connection cap DMI.

PW V6 70

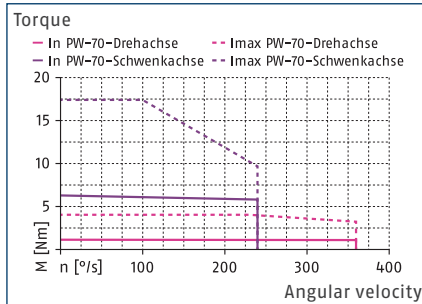
Pan-tilt actuator



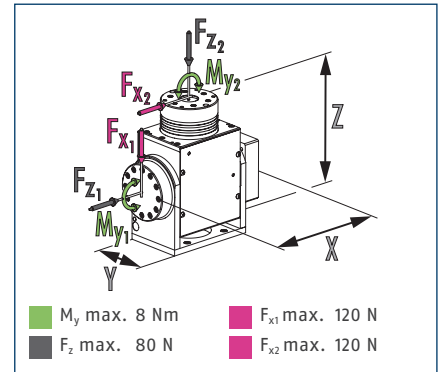
Max. admissible inertia J



Torque characteristic



Dimensions and maximum loads



① Moments and forces may occur simultaneously.

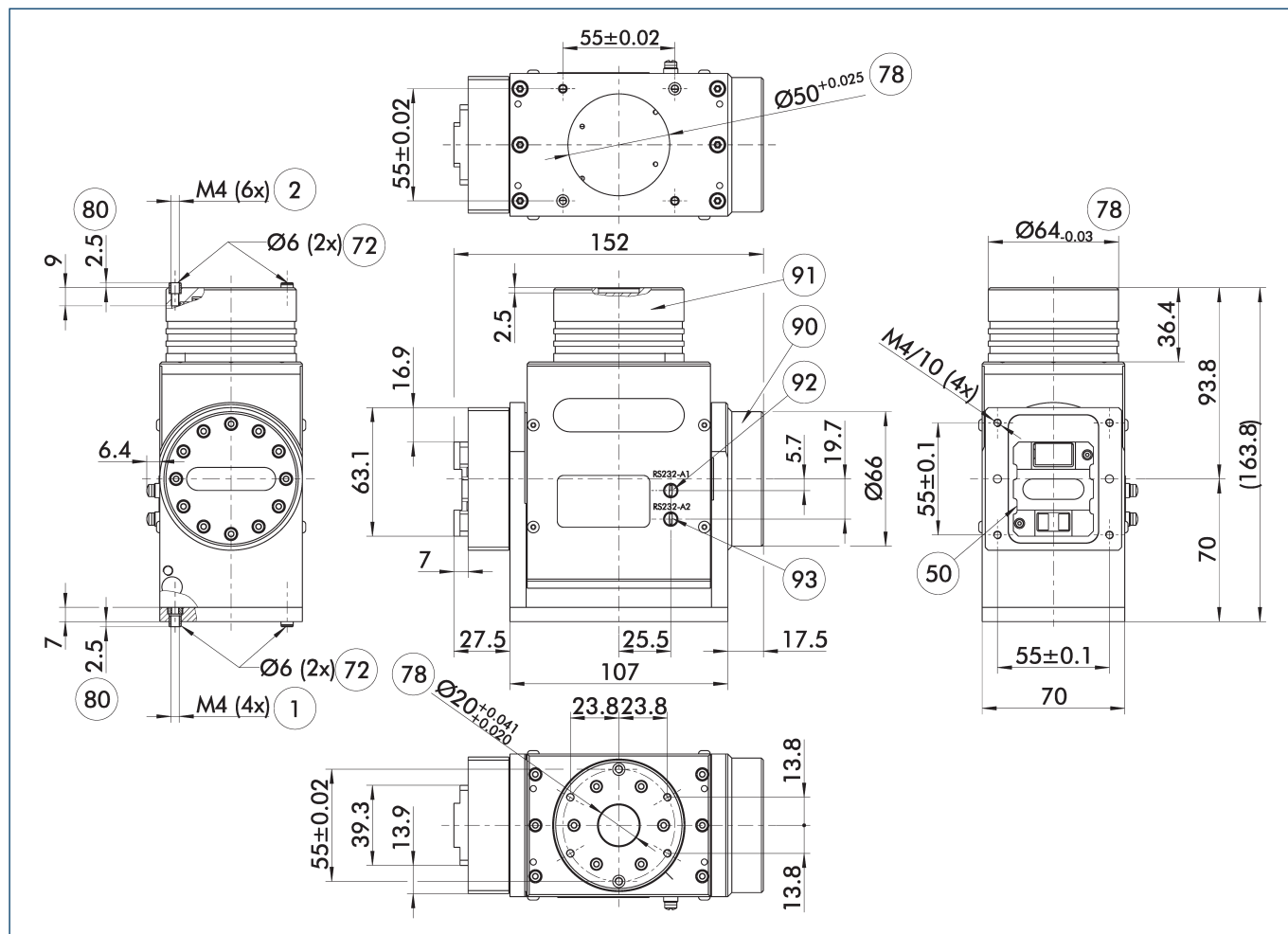
Technical data

Characterization		PW 070-V6-G
ID		0307330
Mechanical operating data		
Max. angle of rotation axis 1/axis 2	[°]	±120/>360
Max. speed of rotation axis 1/axis 2	[1/min]	40/60
Repeat accuracy	[°]	0.004
Gear ratio axis 1/axis 2		121/101
Rated torque axis 1/axis 2	[Nm]	12/2
Max. torque axis 1/axis 2	[Nm]	24/4
General operating data		
Weight	[kg]	1.8
Min./max. ambient temperature	[°C]	5/55
Holding brake version axis 1/axis 2		1/0
IP protection class		54
Dimensions X x Y x Z	[mm]	145 x 70 x 163.8
Electrical operating data		
Nominal voltage	[V]	24
Nominal current	[A]	4
Max. current	[A]	8
Integrated control electronics		
Power supply	[V]	24
Encoder system		Encoder (incremental)
Interface		PROFIBUS, CAN, 4/4 digital I/O, RS232

① The peak torques serve as short-term drive reserves when accelerating and delaying.

The "maximum current" value refers to the peak current during overload operation, the nominal current is an effective current. Depending on the ambient temperature, speed, acceleration and inertia, the appropriate idle times are to be provided.

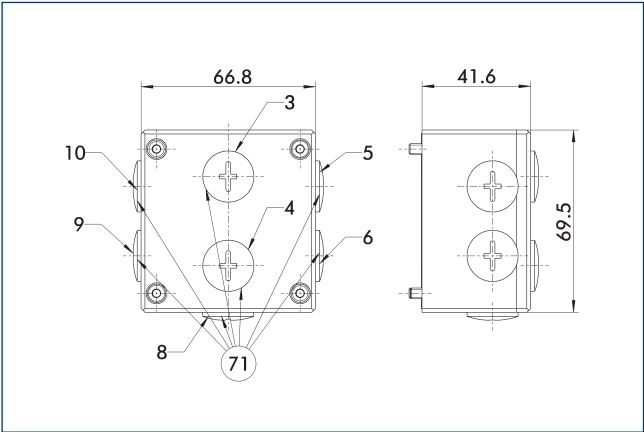
Main view



The drawing shows the basic design of the module without the connection cap without dimensional consideration of the options described below.

- | | |
|---|--|
| ① Connection swivel unit | ⑨⑩ Tilting axis |
| ② Attachment connection | ⑨① Swiveling axis |
| ⑤⑥ Electrical connection | ⑨② RS-232 interface for axis 1 (tilt axis) |
| ⑦⑧ Fit for centering sleeves | ⑨③ RS-232 interface for axis 2 (swivel axis) |
| ⑦⑧ Fit for centering | |
| ⑧⑩ Depth of the centering sleeve hole in the counter part | |

Connection cap DMI

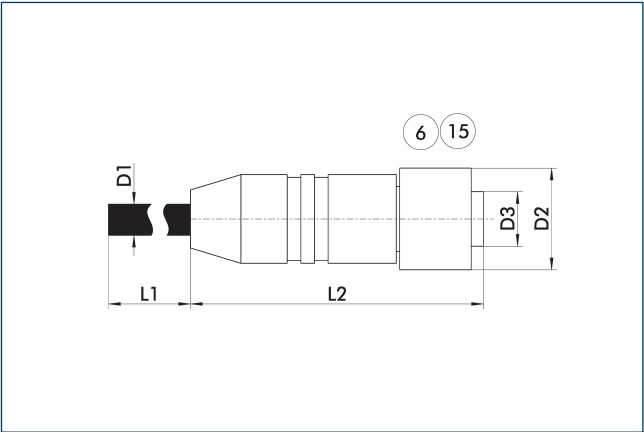


71 M16x1.5 for cable guide penetrating screw connection

The DMI's wire strands are connected via connection terminals. The DMI is prepared for PROFIBUS and CAN communication interfaces.

Characterization	ID	
Connection cap		
DMI 070-V06-B	0349060	

PROFIBUS communication cables



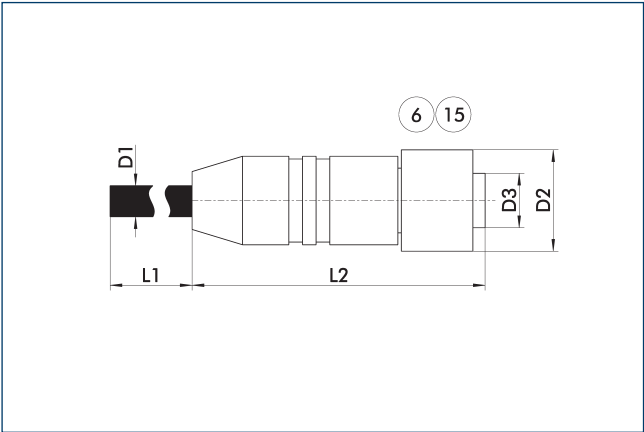
6 Connection module side 15 Socket

The communication cables are ready for use for the mechatronic SCHUNK products. They have M12 connectors on both sides.

Characterization	ID	L1	D1	L2	D2	D3
		[m]	[mm]	[mm]	[mm]	
PROFIBUS communication cable – drag chain suitable						
KA GGN1204-PB-00150-A	0349750	1.5	8	47	15	M12
KA GGN1204-PB-00300-A	0349751	3	8	47	15	M12
KA GGN1204-PB-00500-A	0349752	5	8	47	15	M12
KA GGN1204-PB-01000-A	0349753	10	8	47	15	M12

1 Please observe the min. bending radius for cable track-compatible cables or the max. torsion angle for torsion-compatible cables. These are generally 10 times the cable diameter or +/- 180°/m.

CAN communication cables



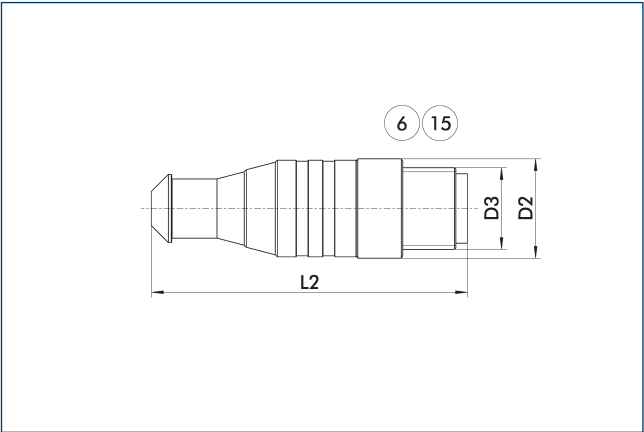
6 Connection module side 15 Socket

The communication cables are ready for use for the mechatronic SCHUNK products. They have M12 connectors on both sides.

Characterization	ID	L1	D1	L2	D2	D3
		[m]	[mm]	[mm]	[mm]	
CAN communication cable – drag chain suitable						
KA GGN1204-CN-00150-A	0349770	1.5	7	47	15	M12
KA GGN1204-CN-00300-A	0349771	3	7	47	15	M12
KA GGN1204-CN-00500-A	0349772	5	7	47	15	M12
KA GGN1204-CN-01000-A	0349773	10	7	47	15	M12

1 Please observe the min. bending radius for cable track-compatible cables or the max. torsion angle for torsion-compatible cables. These are generally 10 times the cable diameter or +/- 180°/m.

Termination resistor



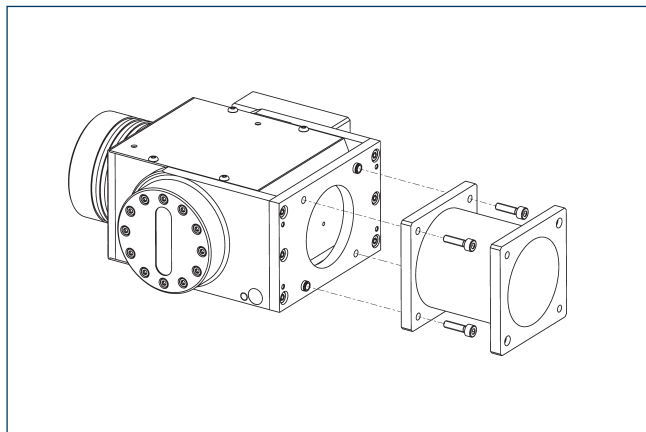
6 Connection module side 15 Socket

The terminating resistors are provided for terminating the bus string directly at the SCHUNK module.

Characterization	ID	L2	D2	D3
		[mm]	[mm]	
Termination resistor – CAN				
ST SG1204-CN-A-A	0349660	47	15	M12
Termination resistor – PROFIBUS				
ST SG1204-PB-A-A	0349650	47	15	M12

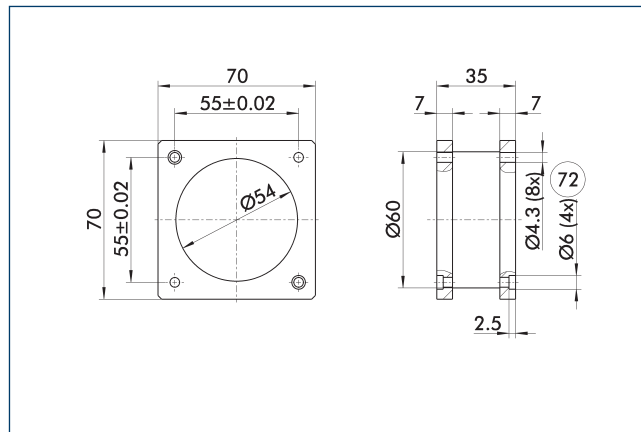
1 An appropriate terminating resistor must be installed on the last module in the CAN or PROFIBUS string.

Connecting element - straight



Characterization	ID	Dimensions
Connecting element		
PAM 100	0307800	70x70/35/70x70 mm
PAM 101	0307801	70x70/70/70x70 mm

PAM 100 - straight

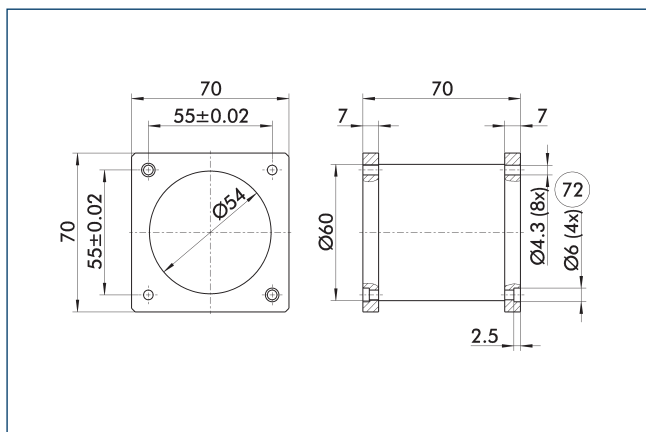


72 Fit for centering sleeves

Suitable for the mechatronic modules PG, PW-V5, PW-V6, PR, PR2, PDU, PDU2, PSM and PSM2 of the size 70

Characterization	ID	Dimensions
Connecting element		
PAM 100	0307800	70x70/35/70x70 mm

PAM 101 - straight

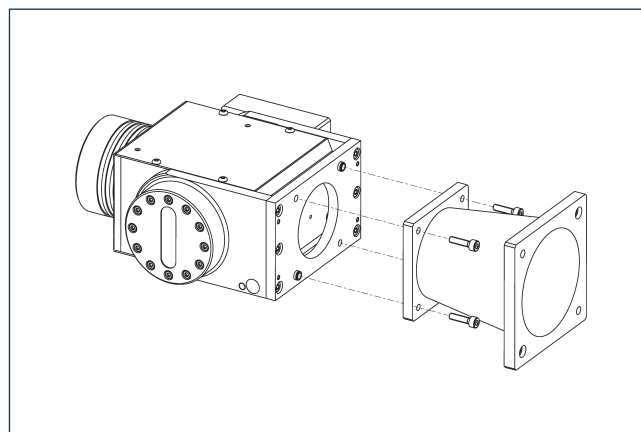


72 Fit for centering sleeves

Suitable for the mechatronic modules PG, PW-V5, PW-V6, PR, PR2, PDU, PDU2, PSM and PSM2 of the size 70

Characterization	ID	Dimensions
Connecting element		
PAM 101	0307801	70x70/70/70x70 mm

Connecting element - conical



Characterization	ID	
Connecting element		
PAM 110	0307810	
PAM 111	0307811	

Pan-tilt actuator

Technical drawing of a square plate with four holes. The outer dimensions are 70 ± 0.02 mm by 70 ± 0.02 mm. The inner dimensions, defining the hole positions, are 55 ± 0.02 mm by 55 ± 0.02 mm. The holes have a diameter of $\varnothing 8$. The distance from the center of each hole to the nearest corner is 17.5 mm.

Characterization	ID	
Connecting element		
PAM 110	0307810	

Characterization	ID	
Connecting element		
PAM 120	0307820	

Technical drawing of a square flange with four holes. The drawing includes a top view and a side view.

Top View Dimensions:

- Overall width: 70 ± 0.02
- Overall height: 70 ± 0.02
- Distance between hole centers (horizontal): 55 ± 0.02
- Distance between hole centers (vertical): 55 ± 0.02
- Four holes are located at the corners of the square.

Side View Dimensions:

- Overall width: 90
- Overall height: 70
- Top flange thickness: 2.5
- Bottom flange thickness: 7
- Distance between flanges: 8
- Inner diameter of the central hole: $\varnothing 5.3 (4x)$
- Outer diameter of the central hole: $\varnothing 8 (2x)$
- Inner diameter of the side holes: $\varnothing 4.3 (4x)$
- Outer diameter of the side holes: $\varnothing 6 (2x)$
- Distance between side holes (horizontal): 2.5
- Distance between side holes (vertical): 2.5

Characterization	ID	
Connecting element		
PAM 111	0307811	

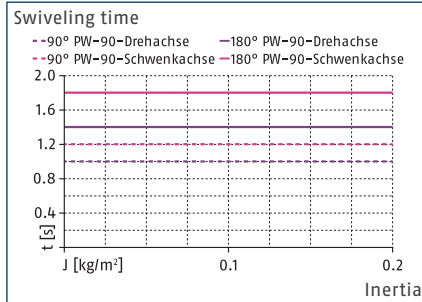
Characterization	ID	
Connecting element		
PAM 120	0307820	

PW V6 90

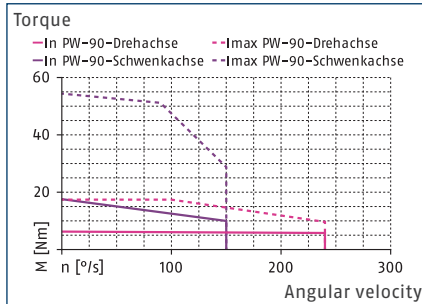
Pan-tilt actuator



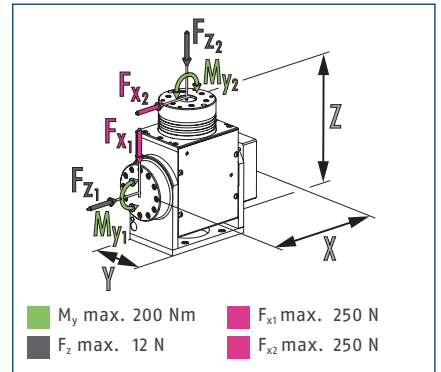
Max. admissible inertia J



Torque characteristic



Dimensions and maximum loads



① Moments and forces may occur simultaneously.

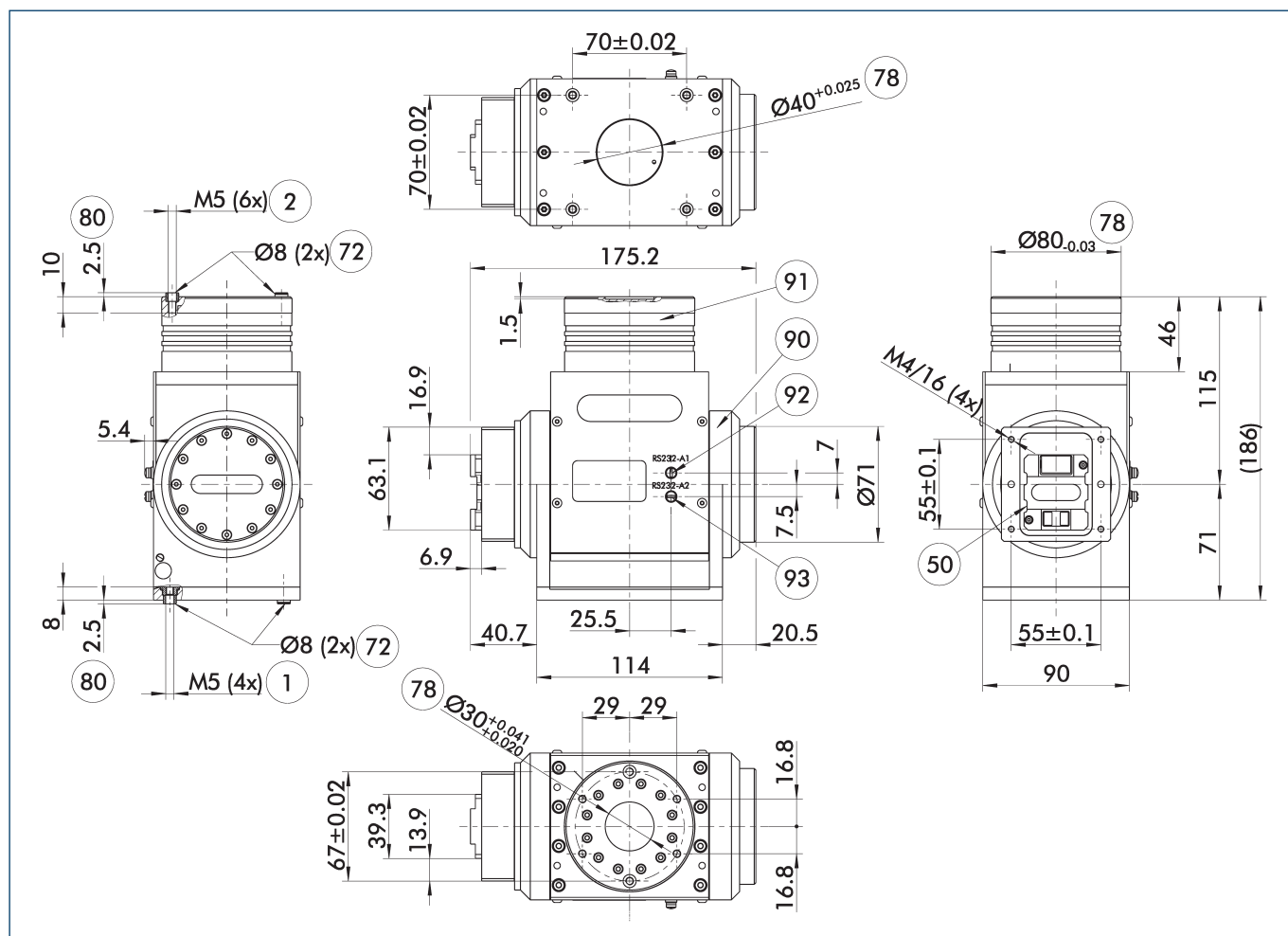
Technical data

Characterization		PW 090-V6-G
ID		0307332
Mechanical operating data		
Max. angle of rotation axis 1/axis 2	[°]	±105/>360
Max. speed of rotation axis 1/axis 2	[1/min]	25/40
Max. acceleration axis 1/axis 2	[°/s²]	600/960
Repeat accuracy	[°]	0.004
Rated torque axis 1/axis 2	[Nm]	23/12
Max. torque axis 1/axis 2	[Nm]	46/24
General operating data		
Weight	[kg]	3.4
Min./max. ambient temperature	[°C]	5/55
Holding brake version axis 1/axis 2		1/0
IP protection class		54
Dimensions X x Y x Z	[mm]	168.3 x 90 x 186
Electrical operating data		
Nominal voltage	[V]	24
Nominal current	[A]	4
Max. current	[A]	8
Integrated control electronics		
Power supply	[V]	24
Encoder system		Encoder (incremental)
Interface		PROFIBUS, CAN, 4/4 digital I/O, RS232
PROFIBUS interface	[Mbit/s]	1.5
CAN interface	[kbit/s]	1000
Number of digital I/O		4/4/-/-

① The peak torques serve as short-term drive reserves when accelerating and delaying.

The "maximum current" value refers to the peak current during overload operation, the nominal current is an effective current. Depending on the ambient temperature, speed, acceleration and inertia, the appropriate idle times are to be provided.

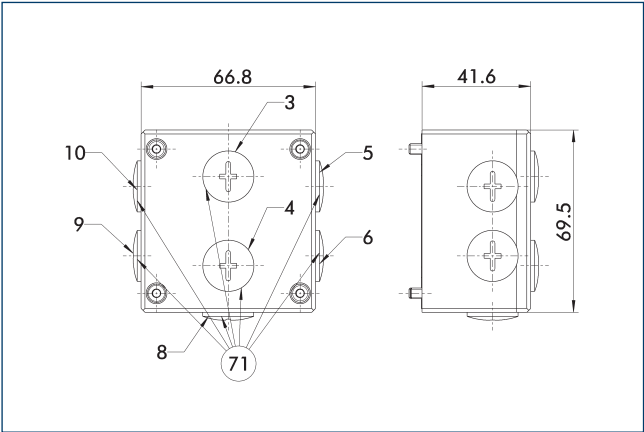
Main view



The drawing shows the basic design of the module without the connection cap without dimensional consideration of the options described below.

- ① Connection swivel unit
- ② Attachment connection
- ⑤⑤ Electrical connection
- ⑦② Fit for centering sleeves
- ⑦⑧ Fit for centering
- ⑧① Depth of the centering sleeve hole in the counter part
- ⑨① Tilting axis
- ⑨① Swiveling axis
- ⑨② RS-232 interface for axis 1 (tilt axis)
- ⑨③ RS-232 interface for axis 2 (swivel axis)

Connection cap DMI

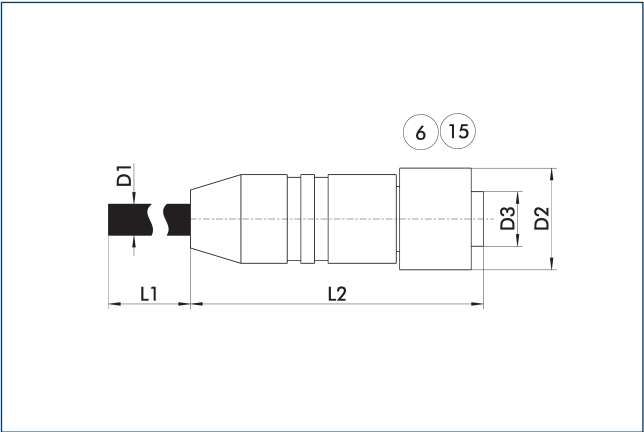


71 M16x1.5 for cable guide penetrating screw connection

The DMI's wire strands are connected via connection terminals. The DMI is prepared for PROFIBUS and CAN communication interfaces.

Characterization	ID	
Connection cap		
DMI 070-V06-B	0349060	

PROFIBUS communication cables



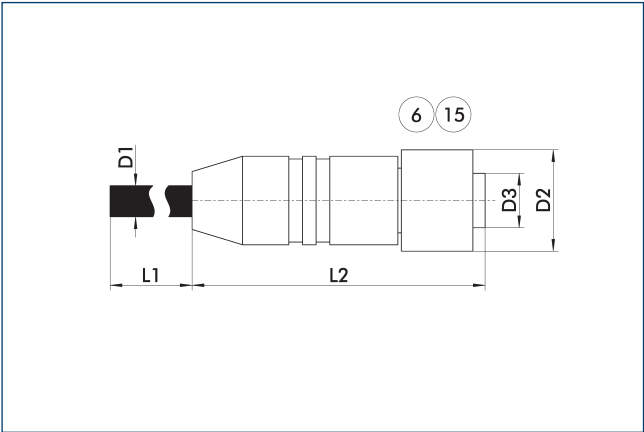
6 Connection module side 15 Socket

The communication cables are ready for use for the mechatronic SCHUNK products. They have M12 connectors on both sides.

Characterization	ID	L1	D1	L2	D2	D3
		[m]	[mm]	[mm]	[mm]	
PROFIBUS communication cable – drag chain suitable						
KA GGN1204-PB-00150-A	0349750	1.5	8	47	15	M12
KA GGN1204-PB-00300-A	0349751	3	8	47	15	M12
KA GGN1204-PB-00500-A	0349752	5	8	47	15	M12
KA GGN1204-PB-01000-A	0349753	10	8	47	15	M12

Please observe the min. bending radius for cable track-compatible cables or the max. torsion angle for torsion-compatible cables. These are generally 10 times the cable diameter or +/- 180°/m.

CAN communication cables



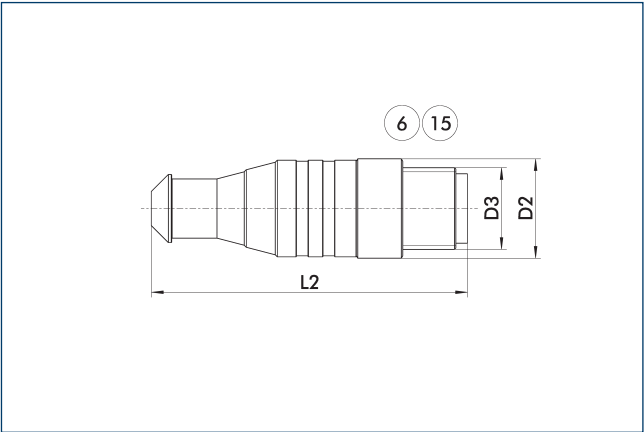
6 Connection module side 15 Socket

The communication cables are ready for use for the mechatronic SCHUNK products. They have M12 connectors on both sides.

Characterization	ID	L1	D1	L2	D2	D3
		[m]	[mm]	[mm]	[mm]	
CAN communication cable – drag chain suitable						
KA GGN1204-CN-00150-A	0349770	1.5	7	47	15	M12
KA GGN1204-CN-00300-A	0349771	3	7	47	15	M12
KA GGN1204-CN-00500-A	0349772	5	7	47	15	M12
KA GGN1204-CN-01000-A	0349773	10	7	47	15	M12

Please observe the min. bending radius for cable track-compatible cables or the max. torsion angle for torsion-compatible cables. These are generally 10 times the cable diameter or +/- 180°/m.

Termination resistor



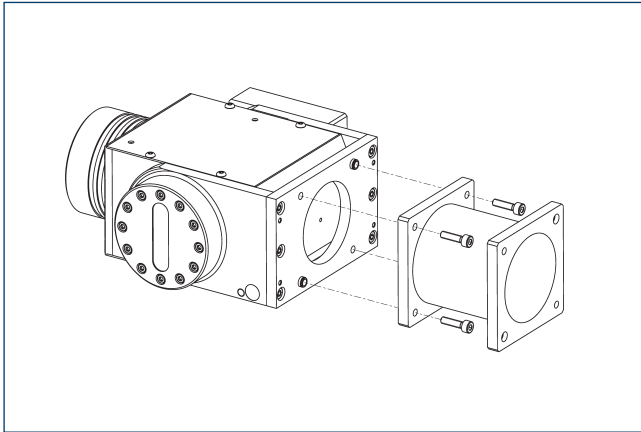
6 Connection module side 15 Socket

The terminating resistors are provided for terminating the bus string directly at the SCHUNK module.

Characterization	ID	L2	D2	D3
		[mm]	[mm]	
Termination resistor – CAN				
ST SG1204-CN-A-A	0349660	47	15	M12
Termination resistor – PROFIBUS				
ST SG1204-PB-A-A	0349650	47	15	M12

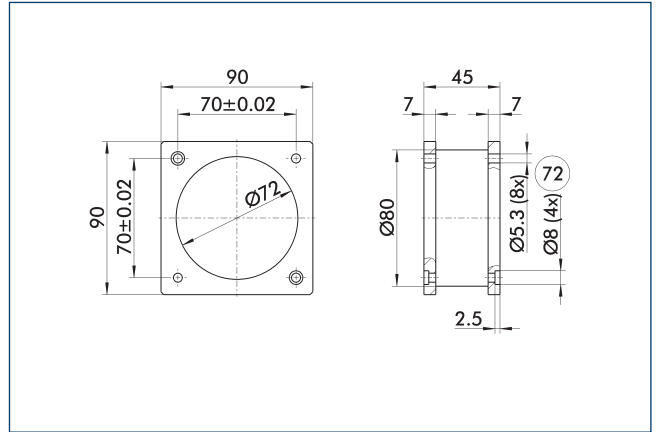
An appropriate terminating resistor must be installed on the last module in the CAN or PROFIBUS string.

Connecting element - straight



Characterization	ID	Dimensions
Connecting element		
PAM 102	0307802	90x90/45/90x90 mm
PAM 103	0307803	90x90/90/90x90 mm

PAM 102 - straight

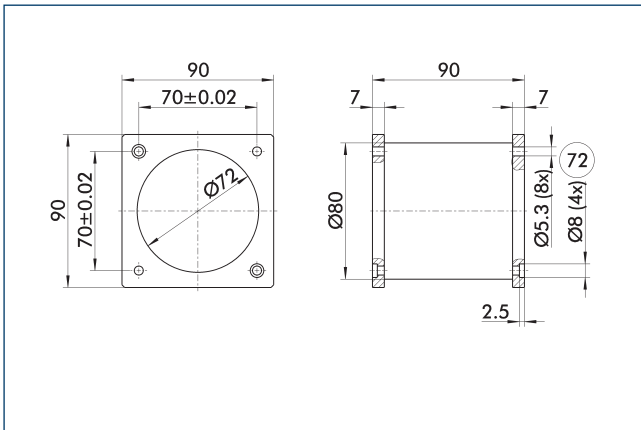


72 Fit for centering sleeves

Suitable for the mechatronic modules PW-V5, PW-V6, PR, PR2, PDU, PDU2, PSM and PSM2 of the size 90.

Characterization	ID	Dimensions
Connecting element		
PAM 102	0307802	90x90/45/90x90 mm

PAM 103 - straight

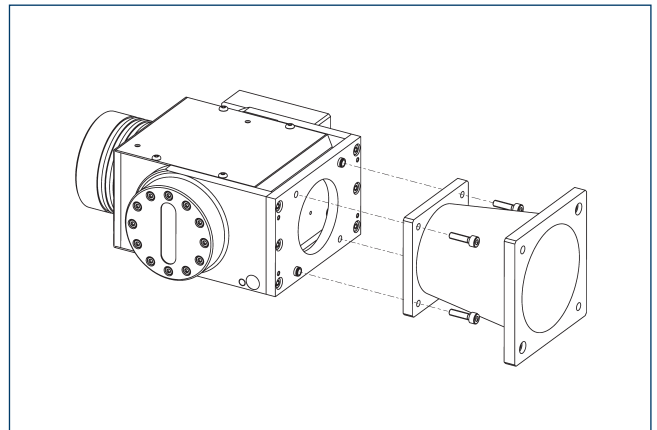


72 Fit for centering sleeves

Suitable for the mechatronic modules PW-V5, PW-V6, PR, PR2, PDU, PDU2, PSM and PSM2 of the size 90.

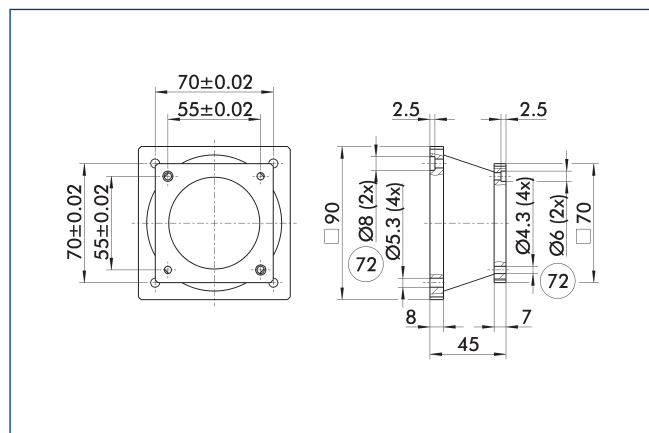
Characterization	ID	Dimensions
Connecting element		
PAM 103	0307803	90x90/90/90x90 mm

Connecting element - conical



Characterization	ID	
Connecting element		
PAM 110	0307810	
PAM 111	0307811	
PAM 112	0307812	
PAM 113	0307813	

PAM 110 – conical

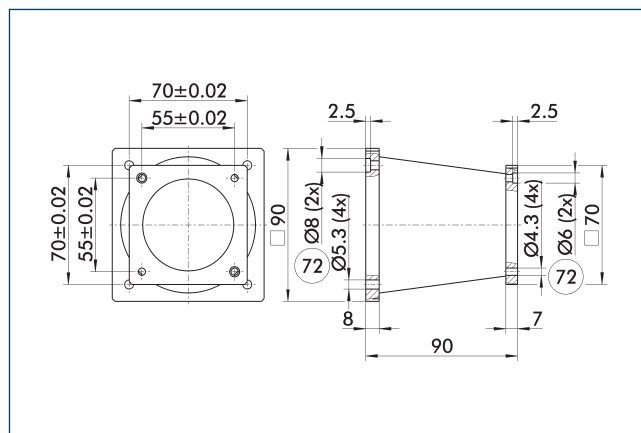


Fit for centering sleeves

Suitable for the mechatronic modules PG, PW-V5, PW-V6, PR, PR2, PDU, PDU2, PSM and PSM2 of the sizes 70/90.

Characterization	ID	
Connecting element		
PAM 110	0307810	

PAM 111 – conical

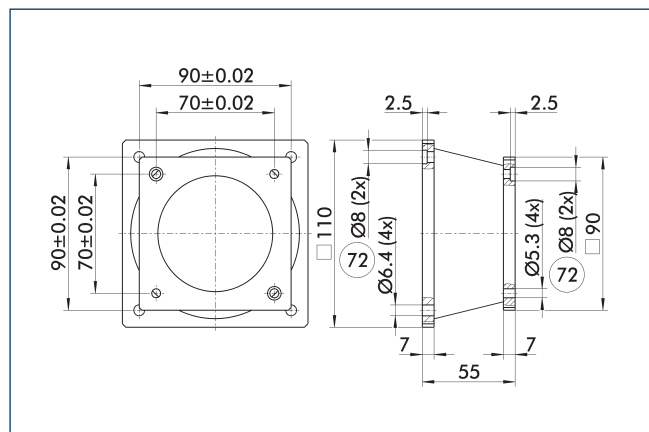


Fit for centering sleeves

Suitable for the mechatronic modules PG, PW-V5, PW-V6, PR, PR2, PDU, PDU2, PSM and PSM2 of the sizes 70/90.

Characterization	ID	
Connecting element		
PAM 111	0307811	

PAM 112 – conical

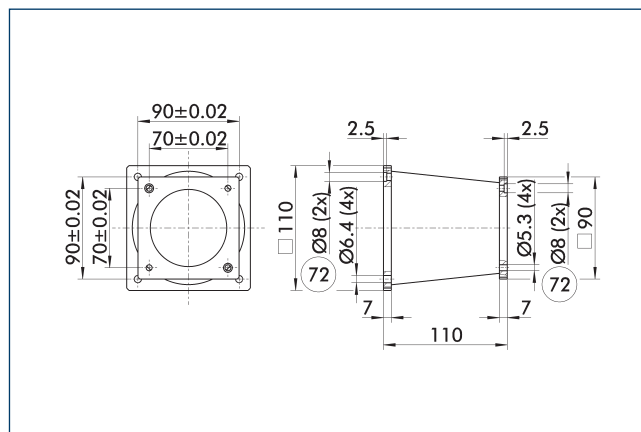


Fit for centering sleeves

Suitable for the mechatronic modules PW-V5, PW-V6, PR, PR2, PDU, PDU2, PSM and PSM2 of the sizes 90/110.

Characterization	ID	
Connecting element		
PAM 112	0307812	

PAM 113 – conical

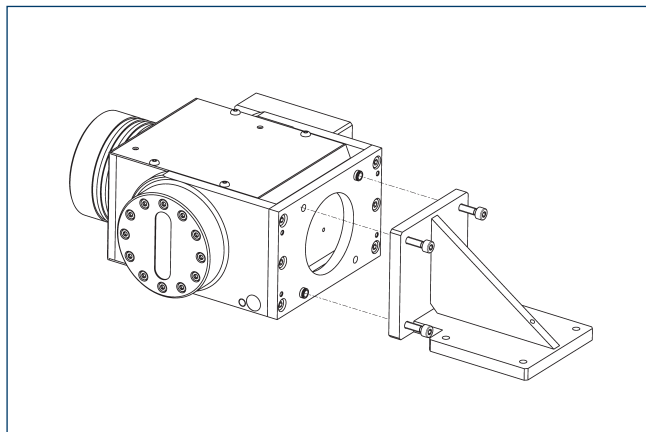


Fit for centering sleeves

Suitable for the mechatronic modules PW-V5, PW-V6, PR, PR2, PDU, PDU2, PSM and PSM2 of the sizes 90/110.

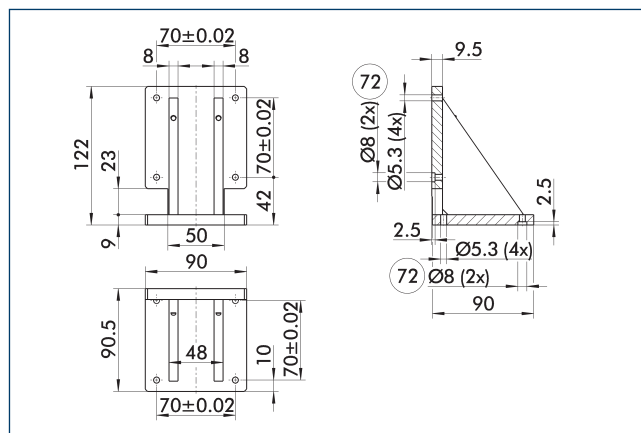
Characterization	ID	
Connecting element		
PAM 113	0307813	

Connectiing element - angle



Characterization	ID	
Connecting element		
PAM 121	0307821	

PAM 121 - angle



72 Fit for centering sleeves

Suitable for the mechatronic modules PW-V5, PW-V6, PR, PR2, PDU, PDU2, PSM and PSM2 of the size 90.

Characterization	ID	
Connecting element		
PAM 121	0307821	

SCHUNK GmbH & Co. KG
Spann- und Greiftechnik

Bahnhofstr. 106 - 134
D-74348 Lauffen/Neckar
Tel. +49-7133-103-0
Fax +49-7133-103-2399
info@de.schunk.com
schunk.com

Follow us



J. Lehmann
Jens Lehmann, German goalkeeper legend, SCHUNK brand ambassador since 2012 for
safe, precise gripping and holding.
schunk.com/Lehmann