

It is a low cost actuator equipped with a DC motor of a small size and high thrust force. It is compatible with micrometer head using the manual stage of Sigma Koki and can be easily automated.

- A customer can remove the micrometer head on its own and replace with the remote actuator.
- It is possible to select the movement amount of 13mm and 25mm depending on the application.
- Since USB interface is a standard feature, it can easily be operated from the PC.
- Since the remote control is possible, it can also be used in a hard place to work as well as a narrow place.
- The speed can be adjusted while driving. * Adjust by variable speed knob and I/O



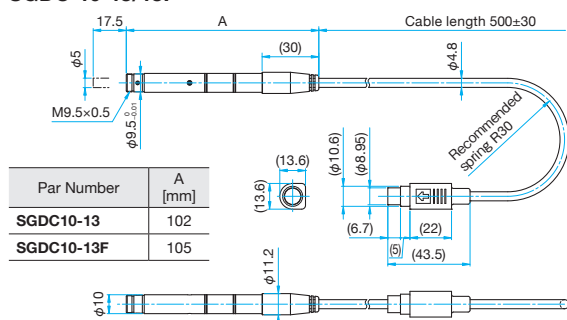
Attention

- ▶ When replacing the micrometer head with the remote actuator, micro nut is required in order to remove the micro. Please contact our international sales division, if the micro nut is required.
- ▶ Please be careful when handling cable. Shock, compression, bending, twisting, tensile bring to the disconnection of the cable.



Outline Drawing

SGDC-10-13/13F



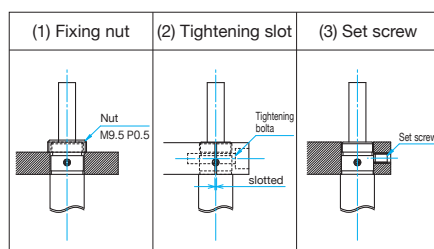
Par Number	A [mm]
SGDC10-13	102
SGDC10-13F	105

Specifications

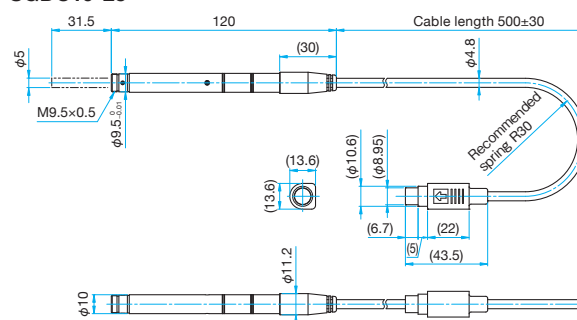
Sensitivity (resolving power)	Under 0.1 μm for reference
Lead of Screw	M3 P=0.5mm
Backlash	<0.03mm
Motor Type	DC motor (DC6V)
Temperature of Operation	5 – 40°C
Ambient Humidity	20 – 80%RH (no condensation)
Length of Cable	0.5m

Method of fixation

There are three methods of fixing for the actuator.
When installing the unit, we recommend Fixing Nut
method with the nut (M9.5×0.5).



SGDC10-25



Specifications

Par Number	Travel [mm]	Travel Speed* ¹ [mm/s]	Thrust Force* ² [N]	Weight [kg]
SGDC10-13	17.5	1	>29.5 (3kgf)	0.06
SGDC10-13F	17.5	0.2	>68.6 (7kgf)	0.06
SGDC10-25	31.5	1	>29.5 (3kgf)	0.08

*1 It is the guaranteed value for maximum speed. The speed can be adjusted.

*2 It is the guaranteed value at the maximum speed setting on the controller. Please be careful that the maximum thrust force can be over 20kgf.

Mounting methods (ex. TSD-601S)

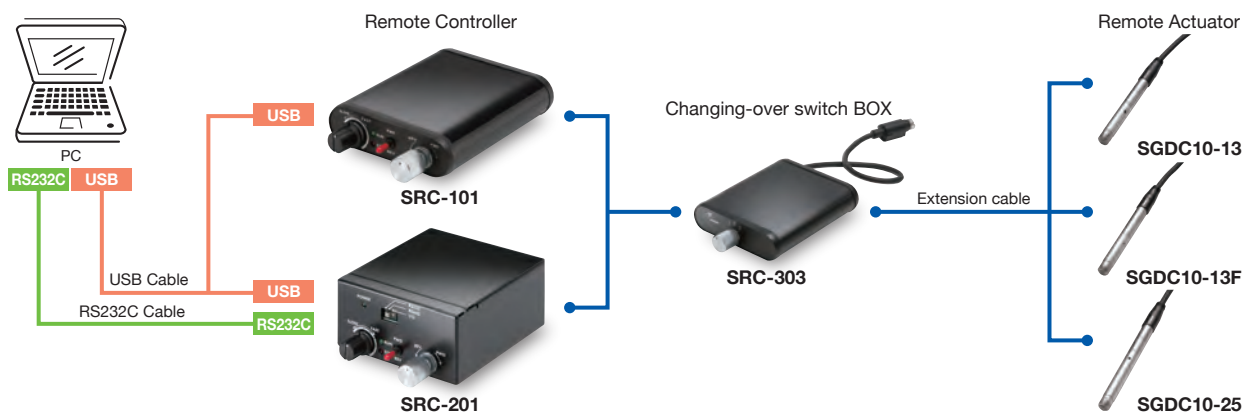
Compatible with most manual translation stages



1. Fixing a stage to tighten the Clamp screw of the stage.
2. Use the Allen wrench and remove the bracket from the stage.
3. Set screw is removed with Allen wrench and nut is removed with Nut driver. Micrometer can be removed.
4. Remote actuator is inserted and it fixes with Set screw and Nut. Please attach to direction of motor cable or twist of cable carefully.
5. A remote actuator is attached to a stage.

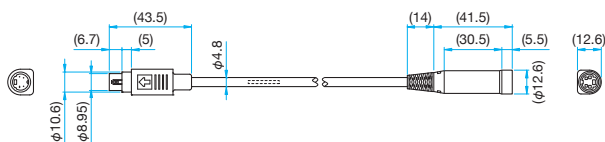
* Please attach a stage and an actuator in parallel.

System Chart



Option Extension cable

MDC-4-2/3/5



Specifications

Par Number	Product Name	Length of Cable [m]
MDC-4-2	Extension cable	2
MDC-4-3	Extension cable	3
MDC-4-5	Extension cable	5
USB/MINI-B-2	USB cable	2

SRC

RoHS CE Catalog Code W8017



SRC-101



SRC-201

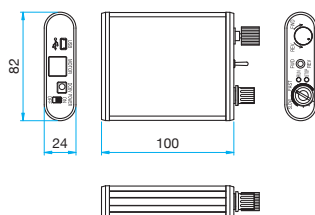


SRC-303 (changing-over switch BOX)

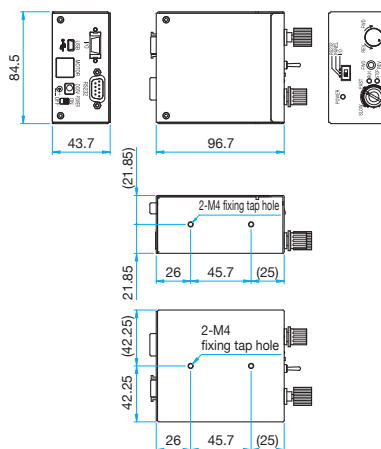
Outline Drawing

* excluding protrusions

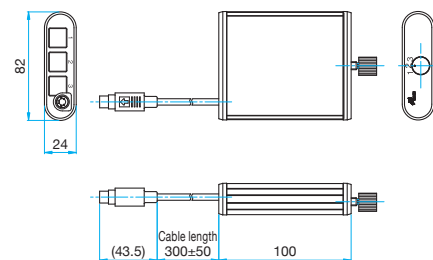
SRC-101



SRC-201



SRC-303



Specifications for SRC-101/201

Number of Controlling Axis	1 axis
Source Voltage	DC6V
Apparent Power	30VA
AC adaptor	AC100 - 240V ±10%
Drive System	PWM Control
Limit Sensor	Overload Detection Style
Motor type	DC motor (DC6V)
Temperature of Operation	5 - 40°C
Storage Temperature	20 - 80%RH (no condensation)
Control Switch	-20°C - 60°C
Control Switch	Shift Transmission, Micromotion, JOG

Specifications

Par Number	Interfaces	Control Signals	Weight [kg]
SRC-101	USB	—	0.15
SRC-201	USB, RS232C	Input Signals 6, Output Signals 4	0.38
SRC-303	—	—	0.15

Ultrasonic Motor Driven Actuator Guide

High resolution and high-speed motion ultrasonic motor driven actuator, allowing remote control.
Compact shape with silent activation.
Friction activation system enables position-holding function when power is OFF.



Features

■ Compact

Smaller motors are used compared to electromagnetic motors, enabling configuration of compact systems. These actuators are approximately the same size as manual types and allow remote control, making them suitable for position adjustment in compact spaces.

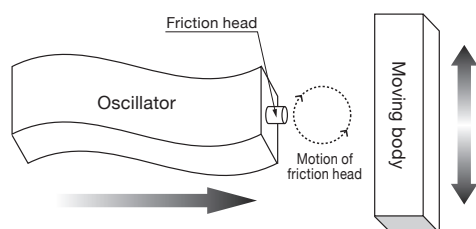
■ Fine Adjustment

The SPD SEL HI/LOW selection switch of the 2-axis controller (PKA-ID-02) allows switching between coarse drive and fine drive to make fine angle and position adjustment smoothly.

■ Silent Operation

Since the PKA series uses ultrasonic motors, the driving sound is extremely quiet, only a friction sound comes out.

Drive System



The PKA series uses the ultrasonic motor drive system, in which the stage and actuator are powered by friction drive. It drives the table face by controlling the oscillator so that the tip of ultrasonic motor (friction head) moves in a circular orbit, and moving the pressure contacted moving object.

Translation Stages

- Stage type actuator utilizing a cross roller guide with excellent rigidity and straightness.
- While the drive source is a small ultrasonic motor, high load capacity of 20N is ensured.
- Two table sizes, □40mm and □60mm, are available.



PKA40-15X



PKA60-20X

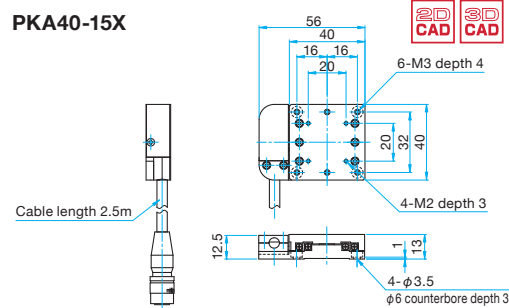
Specifications

Part Number	PKA40-15X	PKA60-20X
Table Size [mm]	40×40	60×60
Travel [mm]	15	20
Resolution [μm]	2 or lower	2 or lower
Holding Power [N]	1	1
Load Capacity [N]	20 (about 2kgf)	20 (about 2kgf)
Weight [kg]	0.1	0.2

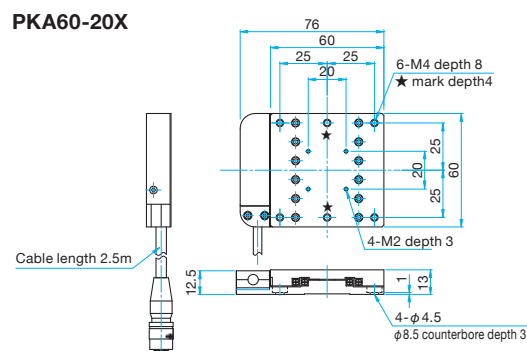
Catalog Code W8009

Outline Drawing

PKA40-15X



PKA60-20X



Remote Control Mirror Holder

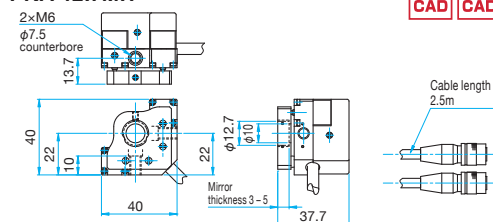
Catalog Code **W8010**



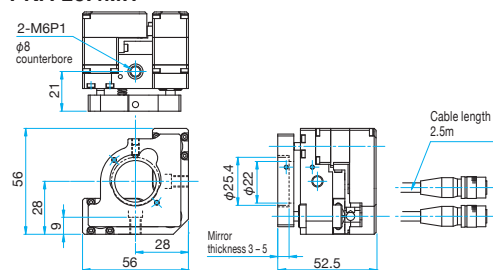
- Compact ultrasonic motor driven actuator mounted on high stability model mirror holders (MHG series).

Outline Drawing

PKA-12.7MH



PKA-25.4MH



Specifications

Part Number	PKA-12.7MH	PKA-25.4MH
Compatible Optics Diameter [mm]	φ12.7	φ25.4
Compatible Optics Thickness [mm]	3 - 5	3 - 5
Number of Adjustable Axes	2	2
Travel [°]	±2.5	±3
Resolution [°]	2.0 or lower	0.5 or lower
Weight [kg]	0.2	0.4

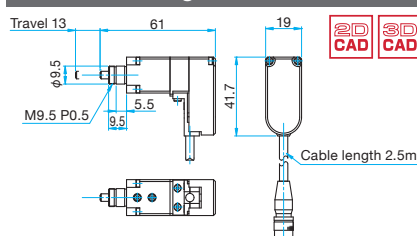
Compact Actuator

Catalog Code **W8011**

- High thrust force produced by using ball screw design.
- Can be used to automate manual stages by replacing manual micrometer heads (travel: 13mm).
- High speed motion (about 0.5mm/sec)



Outline Drawing



Specifications

Part Number	PKA-13ACT
Travel [mm]	13
Resolution [μm]	1 or lower
Holding Power [N]	30
Maximum Travel Speed [mm/s]	0.5 or more
Weight [kg]	0.2

2-Axis Controller

Catalog Code **W8012**



- Easy to manually control with jog sticks.
- Automatic control is possible by issuing simple commands from a PC connected via RS232C.

Guide

- ▶ Compatible with the measurement and control software SGTERM and SGEMCS. [Reference](#) G024, G025
- ▶ Sample programs are available for download on the website.
 - SGCommander 32-bit version for Windows® (only for RS232C)
 - SGCommander 32/64-bit version for Windows® (only for RS232C)

Attention

- ▶ Power supply of the PKA-ID-02 is DC24V 1.8A. You need to purchase the PAT-001-POW1 (AC adapter) or prepare an adapter separately.

List of Commands

Command Name	Command	Details
Absolute coordinate pulse set command	A	Specifies the absolute coordinate value.
Absolute travel pulse set command	M	Specifies the absolute travel.
Drive command	G	Starts driving.
Theoretical origin return command	N	Returns to the theoretical origin.
Stop command	L	Stops travel.
Theoretical origin setting command	R	Resets the coordinate value.
Status check command	Q	Returns the status of coordinate value, etc.
Status check command 2	!	Returns B (Busy) or R (Ready).
Internal information check command	?	Returns the internal information.
Speed setting command	S	Sets the pulse per step when the SPDSEL switch is set to LOW.

Specifications

Part Number	PKA-ID-02
Number of Adjustable Axes	2
Interface	RS232C
Manual Operation	Jog stick
Power Voltage	DC24V 1.8A
Current Consumption [A]	1.8
Outer Dimensions [mm]	(W)50 × (D)142 × (H)100
Weight [kg]	0.53

OptMike with Encoder OptMike-E (B type) Controllers

SOM-C
OMEC

SOM-C

RoHS Catalog Code W8013

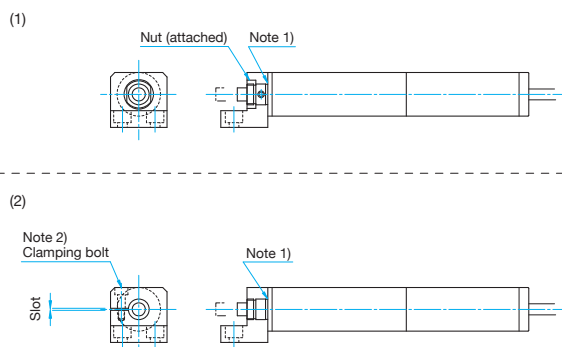
Motorized positioning micrometer heads fitted with an actuator whose lead screw is connected to a compact and highly efficient DC motor, encoder and high resolution gear head, achieving smooth operation with no vibration. Compatible with micrometer heads used on Sigma Koki manual stages, making it easy to motorize them.

- Embedded micro photo sensor enables limit/origin positioning by micron units.
- Encoder is set at the front of the motor instead of rear, there is no integration count for lost motion or backlash of gearhead.
- Precision ground lead screw minimizes backlash.



Mounting Methods

OptMike with encoder can be fixed in 2 ways described below. Fixing with a nut as shown in (1) is recommended for secure fixing and higher stability.



Note 1) Chamfer at least 0.5mm on mounting bracket inlet.
Note 2) Make sure not to clamp too hard to avoid the OptMike body getting crooked.

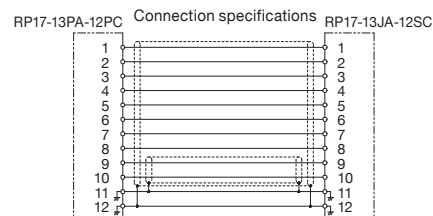
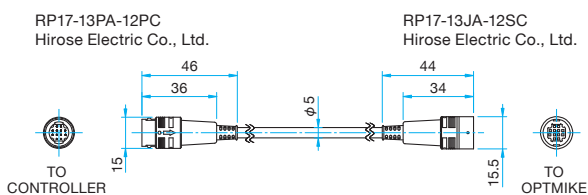
Guide

- ▶ Use the OptMike-E (B type) controllers (OMEC-2BG/4BG) sold separately. [Reference](#) F017
- ▶ Refer to the list of compatible products. [Reference](#) F020

Attention

- ▶ Secure with the attached nut when installing onto device or equipment. Be aware that securing by a set screw with point load (excessive load or tightening) may cause malfunction.

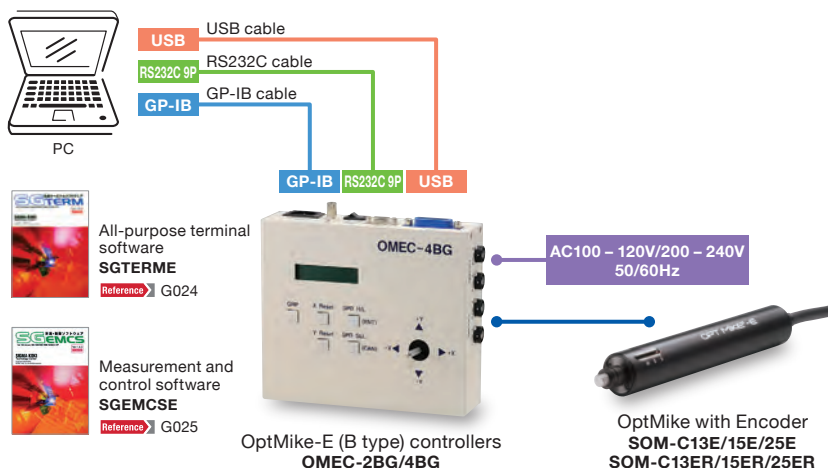
Option Extension Cable for OptMike **SOM-BCA**



Specifications

Part Number	Cable Length [m]
SOM-BCA5	5
SOM-BCA10	10

System Chart



Example of Combination with Stage



A close-up photograph of industrial valves and pipes, likely part of a water treatment system. The image shows metallic components with various fittings and a pressure gauge.



Specifications				
Part Number	Travel [mm]	Tip Shape	Positioning Accuracy [mm]	Weight [kg]
SOM-C13E	13	Flat type	0.012	0.19
SOM-C13ER	13	R type	0.012	0.19
SOM-C15E	15	Flat type	0.012	0.2
SOM-C15ER	15	R type	0.012	0.2
SOM-C25E	25	Flat type	0.015	0.2
SOM-C25ER	25	R type	0.015	0.2



Catalog Code W8014

- Enables control of complex operations by issuing simple commands from a PC via the interfaces.
- Enables reliable and accurate operation with a double-loop positioning system by control system using both speed and position.

Specifications

- ▶ The USB interface is compatible only with Sigma Koki's software.
- ▶ This controller is not compatible with Sigma Koki's OptMike without encoder or products of other companies. Connecting such products will interfere with normal operation and may cause malfunction.

Part Number	Number of Control Axes [axes]
OMEC-2BG	2
OMEC-4BG	4

■Interface Specifications

Power Voltage	AC100-120V/200-240V 50/60Hz 20VA
Operation Temperature	5 ~ 40°C
Ambient Humidity	20 ~ 85%RH (without condensation)
Storage Temperature	-20 ~ 60°C
External Dimensions	(W)200 x (H)52 x (D)172mm (not including protrusions)
Weight	1.5kg

RS232C	Connector Baud rate Data length Parity Stop bit Delimiter Flow control	D-Sub 9pin, female connector, inch screw 4800/9600/19200/38400 8 bits None 1 bit CR + LF/CR/LF None
GP-IB	Setting address Delimiter	1 ~ 30 CR + LF/CR/LF/EOI
USB	Full Speed mode is supported Delimiter	CR

■ List of Commands

Command Name	Command	Functions
Machine origin return	H	Returns to the machine origin.
Theoretical origin setting	R	Clears the coordinates of current position.
Speed setting	D	Sets the travel speed.
Relative travel drive	M	Relative position travel drive
Absolute travel drive	A	Absolute position travel drive
Stop	L	Stops OptMlike travel.
Theoretical origin return	N	Returns to the theoretical origin
Control command	X	Sets lost motion.
Device status check	Q	Checks the OptMlike coordinates
Checks the controller status.	?	Checks the controller status.

■ **Driver**

Number of Control Axes	2 axes (2BG) 4 axes (4BG, but maximum 2 axes of the same group for simultaneous drive)
Coordinate Set Range	±32,767
Travel Speed	1.5 – 100µm/sec
Travel Speed Setting	32 steps
Pulse Travel Distance	1µm/pulse

Compatible Motor	Coreless DC servo motor
Overload Detection (overcurrent detection)	Equipped
Encoder Signal	A/B-phase, 1μm/pulse by duplexing on the driver side
Limit Sensor	+limit and -limit (The direction in which the spindle is pulled is "+")
Polarity	Normal close

Compact Stepping Motor Actuators | SGSP-ACT

Low price actuator fitted with a high-performance compact stepping motor and precision ground screws. Use in place of micrometer heads on Sigma Koki manual stages or mirror holders to motorize them.

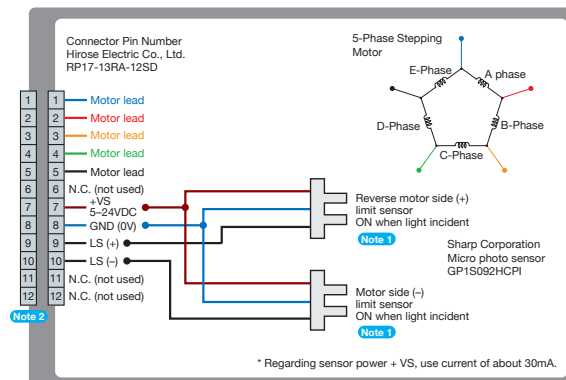


- Compatible with all Sigma-Koki stepper motor controllers.
- Models for 13mm and 25mm travel are available.

Guide

- ▶ Refer to the list of compatible products. [Reference](#) F020
 - ▶ Custom tapped tips can be supplied. Contact our International Sales Division for more information.
 - ▶ Recommended controllers include the single axis stage controller (GSC-01) and 2 axis stage controllers (GSC-02).
- [Reference](#) G098, G099

Schematic

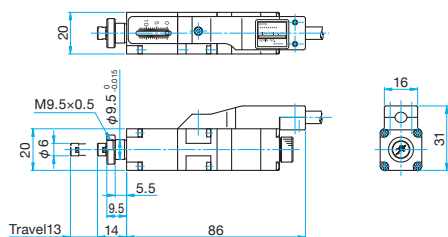


Common Specifications

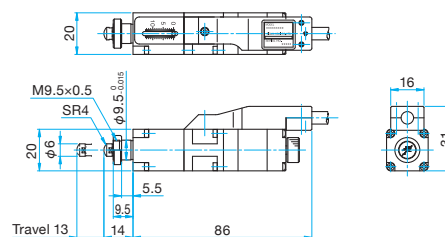
Single-Pulse Travel [μm] (full step/half step)	1/0.5
Type	5-phase stepping motor 0.35A/phase (Oriental Motor Co., Ltd.)
Motor Part Number	PK513PB-C9 (□20mm)
Feed screw [mm]	Precision ground screw φ4, 0.5mm lead

Outline Drawing

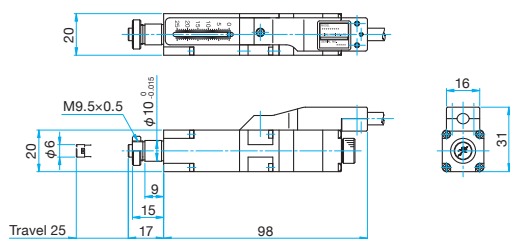
SGSP-13ACT-B0



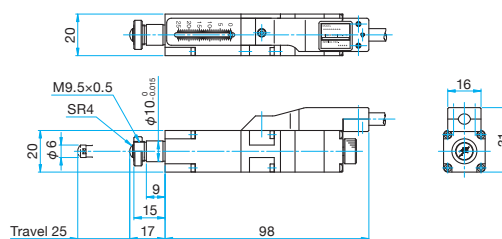
SGSP-13ACTR-B0



SGSP-25ACT-B0



SGSP-25ACTR-B0

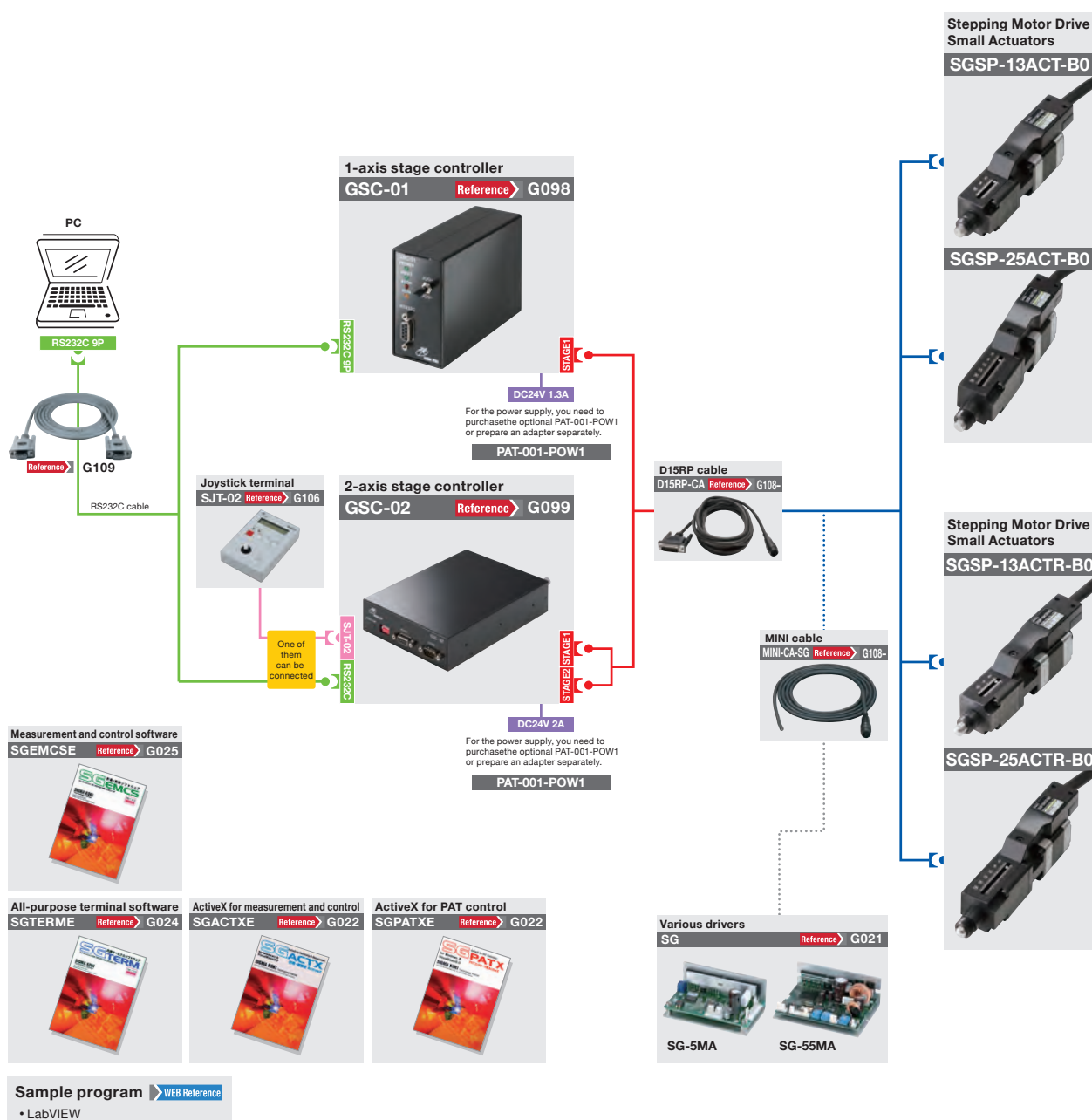


Part Number	Tip Shape	Travel [mm]	Maximum Travel [mm/sec]	Positioning Accuracy [mm]	Positional Repeatability [mm]	Lost Motion [mm]	Load Capacity (Static load) [N]	Weight [kg]
SGSP-13ACT-B0	Flat type	13	2	0.01	0.003	0.005	29.4 (3kgf)	0.16
SGSP-13ACTR-B0	R type	13	2	0.01	0.003	0.005	29.4 (3kgf)	0.16
SGSP-25ACT-B0	Flat type	25	2	0.015	0.003	0.005	29.4 (3kgf)	0.18
SGSP-25ACTR-B0	R type	25	2	0.015	0.003	0.005	29.4 (3kgf)	0.18

Compatible Controllers / Drivers and Cables



System Chart



Application Systems

Optics & Optical Coatings

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Micrometer Heads

Differential Micrometer Heads

Fine-pitch Screws

Remote

PKA

OptMike

ACT

List of Products Compatible with SOM-C and SGSP-ACT

List of Products Compatible with SOM-C13E

Gimbal Mirror Holders (MHAN) [Reference](#) C026

MHAN-25.4S	MHAN-30S	MHAN-40S
MHAN-50S	MHAN-50.8S	MHAN-60S
LMHA-30	LMHA-50	

Topmike Vertical Control Mirror Holders (LMHB) [Reference](#) C024

LMHB-30M	LMHB-50M	LHMB-60M
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Close-proximity Mirror Holders (MHE) [Reference](#) C029

MHE-30MR	MHE-30ML
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Steel Extended Contact Slide Stages (TSD) [Reference](#) Chapter E Manual Positioners

TSD-401C	TSD-401S	TSD-402C	TSD-402S				
TSD-403L	TSD-405CL	TSD-405SL					
TSD-601C	TSD-601S	TSD-602C	TSD-602S				
TSD-603	TSD-603L	TSD-604C	TSD-604S	TSD-605CL	TSD-605S	TSD-605C	TSD-605SL

Aluminum Crossed Roller Slide Stages (TAM) [Reference](#) Chapter E Manual Positioners

TAM-401C	TAM-401S	TAM-402C	
TAM-403L	TAM-404CL	TAM-404SL	TAM-405CL
TAM-601C	TAM-601S	TAM-602C	TAM-602S
TAM-603L	TAM-604CL	TAM-604SL	TAM-605CL

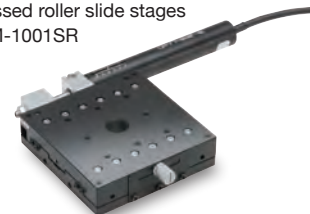
● Combined with gimbal mirror holder
MHAN-25.4S



● Combined with steel extended
contact slide stage
TSD-601S



● Combined with aluminum
crossed roller slide stages
TAM-1001SR



List of Products Compatible with SOM-C15E

Aluminum Crossed Roller Slide Stages (TAM) [Reference](#) Chapter E Manual Positioners

TAM-801C	TAM-801S	TAM-802C	TAM-802S	TAM-803L
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List of Products Compatible with SOM-C25E

Steel Extended Contact Slide Stages (TSD) [Reference](#) Chapter E Manual Positioners

TSD-801C	TSD-801S	TSD-802C	TSD-802S
TSD-1001C	TSD-1001S	TSD-1002C	TSD-1002S

Aluminum Crossed Roller Slide Stages (TAM) [Reference](#) E056

TAM-1001C	TAM-1001S
TAM-1002C	TAM-1002S

List of Products Compatible with SGSP-13ACT-B0

Gimbal Mirror Holders (MHAN) [Reference](#) C026

MHAN-25.4S	MHAN-30S	MHAN-40S
MHAN-50S	MHAN-50.8S	MHAN-60S

Topmike Vertical Control Mirror Holders (LMHB) [Reference](#) C024

LMHB-30M	LMHB-50M	LHMB-60M
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Steel Extended Contact Slide Stages (TSD) [Reference](#) Chapter E Manual Positioners

TSD-401C	TSD-401S	TSD-402C		
TSD-403L	TSD-404CL	TSD-404SL	TSD-405CL	
TSD-601C	TSD-601S	TSD-602C	TSD-603	TSD-603L
TSD-604C	TSD-604S	TSD-604CL	TSD-604SL	
TSD-605C	TSD-605CL			

Aluminum Crossed Roller Slide Stages [Reference](#) Chapter E Manual Positioners

TAM-401C	TAM-401S	TAM-402C		
TAM-403L	TAM-404CL	TAM-404SL	TAM-405CL	
TAM-601C	TAM-601S	TAM-602C	TAM-602S	
TAM-603L	TAM-604CL	TAM-604SL	TAM-605CL	TAM-605SL

● Combined with steel extended
contact slide stage
TSD-403L



List of Products Compatible with SGSP-25ACT-B0

Steel Extended Contact Slide Stages (TSD) [Reference](#) Chapter E Manual Positioners

TSD-801C	TSD-801S	TSD-802C	
TSD-1001C	TSD-1001S	TSD-1002C	TSD-1002S

Aluminum Crossed Roller Slide Stages (TAM) [Reference](#) E056

TAM-1001C	TAM-1001S
TAM-1002C	TAM-1002S

Guide

- Contact our International Sales Division for price and lead time.
- We will accept assembly separately. Contact our International Sales Division for more information.

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Optical
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Stages

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ACT