

Rotation Motorized Stages

Stage Size ϕ 40 mm / ϕ 60 mm

OSMS-YAW

RoHS

CE

Stepping motor driven rotation stages utilizing precision bearings and worm gear drive mechanisms.

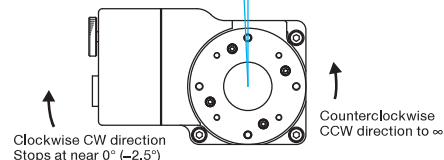


- Suitable for rotating optics about the optical axis, measuring, inspection and evaluation instruments.
 - 360° continuous motion
 - Low, compact profile
- Adapters to hold a variety of optics are available.

Guide

▶ Rotation Range

Minus limit sensor: -2.5° | Scale: 0°



- ▶ Homing of rotation motorized stages is performed using the CW limit sensor as the origin sensor.
- ▶ Origin detection is adjusted so that the stage stops at 0 degrees when homing is performed in the MINI system at half step.

Attention

- ▶ Load capacity and precision may be derated when mounted upside down or vertically. Contact us for informations regarding your specific application.

Specifications

Part Number		OSMS-40YAW	OSMS-60YAW	OSMS-60YAW-W
Mechanical Specifications	Rotation Range	Move in the counterclockwise CCW direction to ∞ , and stop at near 0 degree (-2.5°) in the clockwise CW direction.		
	Stage Size [mm]	$\phi 40$	$\phi 60$	$\phi 60$
	Travel Mechanism (reduction ratio)	Worm gear (1:144)	Worm gear (1:144)	Worm gear (1:144)
	Positioning Slide	Bearing method	Bearing method	Bearing method
	Stage Material	Aluminum / Aluminum bronze	Aluminum / Aluminum bronze	Aluminum / Aluminum bronze
	Weight [kg]	0.35	0.45	1.0
Accuracy Specifications	Resolution	(Full) [$^\circ$ /pulse]	0.005	0.005
		(Half) [$^\circ$ /pulse]	0.0025	0.0025
	MAX Speed [$^\circ$ /sec]		30	30
	Positioning Accuracy [$^\circ$]		0.1	—
	Positional Repeatability [$^\circ$]		0.02	0.02
	Load Capacity [N]		19.6 (2.0kgf)	29.4 (3.0kgf)
	Moment Stiffness [$^\circ$ /N·cm]		2	—
	Lost Motion [$^\circ$]		0.05	0.05
	Backlash [$^\circ$]		0.1	0.1
	Parallelism [μ m]		50	—
	Concentricity [μ m]		30	—
	Wobble [mm]		0.02	—
Sensor	Sensor Part Number	Micro Photoelectric Sensor: PM-F25 (SUNX Co., Ltd.)	Micro Photoelectric Sensor: PM-R25 (SUNX Co., Ltd.)	Micro Photoelectric Sensor: PM-R25 (SUNX Co., Ltd.)
	Limit Sensor	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor	None	None	None
	Proximity Origin Sensor	None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)
	Motor Part Number	TS3664N4E10 ($\square 24$ mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V $\pm 10\%$
	Current Consumption	15mA or lower
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction)

Compatible Driver / Controller

Control System	Compatible Driver	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motorized Stages

Light Sources & Laser Safety

Index

Guide

Controllers/Drivers

Softwares

Stepping Motor

AC Servo Motor

Cables

Piezo

X Translation

Theta Rotation

Goniometer

Vacuum

Options

40 × 40 mm

60 × 60 mm

80 × 80 mm

85 × 85 mm

100 × 100 mm

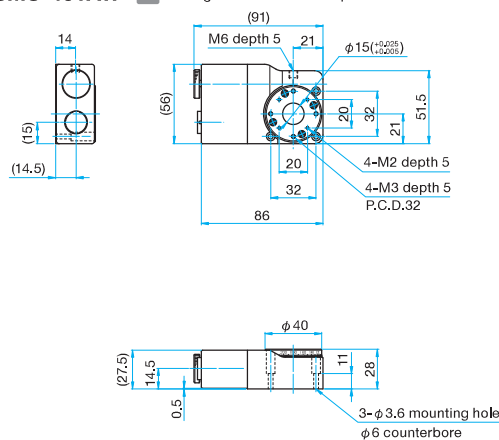
120 × 120 mm

Others

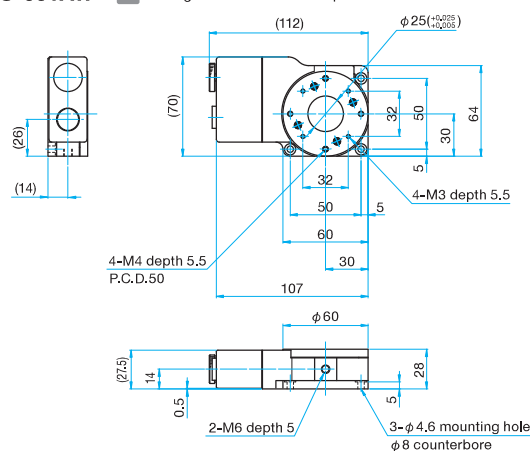


Outline Drawing

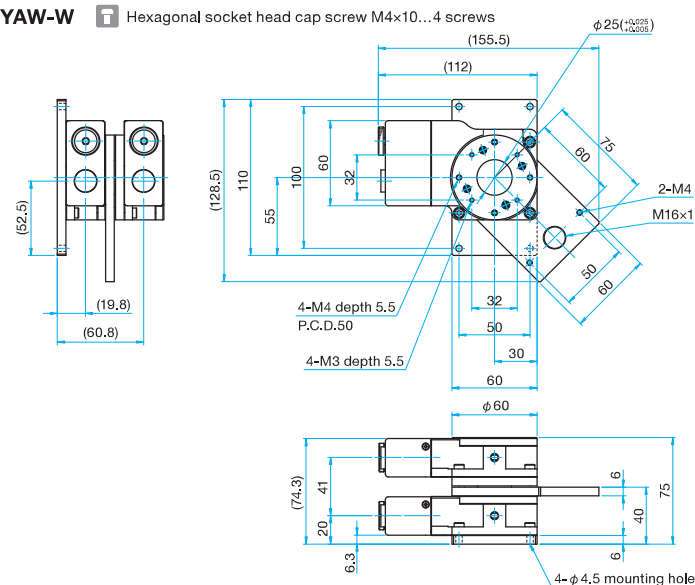
OSMS-40YAW Hexagonal socket head cap screw M3×15...3 screws



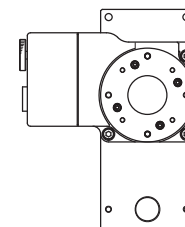
OSMS-60YAW Hexagonal socket head cap screw M4×10...3 screws



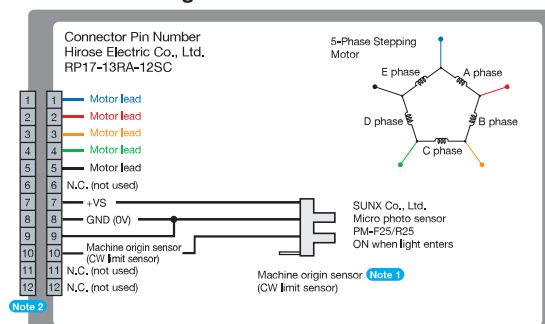
OSMS-60YAW-W Hexagonal socket head cap screw M4×10...4 screws



When homing of OSMS-60YAW-W is performed, the position will become as shown below.



Connection Diagram



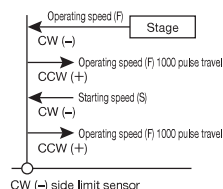
Note 1 When a travel command in the "+" direction is issued, the mounting table rotates to ∞ in the CCW (counterclockwise) direction viewed from the top surface, but it is stopped by the machine origin sensor (CW limit sensor) in the CW (clockwise) direction. Detect the machine origin using the method (MINI system) that detects the origin with a machine origin sensor (CW limit sensor).

Note 2 Compatible cable connector: Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

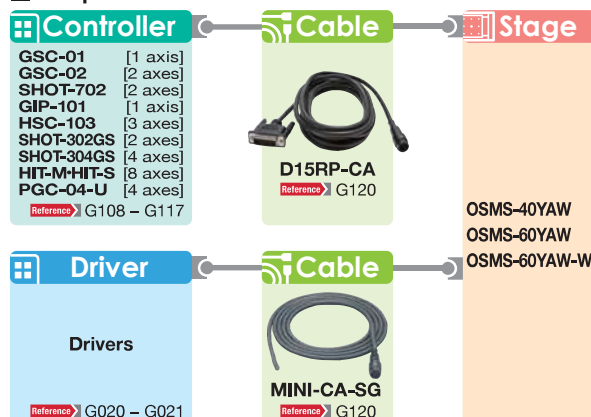
Machine Origin Detection

MINI System

When the machine origin detection command is issued, the stage starts traveling in the CW (-) direction at the operating speed (F) set with the memory switch, and stops by the CW (-) side limit sensor. Then it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses. After stop, it starts traveling in the CW (-) direction again at the starting speed (S), and stops by the CW (-) side limit sensor. After that, it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses. This position is regarded as the machine origin.



Compatible Controllers / Drivers and Cables



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

MotORIZED Stages

Light Sources & Laser Safety

Index

Guide

Controllers/Drivers

Softwares

Stepping Motor

AC Servo Motor

Cables

Piezo

X Translation

Theta Rotation

Goniometer

Vacuum

Options

40 × 40 mm

60 × 60 mm

80 × 80 mm

85 × 85 mm

100 × 100 mm

120 × 120 mm

Others

Rotation Motorized Stages

Stage Size ϕ 80 mm / ϕ 120 mm / ϕ 160 mm

OSMS-YAW

RoHS

CE

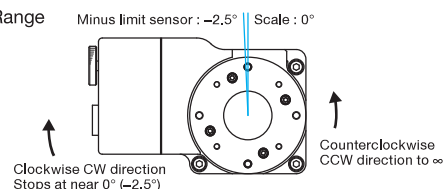
Stepping motor driven rotation stages utilizing precision bearings and worm gear drive mechanisms.



- Suitable for rotating optics about the optical axis, measuring, inspection and evaluation instruments.
 - 360° continuous motion
 - Low, compact profile
- Adapters to hold a variety of optics are available.

Guide

▶ Rotation Range



- ▶ Homing of rotation motorized stages is performed using the CW limit sensor as the origin sensor.
- ▶ Origin detection is adjusted so that the stage stops at 0 degrees when homing is performed in the MINI system at half step.

Attention

- ▶ Load capacity and precision may be derated when mounted upside down or vertically. Contact us for informations regarding your specific application.

Specifications

Part Number		OSMS-80YAW	OSMS-120YAW	OSMS-160YAW	OSMS-120YAW-W
Mechanical Specifications	Rotation Range	Move in the counterclockwise CCW direction to ∞ , and stop at near 0 degree (-2.5°) in the clockwise CW direction.			
	Stage Size [mm]	ϕ 80	ϕ 120	ϕ 160	ϕ 120
	Travel Mechanism (reduction ratio)	Worm gear (1:144)	Worm gear (1:144)	Worm gear (1:144)	Worm gear (1:144)
	Positioning Slide	Bearing method	Crossed roller	Crossed roller	Crossed roller
	Stage Material	Aluminum / Aluminum bronze	Aluminum / Aluminum bronze	Aluminum / Aluminum bronze	Aluminum / Aluminum bronze
	Weight [kg]	1.1	2.0	2.5	5.5
Accuracy Specifications	Resolution	(Full) [$^\circ$ /pulse]	0.005	0.005	0.005
		(Half) [$^\circ$ /pulse]	0.0025	0.0025	0.0025
	MAX Speed [$^\circ$ /sec]		30	30	30
	Positioning Accuracy [$^\circ$]		0.15	0.1	0.1
	Positional Repeatability [$^\circ$]		0.02	0.02	0.02
	Load Capacity [N]		98 (10.0kgf)	196 (20.0kgf)	196 (20.0kgf)
	Moment Stiffness [$^\circ$ /N·cm]		0.2	0.1	0.1
	Lost Motion [$^\circ$]		0.05	0.05	0.05
	Backlash [$^\circ$]		0.08	0.08	0.08
	Parallelism [μ m]		50	50	60
	Concentricity [μ m]		30	30	30
	Wobble [mm]		0.02	0.02	0.02
Sensor	Sensor Part Number		Micro Photoelectric Sensor: PM-F25 (SUNX Co., Ltd.)		
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		None	None	None
	Proximity Origin Sensor		None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK525HPB-C4 (□28mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V \pm 10%
	Current Consumption	15mA or lower
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction)

Compatible Driver / Controller

Control System	Compatible Driver	MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	SHOT-702, HSC-103, GIP-101, SHOT-302GS, SHOT-304GS, HIT-M-HIT-S, PGC-04-U

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motorized Stages

Light Sources & Laser Safety

Index

Guide

Controllers/Drivers

Softwares

Stepping Motor

AC Servo Motor

Cables

Piezo

X Translation

Theta Rotation

Goniometer

Vacuum

Options

40 × 40 mm

60 × 60 mm

80 × 80 mm

85 × 85 mm

100 × 100 mm

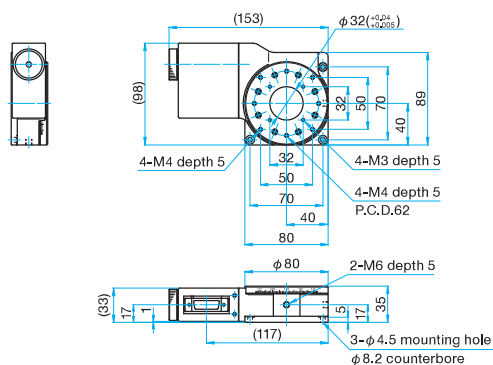
120 × 120 mm

Others

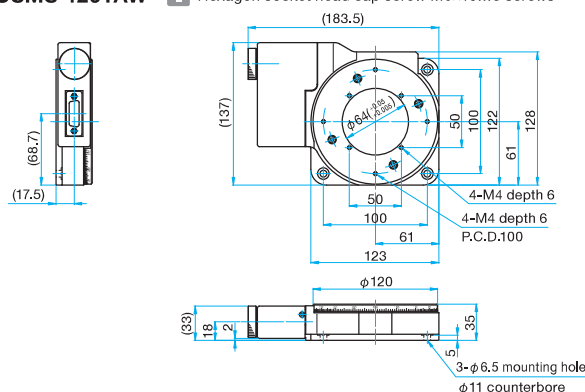


Outline Drawing

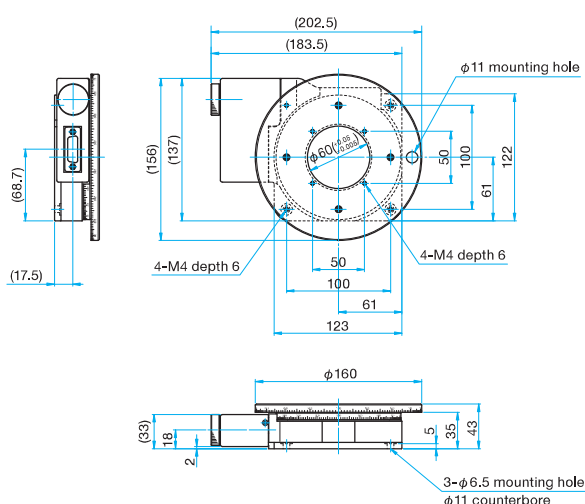
OSMS-80YAW Hexagonal socket head cap screw M4×10...3 screws



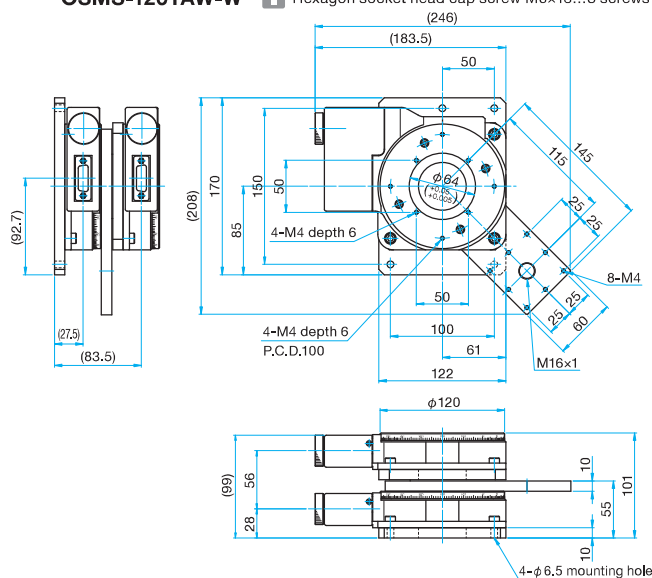
OSMS-120YAW Hexagon socket head cap screw M6×10...3 screws



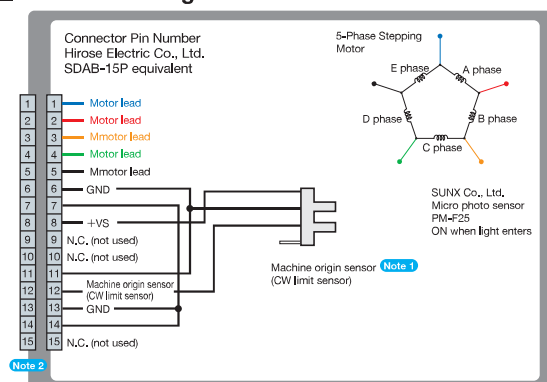
OSMS-160YAW Hexagon socket head cap screw M6×10...3 screws



OSMS-120YAW-W Hexagon socket head cap screw M6×18...3 screws



Connection Diagram



Note 1 When a travel command in the "+" direction is issued, the mounting table rotates to ∞ in the CCW (counterclockwise) direction viewed from the top surface, but it is stopped by the machine origin sensor (CW limit sensor) in the CW (clockwise) direction. Detect the machine origin using the method (MINI system) that detects the origin with a machine origin sensor (CW limit sensor).

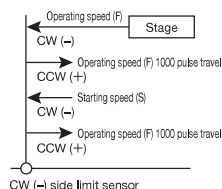
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

Machine Origin Detection

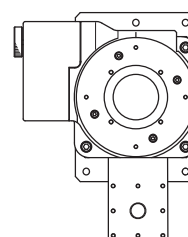
MINI System

When the machine origin detection command is issued, the stage starts traveling in the CW (-) direction at the operating speed (F) set with the memory switch, and stops by the CW (-) side limit sensor. Then it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses.

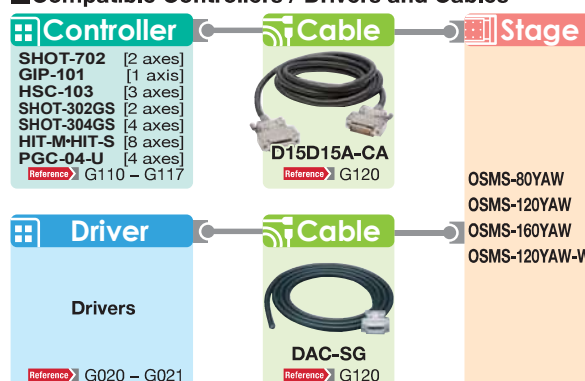
After stop, it starts traveling in the CW (-) direction again at the starting speed (S), and stops by the CW (-) side limit sensor. After that, it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses. This position is regarded as the machine origin.



If homing of OSMS-120YAW-W is performed, the position will become as shown below.



Compatible Controllers / Drivers and Cables



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

MotORIZED Stages

Light Sources & Laser Safety

Index

Guide

Controllers/Drivers

Softwares

Stepping Motor

AC Servo Motor

Cables

Piezo

X Translation

Theta Rotation

Goniometer

Vacuum

Options

40 × 40 mm

60 × 60 mm

80 × 80 mm

85 × 85 mm

100 × 100 mm

120 × 120 mm

Others

Precision Rotation Motorized Stages

Stage Size ϕ 120 mm / ϕ 160 mm

HST-YAW

RoHS

CE

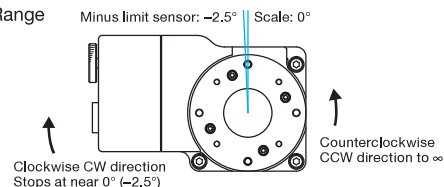
High precision and high stability rotation motorized stages fitted with bearing positioning slide. The combination of HST Series and 3 axis Stage Controllers HSC-103 can perform low-noise and low-vibration operation, compared with conventional products.



- Rotation motorized stages suitable for use when high load capacity is required.

Guide

▶ Rotation Range



- ▶ Homing of rotation motorized stages is performed using the CW limit sensor as the origin sensor.
- ▶ Origin detection is adjusted so that the stage stops at 0 degrees when homing is performed in the MINI system at half step.

Attention

- ▶ Load capacity and precision may be derated when mounted upside down or vertically. Contact us for informations regarding your specific application.

Specifications

Part Number		HST-120YAW-0B		HST-160YAW-0B	
Mechanical Specifications	Rotation Range		Move in the counterclockwise CCW direction to ∞, and stop at near 0 degree (−2.5°) in the clockwise CW direction.		
	Stage Size [mm]		φ120		φ160
	Travel Mechanism (reduction ratio)		Worm gear (1:144)		Worm gear (1:144)
	Positioning Slide		Bearing method		Bearing method
	Stage Material		Aluminum / Aluminum bronze		Aluminum / Aluminum bronze
	Weight [kg]		5		8.5
Accuracy Specifications	Resolution	(Full) [°/pulse]	0.005		0.005
		(Half) [°/pulse]	0.0025		0.0025
	MAX Speed [°/sec]		30		30
	Positioning Accuracy [°]		0.1		0.1
	Positional Repeatability [°]		0.01		0.01
	Load Capacity [N]		343 (35.0kgf)		392 (40.0kgf)
	Moment Stiffness [°/N·cm]		0.015		0.01
	Lost Motion [°]		0.01		0.01
	Backlash [°]		0.003		0.003
	Parallelism [μm]		50		50
	Concentricity [μm]		20		20
	Wobble [mm]		0.01		0.01
Sensor	Sensor Part Number		Micro Photoelectric Sensor: PM-U25 (SUNX Co., Ltd.)		Micro Photo Sensor: PM-F25 (SUNX Co., Ltd.)
	Limit Sensor		Equipped (NORMAL CLOSE)		Equipped (NORMAL CLOSE)
	Origin Sensor		None		None
	Proximity Origin Sensor		None		None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 1.4A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PKP546N18B (\square 42mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V \pm 10%
	Current Consumption	15mA or lower
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF

Compatible Cable

Cable	Driver Cable	D15D15A-CA
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Compatible Driver / Controller

Control System	Compatible Driver	SG-5M*, MC-S0514ZU, SG-514MSC*, MC-7514PCL (* DC36V)
	Compatible Controller	HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-SH, PGC-04-U

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motorized Stages

Light Sources & Laser Safety

Index

Guide

Controllers/Drivers

Softwares

Stepping Motor

AC Servo Motor

Cables

Piezo

X Translation

Theta Rotation

Goniometer

Vacuum

Options

40 × 40 mm

60 × 60 mm

80 × 80 mm

85 × 85 mm

100 × 100 mm

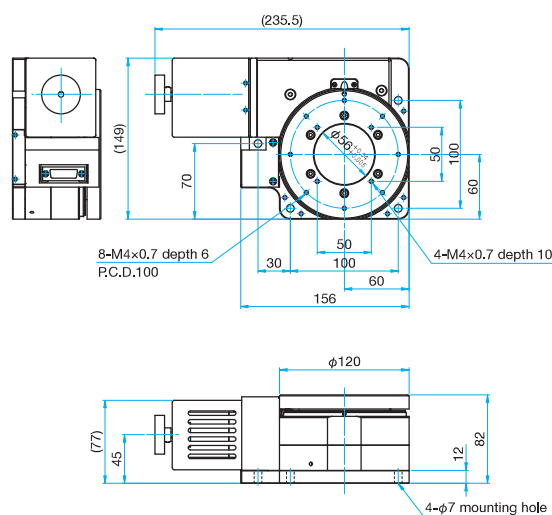
120 × 120 mm

Others

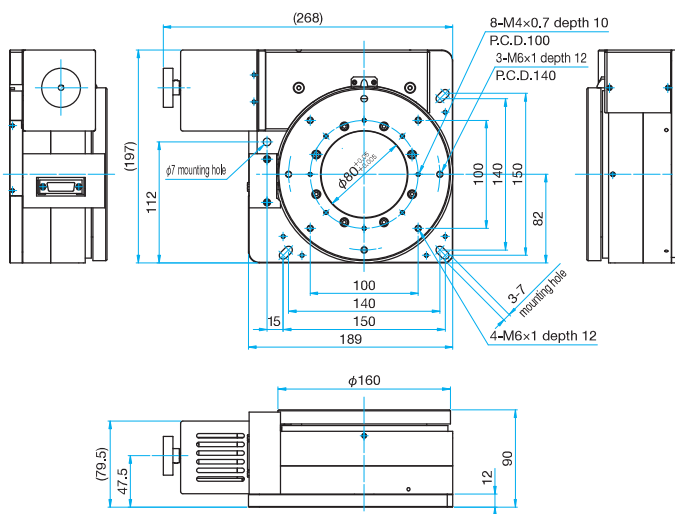


Outline Drawing

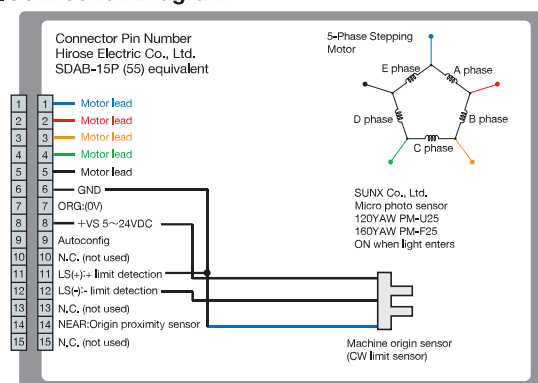
HST-120YAW-0B Hexagon socket head cap screw M6×20...4 screws



HST-160YAW-0B Hexagon socket head cap screw M6×20...4 screws



Connection Diagram

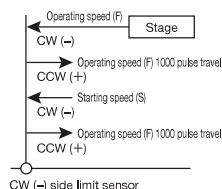


Machine Origin Detection

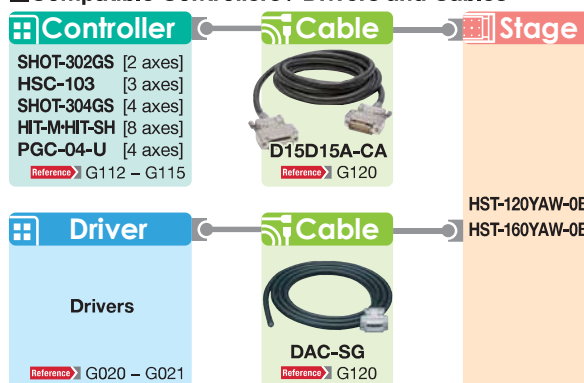
MINI System

When the machine origin detection command is issued, the stage starts traveling in the CW (-) direction at the operating speed (F) set with the memory switch, and stops by the CW (-) side limit sensor. Then it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses.

After stop, it starts traveling in the CW (-) direction again at the starting speed (S), and stops by the CW (-) side limit sensor. After that, it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses. This position is regarded as the machine origin.



Compatible Controllers / Drivers and Cables



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

MotORIZED Stages

Light Sources & Laser Safety

Index

Guide

Controllers/Drivers

Softwares

Stepping Motor

AC Servo Motor

Cables

Piezo

X Translation

Theta Rotation

Goniometer

Vacuum

Options

40 × 40 mm

60 × 60 mm

80 × 80 mm

85 × 85 mm

100 × 100 mm

120 × 120 mm

Others

High Durability Motorized Rotation Stages

Stage Size ϕ 60 mm / ϕ 80 mm / ϕ 120 mm

HDS-YAW

RoHS

CE

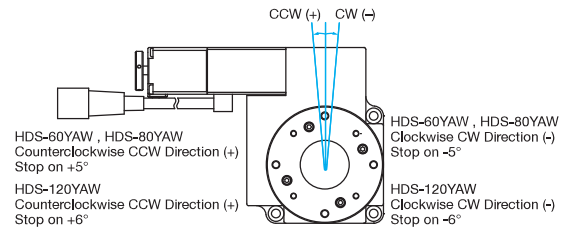
Limited range high duty cycle rotation stage.

- Good for the automatic alignment devices which need to repeatedly adjust the angle of rotation by a small amount.
- The ball screw system drive mechanism reduces abrasion and backlash for high durability.
- Since it converts linear motion of the ball screw into rotational motion using a steel belt, the angular speed and resolution is the same over the full range of travel.



Guide

- The origin sensor for HDS series is at the center of travel (0°).



Attention

- The HDS series should always be mounted horizontally. Performance can not be guaranteed if used in other orientations. If other orientations are required, please contact our Sales Division.

Specifications

Part Number			HDS-60YAW	HDS-80YAW	HDS-120YAW
Mechanical Specifications	Rotation Range		$\pm 5^\circ$	$\pm 5^\circ$	$\pm 6^\circ$
	Stage Size [mm]		$\phi 60$	$\phi 80$	$\phi 120$
	Travel Mechanism		Ball screw with steel belt	Ball screw with steel belt	Ball screw with steel belt
	Positioning Slide		Bearing method	Bearing method	Crossed roller guide
	Stage Material		Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized
	Weight [kg]		0.5	0.9	1.4
Accuracy Specifications	Resolution	(Full) [°/pulse]	≈ 0.0053	≈ 0.0038	≈ 0.0022
		(Half) [°/pulse]	≈ 0.0027	≈ 0.0019	≈ 0.0011
	MAX Speed [°/sec]		60	60	60
	Positioning Accuracy [°]		0.05	0.05	0.05
	Positional Repeatability [°]		0.003	0.003	0.003
	Load Capacity [N]		29.4 (3.0kgf)	58.8 (3.0kgf)	98 (10kgf)
	Moment Stiffness [°/N·cm]		1	0.2	0.1
	Lost Motion [°]		0.003	0.003	0.003
	Backlash [°]		0.05	0.05	0.05
	Parallelism [μ m]		50	50	50
	Concentricity [μ m]		10	10	10
	Wobble [mm]		0.01	0.01	0.01
Sensor	Sensor Part Number		Micro photo sensor: GP1S097HCZ(Sharp Corporation)		
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	TS3664N4E10 ($\square 24$ mm)	PK523HPB-C12 ($\square 28$ mm)
	Step Angle	0.72°	
Sensor	Power Voltage	DC5 – 24V \pm 10%	
	Current Consumption	60mA or lower (20mA per sensor)	
	Control Output	NPN open collector output DC30V or lower, 50mA or lower	
	Output Logic	When shaded: Output transistor OFF (no conduction): Limit sensor When shaded: Output transistor ON (conduction): Origin sensor	

Compatible Driver / Controller

Control System	Compatible Driver	SG-5M, SG-5MA, SG-55M, MC-S0514ZU, MC-7514PCL
	Compatible Controller	GSC-01, GIP-101, GSC-02, SHOT-702, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motorized Stages

Light Sources & Laser Safety

Index

Guide

Controllers/Drivers

Softwares

Stepping Motor

AC Servo Motor

Cables

Piezo

X Translation

Theta Rotation

Goniometer

Vacuum

Options

40 × 40 mm

60 × 60 mm

80 × 80 mm

85 × 85 mm

100 × 100 mm

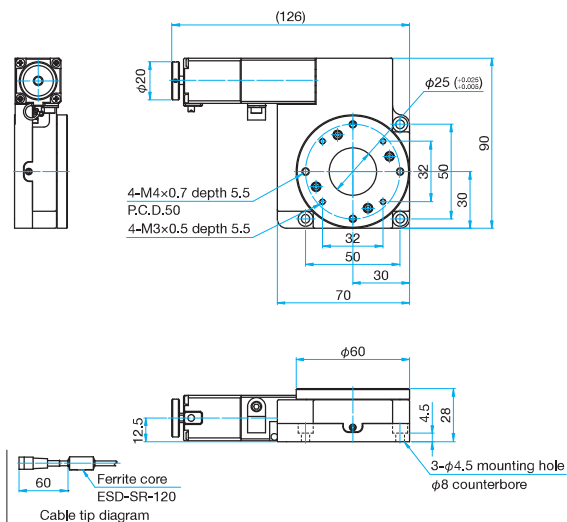
120 × 120 mm

Others

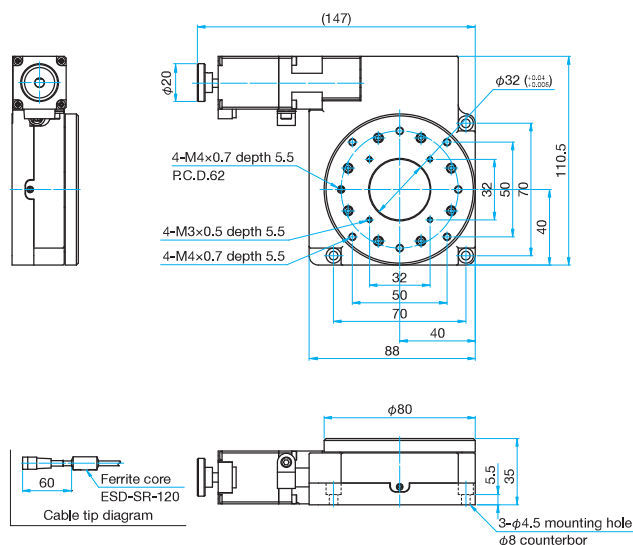


Outline Drawing

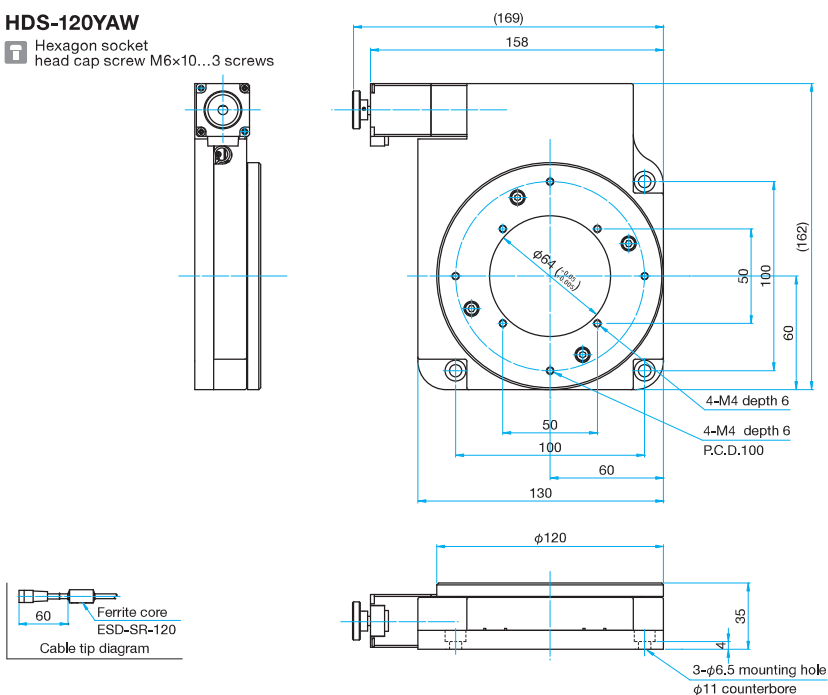
HDS-60YAW Hexagon socket head cap screw M4x10...3 screws



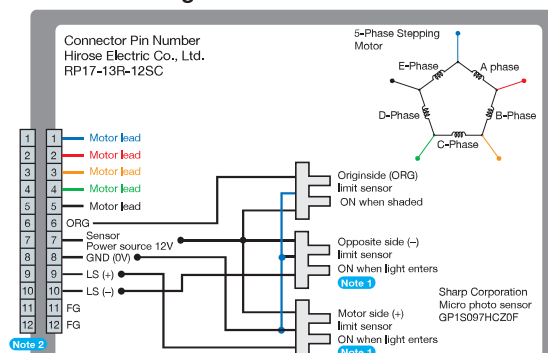
HDS-80YAW Hexagon socket head cap screw M4x12...3 screws



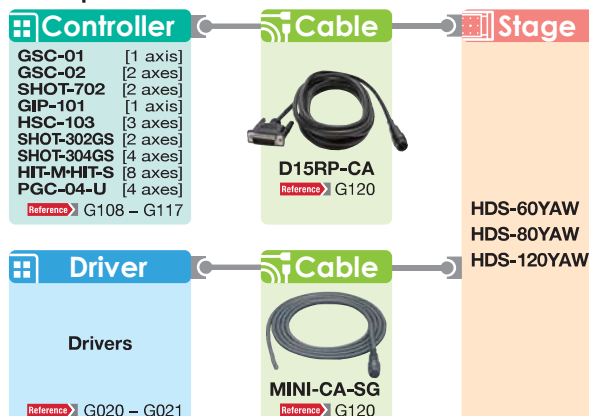
HDS-120YAW Hexagon socket head cap screw M6x10...3 screws



Connection Diagram



Compatible Controllers / Drivers and Cables



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

MotORIZED Stages

Light Sources & Laser Safety

Index

Guide

Controllers/Drivers

Softwares

Stepping Motor

AC Servo Motor

Cables

Piezo

X Translation

Theta Rotation

Goniometer

Vacuum

Options

40 × 40 mm

60 × 60 mm

80 × 80 mm

85 × 85 mm

100 × 100 mm

120 × 120 mm

Others