

Wide Platform Precision Linear Stages



TSW Series precision translation stages are specifically designed for production test measurement and inspection applications requiring high precision and a large work surface.

All TSW stages incorporate smooth running direct-drive DC motors with tachometer feedback and direct output metrology glass scale linear encoders. Eliminating a gearhead on the drivetrain input and measuring the actual motion on the drivetrain output makes these stages highly stable, accurate and repeatable.

TSW stages are machined from stress-relieved 7075 aluminum ensuring long term strength and stability. All critical stage surfaces are machined twice and precision ground, under strict temperature

and quality controls, to further improve overall performance and accuracy. Each stage uses high-quality precision crossed-roller bearings for long life and increased load capacity. Limit switches prevent damage from accidental overtravel.

For optimal positioning performance and seamless compatibility, we recommend our ESP and Motion-Master family of motion controllers. When you order stages and controllers together, each system is factory tested and tuned ensuring perfect out-of-the-box performance every time. Each TSW Series stage is supplied with a 3-meter cable for connection to the ESP and Motion-Master controllers. See page 4-28 for information on optional cables.

Key Features

- Travel 150–400 mm
- Bi-directional repeatability to $\pm 0.5 \mu\text{m}$
- Glass scale direct output metrology
- Maximum speed 75 mm/sec
- Load capacity to 45 kg
- DC motor driven



Specifications

Travel Range	All	150 mm	200 mm	300 mm	400 mm
Bi-directional Repeatability	$\pm 1.0, \pm 0.5$				
Minimum Incremental Motion	1.0, 0.5 μm				
Normal Load Capacity	45 kg				
Absolute Accuracy	per 25 mm	max	max	max	max
with 1.0 μm encoder	$\pm 3.0 \mu\text{m}$	$\pm 6.0 \mu\text{m}$	$\pm 7.0 \mu\text{m}$	$\pm 9.0 \mu\text{m}$	$\pm 10.0 \mu\text{m}$
with 0.5 μm encoder	$\pm 2.0 \mu\text{m}$	$\pm 4.0 \mu\text{m}$	$\pm 4.5 \mu\text{m}$	$\pm 6.0 \mu\text{m}$	$\pm 8.0 \mu\text{m}$
with 0.1 μm encoder	$\pm 1.0 \mu\text{m}$	$\pm 3.0 \mu\text{m}$	$\pm 4.0 \mu\text{m}$	$\pm 5.0 \mu\text{m}$	$\pm 7.0 \mu\text{m}$
Maximum Speed	75 mm/sec				
Origin Repeatability	1.0, 0.5 μm				
Straightness	$\pm 0.5 \mu\text{m}$ per 25 mm	$\pm 1.5 \mu\text{m max}$	$\pm 2.5 \mu\text{m max}$	$\pm 3.0 \mu\text{m max}$	$\pm 3.5 \mu\text{m max}$
Flatness	$\pm 0.5 \mu\text{m}$ per 25 mm	$\pm 1.5 \mu\text{m max}$	$\pm 2.5 \mu\text{m max}$	$\pm 3.0 \mu\text{m max}$	$\pm 3.5 \mu\text{m max}$
Pitch		$\pm 24 \mu\text{rad}$	$\pm 34 \mu\text{rad}$	$\pm 39 \mu\text{rad}$	$\pm 43 \mu\text{rad}$
Yaw	$\pm 10 \mu\text{rad}$				
Motor	UE611CC (see Drives Section)				

Driver Module Options

Driver modules for our ESP and MotionMaster (MM) Series controllers are available for each of the TSW Series stages. They are referenced as option codes to be used in the motion controller part number.

ESP7000
 page 4-4


Module Option 01

ESP6000
 page 4-12

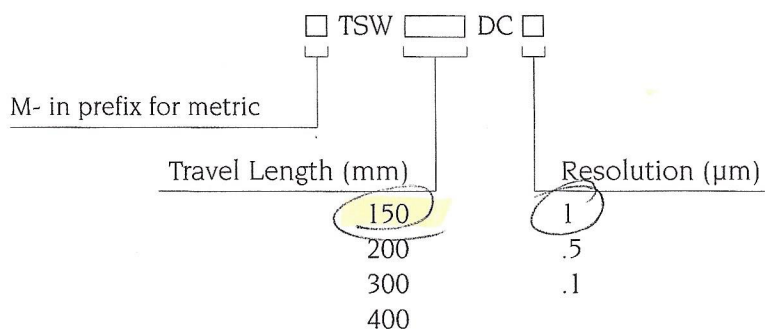
UNIDRIV6000
 page 4-16


Module Option 01

MM4005
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Module Option 1M

Ordering Information



How to order

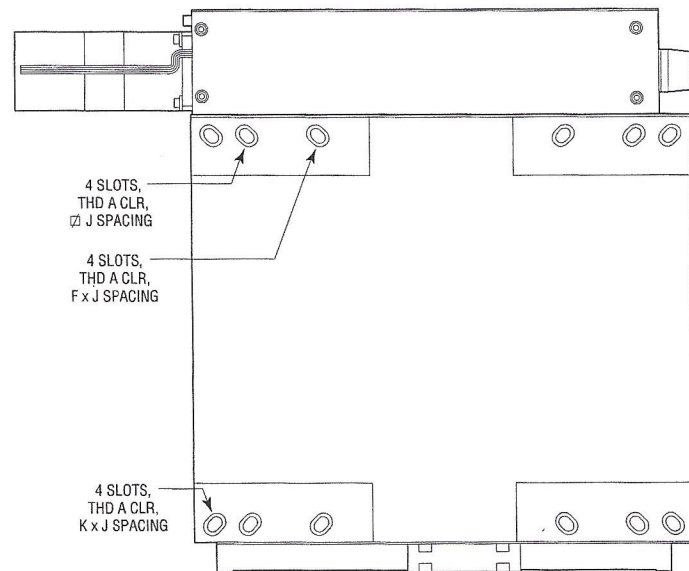
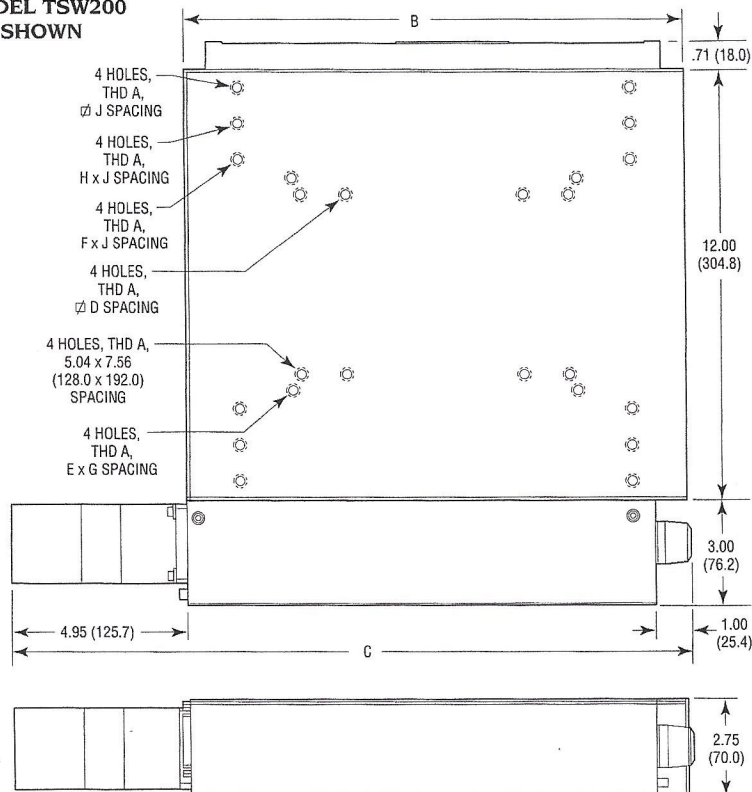
TSW Series stages are ordered by first specifying an English or metric version followed by the length of travel in mm and the resolution in μm .

A **TSW150DC1** is an English version 150 mm travel stage with 1 μm resolution. For XY mounting with precision factory alignment to 50 μrad orthogonality, please call. Travel range of 250 mm and 350 mm available on request.

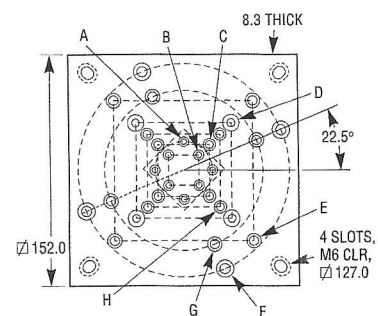
Accessories

TSAP-M Interface adapter plate (see drawing for usage)

MODEL TSW200 SHOWN



MODEL TSAP-M



TS Series Adapter Plate Dimensions

PATTERN	DIMENSION	INTERFACES WITH
A	4 HOLES, M4 CLR, ϕ 38.0	UTR46
B	4 HOLES, M3 CLR, ϕ 20.0	UMR3, UMR5, MVN50, BGM50
C	4 HOLES, M4 CLR, ϕ 34.0	MVN80, UZM80, TGN80
D	4 HOLES, M4 CLR, ϕ 63.0 (M6 C'BORE)	UTM/URM100, BGM120, TGN80 (MODIFY TO M6 CLR FOR MTM)
E	4 HOLES, M5 CLR, ϕ 92.0	MVN120, BGM160, TGN120
F	4 HOLES, M6 CLR, ϕ 140.0	UTR160
G	4 HOLES, M5 CLR, ϕ 105.0	UTR120
H	4 HOLES, M5 CLR, ϕ 48.0	URM80, BGM80, UTR80

MODEL	THREAD				DIMENSION					
	A	B	C	D	E	F	G	H	J	K
ENGLISH					INCHES					
TSW150	1/4-20	12.00	17.05	5.000	6.000	7.000	8.000	9.000	11.000	—
TSW200	1/4-20	14.00	19.05	5.000	6.000	7.000	8.000	9.000	11.000	13.000
TSW300	1/4-20	18.00	23.05	5.000	6.000	7.000	8.000	9.000	11.000	17.000
TSW400	1/4-20	22.00	27.05	5.000	6.000	7.000	8.000	9.000	11.000	17.000
METRIC					MILLIMETERS					
M-TSW150	M6	305	433.1	125.0	150.0	175.0	200.0	225.0	275.0	—
M-TSW200	M6	356	483.9	125.0	150.0	175.0	200.0	225.0	275.0	325.0
M-TSW300	M6	457	585.5	125.0	150.0	175.0	200.0	225.0	275.0	425.0
M-TSW400	M6	559	687.1	125.0	150.0	175.0	200.0	225.0	275.0	425.0