

NEX Series

# SURFCOM NEX

Dedicated catalog is available.

**Wide flexibility of allowing for selection of a combination from detectors, driver unit and measuring stands, in accordance with users' aim.**



SURFCOM NEX series offers three measurement functions (roughness, contour and roughness/contour). Detectors are freely selectable in accordance with users' needs.

Adoption of multi-sensor technology allows for the single purpose function by a single detector, or the multipurpose functions by combining multiple detectors.

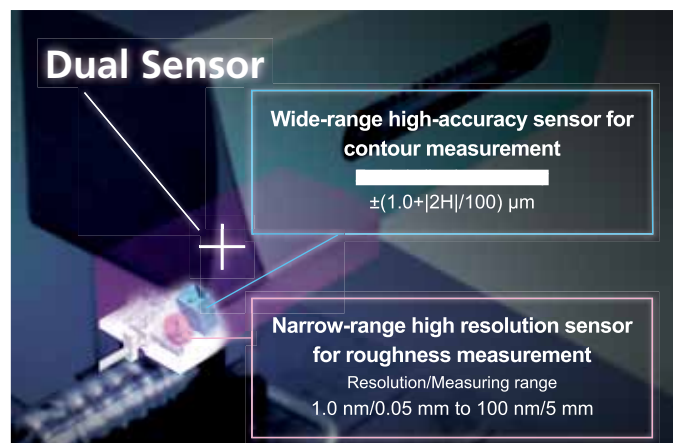
The system allows for flexible configuration capability for users' needs, as in use of detector dedicated to contour or in use of 3D roughness measuring unit.

SURFCOM NEX 100

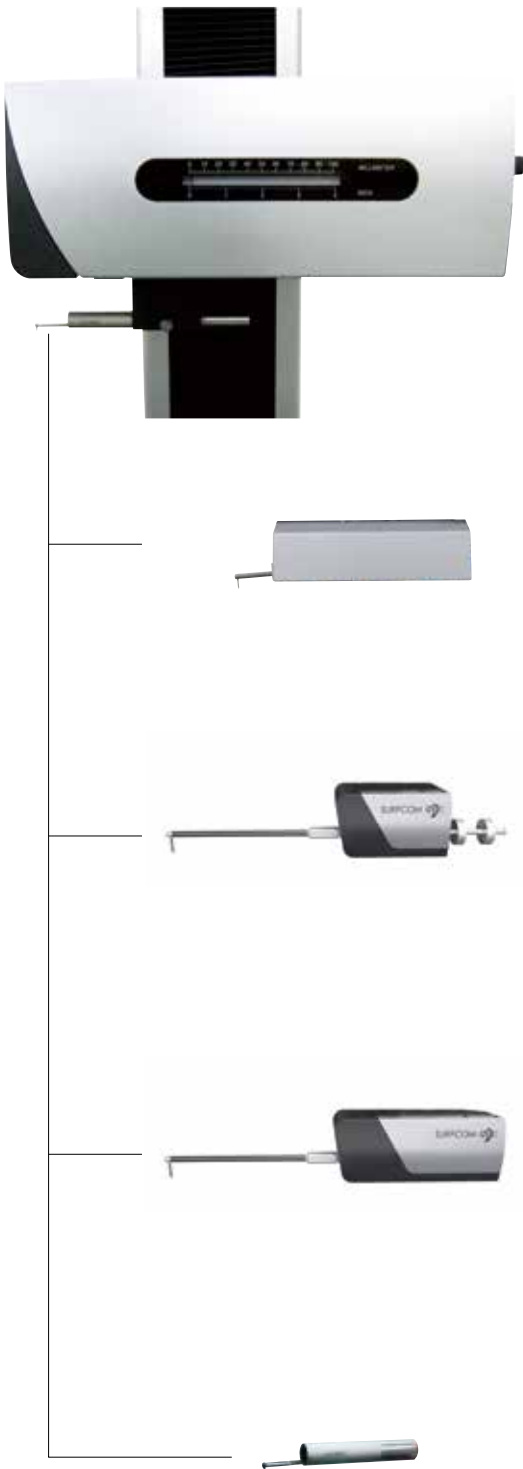
## Hybrid detector with dual sensor technology NEX100 (E-DT-CR14A) **patented**

Availability of the dual sensor technology.

The combination of a wide-range high-accuracy sensor and a narrow-range high resolution sensor allows for simultaneous measurements. This new operating principle enables you to measure surface roughness and contour at the same time, thus no longer requiring the change of detectors and increasing measurement efficiency.



**SURFCOM NEX allows you to decide specifications by selecting necessary detectors. You can add sensors after installation to upgrade its ability.**



### Multiple sensors are available. Detectors can be selected by application.

This machine offers hybrid, roughness, contour, and combined functions.

The SURFCOM NEX series allows you to select detectors by application. Detectors can be used as a single detector or combined with others to serve as multiple sensors.

#### Hybrid detector with dual sensor technology E-DT-CR14A



An integrated measuring instrument with newly developed dual sensor technology capable of measuring roughness and contour simultaneously. Please refer to the next page for details.

#### Contour detector E-DT-CH18A



General purpose detector equipped with a newly-developed high-precision scale. The Z-axis measurement range is 60 mm. Stress-free replacement is possible with the newly-developed Quick-change mechanism of arm. Upward/downward measurements are optionally available.

#### High-accuracy contour detector with automatic measuring force adjustment mechanism E-DT-CH19A



High accuracy type detector equipped with a new laser diffraction linear scale. The full-range measurement resolution is 0.02  $\mu\text{m}$ . It features an automatic adjustment mechanism of measuring force as well as the Z-axis measurement range of 60 mm and Quick-change arm mechanism. Upward/downward measurement is optionally available.

#### Pickup for roughness measurement E-DT-SS01A



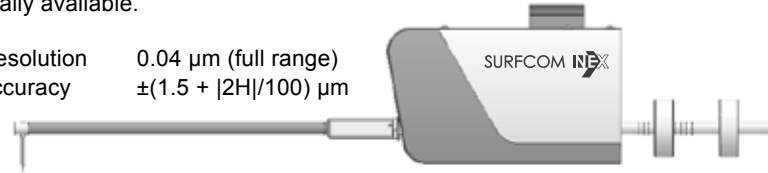
A pickup with compact design for high magnification and wide-range measurements. Its outer diameter is 14 mm, measurement range is 1000  $\mu\text{m}$ , and its maximum measurement magnification is 500,000 times. It is used for pickup upward measurements (with the auto-stop function) and horizontal trace measurements.

### General-purpose detector for contour measurement NEX030 (E-DT-CH18A)

- Detector with correction function for temperature effects to provide the highest-in-class accuracy

General purpose detector equipped with a newly-developed high-precision scale. The Z-axis measurement range is 60mm. Stress-free arm replacement is possible with the newly-developed quick-change arm mechanism. Upward/downward measurement is optionally available.

Measuring resolution 0.04  $\mu\text{m}$  (full range)  
Indication accuracy  $\pm(1.5 + |2H|/100)$   $\mu\text{m}$

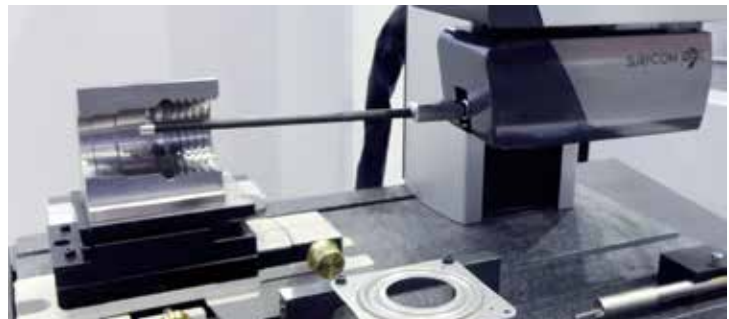
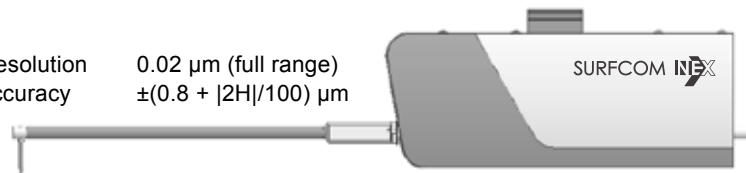


### High-accuracy detector for contour measurement NEX040 (E-DT-CH19A)

- High-accuracy detector with built-in auto balance (automatic measuring force adjustment) function

This is new high accuracy detector equipped with laser optical diffraction scale. The measurement resolution under full-range measurement is 0.02 $\mu\text{m}$ . In addition to Z-axis measurement range of 60mm and quick-change arm mechanism, the automatic measuring force adjustment mechanism is provided. Upward/downward measurement is optionally available.

Measuring resolution 0.02  $\mu\text{m}$  (full range)  
Indication accuracy  $\pm(0.8 + |2H|/100)$   $\mu\text{m}$



Example of diameter measurement using T-shaped stylus

### Pickup for roughness measurement NEX001 (E-DT-SS01A)

- The specification of the pickup for roughness measurements is 1000  $\mu\text{m}$ .

This is the pickup with compact design for high magnification and wide-range measurement. The specification of pickup are; outer diameter: 14mm, measurement range: 1000 $\mu\text{m}$ , maximum measurement magnification: 500,000 times. Measurement with upward pickup posture (with auto-stop function) and horizontal trace measurement are available.



**T-shaped stylus option for upward/downward contour measurements**



- Masterball calibration unit for upward/downward measurements E-MC-S97A

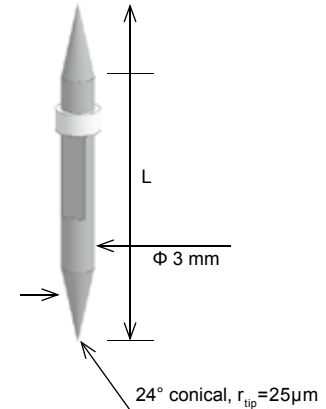
This is a calibration unit to guarantee the spatial accuracy of upward and downward measurements using SURFCOM NEX 030/040. Use this unit to calibrate the parameters required to set the stylus upward/downward. Arc correction and stylus tip radius correction performed based on the calculated parameter provides advanced measurements.

Dimensions: 150(W) x 120(D) x 230(H) mm  
Weight: Approx. 3.3 kg

- Stylus for upward/downward measurements

The stylus designed for the upward/downward measurement using SURFCOM NEX 030/040.

	Length	Tip radius	Edge angle	Material
DM83502	L=26 mm	$r_{tip}=25\mu\text{m}$	24° conical	Cemented carbide
DM83503	L=32 mm	$r_{tip}=25\mu\text{m}$	24° conical	Cemented carbide
DM83504	L=44 mm	$r_{tip}=25\mu\text{m}$	24° conical	Cemented carbide



**Attachment for Quick change arm (option)(DM83506)**

This attachment attaches conventional arms to a quick change type contour measurement detector. You can continue the use of the arms of your conventional measuring instrument to save cost. It is designed to make the total length when combining the attachment and the conventional arms be the same as that of the supplied standard arm. Even when the conventional arm is used, the detector's z-axis measurement range (60 mm(±30 mm)) can be ensured. For applicable arms, contact our sales representative.



Example of using the Quick-change arm attachment



**No screwdriver or other tool for detector replacement (option)**

This is an option effective for the users who replace sensors (detector/pickup) frequently. The wider clearance between the drive part and the detector allows easy replacement of the detector. It is equipped with special pin for mounting/removing detector. You can easily mount/remove the detector by pulling out the special pin and turning it to either of left or right by a half turn. No screwdriver or other tool is required.



When the pin is retracted



When the pin is pulled out



The detector is locked or unlocked by a half turn clockwise or counterclockwise respectively.

Product name

**SURFCOM NEX**



1 Detector 2 Type

3 Tracing driver and measuring stand

1 Detector selection

Item	Detector/Pickup				Model (Commodity code)	Remarks
	Hybrid detector with dual sensor technology	For Contour measurement		Pickup for roughness measurement		
Model	E-DT-CR14A	E-DT-CH18A	E-DT-CH19A	E-DT-SS01A		
External View						
Model name	100	•	-	-	-	K2 △□ 100
	130	•	•	-	-	K2 △□ 130
	140	•	-	•	-	K2 △□ 140
	101	•	-	-	•	K2 △□ 101
	131	•	•	-	•	K2 △□ 131
	141	•	-	•	•	K2 △□ 141
	030	-	•	-	-	K2 △□ 030
	040	-	-	•	-	K2 △□ 040
	001	-	-	-	•	K2 △□ 001
	031	-	•	-	•	K2 △□ 031
041	-	-	•	•	K2 △□ 041	

\* Three digit code shows the followings.  
Third digit (hundreds place): Presence or absence of hybrid detector  
0 = Hybrid detector is not provided  
1 = Hybrid detector is provided  
Second digit (tens place): Presence or absence of detector for contour measurement  
0 = Contour detector is not provided  
3 = Contour detector (general-purpose) is provided  
4 = Contour detector (high-accuracy) is provided  
First digit (ones place): Presence or absence of detector for roughness measurement  
0 = Roughness detector is not provided  
1 = Roughness detector is provided

2 Type selection

Item	Type						Model (Commodity code)		
	DX			SD					
External View									
Specifications	Destination	Japan	Overseas		Japan	Overseas			
	Computer	Included	Included	Not included	Included	Included	Not included		
Model name	DX	•	-	-	-	-	-	K2 A□***	
		-	•	-	-	-	-	-	K2 B□***
	-	-	•	-	-	-	-	K2 C□***	
	SD	-	-	-	-	•	-	-	K2 D□***
		-	-	-	-	-	•	-	K2 E□***
-		-	-	-	-	-	•	K2 F□***	

3 Selection of tracing driver and measuring stand

Item	Tracing driver		Measuring stand				Model (Commodity code)	
	E-RM-S214A	E-RM-S215A	E-ST-S389A E-CL-S148A	E-ST-S389A E-CL-S150A	E-ST-S390A E-CL-S150A	E-ST-S390A E-CL-S151A		
External View								
Tracing driver	X-axis stroke (mm)	100	200	-	-	-	-	
Measuring stand	Base	Width (mm)	-	-	600	600	1000	1000
		Depth (mm)	-	-	450	450	450	450
		Maximum payload (kg) <sup>*1</sup>	-	-	82	72	89	79
	Column	up and down stroke (mm)	-	-	250	450	450	650
		Model name	12	•	-	•	-	-
	13	•	-	-	•	-	-	K2 △B ***
	14	•	-	-	-	•	-	K2 △C ***
	15	•	-	-	-	-	•	K2 △D ***
	22	-	•	•	-	-	-	K2 △E ***
	23	-	•	-	•	-	-	K2 △F ***
	24	-	•	-	-	•	-	K2 △G ***
	25	-	•	-	-	-	•	K2 △H ***

\*1 The upper is the maximum payload when having 100 mm tracing driver. The lower is the maximum payload when having 200 mm tracing driver.

## Measuring Unit

## SURFCOM NEX

Model			SURFCOM NEX								
			12	13	14	15	22	23	24	25	
Tracing driver	X-axis (L: Measuring length:mm)	Sensing method		Linear scale							
		Straightness accuracy	When hybrid detector with dual sensor technology is used (μm)		(0.05 + 1.0L/1000) *When standard arm is used						
			When high-accuracy detector for contour measurement is used (μm/mm)		1.0/100			2.0/200			
			When general-purpose detector for contour measurement is used (μm/mm)		1.0/100			2.0/200			
			When pickup for roughness measurement is used (μm)		(0.05+1.0L/1000)						
		X-axis indication accuracy (μm) : Lateral		±(1.0 + 1.0L/100)							
		Resolution (μm)		0.016							
		Speed (mm/s)	Moving speed		0.03 to 60						
Measuring speed			0.03 to 20								
Tilt angle (°)	When hybrid detector with dual sensor technology is used		±10 (Optional tilting device)								
	Other than above		±15 (Optional tilting device)								
Measuring stand	Column	Speed (mm/s)	Max. 10								
	Base	Material	Gabbro								

## Detector

Hybrid detector with dual sensor technology (E-DT-CR14A)	Measuring range	Z-axis (mm): Vertical direction		5.0 (Standard arm), 10.0 (2x arm)						
	Roughness	Sensing method		Differential inductance						
		Measuring range (mm)		0.05 to 5.0						
		Resolution (nm)		1.0 to 100						
	Contour measurement (H: Measuring height (mm))	Sensing method		High-accuracy scale						
		Measuring range (mm)		5.0						
		Resolution (μm)		0.015 (Full range)						
	Stylus	Indication accuracy (μm): Vertical direction		±(1.0 +  2H /100) *When LH = 50 mm stylus is used						
		For Roughness and Contour	Model	DM84071 (LH=50 mm, Standard arm)						
			Measuring force (mN)	0.75						
Stylus material			Diamond							
For Contour		Model	DM48775 (LH = 100 mm, 2x arm)							
		Measuring force (mN)	4.0							
		Stylus material	Cemented carbide							
		Stylus shape	25 μmR/24° conical							
Replacement method		Replaceable								
Common Function		Downward measurements /Upper limit detection safety mechanism /Retract function								
General-purpose contour detector (E-DT-CH18A)	Measuring range	Z-axis (mm): Vertical direction		60.0						
	Contour measurement (H: Measuring height (mm))	Sensing method		Laser optical diffraction scale						
		Measuring range (mm)		60.0						
		Resolution (μm)		0.04(Full range)						
		Indication accuracy (μm): Vertical direction		±(1.5 +  2H /100)						
	Stylus Tip	Function		Downward/upward measurements /Lower/upper limit detection safety mechanism /Retract function						
		For Contour	Model	DM45505						
			Replacement method	Replaceable						
Measuring force (mN)			10 to 30							
Stylus Material			Cemented carbide							
Stylus shape	25 μmR/24° conical									
High-accuracy contour detector (E-DT-CH19A)	Measuring range	Z-axis (mm): Vertical direction		60.0						
	Contour measurement (H: Measuring height (mm))	Sensing method		Laser optical diffraction scale						
		Measuring range (mm)		60.0						
		Resolution (μm)		0.04(Full range)						
		Indication accuracy (μm): Vertical direction		±(1.5 +  2H /100)						
	Stylus Tip	Function		Downward/upward measurements /Lower/upper limit detection safety mechanism /Retract function						
		For Contour	Model	DM45505						
			Replacement method	Replaceable						
Measuring force (mN)			10 to 30							
Stylus Material			Cemented carbide							
Stylus shape	25 μmR/24° conical									
Pickup for roughness measurement (E-DT-SS01A)	Measuring range	Z-axis (μm): Vertical direction		1000						
	Roughness measurement	Sensing method		Differential inductance						
		Measuring range (μm)		6.4 to 1000						
		Resolution (nm)		0.1 to 20						
		Function		Downward/Upward measurements /Upper limit detection safety mechanism						
	Stylus	For Roughness	Model	DM43801						
			Replacement method	Replaceable						
			Measuring force (mN)	0.75						
Stylus Material			diamond							
Stylus shape		2 μmR/60° conical								

## Other

Power supply	Voltage (V), Frequency (Hz)		Single-phase AC100 to 240, 50/60						
	Power consumption (VA)		Max. 670						
Air supply (For antivibration table)	Supply pressure (MPa)		0.45 to 0.7						
	Working pressure (MPa)		0.4						
	Air consumption (L/min)		0.1 (Max. 10)						
	Supply position		main body back side						
	*Air supply connecting port diameter		Rc1/4 male screw (Outside diameter Φ 6 mm one-touch pipe joint for tube)						
Setting environment	Temperature	Temperature of accuracy guarantee (°C)	20 ± 5 (temperature change rate ±0.5°C/hour and 0.1°C/measurement time.)						
		Temperature of operation guarantee (°C)	10 to 30						
		Storage temperature (°C)	5 to 40						
	Humidity	Humidity of operation guarantee (%)	40 to 80 (without condensation)						
		Storage humidity (%)	80 or lower (without condensation)						

\* Power and air supply and a connecting hose are required before the delivery.

\* The temperature change rate for guaranteed accuracy is limited to ±0.5°C/hour and 0.1°C/measurement time.

\* The power supply must be grounded (Type D grounding).

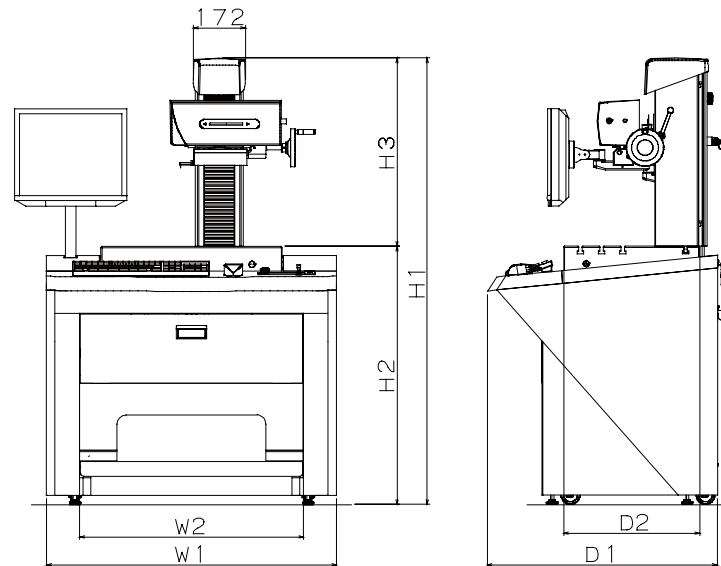
\* Contents of the specification may be changed without any notice due to product modifications.

Dimensional outline drawing, dimensional drawing

DX type		Main unit dimensions					Measuring range (mm)		Base (mm)		Weight (kg)				
		Width	Depth	Height	Table height	Column height	X-axis (Tracing driver)	Z-axis (Column)	Width	Depth	Main unit weight *1	Max. loading weight			
Model	Code	W 1	D 1	H 1	H 2	H 3	-	-	W 2	D 2	-	-			
DX	K2	A B C	12	A	960	762	1478	855	623	100	250	600	450	245 (275)	82
			13	B	960	762	1678	855	823	100	450	600	450	255 (285)	72
			14	C	1360	840	1673	850	823	100	450	1000	450	395 (425)	89
			15	D	1360	840	1893	850	1043	100	650	1000	450	405 (435)	79
			22	E	960	762	1478	855	623	200	250	600	450	250 (280)	76
			23	F	960	762	1678	855	823	200	450	600	450	260 (290)	66
			24	G	1360	840	1673	850	823	200	450	1000	450	400 (430)	83
			25	H	1360	840	1893	850	1043	200	650	1000	450	410 (440)	73

\* Weights in parentheses include PC, driver unit, monitor and printer (DX model only).

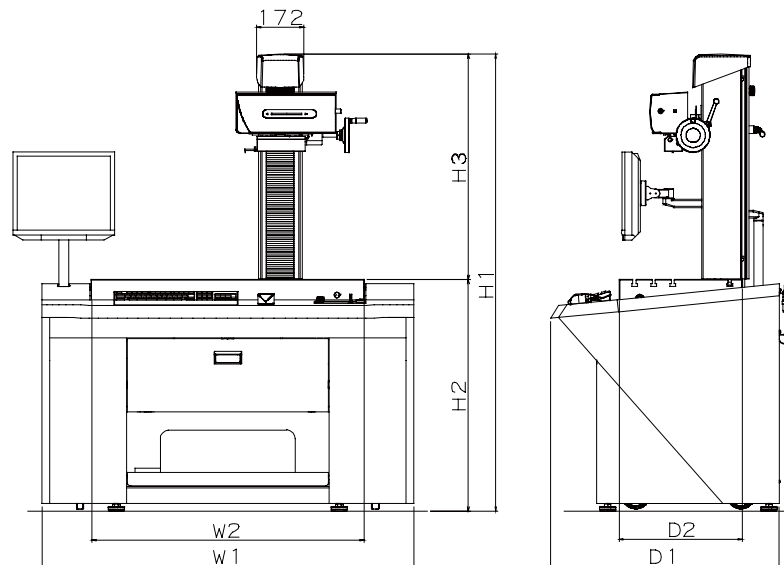
DX type			
12	13	22	23



\*Tracing driver tilting device is optional.

\*Air supply connecting port Rc 1/4 male screw (outside diameter  $\Phi$  6 mm one-touch pipe joint for tube)

DX type			
14	15	24	25



\*Tracing driver tilting device is optional.

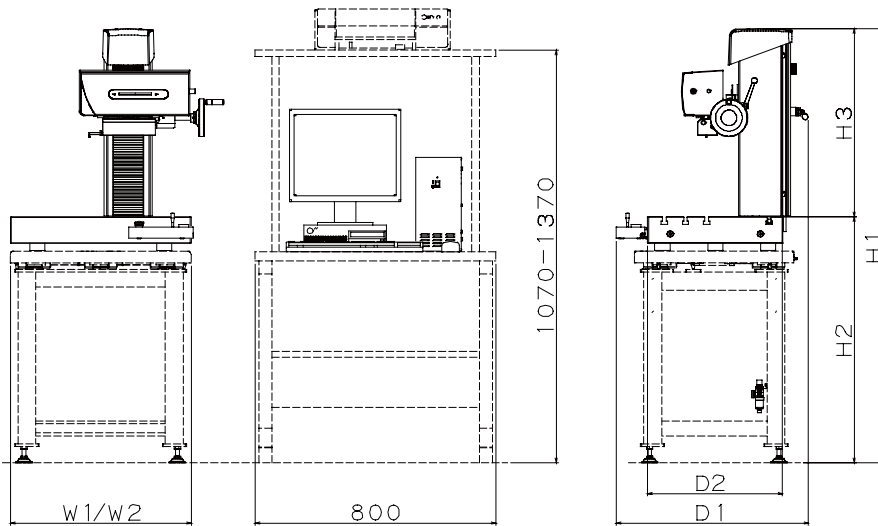
\*Air supply connecting port Rc 1/4 male screw (outside diameter  $\Phi$  6 mm one-touch pipe joint for tube)

**Dimensional outline drawing, dimensional drawing**

SD type		Main unit dimensions					Measuring range (mm)		Base (mm)		Weight (kg)			
		Width	Depth	Height	Table height	Column height	X-axis (Tracing driver)	Z-axis (Column)	Width	Depth	Main unit weight *1	Max. loading weight		
Model	Code	W 1	D 1	H 1	H 2	H 3	-	-	W 2	D 2	-	-		
SD	K2	D E F	A	600	638	1441	818	623	100	250	600	450	120 (145) 2 42	82
			B	600	638	1641	818	823	100	450	600	450	130 (155) 252	72
			C	1000	780	1663	840	823	100	450	1000	450	215 (240) 472	39
			D	1000	780	1883	840	1043	100	650	1000	450	225 (250) 488	29
			E	600	638	1441	818	623	200	250	600	450	125 (150) 247	76
			F	600	638	1641	818	823	200	450	600	450	135 (160) 256	66
			G	1000	780	1663	840	823	200	450	1000	450	220 (245) 483	33
			H	1000	780	1883	840	1043	200	650	1000	450	230 (255) 493	23

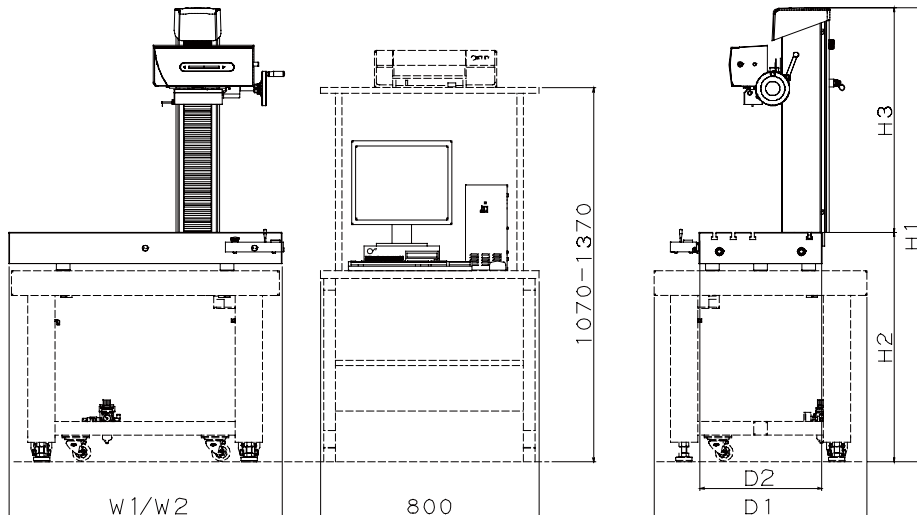
\* Weights in parentheses include PC, driver unit, monitor and printer (DX model only).  
Gross weights in lower lines include optional anti-vibration table, bench, rack and printer (SD model only).

SD type			
12	13	22	23



\*Tracing driver tilting device is optional.  
\*Air supply connecting port Rc 1/4 male screw (outside diameter  $\Phi$  6 mm one-touch pipe joint for tube)

SD type			
14	15	24	25



\*Tracing driver tilting device is optional.  
\*Air supply connecting port Rc 1/4 male screw (outside diameter  $\Phi$  6 mm one-touch pipe joint for tube)