Surface Texture and Contour Measuring Instrument
In combination with multiple sensors selectable by applications

SURFCOM NEX series
Linear Technology
New design expressing the advancement of SURFCOM

Totally new design expressing dignity and innovation, with the extensibility of the linear x drive and detector.

Hairline-finish aluminum side covers are provided to the column, representing a beautiful and smooth line. An accordion-type cover is provided to the guide part to raise dust resistance. The depth of the granite table has been extended by 133 mm from the previous model to provide sufficient working space. The improved internal structure of the advanced-type linear x drive is wrapped by a high-quality front aluminum panel.

Dignity as a high-end model and innovation with a new technology have been combined to develop SURFCOM NEX.

Feature 1 Global model with the highest accuracy in class

Feature 2 Detectors selectable by applications

Feature 3 Excellent extensibility worth initial investment

Feature 4 Available for the world-first hybrid detector with dual sensor technology

Feature 5 Advanced software ACCTee
Surface texture and contour measuring instrument with the world-first dual sensor technology and a linear x drive

SURFCOM NEX
**SURFCOM NEX allows you to decide specifications**

**You can add sensors after installation to upgrade its**

This machine provides an innovative extensibility.

The SURFCOM NEX series provides three functions: roughness, contour, and roughness/contour measurements. Necessary sensors can be selected according to measurement purposes. Separate detectors can be added later when necessary.

For example, if you need a general roughness measuring machine, you may purchase the roughness detector only and use the system for roughness measurements.

But later, if you also need wide-range roughness measurements such as roughness evaluations of round shapes, you may then add the hybrid detector unit and use several detectors interchangeably. The system can also be upgraded by installing a detector dedicated to contour measurements, 3D roughness measurement unit, etc.
by selecting necessary detectors. Detectors can be selected by application.

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 μm. 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 μm, 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.
World-first! Hybrid detector with dual sensor technology.

The world-first hybrid detector with the dual sensor technology ACCRETECH has developed (patent obtained). Unlike the conventional detector, it has a high-accuracy linear Z scale for wide-range measurements and a high resolution differential inductance for narrow-range measurements. Using these two sensors simultaneously in measurement maximizes their performance.

This new type hybrid detector is compatible with the previous model series (DX2/SD2 and after).
World-First!! 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 100  Principle of Dual Sensor Technology (Patented)

Conventional principle

Sensor for roughness measurement

Narrow-range sensor with a nano-level measurement resolution

Sensor for contour measurement

High-accuracy sensor with a measurement resolution of 0.1 μm in a wide range of 50 mm

Dual Sensor for roughness and contour measurement

Wide-range high-accuracy sensor for contour measurement

Z-axis indication accuracy

±(1.0 + |2H|/100) μm

Narrow-range high resolution sensor for roughness measurement

Resolution/Measuring range

1.0 nm/0.05 mm to 100 nm/5 mm

Dual sensor technology combining a wide-range high-accuracy sensor and a narrow-range high resolution sensor

Highest Accuracy in Class World No.1

Z-axis indication accuracy is ±(1.0 + |2H|/100) μm. This is a 60% improvement in specifications for first term accuracy from the previous model, achieving 1.05 μm at a full stroke of 2.5 mm. This is the highest accuracy in class.
Detector for contour measurement offering excellent convenience by incorporating linear drive with a temperature correction system. This is the evolution into the ultimate refinement without compromises to make high accuracy a common thing.

**Feature 1**

**Temperature correction system provides you the accuracy guaranteed temperature range to** **20°C ± 5°C**

The NEX series drive with scale temperature correction technology provides. The each accuracy guaranteed temperature range of the system was expand to 20°C ± 5°C from 20°C ± 2°C.

Conventionally, expansion and contraction of the drive’s scale by temperature change affected the indication accuracy for X direction. However, it can be corrected automatically in real time by having a temperature sensor.

This is a special function only for NEX series with the combination of the temperature correction system and each detector which is less affected by temperature change.
Feature 2 Quick-change arm with attachment recognition sensors
Availability of Quick-change function which changes arm easily by magnet desorption. In addition to double magnet which stably holds arm, the crossing V-groove structure with three-part support ensures extremely high reproducibility. Moreover, sphere-shaped sensors quickly detect deviation in all directions. A complete safety mechanism has also been introduced including the design to reduce the impact on the detector: When a strong impact is applied in the X direction, a slide guiding structure releases the force in oblique directions.

Feature 3 Z-axis measurement range expanded to 60 mm (±30 mm)

Feature 4 T-shaped stylus for continuous upward/downward measurement
Although upward/downward measurement was available with conventional models, the T-shaped stylus now guarantees the spatial accuracy during such measurement. This enables measurements and evaluations of workpieces’ diameter, thickness, uneven thickness, etc.
(The optional masterball calibration unit for upward/downward measurement is required.)

Feature 5 Safety mechanism against detector collision
A safety mechanism is featured as standard to activate a sensor and stop driving in case the left side or bottom of the detector hits a workpiece or other object. The linear drive is designed to have a slide structure which can release the force with shaft motor when a large load is applied to the drive direction (X-axis direction).
Two types of new detectors for contour measurement are selectable by applications and required accuracy.

General-purpose detector for contour measurement NEX030  E-DT-CH18A

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

The measuring force should be adjusted manually with weights. A newly-developed high resolution scale allows the highest accuracy in this class.

Measuring resolution  0.04 μm (full range)
Indication accuracy  ±(1.5 + |2H|/100) μm

High-accuracy detector for contour measurement NEX040  E-DT-CH19A

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

The measuring force can be finely specified and controlled on PC software in 2 mN increments. This prevents trace scratches or a broken chip of a stylus tip when it hits a step. Various special arms/styluses are supported to ensure an optimum measuring force. *An auxiliary weight may be needed depending on the combination of arms and styluses.

Measuring resolution  0.02 μm (full range)
Indication accuracy  ±(0.8 + |2H|/100) μm
### 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.

<table>
<thead>
<tr>
<th>Stylus code</th>
<th>Length (mm)</th>
<th>Tip radius (μm)</th>
<th>Edge angle</th>
<th>Material</th>
</tr>
</thead>
<tbody>
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<td>25</td>
<td>24°</td>
<td>Conical cemented carbide</td>
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<td>DM83504</td>
<td>44</td>
<td>25</td>
<td>24°</td>
<td>Conical cemented carbide</td>
</tr>
</tbody>
</table>

### Attachment for Quick change arm (option)

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
Detector (pickup) dedicated to surface roughness measurement providing unparalleled possibility resulted from our histories as a market leader. When combined with linear x drive, it provides excellent reliability for surface profile evaluation.

The specification of the pickup for roughness measurements is 1000 μm.

This detector offers a measurement range of 1000 μm in the Z direction, which is 25% wider compared with 800 μm of common detectors. It has an excellent wide stroke as a roughness measuring machine. The wide-range measurements significantly reduces the tilt angle of the measurement surface and detailed alignment at the R surface measurements (such as shafts, bearing workpieces).

The newly developed pickup supports high magnification and wide range measurements. The compact body with an outside diameter of 14 mm provides the measurement range of 1000 μm and measurement magnification of 500,000x.

Just changing the holder direction allows horizontal trace measurements.

The auto stop is also possible for upward measurements.

The optional connecting rod for ultra-long holes
Detector mounting holder II (option)  E-DH-S299A

(Upgrading from the standard holder)

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.

Sharing data, performing reanalysis, and editing output data.

Proposal of the second license...

ACCTee software for offline analysis.

You can use special analysis software on your computer.

(limited to those running on the specified Windows OS)

With the offline software, you can perform analysis, editing, or printing work on your desktop independent of the measuring instrument.

Supports network license

Besides working with UBS protection key, Offline ACCTee Analysis Software can also be used with network licenses. The software can be started up and used on network-connected personal computers as many as the acquired licenses (rights to use the software).

*The software is delivered in DVD-ROM.
Continually increasing the resolution of a detector is a simple task. However, unless you also improve factors like the structure that drives the detector, unnecessarily raising the resolution of the detector is merely window-dressing the specifications. ACCRETECH is the first company in the world to use a high-accuracy linear motor as the drive motor (patented) in a revolutionary new structure that dramatically pushes the envelope in terms of high accuracy. The result is a dynamic solution that improves actual values to unmatched levels.

A linear motor is ideal even for reciprocating motion, and enables accurate positioning and high-speed measuring. Conventional control uses a ball screw drive control system that combines a motor, encoder, and linear scale, which limits the reciprocating motion control response especially when determining accurate positioning during 3D surface evaluation. Linear drive, on the other hand, enables simplified control consisting basically of a linear motor and scale, for high response, high accuracy positioning.

Approach distance is effective when you do not want to waste measuring distance or when you can only measure short distances. With conventional measuring instruments, approach distance is always required before data sampling, while taking backlash and motor startup characteristics into consideration. ACCRETECH linear motor models are designed for high response and zero backlash, which eliminates the need for approach distance.

It is unnecessary to apply grease to or lubricate the drive mechanism on a daily basis. The review of the material and mechanism of the guide surface that supports driving has eliminated the need of daily maintenance. Periodical maintenance (inspection and calibration) is recommended in terms of ensuring the guaranteed accuracy of the instrument.
Positioning  

The manual feed mechanism installed on the X-axis drive is so designed that the connection between the manual gear mechanism and the linear measurement mechanism is automatically cut off in the actual measurements in order not to affect the low vibration characteristics achieved by the linear motor. This results in high operability and accuracy. A jog dial for minute feeding has been laid out in addition to the joystick in the hand operation section to ensure that subtle positioning can be securely carried out.

World's Fastest Speed Measurements

The measuring time for 3D roughness measuring is: \(\frac{1}{10}\) Conventional Measuring Time \(\times\) [Number of Measuring Lines], resulting in greatly reduced measuring times. This reduces the risk of measurements being affected by temperature change and other measuring error factors, leading to more reliable measured results.

The linear motor and minimal lost motion provided by the 1/100-second link control combine with outstanding start response to deliver dramatic overall reductions in total measuring time.

The Perfect Combination of Operation and Cost Performance

C.O.A.P. (Comfortable Operation and All-in-one Package) Design Plan

The DX Type is designed for much more than simply saving space. Keeping in mind the idea of “Important Functions for Realization of Comfortable Measurement and Analysis,” a COAP concept design derived from ergonomics has been introduced to minimize frequent operator movements while measuring and analysing multiple workpieces. The DX Type also comes complete with essential options, making it an all-in-one package.

The Windows computer is stored in the space under the vibration isolation stand, to provide a high level of environmental resistance. Dead space on the right side of the column is also put to use by providing a storage box that can be used for system accessories and peripherals. The Windows computer is stored in the space under the vibration isolation stand, to provide a high level of environmental resistance. As a result, the area required for installation is approximately 25% less than the standard installation area of previous models (SD specifications require the same area as previous models).
**DX type**

- Printer: With a front slide mechanism
- DX type detector storage box
- PC, controller unit storage
- Detector changeover switch: After the replacement of detectors, the connected detector is switched over. Detector change is automatically recognized without turning off the computer.
- *Standard accessories to integrated machines equipped with a detector for contour measurement* Models: SUFRCOM NEX 131/130/141/140

**Special designed mount with anti-vibration device**

- Monitor is freely movable with articulated arm
- Caster for transfer

**SD type**

- Detector table: It is standard equipment for integrated machines.
- Desktop-type anti-vibration table is optional.
Detector
Detectors can be selected according to usage:
- Hybrid detector with dual sensor technology
- General-purpose detector for contour measurement
- High-accuracy detector for contour measurement
- Roughness pickup

Measuring stand base
Surface plates can be selected according to the size of the workpiece.
- 600 mm x 450 mm
- 1000 mm x 450 mm

X-axis drive
This drive with a linear motor is provided as standard equipment. You can choose 100 or 200 mm measuring range.

Z-axis column
An accordion-type dust prevention function is provided. You can choose 250, 450, or 650 mm as maximum driving range.

Tilting device (Option)
Tilting is allowed up to ±10° when the hybrid detector with dual sensor is used, and up to ±15° for other detectors.

Measuring stand base
Surface plates can be selected according to the size of the workpiece.
- 600 mm x 450 mm
- 1000 mm x 450 mm

Monitor
A 17-inch liquid crystal display is provided as standard equipment. To change the monitor size, please contact our sales representatives.

Operation panel
With a joystick, a jog dial, and emergency stop button.
Dimensional outline drawing, dimensional drawing

<table>
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<tr>
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<th>Model Code</th>
<th>Width</th>
<th>Depth</th>
<th>Height</th>
<th>Table height</th>
<th>Column height</th>
<th>Measuring range (mm)</th>
<th>Base (mm)</th>
<th>Weight (kg)</th>
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<td>1043</td>
<td>200</td>
<td>650</td>
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</tbody>
</table>

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

※ Weights in parentheses include PC, driver unit, monitor and printer (DX model only).
### SD type

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#### Main unit dimensions

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<th>Code</th>
<th>Width (mm)</th>
<th>Depth (mm)</th>
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<th>X-axis Weight (kg)</th>
<th>Z-axis Weight (kg)</th>
<th>Base (mm) Width</th>
<th>Base (mm) Depth</th>
<th>Base (mm) Height</th>
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<td>650</td>
<td>230</td>
<td>1000</td>
<td>493</td>
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</tbody>
</table>

※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).

※Tracing driver tilting device is optional.

※Air supply connecting port Rc 1/4 male screw (outside diameter Φ 6 mm one-touch pipe joint for tube)
# Specifications

## Measuring Unit

<table>
<thead>
<tr>
<th>Model</th>
<th>SURFCOM NEX</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>Sensing method</td>
<td>Linear scale</td>
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<tr>
<td>Straightness accuracy</td>
<td>When hybrid detector with dual sensor technology is used (μm)</td>
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<tr>
<td></td>
<td>When high-accuracy detector for contour measurement is used (μm)</td>
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<td></td>
<td>When general-purpose detector for contour measurement is used (μm)</td>
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<tr>
<td></td>
<td>When pickup for roughness measurement is used (μm)</td>
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<tr>
<td>X-axis indication accuracy (μm)</td>
<td>Vertical direction</td>
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<tr>
<td>X-axis</td>
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<td>Resolution (μm)</td>
<td>Measuring speed</td>
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<td>Speed (mm/s)</td>
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<td>When hybrid detector with dual sensor technology is used</td>
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<td>Other than above</td>
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<tr>
<td>Measuring stand</td>
<td>Column Speed (mm/s)</td>
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<tr>
<td></td>
<td>Base</td>
</tr>
</tbody>
</table>

## 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)
- **Sensing method**: Differential inductance
- **Measuring range (mm)**: 0.05 to 5.0
- **Resolution (μm)**: 1.0 to 100
- **Stylus Tip**: DM84771 (LH=50 mm, Standard arm)
- **Material**: Diamond
- **Stylus shape**: 2 μmR/60° conical
- **Replacement method**: Replaceable
- **Measuring force (mN)**: 0.75

### General-purpose contour detector (E-DT-CH18A)

- **Measuring range**: Z-axis (mm): Vertical direction 60.0
- **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) *When LH = 50 mm stylus is used
- **Model**: DM45505
- **Stylus Material**: Cemented carbide
- **Stylus shape**: 25 μmR/24° conical
- **Replacement method**: Replaceable
- **Stylus Tip**: 10 to 30
- **Measuring force (mN)**: 2 to 30 (Set from ACCTe)
- **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
- **Sensing method**: Laser optical diffraction scale
- **Measuring range (mm)**: 60.0
- **Resolution (μm)**: 0.02 (Full range)
- **Indication accuracy (μm): Vertical direction** ±(0.8 + |2H|/100)
- **Model**: DM45505
- **Stylus Material**: Cemented carbide
- **Stylus shape**: 25 μmR/24° conical
- **Replacement method**: Replaceable

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

- **Measuring range**: Z-axis (μm): Vertical direction 1000
- **Sensing method**: Differential inductance
- **Measuring range (μm)**: 6.4 to 1000
- **Resolution (μm)**: 0.1 to 20
- **Model**: DM43801
- **Stylus Material**: Cemented carbide
- **Stylus shape**: 2 μmR/60° conical

## Tracing driver

<table>
<thead>
<tr>
<th>L: Measuring length (mm)</th>
<th>Sensing method</th>
<th>Linear scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis indication accuracy (μm): Lateral</td>
<td>Moving speed</td>
<td>0.03 to 60</td>
</tr>
<tr>
<td></td>
<td>Measuring speed</td>
<td>0.03 to 20</td>
</tr>
<tr>
<td></td>
<td>When hybrid detector with dual sensor technology is used</td>
<td>±10 (Optional tilting device)</td>
</tr>
<tr>
<td></td>
<td>Other than above</td>
<td>±15 (Optional tilting device)</td>
</tr>
<tr>
<td></td>
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</table>

## Stylus

<table>
<thead>
<tr>
<th>Style</th>
<th>Model</th>
<th>Replacement method</th>
<th>Measuring force (mN)</th>
<th>Measuring speed</th>
<th>Measuring length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roughness</td>
<td>DM84071</td>
<td>Replaceable</td>
<td>0.75</td>
<td>0.03 to 60</td>
<td></td>
</tr>
<tr>
<td>Contour</td>
<td>DM48775 (2x arm)</td>
<td>Replaceable</td>
<td>4.0</td>
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<tr>
<td></td>
<td>DM45505 (50 mm)</td>
<td>Replaceable</td>
<td>10 to 30</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>2 to 30 (Set from ACCTe)</td>
<td></td>
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<td></td>
<td>2 to 30</td>
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<tr>
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<td></td>
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<td>25 μmR/24° conical</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.03 to 60</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>0.03 to 20</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>±10 (Optional tilting device)</td>
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<td></td>
<td></td>
<td></td>
<td>±15 (Optional tilting device)</td>
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</tbody>
</table>

## General-Use Downward Measurements

<table>
<thead>
<tr>
<th>Column</th>
<th>Speed (mm/s)</th>
<th>Travel speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td></td>
<td>Gabbro</td>
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</tbody>
</table>

## High-Accuracy Contour Measurement

<table>
<thead>
<tr>
<th>Sizing</th>
<th>Model</th>
<th>Replacement method</th>
<th>Measuring force (mN)</th>
<th>Measuring speed</th>
<th>Measuring length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roughness</td>
<td>DM43801</td>
<td>Replaceable</td>
<td>0.75</td>
<td>0.03 to 60</td>
<td></td>
</tr>
<tr>
<td>Contour</td>
<td>DM45505 (50 mm)</td>
<td>Replaceable</td>
<td>10 to 30</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>2 to 30 (Set from ACCTe)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>25 μmR/24° conical</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.03 to 60</td>
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<td></td>
<td></td>
<td></td>
<td>0.03 to 20</td>
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<td></td>
<td></td>
<td></td>
<td>±10 (Optional tilting device)</td>
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<td></td>
<td>±15 (Optional tilting device)</td>
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</tbody>
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## General-Use Downward Measurements

<table>
<thead>
<tr>
<th>Column</th>
<th>Speed (mm/s)</th>
<th>Travel speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td></td>
<td>Gabbro</td>
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## High-Accuracy Contour Measurement

<table>
<thead>
<tr>
<th>Sizing</th>
<th>Model</th>
<th>Replacement method</th>
<th>Measuring force (mN)</th>
<th>Measuring speed</th>
<th>Measuring length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roughness</td>
<td>DM43801</td>
<td>Replaceable</td>
<td>0.75</td>
<td>0.03 to 60</td>
<td></td>
</tr>
<tr>
<td>Contour</td>
<td>DM45505 (50 mm)</td>
<td>Replaceable</td>
<td>10 to 30</td>
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<td></td>
<td></td>
<td></td>
<td>2 to 30 (Set from ACCTe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>25 μmR/24° conical</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.03 to 60</td>
<td></td>
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<td>0.03 to 20</td>
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<td></td>
<td></td>
<td></td>
<td>±10 (Optional tilting device)</td>
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<td>±15 (Optional tilting device)</td>
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</tbody>
</table>

## General-Use Downward Measurements

<table>
<thead>
<tr>
<th>Column</th>
<th>Speed (mm/s)</th>
<th>Travel speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td></td>
<td>Gabbro</td>
</tr>
</tbody>
</table>
### Other

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Voltage (V), Frequency (Hz)</th>
<th>Single-phase AC100 to 240, 50/60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption (VA)</td>
<td>Max. 670</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air supply</th>
<th>Supply pressure (MPa)</th>
<th>0.45 to 0.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(For antivibration table)</td>
<td>Working pressure (MPa)</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Air consumption (L/min)</td>
<td>0.1 (Max. 10)</td>
</tr>
<tr>
<td></td>
<td>Supply position</td>
<td>main body back side</td>
</tr>
</tbody>
</table>

*Air supply connecting port diameter | Rc1/4 male screw (Outside diameter Φ 6 mm one-touch pipe joint for tube)*

<table>
<thead>
<tr>
<th>Setting environment</th>
<th>Temperature</th>
<th>Temperature of accuracy guarantee (°C)</th>
<th>20 ± 5 (temperature change rate ±0.5°C/hour and 0.1°C/measurement time.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Humidity</td>
<td>Humidity of operation guarantee (%)</td>
<td>40 to 80 (without condensation)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Storage humidity (%)</td>
<td>80 or lower (without condensation)</td>
</tr>
</tbody>
</table>

* Power and air supply and a connecting hose are required before the delivery.
* The power supply must be grounded (Type D grounding).
* The temperature change rate for guaranteed accuracy is limited to ±0.5°C/hour and 0.1°C/measurement time.
* Contents of the specification may be changed without any notice due to product modifications.

### SURFCOM NEX

#### Standard configuration table

* A typical detector/pickup combination is shown. For the standard configuration of other combination, please contact our sales representatives.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Surface Texture and Contour Instruments</th>
<th>Surface Texture and Contour Combined Measuring Instruments</th>
<th>Contour Measuring Instruments</th>
<th>Surface Texture Measuring Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard accessories</strong></td>
<td><strong>Model</strong></td>
<td><strong>010</strong></td>
<td><strong>031</strong></td>
<td><strong>041</strong></td>
</tr>
<tr>
<td><strong>Detector/Pickup</strong></td>
<td>Hybrid detector with dual sensor technology [E-DT-CR14A]</td>
<td>●</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>High-accuracy detector for contour measurement [E-DT-CH18A]</td>
<td>-</td>
<td>●</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>General-purpose detector for contour measurement [E-DT-CH19A]</td>
<td>-</td>
<td>-</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Pickup for roughness measurement [E-DT-SS01A]</td>
<td>-</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td><strong>Measurement analysis software</strong></td>
<td>Surface Texture and Contour measurement analysis program</td>
<td>Surface Texture and Contour measurement analysis program</td>
<td>Surface Texture and Contour measurement analysis program</td>
<td>Contour profile measurement analysis program</td>
</tr>
<tr>
<td><strong>Reference specimen</strong></td>
<td>Reference specimen [E-MC-S24C]</td>
<td>●</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Level difference reference specimen [E-MC-S57A]</td>
<td>-</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td><strong>Master ball calibration unit</strong></td>
<td>[E-MC-S65B]</td>
<td>●</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>[E-MC-S57A]</td>
<td>-</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td><strong>Block gauge unit</strong></td>
<td>[E-MG-S39A]</td>
<td>●</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>[E-MG-S22A]</td>
<td>-</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>**Arm <strong>3</strong></td>
<td>[DM83501]</td>
<td>●</td>
<td>-</td>
<td>●</td>
</tr>
<tr>
<td><strong>Stylus Tip</strong></td>
<td>[DM45505]</td>
<td>-</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td><strong>Stylus</strong></td>
<td>[DM84071]</td>
<td>●</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>[DM48775]</td>
<td>●</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>[DM43801]</td>
<td>●</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* A set of measuring unit **1**, a set of data processor **2**, oil clay, a set of hex wrenches, a flat-blade screwdriver, lubrication oil, an accessory case, an inspection certificate, and an operation manual are provided to all machines.

---

*1... Detector/Pickup, tracing driver, measuring stand column, measuring stand base (anti-vibration table and bench are standard for the DX type and optional for the SD type)
*2... Driver unit, PC, keyboard, mouse, liquid crystal display (A4 color inkjet printer is standard for the DX type and optional for the SD type)
*3... Straight arm with magnet-based attachment mechanism
## Major options

### Tracing driver Options

<table>
<thead>
<tr>
<th>Name</th>
<th>Model</th>
<th>Specifications</th>
<th>External view</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer periphery roughness tracing driver</td>
<td>E-RM-S85B</td>
<td>Measuring OD/length: 12 mm to 20 mm, 30 mm to 150 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peripheral velocity: 0.3, 0.6, 1.5 mm/s</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. loading weight: 5 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight: 5 kg</td>
<td></td>
</tr>
<tr>
<td>Round surface roughness tracing driver</td>
<td>E-RM-S84A</td>
<td>Measuring radius: 0.25 mm to 40 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rotation accuracy: ± 0.25 μm (180° arbitrary)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peripheral velocity: 0.3 mm/s (stepless)</td>
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<tr>
<td></td>
<td></td>
<td>Weight: Approx. 7 kg</td>
<td></td>
</tr>
<tr>
<td>Y-axis fixed pitch tracing driver for 3D</td>
<td>E-DH-S173A</td>
<td>Drive range: 13 mm</td>
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</tr>
<tr>
<td>roughness measurement (Detector movement</td>
<td></td>
<td>Min. feed pitch: 0.001 mm</td>
<td></td>
</tr>
<tr>
<td>type)</td>
<td></td>
<td>Number of feed line: 2 to 4001 lines</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Straightness accuracy: 1 μm</td>
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<td></td>
<td></td>
<td>Table surface dimensions:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. loading weight: —</td>
<td></td>
</tr>
<tr>
<td>Y-axis fixed pitch tracing driver for 3D</td>
<td>E-YM-S06A</td>
<td>Drive range: 50 mm</td>
<td></td>
</tr>
<tr>
<td>roughness measurement (Workpiece movement</td>
<td></td>
<td>Min. feed pitch: 0.001 mm</td>
<td></td>
</tr>
<tr>
<td>type)</td>
<td></td>
<td>Number of feed line: 2 to 4001 lines</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Straightness accuracy: 0.05 μm/1000 μm</td>
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<td>Table surface dimensions: 80 x 120 mm</td>
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<tr>
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<td></td>
<td>Max. loading weight: 5 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E-YM-S12A</td>
<td>Drive range: 100 mm</td>
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<tr>
<td></td>
<td></td>
<td>Min. feed pitch: 0.001 mm</td>
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<td></td>
<td></td>
<td>Number of feed line: 2 to 4001 lines</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Straightness accuracy: 0.05 μm/1000 μm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Table surface dimensions: 100 x 120 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. loading weight: 10 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E-YM-S07A</td>
<td>Drive range: 150 mm</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Min. feed pitch: 0.001 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of feed line: 2 to 4001 lines</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Straightness accuracy: 0.05 μm/1000 μm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Table surface dimensions: 120 x 150 mm</td>
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</tr>
<tr>
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<td></td>
<td>Max. loading weight: 5 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E-YM-S08A</td>
<td>Drive range: 200 mm</td>
<td></td>
</tr>
<tr>
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<td></td>
<td>Min. feed pitch: 0.001 mm</td>
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<td></td>
<td>Number of feed line: 2 to 4001 lines</td>
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<tr>
<td></td>
<td></td>
<td>Straightness accuracy: 0.05 μm/1000 μm</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Table surface dimensions: 150 x 150 mm</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Max. loading weight: 10 kg</td>
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</tr>
</tbody>
</table>

### Automatic Adjustment Stand Options

<table>
<thead>
<tr>
<th>Name</th>
<th>Model</th>
<th>Leveling range: ± 2°</th>
<th>Max. load: 5 kg</th>
<th>Weight: 4 kg</th>
</tr>
</thead>
</table>
**CNC Table Options**

The standard measuring system can be automated by adding a CNC table unit. CNC table is controlled, and fully automatic measurements can be performed from the ACCTee integrated measuring software. The Y-axis and θ-axis CNC table can be rearranged as needed in order to configure the system to suit the workpiece.

<table>
<thead>
<tr>
<th>Name</th>
<th>Model</th>
<th>Specifications</th>
<th>External view</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y-axis CNC table (100 mm)</td>
<td>E-AT-S105A</td>
<td>Travel 100 mm</td>
<td>![Y-axis CNC table 100 mm]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. travel speed 50 mm/s</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positioning accuracy 20 μm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. load 30 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight Approx. 19 kg</td>
<td></td>
</tr>
<tr>
<td>Y-axis CNC table (200 mm)</td>
<td>E-AT-S106A</td>
<td>Travel 200 mm</td>
<td>![Y-axis CNC table 200 mm]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. travel speed 50 mm/s</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positioning accuracy 20 μm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. load 30 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight Approx. 22 kg</td>
<td></td>
</tr>
<tr>
<td>θ-axis CNC table (horizontal)</td>
<td>E-AT-S107A</td>
<td>Travel 360 °</td>
<td>![θ-axis CNC table horizontal]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. travel speed 20 °/s</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positioning accuracy 0.03 °</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. load 15 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight Approx. 2.5 kg</td>
<td></td>
</tr>
<tr>
<td>θ-axis CNC table (vertical)</td>
<td>E-AT-S108A</td>
<td>Travel 360 °</td>
<td>![θ-axis CNC table vertical]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. travel speed 20 °/s</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positioning accuracy 0.03 °</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. load 5 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight Approx. 3.2 kg</td>
<td></td>
</tr>
</tbody>
</table>

**Automatic Adjustment Stand Options**

<table>
<thead>
<tr>
<th>Name</th>
<th>Model</th>
<th>External view</th>
<th>Specifications</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| Desktop anti-vibration table | E-VS-S213A | ![Desktop anti-vibration table] | Anti-vibration method: Diaphragm air spring  
Natural frequency: 2.5 Hz to 3.5 Hz  
Load weight: 200 kg | · Dimensions: 600 (W) x 530 (D) x 60 (H) mm  
· Weight: 27 kg  
Requires nylon tube with Ø 6 mm outside and Ø 4 mm inside diameter for quick joint connecting aperture. |
| Desktop large anti-vibration table | E-VS-S45A | ![Desktop large anti-vibration table] | Anti-vibration method: Diaphragm air spring  
Natural frequency: 4 Hz  
Load weight: 300 kg | · Dimensions: 1000(W) x 750(D) x 143(H) mm  
· Air supply: Pump  
· Weight: 80 kg |
| Bench for desktop anti-vibration table | E-VS-S218A | ![Bench for desktop anti-vibration table] | — | · Dimensions: 510 (W) x 430 (D) x 643 (H) mm  
For E-VS-S213A |
| Anti-vibration table | E-VS-R16A | ![Anti-vibration table] | Anti-vibration method: Diaphragm air spring  
Natural frequency: V: 2 Hz; H: 2.2 Hz  
Load weight: 250 kg | · Dimensions: 980 (W) x 780 (D) x 700 (H) mm  
· Air supply: 350 kPa to 700 kPa  
· Weight: 170 kg |
| | E-VS-S21B | ![Anti-vibration table] | Anti-vibration method: Diaphragm air spring  
Natural frequency: V: 1.6 Hz; H: 2 Hz  
Load weight: 550 kg | · Dimensions: 1100 (W) x 850 (D) x 700 (H) mm  
· Air supply: 350 kPa to 700 kPa  
· Weight: 340 kg |
| System rack | E-DK-S24A | ![System rack] | — | · Dimensions: 800 (W) x 800 (D) x 1070 mm to 1370 (H) mm  
· Weight: 44.5 kg |
| | E-DK-S25A | ![System rack] | — | · Dimensions: 1200 (W) x 800 (D) x 1070 mm to 1370 (H) mm |
## Detector selection

<table>
<thead>
<tr>
<th>Item</th>
<th>Detector/Pickup</th>
<th>Remarks</th>
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<tbody>
<tr>
<td></td>
<td>Hybrid detector with dual sensor technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For Contour measurement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General-purpose detector</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High-accuracy detector</td>
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</tr>
<tr>
<td>Model</td>
<td>E-DT-CH14A</td>
<td>E-DT-CH18A</td>
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<td>External View</td>
<td>100</td>
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</tr>
<tr>
<td></td>
<td>041</td>
<td>-</td>
</tr>
</tbody>
</table>

* 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

## Type selection

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<tr>
<th>Item</th>
<th>DX</th>
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<tr>
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<td>Type</td>
<td>Model (Commodity code)</td>
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<td>K2 A △ ***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>K2 B △ ***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>K2 C △ ***</td>
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<tr>
<td></td>
<td></td>
<td>K2 D △ ***</td>
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<td></td>
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<td>K2 F △ ***</td>
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<tr>
<td>Computer</td>
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<td>Not included</td>
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<td>DX Model name</td>
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</table>
### Selection of tracing driver and measuring stand

<table>
<thead>
<tr>
<th>Item</th>
<th>Tracing driver</th>
<th>Measuring stand</th>
<th>Model (Commodity code)</th>
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</thead>
<tbody>
<tr>
<td>Model</td>
<td>E-RM-S214A</td>
<td>E-ST-S389A</td>
<td>E-CL-S148A</td>
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<td>E-ST-S389A</td>
<td>E-CL-S150A</td>
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<tr>
<td>External View</td>
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<td>E-ST-S390A</td>
<td>E-CL-S151A</td>
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<tr>
<td>Tracing driver</td>
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<tr>
<td>X-axis stroke (mm)</td>
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<td>Measuring stand</td>
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<td>Depth (mm)</td>
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<td>Maximum payload (kg) *1</td>
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<tr>
<td>Column up and down stroke (mm)</td>
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<td>Model name</td>
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<tr>
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<td>13</td>
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</tr>
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<td></td>
<td>25</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>*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.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Detector selection
2. Type selection
3. Selection of tracing driver and measuring stand

![Diagram](image)
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