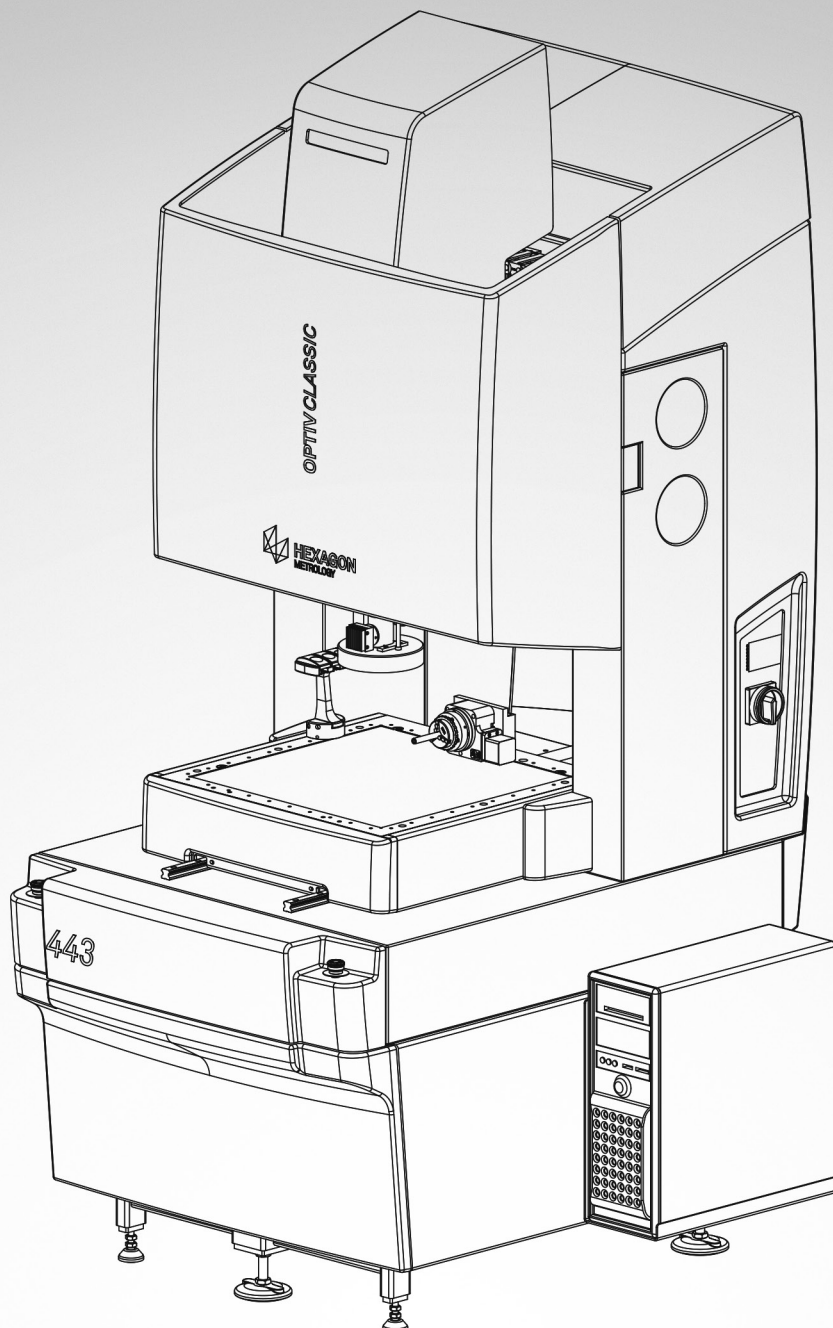




# OPTIV CLASSIC 443

Version 3/2013



**Product description**

The Optiv Classic 443 combines optical and tactile measurement in one system (optional touch-trigger probe). The system supports multi-sensor measurements using the Vision sensor (CCD camera, motorised CNC zoom) and the touch-trigger probes TESASTAR-p or TESASTAR-mp. The Optiv Classic 443 provides easy pallet station integration with good accessibility to the measuring table from all sides. Measurement software is PC-DMIS Vision.

**Fields of application**

- Shop floor and inspection room
- Versatile geometry measurements and GD&T analysis

**Design**

- Design principle:
  - » Low-vibration granite construction with a fixed bridge and a moving table
  - » Integrated subframe with optional vibration dampers
- Guides:
  - » Mechanical linear guides on all axes
- Drives:
  - » DC servo motors, power transmission via backlash free circulating ball screws
- Length measuring system:
  - » Incremental optoelectronic length measuring system
- Resolution of the scales:
  - » 0.1µm

**Measuring range (X x Y x Z)**

<sup>(1)</sup> Vision sensor <—>  
Touch-trigger probe  
(X offset = 55 mm)

	Optiv Classic 443	
	Measuring range single sensor	Mutual measuring range <sup>(1)</sup>
<b>X</b>	400 mm (15.75 in.)	345 mm (13.58 in.)
<b>Y</b>	400 mm (15.75 in.)	400 mm (15.75 in.)
<b>Z</b>	300 mm (11.81 in.)	300 mm (11.81 in.)

**Loading capacity**

- Load-bearing capacity of the table up to 30 kg

**Dimensions in mm and weights in kg**

- Dimensions see machine layout on page 5
- Machine weight 1100 kg

**Measuring accuracy <sup>(2)</sup>**

<sup>(2)</sup> The conditions of acceptance of Hexagon Metrology Vision apply.

L = measurement length in mm

**At 20°C, according to ISO 10360-7, with Vision sensor, at highest zoom magnification, standard measuring plane <sup>(2)</sup>**

<b>X, Y measuring accuracy</b> Ex, Ey = (1.9 + L/250) µm
<b>XY measuring accuracy</b> Exy = (1.9 + L/250) µm
<b>Z measuring accuracy</b> Ez = (2.5 + L/200) µm

**At 20°C, according to ISO 10360-2, with touch-trigger probe <sup>(2)</sup>**

<b>X, Y measuring accuracy</b> Ex, Ey = (1.9 + L/250) µm
<b>XY measuring accuracy</b> Exy = (1.9 + L/250) µm
<b>Z measuring accuracy</b> Ez = (2.5 + L/200) µm

- Airborne noise emissions**
  - The A-weighted emission sound pressure level at operator's position is less than 70 db(A).
  
- Environmental requirements**
  - Limits of permissible floor vibration  $< 5 \times 10^{-3} \text{ m/s}^2$  corresponds to an amplitude of  $< 5 \text{ }\mu\text{m}$  at 5 Hz
  - Air humidity 40 % - 70 % RL, non-condensing
  - Environmental temperature  $20 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$
  - Permissible temperature gradient  $0.5 \text{ }^\circ\text{C/h}$ ,  $0.8 \text{ }^\circ\text{C/d}$ ,  $0.6 \text{ }^\circ\text{C/m}$
  
- Throughput**
  - Max. traversing speed
    - » 150 mm/s (per axis)
    - » 250 mm/s (vector)
  
- Supply data**
  - Input voltage power supply  $115\text{-}230 \text{ V} \pm 10\%$
  - Frequency  $50/60 \text{ Hz} \pm 5\%$
  - Power consumption 1000 VA

**Vision sensor**

**Technical description**

- Sensor for non-contact measurement of smallest and closely toleranced features
  - » High resolution CCD camera, for interference-free, low noise image reproduction
  - » Maximum optical precision due to low distortion optics
    - » Motorised CNC zoom
  - » Powerful image processing
    - » Fast, precision video autofocus
    - » Automatic feature detection, geometry and bad pixel video filters
    - » Contour scanning mode:
      - Sophisticated set of user-selectable algorithms to setup edge detection, intelligent, automatic selection of the most suitable setting for the measurement
    - » Best fit routines
    - » AutoTune:
      - Transferability of measuring programs between machines of the same type
    - » MultiCapture:
      - MultiCapture allows all 2D features within a field of view to be captured simultaneously, regardless of the feature type. Inspection speeds can be increased by 35 % or more, depending on the feature size and density. The capture sequence for groups of features using MultiCapture is also automatically optimized, creating the most efficient possible path with the fewest number of stage movements.

**Illumination for Vision sensor**

- Coaxial LED top light
- LED back light
- Multi-segment LED ring light
  - » 3 rings with 3 different angles of incidence ( $27^\circ$ ,  $35^\circ$ ,  $45^\circ$ ) and 4 segments each
  - » White LEDs

**CNC zoom**

- 12x motorised zoom, for a continuous adjustment of field of view and resolution
- High resolution 1/2-inch CCD camera (H 752 x V 582 pixels)

Magnification variants of the 12x CNC zoom on a 20 in. monitor					
Lens	Magnification	Working distance (mm)	Max. workpiece height (mm)	Max. field of view (mm)	Min. field of view (mm)
Standard	0.65x to 6.5x	86	0 to 300	10.2 x 7.7	1.0 x 0.8

**Optional touch-trigger probes TESASTAR-p, TESASTAR-mp**

TESASTAR-p	TESASTAR-mp
<b>Technical description</b>	
<ul style="list-style-type: none"> <li>Compact 5-ways touch-trigger probe available in four trigger force variants</li> </ul>	<ul style="list-style-type: none"> <li>The 5-ways touch-trigger probe consists of the sensor body and the stylus holding module that are magnetically connected to each other.</li> <li>The stylus holding modules are available in four versions with different trigger forces.</li> </ul>
<b>Mounting</b>	
M8 thread (probe body), M2 thread (styli)	
<b>Four trigger force variants</b>	<b>Four stylus holding modules</b>
LF low force SF standard force MF medium force EF extended force	LF low force SF standard force MF medium force EF extended force
<b>Sense directions</b>	
5-way: ± X, ± Y, + Z	
<b>Repeatability 1D (10 mm stylus)</b>	
0.35 µm (LF module), 0.35 µm (SF module), 0.50 µm (MF module), 0.65 µm (EF module)	
<b>Repeatability 2D (10 mm stylus)</b>	
± 0.60 µm (LF module), ± 0.80 µm (SF module), ± 1.00 µm (MF module), ± 2.00 µm (EF module)	
<b>Trigger force</b>	
0.055 N, L = 10 mm (LF module), 0.08 N, L = 10 mm (SF module), 0.10 N, L = 25 mm (MF module), 0.10 N, L = 50 mm (EF module)	
<b>Optional stylus module changing rack</b>	
-	TESASTAR-pr with 4 slots

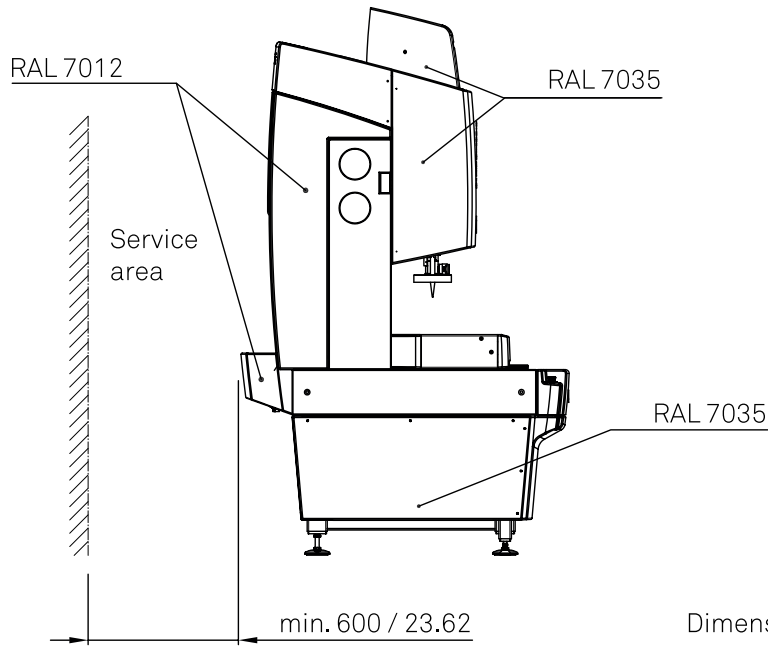
**Mutual measuring range Vision sensor ↔ Touch-trigger probe in X direction = 345 mm (X offset = 55 mm)**

**Control system and safety regulations**

- CNC controller:
  - » 3-4 axes microprocessor CNC with vector path control
- Safety equipment:
  - » Emergency-Stop circuit with Emergency-Stop button(s)
  - » Scale signal monitoring
  - » Double safety limit switches (magnetic/mechanical)
  - » Protective covers for the axes' drives
  - » Collision protection for touch-trigger probes
- Safety regulations:
  - » DIN EN ISO 12100-1 and -2 (Safety of machinery)
  - » DIN EN 60204-1 (Safety of machinery - Electrical equipment of machines)
  - » DIN EN ISO 13849-1 (Safety of machinery - Safety-related parts of control systems)
  - » DIN EN 61000-4-2 and -4 (Electromagnetic compatibility EMC, immunity of machines)
  - » DIN EN 55011 (Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics)

**Optional equipment**

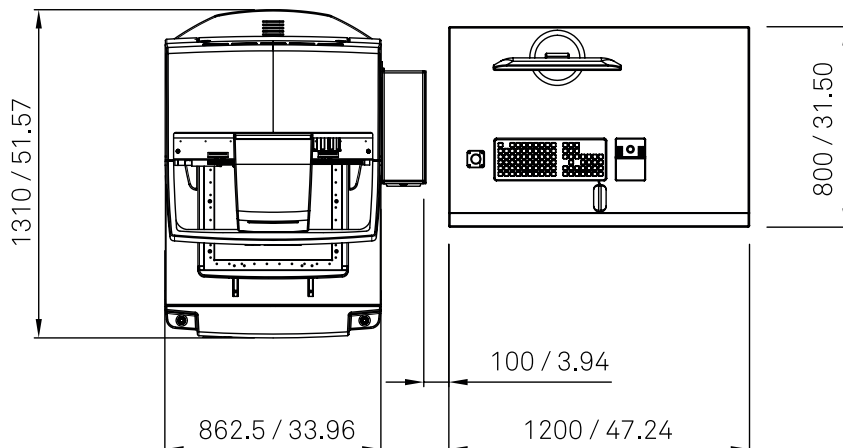
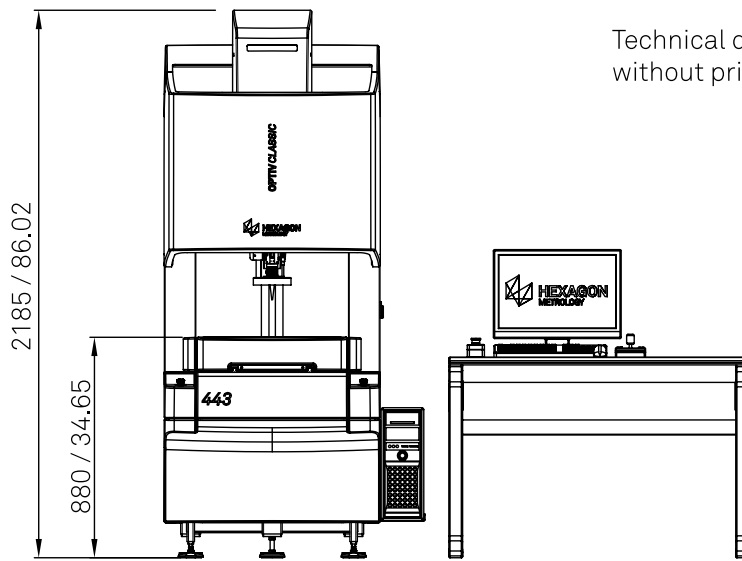
- Indexing rotary stage
- Stylus module changing rack
- Periphery:
  - » Worktable
  - » Printers, monitors
  - » Uninterruptible power supply (UPS)

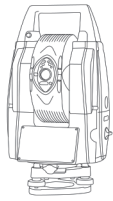


Dimensions in mm / inch

Optional worktable and monitor(s), differing variants possible.

Technical details subject to change without prior notice.

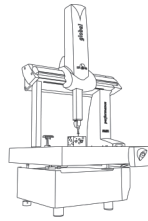




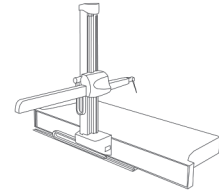
LASER TRACKERS & STATIONS



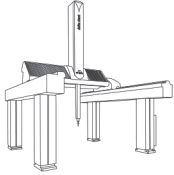
PORTABLE MEASURING ARMS



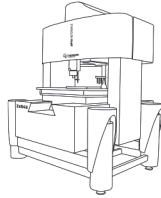
BRIDGE CMMS



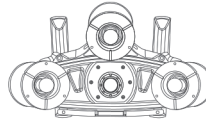
HORIZONTAL ARM CMMS



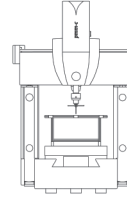
GANTRY CMMS



MULTISENSOR & OPTICAL SYSTEMS



WHITE LIGHT SCANNERS



ULTRA HIGH ACCURACY CMMS



SENSORS



PRECISION MEASURING INSTRUMENTS



SOFTWARE SOLUTIONS



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Version 3/2013.