TESA
TECHNOLOGY

V-300

TESA
TECHNOLOGY

X   -4.723
Y   17.347
Z   -7.479

CIRCLE 1
CIRCLE 2
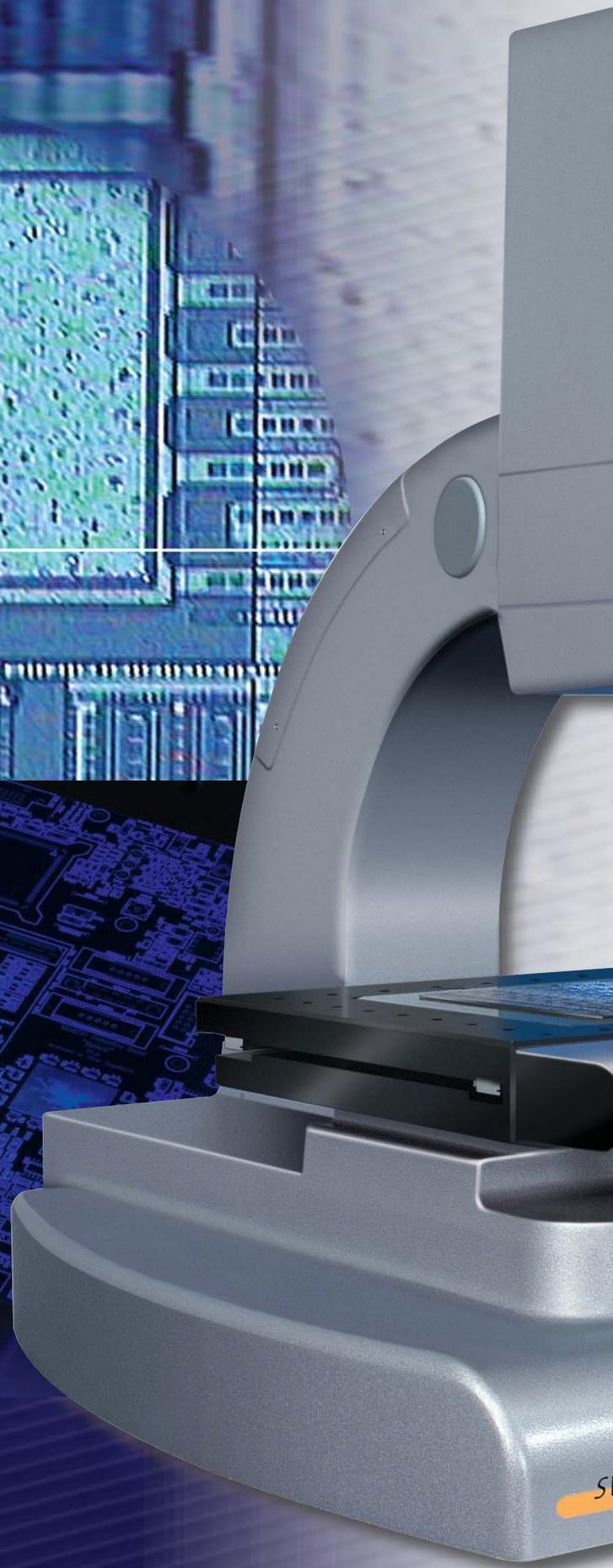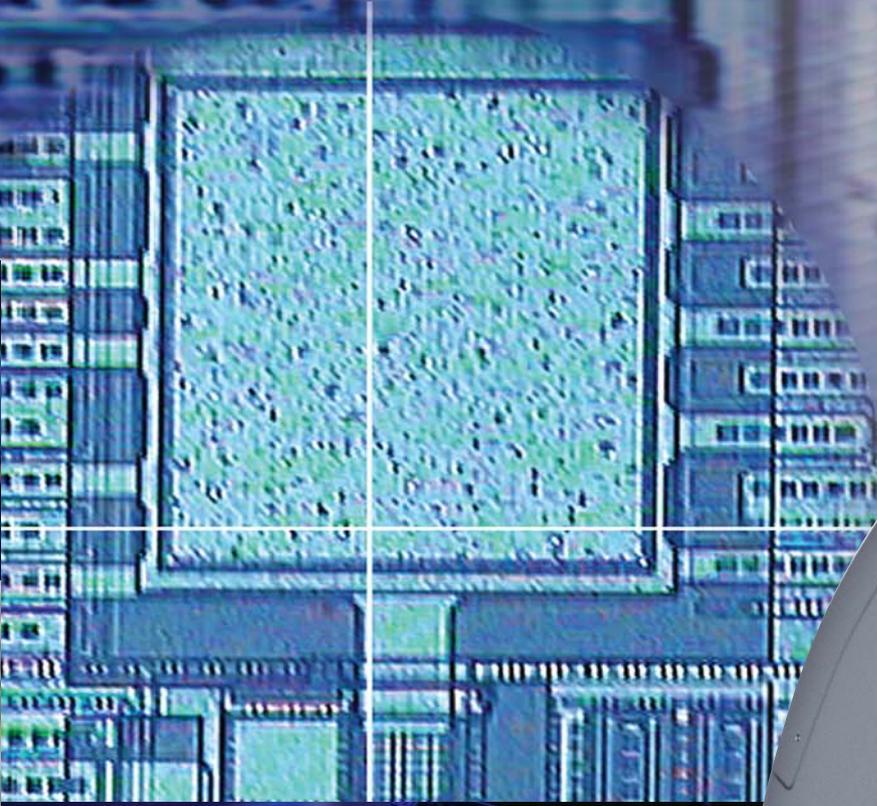CIRCLE 3
CIRCLE 4
CIRCLE 5
CIRCLE 6

TESA Visio 300

SWISS MADE

Mastery of vision

HEXAGON METROLOGY

MASTERY
OF VISION

TESA-VISIO 300 OR 300 DCC

With the new step taken by TESA with the introduction of their TESA-SCAN product family for non-contact measurement, the need for developing TESA-VISIO like systems as a further contribution to quality control appears as the next logical step to the company.

So to complement, extend and enhance this product line, TESA have engineered a new line of high precision machines, including the innovative TESA-VISIO 300 available today in three different models. Each model comes equipped with a 300 x 200 mm coordinate stage.

1 Manual video machine provided with TESA-VISTA – the software tool for the most varied applications. Made simple to use, this software is within the reach of any end-user.
2 Manual video machine delivered with PCDmis – the enterprise-wide metrology software. Using the Vision capability of this software, the machine provides users with a powerful tool for non-contact measurement in two and three coordinate directions.
3 Automatic CNC controlled video machine (DCC) equipped with DC servomotors. Running the PCDmis Vision software, this machine is one the most cost-effective currently available on the market.

Since users are not limited to a single choice when deciding upon the software to use, this results in a number of benefits our customers do very much appreciate.

Manual machine versions

These two versions have a coordinate stage fitted with a quick release system in both axes X and Y. This system enables fast displacements for locating the geometric feature to be measured.

Disengageable wheel drives are used for quick motion in the Z-axis as well as fine setting of the focal length.

DCC machine version

On this version again, the coordinate stage along with the vertical axis are displaced by means of DC servomotors. Their speed is tightly controlled through the rotative encoders, especially when the joystick is used or high precision images are processed in the X-direction. This for example.

A plain axis with linear drive allows the stage to be displaced mechanically. This system also acts as coupling clutch in case of collision.

Vertical displacement is ensured by rack and pinion.

Machine construction

The machine's all aluminium construction provides the high structural rigidy and stability needed for any high precision system applied for dimensional inspection.

The coordinate stage features prestressed carriages mounted on ultra-precise monorails to ensure a reliable stability over years. Thereby, the machines can be used in both the workshop and the measurement laboratory. Distance between the two axes X and Y has been lowered down to the minimum for optimum compactness.

Through the swan neck shaped structure supporting the Z-axis, the guiding system could be mounted as close as possible to the optics. This system is totally counter-balanced.

The measuring systems are based on linear encoders mounted on the three axes. Each of them is identical to those used on our small MH3D, which proved to be very accurate and dependable.

Optional 75 or 150 mm height extensions are also available to allow easy inspection of large test pieces.
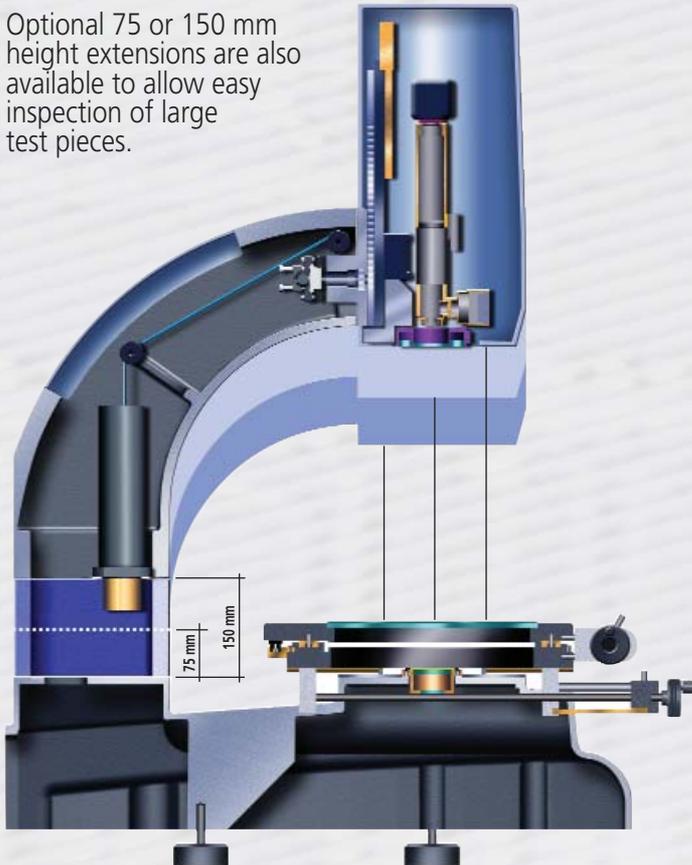
Working distance
A = 60 ÷ 210 mm   basis model
B = 135 ÷ 285 mm   using the 75 mm height extension
C = 210 ÷ 360 mm   using the 150 mm height extension

Illumination

Light sources with coloured LEDs. This valuable technology offers long-lasting cold light sources (over 50.000 hours) with low power needs.

Transmitted light (diascopic illumination) is produced by a green LED with programmable light intensity.

Reflected light (episcopic illumination) is created by a so-called Fresnel lens consisting of a dual line of 24 LEDs. Intensity of this white ring light can be set through the software as well. An extra ring light fragmented into 4 programmable segments is available as an option.

On request, a coaxial light (white LED) can be supplied for use in conjunction with the motorised zoom.

Optics

Each variant comes with a high-resolution colour camera.

The manual base version with TESA-VISTA has a motorised zoom, without coaxial light.

Another version with a telecentric objective (magnification 2x) is planned for specific metrology applications.

Both PCDmis models, whether manual or in DCC version, also include a motorised zoom (magnifications 0,7x to 4,5x). A calibration routine is provided with the sofware for the zoom.

This routine makes dimensional inspection possible throughout the full range with no effect on accuracy for the measurements taken within the viewing area.

Being an integral part of all our machines, the laser pointer helps users locating the area they want to check.

TESA-VISTA application software

This simple-to-use software is very user-friendly. Using TESA-VISTA, the widest number of part features and elements will be measured reliably and quickly.

Key Features

– Viewing in either axis X, Y or Z with a resolution to 0,001 mm.
– Zero setting of displayed axis by just a click.
– Metric/Inch conversion.
– Cartesian and polar coordinates.
– Storage of the video image.
– Drawing of the measured feature shown in the active window.
– Automatic entry of measured points (programmable).
– Automatic edge detection.
– Z-measurement with on-screen help and guidance.

Features and Functions

– Point, radius, diameter, arc of circle, angle, line, distance (X/Y), slot, Z-measurement.
– Alignment, perpendicularity, parallelism, theoretical point, theoretical diameter, Translation of X/Y origin points.

PCDmis-Vision software

Including many programming capabilities, PCDmis provides a long-term solution in an ever evolving manufaturing environment as it can be continuously updated to the latest technology level. All inspection reports issued in a variety of formats can be custom-made to suit the operator's specific needs.

Key Features

– Real time inspection up to the subpixel using the mouse.

– Point and click programming.

– Automatic edge detection – Eliminates positioning uncertainty resulting from the use of the crossline graticule while enhancing the machine velocity and repeatability.

– Acquisition of a higher number of points to make the measurement of form and shape deviations even more accurate.

– Importation and use of CAD files (various formats).

– Off-line programming.

– Simple programme sequences.

– Reverse engineering together with export option in CAD format.

– Automatic recognition of used magnification without the need for the user to recalibrate the objective inside a programming process.
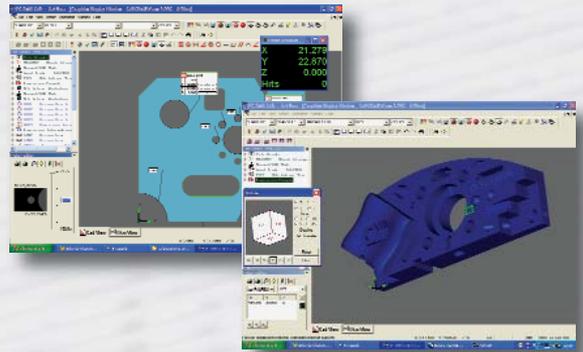
– Automatic or manual control of the tools.

– Measurement in Z-axis made easier through computer-aided focusing in graph mode.

– On-screen viewing of the measured values, including those related to the position of geometric elements and edge capture.

– Use of the existing 20,000 install base for a single software solution across multiple products.
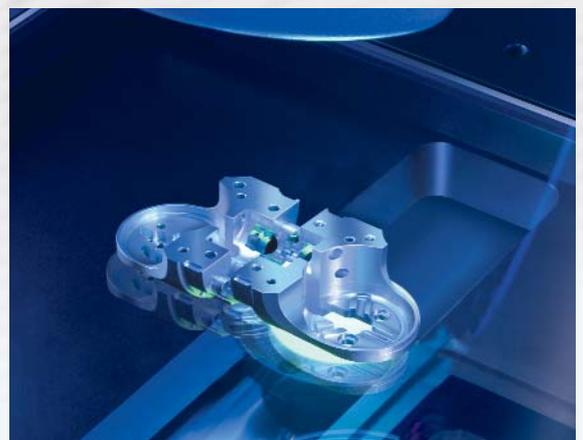
TESA-VISIO 300 and 300 DCC

SPECIFICATIONS

Order number	06830200	06830201	06830202
Video machine	TESA-VISIO 300	TESA-VISIO 300	TESA-VISIO 300 DCC
Software	TESA-VISTA	PCDmis	PCDmis
Machine version	Manual	Manual	Motorised
Measuring spans X/Y (in mm)	300 x 200	300 x 200	300 x 200
Measuring span Z (in mm)	150	150	150
DC servomotors coupled with rotary encoders as tacho fitted on each axis	–	–	•
X and Y quick release system	•	•	–
Focus length fine setting, manual	•	•	–
Profile illumination (episcopic illumination with 1 green LED)	•	•	•
X/Y-Accuracy at 20°C	3+10•L/1000	3+10•L/1000	2,4+4•L/1000
Z-Accuracy at 20°C	3+2•L/100*	3+2•L/100*	3+1•L/100*
Encoder resolution (X/Y/Z)	0,05 µm	0,05 µm	0,05 µm
Max. perm. load (in the middle of the stage)	16 kg	16 kg	16 kg
Size (monitor and PC not included) (L x H x P in mm)	680 x 990 x 800	680 x 990 x 800	680 x 990 x 800
Weight (monitor and PC not included)	78 kg	78 kg	78 kg
Operating temperature range	20°± 2°C	20°± 2°C	20°± 2°C
Power supply	115 to 220 Vac ±10% 50 to 60 Hz	115 to 220 V ±10% 50 to 60 Hz	115 to 220 V ±10% 50 to 60 Hz

OPTIONAL COMPONENTS

06860070 PCDmis-Vision PRO (main software)	–	•	–
06860071 PCDmis-Vision CAD	–	Optional	–
06860072 PCDmis DCC PRO (motorised version)	–	–	•
06860073 PCDmis DCC CAD (motorised version)	–	–	Optional
06860076 Update PCDmis DCC PRO / CAD DCC	–	–	Optional
06860039 Update PCDmis PRO / CAD	–	Optional	–
06860080 Z height extension, 75 mm (Z)	Optional	Optional	Optional
06860081 Z height extension, 150 mm (Z)	Optional	Optional	Optional
04760023 DELL Computer GX 280, 512 MB, 2,53 GHz, 40 GB HD	•	•	•
04760004 DELL Monitor TFT, 15"	•	•	•
04760032 Touch screen monitor, 15"	Optional	–	–
04760035 DELL Monitor TFT, 17"	–	Optional	Optional
Keyboard according to language (FR, CH, DE, IT, ES, GB, USA, NO, SE, FI, DK)	•	•	•

*Accuracy obtained with use of the motorised zoom at highest magnification on a textured surface

OPTICS

High-resolution colour camera	•	•	•
Red laser pointer	•	•	•
06860048 Motorised zoom (20x to 130x on a 15" monitor)	•	•	•
06860049 Motorised zoom (20x to 130x on a 15" monitor) with coaxial light (white LED)	Optional	Optional	Optional
06860052 Telecentric objective, 2x (60x on a 15" monitor)	On request	–	–
06860030 Lens, 0,5x	Optional	Optional	Optional
06860031 Lens, 0,75x	Optional	Optional	Optional
06860032 Lens, 1,5x**	Optional	Optional	Optional
06860033 Lens, 2x**	Optional	Optional	Optional

ILLUMINATION

06860053 Episcopic ring light (48 white LEDs)	•	•	•
06860054 Fragmented ring light (4 x 90° programmable segments)	Optional	Optional	Optional

**Lens with magnifications 1,5x and 2x require the use of the zoom with coaxial light.