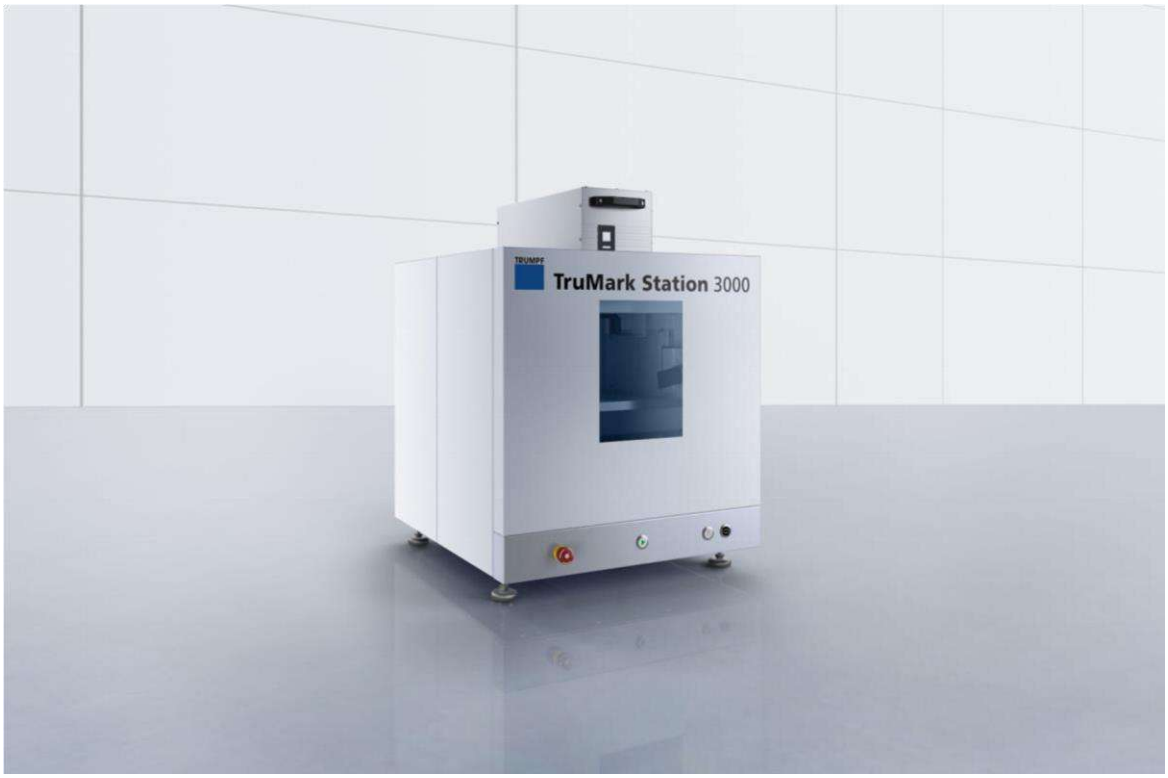
TruMark Station 3000 (laser control 17)



All illustrations are examples. The product may differ from the picture.
Your contact person in the field at TRUMPF

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1. TRUMPF

The high-technology company TRUMPF provides manufacturing solutions in the fields of machine tools, lasers and electronics. TRUMPF is advancing the digital networking of the manufacturing industry with their consultation, platform and software offers. The company is the world technological and market leader for machine tools used in flexible sheet metal processing, and also for industrial lasers.

With around 14,767 employees, TRUMPF generated sales of €3.50 billion in 2020/21. With an R+D quota currently at 10.9 percent and the long-term approach of an independent, family-owned business, TRUMPF is a guarantor of continuous innovative strength.

Machine tools for flexible sheet and tube processing make up its core business. The product portfolio includes machines for bending, punching, combined punch and laser processing, laser cutting, and laser welding applications. Diverse automation solutions and a broad range of software round off the portfolio.

In the Laser Technology Business Unit, TRUMPF provides highperformance CO_2 lasers, disk and fiber lasers, direct diode lasers, ultrashort pulse lasers, and also marking lasers and marking systems. The laser technology product program also includes laser systems for the cutting, welding and surface processing of three-dimensional parts.

The product palette of the electronics business field includes DC, high and medium frequency generators for inductive material heating, surface coating and surface processing via plasma technology, as well as for laser excitation.

The headquarters of this family business is in Ditzingen, near Stuttgart. The TRUMPF Group is represented by over 70 subsidiaries in all of the world’s leading markets. Production facilities are located in Germany, France, Great Britain, Italy, Austria, Switzerland, Poland, the Czech Republic, the USA, Mexico, China and Japan.

2. Parts

Work station

1010 TruMark Station 3000 1 PCE

- Ergonomically designed desktop workstation (laser class 1)

Work station extensions

1020 Extension stand-alone version 1 PCE

- Machine base and monitor arm to extend the TruMark Station 3000 desktop workstation

1030 Rotary axis 65 mm TruMark Station 3000 1 PCE

- Rotary axis with stepping motor for circumference marking

1040 External exhaust system "Compact" 1 PCE

- Exhaust system model KKF 300 L from manufacturer Fuchs for the connection to a TruMark Station including suction hose, sleeves and electric cable for the connection and regulation of the exhaust system

1050 Protective filter DIN A4 (IR) 1 PCE

- Protective filter for infrared laser radiation
- Material: polymer

Laser device

1060 TruMark 6030 (L026) 1 PCE

- Marking laser TruMark 6030 (L026) with laser active medium Yb:YAG and wavelength 1030 nm
- Internal focal position control
- Pilot laser for simulation of marking content with a laser diode
- High-precision scanner head for wavelength 1030 nm
- Supply unit with control unit including power supply, Q-switchdriver, control electronics – designed as 19" plug-in unit variant
- External acousto-optical modulator for modulation of the laser pulses
- Internal power regulation of the resonator

1070 Marking volume 125 x 125 x 50 mm³ (1030 nm) 1 PCE

- Focusing lens for 1030 nm with adapter plate
- Marking volumes of 125 x 125 x 50 mm³
- Focal length f = 300 mm

Operation / programming

1080 Comfort operating package 1 PCE

- Touch monitor: power connection cable 1.8 m, video cable 1.8 m (VGA) and 3 m (DisplayPort), 1.6 m USB 3.0 cable, weight 6.6 kg
- Keyboard (cable length 1.75 m) and mouse for operating the marking laser

1090 "Performance" control computer 19" 1 PCE

- "Performance" as control computer with Windows operating system in 19" plug-in unit

1100 TruTops Mark 2 Basic license 1 PCE

- Software license for the use of TruTops Mark 2 in connection with a TruMark marking laser

1110 TruTops Mark 3D Basic license 1 PCE

- Software license for the use of TruTops Mark 3D in connection with a TruMark marking laser
- Software for workpiece-oriented creation of marking contents and definition of laser parameters
- 3D CAD software
- Touch-capable HMI for connection with marking laser (touchcapable monitor required)
- Updates and new software versions will be offered on the basis of license models in the future

1120 Navigator 1 PCE

- Software-based wizard for determining suitable laser parameters for customer-specific applications

1130 Circumference segmentation 1 PCE

1140 Navigator TTM 3D 1 PCE

- Software-based wizard for determining suitable laser parameters for customer-specific applications on freely selectable objects, suitable for the coupled laser and the previously selected marking process

1150 TruMark Smart View Services Starter 1 PCE

- Right of use of Smart View Services license. The license term is 12 months and when a new laser device is purchase it begins 3 months after delivery.
- By placing your order for this offer, you accept the

  "Agreement on the Transmission and Use of Data"

  (www.trumpf.com/s/TCadLT). If you do not wish to accept this agreement, please state this explicitly in your order. However, it is not possible to provide data-based services without your consent.
- If, after the expiration of the free trial period, the license is not extended at a fee, an automatic downgrade to a functionally reduced, free Lite version occurs. The consent to the "Agreement on the Transfer and Use of Data" must be revoked separately, if desired, when the license expires. Upon revocation of this consent, the data transmission must be cancelled immediately by the customer.
- Installation & configuration is performed independently by the customer
- Prerequisite: Continuous provision of CM data via Factory Gate or Device Gate
- Technical requirements can be found in the document

  "System Requirements and Network Configurations for Condition & Data Based Services" (www.trumpf.com/s/TCadLT).

1160 Remote service agreement, 2 years 1 PCE

- IT-secure remote diagnostics with possibility of active intervention

Accessories

1170 TruMark Station packaging 1 PCE

3. Configuration details

This chapter provides a detailed technical specification

TruMark Station 3000 (laser control 17)

Used work station	No
Used marking laser	No
Delivery country	US United States of America
Length connecting cable	4 m
Interface extension IOM	No
OPC-UA Interface	No
Field bus	No
Remote access	Via Internet
Operating system	Win10 IOT Ent. LTSB 2016 64bit
Monitor	Touchscreen
Keyboard	US United States of America
Document. digital on data carr	1 PCE
Documentation on paper	1 PCE
CE/UKCA declaration	Declar. of conformity ex works
Lang. EU/UKCA conform. decl.	EN English
Operating system language	EN English
Operating software language	EN English
Operator's manual language	EN English
Language - Labels	EN-US American English

4. Additional Information

1010 TruMark Station 3000

- Ergonomically designed desktop workstation for laser processing with laser class 1
- Motorized Z-axis for height adjustment of the laser with traverse path of 200 mm
- Automatic closing/opening of door
- Suction nozzle with exhaust hose 2 m and adapter piece
- Processing area for workpieces with maximum dimensions of 450 mm x 200 mm x 350 mm (W x H x D) and maximum weight of 12 kg
- T-slot plate, dimensions 360 x 25 x 250 mm (W x H x D), slot space 25 mm
- Standard color scheme of the workstation (blue RDS 250 20 20, grain structure, white NCS S0505-R80B, grain structure and white aluminum RAL 9006, deep/jet black matt RAL 9005)

1020 Extension stand-alone version

• Allows comfortable use of the TruMark Station 3000 as a standing workstation

• Customized base for the TruMark Station 3000 with small footprint for use in industrial environment

• Possibility to accommodate an exhaust system (OneBox marking laser) or position the supply unit of the marking laser in the base

1030 Rotary axis 65 mm TruMark Station 3000

• Rotary axis with stepping motor enables circumference marking of parts with maximum weight of 2.5 kg

• Including 3-jaw-chuck with a diameter of 65 mm

1040 External exhaust system "Compact"

- Module housing made of steel sheet with casters
- Enables exhaustion of low particle and smoke emissions during laser processing
- Filter equipment: TKF FA1
- Suction power: maximum 300 m³/h
- Negative pressure: maximum 11,500 Pa
- Electrical connection: 120/230 V / 50/60 Hz
- Power input: 0.8 kW
- Nominal current: 1.0 A
- Emission sound pressure level: 65 dB(A)
- Acoustic power level according to CE (DIN 45635-3): 80 dB(A)
- Protection class: IP42
- Ambient temperature: +5 °C to +35 °C
- Dimensions: l 355 x w 355 x h 655 mm
- Weight (without filter equipment): 29 kg
- Total weight of the filter equipment: 8.2 kg
- With possibility of remote control

1050 Protective filter DIN A4 (IR)

• The protective filter enables the safe viewing of the marking process in a work station when operating an infrared laser

1060 TruMark 6030 (L026)

Marking laser basic equipment

- Laser for reliable and precise marking and microprocessing with the wavelength 1030 nm
- Unique marking laser on ytterbium basis with excellent beam quality of $M^2 < 1.3$ enables spot sizes of 50 µm
- Linearized characteristic curve of the laser power by external acousto-optical modulator. Laser power can thus be linearly scaled over the entire power range with otherwise constant laser parameters.
- No first-pulse behavior at the beginning of vectors due to the optical design of the external acousto-optical modulator
- The internal power regulation keeps the laser power of the resonator constant over the entire temperature range as well as during the entire use in the field
- High peak pulse power and short pulse durations ensure excellent marking results
- Ytterbium laser with very good pulse-to-pulse stability up to high frequencies of f ≤ 200 kHz
- Due to the highly dynamic fast internal Z-axis of the laser in combination with a scanner optics unit, the focal point is not adjusted in two but in three dimensions
- The new optical setup using pre-scan optics protects the focusing lens between scan head and beam source
- Complete documentation in electronic form

Pilot laser

- Simulation of marking content with visible red light using a laser diode
- Simulating the marking content gives an impression of the marking result and allows for easy positioning of the workpiece in the marking field.
- The focusing optics are optimized for the wavelength of the marking laser and not for the wavelength of the pilot laser. As a result the red light beam of the pilot laser and the marking laser beam are not congruent in the boundary of the marking field.

Easy, fast and reliable integration

- The processing head is connected to the supply unit with pluggable connecting cables. This enables easy integration of the marking laser for commissioning or in case of servicing (Plug & Produce).
- Pluggable connection cable with optional length of 4 m or 6 m
- Fast laser-ready times of ≤ 50 ms after closing the safety circuit and real time output signals for the status of the marking laser enable laser applications with maximum performance
- Marking laser system with maximum safety Performance Level e
- Several 2-channel interlock channels with performance level e provide flexible options for integrating the marking laser into the production environment (e.g. including emergency shutdown with performance level e)
- The safety system of the marking laser enables an unlimited number of marking cycles in the context of the risk assessment

High industry suitability

- Even in adverse production environments, the processing head is protected with safety class IP64
- Standard operation at ambient temperatures up to 40°C (optional: water cooler processing head enables operation up to max. 45°C)

1070 Marking volume 125 x 125 x 50 mm³ (1030 nm)

• Adapter plate with precise pre-assembled focusing optics for protected assembly between laser head and scan head

1080 Comfort operating package

- Monitor, keyboard and mouse allow easy and comfortable control of the marking laser
- Very simple input also through multitouch display

1090 "Performance" control computer 19"

- High-performance control computer that is particularly suitable for processing large amounts of data, e.g. of component and marking contents in TruTops Mark 3D
- Designed as 19" plug-in unit with three height units for easy integration into electrical cabinets
- With Windows operating system

1100 TruTops Mark 2 Basic license

- Basic software for comfortable marking with TruMark lasers
- Import function for frequently used graphic formats e.g. HPGL, IGES, DXF/DWG and PCR
- Bitmap import for formats BMP, TIFF and JPG
- Real-time update of variables
- Marking of text objects, barcodes, 2D Data Matrix Codes and dot codes, as well as linking these to variables
- Structured management of laser parameters for different materials
- Adjustable line width via laser parameters using parallel lines or wobbling

1110 TruTops Mark 3D Basic license

- Basic operating software for a new and convenient type of laser marking in 3D volumes
- Full-feature 3D CAD design software for easy creation and marking of your own workpieces and content to be marked
- This version of TruTops Mark 3D enables three-dimensional marking on the following defined body forms: freely suspended cylinders/half-cylinders, inclined planes, coneshaped bodies, prisms. Surfaces with multiple curves are currently not supported.
- Tidy user interface for the most important functions such as workpiece creation or STP / STL / DXF / DWG file import and other common 3D and vector-based formats
- Unique laser parameter concept for very simple operation with slider function for setting the best contrast
- Optimized variables wizard for generation of e.g. variables, serial numbers and date/time details including from external sources and csv/txt files
- HMI: Wizard/touch-controlled user interface for laser integration, focus test, telephone support, optics replacement and more.

Design function TTM 3D

- Function for design of 3D components and for drawing derivation
- Market launch price when purchased in the initial marketing year
- Updates and new software versions will be offered on the basis of license models in the future

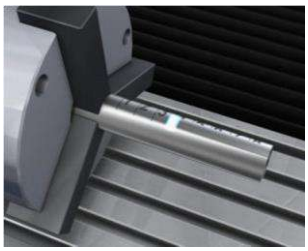
Magic 5 TTM 3D

- Software-based wizard for the easy setting of marker parameters by slider
- Market launch price when purchased in the initial marketing year
- Updates and new software versions will be offered on the basis of license models in the future

1120 Navigator

- Enables fast and convenient definition of laser parameters for customer-specific applications
- For specific marking applications laser parameters can be found, optimized and transferred easily and quickly. The operator requires no previous knowledge with regard to laser processing.
- Time savings, particularly for programming regularly changing workpieces and different contrasts

1130 Circumference segmentation



• Software option for circumference marking of large cylindrical workpiece surfaces exceeding the marking field

1140 Navigator TTM 3D

- Enables fast and convenient definition of laser parameters for customer-specific applications
- For specific marking applications laser parameters can be found, optimized and transferred easily and quickly. The operator requires no previous knowledge with regard to laser processing.
- Time savings, particularly for programming regularly changing workpieces and different contrasts

1160 Remote service agreement, 2 years

- IT-secure remote diagnostics with possibility of active intervention
- With TRUMPF remote support, your laser can be restored to normal working order by remote access in many cases -

  without the need for any service assignment directly on site. This increases the availability of the production system.
- In addition, it is possible to adjust the system parameters, perform software updates and obtain quick and targeted expert support.

5. Technical data (metric)

Rotary axis 65 mm TruMark Station 3000

Technical specification

Diameter of hand-operated chuck	65 mm
Center height	153.7/63.6 mm
Clamping range, interior	3 mm - 24 mm
Clamping range, exterior	23 mm - 88 mm
Diameter of central passage	15 mm
Speed	25 1/min
Concentricity precision	80 µm
Repeatability	0.15 °
Maximum workpiece moment of inertia	0.03 kg*m^2
Axial load	50 N
Radial load	25 N
Maximum tangential torque	8 Nm
Maximum part weight	2.5 kg

TruMark 6030 (L026)

Laser parameters

Maximum peak pulse power	40 kW at 40 kHz
Beam quality (M^2)	< 1.3
Wavelength	1030 nm
Laser medium	Yb:YAG
Pulse duration	16 ns at 40 kHz
	38 ns at 100 kHz
	75 ns 200
Pulse repetition frequency	40 kHz - 200 kHz
Minimum focal diameter	50 µm

Connection and consumption

Electrical connection (voltage)	90 V - 264 V
Electrical connection (frequency)	47 Hz - 63 Hz
Electrical connection (current intensity)	8.5/15 A
Typical power input at rated power	0.4 kW
Maximum power input	1.6 kW

Structural design

Dimensions of laser head (W x H x D)	156 mm x 214 mm x 435 mm
Dimensions of supply unit (W x H x D)	446 mm x 222 mm x 495 mm
Dimensions of control PC (W x H x D)	446 mm x 133 mm x 371 mm
Weight of laser head	14.5 kg
Weight of supply unit	24 kg
Weight of control PC	8.5 kg

Installation

Laser head protection class	IP64
Supply unit protection class	IP20
Ambient temperature	15 °C - 40/45 °C
Relative humidity	max. 90 % at 15-45°C

Marking volume 125 x 125 x 50 mm³ (1030 nm)

Technical specification

Marking volume	125 mm x 125 mm x 50 mm
Calibration accuracy of scanner	± 50 µm

TruMark Station 3000 (laser control 17)

Laser

Available marking lasers	TruMark 6030

Workpiece specification

Maximum workpiece dimensions (W x H x D)	440 mm x 200 mm x 350 mm
Maximum workpiece weight	12 kg

Available motorized axis

Traverse path of the Z axis	200 mm
Z traverse speed	2.4 m/min

Dimensions and weight of work station

Dimensions of work station, desktop station (W x H x D)	630 mm x 820 mm x 670 mm
Weight of work station, desktop station without integrated laser	90 kg
Dimensions of work station, stand alone station (W x H x D)	630 mm x 1750 mm x 670 mm
Weight of work station, stand alone station without integrated laser	160 kg

Laser class

Laser class	1