

PS 10 / M 300 / M 300 C



## IN THE PAST THERE WAS THE FINGERNAIL TEST. TODAY, THERE IS MARSURF



The latest information on MARSURF products can be found on our website:  
**[www.mahr.com](http://www.mahr.com), WebCode 158**

► | Wherever surface structures influence the function, processing or appearance of components or products, careful testing is essential. But how can surfaces be tested? At the beginning of the 20th Century, experts still had to test by eye and touch. A practiced eye can detect features in the  $\mu\text{m}$  range, and even the much maligned thumbnail test delivered perfectly acceptable results. Now however, we live in an age of interchangeable parts and globalization, where subjective tests like this are no longer adequate. Today, computer-aided measuring instruments provide objective data. Measurement and evaluation have become considerably easier. For decades, Mahr has been a worldwide pioneer in this area, as demonstrated by the company's numerous innovations and patented solutions in the field of surface roughness metrology. The interplay between the stylus, drive and measuring setup plays a key role in influencing the quality of surface measurement tasks. This is where Mahr's core expertise comes in, as demonstrated by the company's numerous innovations and patented solutions. Over this time, we have succeeded in perfecting the stylus method, which is now in widespread use throughout the world. We can meet even the most demanding requirements for non-contact measurement, e.g. where extremely soft materials or ultra-short measuring times are involved, thanks to the range of optical sensors offered in the MarSurf product family. Developed with Mahr quality, expertise and know-how, MarSurf is the solution for all your surface metrology needs.

## ► | MarSurf. Mobile Surface Roughness Measuring Instruments

### Mobile Surface Roughness Measuring Instruments

Overview 4

MarSurf PS 10 6

MarSurf M 300 8

MarSurf M 300 C 9

Drive Unit MarSurf RD 18 11

Drive Unit MarSurf RD 18 C2 for transverse tracing 11

Optional Probes for MarSurf PS 10 / M 300 / M 300 C 12

---

Accessories 14

MarSurf PS 10 / M 300 16


MarSurf PS 10 / M 300 / M 300 C 17

Software 18

MarSurf available parameters 19

# MarSurf. Mobile Surface Roughness Measuring Instruments

## OVERVIEW

	MarSurf PS 10
	
Page	6
Measuring principle	Skid probe system
Probe system	PHT probe range
Probe	Inductive skidded probe, 2 µm stylus tip, measuring force ca. 0.7 mN
Traversing length	ISO/JIS: 1,5 mm, 4,8 mm, 16 mm; automatic, NxLc, freely selectable MOTIF: 1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm
Measuring range	350 µm
Profile resolution	8 nm
Evaluation lengths	1.25 mm, 4.0 mm, 12.5 mm
Number of parameters available	31
Parameters	DIN / ISO    Ra, Rq, Rz, Rmax, Rp, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, R <sub>Pc</sub> , R <sub>mr</sub> , R <sub>Sm</sub> , R <sub>sk</sub> , CR, CF, CL, R, AR, Rx JIS            Ra, Rq, Ry (equiv. to Rz), RzJIS, tp (equiv. to R <sub>mr</sub> ), R <sub>Sm</sub> , S  ASME        Rp, Rpm, R <sub>Pc</sub> , R <sub>sk</sub> , tp (equiv. to R <sub>mr</sub> ) MOTIF       R, AR, Rx, CR, CF, CL
Bluetooth	—
Large color display	Yes
Built-in printer	—
Integrated roughness standard for Standard probe PHT 6-350	Yes
Cylindrical drive unit with hand-held Vee-block	Yes
Drive unit with transverse tracing (optional)	Yes
Internal memory	3900 Profiles, 1500 pdf-files, 500000 Results, memory can be extended with microSD-Card up to 32 GB
Software (optional)	MarCom, MarSurf XR 20
Order no.	6910230

## MarSurf M 300



8

Skid probe system

PHT probe range

Inductive skidded probe, 2  $\mu\text{m}$  stylus tip, measuring force ca. 0.7 mNISO/JIS: 1.75 mm, 5.6 mm, 17.5 mm; automatic  
MOTIF: 1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm350  $\mu\text{m}$ 

8 nm

1.25 mm, 4.0 mm, 12.5 mm

33

DIN / ISO Ra, Rq, Rz, Rmax, Rp, Rv, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2,  
Vo, Rt, R3z, R<sub>Pc</sub>, Rmr, RSm, Rsk, R, AR, Rx, W, CR, CF, CLJIS Ra, Rq, Ry (equiv. to Rz), RzJIS, Rp, Rv, Rpk, Rk, Rvk, Mr1,  
Mr2, A1, A2, Rt, tp (equiv. to Rmr), RSm, Rsk, S, R, AR, Rx,  
W, CR, CF, CL

ASME RpA, Rpm, Rmr, RSm, Rsk

MOTIF R, AR, Rx, W, CR, CF, CL

Yes

Yes

Yes

Yes

—

—

max. 30 Profiles  
max. 40000 ResultsExplorer,  
MarSurf XR 20

6910401

## MarSurf M 300 C



9

Skid probe system

PHT probe range

Inductive skidded probe, 2  $\mu\text{m}$  stylus tip, measuring force ca. 0.7 mNISO/JIS: 1.75 mm, 5.6 mm, 17.5 mm; automatic  
MOTIF: 1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm350  $\mu\text{m}$ 

8 nm

1.25 mm, 4.0 mm, 12.5 mm

33

DIN / ISO Ra, Rq, Rz, Rmax, Rp, Rv, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2,  
Vo, Rt, R3z, R<sub>Pc</sub>, Rmr, RSm, Rsk, R, AR, Rx, W, CR, CF, CLJIS Ra, Rq, Ry (equiv. to Rz) RzJIS, Rp, Rv, Rpk, Rk, Rvk, Mr1,  
Mr2, A1, A2, Rt, tp (equiv. to Rmr), RSm, Rsk, S, R, AR,  
Rx, W, CR, CF, CL

ASME RpA, Rpm, Rmr, RSm, Rsk

MOTIF R, AR, Rx, W, CR, CF, CL

—

Yes

Yes

—

(External roughness standard is included in the scope of supply)

Yes

RD 18 C2

max. 30 Profiles  
max. 40000 ResultsExplorer,  
MarSurf XR 20

6910431

## Mobile Surface Roughness Measuring Instrument MarSurf PS 10 "SMAHRT Surf" - easy, smart and mobile



### Applications

- On-site surface roughness measurement
- Measuring during the production process
- Universal use on processing machinery
- For incoming goods inspection



### Features

- Small and lightweight; ideal as mobile surface roughness measuring instruments
- Large illuminated 4.3" TFT touch display
- Display can be rotated
- Simple to operate (smartphone!)
- Increased flexibility due to the removable drive unit
- Start button is simultaneously the home button for direct access to the start screen
- Direct access to your customized functions with favorites
- 31 parameters: offer the same range of functions as a laboratory instrument
- Data is saved in the device, e.g. TXT, X3P, CSV and PDF file
- Evaluation of most common parameters conforming to

- standards and in accordance to ISO /JIS as well as parameter lists
- Integrated, removable roughness standard for the standard pick-up PHT 6-350
- Dynamic calibration function
- Select standards (DIN-ISO/JIS/ASME /MOTIF )
- Automatic cutoff selection (patented) to ensure correct measuring results
- Individual sampling lengths and shortened cutoff can be selected
- Setting of unsymmetric intersection lines for peak count calculation
- Phase-correct profile filter (Gaussian filter) acc. To DIN EN ISO 16610-21 (before DIN EN ISO 11562), special filter acc. to

- DIN EN ISO 13565-1, Is-filter acc. to DIN EN ISO 3274 (disengageable )
- Tolerance monitoring
- Lock settings and/or password protection
- Date and/or time of measurement
- Integrated memory to store approx. 500000 results, 3900 profiles and 1500 pdf-files
- Data transmission via the USB interface to a PC or via microSD-Card
- MarConnect interface, to connect e.g. a PC via the MarCom Software
- Main free operation: the built-in rechargeable battery can be used for up to 1200 measurements before being recharged

### Supplied with:

- MarSurf PS 10 base unit
- Drive unit (removable)
- 1 standard pick-up PHT 6-350 (conforming to standards)
- Built-in battery
- Roughness standard integrated (removable) into base unit incl. Mahr calibration certificate
- Pick-up protection
- Charger / mains adapter with 3 mains power adapters
- Operating instructions
- Carrying case with shoulder strap
- USB cable
- Extension cable drive unit
- Height adjustment accessory (integrated)



## Technical Data

Unit of measurement		Metric / inch
Measuring principle		Stylus method
Pick-up		Inductive skidded pick-up, 2 $\mu\text{m}$ (80 $\mu\text{in}$ ) stylus tip, measuring force ca. 0.7 mN
Parameters	DIN / ISO	Ra, Rq, Rz, Rmax, Rp, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, R <sub>PC</sub> , R <sub>mr</sub> , R <sub>Sm</sub> , R <sub>sk</sub> , CR, CF, CL, R, AR, Rx
	JIS	Ra, Rq, Ry (equiv. to Rz), RzJIS, tp (equiv. to R <sub>mr</sub> ), R <sub>Sm</sub> , S
	ASME	Rp, Rpm, R <sub>PC</sub> , R <sub>sk</sub> , tp (enquir. to R <sub>mr</sub> )
	MOTIF	R, AR, Rx, CR, CF, CL
Languages		English, German, French, Italian, Spanish, Portuguese, Dutch, Swedish, Czech, Polish, Russian, Japanese, Chinese, Korean, Turkish, Hungary, Romanian
Measuring range		350 $\mu\text{m}$
Profile resolution		8 nm
Filter*		Phase-correct profile filter (Gaussian filter) according to DIN EN ISO 16610-21 (before ISO 11562) Special filter according to DIN EN ISO 13565-1, ls filter according to DIN EN ISO 3274 (can be disabled)
Cutoff lc*	mm (inch)	0.25 / 0.8 / 2.5 (0.010" / 0.030" / 0.100"); automatic
Traversing length Lt*	mm (inch)	1.5/ 4.8 / 15 (0.06" / 0.192" / 0.6"); automatic
Traversing length (according to MOTIF)	mm (inch)	1 / 2 / 4 / 8 / 12 / 16 (0.040" / 0.080" / 0.160" / 0.320" / 0.480" / 0.640")
Short cutoff*		Selectable
Evaluation length ln*	mm (inch)	1.25 / 4.0 / 12.5 (0.050", 0.15", 0.50")
Number n of sampling lengths*		Selectable: 1 to 16
Calibration function		Dynamic
Memory		3900 profiles, 500000 results, 1500 pdf-files, memory can be extended with microSD-Card up to 32 GB
Additional functions		Lock settings / password protection, Date/Time
Dimensions	mm (inch)	160 × 77 × 50 (6.29" × 3.03" × 1.97")
Weight		500 g (1.10 lbs)
Rechargeable battery		Li-ion battery, 3,7 V, rating 11,6 Wh
Interfaces		USB-Device, MarConnect (RS232, USB), micro SD Slot for SD™ / SDHC-Cards up to 32 GB
Long-range power supply		100 V to 264 V

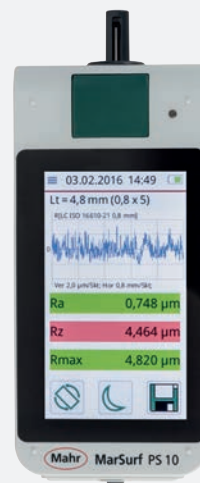
Order no.

**6910230**

Order no.

**6910232 (5  $\mu\text{m}$  probe tip)**

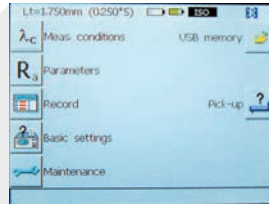
\* In accordance to ISO/JIS



## Mobile Surface Roughness Measuring Instrument MarSurf M 300 A step ahead



M 300



### Applications

- On shafts, housing parts
- On large scale machines
- For large workpieces
- On milling and turning parts
- For use on grinding and honing components
- On the production line, or directly upon a machine. Ideal for rapid testing of the surface roughness of a workpiece in or on a machine
- A simple universal measuring station for checking surface roughness



RD 18

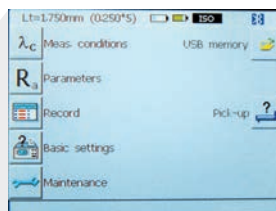


### Features

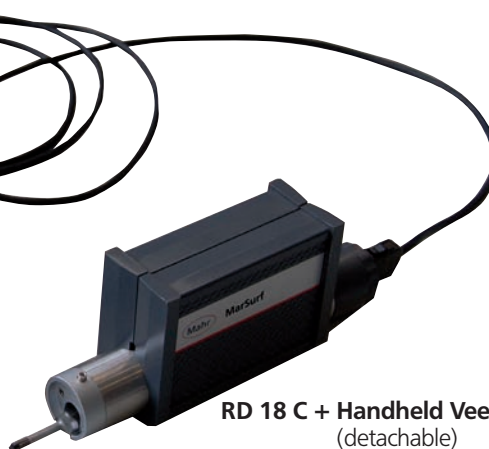
- Bluetooth wireless connection between the evaluation unit and drive unit (up to 4 m)
- Bright, illuminated color display
- Automatic selection of filter and traversing length conforming to standards
- Integrated thermal graphics printer of high print quality
- Print the R-profile via the thermal graphics printer
- Printed log either by pressing a button or automatically
- Data transfer of results and profiles via USB-interface to your PC
- Evaluation of most common parameters conforming to standards and in accordance to ISO/JIS as well as characteristic curves, parameter lists (e.g. material ratio curve)
- Printing of R-profile (ISO/ASME/JIS), P-profile (MOTIF), material ratio curve, measuring record
- Measuring units ( $\mu\text{m}/\mu\text{inch}$ ) and standards (ISO/JIS/ASME/MOTIF) are selectable
- Tolerance monitoring
- Integrated memory for the results of up to 40000 measurements and 30 profiles
- Setting of unsymmetric intersection lines for peak count calculation
- Individual sampling lengths and short cutoff can be selected
- Key pad lock and/or password protection for instrument settings
- Built-in rechargeable battery with power management
- Integrated roughness standard for the standard pick-up PHT 6-350
- Dynamic calibration function
- Date and/or time of measurement
- Software MarSurf PS1/M 300 Explorer for recording measurements (option)
- Supplied with: Evaluation unit M 300, drive unit RD 18 with integrated roughness standard, standard pick-up PHT 6-350/2 $\mu\text{m}$  (conforming to standards), charger / mains adapter with 3 mains power adapters, height adjustment accessory, pick-up protection, pick-up protection with prismatic underside, end face vee-block, 2 x USB cables, 1 roll of thermal paper, shoulder strap, carrying case, Mahr calibration certificate, operating instructions



## Mobile Surface Roughness Measuring Instrument MarSurf M 300 C A step ahead



M 300 C



RD 18 C + Handheld Vee block  
(detachable)

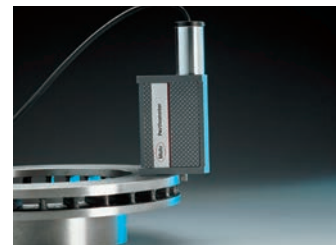
### Applications

- On shafts, housing parts
- On large scale machines
- For large workpieces
- On milling and turning parts
- For use on grinding and honing components
- On the production line, or directly upon a machine. Ideal for rapid testing of the surface roughness of a workpiece in or on a machine
- A simple universal measuring station for checking surface roughness

Upside down measurement



Measurement on an end face vee



### Features

- Bright, illuminated color display
- Automatic selection of filter and traversing length conforming to standards
- Integrated thermal graphics printer of high print quality
- Easy to use due to the large color display and the operator guidance
- Printing of R-profiles with the thermo printer
- Printed log either by pressing a button or automatically
- Data transfer of results and profiles via USB-interface to your PC
- Evaluation of most common parameters conforming to standards and in accordance to ISO/JIS as well as characteristic curves, parameter lists (e.g. material ratio curve)
- Printing of R-profile (ISO/ASME/JIS), P-profile (MOTIF), material ratio curve, measuring record
- Measuring units ( $\mu\text{m}/\mu\text{inch}$ ) and standards (ISO/JIS/ASME/MOTIF) are selectable
- Integrated memory for the results of up to 40000 measurements and 30 profiles
- Tolerance monitoring
- Setting of unsymmetric intersection lines for peak count calculation
- Cylindrical drive unit with handheld vee block and PHT pick-up protection
- Individual sampling lengths and short cutoff can be selected
- Lock instrument settings
- Date and/or time of measurement
- Can be expanded to be an stationary measuring station
- Software MarSurf PS1/M 300 Explorer for recording measurements (option)
- Supplied with: Evaluation unit M 300 C, cylindrical drive unit RD 18 C incl. 1.8 m data connection cable, handheld vee block with height adjustable feet, standard pick-up PHT 6-350/2 $\mu\text{m}$  (conforming to standards), roughness standard PRN 10 with Mahr calibration certificate, 1 roll of thermal paper, pick-up protection with prismatic underside, dia. 8 mm mounting clamp for drive unit, charger / mains adapter with 3 mains power adapters, 1 x USB cable (for connection to a PC), shoulder strap, carrying case, operating instructions

## Mobile Surface Roughness Measuring Instrument MarSurf M 300 / M 300 C

### Technical Data

Measuring principle		Stylus method
Traversing speed	mm (inch)	0.5 mm/s (0.02"/s)
Measuring range		350 µm (0.014")
Profile resolution		8 nm
Filter		Gaussian filter, Ls-Filter (switchable)
Cutoff	mm (inch)	0,25, 0,8, 2,5 (0.010", 0.032", 0.100")
Short Cutoff		wählbar
Traversing lengths as per DIN / ISO / ASME / JIS	mm (inch)	1,75, 5,6, 17,5 (0.070", 0.2242, 0.700")
Traversing lengths as per EN ISO 12085 (MOTIF)	mm	1, 2, 4, 8, 12, 16
Evaluation lengths	mm (inch)	1,25, 4, 12,5 (0.05", 0.16", 0.5")
Number of sampling lengths selectable:		1-5
Parameters	DIN / ISO:	Ra, Rq, Rz, Rmax, Rp, Rv, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, R <sub>Pc</sub> , R <sub>mr</sub> , R <sub>Sm</sub> , R <sub>sk</sub> , R, AR, Rx, W, CR, CF, CL
	JIS:	Ra, Rq, Ry (equiv. to Rz), RzJIS, Rp, Rv, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Rt, tp (equiv. to R <sub>mr</sub> ), R <sub>Sm</sub> , R <sub>sk</sub> , S, R, AR, Rx, W, CR, CF, CL
	ASME:	R <sub>pA</sub> , R <sub>pm</sub> , R <sub>mr</sub> , R <sub>Sm</sub> , R <sub>sk</sub>
	MOTIF:	R, AR, Rx, W, CR, CF, CL
Vertical scale		Automatic/selectable
Horizontal scale		Depending on the cutoff
Record contents		R -profile, MRK, P-profile (MOTIF), results
Printing		Automatic/manual
		Record with time
Surface hardness		Ideal for surface hardness >50 Shore
Calibration function		Dynamic
Memory		Integrated memory
		For the storage up to 40000 measurements and up to 30 profiles
Measuring units		µm/µinch selectable
Languages selectable:		English, German, French, Italian, Spanish, Portuguese, Dutch, Swedish, Czech, Polish, Russian, Japanese, Chinese, Korean, Turkish
Blocking instrument settings		Yes
Password protection		Yes
LCD		High resolution color display, 3.5", 320 x 240 pixel
Printer		Thermal printer, 384 points/horizontal line, 20 characters/line
Printing speed		ca. 6 lines/second corresponds to approx. 25 mm/s (1"/s)
Thermal paper		Dia. 40.0 mm-1.0 mm, width 57.5 mm-0.5 mm, coated
Interface		USB, MarConnect
Power supply		NiMH battery, capacity: approx. 500 measurements (depending on the number and length of record printouts), plug-in power pack with three mains plugs, for input voltages from 90 V to 264 V
Power management		Yes
Connections		Drive unit, power pack, USB, MarConnect
Protection class	M 300 / M 300 C	IP 42
	RD 18 / RD 18 C	IP 40
Temperature range for storage		-15°C to +55°C (5°F to 131°F)
Temperature range for operation		+5°C to +40°C (41°F to 104°F)
Relative humidity		30 % to 85 %
Dimensions (L x W x H)	M 300 / M 300 C	190 x 140 x 75 mm (7.5" x 5.5" x 3")
Dimensions (L x W x H)	RD 18	130 x 70 x 50 mm (5.1" x 2.7" x 2")
Dimensions (L x dia.)	RD 18 C	139 x 26 mm (5.5" x 1")
Dimensions (L x W x H)	RD 18 C*	82 x 34 x 59 mm (3.2" x 1.3" x 2.3")
Weight	M 300 / M 300 C	ca. 1 kg
	RD 18	ca. 300 g
	RD 18 C	ca. 165 g
	RD 18 C*	ca. 55 g
<b>Order no.</b>	<b>M 300 Set</b>	<b>6910401</b>
<b>Order no.</b>	<b>M 300 C Set</b>	<b>6910431</b>

\* Handheld Vee block

## Mobile Surface Roughness Measuring Instrument MarSurf M 300

### Drive Unit MarSurf RD 18

#### Bluetooth Technology

**Unique:** Cable-free connection between evaluation unit and drive unit!

A further advantage is the connection of several drive units to only one evaluation unit.



#### Features

- The well-proven PHT-skid probes are implemented in the drive unit.
- Can be connected via a cable
- Supplied with: Drive unit RD 18 with integrated roughness standard

#### Technical Data

Tracing direction	Longitudinal
Traversing length as per DIN/ISO	adjustable on M 300 1.75 mm, 5.6 mm, 17.5 mm (0.07", 0.22", 0.7")
as per EN ISO 12085	1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm
Traverse speed	0.5 mm/s
Dimensions (w/o pick-up protection)	dia. 24 mm, L = 112 mm
Bluetooth range	up to 4 m

**Order no.**

**6910403**

### Drive Unit MarSurf RD 18 C2 for transverse tracing for M 300 C / PS 10



#### Features

- During the manufacturing process, surface measurements of work pieces usually require special tools to find the right solution for a particular task; e.g. transverse scanning on a crank or camshafts, or measuring bearings. For such tasks the drive unit RD 18 C2 is available for transverse scanning.
- The well-proven PHT-skid probes are implemented in the drive unit.
- The drive unit RD 18 C2 is attached in the same way as the RD 18. By being able to use both types of drive units the range of application offered by the mobile MarSurf M 300 C and MarSurf PS 10 is broadened.
- Supplied with: Drive unit RD 18 C2, pick-up protection with prismatic underside, pick-up protection and a screwdriver

#### Technical Data

Tracing direction	Transverse
Traversing length as per DIN/ISO	adjustable on M 300 1.75 mm, 5.6 mm (0.07", 0.22")
as per EN ISO 12085	1 mm, 2 mm, 4 mm
Traverse speed	0.1 mm/s and 0.5 mm/s
Dimensions (w/o pick-up protection)	dia. 24 mm, L = 142 mm

**Order no. RD 18 C2**

**6910426**

**Order no. chuck**

**6850738**

**RD 18 C2 for Ø 5 mm to Ø 80 mm**

## Optional probes for MarSurf PS 10 / M 300 / M 300 C

### Probes for various measuring tasks

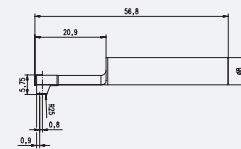
The P-probes are characterized by special construction features:

- Stylus tip geometry as per EN ISO 3274, standard  $2\text{ }\mu\text{m}/90^\circ$
- Measuring force of approx.  $0.7\text{ mN}$  (as per EN ISO 3274)
- Reliable inductive converter
- Robust, rigid housing
- Self-aligning, elastic bearings
- Reliable plug and socket connections

### Pick-up PHT 6-350 (standard probe)



System	Single-skid pick-up with spherical skid
Skid radius	in traversing direction $25\text{ mm}$ (.984"), at right angles $2.9\text{ mm}$ (.114")
Contact point	$0.8\text{ mm}$ (.0315") in front of the stylus
Meas. range	$350\text{ }\mu\text{m}$ (.014")
Specification	for plane surfaces, bores with a dia. larger than $6\text{ mm}$ (.236") and a max. depth of $17\text{ mm}$ (.669"), grooves with a width larger than $3\text{ mm}$ (.118"); min. workpiece length = traversing length + $1\text{ mm}$ (.0394")



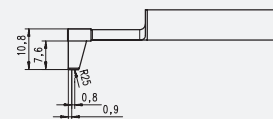
**Order no. 6111520\***

\* Included in the scope of supply

### Pick-up PHT 11-100



System	Single-skid pick-up with spherical skid
Skid radius	in traversing direction $25\text{ mm}$ (.984"), at right angles $2.9\text{ mm}$ (.114")
Contact point	$0.8\text{ mm}$ (.0315") in front of the stylus
Meas. range	$100\text{ }\mu\text{m}$ (.00394")
Specification	for plane surfaces, bores with a dia. larger than $11\text{ mm}$ (.433") and a max. depth of $14\text{ mm}$ (.551"), grooves with a width larger than $2.5\text{ mm}$ (.098")

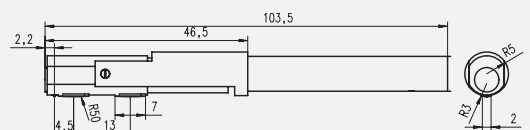


**Order no. 6111524**

### Pick-up PT 150



System	Dual-skid pick-up with spherical skid
Skid radius	in traversing direction $50\text{ mm}$ (1.969"), at right angles $3\text{ mm}$ (.118")
Contact point	$4.5\text{ mm}$ (.177") in front of the stylus
Meas. range	$150\text{ }\mu\text{m}$ (.006")
Specification	for measurements on metal sheets and roller surfaces according to DIN EN 10049 (SEP). min. workpiece length = tracing length + $5\text{ mm}$ (.197")



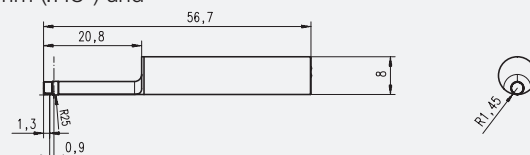
**Order no. 6111523**

## Pick-up PHT 3-350



System Single-skid pick-up with spherical skid  
 Skid radius in traversing direction 25 mm (.984"),  
 at right angles 1.45 mm (.0571")  
 Contact point 0.9 mm (.0354") in front of the stylus  
 Meas. range 350  $\mu\text{m}$  (0.014")  
 Specification for bores with a dia. larger than 3 mm (.118") and  
 a max. depth of 17 mm (.669 ")  
 min. workpiece length =  
 traversing length + 1 mm (.0394")

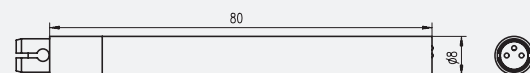
Order no. 6111521



## Pick-up extension PHT (80 mm) for P probes



Order no. 6850540

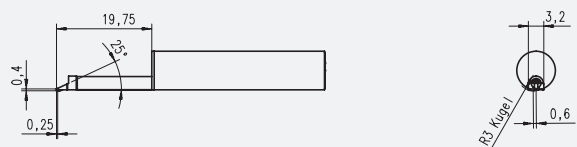


## Pick-up PHTF 0.5-100



System Single-skid pick-up with spherical skid  
 Skid radius in traversing direction 25 mm (.984"),  
 at right angles 1.45 mm (.0571")  
 Contact point 0.6 mm (.0236") at the side the stylus  
 Meas. range 100  $\mu\text{m}$  (.00394")  
 Specification e.g. for gear tooth flanks with a modulus larger than 0.8  
 Calibration via Geometric standard PGN

Order no. 6111522

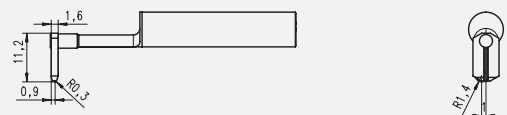


## Pick-up PHTR-100



System Single-skid pick-up with lateral, spherical skid  
 Skid radius in traversing direction 0.3 mm (.012")  
 stylus radius 2  $\mu\text{m}$  (.0008"), 90°  
 Specification for measurements on concave and convex surfaces  
 Calibration via Geometric standard PGN

Order no. 6111525





## MarSurf PS 10 / M 300 Accessories

### Measuring stand MarStand 815 GN

MarStand measuring stands offer high stability which ensures precise measurements.

- Rugged base ensures both maximum stability and sturdiness
- The upper side of the base has a convenient hand grip
- Support arm can be finely adjusted

total height with base	Order no.
300 mm	4413000
500 mm	4413001
750 mm	4413005



### Stand adapter for MarSurf PS 10 / RD 18 C

Mount for cylindrical drive unit PS 10 / RD 18 C on measuring stand / height measuring instrument  
Ø 8 mm

	Order no.
Stand adapter	6910435



### Hand-held support for MarSurf PS 10 / RD 18 C

The hand-held support with its multiple contact surfaces offers various application possibilities.

	Order no.
Hand-held support for MarSurf PS 10 / RD 18 C	6910434
Height adjustment device suitable for hand-held (pair)	6850720



### Pick-up protection for PS 10 / RD 18 / RD 18 C

	Order no.
Pick-up protection, steel	6850716
Pick-up protection with header vee-block, steel	6850715
Pick-up protection, plastic*	7028532
Pick-up protection header vee-block, plastic**	7028530

\* With M 300 Set included in the scope of supply

\*\* With M 300 and M 300 C Set included in the scope of supply



Illustration: 7028532

## MarSurf PS 10 / M 300 / M 300 C Accessories

### Mount for measuring stand ST

Accessories for measuring stands (these are not included in the measuring stands scope of supply):

#### Mount for MarSurf PS 10 / RD 18

The drive unit RD 18 can in the mount be pivoted and locked in any position ( $\pm 15^\circ$ )

**Order no.** 6910201

#### Mount for MarSurf RD 18 C

The drive unit RD 18 C can in the mount be pivoted and locked in any position ( $\pm 15^\circ$ )

**Order no.** 6851304

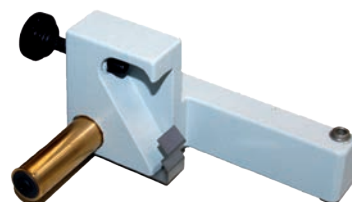


Illustration: 6910201

### Measuring stand ST

#### Measuring stand ST-D

Height adjustment 0 to 300 mm, with a hand wheel  
 Dimensions (L x W x H) 175 x 190 x 385 mm  
 Weight ca. 3 kg

**Order no.** 6710803

#### Measuring stand ST-F

Grantee plate. The required measuring height can be adjusted with a hand wheel for convenient and accurate positioning of the drive unit.

Height adjustment 0 to 300 mm, with a hand wheel  
 Dimensions (L x W x H) 400 x 300 x 415 mm  
 Weight ca. 35 kg

**Order no.** 6710806

#### Measuring stand ST-G

Grantee plate with a 10 mm (.39 in) T-slot for mounting work pieces. The required measuring height can be adjusted with a hand wheel for convenient and accurate positioning of the drive unit.

Height adjustment 0 to 300 mm, with a hand wheel  
 Dimensions (L x W x H) 500 x 300 x 415 mm  
 Weight ca. 35 kg

**Order no.** 6710807



## MarSurf PS 10 / M 300 Accessories

### Mounting bracket for Digimar 814 SR

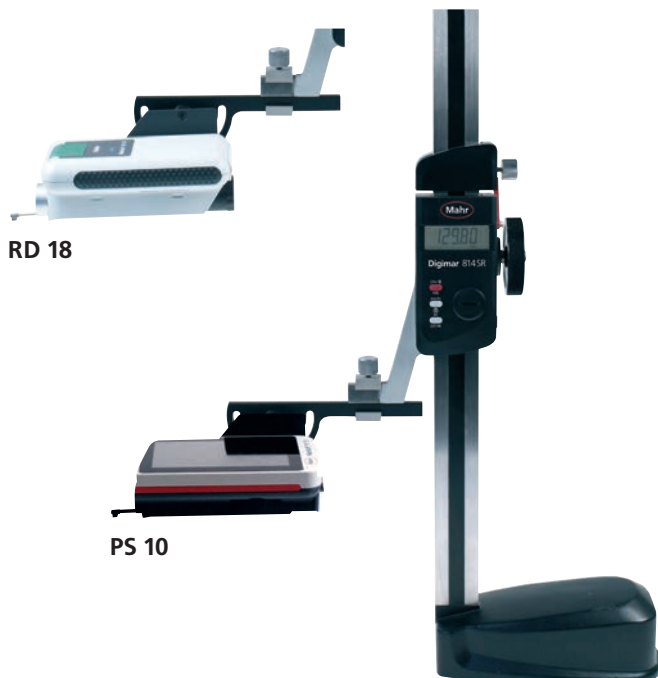
**814 Sh** Adjustable mounting bracket to connect the PS 10 / RD 18 to a 814 SR

Order no.

**2247086**

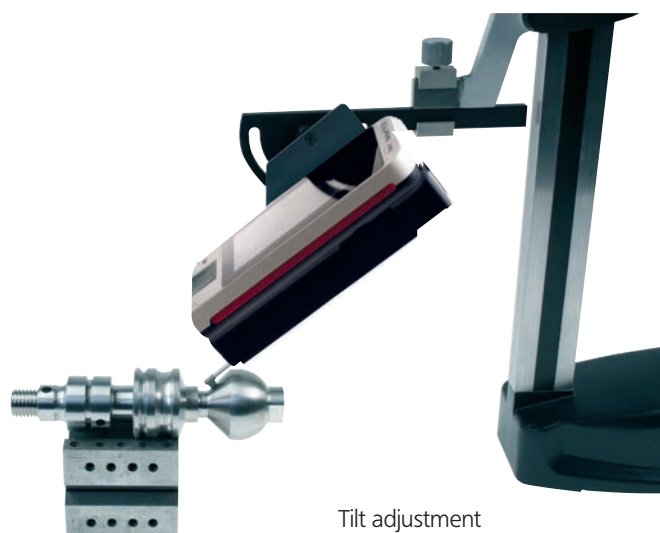


814 Sh



RD 18

PS 10



Tilt adjustment

## Height Measuring and Scribing Instrument Digimar 814 SR for MarSurf PS 10 / RD 18



**REFERENCE**



### Functions:

RESET (Set the display to zero for relative measurement), ABS (Switch between relative and absolute measurement), mm/inch, Reference-Lock/Unlock, PRESET (To enter a numerical value), DATA (Data transmission via connection cable), Auto-ON/OFF

- Max. measuring speed 1.5 m/s (60"/s)
- High contrast Liquid Crystal Display with 12 mm high digits
- Sturdy heavy-duty base, easy to handle
- Hardened and lapped contact surface which produce both a smooth and even movement
- Slide and beam made of hardened stainless steel
- Hand crank for positioning and measuring
- Fine adjustment
- Locking screw
- Interchangeable scriber point, carbide tipped

Supplied with:  
Scriber point, cardboard box, battery and operating instructions

Order no.

**814 SR** Measuring range 350 mm

**4426100**

**814 SR** Measuring range 600 mm

**4426101**

## MarSurf PS 10 / M 300 / M 300 C Accessories

### Vee-block PP



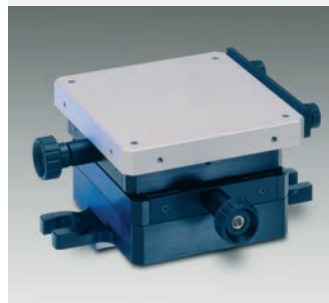
With four different prisms for mounting axis-symmetrical workpieces with diameters from 1 mm to 160 mm (.0394" to 6.30").

Dimensions (L x W x H)  
80 x 100 x 40 mm  
3.91" x 3.15" x 1.58"  
Weight 1.5 kg / 3.31 lb

Including clamping springs for holding light workpieces in the prism.

**Order no. 6710401**

### XY table CT

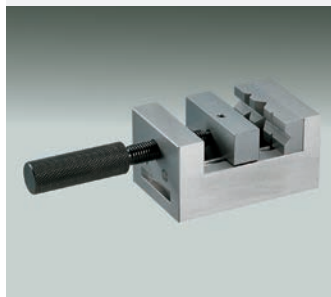


For mounting and aligning workpieces. Can be adjusted in two coordinates by 15 mm (.591").

Table surface 120 x 120 mm  
Table surface 4.728" x 4.728"  
with two brackets.

**Order no. 6710529**

### Parallel vice PPS



For mounting rectangular and cylindrical workpieces

Jaw width 70 mm / 2.76"  
Jaw height 25 mm / .984"  
Span 40 mm / 1.58"  
Total height 58 mm / 2.28"  
Weight 2 kg / 4.41 lb

**Order no. 6710604**

### Mini Precision Vise 109 PS as set



With mini precision vises. Depending on the version with prism jaws, carrier plates, stands and mini dividing attachment. Included in a plastic case

Width of jaws 15 / 25 / 35 mm

**Order no. 4246819**

### Roughness standard PRN 10



With Mahr calibration certificate. Roughness standard with turned profile, chromed. Profile depth ca. 10  $\mu\text{m}$  (.394  $\mu\text{inch}$ ), for checking the roughness measuring station.

**Order no. 6820420\***

*\* With the M 300 C Set this is included in the scope of supply.*

### Geometric Standard PGN



Surface standard with sinusoidal groove profile for dynamic monitoring of the roughness measuring station. Ra, Rz, Rmax. Optical flat. The following versions are available:

		Order no.
<b>PGN 1</b>	Profile depth ca. 1.5 $\mu\text{m}$ (60 $\mu\text{inch}$ ), groove distance ca. 0.10 mm (0.0039")	<b>6820602</b>
<b>PGN 3</b>	Profile depth ca. 3 $\mu\text{m}$ (120 $\mu\text{inch}$ ), groove distance ca. 0.12 mm (0.0047")	<b>6820601</b>
<b>PGN 10</b>	Profile depth ca. 10 $\mu\text{m}$ (394 $\mu\text{inch}$ ), groove distance ca. 0.20 mm (0.0079")	<b>6820605</b>

<b>Mahr-calibration certificate</b> for PGN	<b>9027715</b>
<b>DKD (German Calibration Service) calibration certificate</b> for PGN	<b>6980102</b>

## MarSurf PS 10 / M 300 / M 300 C Accessories

### MarCom Software for PS 10 / M 300 / M 300 C

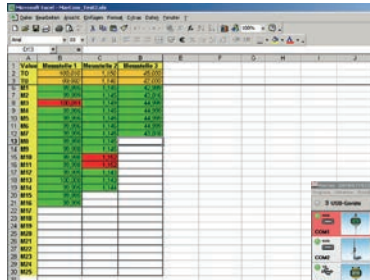
#### Software MarCom Professional

- Measured values can be directly transferred into MS Excel (from version 97) or into a text file or key code
- The measured values from each instrument can be sent to a different column, table or folder in Excel
- Data transmission via USB and/or 2 serial COM interfaces
- Flexible and comfortable data transmission: you can either press the "Data" button on the measuring instrument or on the data cable; via a computer keyboard, timer; or by activating a foot switch connected to an USB interface

#### Software MarCom Standard

(included with the USB Data Cable, for free download)

Features and system requirements are identical to MarCom Professional, except that it only has one USB and one serial COM interface.



Order no.

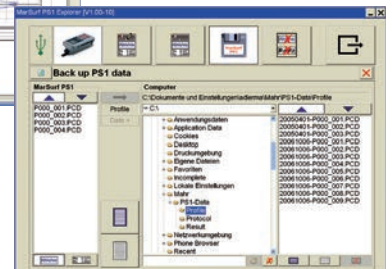
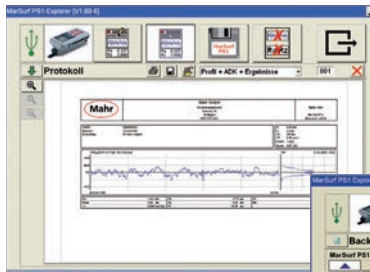
Software MarCom Professional  
Data Cable 16 EXu incl. MarCom Standard

4102212  
4102357

### Software MarSurf M 300 Explorer

- The Software can be used to secure and document your measuring results and profiles (simply use Drag & Drop)
- The stored data can for example, be printed out on a A4 sheet or in any other format
- The measuring data can be displayed in different forms: profile and results, results, profile + MRC + results, statistics, and much more

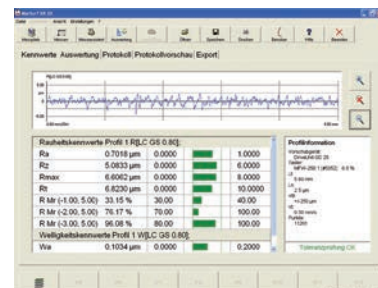
Order no. 6910205



### Evaluation Software MarSurf XR 20

- An easy way to evaluate and document data based on MarWin
- Evaluation and documentation of the results can be conducted independently and away from the measuring station
- Filing including documentation is made simple
- Workstation version available

Order no. 6299054





## MarSurf Available Parameters

### Parameters for MarSurf PS 10 / M 300 / M 300 C

Parameter	Output	Meaning	Standards
<b>Ra</b>	RA	Arithmetic mean roughness Ra	
<b>Rq</b>	RQ	Root mean square roughness Rq	
<b>Rz Ry (JIS)</b> equiv. to <b>Rz</b>	RZ	Mean peak-to-valley height Rz (acc. to ISO) or Ry (acc. to JIS)	DIN EN ISO 4287 : 1998; ISO 4287 : 1997; JIS B 0601 : 2001
<b>Rz (JIS)</b>	RZJ	Mean height Rz of profile elements	JIS B 0601 : 2001 (früher: ISO 4287/1 : 1984)
<b>Rmax</b>	RMAX	Maximum roughness depth Rmax	DIN 4768 : 1990
<b>Rp</b>	RP	Mean profile peak height Rp	DIN EN ISO 4287 : 1998; ISO 4287 : 1997
<b>RpA (ASME)</b>	RP	Maximum profile peak height Rp	ASME B46
<b>Rpm (ASME)</b>	RPM	Mean profile peak height Rp	
<b>Rpk</b>	RPK	Reduced peak height Rpk	
<b>Rk</b>	RK	Core roughness depth Rk	
<b>Rvk</b>	RVK	Reduced valley depth Rvk	
<b>Mr1</b>	MR1	Smallest material ratio Mr1 of roughness core profile	
<b>Mr2</b>	MR2	Largest material ratio Mr2 of roughness core profile	DIN EN ISO 13565-2 : 1998
<b>A1</b>	A1	Material-filled profile peak area A1	
<b>A2</b>	A2	Lubricant-filled profile valley area A2	
<b>Vo</b>	VO	Oil-retaining volume Vo	
<b>Rt</b>	RT	Total height Rt of R-profile	DIN EN ISO 4287 : 1998
<b>R3z</b>	R3Z	Arithmetic mean third peak-to-valley R3z	DB N 31007 : 1983
<b>RPc</b>	RPC	Peak count RPc is the number of profile elements (see Rsm) per cm that exceed the set upper profile section level c1 and then fall short of the lower c2.	EN 10049 : 2005; ASME B46
<b>Rmr tp (JIS, ASME) equiv. to <b>Rmr</b></b>	RMR	Material ratio Rmr	DIN EN ISO 4287 : 1998; ISO 4287 : 1997; JIS B 0601 : 2001
<b>RSm</b>	RSM	Mean width RSm of profile elements (previously: groove spacing)	
<b>Rsk</b>	RSK	Skewness Rsk of the profile	DIN EN ISO 4287. ASME B46.1
<b>S</b>	S	Mean spacing S of local profile peaks	JIS B 0601 : 1994
<b>CR</b>	CR	Zone width CR of the profile peak zone (French „critère de rodage“) (dependent on intersection lines Scr1 and Scr2)	
<b>CF</b>	CF	Zone width CF of the profile core zone (French „critère de fonctionnement“) (dependent on intersection lines Scf1 and Scf2)	cf. Pδc (Pdc) in: DIN EN ISO 4287 : 1998 ISO 4287 : 1997 JIS B 0601 : 2001
<b>CL</b>	CL	Zone width CL of the profile valley zone (French „critère de lubrification“) (dependent on intersection lines Scl1 and Scl2)	
<b>R</b>	R	Mean depth R of roughness motifs	ISO 12085 : 1996
<b>Ar</b>	AR	Mean width Ar of roughness motifs	
<b>Rx</b>	RX	Maximum depth Rx of profile irregularity	

### Additional parameters for MarSurf M 300 / M 300 C

<b>Rv</b>	Rv	Mean profile valley depth Rv	DIN EN ISO 4287 : 1998 ISO 4287 : 1997 JIS B 0601 : 2001
<b>W</b>	W	Mean depth W of waviness motifs (dependent on operators A and B)	DIN EN ISO 12085 : 1998 ISO 12085 : 1996 JIS B 0631 : 2000

SURFACE  
MEASUREMENT



SHAFT  
MEASUREMENT



HEIGHT  
MEASUREMENT



CALIPERS &  
MICROMETERS



INDICATORS &  
COMPARATORS



AIR  
GAGING



SNAP  
GAGES



FORM  
MEASUREMENT



PRECISION LENGTH  
MEASUREMENT



|  
- 0 +



E X A C T L Y



**Mahr Federal Inc.** 1144 Eddy Street, Providence, RI 02905  
1-800-343-2050 · [www.mahr.com](http://www.mahr.com)