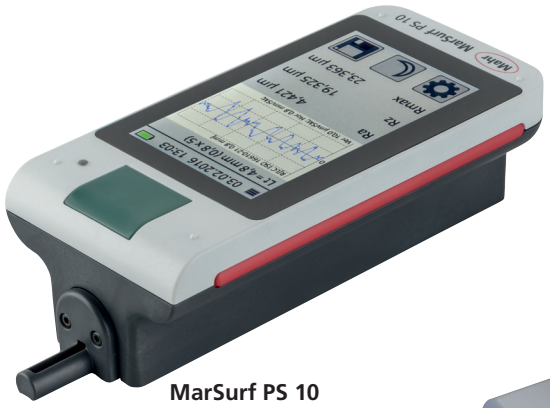
MarSurf. Surface Measuring Instruments

MarSurf. Surface Metrology System for all your industrial requirements

THE RIGHT SOLUTION FOR EVERY TASK

Integrated calibration standard

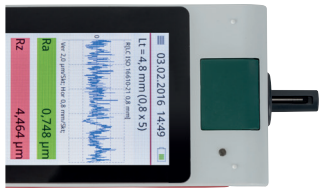
No external calibration standard necessary (patent pending). More secure standardized measurements.
A standard probe is integrated into MArSurf M 300 to check the default button – you can be sure that your results are correctly.



MarSurf PS 10

Probe with removable pick-up protection

Standardize Measuring, 2 µm diamond stylus tip, Measuring force 0,7 mN. Probe with open blade for various measurement tasks are available.



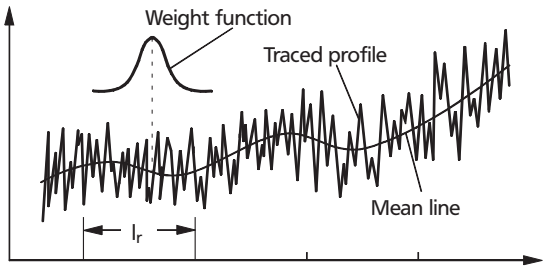
Bluetooth-Technology

Cable-free connection between evaluation unit and drive unit!
A further advantage is the connection of several drive units to only one evaluation unit.

MarSurf M 300 C

Automatic choice of cut off ...

…and tracing length ensures the right evaluation (also for unskilled workers)



Profil filters seperate into long wave and short wave components. The λc profile filter seperates the roughness profile from lang wave components (e. g. waviness). **R-profile** (roughness profile) represents the deviations of the primary profile from the mean line of the λc profile filter. When presenting the roughness profile, the mean line is the zero line.

Choice of Wavelength

EN ISO 4288, ASME B46.1

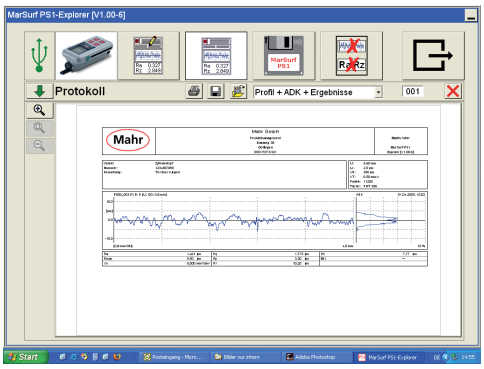
Periodic profiils	Non periodic profiils		Cut off wave-length	Single/ Total measu-ring range
R_{sm} (mm)	R_z (µm)	R_a (µm)	λ_c (mm)	l_r / l_n (mm)
> 0,013 to 0,04	to 0,1	to 0,02	0,08	0,08 / 0,4
> 0,04 to 0,13	> 0,1 to 0,5	> 0,02 to 0,1	0,25	0,25 / 1,25
> 0,13 to 0,4	> 0,5 to 10	> 0,1 to 2	0,8	0,8 / 4
> 0,4 to 1,3	> 10 to 50	> 2 to 10	2,5	2,5 / 12,5
> 1,3 to 4	> 50 to 200	> 10 to 80	8	8 / 40

MarSurf M 300

Integrated Memory

Large memory to store the results and profiles

The Software **„MarSurf M 300 Explorer“** can be used to secure and document your measuring results and profiles (simply use Drag & Drop)



Overhead Measuring

Mobile Roughness Measuring Instrument MarSurf Pocket Surf IV

Application:

A pocket-sized economically priced, completely portable instrument which performs traceable surface roughness measurements on a wide variety of surfaces; can be used confidently in production, on the shop floor and in the laboratory.

- Durable cast aluminum housing to provide years of accurate and reliable surface finish gaging
- Can be used to measure any one of four, selectable, parameters: Ra, Rmax/Ry, Rz
- Review any of the parameters after the measurement is complete
- Selectable traverse length 1, 3 or 5 cut-offs of 0.8 mm/0.030"
- Operates in any position – horizontal, vertical, and upside down
- Four switchable probe positions – axial (folded) or at 90°, 180° or 270°
- Even difficult-to-reach surfaces such as inside and outside diameters are accessible
- MarConnect data output for easy SPC processing that is compatible with the most common data processing systems
- Easy-to-read LCD readout presents the measured roughness value, in micro inches or micro-meters, within half a second after the surface is traversed
- Out-of-range (high or low) and "low battery" signals are displayed
- Improved digital calibration process eliminates scandrivers and potentiometers to simplify and enhance the calibration process
- Improved battery life with easy to replace standard 9V battery

Technical Data

Order no.		2191800	2191802
Product type		Pocket Surf IV	
Parameters		Ra, Ry, Rmax, Rz	
Stylus		10 µm /.0004"	5 µm / .0002"
Data interface:		RS232C, USB	
Rechargeable batteries		Battery, 9V	
H x W x D	**mm**	140 x 76 x 6,35 mm	
Weight	**kg**	1.03	
Measuring principle		Skid probe system	
Probe		Piezoelectric skid probe	
Measuring range	**mm**	Ra –6.35 µm / 250 Ry, Rmax, Rz –25.3 µm / 999 µin	Ra –6,35 µm / 250 Ry, Rmax, Rz –25,3 µm / 999 µin
Profile resolution		0,01 µm / 1 µin	
Number n of sampling length according to ISO/JIS		Selected: 1 –5	
Measuring force	**N**	15 mN	

Mobile Roughness Measuring Instrument MarSurf Pocket Surf IV

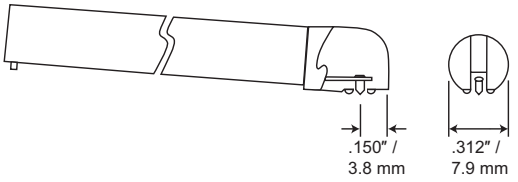
Accessories

Order no.	Product description	Product type
2008010	General purpose probe, 10µm/90°	EGH–1019
2213247	Transverse chisel probe, 10 µm	EGH–1020-W1
2213248	Parallel chisel probe, 10 µm	EGH–1020-W2
2213249	Small bore probe, 10µm/90°	EGH–1021
2213250	General purpose probe, 5µm/90°	EGH–1026
2213251	Small bore probe, 5µm/90°	EGH–1027
2213252	Groove bottom probe, 10µm/90°	EGH–1028
2008024	Compact height stand	EAS–2496
2008025	Universal Stand	EAS–2426
2008026	Column clamp and bracket for EAS–2426	EAS–2567
2008027	Adapter plate	EPL–1681
2008023	Portable V-fixture	EAS–2421
2008022	Bottom plate	EAS–2584
2008021	Bore adapter kit	EAS–2839
2008020	V-adapter kit	EAS–2739
2008030	Certified specimen, incl. test certificate	PMD–90101
2008031	Precision reference specimen, without certificate	EMD–90010
4102357	Data Connection Cable USB	16 EXu
4102410	Data Connection Cable RS232C	16 EXr
4102212	Software interface	MarCom Prof. 5.1
2238983	Certified reference speciman, double patch, 0,4 µm / 16 u" - 3,0 µm / 118 u", certified for Ra, Rz, Rmax, and Sm	
2008143	Certified Reference speciman, sinusoidal, single patch, certified for Ra 3,0 / 118 u", Rz 9,75 µm / 386 u" and Rmax 9,8 µm / 386 u"	

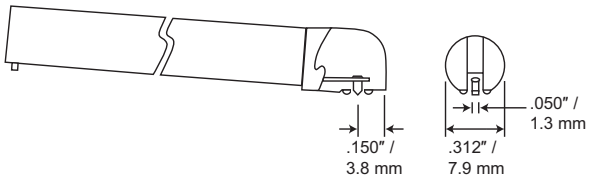
EAS–2421

EAS–2839

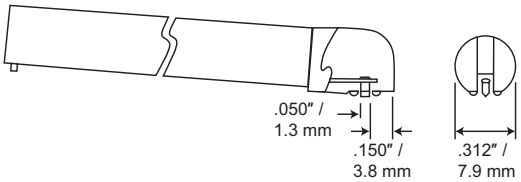
EAS–2739



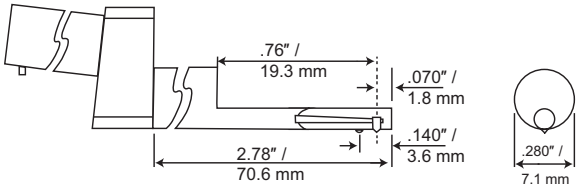
EGH-1019



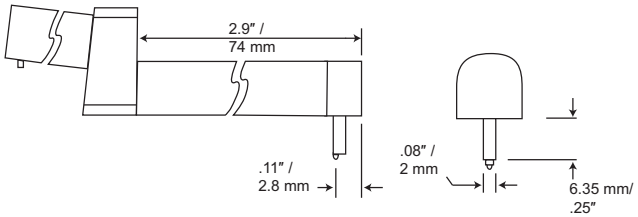
EGH-1020



EGH-1020W2



EGH-1023



EGH-1028

Mobile Roughness Measuring Instrument MarSurf PS 10

Application:

- For shafts and housing components
- For large machines
- For large workpieces
- For milled and turned parts
- For ground and honed workpieces
- On the production line or directly on the machine; ideal for rapid testing of the surface roughness of a workpiece in or on the machine.

Technical Data

Order no.		6910230	6910232
Product type		PS 10	
Parameters		Ra, Rq, Rz (Ry (JIS) is equivalent to Rz), Rz (JIS), Rmax, Rp, RpA (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, RPc, Rmr (tp (JIS, ASME) is equivalent to Rmr), RSm, RSk, RS, CR, CF, CL, R, Ar, Rx	
Stylus		2 µm	5 µm
Calibration function		dynamic; Ra, Rz, Rsm	
Storage capacity		min. 1350 profiles, min. 500,000 results, min. 250 PDF records, expandable to 32 GB with microSD card	
Languages:		German, English, French, Italian, Spanish, Portugese, Dutch, Swedish, Russian, Polish, Czech, Japanese, Chinese, Korean, Hungarian, Turkish, Romanian	
Other		Lock/password protected, date/time	
Data interface:		USB, MarConnect (RS232), microSD Slot for SD / SDHC-Cards up to 32 GB	
System of protection		IP 40	
Rechargeable batteries		Lithium-ion battery, min. 1200 measurements	
Wide range power supply		100 to 264 V	
H x W x D	mm	160 mm x 77 mm x 50 mm	
Weight	kg	0.49	
Measuring principle		Stylus method	
Probe		inductive skidded probe	
Measuring range	mm	350 µm	
Profile resolution		8 nm	
Filter according to ISO/JIS		Gaussian filter as per ISO 16610–21 (formerly ISO 11562), special filter as per DIN EN ISO 13565–1, Lambda s filter as per DIN EN ISO 3274 (can be switched off)	
Cutoff lc according to ISO/JIS		0,25 mm, 0,8 mm, 2,5 mm, automatic filter detection	
Number n of sampling length according to ISO/JIS		selectable: 1 to 16	
Short stroke under ISO/JIS		selectable	
Traversing length Lt according ISO/JIS		1.5 mm, 4.8 mm, 15 mm, N x Lc, variable, automatic	
Traversing length according ISO 12085 (MOTIF)		1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm	
Evaluation lenth ln according to ISO/JIS		1.25 mm, 4.0 mm, 12.5 mm	
Measuring force	N	0.75 mN	

„sMAHRtSurf" - Simple, smart and mobile

- Compact roughness measuring instrument for mobile use
- Simple and intuitive to use: As easy to use as a smart phone
- Large, illuminated 4.3" TFT touch display
- Adjustable display
- Start button also serves as the Home button for direct access to the start screen
- Data backup as TXT, X3P or PDF file
- Creation of completed PDF measuring records in the measuring device
- Customer-specific comments for the PDF measuring record are entered directly into the MarSurf PS 10
- Power supply independent operation: Over 1200 measurements without having to recharge the instrument
- An all in one solution. Small and lightweight (approx. 500 g)
- Instrument flexibility: Removable drive unit
- All the measuring positions you need: horizontal, vertical, upside down
- 31 surface parameters offer the same range of functions as a laboratory instrument.
- Error free operation thanks to an integrated, removable roughness standard
- Quick access to your frequently used functions via the Favorites list in the display
- Very short activation time: results available within seconds
- Automatic cutoff selection, so even non-specialists can be sure of getting the correct measuring results
- NEW: Additional version with transverse drive unit MarSurf PS 10 C2 available (article number 6910235)
- **Scope of delivery:**
- MarSurf PS 10 unit
- Drive unit (detachable)
- 1 standard probe conforming to standards
- Built-in rechargeable battery
- Roughness standard integrated into housing (detachable), including Mahr calibration certificate
- Probe protection
- Charger / 3 adapters
- Operating instructions
- Carry case with shoulder strap
- USB cable
- Extension cable for drive unit (length 1.2 m)
- Height adjustment (integrated)
- **Software:** MarCom Professional free download:**www.mahr.com/marcom**(only for Mahr data cables and wireless systems with USB and RS232 interface)

Mobile Roughness Measuring Instrument MarSurf PS 10

Accessories

Order no.	Product description	Product type
6850540	PHT pick-up extension 80 mm	PHT (80 mm)
6111520	Standard probe 2 µm	PHT 6–350
6111526	Standard probe 5 µm	PHT 6–350/ 5µm
6111527	Standard probe 10 µm	PHT 6–350/ 10µm
6111521	Probe for bores with a dia. larger than 3 mm	PHT 3–350
6111524	Probe for grooves	PHT 11–100
6111525	Probe for concave and convex surfaces	PHTR–100
6111522	Probe for gear tooth flanks	PHTF 0.5–100
6111523	Probe for metal sheets	PT 150
6850715	Pick-up protection with header V-block, steel	PHT-ts4
7028530	Pick-up protection header V-block, plastic	PHT-ts3
6910209	Mount MarSurf PS 10 on measuring stand ST	ST-a3
6910435	RD 18 C / PS 10 upright holder for cylindrical drive unit, Ø 8 mm	ST-a2
6710803	Measuring stand 300 mm with cast iron base	ST-D
6710806	Measuring stand 300 mm with granite plate	ST-F
6710807	Measuring stand 300 mm with granite plate and T-slot	ST-G
2247086	Adjustable mounting bracket to connect to 814 SR	814 Sh
4426100	Height Measuring and Scribing Instrument	814 SR
4426101	Height Measuring and Scribing Instrument	814 SR
4102410	Data connection cable RS232C	16 EXr
4102357	Data connection cable USB	16 EXu
4102231	Transmitter	16 EWe
4102230	Receiver	e-Stick
6710401	V-block	PP
6710604	Parallel vice	PPS
6710529	XY Table	CT 120
4246819	Miniature precision vises, set	109 PS
6820420	Roughness standard with Mahr calibration certificate, profile depth 10 µm	PRN 10
6820601	Geometric Standard with sinusoidal groove profile, Profiltiefe 3 µm	PGN 3
6820602	Geometric Standard with sinusoidal groove profile, Profiltiefe 1,5 µm	PGN 1
6820605	Geometric Standard with sinusoidal groove profile, Profiltiefe 10 µm	PGN 10
9027715	Mahr-calibration certificate for PGN Standard	PGN
6980102	DKD (German Calibration Service) calibration certificate for PGN Standard	PGN
4413000	Indicator Stand with Base	815 GN
4413001	Indicator Stand with Base	815 GN
4413005	Indicator Stand with Base	815 GN
4416000	Indicator Stand with Magnetic Base	815 MA
6299054	Evaluation Software	SW XR 20

ST-D

814 Sh

ST-F

ST-G

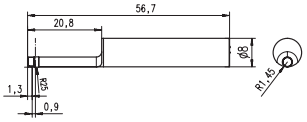
814 SR

109 PS

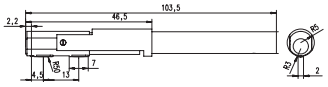
e-Stick

16 EWe

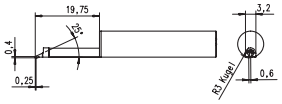
PHTR–100



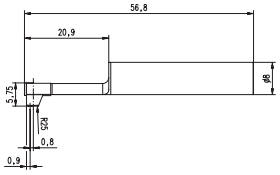
PHT 3–350



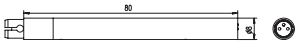
PT 150



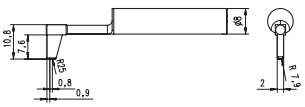
PHTF 0.5–100



PHT 6–350;PHT 6–350/ 5µm



PHT (80 mm)



PHT 11–100

Mobile Roughness Measuring Instrument MarSurf M 300

RS232C USB Digimatic

Application:

- For shafts and housing components
- For large scale machines
- For large workpieces
- For 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.

Technical Data

Order no.		6910401	6910411
Product type		M 300	
Parameters		Ra, Rz (Ry (JIS) is equivalent to Rz), Rz (JIS), Rq, Rmax, Rp, RpA (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr (tp (JIS, ASME) is equivalent to Rmr), RSm, RSk, S, CR, CF, CL, R, Ar, Rx, Rv	
Horizontal scale		dep. on cutoff	
Log contents		R-profile, MRK,P-profile (MOTIF),results	
Stylus		2 µm	5 µm
LC Display		high resolution color display, 3.5", 320 x 240 pixel	
Printing		automatic/manual record with time	
Printer		thermal printer, 384 points/horizontal line, 20 characters/line	
Printing speed		approx. 6 lines/second corresponds to approx. 25 mm/s (1 in/s)	
Thermopaper		Ø 40.0 mm–1.0 mm, width 57.5 mm–0.5 mm, coated	
Calibration function		dynamic	
Password protection		yes	
Lock for device settings		yes	
Languages:		German, English, French, Italian, Spanish, Portugese, Dutch, Swedish, Russian, Polish, Czech, Japanese, Chinese, Korean, Hungarian, Turkish	
Power Management		yes	
Interfaces		drive unit, power pack, USB, MarConnect	
Data interface:		RS232C, USB, Digimatic, USB A	
Relative humidity		30 % to 85 %	
System of protection		M 300 = IP 42, RD 18 = IP 40	
Operating temp. range		+5 °C to +40 °C	
Temperature range for storage		–15 °C to +55 °C	
Power supplied		NiMH battery, capacity: approx. 1,000 measurements (dep. on number and length of record printouts), plug-in power pack with three mains plugs, for input voltages from 90 V to 264 V	
(L x W x H) for Drive unit		130 mm x 70 mm x 50 mm	
(L x W x H) for Measuring instrument .		190 mm x 140 mm x 75 mm	
Weight	kg	4,1	
Measuring principle		stylus method	
Probe		Inductive skidded probe	
Measuring range	mm	350 µm, 180 µm, 90 µm (automatic switching)	
Profile resolution		8 nm	
Filter according to ISO/JIS		Gauß-Filter, Ls-Filter	
Cutoff lc according to ISO/JIS		0,25 mm, 0,8 mm, 2,5 mm	
Number n of sampling length according to ISO/JIS		selectable: 1–5	
Short stroke under ISO/JIS		selectable	
Traversing length Lt according ISO/JIS		1,75 mm, 5,6 mm, 17,5 mm	
Evaluation lenth ln according to ISO/JIS		1.25 mm, 4 mm, 12.5 mm	1,25 mm, 4 mm, 12,5 mm
Contacting speeds		0.5 mm/s	
Measuring force	N	approx. 0.7 mN	
Weight Drive unit		approx. 300 g	
Weight Measuring instrument		approx. 1 kg	

- MarSurf 300, the first portable roughness measuring unit with the option of wireless (Bluetooth) connection between the evaluation unit and drive unit.
- Bluetooth wireless connection
- Easy to use, with high-resolution color display and ATM-style user guidance
- Integrated standard in drive unit
- Large measuring range, 350 µm
- Automatic profile detection and corresponding selection of filter and traversing length conforming to standards
- Integrated memory for the results of up to 40,000 measurements and 30 profiles
- 16 languages (including 3 Asian languages)
- Integrated thermal graphics printer with high print quality
- Print the R-profile via the thermal graphics printer
- Log printed either by pressing a button or automatically
- Data transfer of results and profiles via USB interface to your PC
- Evaluation of most common parameters as well as characteristic curves, parameter lists (e.g. material ratio curve)
- Integrated memory for results and profiles
- Tolerance monitoring
- Printing of R profile (ISO/ASME/JIS), P profile (MOTIF), material ratio curve, measuring record
- Setting of asymmetric intersection lines for peak count calculation
- Measuring units (µm/µin) and standards (ISO/JIS/ASME/MOTIF) are selectable
- Individual sampling lengths and short cutoff can be selected
- Lock for instrument settings
- Built-in rechargeable battery with power management
- AC adapter with interchangeable international plug adapters
- Date and time of measurement
- Suitable for use with stationary measuring station
- For use with PHT probe range
- MarSurf PS1/M300 Explorer software for recording measurements
- **Supplied with**
- Evaluation unit M 300 drive unit RD 18 with integrated roughness standard
- Standard pick-up PHT 6–350/2µm (conforming to standards)
- Power source with 3 adapters
- Height adjustment accessory
- Pick-up protection
- Pick-up protection with prismatic underside end face V-block
- 2 usb cables
- 1 roll of thermal paper
- Shoulder strap
- Carrying case
- Mahr calibration certificate
- Operating instructions

Mobile Roughness Measuring Instrument MarSurf M 300

Accessories

Order no.	Product description	Product type
6850540	Pick-up extension 80 mm	PHT (80 mm)
6111520	Standard probe	PHT 6–350
6111526	Standard probe 5 µm	PHT 6–350/ 5µm
6111527	Standard probe 10 µm	PHT 6–350/ 10µm
6111521	Probe for bores with a dia. larger than 3 mm	PHT 3–350
6111524	Probe for grooves	PHT 11–100
6111525	Probe for concave and convex surfaces	PHTR–100
6111522	Probe for gear tooth flanks	PHTF 0.5–100
6111523	Probe for metal sheets	PT 150
6850715	Pick-up protection with header V-block, steel	PHT-ts4
6850541	Adapter for transverse tracing	PHT AQ
6850542	V-block holder	PS1 php
6910203	End face V-block	PS1 / RD18
7028530	Pick-up protection header V-block, plastic	PHT-ts3
6910201	Mount for MarSurf PS1/RD18 on measuring stand ST	
6710803	Measuring stand 300 mm with cast iron base	ST-D
6710806	Measuring stand 300 mm with granite plate	ST-F
6710807	Measuring stand 300 mm with granite plate and T-slot	ST-G
2247086	Adjustable mounting bracket to connect to 814 SR	814 Sh
4426100	Height Measuring and Scribing Instrument	814 SR
4426101	Height Measuring and Scribing Instrument	814 SR
4102357	Data Connection Cable USB	16 EXu
4102410	Data Connection Cable RS232C	16 EXr
4102915	Digimatic data cable	16 EWd
6710401	V-block	PP
6710604	Parallel vice	PPS
6710529	XY Table	CT 120
4246819	Miniature precision vises, set	109 PS
6910205	Evaluation Software	SW PS1/M300 Explorer
6299054	Evaluation Software	SW XR 20
6820420	Roughness standard with Mahr calibration certificate	PRN 10
6820601	Geometric Standard with sinusoidal groove profile	PGN 3
6820602	Geometric Standard with sinusoidal groove profile	PGN 1
6820605	Geometric Standard with sinusoidal groove profile	PGN 10
2240360	PRN 10-2N - Same as above but without certificate, traceable to NIST using 2 µm probe	
2249863	PRN 105N - Same as above but without certificate, traceable to NIST using 5 µm probe	
2252018	PRN 10-10N - Same as above but without certificate, traceable to NIST using 10 µm probe	

ST-D

814 Sh

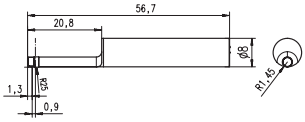
ST-F

ST-G

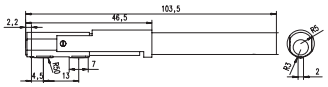
814 SR

109 PS

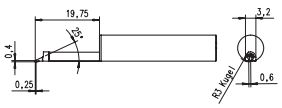
PHTR–100



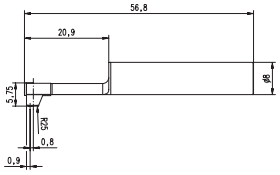
PHT 3–350



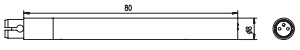
PT 150



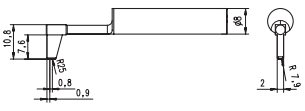
PHTF 0.5–100



PHT 6–350;PHT 6–350/ 5µm



PHT (80 mm)



PHT 11–100

Mobile Roughness Measuring Instrument MarSurf M 300 C

RS232C Digimatic USB

Application:

- For shafts and housing components
- For large scale machines
- For large workpieces
- For milling and turning parts
- For use on grinding and honing components
- On the production line or directly on the a machine; ideal for rapid testing of the surface roughness of a workpiece in or on a machine.

Technical Data

Order no.		6910431
Product type		M 300 C
Parameters		Ra, Rq, Rz (Ry (JIS) is equivalent to Rz), Rz (JIS), Rmax, Rp, RpA (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr (tp (JIS, ASME) is equivalent to Rmr), RSm, RSk, S, CR, CF, CL, R, Ar, Rx, Rv, W
Horizontal scale		dep. on cutoff
Log contents		R-profile, MRK,P-profile (MOTIF),results
Stylus		2 µm
LC Display		high resolution color display, 3.5", 320 x 240 pixel
Printing		automatic/manualrecord with time
Printer		Thermal printer, 384 points/horizontal line, 20 characters/line
Printing speed		approx. 6 lines/second corresponds to approx. 25 mm/s (1 in/s)
Thermopaper		Ø 40.0 mm –1.0 mm, width 57.5 mm–0.5 mm, coated
Calibration function		dynamic
Storage capacity		internal memory for max. 40000 results, max. 30 profiles
Password protection		yes
Lock for device settings		yes
Languages:		German, English, French, Italian, Japanese, Korean, Spanish, Dutch, Chinese, Polish, Czech, Portugese, Russian, Swedish, Hungarian, Turkish
Power Management		yes
Interfaces		drive unit, mains adaptor, USB, MarConnect
Data interface:		RS232C, Digimatic, USB, USB A
Relative humidity		30 % to 85 %
System of protection		M 300 = IP 42, RD 18 = IP 40
Operating temp. range		+5 °C to +40 °C
Temperature range for storage		–15 °C to +55 °C
Power supplied		NiMH battery, capacity: approx. 500 measurements (dep. on number and length of record printouts)
Rechargeable batteries		NiMH battery, capacity: approx. 500 measurements
Wide range power supply		plug-in power pack with three mains plugs, for input voltages from 90 V to 264 V
(L x W x H) for Drive unit		139 x 26 mm
(L x W x H) for Measuring instrument		190 x 140 x 75 mm
Weight	kg	4,1
Measuring principle		stylus method
Probe		Inductive skidded probe
Measuring range	mm	350 µm, 180 µm, 90 µm (automatic switching)
Profile resolution		8 nm
Filter according to ISO/JIS		Gauß-Filter, Ls-Filter
Cutoff lc according to ISO/JIS		0,25 mm, 0,8 mm, 2,5 mm, automatic
Number n of sampling length according to ISO/JIS		selectable: 1–5
Short stroke under ISO/JIS		selectable
Traversing length Lt according ISO/JIS		1,75 mm, 17,5 mm, 5,6 mm, automatic
Traversing length according ISO 12085 (MOTIF)		1 mm, 2 mm, 4 mm, 8 mm, 12 mm,16 mm
Evaluation lenth ln according to ISO/JIS		1.25 mm, 4 mm, 12.5 mm
Contacting speeds		0.5 mm/s
Measuring force	N	0,7 mN
Weight Drive unit		approx. 300 g
Weight Measuring instrument		approx. 1 kg

- 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
- Log printed 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 (µm/µinch) and standards (iso/Jis/asme/motif) are selectable
- Tolerance monitoring
- Integrated memory for results of up to 40000 measurements and 30 profiles
- Setting of asymmetric 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
- MarSurf PS1/M300 Explorer Software for recording measurements

- **Supplied with**
- Evaluation unit M 300 C
- Cylindrical drive unit RD18 C
- Handheld v
- Block with height adjustable feet
- Standard pick-up PHT 6–350/2µm (conforming to standards)
- Roughness standard PRN 10 with Mahr calibration certificate
- 1 roll of thermal paper
- Pick-up protection
- 8 mm mounting clamp for the drive unit
- Power source with 3 adapters
- 1 x usb cable (for connection to a PC)
- Shoulder strap
- Carrying case
- Operating instructions

Mobile Roughness Measuring Instrument MarSurf M 300 C

Accessories

Order no.	Product description	Product type
6850540	Pick-up extension 80 mm	PHT (80 mm)
6111520	Standard probe	PHT 6–350
6111526	Standard probe 5 µm	PHT 6–350/ 5µm
6111527	Standard probe 10 µm	PHT 6–350/ 10µm
6111521	Probe for bores with a dia. larger than 3 mm	PHT 3–350
6111524	Probe for grooves	PHT 11–100
6111525	Probe for concave and convex surfaces	PHTR–100
6111522	Probe for gear tooth flanks	PHTF 0.5–100
6111523	Probe for metal sheets	PT 150
6850715	Pick-up protection with header V-block, steel	PHT-ts4
6850541	Adapter for transverse tracing	PHT AQ
6850542	V-block holder	PS1 php
6910203	End face V-block	PS1 / RD18
6910426	Drive unit for transverse tracing for M 300C	RD 18 C2
6850738	Collet chucks for RD 18 C2 for ø 5 –80 mm	RD 18 C2
7028530	Pick-up protection header V-block, plastic	PHT-ts3
6851304	Mount for MarSurf RD18 C on measuring stand ST	PST-a2
6710803	Measuring stand 300 mm with cast iron base	ST-D
6710806	Measuring stand 300 mm with granite plate	ST-F
6710807	Measuring stand 300 mm with granite plate and T-slot	ST-G
2247086	Adjustable mounting bracket to connect to 814 SR	814 Sh
4426100	Height Measuring and Scribing Instrument	814 SR
4426101	Height Measuring and Scribing Instrument	814 SR
4102357	Data Connection Cable USB	16 EXu
4102410	Data Connection Cable RS232C	16 EXr
4102915	Digimatic data cable	16 EWd
6710401	V-block	PP
6710604	Parallel vice	PPS
6710529	XY Table	CT 120
4246819	Miniature precision vises, set	109 PS
6910205	Evaluation Software	SW PS1/M300 Explorer
6299054	Evaluation Software	SW XR 20
6820420	Roughness standard with Mahr calibration certificate	PRN 10
6820601	Geometric Standard with sinusoidal groove profile	PGN 3
6820602	Geometric Standard with sinusoidal groove profile	PGN 1
6820605	Geometric Standard with sinusoidal groove profile	PGN 10
2240360	PRN 10-2N - Same as above but without certificate, traceable to NIST using 2 µm probe	
2249863	PRN 105N - Same as above but without certificate, traceable to NIST using 5 µm probe	
2252018	PRN 10-10N - Same as above but without certificate, traceable to NIST using 10 µm probe	

ST-D

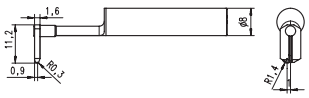
814 Sh

ST-F

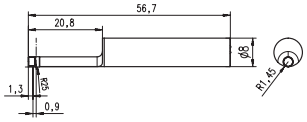
ST-G

814 SR

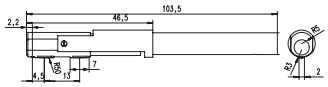
109 PS



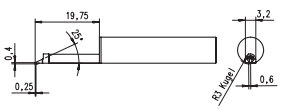
PHTR–100



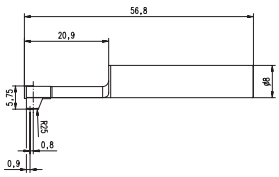
PHT 3–350



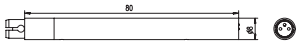
PT 150



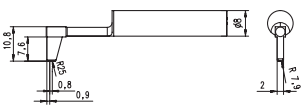
PHTF 0.5–100



PHT 6–350;PHT 6–350/ 5µm

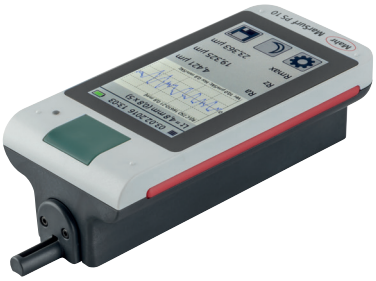


PHT (80 mm)



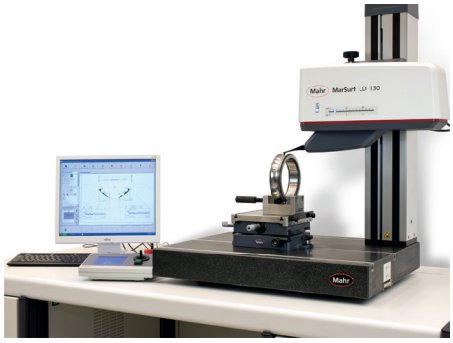
PHT 11–100

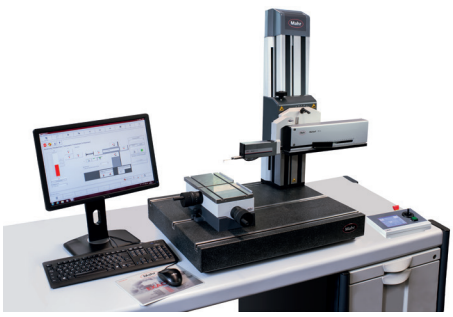
MarSurf. Surface Metrology



PORTABLE SURFACE ROUGHNESS MEASUREMENT

PORTABLE AND STATIONARY SURFACE MEASUREMENT FOR ROUGHNESS DEPTH AND CONTOURS





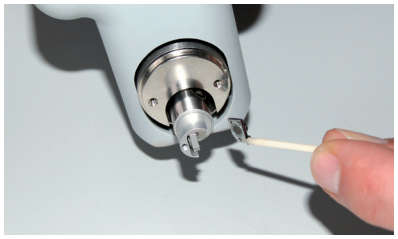
MarSurf M 400. Mobile Surface Measuring Instrument

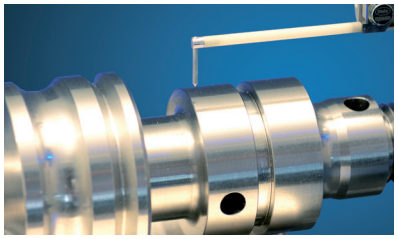
MarSurf M 400. The best of the mobile devices
Both in the measuring room and increasingly also in the production area, there is a need for surface evaluations requiring skidless tracing.
This generally requires more highly skilled operators, more time and more adjustment work.
Within the "mobile surface metrology" range, MarSurf M 400 provides the necessary range of functions, while at the same time being quick and easy to use.

- Mobile and stationary measuring instrument
- Roughness and waviness measurements
- Traversing lengths up to 26 mm
- Over 50 R , W and P surface parameters
- Automatic choice of cut-off and traversing length in accordance with international standards
- Dynamic calibration function
- Cable and Bluetooth connection between drive unit and evaluation instrument (4 m)
- Magnetic probe holder (breakaway probe) BFW 250
- Motorized probe zero setting (max. 7.5 mm)

Supplied with:

- MarSurf M 400 evaluation instrument
- MarSurf SD 26 drive unit including BFW 250 probe system
- Standard probe arm (6852403)
- 1 roll of thermal paper
- Wide-range power supply unit with 3 adapters
- 2 x USB cables (for connecting to the PC and the M 400
- Operating instructions
- Case





BFW probe system with magnetic probe arm holder

Technical Data

Measuring principle	Stylus method
Probe	BFW skidless system
Measuring range	+/–250 µm (up to +/–750 µm with 3x probe arm length)
Profile resolution	Measuring range +/–250 µm: 8 nm Measuring range +/–25 µm: 0.8 nm
Filter according to ISO/JIS	Gaussian filter as per ISO 11562 Filter as per ISO 13565
Cutoff lc according to ISO/JIS	0,25 mm, 0,8 mm, 2,5 mm, automatical, variable
Number n of sampling length according to ISO/JIS	1–5
Contacting speeds	0,2 mm/s; 1,0 mm/s
Measuring force	0,7 mN
Surface parameters	Over 50 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)

Accessories

Measuring stand
- ST-D, ST-F and ST-G
- Holder on measuring stand

Other accessories
- CT 120 XY table, parallel vise, V-block
- Assorted probe arms for the BFW probe system

Applications

Machine building
Bearings, shafts, racks, valves

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

Steel industry
Measurement of sheet metal surfaces
Measurement of roller surface

Medicine
Surface roughness measurement for hip and knee endoprostheses

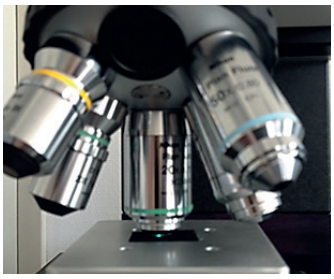
Aerospace
Turbine components

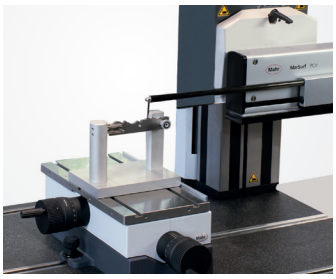
For more information, please visit our website: www.mahr.com

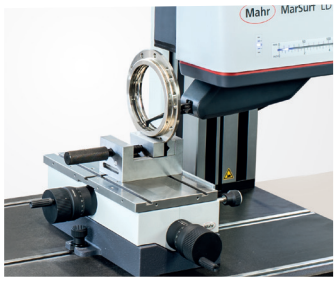
MarSurf. PC-based Stationary Surface Measuring Stations

Versatile And Powerful In Measuring Rooms And Laboratories

In surface measurement a distinction is made between mobile instruments, stationary workshop instruments and PC-based surface measuring instruments. This last group represent the cutting edge in surface measurement and evaluation. They satisfy all the requirements of a modern PC-based measuring and evaluation system. International standards, versatile evaluation methods, comprehensive documentation, large storage capacity, data export/import and networking with other systems have now become essential features of a PC-based system. Extensive QA procedures guarantee the highest quality and stability of software and hardware.







MarSurf XR 1. Roughness Measuring Station

MarSurf XR 1. The ideal instrument for a low-cost introduction to user-friendly surface metrology.
The PC-based instrument delivers all common surface parameters and profiles in accordance with international standards, both in the measuring room and in production. MarSurf XR 1 from Mahr stands for innovative roughness evaluation software.

- Over 80 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)
- Bandpass filter Ls in accordance with current standard; Ls can also be switched off or varied as required.
- Comprehensive measuring records
- Teach-in methods for the rapid creation of Quick & Easy measuring programs
- Automatic functions for choosing cut-off and traversing length in accordance with international standards (patented)
- Support for various calibration methods (static and dynamic) by specifying the Ra or Rz parameter
- Adjustable maintenance and calibration intervals
- Multiple measuring station configurations for custom applications
- Range of options provide system flexibility
- Various user levels protect the device against misuse and prevent unauthorized use

Drive units and probe options:
- Skidded or skidless tracing
- MarSurf RD 18 or MarSurf SD 26 drive units

Supplied with:
- MarSurf XR 1, XR 1 software, Mahr license key with standard license
- Drive unit adapter
- All-in-one PC optional
- MarSurf SD 26 and/or RD 18 drive unit set including probe system
- MFW 250 B probe system set
- MarSurf ST-G measuring stand
- CT 120 XY table

Technical Data

Measuring principle	Stylus method
Probe	BFW skidless system with MarSurf SD 26 drive unit and/or PHT skidded system with MarSurf RD 18 drive unit
Measuring range	+/–250 µm (up to +/–750 µm with 3x probe arm length) applies to BFW system 350 µm applies to PHT probe system
Filter according to ISO/JIS	Gaussian filter as per ISO 11562 Filter as per ISO 16610–21 / ISO 16610–31
Number n of sampling length according to ISO/JIS	1 to 50 (default: 5)
Traversing lengths	MarSurf GD 26 / SD 26: Automatic; 0.56 mm*; 1.75 mm; 5.6 mm; 17.5 mm, 56 mm, Measurement up to stop, variable * Traversing length dependent on drive unit RD 18: Automatic; 1.75 mm; 5.6 mm; 17.5 mm
Measuring force	0.7 mN
Surface parameters	Over 80 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)

Accessories

General software options:
- Dominant waviness option (WDc) for MarWin
- ISO 13565–3 surface parameters option
- QS-STAT / QS-STAT Plus option
- Profile processing option
- User defined parameters between operator and authorized personnel
- Contour 1 for MarSurf XR 1 / XR 20 option (in conjunction with MarSurf SD 26 drive unit)
- All options on one MLK

Software options:
- Expanded evaluation option
- Multiple measurement option
- Expanded measuring record option
- Script program integration option
- Digital I/O set option

Applications

Machine building
Bearings, shafts, racks, valves, various components from the engineering and precision engineering industry

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

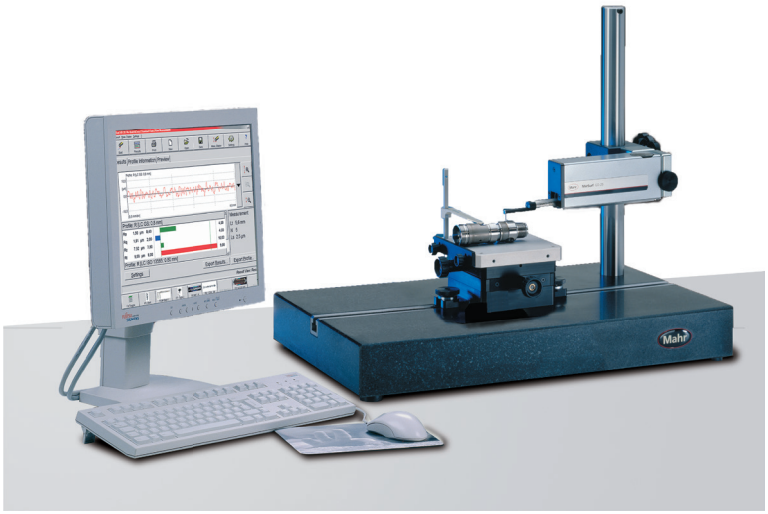
Medicine
Surface roughness measurement for hip and knee endoprostheses

Aerospace
Turbine components

Optics
Various optical components

For more information, please visit our website: www.mahr.com

MarSurf XR 20 with GD 25. Roughness Measuring Station



MarSurf XR 20, the perfect introduction to top-class surface metrology
The PC-based instrument delivers all common surface parameters and profiles in accordance with international standards, both in the measuring room and in production. The powerful MarSurf XR 20 combines decades of experience in surface metrology with innovative technology, easy-to-read icons and user-friendly operator assistance.

- Over 100 surface parameters available for R, P and W profiles in accordance with ISO / JIS, ASME or MOTIF (ISO 12085)
- Tolerance monitoring and statistics for all surface parameters
- Teach-in methods for the rapid creation of Quick & Easy measuring programs
- Comprehensive measuring records
- Automatic functions for choosing filter and traversing length in accordance with international standards
- Support for various calibration methods (static/dynamic) by specifying the Ra or Rz parameter
- Adjustable maintenance and calibration intervals
- Simulation mode for rapid familiarization with operating principle
- Multiple measuring station configurations for custom applications

Supplied with:

- MarSurf XR 20 including PC, Mid-Range Standard, XR 20 software, Mahr license key
- TFT monitor
- MarSurf GD 25 drive unit
- MFW 250 B probe system set
- MarSurf ST-G measuring stand
- PGN 3 calibration standard
- MCP 23 manual control panel
- CT 120 XY table

Technical Data

Measuring principle	Stylus method
Probe	R probe, MFW 250 B
Measuring range	MFW 250: ±25 µm, ±250 µm, (up to ±750 µm); ±1000 µin, ±10,000 µin (up to ±30,000 µin)
Filter according to ISO/JIS	Gaussian filter as per ISO 11562, filter as per ISO 16610–21/ISO 16610–31
Number n of sampling length according to ISO/JIS	1 to 50 (default: 5)
Traversing lengths	Automatic; 0.56 mm; 1.75 mm; 5.6 mm; 17.5 mm, 56 mm*, Measurement up to stop, variable * Traversing length dependent on drive unit
Surface parameters	Over 100 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)

Accessories

- Parallel vise
- V-block

General software options:

- Dominant waviness option (WDc) for MarWin
- ISO 13565–3 surface parameters option
- QS-STAT / QS-STAT Plus option
- Profile processing option
- User defined parameters option
- Contour 1 for MarSurf XR 1 / XR 20 options
- All options on one MLK (Mahr license key)

Applications

Machine building
Bearings, threads, threaded rods, ball screws, shafts, racks, valves

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

Medicine
Surface roughness measurement for hip and knee endoprostheses

Aerospace
Turbine components

Optics
Various optical components

For more information, please visit our website: www.mahr.com

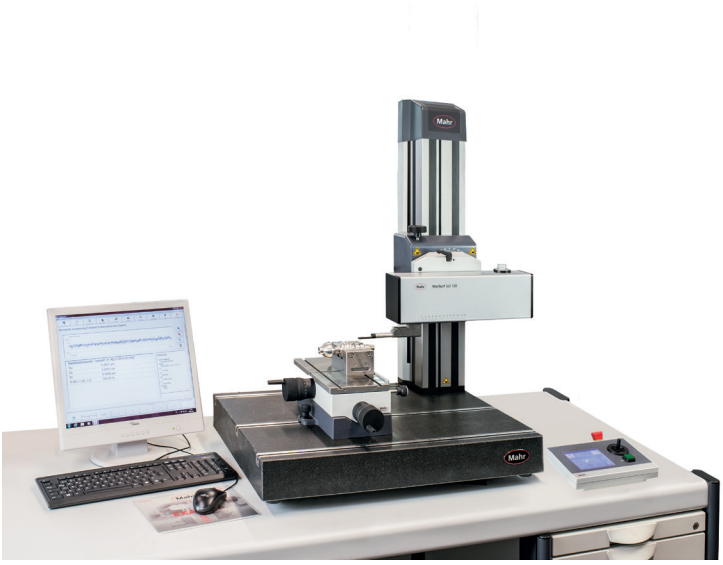
MarSurf XR 20 with GD 120. Roughness Measuring Station

MarSurf XR 20, the introduction to surface metrology

- PC based instrument delivers all common surface parameters and profiles in accordance with international standards (both in measuring room and in production)
- Combines decades of experience in surface metrology with innovative technology
  - Easy to read icons
  - User friendly operator assistance
- A sampling length of up to 120 mm is possible in conjunction with the GD 120 drive unit
  -In addition to surface roughness evaluations, profile and waviness evaluations can also be performed in this way
- Over 100 surface parameters available for R, P and W profiles in accordance with ISO / JIS, ASME or MOTIF (ISO 12085)
- Tolerance monitoring and statistics for all surface parameters
- Teach-in methods for the rapid creation of Quick & Easy measuring programs
- Comprehensive measuring records
- Automatic functions for choosing filter and traversing length in accordance with international standards
- Support for various calibration methods (static/dynamic) by specifying the Ra or Rz parameter
- Adjustable maintenance and calibration intervals
- Simulation mode for rapid familiarization with operating principle
- Multiple measuring station configurations for custom applications

Supplied with:

- MarSurf XR 20 including PC, Mid-Range Standard, XR 20 software, Mahr license key
- TFT monitor
- MarSurf GD 120 drive unit
- MFW 250 B probe system set
- MarSurf ST 500 measuring stand
- PGN–3 calibration standard
- MCP 23 manual control panel
- CT 300 XY table



Technical Data

Measuring principle	Stylus method
Probe	R probe, MFW 250 B
Measuring range	MFW 250: ±25 µm, ±250 µm, (up to ±750 µm); ±1000 µin, ±10,000 µin (up to ±30,000 µin)
Filter according to ISO/JIS	Gaussian filter as per ISO 11562, filter as per ISO 16610–21/ISO 16610–31
Number n of sampling length according to ISO/JIS	1 to 50 (default: 5)
Traversing lengths	Automatic; 0.56 mm; 1.75 mm; 5.6 mm; 17.5 mm, 56 mm*, Measurement up to stop, variable * Traversing length dependent on drive unit
Surface parameters	Over 100 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)

Accessories

Optional:

- MarSurf ST 750 measuring stand
- Manual control panel with joystick and display
- Parallel vise
- V-block
- Equipment table
- Vibration dampening system
- Measuring cabinet

General software options:

- Dominant waviness option (WDc) for MarWin
- ISO 13565–3 surface parameters option
- QS-STAT / QS-STAT Plus option
- Profile processing option
- User defined parameters option
- Contour 1 for MarSurf XR 1 / XR 20 options
- Topography option

Applications

Machine building
Bearings, threads, threaded rods, ball screws, shafts, racks, valves

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

Medicine
Surface roughness measurement for hip and knee endoprostheses

Aerospace
Turbine components

Optics
Various optical components

For more information, please visit our website: www.mahr.com

MarSurf XC 2 with CD 120. Contour Measuring Station

Your entry into precision contour measurement

• The quick, simple and inexpensive 2D contour measuring system satisfies all demands in terms of accuracy and range of evaluation criteria

• Consistently delivers safe and reliable results

• Parameters that are dependent on datum elements are recalculated as soon as a datum element is changed

• Password protected user access prevents improper use

• Outstanding calibration processes, including geometry calibration, measuring force calibration, compensation, etc.

• Sturdy, rigid probes

• Reliable drive unit

• Automatic lowering and raising of the probe arm at individually adjustable speeds

• Patented probe arm attachement for collision protection

Supplied with:

• MarSurf XC 2 including PC, Mid-Range Standard, MarSurf XC 2 software, Mahr license key

• TFT monitor

• MarSurf CD 120 drive unit

• MarSurf ST 500 measuring stand (including holder)

• Calibration set

• MCP 23 manual control panel

• CT 120 XY table including rotary adjustment

Technical Data

Measuring range	(in Z) 50 mm
Traversing lengths	0.2 mm to 120 mm
Measuring force	1 mN to 120 mN
Sampling angle	on smooth surfaces, depending on deflection: trailing edges up to 88°, leading edges up to 77°
Contacting speed (in Z)	0.1 to 1 mm/s
Resolution	In Z, relative to stylus tip: 0.38 µm (350 mm probe arm) / 0.19 µm (175 mm probe arm) In Z, relative to measuring system: 0.04 µm
Guide deviation	< 1 µm (over 120 mm)
Measuring speed	0.2 mm/s to 4 mm/s
Positioning speed	In X and return speed: 0.2 to 8 mm/s In Z: 0.2 to 10 mm/s
Probe arm length	175 mm, 350 mm
Tip radius	25 µm

Accessories

Optional:

• MarSurf ST 750 measuring stand

• Manual control panel with joystick and display MCP 21

• Parallel vise, V-block

• Equipment table

Software options:

• DXF import option

• Tangential elements option

• Thread evaluation option

• Chamfer option

• QS-STAT / QS-STAT Plus option

• Topography option

Applications

Machine building
Bearings, threads, threaded rods, ball screws, shafts, racks

Measurement close to the production area
Contour measurement in semi-automated operation

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head

Medicine
Contour measurement for hip and knee endoprostheses
Contour measurement for medical screws
Contour measurement for dental implants

For more information, please visit our website: www.mahr.com

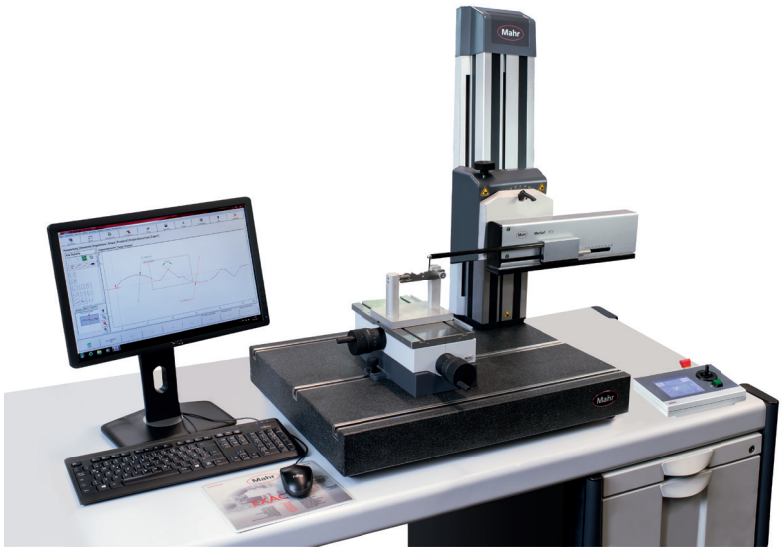
MarSurf XC 20 with PCV 200. Contour Measuring Station

The international benchmark for contour measurement
The MarSurf XC 20 is recognized as the ultimate in contour evaluation. What started some 30 years ago with the Konturograph - consisting of a drive unit and X-/Y-recorders — has developed into a top-quality contour measuring system using cutting-edge technology. The finely tuned device configuration offers superb performance standards. The drive unit and the measuring stand are controlled and positioned via the reliable measuring and evaluation software.

- User prompts can be displayed
- Interactive control elements support evaluations and automatic routines
- Measurement of upper and lower contours with a twin-stylus probe; a relative evaluation of the two contours is also possible
- Profile section images with evaluation of different parameters for each section
- Segmented measurement is possible across obstacles such as bores or steep sides
- Import and export of DXF files supported for setpoint/actual value comparison
- PCV 200 drive unit with patented probe arm magnetic attachment for reproducible probe arm change
- Patented probe system for measuring station flexibility
- Manually variable tracing forces also support flexibility
- Synthetic creation of nominal profiles from straight lines and circle arcs
- Easy comparison of nominal and actual profiles
  - Different tolerances can be selected by within a profile

Supplied with:

- MarSurf XC 20 including PC, Mid-Range Standard including XC 20 software, Mahr license key
- TFT monitor
- MarSurf PCV 200 drive unit
- MarSurf ST 500 measuring stand (including holder)
- Calibration set
- MCP 23 manual control panel
- CT 300 XY table



Technical Data

Measuring range	(in Z) 50 mm
Traversing lengths	0.2 mm to 200 mm
Measuring force	1 mN to 120 mN, below and above (can be set in MarSurf XC 20)
Sampling angle	on smooth surfaces, depending on deflection: trailing edges up to 88°, leading edges up to 77°
Contacting speed (in Z)	0.1 to 1 mm/s
Resolution	In Z, relative to stylus tip: 0.38 µm (350 mm probe arm) / 0.19 µm (175 mm probe arm) In Z, relative to measuring system: 0.04 µm
Guide deviation	< 1 µm (over 200 mm)
Measuring speed	0.2 mm/s to 4 mm/s
Positioning speed	In X and return speed: 0.2 to 8 mm/s In Z: 0.2 to 10 mm/s
Probe arm length	175 mm, 350 mm
Tip radius	25 µm

Accessories

Optional:
- MarSurf ST 750 measuring stand
- Manual control panel with joystick and display MCP 21
- Parallel vise, V-block
- Equipment table

Software options:
- Thread evaluation option
- Chamfer option
- QS-STAT / QS-STAT Plus option
- Topography option

Applications

Machine building
Bearings, threads, threaded rods, ball screws, shafts, racks

Measurement close to the production area
Contour measurement in semi-automated operation

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head

Medicine
Contour measurement for hip and knee endoprostheses
Contour measurement for medical screws
Contour measurement for dental implants

For more information, please visit our website: www.mahr.com