



Mahr | MOBİL YÜZEY METROLOJİSİ

# Taşınabilir pürüzlülük cihazı MarSurf M 310

# MarSurf M 310 - “**SMAHRT** Surf 4.0”

- Esnek ve yetenekli MarSurf M 310 atölye koşullarında mobil kullanım için kullanışlı bir cihazdır.
- Uç yöntemi kullanılarak yapılan yüksek hassasiyetli ölçümler, yüzey pürüzlüğünün küçük ve büyük iş parçalarına test edilmesini sağlar.
- Akıllı telefonla çalışmaya ve her zaman her yerde verilere erişmeye alışkin misiniz?
- Kalite kontrol konusunda çok az bilgisi olan kullanıcılar, bu skid prob sistemini mükemmel bir arkadaş olarak görecelerdir.



# MarSurf M 310 - “**SMAHRT** Surf 4.0”

**Mobil pürüzlülük ölçümü- garantili başarı!**

Mobil pürüzlülük ölçümüne bir sonraki adım!



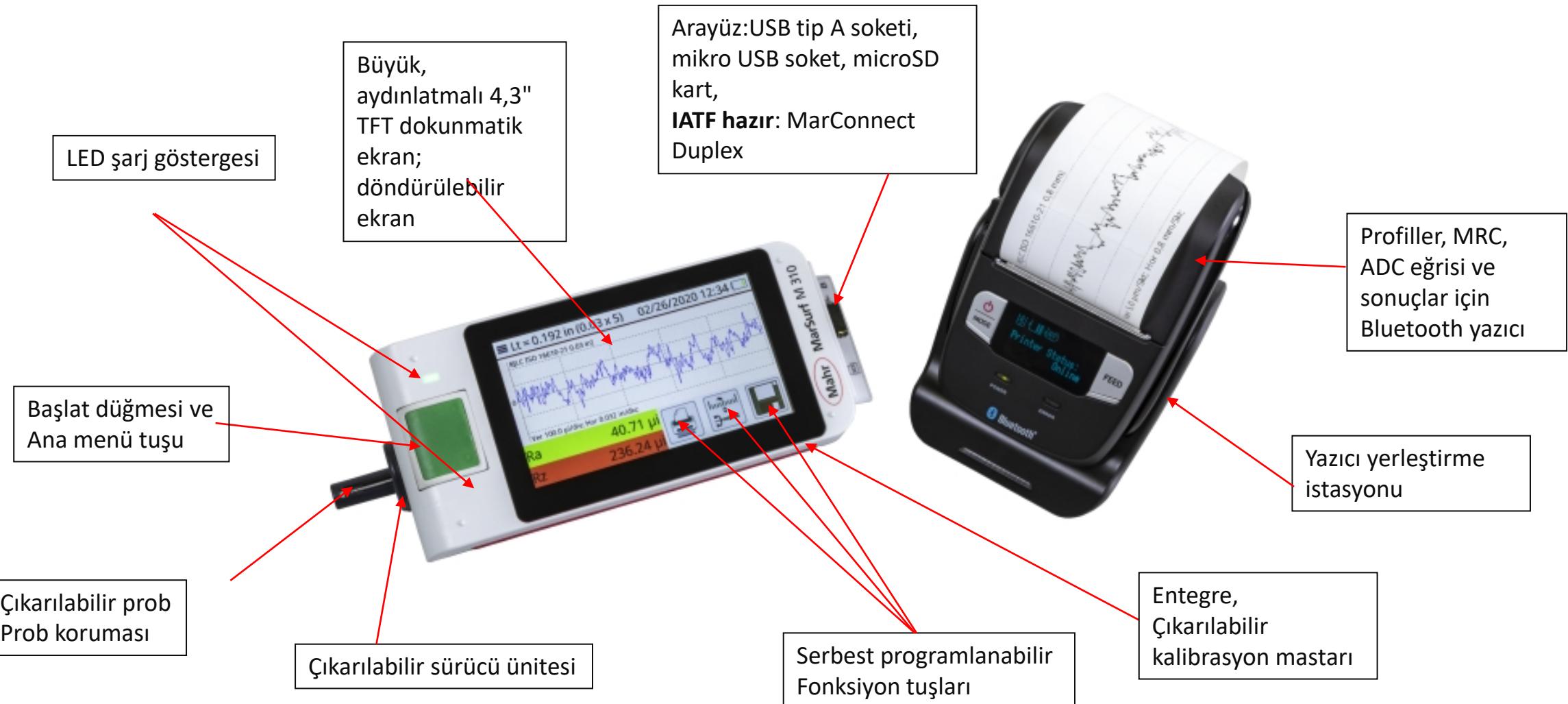
**SMAHRT** Fabrikası → **SMAHRT** Metroloji → **SMAHRT** Çözümü → **SMAHRT** Ürünü

→ **SMAHRT** Surf → MarSurf PS 10 – Basit, akıllı ve mobil

→ **MarSurf M 310 - SMAHRT Surf 4.0**



# MarSurf M 310 - "SMAHRT Surf 4.0"



# ÖZELLİKLER - çalışma

- Büyük, aydınlatmalı 4,3 "TFT dokunmatik ekran, döndürülebilir ekran
- Akıllı telefon kadar kolay kullanım! → eğitim çabasından tasarruf sağlar
- Standart uyumlu ayarlarla hatasız çalışma Otomatik kesme seçimi, ölçüm yapmayan teknisyenler için bile doğru ölçüm sonuçlarını sağlar.
- Doğrudan cihazda PDF dosyası olarak kaydetme → ek yazılım gerekmez
- PDF protokol metinlerinin doğrudan MarSurf M 310'a girişi



Select basic view



Record texts

Record header

<Title, 1st line>

<Title, 2nd line>

<Title, 3rd line>

**<1st text>**

Werk 35

1 2 3 4 5 6 7 8 9 0 - =  
q w e r t y u i o p [ ]  
a s d f g h j k l ; '#  
z x c v b n m ↵  
↶ ↷ , . / ↲ ↳

F1 F2 F3

Record texts

Record header

<Title, 1st line>

<Title, 2nd line>

<Title, 3rd line>

Query profile information

Werk 35

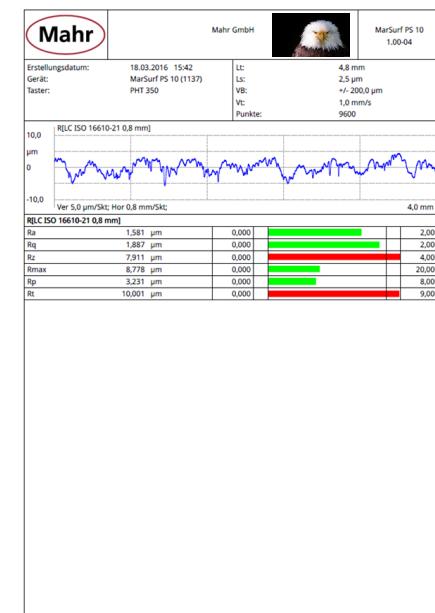
<2nd text>

<3rd text>

<4th text>

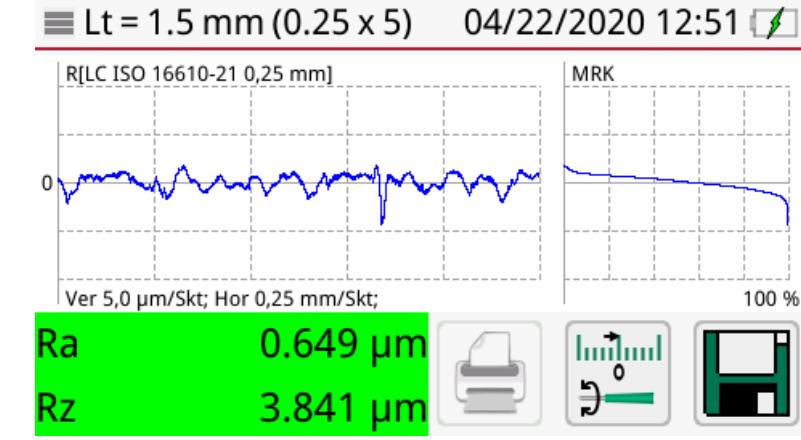
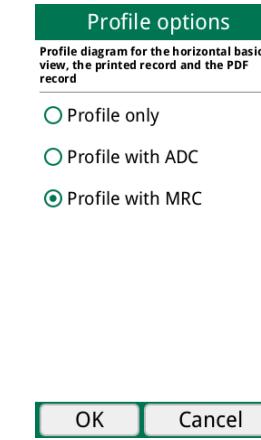
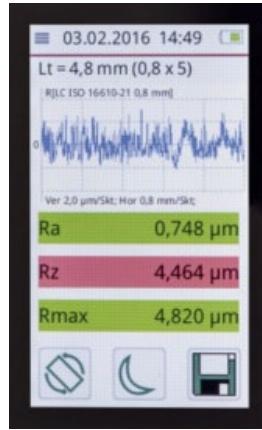
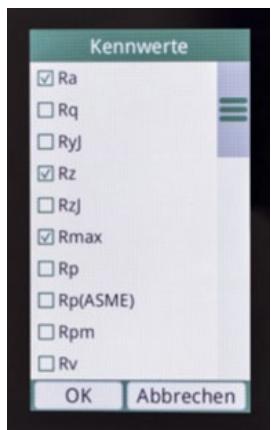
<Comment>

OK Cancel



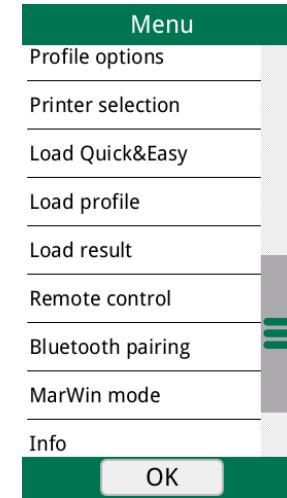
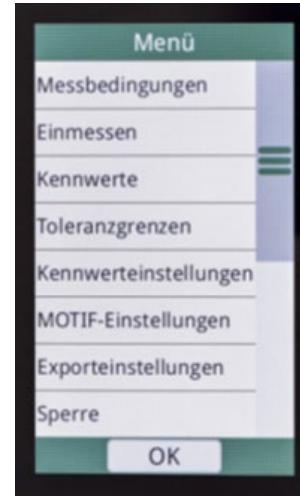
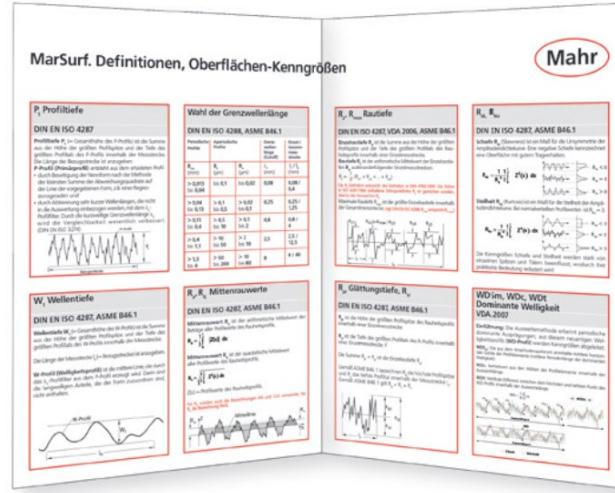
# ÖZELLİKLER - yazılım

- 31 parametre - bir laboratuvar cihazı gibi bir performans aralığı sunar.
- MRC ve ADC eğrisinin görüntülenmesi ve yazdırılması
- Tolerans izleme , seçilen tüm parametreler için tolerans sınırları ayarlanabilir. Ekranda (ve protokolde) aşımlar belirtilir.
- Rmr ve tp karakteristik değerleri için kesme çizgisi C'nin  $\mu\text{m}$  veya % Rz cinsinden belirtilmesi



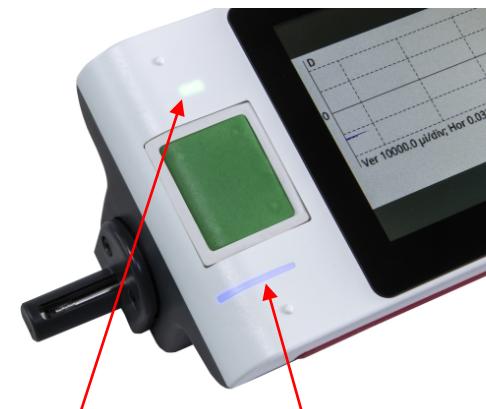
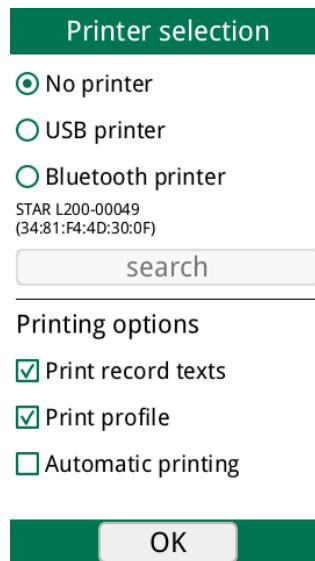
# ÖZELLİKLER - yazılım

- En az 500.000 ölçüm sonucu ve 1500 PDF protokolü için entegre bellek 32 GB'a kadar mı 320 fakötr üzerinde istege bağlı veri yedekleme.
- Ölçüm uçları için standartlara ve kurallara göre ölçüm yaparsınız (DIN ISO, ASME, JIS, MOTIF).
- Ölçüm programlarının kaydedilmesi (Hızlı ve Kolay)
- Temel görünümün serbestçe programlanabilir F1, F2, F3 tuşlarına bir fonksiyonun veya karakteristik bir değişkenin atanması.



# ÖZELLİKLER - donanım

- Profillerin, MRC-, ADC eğrisinin ve sonuçların doğrudan yazdırılması için bağlantı istasyonlu USB- / Bluetooth Yazıcı
- "Şebekeden bağımsız çalışma "- cihazı yeniden şarj etmek zorunda kalmadan 1.200'den fazla ölçüm
- Yağa dayanıklı plastikten yapılmış başlatma düğmesi



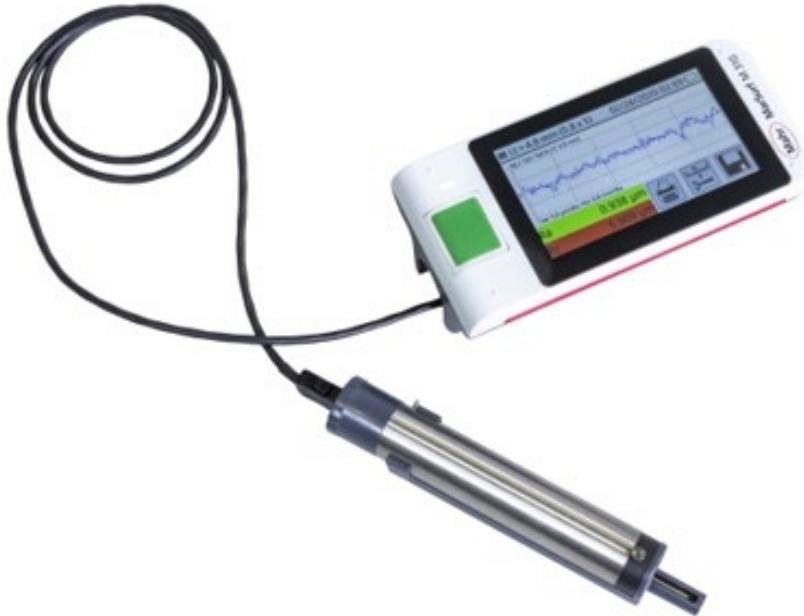
" Pili şarj edin "  
 «Ölçümü başlat»  
 «Veri aktarımı»



„ Hata mesajı“

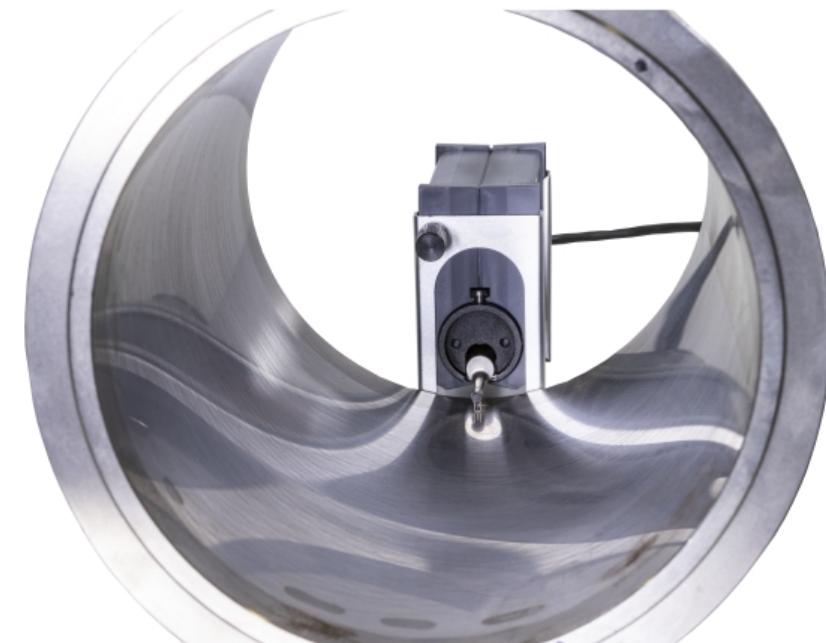
## ÖZELLİKLER - donanım

- Prob, tahrik üitesi ve değerlendirme üitesi tek bir üniteyi oluşturur  
→ Çıkarılabilir besleme üitesi sayesinde daha fazla esneklik  
→ Gövdeye entegre edilmiş farklı seviyelerde yükseklik ayarı
- Entegre, çıkarılabilir kalibrasyon standarı (isteğe bağlı: Dakks / DKD kalibre edilmiş)
- Kapsamlı aksesuarlara sahip sağlam taşıma çantası



## ÖZELLİKLER - donanım

- Prob PHT6-350 → ölçüm aralığı: 350 µm → prob ucu 2 µm (alternatif olarak 5 µm)
- PHT serisi probalar, kir ve yağların birikmesini büyük ölçüde önleyen açık bir kızağa sahiptir. örn. bir saç fırçası.



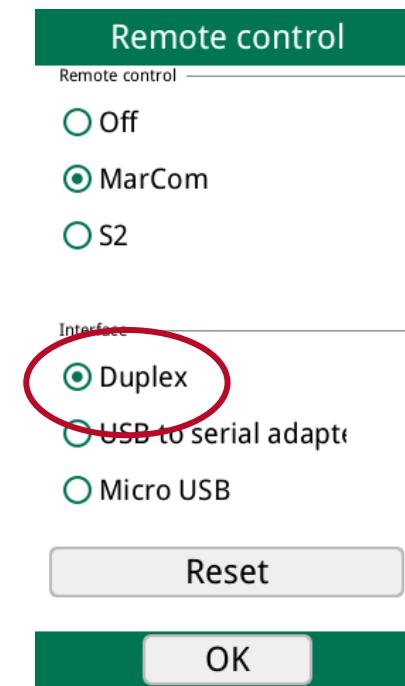
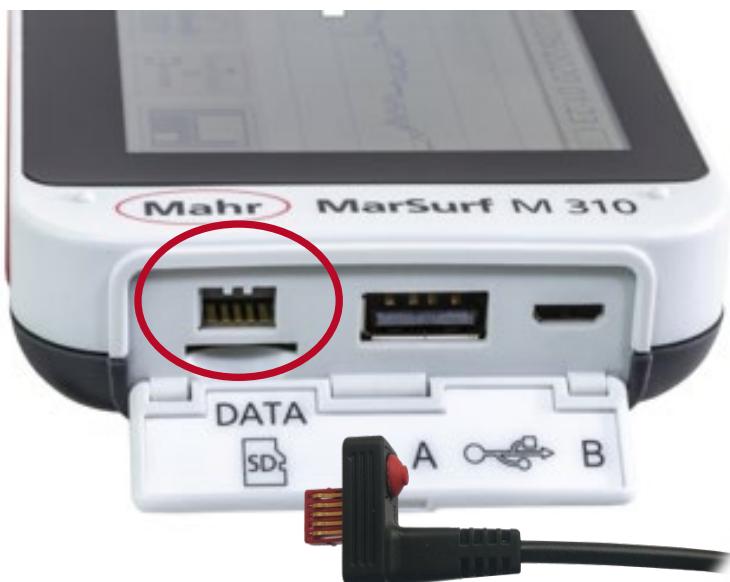
# Arayüzler

- **SD yuvası** - profillerin, sonuçlara sahip profillerin, sonuçların ve / veya ölçüm raporlarının saklanabileceği microSD veya microSDHC kart (32 GB'a kadar)
  - Gerekirse, bir microSD kart aracılığıyla bir yazılım güncellemesi gerçekleştirilebilir.
- **MarConnect çift yönlü arayüz** - "MarCom Professional" veri aktarım yazılımı için
  - Bilgisayara bağlantı için **Mikro USB** arabirimi. Bir USB bellek modülü (bellek çubuğu) gibi işlem görür ve sürücü olmadan tanınır.
  - ASCII komutlarıyla uzaktan kumanda için, örn. istatistiksel süreç kontrolü için yazılım aracılığıyla.
- **USB-A arayüzü** - örn. bir USB Bluetooth adaptörü veya USB / Bluetooth yazıcı
  - DATA SD A B



# IATF hazır - yeni MarConnect çift yönlü arayüz ile

- Kanıtlanmış MarConnect çift yönlü arayüz ile donatılmış MarSurf M 310, her ölçümde bir gösterge kimliğinin iletilmesini sağlar. Bu, ölçüm sonuçlarınızın izlenebilirliğini sağlamak için bir kontrol gerçekleştirmek için hangi ölçüm cihazının kullanıldığını güvenilir bir şekilde belgelemenizi sağlar.



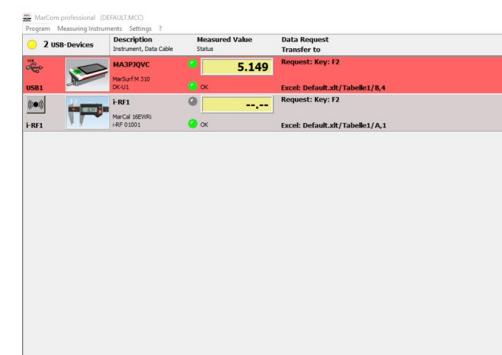
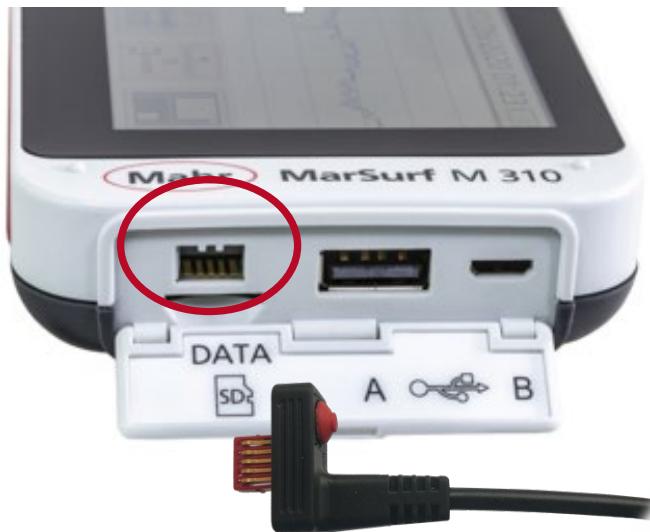
# IATF hazır – Excursus – IATF 16949

- IATF 16949 - Otomotiv Endüstrisinde Kalite Yönetimi - Otomotiv endüstrisinde seri ve yedek parça üretimi için kalite yönetim sistemleri gereksinimleri
- Yeni otomotiv standartı, IATF (Uluslararası Otomotiv Görev Gücü) tarafından IATF 16949 olarak belirlendi ve Ekim 2016'da yayınlandı.
- 15.09.2018 tarihinden itibaren yalnızca IATF 16949 sertifikalarına izin verilmektedir. O zamandan beri, sertifikasyon şirketleri yalnızca bu standarda göre denetim ve sertifikalandırma yapmaktadır.
- IATF ,16949'un önemli bir parçası
- **Ürünlerin izlenebilirliği ve ölçüm ekipmanlarının ürün gruplarına atanması!**



# Marcom yazılımı ile dokümantasyon

- IATF ready thanks to traceability of the gauge ID
- Setting of tolerances via MarCom



**gauge ID**

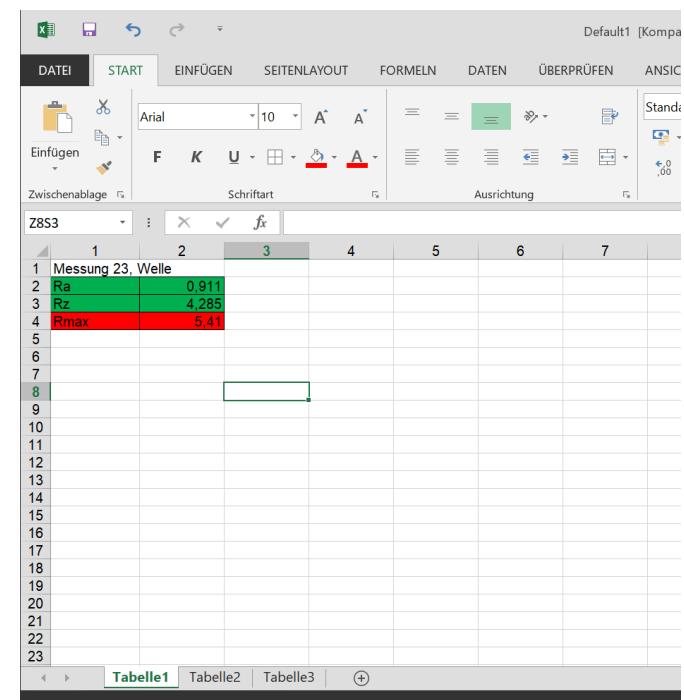
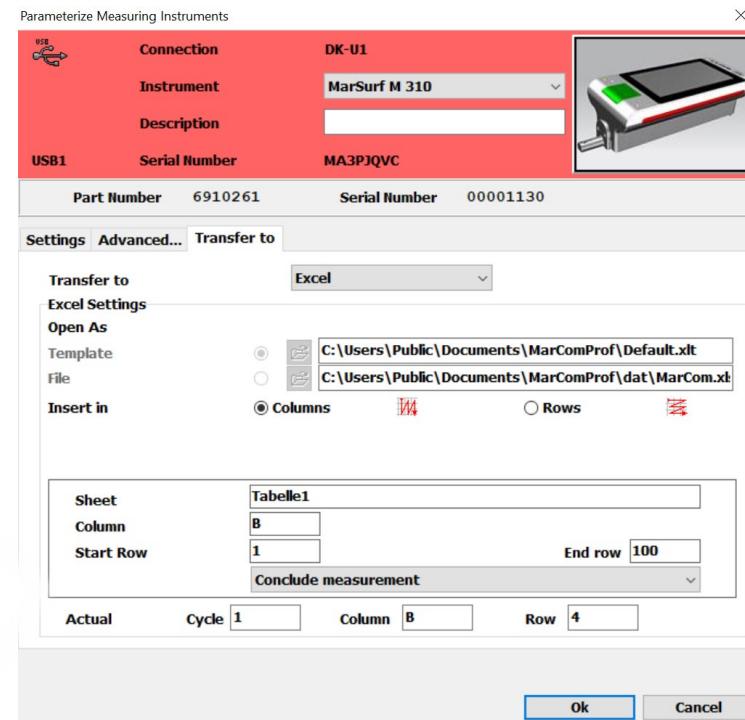
~Kennwert	Tolerances	(mm)
	Lower	Upper
R <sub>a</sub>	0,5	2,0
R <sub>q</sub>	0,0	0,0
R <sub>yJ</sub>	0,0	0,0
R <sub>z</sub>	0,0	5,0
R <sub>zJ</sub>	0,0	0,0
R <sub>max</sub>	0,0	0,0
R <sub>p</sub>	0,0	0,0
R <sub>p</sub> (ASME)	0,0	0,0
R <sub>pm</sub>	0,0	0,0
...	...	...

Send

Ok Cancel

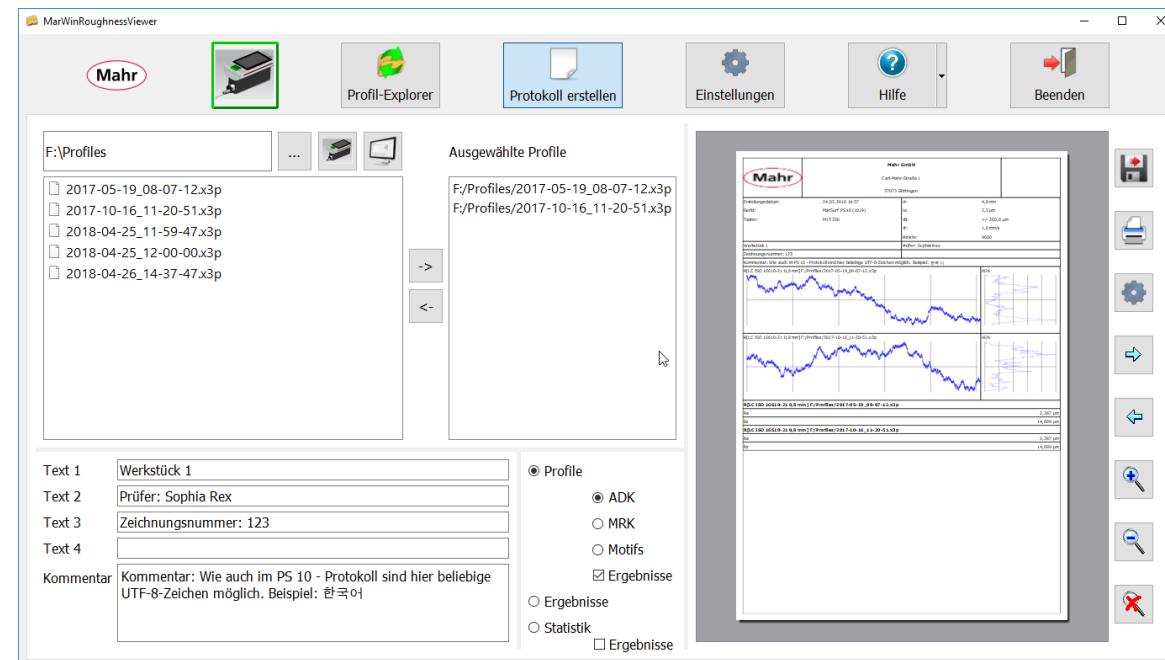
# Documentation with Marcom software

- Transfer of the measurement results to the MarCom software in e.g. an Excel table
- Remote start of the measurement via e.g. keyboard

A screenshot of the MarCom software interface. The top menu bar includes "DATEI", "START", "EINFÜGEN", "SEITENLAYOUT", "FORMELN", "DATEN", "ÜBERPRÜFEN", and "ANSIC...". The main area shows an Excel table with data from a measurement. The table has columns 1 through 7 and rows 1 through 23. Row 1 contains the header "Messung 23, Welle". Rows 2, 3, and 4 contain data: Ra (0.911), Rz (4.285), and Rmax (5.41). The rest of the table is empty. The status bar at the bottom shows "Tabelle1 Tabelle2 Tabelle3 +".

# Documentation with Software MarWin Roughness Viewer

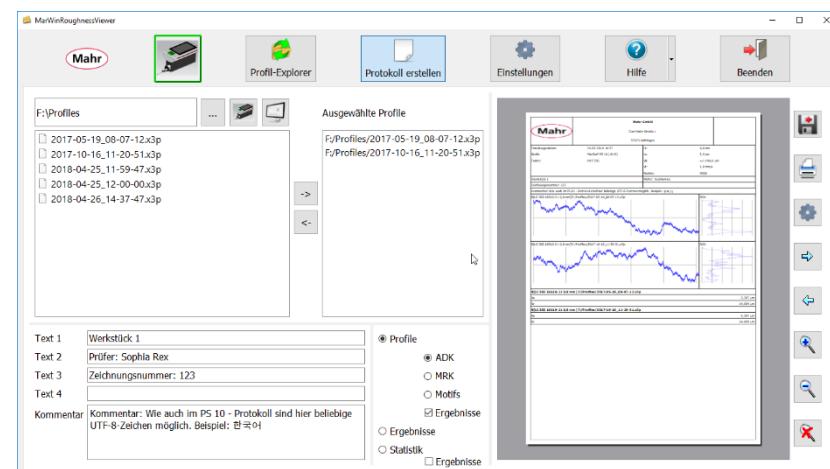
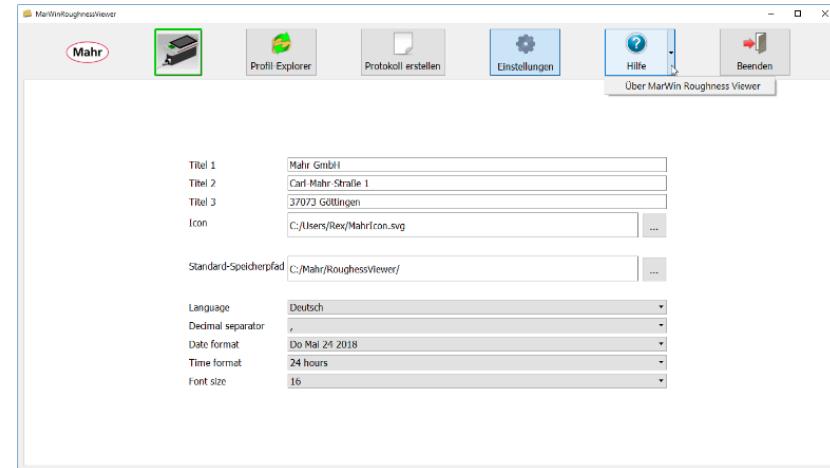
- The MarWin Roughness Viewer is a simple software for logging the collected measurement data.
- The evaluation (filtering and calculation of characteristic values) is performed in the MarSurf M 310.
- The MarWin Roughness Viewer is available for free download on the Mahr website.



# Documentation with Software MarWin

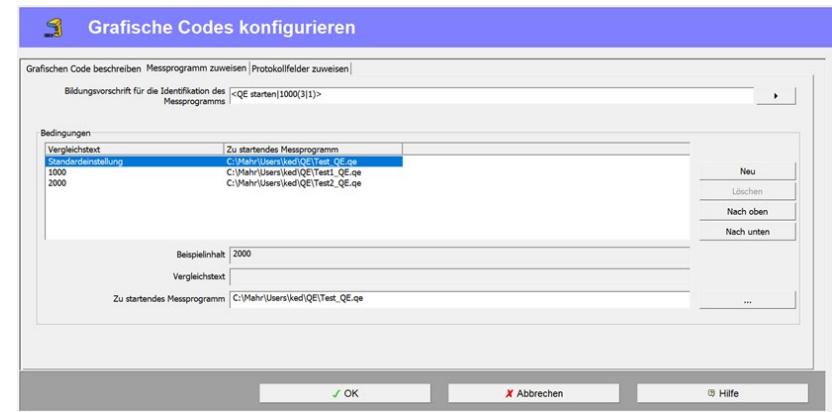
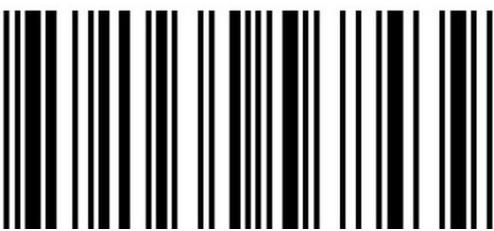
## Roughness Viewer - Features

- Creation of protocols from up to 100 profile files
- Easy configuration of the protocols:
  - only profile display
  - Profile plus MRC
  - Profile plus ADC
  - Profile with marked motifs
  - Profile with results
  - Results (without profile display)
  - Statistics table (mean value, sigma, minimum, maximum, range, out of tolerance, not evaluable) without and with original value list
- Print protocol
- Save protocol as pdf file
- Edit profile information for the protocol



# Outlook - Function QR-/Barcode Scanner

- The next software version of the MarWin Roughness Viewer will include the QR/Barcode Scanner function.
- The "QR/Barcode Scanner" function allows a standard USB/Bluetooth scanner to be connected to the MarSurf M 310 and is a convenient function for entries that would otherwise have to be made via alphanumeric input on the touch TFT.
- Examples:** Scanning a QR/barcode on the workpiece to start the associated program, scanning a QR/barcode on the workpiece to read workpiece information (drawing no. etc.) into the profile information

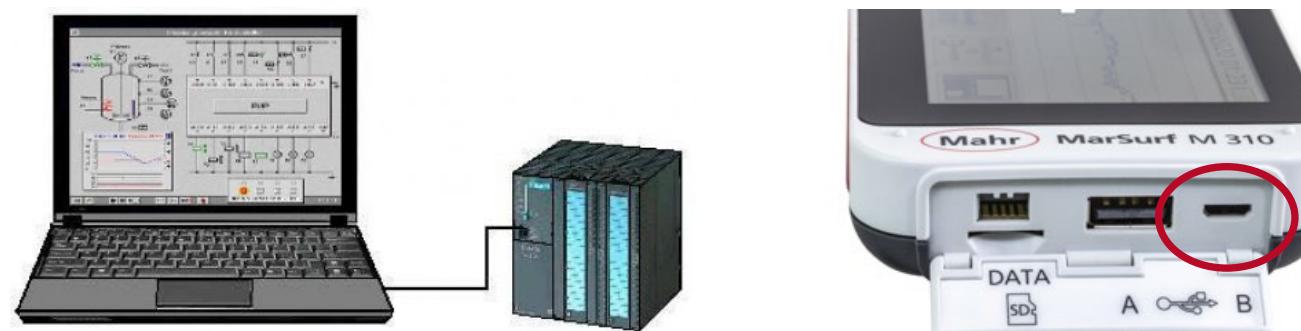
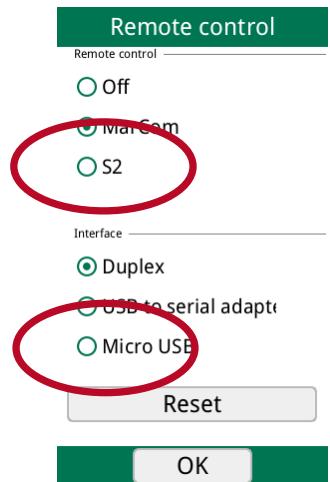


# New serial interface - Remote control via Micro-USB interface

For remote control via ASCII commands, e.g. via statistical process control (SPC) software.

## Start measurement

- Starts a measurement with the currently set measuring conditions.
- Calculates the parameters selected on the MarSurf M 310 with the set evaluation conditions.
- Transfers all calculated characteristic results in a string terminated with <CR>.

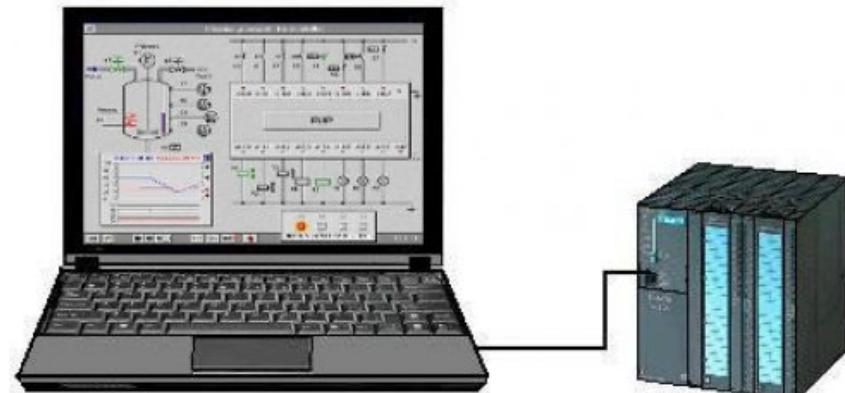
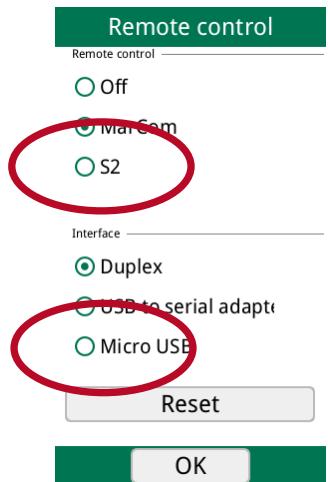


# New serial interface - Remote control via Micro-USB interface

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## Changing settings on the MarSurf M 310

- Loads the Quick&Easy with the file name "Name" and confirms the error-free execution with "ready"
- Change the tracing length, Cutoff, unit of measurement

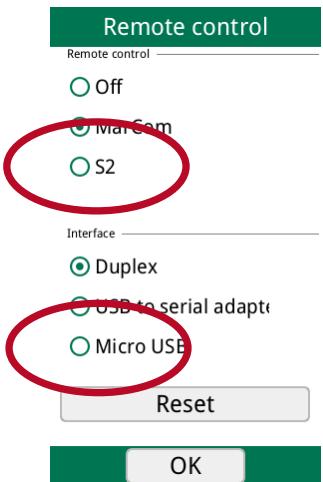
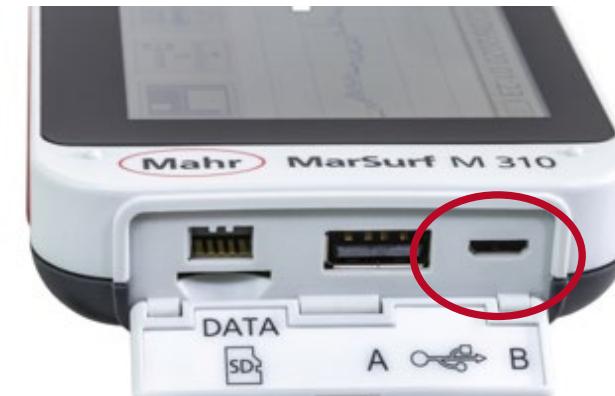


# New serial interface - Remote control via Micro-USB interface

For remote control via ASCII commands, e.g. via statistical process control (SPC) software.

## Request settings/data from the MarSurf M 310

- Queries the article and serial number (**IATF ready!**)
- Queries: the result, the current tracing length, the current number of individual measuring ranges, the current cutoff, the current unit of measurement, the current probe tip position

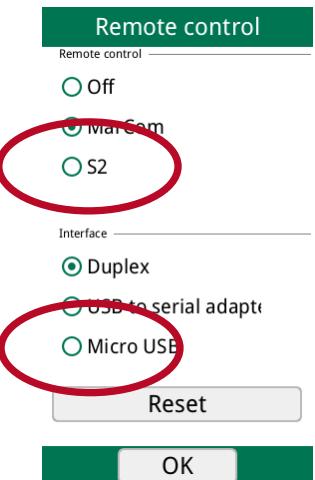
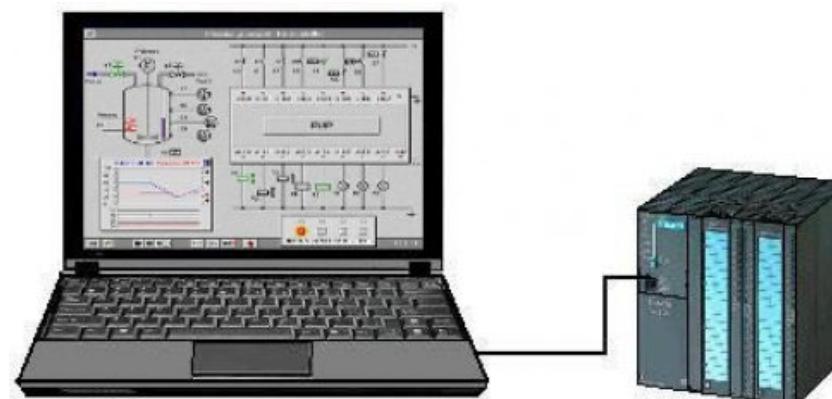


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For remote control via ASCII commands, e.g. via statistical process control (SPC) software.

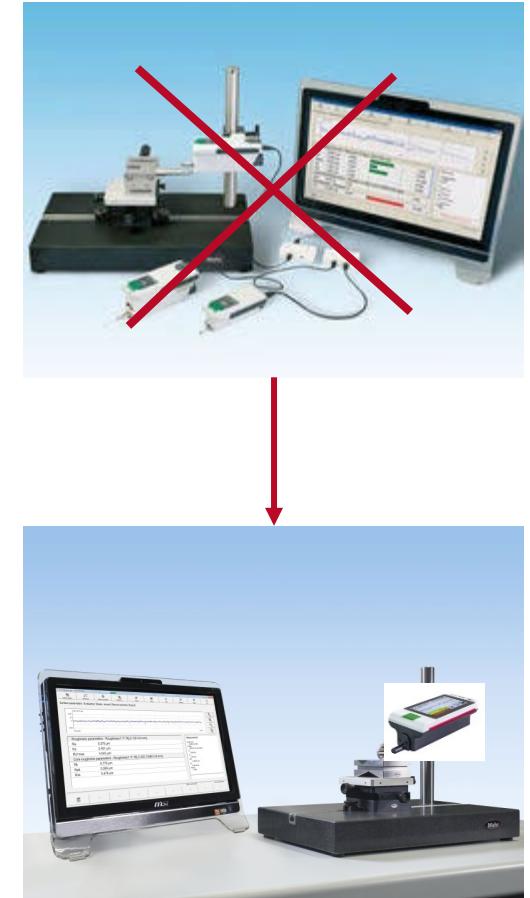
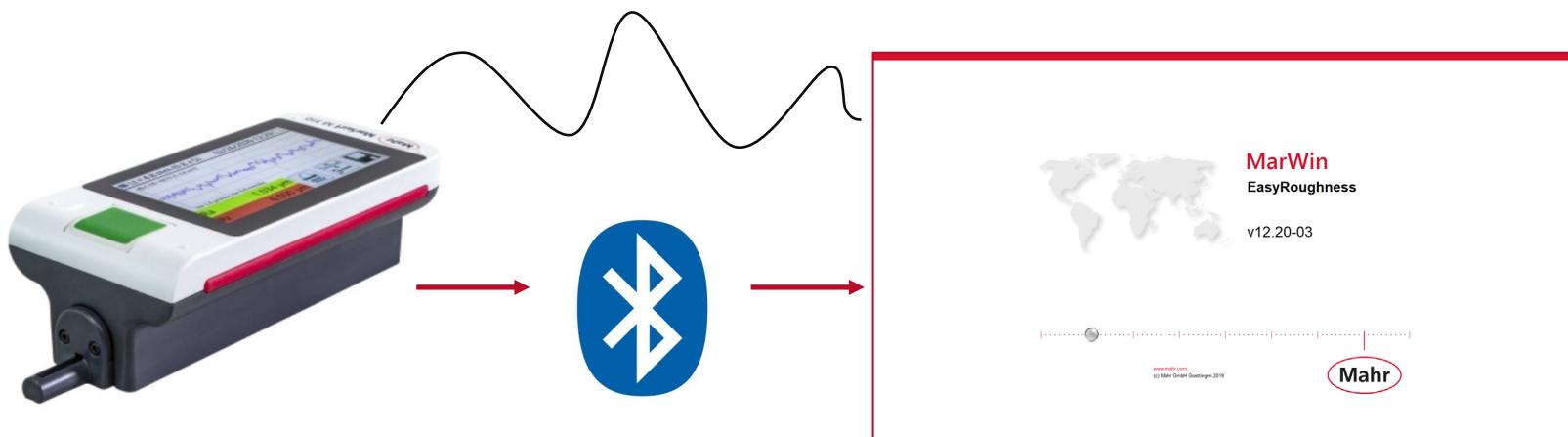
## Confirmation and error message of the MarSurf M 310

- Faultlessly executed commands are acknowledged by the MarSurf M 310.
- Error messages → If commands are executed incorrectly, the MarSurf M 310 sends an error message.



# Outlook - MarSurf M 310 as feed device for MarWin Easy Roughness software

- The next software version of the MarSurf M 310 will integrate the connection to MarWin Easy Roughness
- MarSurf M 310 as feed device to MarWin Easy Roughness software
- Direct connection to the PC (without MidRange, MI 500 Box) via cable or Bluetooth adapter



## Uygulama örneği



MarSurf M 310, manyetik tripodlu 815 MA / MB



ST-D ölçüm standı ve manuel prizma tutuculu  
MarSurf M 310

# Uygulama örneği

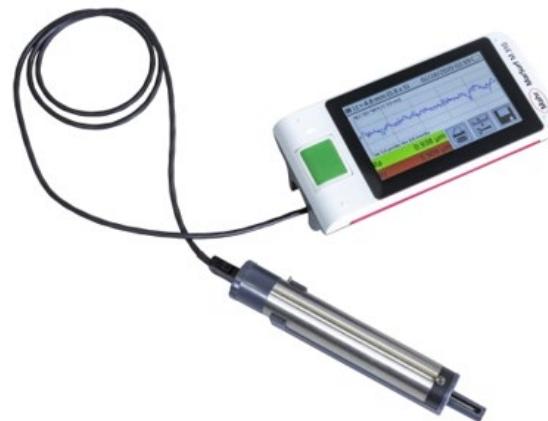


MarSurf M 310 ST-D ölçüm standı üzerinde



El prizması ve yükseklik ayarlı MarSurf M 310

## Application example



Flexible hand prism

## Application example



Special solution with MarSurf M 310

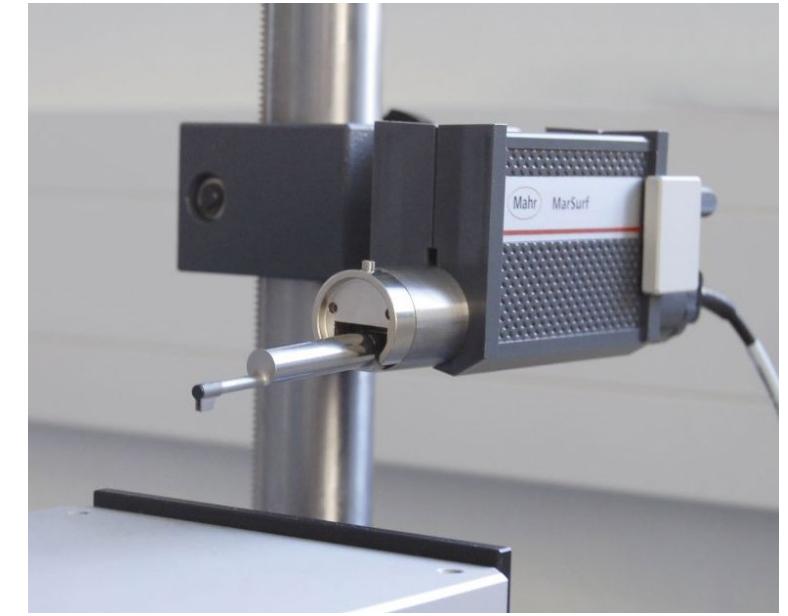
# Application example



Roughness measurement in production

# MarSurf M 310 C2 for transverse scanning

The MarSurf M 310 C2 is specially designed for measurements in transverse direction (e.g. on crankshafts or camshafts and at bearing points).



## Aksesuarlar

- Pick-up extension 80 mm (3.15 in)
- Pick-up PHT-3-350 for measurements in bores from Ø 3 mm (0.12 in)
- Pick-up PHT 11-100 for measurements at recessed points e.g. in grooves from 2.5 mm (0.10 in) wide and up to 7.5 mm (0.30 in) deep
- Pick-up PHTR 100 for measurements on concave and convex surfaces
- Pick-up PHTF 0.5-100 for measurements on tooth flanks
- Pick-up PT 150 dual-skid pick-up for measurements on metal sheet and roller surfaces according to DIN EN 10049 (SEP)



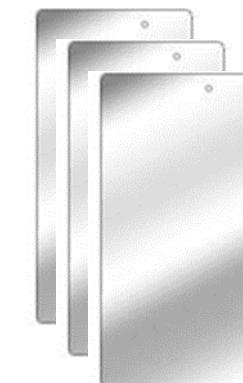
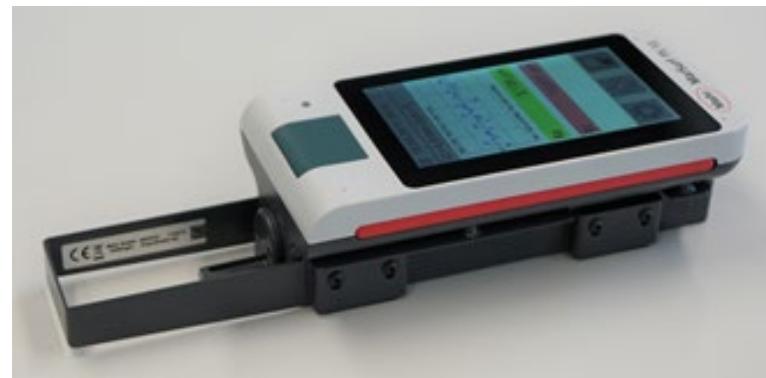
## Accessories

- RD 18 C mount with dia. 8H7
- Mount for measuring stand ST-D / ST-G
- Measuring stand with magnetic base MarStand 815 MA/MB
- Pick-up protection/ pick-up protection with prism
- Measuring stand ST-D, ST-F, ST-G
- Geometric standard PGN 3



# Accessories

- Data connection cable USB Bi-Directional DK-U1 for connection to MarCom software
- PS 10 / M 310 test and geometry standard incl. DAkkS / DKD calibration certificate (ISO 5436-1, C3)
- Magnetic holder for MarSurf M 310
- Display protection films (real glass) for MarSurf PS 10 / M 310



# Scope of delivery MarSurf M 310 Set

## **6910260      Set "MarSurf M 310 (2 µm)"**

- 6910261      Roughness measuring instrument MarSurf M 310
- 7028530      Probe protection with prismatic bottom, plastic, for measurements on cylindrical workpieces
- 6910434      hand prism
- 6850720      Height adjustable feet (2 pieces) for hand prism 6910434
- 3028331      Power supply unit (100 V AC to 264 V AC, 5 V =)
- 3028332      Mains adapter (4 pieces) for plug-in power supply unit 3028331  
(for use in Europe, Great Britain, USA, Australia)
- 3028323      USB cable (USB-A, microUSB), length 2.0 m; to connect the power supply unit; to connect to the USB interface of a computer
- 7053553      Extension cable for removable drive unit, length 1.2 m
- 3650419      Hexagon screwdriver, SW 2.0 mm
- 3762817      Folding map "MarSurf. Surface parameters" (German, English)
- 7053543      Carrying case with shoulder strap
- 7012054      Transport case



# Lieferumfang MarSurf M 310 Set

**6910267**

## **Set "MarSurf M 310 (2 µm) mit Drucker"**

6910261

Roughness measuring instrument MarSurf M 310

7028530

Probe protection with prismatic bottom, plastic, for measurements on cylindrical workpieces

6910434

hand prism

6850720

Height adjustable feet (2 pieces) for hand prism 6910434

6910270

Bluetooth printer (receipt printer, 58 mm) with charging station

5450105

Thermal paper (1 roll)

3003856

USB-Bluetooth-Adapter

3028331

Power supply unit (100 V AC to 264 V AC, 5 V =)

3028332

Mains adapter (4 pieces) for plug-in power supply unit 3028331

(for use in Europe, Great Britain, USA, Australia)

3028323

USB cable (USB-A, microUSB), length 2.0 m; to connect the power supply unit; to connect to the USB interface of a computer

7053553

Extension cable for removable drive unit, length 1.2 m

3650419

Hexagon screwdriver, SW 2.0 mm

3762817

Folding map "MarSurf. Surface parameters" (German, English)

7053543

Carrying case with shoulder strap

7012054

Transport case



## Verfügbare MarSurf M 310 Set

- 6910260 Set "MarSurf M 310 (2 µm)"
- 6910265 Set "MarSurf M 310 (5 µm)"
- 6910267 Set "MarSurf M 310 (2 µm) with printer"
- 6910268 Set "MarSurf M 310 (5 µm) with printer"
- 6910266 Set "MarSurf M 310 ohne PHT-Taster"
- 6910264 Set "MarSurf M 310 C2 (2 µm)"
- 6910270 Bluetooth-/USB printer with charging station



# Technical data

Unit of measurement	Metric, inch
Measuring principle	Stylus method
Pick-up	Inductive skidded pick-up, 2 µm (80 µin), 90° stylus tip, measuring force approx. 0.7 mN
Measuring range / resolution	350 µm / 8 nm
Display	Large illuminated 4.3"-TFT-Touchdisplay; display rotatable
Parameter	Ra, Rq, Rz (Ry (JIS) corresp. Rz), Rz (JIS), Rmax, Rp, Rpa (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, Rpc, Rmr (tp (JIS, ASME) corresp. Rmr), RSm, RSk, RS, CR, CF, CL, R, Ar, Rx
Filter acc. to DIN ISO/JIS	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, ls-filter acc. to DIN EN ISO 3274 (disengageable )
Standards	DIN EN ISO, ASME, JIS
Cutoff $\lambda c$ (acc. to ISO/JIS):	0.25 mm, 0.8 mm, 2.5 mm, automatically
Pre- and post-travel:	half, without
Tracing length $L_t$ (according to ISO/JIS)	1.5 mm, 4.8 mm, 15.0 mm, N x Lc, freely selectable, automatically
Tracing length (according to MOTIF)	1 mm, 4 mm, 8 mm, 12 mm, 16 mm
Evaluation length $l_m$ (according to ISO/JIS)	1.25 mm, 4.0 mm, 12.5 mm
Number n of sampling lengths acc. to ISO/JIS	Selectable: 1 to 16
Short cutoff acc. to ISO/JIS	Selectable, freely adjustable
Tracing speed	1 mm/s, 0.5 mm/s

# Technical data

Return speed	1 mm/s
Calibration function	Dynamic, Ra, Rz and RSm (calibration standard integrated, removable)
Languages	17, including 3 Asian languages German, English, French, Italian, Spanish, Portuguese, Dutch, Swedish, Russian, Polish, Czech, Japanese, Chinese, Korean, Hungary, Turkey, Romanian
Memory capacity	TXT, X3P, CSV, PDF-file, memory can be extend with microSD-Card (up to 32 GB)  Results as txt-file: min. 500.000 PDF-protocol: min. 1500 Profile in X3P: min. 3900 Profile as txt-file: min. 1200 with 32 GB microSD-Card → Factor 320
Other	Drive unit removable, Blocking of settings (code-protected), date/time, tolerance monitoring in terms of color, Connection to MarCom software via cable (USB, RS232C) and wireless data transmission, Connection to MarCom software via data connection cable (duplex - USB), connection to SPC, connection to Bluetooth printer, storage of measuring programs
Dimensions	160 mm x 77 mm x 50 mm
Weight	approx. 500 g
Battery	Li-ion battery
Battery charging time	Approx. 1,5 hours
Interfaces / power supply	USB, MarConnect (USB, RS232), microSD-Card slot for SD / SDHC / 100 – 264 V
Protection class	IP 40

## Competition

Competitor	Device	
Mitutoyo	SJ-310 Surftest	
Jenoptic (Hommel-Etamic)	Waveline W10	
Diavite	DH-10 Touch	
Accretech (Zeiss)	Surfcom Touch 35/40/45	



## Comparison - Mitutoyo SJ 310 Surftest



- List price: 4.450,00 Euro
- Special price: 3.599,00 Euro
- Larger display than M 310 → but more unwieldy and heavier than MarSurf M 310.
- Printer integrated in the device → the customer pays for it even if no printer is needed.
- Measuring range with 360 µm 10 µm higher → but has no advantages for skid measurement. Very rough surfaces cannot be measured with it either.
- Probe - skid closed, no cleaning if dirty



## Comparison - Mitutoyo SJ 310 Surftest



Feature	Mitutoyo SJ 310	MarSurf M 310
Operation	Via touch screen and buttons	<b>Via Touchscreen - Smartphone Concept</b>
Size, weight	275 x 198 mm, 1,8 kg – unwieldy and heavy	<b>180 x 75 mm, 500 g, handy and light</b>
Display made of mineral glass	No	<b>Yes, therefore more resistant to scratches</b>
Printer	Integrated	<b>external, optionally selectable Customer only pays for it when he needs it.</b>
PDF protocol can be created in the device	No	<b>Yes</b>
Auto Cutoff	No	<b>Yes</b>
Cutoff variable	No	<b>Yes</b>
Funktion QR/Barcode-Scanner	No	<b>Yes</b>
Duplex interface	No	<b>Yes (IATF ready)</b>
LED for status indication	No	<b>Yes</b>
Function keys on the display	No	<b>Yes</b>
List price	4.450,00 Euro with printer <b>4.450,00 Euro with printer</b>	<b>4.150,00 Euro without printer</b> 4.650,00 Euro with printer

# Comparison - Jenoptic (Hommel-Etamic) Waveline W10



- List price: 5.120,00 Euro
- Special price: 4.700,00 Euro
- 4.3" touch screen (no mineral glass)
- Printer integrated in the device → the customer pays for it even if he does not need a printer
- probe – skid closed, no cleaning if dirty
- Probe can be swivelled 90° (Mahr offers M 310 C2)
- Measuring range 320 µm (Mahr offers 350 µm)
- Raunormally integrated, but removable (like M 310)
- 800 measuring cycles per battery charge → 1200 measuring cycles with M 310 per battery charge



## Comparison - Jenoptic (Hommel-Etamic) Waveline



Feature	Waveline W10	MarSurf M 310
Operation	Via touch screen and buttons	<b>Via Touchscreen - Smartphone Concept</b>
Size, weight	224 x 224 mm, 1kg	<b>180 x 75 mm, 500 g, handy and light</b>
Drive unit	Separate drive unit as extra unit, cylinder not removable	<b>Cylindrical drive unit removable</b>
Display made of mineral glass	No	<b>Yes, therefore more resistant to scratches</b>
Printer	Integrated	<b>external, optionally selectable Customer only pays for it when he needs it</b>
PDF protocol can be created in the device	No	<b>Yes</b>
Auto Cutoff	No	<b>Yes</b>
Cutoff variable	No	<b>Yes</b>
Funktion QR/Barcode-Scanner	No	<b>Yes</b>
Duplex interface	No	<b>Yes (IATF ready)</b>
LED for status indication	No	<b>Yes</b>
Function keys on the display	No	<b>Yes</b>
List price	5.120,00 Euro with printer	<b>4.150,00 Euro without printer, 4.650,00 Euro with printer</b>

# Comparison - Diavite DH-10 Touch

**DIAVITE AG**

- Available as a variant of a skidless probe and a skid probe
- One evaluation unit for all feed devices. The drive units can be repositioned as skid system and free touch systems.
- VHF (for all skid and free probe systems) Measuring length 0.48 - 16 mm
- List price: 5890,00 Euro (variant skidded system)
- 10,1" Touch display - industrial computer
- Measuring range: 350 µm identical to MarSurf M 310.



## Comparison - Diavite DH-10 Touch



Feature	Diavite DH-10 Touch	MarSurf M 310
Operation	Via touch screen, PC Concept	<b>Via Touchscreen - Smartphone Concept</b>
Size, weight	265 x 175 mm	<b>180 x 75 mm</b>
Display made of mineral glass	No	<b>Yes, therefore more resistant to scratches</b>
Printer	No	<b>Yes</b>
PDF protocol can be created in the device	<b>Yes, as printout, since evaluation unit = PC</b>	Yes
Auto Cutoff	No	<b>Yes</b>
Cutoff variable	No	<b>Yes</b>
Funktion QR/Barcode-Scanner	<b>Yes, because evaluation unit = PC</b>	Yes
Duplex interface	No	<b>Yes (IATF ready)</b>
LED for status indication	No	<b>Yes</b>
Languages	7	<b>17</b>
List price	5.890,00 Euro	<b>4.150,00 Euro without printer 4.650,00 Euro with printer</b>

# Comparison - Zeiss Surfcom Touch 35/40/45



Seeing beyond



- Introduction 2018
- Automatic recognition of the feed unit of the 3 different feed units:  
Surfcom Touch 35 = Standard type  
Surfcom Touch 40 = Retraction type  
Surfcom Touch 45 = Horizontal type
- The drive unit is a copy of the Mitutoyo drive unit.
- Measuring range increased by 20 µm compared to Mahr and 10 µm compared to Mitutoyo, but has no advantages in skid measurement.  
Very rough surfaces cannot be measured with them either.
- Liquid crystal touch screen - Mahr uses mineral glass touch screen.
- Currently only sporadically or not at all in competition.
- The system is mainly intended for the Asian market.



## Comparison - Zeiss Surfcom Touch 35/40/45



Feature	Surfcom Touch 40	MarSurf M 310
Operation	Via touch screen	<b>Via Touchscreen - Smartphone Concept</b>
Size, weight	320 x 167 mm, 2.0 kg - unwieldy and heavy	<b>180 x 75 mm, 500 g, handy and light</b>
Display made of mineral glass	No	<b>Yes, therefore more resistant to scratches</b>
Printer	<b>Model available with and without printer</b>	<b>external, optionally selectable Customer only pays for it when he needs it</b>
PDF protocol can be created in the device	No	<b>Yes</b>
Auto Cutoff	No	<b>Yes</b>
Cutoff variable	No	<b>Yes</b>
Funktion QR/Barcode-Scanner	No	<b>Yes</b>
Duplex interface	No	<b>Yes (IATF ready)</b>
LED for status indication	No	<b>Yes</b>
Measuring range	<b>370 µm</b>	350 µm
Languages	<b>20 incl. (Thai, Vietn., Indones., Trad. Chines.)</b>	17
List price	4.330 Euro without printer	<b>4.150,00 Euro without printer</b>

- Thank you very much for your attention!

