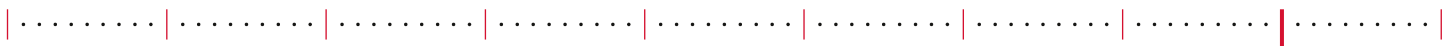
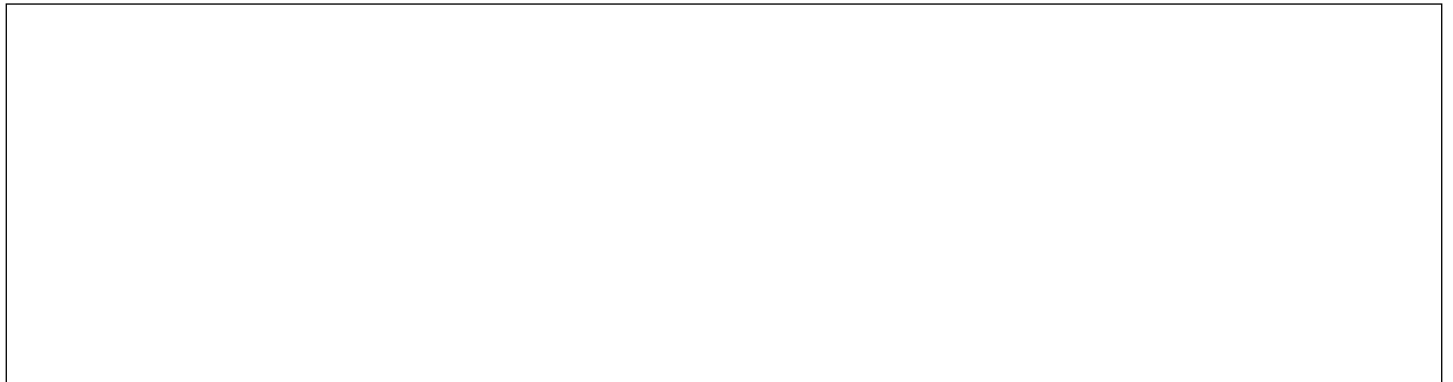


Partner for manufacturing companies worldwide.

**Close to our customers.**



Mahr GmbH  
 Carl-Mahr-Straße 1, 37073 Göttingen, Germany  
 Reutlinger Str. 48, 73728 Esslingen, Germany  
 Telefon +49 551 7073-800, Fax +49 551 7073-888  
[info@mahr.de](mailto:info@mahr.de), [www.mahr.com](http://www.mahr.com)



© Mahr GmbH

We reserve the right to make changes to our products, especially due to technical improvements and further developments. All illustrations and technical data are therefore without guarantee. All list prices are the recommended retail prices.

3723188 | 04.2017

- 0 +



**E X A C T L Y**

# SMAHRT Tools



## PRECISION GAGES WITH INTEGRATED WIRELESS


That you receive reliable measuring results while being completely mobile.

This is what **EXACTLY** means to us!

- 0 +



EXACTLY



That you receive reliable measuring results  
while being completely mobile.

**This is what EXACTLY means to us!**

With Integrated Wireless, you receive a new Integrated Wireless data transmission system from Mahr for the price of a cable. Data acquisition is now even simpler: Simply transmit your measuring data without being tangled up between cables directly into Microsoft Office Excel® or into your CAQ/SPC Software package.





## INDEX

<b>SMAHRT Metrology</b>	2
<b>SMAHRT Connectivity</b>	4
<b>MarCal Calipers</b>	
Overview MarCal Caliper16 EWRI	6
MarCal 16 EWRI Digital caliper	8
MarCal 16 EWRI-C / 16 EWRI-H Digital caliper for special applications	9
Overview MarCal Digital Caliper for special applications	10
MarCal 16 EWRI-V Digital universal caliper	12
MarCal 30 EWRI / 30 EWRI-D / 30 EWRI-N Digital depth gage	13
<b>Micromar Micrometers</b>	
Overview Micromar 40 EWRI	16
Micromar 40 EWRI Digital micrometer	18
<b>MarCator Digital Indicators</b>	
Overview MarCator 1086 Ri	20
MarCator 1086 Ri / 1086 WRi Digital Indicators	21
Overview MarCator 1087 Ri	24
MarCator 1087 Ri / 1087 BRi Digital Indicators	25
<b>MarConnect Wireless Data Transmission</b>	
MarConnect e-Stick	28
MarConnect 16 EWe / 2000 e / RS232 e / 1082 e	29



# SMAHRT METROLOGY



**MARCONNECT**  
**PATENTED INNOVATIVE**  
**WIRELESS TECHNOLOGY**

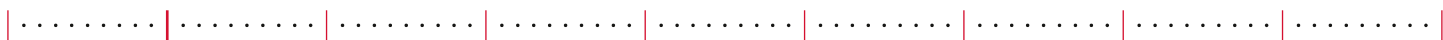
## WIRELESS DEVICES FOR MORE MEASURING CONVENIENCE

Mahr's new wireless devices with **integrated wireless transmitter** are designed for user-friendly, practical and cost-effective use in your factory. They will make your measurement recording processes much faster and more efficient.

**Mahr's caliper, micrometers and dial indicators herald a new era:**

Mahr has enhanced its "MarCal", "Micromar" and "MarCator" ranges with state-of-the-art patented technology. These special measuring instruments

- feature "**Integrated Wireless**",
- have a transmitter directly integrated in the measuring instrument,
- are **energy-efficient** and do not require a separate battery.



**Conventional measuring station –  
with cable connection**



**BENEFIT FROM THESE OUTSTANDING ADVANTAGES:**

Data link	Integrated wireless	Cable connection
Range	Max. <b>6 m</b>	Max. <b>2 m</b> (without extension cable)
Freedom of movement and operation	<b>Fully autonomous measuring without limits</b>	<b>Limited freedom of movement</b> , especially at measuring stations with multiple measuring instruments
Wear	<b>No risk of damage or wear</b>	<b>Risk of:</b> - cable breaks, cable kinks - embrittlement from oil, etc.
Interface	1 <b>affordable i-Stick receiver</b> for 8 measuring instruments (maximum 4 i-Sticks per PC) <b>Free MarCom Professional software interface</b>	<b>One cable</b> is required for each measuring instrument Additional <b>hardware interface</b> must be purchased
Safety	Visual <b>feedback of successful transmission</b> on display of measuring instrument, or <b>error message</b>	<b>No feedback from transmission</b> Unplugged cables or cable breaks are <b>not identified</b>

**Innovative measuring station –  
with integrated wireless**



# SMAHRT CONNECTIVITY

## Sending measuring results

Data

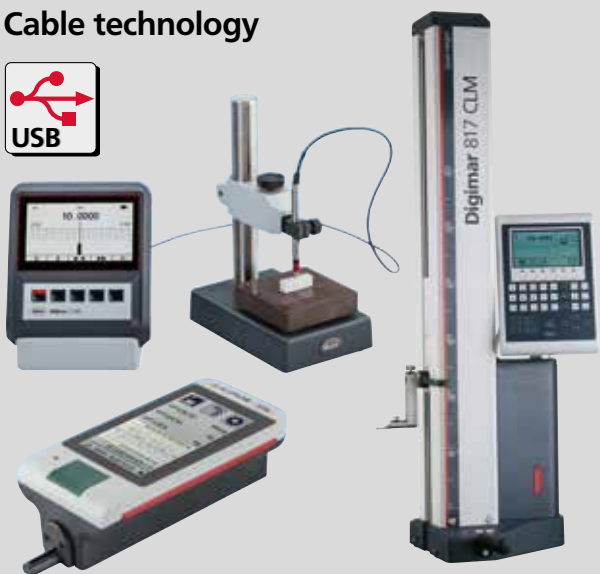
### Integrated wireless technology



### Retrofitted wireless technology



### Cable technology



**MarCom Pro**  
**Free to**  
**www.mahr.**

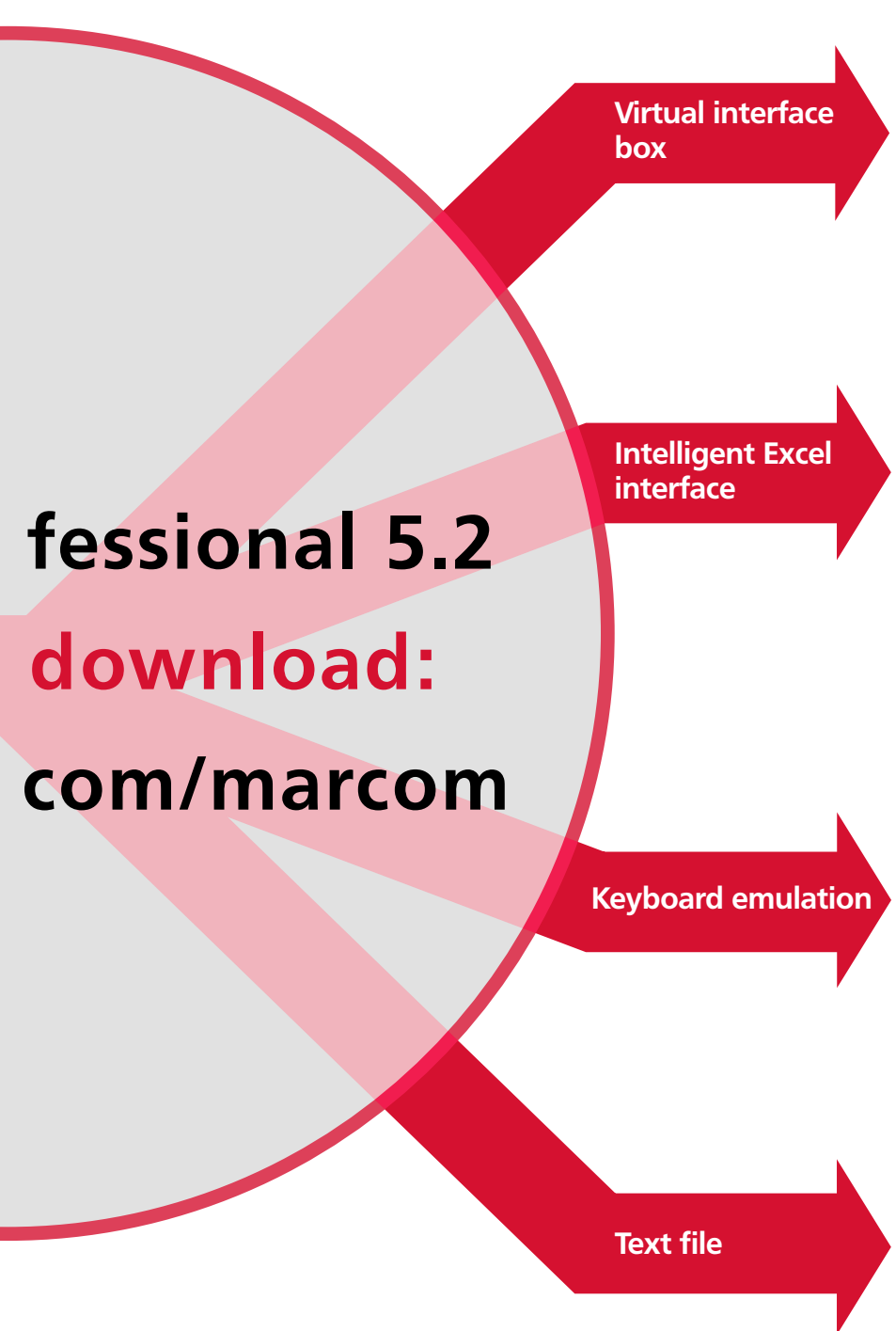
Scan the QR code  
to watch simple and  
practical applications





**HIGHLIGHT:** Our contribution to Industry 4.0: You can now download MarCom Professional software free of charge!

transfer **Data processing**



**CAQ-/SPC-Software**

BABTEC Q-DAS BÖHME & WEIHS

**Microsoft Office Excel®**

	A	B	C
1			
2			
3			
4			
5			
6			

**Any Windows software**

**Flexible data processing**

```
TXTXTXTXT
TXTXTXTXT
TXTXTXTXT
TXTXTXTXT
TXTXTXTXT
TXTXTXTXT
TXTXTXTXT
TXTXTXTXT
TXTXTXTXT
```

## MarCal. The new Generation

Waterproof digital calipers with the Reference system and integrated wireless

### Security due to the Reference lock function

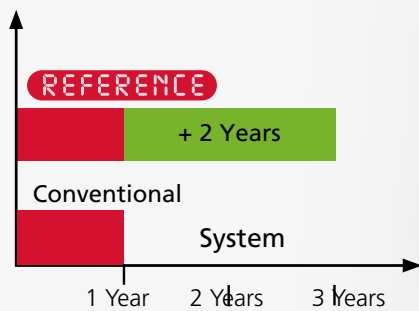
- Zero position is secured
- Operating error is not possible

The digital caliper MarCal 16 EWRI Reference is equipped with a LOCK function. With this key lock the zero position is secured and operating error is avoided.



### Battery service life is 3 years

The new Reference system is just as extremely energy efficient as when the caliper is in standby mode; almost no power is required, thus extending the life of the battery up to 3 years\*.



\* When Integrated Wireless is deactivated

### Superior quality of the guideways

Only MarCal calipers have lapped guideway surfaces to guarantee an even and sensitive run of the slide. Additionally, the service life of the caliper increases compared to a ground guideway due to the greater contact area on the guideway surface.



### Surface of the guideway



## MarConnect Integrated Wireless



Wireless data transmission for the price of a data cable. With Integrated Wireless, you have a new Integrated Wireless data transmission system from Mahr for the price of a data cable. Data acquisition with digital calipers is now even simpler: Simply transmit your measured data without being caught up between cables directly into Microsoft Office Excel® or via a keyboard code into any Windows program.

## Secure data transmission



With Integrated Wireless your data will be transferred to the digital indicator; this is confirmed with a message in the digital indicator's display to whether the sent data has been transferred correctly, and/or whether you are in the reception range of the i-Stick.



## Ergonomic Design

The handy non-slip thumb support of the MarCal 16 EWRI ensures even in contaminated working conditions trouble-free handling and therefore reliable measuring results.



The high-contrast display with 11 mm high digits enables accurate, fatigue-free reading of the measurement results.

## Excellent resistance against dust, coolant and lubricants



Due to the outstanding protection against dust and water, the digital caliper MarCal 16 EWRI Reference delivers precise and secure results even in the most difficult workshop conditions. The finished plastic components have an excellent outstanding chemical resistance.

Code Initials	<b>IP</b>	International Protection
First digit	<b>6</b>	Dustproof
Second digit	<b>7</b>	Protected against temporary immersion in water





# MarCal 16 EWRI. Digital Caliper

## Functions

- ON/OFF
- AUTO-ON / OFF
- HOLD (storage of measured values)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- Reversal of counting direction
- mm/inch
- LOCK function (key lock)
- DATA (Data transmission)

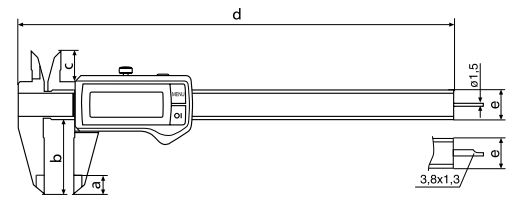
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference system
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- SoftwareMarCom Professional free download:  
[www.mahr.com/marcom](http://www.mahr.com/marcom)  
(only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case



## Technical Data

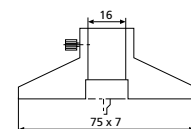
Order no.	Product type	Measuring range	Resolution	Error limit	Standard	Depth Rod	Friction wheel
		mm	mm/inch	mm			
4103400	16 EWRI	0–150	0,01 / .0005"	0,03	DIN 862	round	
4103401	16 EWRI	0–150	0,01 / .0005"	0,03	DIN 862	round	•
4103402	16 EWRI	0–150	0,01 / .0005"	0,03	DIN 862	rectangular	
4103403	16 EWRI	0–150	0,01 / .0005"	0,03	DIN 862	rectangular	•
4103404	16 EWRI	0–200	0,01 / .0005"	0,03	DIN 862	rectangular	
4103405	16 EWRI	0–200	0,01 / .0005"	0,03	DIN 862	rectangular	•
4103406	16 EWRI	0–300	0,01 / .0005"	0,04	Factory standard		
4103407	16 EWRI	0–300	0,01 / .0005"	0,04	Factory standard		•

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103400	10	40	16	235	16
4103401	10	40	16	235	16
4103402	10	40	16	235	16
4103403	10	40	16	235	16
4103404	10	50	19	285	16
4103405	10	50	19	285	16
4103406	14	64	19	388	16
4103407	14	64	19	388	16



## Accessories

Order no.	Product description	Product type
4102020	Depth bridge (75 x 7 mm)	16 Em
4102220	Receiver incl. Software MarCom Std.	i-Stick
4102520	Battery 3 V, CR 2032	



16 Em



i-Stick

# MarCal 16 EWRI-C / 16 EWRI-H. Digital Caliper for special applications

## Functions 16 EWRI-C:

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)



## Application:

Outer measuring surfaces made of ceramic

## Functions 16 EWRI-H:

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)



- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference system
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide

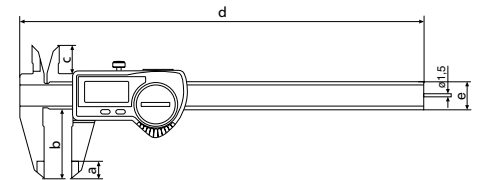
## Technical Data

Order no.	Product type	Measuring range	Resolution	Error limit	Standard	Depth Rod
		mm	mm/inch	mm		
4103372	16 EWRI-C	0 – 150	0,01 / .0005"	0,03	DIN 862	round
4103373	16 EWRI-H	0 – 150	0,01 / .0005"	0,03	DIN 862	round

## Features:

- SoftwareMarCom Professional free download:  
[www.mahr.com/marcom](http://www.mahr.com/marcom)  
(only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103372	10	40	16	235	16
4103373	10	40	16	235	16



## Accessories

Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRI-C, 16 EWRI-H	Receiver incl. Software MarCom Std.	i-Stick
4102520	16 EWRI-C, 16 EWRI-H	Battery 3 V, CR 2032	



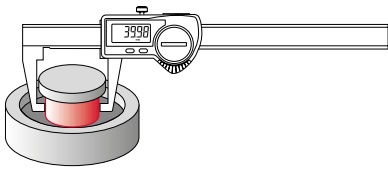
i-Stick

# MarCal Digital Caliper for special applications

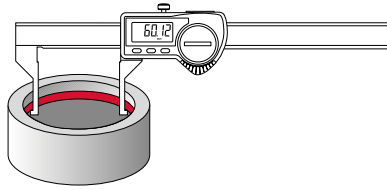


MarCal 16 EWri-BA

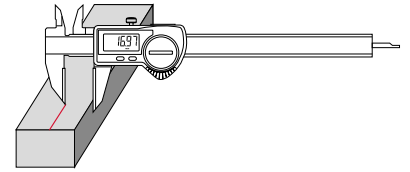
MarCal 16 EWri-AA



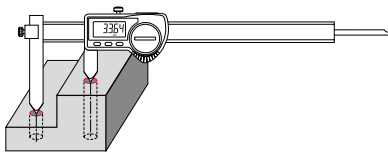
MarCal 16 EWri-AI



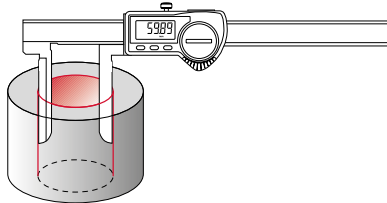
MarCal 16 EWri-AR



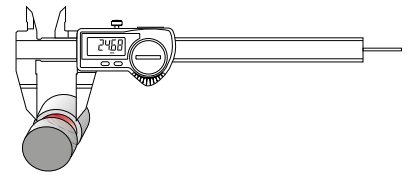
MarCal 16 EWri-BA



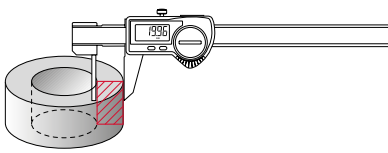
MarCal 16 EWri-LI



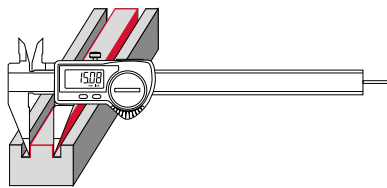
MarCal 16 EWri-NA



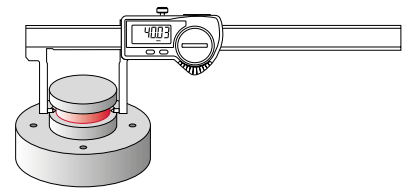
MarCal 16 EWri-RW



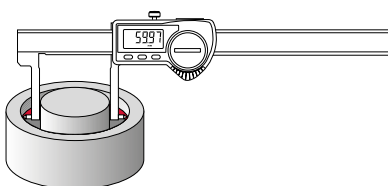
MarCal 16 EWri-S



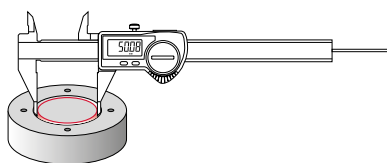
MarCal 16 EWri-SA



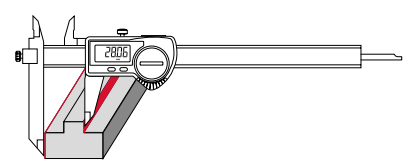
MarCal 16 EWri-SI



MarCal 16 EWri-SM



MarCal 16 EWri-VS





# MarCal Digital Caliper for special applications

## Functions

- ON/OFF
- AUTO-ON / OFF
- HOLD (storage of measured values)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- Reversal of counting direction
- mm/inch
- LOCK function (key lock)
- DATA (Data transmission)
- High contrast analog display
- Locking screw above
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference system
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- SoftwareMarCom Professional free download:  
[www.mahr.com/marcom](http://www.mahr.com/marcom)  
(only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

## Technical Data

Order no.	Product type	Measuring range	Resolution	Error limit	Standard	Depth Rod
		mm	mm/inch	mm		
4103379	16 EWRI-AA	0 – 150	0,01 / .0005"	0,03	Werksnorm	ohne
4103380	16 EWRI-AI	10 – 160	0,01 / .0005"	0,03	Werksnorm	ohne
4103382	16 EWRI-AR	0 – 200	0,01 / .0005"	0,03	Werksnorm	eckig
4103384	16 EWRI-BA	10 – 210	0,01 / .0005"	0,04	Werksnorm	eckig
4103385	16 EWRI-LI	10 – 200	0,01 / .0005"	0,05	Werksnorm	ohne
4103374	16 EWRI-NA	0 – 150	0,01 / .0005"	0,03	Werksnorm	rund
4103381	16 EWRI-RW	0 – 150	0,01 / .0005"	0,05	Werksnorm	ohne
4103375	16 EWRI-S	0 – 150	0,01 / .0005"	0,03	Werksnorm	rund
4103377	16 EWRI-SA	0 – 140	0,01 / .0005"	0,03	Werksnorm	ohne
4103378	16 EWRI-SI	20 – 170	0,01 / .0005"	0,03	Werksnorm	ohne
4103376	16 EWRI-SM	0 – 150	0,01 / .0005"	0,03	Werksnorm	rund
4103383	16 EWRI-VS	0 – 200	0,01 / .0005"	0,04	Werksnorm	eckig

## Accessories

Order no.	Product description	Product type
4102220	Receiver incl. Software MarCom Std.	i-Stick
4102520	Battery 3 V, CR 2032	



i-Stick

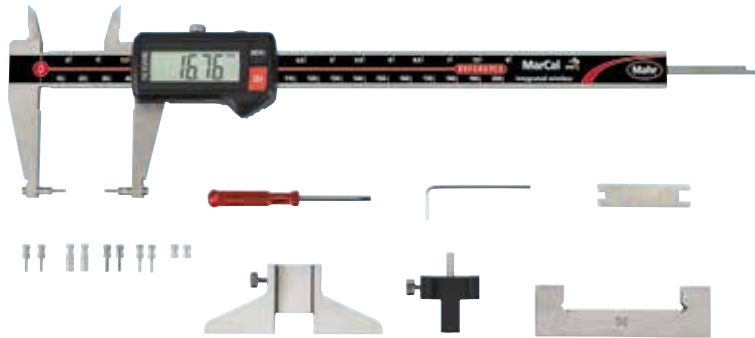


For detailed information about the special caliper line visit [www.mahr.com](http://www.mahr.com)

# MarCal 16 EWRI-V. Digital universal caliper

## Functions

- AUTO-ON / OFF
- ON/OFF
- DATA (Data transmission via connection cable)
- HOLD (storage of measured values)
- PRESET (for entering a numerical value)
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference system
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- SoftwareMarCom Professional free download: [www.mahr.com/marcom](http://www.mahr.com/marcom) (only for Mahr data cables and wireless systems with USB and RS232 interface)
- Height of digits: 11 mm
- Data interface: Integrated wireless
- Energy supply: Battery life approx. 3 years (approx. 0.5 in wireless mode)
- IP protection category: IP 67
- Scope of delivery: Battery, Instruction manual, Case, Setting gage for inside measurement 16 Eel, Measuring force device 16 Ec, Depth Measuring Bridge 16 Em, Anvils for outside measurement 16 Eea 1–3, Anvils for inside measurement 16 Eei 1–3



## Application:

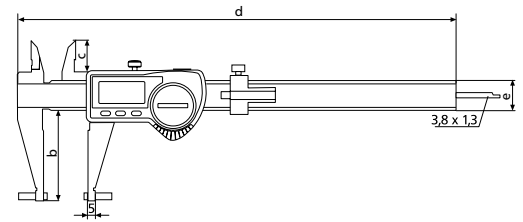
Can be used as standard calipers (four measuring directions), with standard accessories for measuring recesses, grooves, etc., with special accessories for measuring threads, bores and gears.



## Technical Data

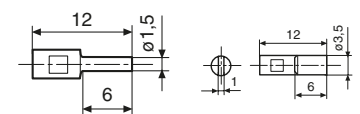
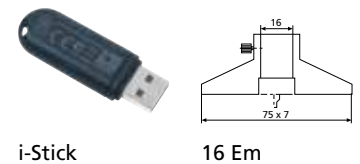
Order no.	Product type	Measuring range	Resolution	Error limit	Standard	Depth Rod	Incl. accessories
4118907	16 EWRI-V	0–200	mm/inch	mm	DIN 862	rectangular	•

Order no.	b	c	d	e
4118907	mm	mm	mm	mm
4118907	48	16,5	285	16

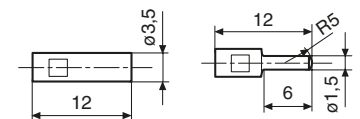


## Accessories

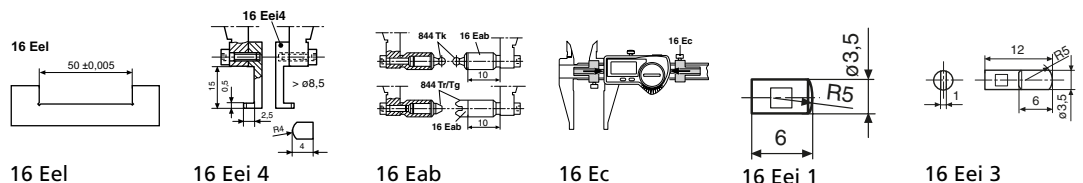
Order no.	Product description	Product type
4102020	Depth bridge (75 x 7 mm)	16 Em
4102220	Receiver incl. Software MarCom Std.	i-Stick
4102520	Battery 3 V, CR 2032	
4118810	Anvil for outside measurement (3,5 x 12 mm)	16 Eea 1
4118811	Anvil for outside measurement (1,5 x 6 mm)	16 Eea 2
4118812	Anvil for outside measurement (3,5 x 6 mm)	16 Eea 3
4118813	Anvil for inside measurement (3,5 x 6 mm)	16 Eei 1
4118814	Anvil for inside measurement (1,5 x 6 mm)	16 Eei 2
4118815	Anvil for inside measurement (3,5 x 6 mm)	16 Eei 3
4118816	Anvil for inside measurement (4 x 2,5 mm)	16 Eei 4
4118817	Setting Gage for inside measurement (50 mm)	16 Eel
4118818	Measuring Force Device	16 Ec
4118819	Mounting Attachment for thread anvils 844 TG/844Tr and ball anvils 844 Tk	16 Eab
4879602	Screws M2x8	



16 Eea 2      16 Eea 3



16 Eei 1      16 Eei 2



# MarCal 30 EWRI. Digital Depth Gage

## Functions

- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- mm/inch
- PRESET (for entering a numerical value)
- LOCK function (key lock)
- HOLD (storage of measured values)
- Reversal of counting direction
- DATA (Data transmission)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference system
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case



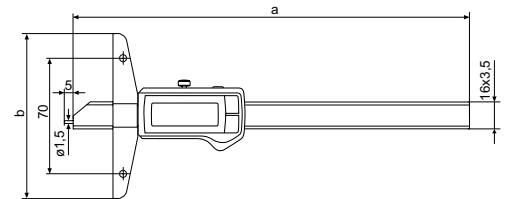
REFERENCE



## Technical Data

Order no.	Product type	Measuring range	Resolution	Error limit	Standard
		mm	mm/inch	mm	
4126755	30 EWRI	0 – 150	0,01 / .0005"	0,03	Factory standard
4126754	30 EWRI	0 – 200	0,01 / .0005"	0,03	Factory standard
4126756	30 EWRI	0 – 300	0,01 / .0005"	0,04	Factory standard
4126757	30 EWRI	0 – 500	0,01 / .0005"	0,05	Factory standard

Order no.	a	b
	mm	mm
4126755	234	100
4126754	284	100
4126756	384	150
4126757	584	150

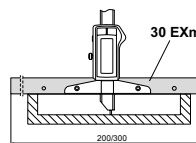


## Accessories

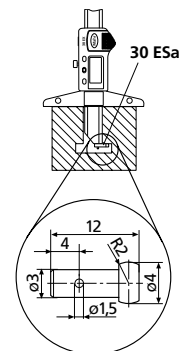
Order no.	Product description	Product type
4102220	Receiver incl. Software MarCom Std.	i-Stick
4102520	Battery 3 V, CR 2032	
4125611	Anvil (4 mm)	30 ESa
4126510	Cross Beam Extension (300 mm)	30 EXm
4126511	Cross Beam Extension (200 mm)	30 EXm



i-Stick



30 EXm



30 ESa

# MarCal 30 EWRI-D. Digital Depth Gage

## Functions

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference system
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- Height of digits: 11mm
- Data interface: Integrated wireless
- Energy supply: Battery life approx. 3 years (approx. 0.5 in wireless mode)
- IP protection category: IP 67
- Scope of delivery: Battery, Instruction manual, Case

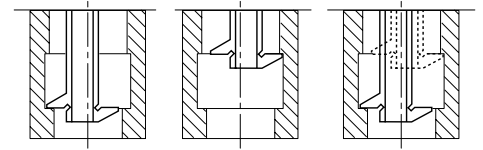


REFERENCE



## Application:

Measuring groove widths and distances between grooves



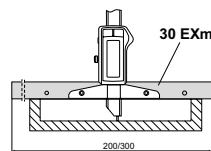
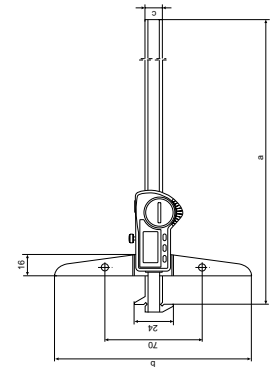
## Technical Data

Order no.	Product type	Measuring range	Resolution	Error limit	Standard
		mm	mm/inch	mm	
4126533	30 EWRI-D	0 – 200	0,01 / .0005"	0,03	Factory standard
4126534	30 EWRI-D	0 – 300	0,01 / .0005"	0,04	Factory standard

Order no.	a	b	c
	mm	mm	mm
4126533	281	100	12
4126534	381	150	12

## Accessories

Order no.	Product description	Product type
4102220	Receiver incl. Software MarCom Std.	i-Stick
4102520	Battery 3 V, CR 2032	
4126510	Cross Beam Extension (300 mm)	30 EXm
4126511	Cross Beam Extension (200 mm)	30 EXm



30 EXm



i-Stick



# MarCal 30 EWRI-N. Digital Depth Gage

## Functions

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference system
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Height of digits:** 11mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Anvils 30 Ent (1mm), 902 (4mm) and 903 (4mm), Case

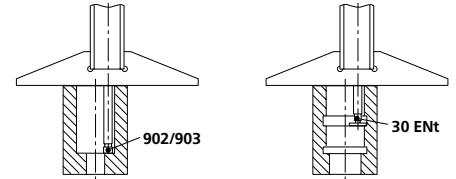


REFERENCE



## Application:

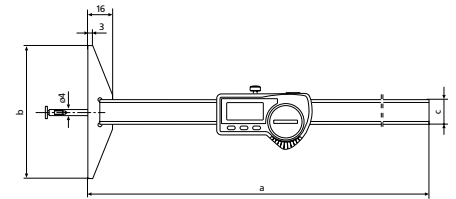
Measuring groove widths and distances between grooves



## Technical Data

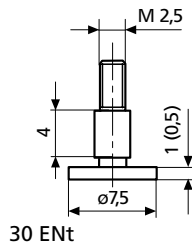
Order no.	Product type	Measuring range	Resolution	Error limit	Standard
		mm	mm/inch	mm	
4126532	30 EWRI-N	0 – 100	0,01 / .0005"	0,03	Factory standard

Order no.	a	b	c
	mm	mm	mm
4126532	268	85	16



## Accessories

Order no.	Product description	Product type
4102220	Receiver incl. Software MarCom Std.	i-Stick
4102520	Battery 3 V, CR 2032	
4126310	Disc Type Anvil (7,5 x 0,5 mm)	30 ENT
4882022	Disc Type Anvil (7,5 x 1 mm)	30 ENT



i-Stick

# Micromar. The digital Micrometer Micromar 40 EWRI

## Waterproof Micrometer with Integrated Wireless

### Large freedom of movement

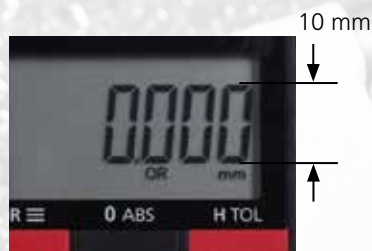


Integrated Wireless clearly gives you more freedom of movement. When used with a digital micrometer in conjunction with a indicating measuring instruments, for example when measuring on or at the machine or with large workpieces you are not obstructed by any cables.



### Large display

The high-contrast display with 10 mm high digits enables accurate, fatigue-free reading of the measurement results.



### Security due to the Reference-Lock function

- Zero position is secured
- Operating error is not possible

The digital micrometer Micromar 40 EWRI Reference is equipped with a LOCK function. With this keylock the zero position is secured and operating error is avoided.





## IP protection category



Excellent resistance against dust, coolants and lubricants

Code Initials	<b>IP</b>	International Protection
First digit	<b>6</b>	Dustproof
Second digit	<b>5</b>	Protected against powerful water jets



## HOLD/DATA function

### HOLD





Freezes the measured value after the measurement. Practical function for measuring tasks, where the display is not visible, i.e. measurements in the machine.

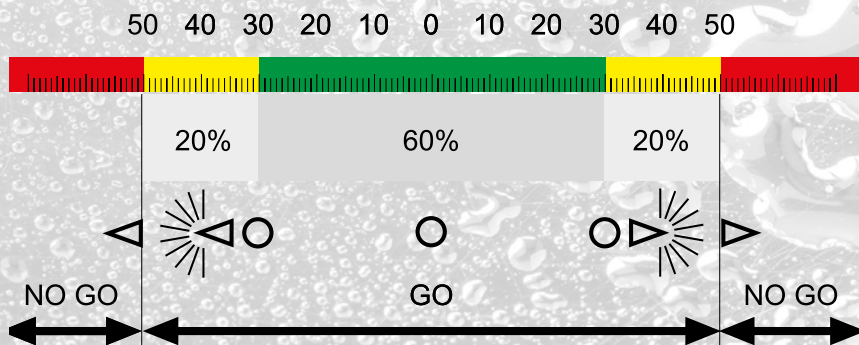
### DATA

If data transmission is activated, the HOLD button acts as DATA button



## Tolerance function with warning limits

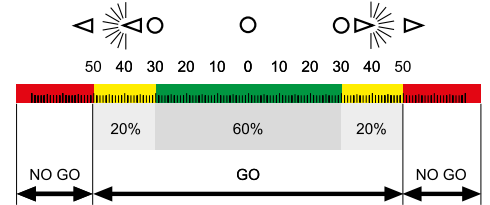
-  Measured value within tolerance limits
-  Warning limit: flashing arrow, if upper warning limit is reached
-  Warning limit: flashing arrow, if lower warning limit is reached
-  Measured value out of tolerance



# Micromar 40 EWRI. Digital Micrometer

## Functions

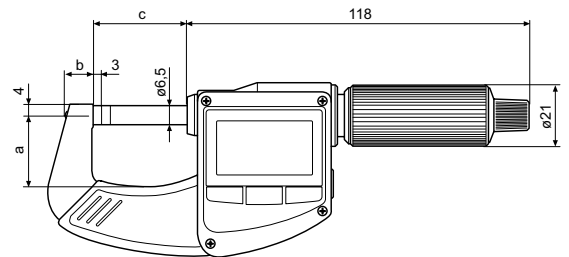
- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (Tolerance and warning limits)
- DATA (Data transmission)
- HOLD (storage of measured values)
- High contrast analog display
- Spindle is hardened throughout and ground, stainless
- Spindle and anvil are carbide tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- SoftwareMarCom Professional free download:  
[www.mahr.com/marcom](http://www.mahr.com/marcom)  
(only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Height of digits:** 10 mm
- **Data interface:** Integrated wireless
- **IP protection category:** IP 65
- **Scope of delivery:** Instruction manual, Battery, Setting standard (from measuring range 25–50 mm), Case



## Technical Data

Order no.	Product type	Measuring range		Resolution		Error limit		Spindle thread pitch		Measuring force	
		mm	mm	mm/inch	mm/inch	µm	mm	mm	N	N	
4157100	40 EWRI	0–25	0–25	0,001 / .00005"	0,001 / .00005"	2	2	0,5	0,5	5–10	5–10
4157101	40 EWRI	25–50	25–50	0,001 / .00005"	0,001 / .00005"	2	2	0,5	0,5	5–10	5–10
4157102	40 EWRI	50–75	50–75	0,001 / .00005"	0,001 / .00005"	3	3	0,5	0,5	5–10	5–10
4157103	40 EWRI	75–100	75–100	0,001 / .00005"	0,001 / .00005"	3	3	0,5	0,5	5–10	5–10

Order no.	a	b	c
	mm	mm	mm
4157100	24	9,5	32
4157101	36	11	57
4157102	45	13	82
4157103	57	13	107



## Accessories

Order no.	Product description	Product type
4102220	Receiver incl. Software MarCom Std.	i-Stick
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H



i-Stick



41 H

Scan the QR code to watch simple and practical applications

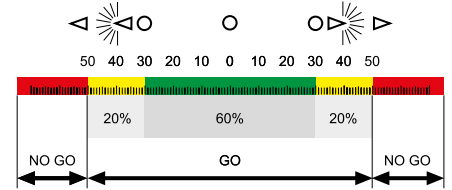




# Micromar 40 EWri. Digital micrometer set

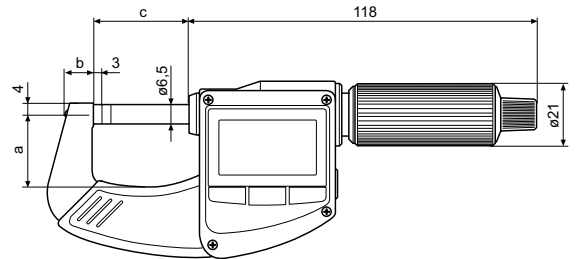
## Functions

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (Tolerance and warning limits)
- DATA (Data transmission)
- HOLD (storage of measured values)
- High contrast analog display
- Spindle is hardened throughout and ground, stainless
- Spindle and anvil are carbide tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- SoftwareMarCom Professional free download:  
[www.mahr.com/marcom](http://www.mahr.com/marcom)  
(only for Mahr data cables and wireless systems with USB and RS232 interface)
- Height of digits: 10 mm
- Data interface: Integrated wireless
- IP protection category: IP 65
- Scope of delivery: Instruction manual, Battery, Setting values, Case



## Technical Data

Order no.	Product type	Measuring range	Resolution	Spindle thread pitch	Measuring force	Number of Micrometers
4157115	40 EWri	0 – 100	0,001 / .00005"	0,5	N	4



## Accessories

Order no.	Product description	Product type
4102220	Receiver incl. Software MarCom Std.	i-Stick
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H



i-Stick

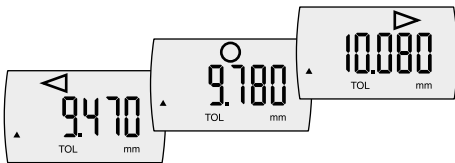
41 H

# MarCator. Digital Indicators

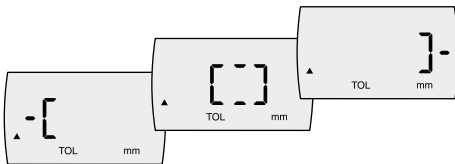
Digital Indicators with tolerance indication and integrated wireless

## Clear display

Tolerance indication with the displayed value. Displayed is the actual measured value and the tolerance zone position



Tolerance indication without the value in the display. In and Out of tolerance will be indicated in the display as a symbol.



## Universal Data-Interface



• **Integrated Wireless**  
The wireless interface for the price of a cable



• **USB**  
No interface box is required! Simple and inexpensive way to set up a multiple measuring instruments via a USB hub



• **Digimatic**  
To connect a Digimatic compatible evaluation instrument



• **Mahr Opto RS232C**  
For direct connection to a COM port on a PC



**Absolute funktion:**  
Micrometer can be set in any position to 0.000 mm / .0000" without the reference to the Preset value being lost.

## Error-free operation



**Lock funktion:** This prevents unintentional activation of an operating button. Either all the operating buttons or only certain individual buttons can be locked. If a locked operating button is pressed the "LOC" symbol will appear in the display.

## Protection class



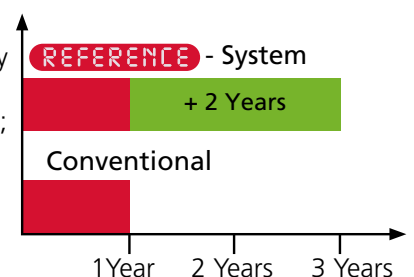
**Protection class IP54 (optional)**

- Protection cap is sealed
- Rubber bellows for the measuring spindle
- Sealed battery compartment

Code Initials	<b>IP</b>	International Protection
First digit	<b>5</b>	Dust protected
Second digit	<b>4</b>	Protection against splash water in all directions

## Battery service life is 3 years

The new Reference system is extremely energy efficient as when the caliper is in standby mode; almost no power is required, thus extending the life of the battery up to 3 years\*.

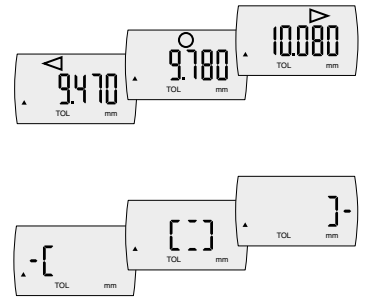


\* When Integrated Wireless is deactivated

# MarCator 1086 Ri. Digital Indicator

## Functions

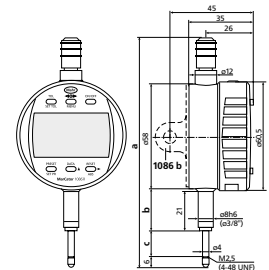
- ON/OFF
  - RESET (set display to zero)
  - mm/inch
  - Reversal of counting direction
  - PRESET (for entering a numerical value)
  - TOL (enter tolerance limit values)
  - <0> (tolerance GO / NO GO display mode)
  - ABS (display can be set to zero without losing reference to preset)
  - DATA (Data transmission via connection cable)
  - Factor (adjustable)
  - LOCK (individual button lock)
- Integrated wireless transmitter
  - High contrast LCD
  - Operating and display unit (bezel) can be rotated through 280°
  - Mounting shank and measuring spindle are both made of hardened stainless steel
  - Immediate measurements due to the Reference system
  - SoftwareMarCom Professional free download:  
[www.mahr.com/marcom](http://www.mahr.com/marcom)  
(only for Mahr data cables and wireless systems with USB and RS232 interface)
  - **Height of digits:** 11 mm
  - **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
  - **IP protection category:** IP 42
  - **Scope of delivery:** Instruction manual, Battery



## Technical Data

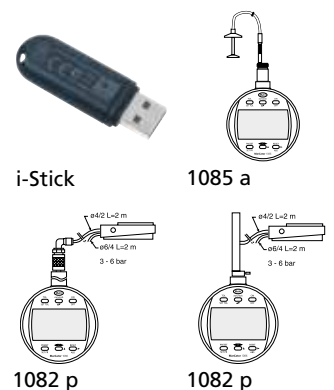
Order no.		4337624	4337625	4337626	4337627	4337628
Product type		1086 Ri				
Measuring span	mm	12,5	25	50	100	25
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01				
Resolution	inch	.00002", .00005", .0001", .0002", .0005"				
Error limit	mm	0,004		0,008	0,009	0,004
Error limit over 50 graduations	mm	0,002				
Repeatability	mm	0,001				
Measuring force	N	0,65 - 0,9	0,65 - 1,15	1,25 - 2,7	1,8 - 3,5	0 - 0
Standard		Factory standard				
Lifting protection cap		•				

Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337624	126,3	23	13,5	8
4337625	153,4	26,8	26,5	8
4337626	267,3	40	52	8
4337627	420,3	91	103	8
4337628	153,4	26,8	26,5	8



## Accessories

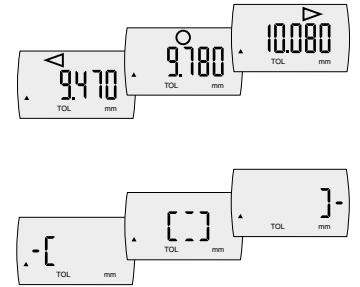
Order no.	Product description	Product type
4884464	Battery 3 V, Type CR 2450	
4102357	16 EXu Data Connection Cable USB (2 m) incl. Software MarCom Std.	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102220	Receiver incl. Software MarCom Std.	i-Stick
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336311	Cable Release (12,5 + 25 mm)	1085 a
4336237	Pneumatic lifting (12,5 + 25 mm)	1082 p
4310103	Adapter bush (.375" / 8 mm)	940
4336230	Pneumatic lifting (50 + 100 mm)	1082 p



# MarCator 1086 Ri. Digital Indicator

## Functions

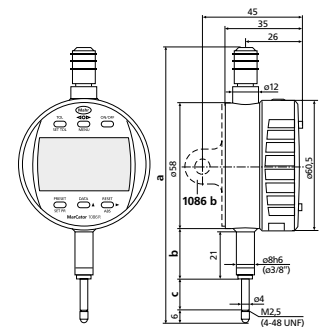
- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (Data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual button lock)
  
- Integrated wireless transmitter
- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference system
- SoftwareMarCom Professional free download:  
[www.mahr.com/marcom](http://www.mahr.com/marcom)  
(only for Mahr data cables and wireless systems with USB and RS232 interface)
- Height of digits: 11 mm
- Data interface: Digimatic, Opto RS232C, USB, Integrated wireless
- IP protection category: IP 42
- Scope of delivery: Instruction manual, Battery



## Technical Data

Order no.	4337134	4337135
Product type	1086 Ri	
Measuring span	mm 12,5	25
Resolution	mm 0,01	
Resolution	inch .0005"	
Error limit	mm 0,02	
Error limit over 50 graduations	mm 0,02	
Repeatability	mm 0,01	
Measuring force	N 0,65 - 0,9	0,65 - 1,15
Standard	Factory standard	
Lifting protection cap	•	

Order no.	a	b	c	Mounting shaft
4337134	mm 126,3	mm 23	mm 13,5	mm 8
4337135	mm 153,4	mm 26,8	mm 26,5	mm 8

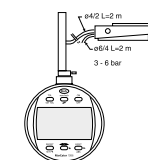


## Accessories

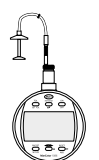
Order no.	Product description	Product type
4884464	Battery 3 V, Type CR 2450	
4102357	16 EXu Data Connection Cable USB (2 m) incl. Software MarCom Std.	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102220	Receiver incl. Software MarCom Std.	i-Stick
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4310103	Adapter bush (.375" / 8 mm)	940
4336311	Cable Release (12,5 + 25 mm)	1085 a
4336237	Pneumatic lifting (12,5 + 25 mm)	1082 p



i-Stick



1082 p

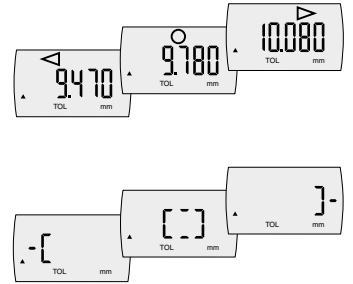


1085 a

# MarCator 1086 WRi. Digital Indicator

## Functions

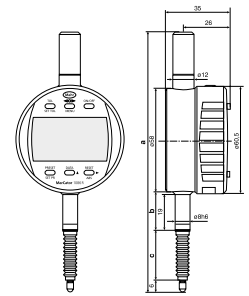
- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (Data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual button lock)
- Integrated wireless transmitter
- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference system
- Software MarCom Professional free download:  
[www.mahr.com/marcom](http://www.mahr.com/marcom) (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Height of digits:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **IP protection category:** IP 54
- **Scope of delivery:** Instruction manual, Battery



## Technical Data

Order no.	4337142	4337143
Product type	1086 WRi	
Measuring span	mm 12,5	25
Resolution	mm 0,0005, 0,001, 0,002, 0,005, 0,01	
Resolution	inch .00002", .00005", .0001", .0002", .0005"	
Error limit	mm 0,004	
Error limit over 50 graduations	mm 0,002	
Repeatability	mm 0,001	
Measuring force	N 0,65 -1,4	1 -2,25
Standard	Factory standard	
Protective measuring spindle cap	•	

Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337142	144,3	21	28,5	8
4337143	193,2	24,8	50	8

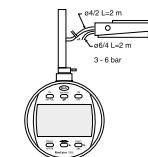


## Accessories

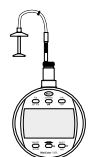
Order no.	Product description	Product type
4884464	Battery 3 V, Type CR 2450	
4102357	16 EXu Data Connection Cable USB (2 m) incl. Software MarCom Std.	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102220	Receiver incl. Software MarCom Std.	i-Stick
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336311	Cable Release (12,5 + 25 mm)	1085 a
4310103	Adapter bush (.375" / 8 mm)	940
4336237	Pneumatic lifting (12,5 + 25 mm)	1082 p
4337472-E	Rubber bellows (12,5 mm)	
4337474-E	Rubber bellows (25 mm)	



i-Stick



1082 p



1085 a

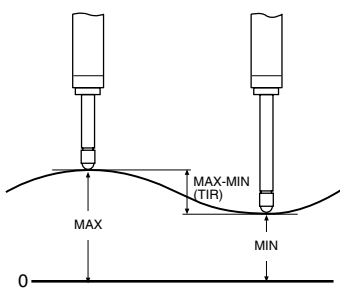


# MarCator 1087 Ri

Digital indicator with integrated wireless and dynamic measuring functions

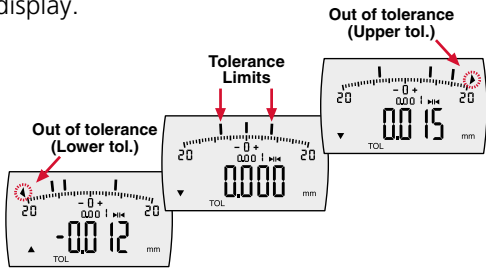
## Dynamic measuring functions

- **MAX-MIN** function ideal for testing flatness and concentricity
- **MAX** and / or **MIN** for searching the reversal point



**Clear display  
Tolerance  
indication**

The integrated bar graph visualizes the tolerance deviation. Out of tolerance; above the upper or below the lower tolerance limit is represented by arrows shown in the display.



## Universal Data-Interface



- **i-wi**  
The wireless interface for the price of a cable



- **USB**  
No interface box is required! Simple and inexpensive way to set up a multiple measuring instruments via a USB hub



- **Digimatic**  
To connect a Digimatic compatible evaluation instrument



- **Mahr Opto RS232C**  
For direct connection to a COM port on a PC



- **Absolute funktion:**  
Micrometer can be set in any position to 0.000 mm / .0000" without the reference to the Preset value being lost.

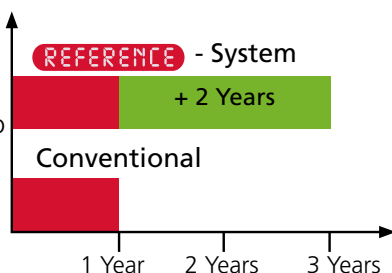


## Just set once to zero

**REFERENCE** The new Digital Indicators 1087 Ri are equipped with the innovative Reference system. The zero position only has to be set one time: once it is set, the zero remains stored for all further measurements. Therefore, when the indicator is switched ON or the measuring spindle is moved the indicator is immediately ready for measurement; thus the need to reset as with a conventional indicator is now obsolete.

## Battery service life is 3 years

The new Reference system is extremely energy efficient as when the caliper is in standby mode; almost no power is required, thus extending the life of the battery up to 3 years\*.



\* When Integrated Wireless is deactivated

## Error-free operation



**Lock funktion:** This prevents unintentional activation of an operating button. Either all the operating buttons or only certain individual buttons can be locked. If a locked operating button is pressed the "LOC" symbol will appear in the display.

# MarCator 1087 Ri. Digital Indicator

## Functions

- 0 (set the analog display to zero)
- ABS (display can be set to zero without losing reference to preset)
- AUTO-ON / OFF
- DATA (Data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual button lock)
- MAX/MIN memory for searching the reversal point
- ON/OFF
- PRESET (for entering a numerical value)
- RANGE (switch the measuring range and resolution)
- RESET (set display to zero)
- TIR (MAX-MIN) for testing flatness and concentricity
- TOL (enter tolerance limit values)
- Reversal of counting direction
- mm/inch

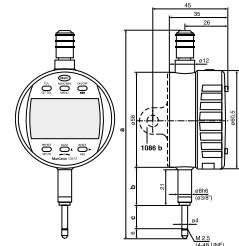
- Integrated wireless transmitter
- High-contrast LCD display
- Control and display unit rotatable through 280°
- Lift-off cap on end of measuring pin
- Clamping shaft and measuring pin in hardened stainless steel
- Ready to measure immediately thanks to reference system
- SoftwareMarCom Professional free download:  
www.mahr.com/marcom  
(only for Mahr data cables and wireless systems with USB and RS232C interface)
- **Height of digits:** 8,5 mm
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **Energy supply:** Battery operation
- **IP protection category:** IP 42
- **Scope of delivery:** Instruction manual, Battery



## Technical Data

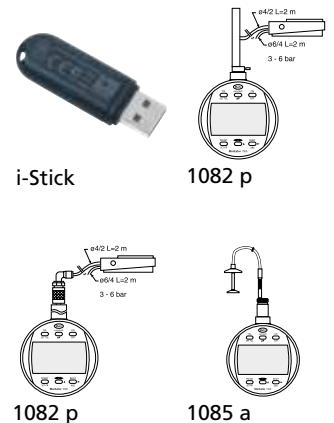
Order no.	4337663	4337665	4337667
Product type	1087 Ri		
Measuring span	mm	12,5	25
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01	
Resolution	inch	.00002", .00005", .0001", .0002", .0005"	
Readings	mm	0,001, 0,002, 0,005, 0,01, 0,02, 0,05	
Range of analog display	mm	± 0,01, ± 0,02, ± 0,04, ± 0,1, ± 0,2	
Error limit	mm	0,004	0,007
Error limit over 50 graduations	mm	0,002	
Repeatability	mm	0,001	
Measuring force	N	0,65 – 0,85	0,65 – 0,9
Standard	Factory standard		
Lifting protection cap	•		

Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337663	126,3	23	13,5	8
4337665	153,4	26,8	26,5	8
4337667	267,3	40	52	8



## Accessories

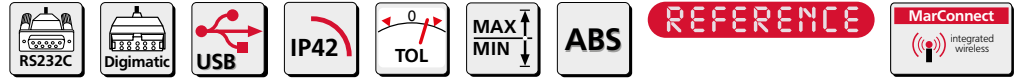
Order no.	Product description	Product type
4884464	Battery 3 V, Type CR 2450	
4102357	16 EXu Data Connection Cable USB (2 m) incl. Software MarCom Std.	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102411	Digimatic data cable (2 m)	16 EXd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102220	Receiver incl. Software MarCom Std.	i-Stick
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336237	Pneumatic lifting (12,5 + 25 mm)	1082 p
4336311	Cable Release (12,5 + 25 mm)	1085 a
4310103	Adapter bush (.375" / 8 mm)	940
4336230	Pneumatic lifting (50 + 100 mm)	1082 p



# MarCator 1087 BRi. Digital Indicator

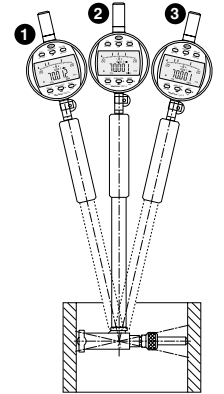
## Functions

- ON/OFF
  - RESET (set display to zero)
  - mm/inch
  - PRESET (enter a numerical value) from range 500 mm
  - Reversal of counting direction
  - TOL (enter tolerance limit values)
  - START/STOP search for reversal point
  - MAX/MIN memory for searching the reversal point
  - ABS (display can be set to zero without losing reference to preset)
  - 0 (set the analog display to zero)
  - DATA (Data transmission via connection cable)
  - Factor (adjustable)
  - LOCK (individual button lock)
- Integrated wireless transmitter
  - High-contrast LCD display
  - Control and display unit rotatable through 280°
  - Lift-off cap on end of measuring pin
  - Clamping shaft and measuring pin in hardened stainless steel
  - Ready to measure immediately thanks to reference system
  - Software MarCom Professional free download: [www.mahr.com/marcom](http://www.mahr.com/marcom) (only for Mahr data cables and wireless systems with USB and RS232C interface)
  - Height of digits: 8,5 mm
  - Data interface: Opto RS232C, Digimatic, USB, Integrated wireless
  - Energy supply: Battery, life span ca. 3 years
  - IP protection category: IP 42
  - Scope of delivery: Instruction manual, Battery



## Application:

In measurements with a 2-point bore gage the reversing point can be calculated automatically during oscillation. Then a PRESET value can be assigned. The ACTUAL value measured is saved by the MIN or MAX function and is shown on the display. The 1087 BRi model can process 64 measured values per second, for fast measuring movements combined with measuring certainty.



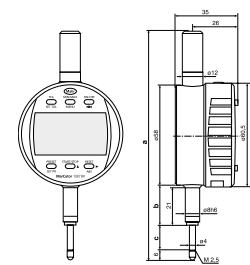
## Technical Data

Order no.	4337664	
Product type	1087 BRi	
Measuring span	mm	12,5
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01
Resolution	inch	.00002", .00005", .0001", .0002", .0005"
Readings	mm	0,001, 0,002, 0,005, 0,01, 0,02, 0,05
Range of analog display	mm	± 0,01, ± 0,02, ± 0,04, ± 0,1, ± 0,2
Error limit	mm	0,004
Error limit over 50 graduations	mm	0,002
Repeatability	mm	0,001
Measuring force	N	0,65 – 0,9
Standard	Factory standard	
Protective measuring spindle cap	•	

Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337664	126,3	23	13,5	8

## Accessories

Order no.	Product description	Product type
4884464	Battery 3 V, Type CR 2450	
4102357	16 EXu Data Connection Cable USB (2 m) incl. Software MarCom Std.	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102220	Receiver incl. Software MarCom Std.	i-Stick
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4310103	Adapter bush (.375" / 8 mm)	940



i-Stick

# MarConnect Integrated Wireless

Make your indicating instrument — wireless!

Simply transmit your measuring data without being tangled up between cables directly into Microsoft Office Excel® or via a Virtual Interface Box to your S PC software.



Application Example:  
Digital Indicator 1087 Ri with  
Plug Gage MaraMeter 844 D



Application Example:  
Digital Indicator 1087 BRi with  
Self-Centering Bore Gage Mara-  
Meter 844 N



Application Example:  
Digital Indicator 1086 Ri with  
Snap Gage MaraMeter 840 F



Application Example:  
Digital Indicator 1087 Ri with  
Universal Gage Multimar 844 T

# MarConnect e-Stick. Receiver

- To retrofit on all Mahr Hand Measuring instruments that have a data interface
- Wireless data transmission from a measuring instrument to a PC
- Secure data transmission due to the acknowledgement dialog of the received data from the PC to the measuring instrument
- Optical confirmation of received data on the transmitter
- Compact transmitter without an external antenna
- Bi-directional radio link (remote control from measuring instruments)
- Radio frequency is 2400 MHz
- **Scope of delivery:** e-stick wireless receiver, Driver
- SoftwareMarCom Professional free download:  
[www.mahr.com/marcom](http://www.mahr.com/marcom)  
(only for Mahr data cables and wireless systems with USB and RS232 interface)



## Technical Data

Order no.		4102230
Frequency band	MHz	2400
Radio range		up to 6 m
Product type		e-Stick
Number of connectable wireless receivers for e-stick		1
Number of connectable transmission modules for e-stick		8
For measuring instrument		Transmission modules 16 EWe, 2000 e, RS232 e



# MarConnect 16 EWe / 2000 e / RS232 e / 1082 e. Transmitter

- To retrofit on all Mahr Hand Measuring instruments that have a data interface
- Wireless data transmission from a measuring instrument to a PC
- Secure data transmission due to the acknowledgement dialog of the received data from the PC to the measuring instrument
- Optical confirmation of received data on the transmitter
- Compact transmitter without an external antenna
- Bi-directional radio link (remote control from measuring instruments)
- Radio frequency is 2400 MHz
- SoftwareMarCom Professional free download:  
[www.mahr.com/marcom](http://www.mahr.com/marcom)  
(only for Mahr data cables and wireless systems with USB and RS232 interface)



## Technical Data

Order no.		4102231	4102232	4102233	4102235
Frequency band	MHz	2400			
Radio range		up to 6 m (20 ft)			
Product type		16 EWe	2000 e	RS232 e	1082 e
For measuring instrument		MarCal 16 ER, 16 EWR, 16 EWW, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 EWR, 40 EWS, 40 EWW, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1087 R, 1087 BR MarSurf PS1, PS10	Digimar 816 CL MarCator 1088 / 1088W Millimes 2000, 2001, 2100, µMaxµm II Millimar C1200	Millimar C1208, C1216, C1245, S1840 Digimar 817 CLM	Digimar M814 N/G Multimar 25 ES MarTool 106 ES