DIMENSIONAL METROLOGY I PRECISION GAGES

MEASURING INSTRUMENTS WITH INTEGRATED WIRELESS SYSTEM

MarConnect

integrated wireless

- 0 +

Mahr

EXACTLY

MarConnect Integrated Wireless

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

Inexpensive

With the Integrated Wireless receiver up to 8 measuring instruments can be connected per i-stick, therefore expensive interface boxes are no longer required. When just attaching a measuring instrument with the Integrated Wireless function you have already a wireless data transmission for the price of a data cable.
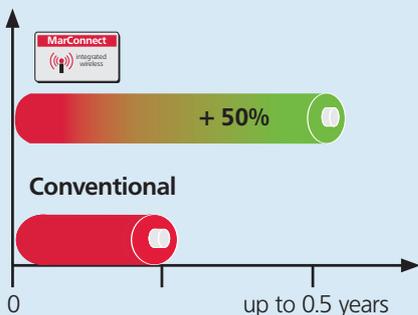
Secure data transmission

When using Integrated Wireless your data will be transferred from the digital measuring instrument to the i-stick, thus computer. This is confirmed with a message in the display of the measuring instrument to whether the sent data has been transferred correctly, and/or whether you are in the reception range of the i-stick.

Long battery life span

As the wireless interface is Integrated in the digital measuring instruments, these are extremely energy efficient. In addition contrary to conventional wireless data transmission systems no additional battery is needed.

+ 50%

Conventional

0   up to 0.5 years

Simple data transmission

MarConnect (((•))) integrated wireless

With the i-stick you can simply **transfer your measured values via the Integrated Wireless to the PC**. The measured values are sent directly (as with a data cable) via the MarCom software to Microsoft Office Excel® or by a keyboard code into any other Windows program.
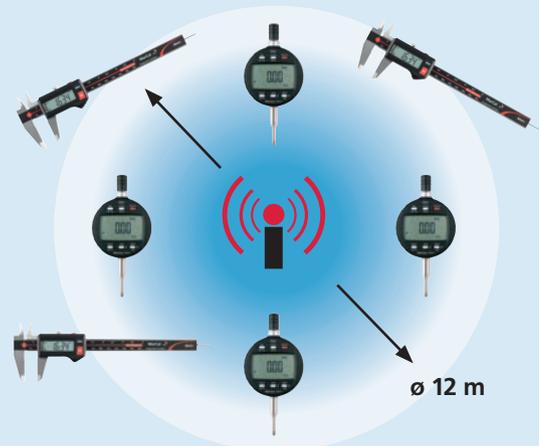
Large freedom of movement

MarConnect (((•))) integrated wireless

Integrated Wireless offers you considerably more **freedom of movement**. Whether at a measuring station, or measuring on or at the machine or with large workpieces you are not obstructed by any cables.

ø 12 m

Excellent ergonomics

MarConnect (((•))) integrated wireless

Conduct measurements without additional modules. Compared to a bulky conventional radio transmission which requires a large external transmitter with a separate battery; the Integrated Wireless transmitter is integrated in the measauring instrument.

MarCator 1087 R

MarCal IP67 integrated wireless

MarCal. The new Generation

WATERPROOF DIGITAL CALIPERS WITH THE REFERENCE-SYSTEM AND INTEGRATED WIRELESS

►| Once again Mahr sets a new standard in the digital caliper product segment with the new generation of MarCal digital reference calipers.

With the new Reference system from Mahr the handling of the caliper has become considerably simpler and far more comfortable, as the zero-position only has to be set once. For all further measurements this setting remains stored. With the high degree of protection, in accordance to IP67 the MarCal 16 EWRi is protected against dust, coolants and lubricants and is therefore suitable to be used in the most difficult workshop conditions.

Also, if you need to document your data, we can offer you the Integrated Wireless, an integrated energy efficient wireless data transmission system; the optimal solution for transmitting your measured values to a PC. |◄
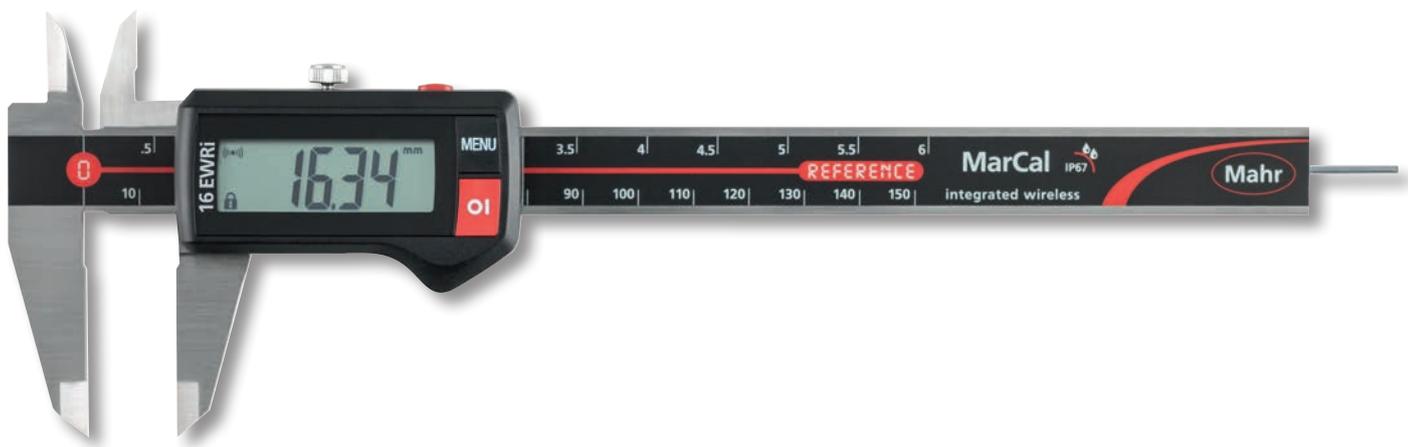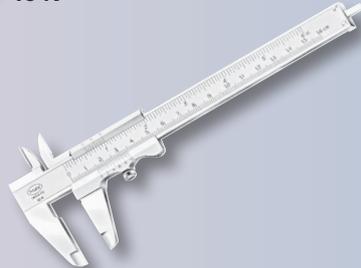

1869	1899	1951	1985
Vernier Caliper Nr. 1	**Vernier Caliper Type Carl**	**Super Vernier Caliper 16 N**	**Digital Caliper 16 E**
The first Caliper from Mahr	Caliper in the present modern form **for inside, outside and depth measurements**	Caliper with a **recessed main scale for the protection of the graduation lines,** a Mahr-Patent	Digital caliper digital **with a data output** for the acquisition of measured values

MarConnect Integrated Wireless - wireless data transmission for the price of a data cable

MarConnect
((•)) integrated wireless

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 and indicators 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

MarConnect
((•)) integrated wireless

When using Integrated Wireless your data will be transferred from the digital measuring instrument to the i-stick, thus computer. This is confirmed with a message in the display of the measuring instrument to whether the sent data has been transferred correctly, and/or whether you are in the reception range of the i-stick.
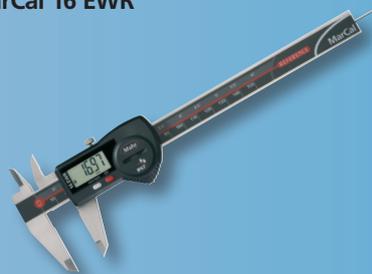
1999

**Digital Caliper
MarCal 16 EX**

MarConnect
USB | RS232C | Digimatic

Caliper with a **MarConnect interface** for trouble-free connection to all commercial evaluation devices

2009

**Digital Caliper
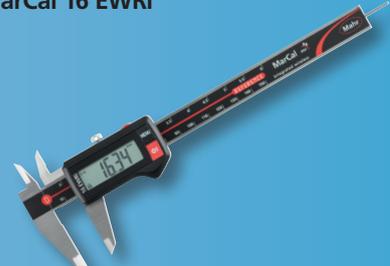MarCal 16 EWR**

REFERENCE

Always ready to measure thanks to the **Reference-System**

2013

**Digital Caliper
MarCal 16 EWRi**

MarConnect
((•)) integrated wireless

Integrated Wireless patent pending

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 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***.

REFERENCE **System**

+ 2 Years

Conventional

1 Year   2 Year   3 Years

* When Integrated Wireless is deactivated

Superior quality of the guide ways

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

Surface of the guide way

Mahr
Lapped guide way

Competitor A
Ground guide way

Competitor B
Ground guide way

The innovative Reference-System

⬭REFERENCE **Just set once to zero**

All Mahr digital calipers with the REFERENCE logo are equipped with the innovative Reference-System. The zero position just has to be set once: after setting the zero position, the zero remains stored for all further measurements. Therefore, once the caliper is switched ON or the slide is moved the caliper is immediately ready for measurement. The need to reset to zero with a conventional caliper once the caliper is switched on has now become obsolete.

① Switch ON   ② Close the measuring jaws   ③ Set to zero   ④ Results of measurement

Conventional

①   ②   ③   ④

⬭REFERENCE **- System**

①   ④
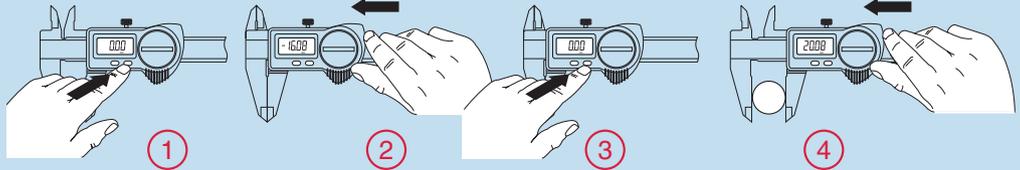
Ergonomic Design

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.

Original size

11 mm

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

IP67 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	**IP**	International Protection
First digit	**6**	Dust-tight
Second digit	**7**	Protected against temporary immersion in water

Digital Caliper MarCal 16 EWRi

MarConnect — (((•))) integrated wireless   🔒   **IP67**

REFERENCE

Features

Functions:
ON/OFF
RESET (Set display to zero)
mm/inch
Reference-Lock/Unlock
Auto-ON/OFF
Hold
DATA

• Integrated Wireless data transmission

• Immediate measurement due to the Reference system

• Excellent resistance against dust, coolants and lubricants, protection class IP67

• Dirt wipers are integrated in the slide

• Life of the battery up to 3 years

• Max measuring speed 2,5 m/s (100"/s)

• High contrast LCD with 11 mm high digits

• Lapped guide way

• Slide and beam made of hardened stainless steel

• Measuring blades for inside measurement

• Step measuring function

• Locking screw

• Supplied with: Case, battery, operating instructions

Technical Data

Measuring range		Resolution	Error limit G		DIN 862	Depth rod		Friction wheel	Order no.
mm	(inch)	mm/inch	mm	/ *inch*		⌀1,5			
150	(6")	0.01/ *.0005"*	0.03	/ *.001"*	●	●			**4103400**
150	(6")	0.01/ *.0005"*	0.03	/ *.001"*	●	●		●	**4103401**
150	(6")	0.01/ *.0005"*	0.03	/ *.001"*	●		●	●	**4103402**
150	(6")	0.01/ *.0005"*	0.03	/ *.001"*	●		●	●	**4103403**
200	(8")	0.01/ *.0005"*	0.03	/ *.001"*	●		●	●	**4103404**
200	(8")	0.01/ *.0005"*	0.03	/ *.001"*	●		●	●	**4103405**
300	(12")	0.01/ *.0005"*	0.04	/ *.0015"*				●	**4103406**
300	(12")	0.01/ *.0005"*	0.04	/ *.0015"*				●	**4103407**

Technical Data
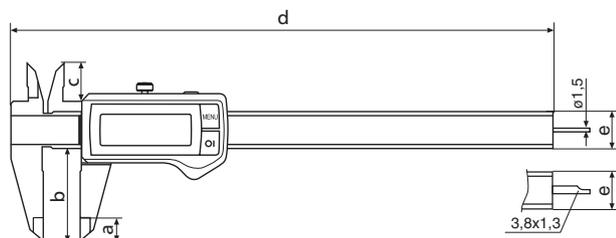
Dimensions					
mm	a	b	c	d	e
150	10	40	16	235	16 x 3
200	10	50	19	285	16 x 3.5
300	14	64	19	388	16 x 4

Accessories

		Order no.
Depth Measuring Bridge	**16 Em**	**4102020**
Battery 3V, Type CR 2032		**4102520**
i-Stick wireless receiver inkl. MarCom Standard		**4102220**
Software MarCom Professional 4.0		**4102552**
Software MarCom Standard 3.1		**4102551**

Accessories for Data Processing see Dimensional Metrology catalog, Chapter 11

16 Em

75 x 7
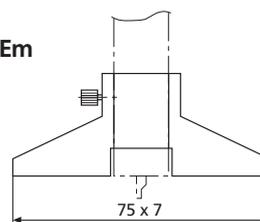
MarCator. The new Generation
DIGITAL INDICATORS WITH THE REFERENCE-SYSTEM AND INTEGRATED WIRELESS

►| Once again Mahr sets a new standard in the digital indicator product segment with the new generation of MarCator Reference indicators:
With the new Reference system the MarCator digital indicators can be applied immediately as the zero-position only has to be set once for all further measurements. Also, if you need to document your data, we can offer you the Integrated Wireless, an integrated energy efficient wireless data transmission system; the optimal solution for transmitting your measured values to a PC. |◄

Just set once to zero

REFERENCE The new Digital Indicators 1086 Ri / 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.

MarConnect Integrated Wireless - wireless data transmission for the price of a data cable

MarConnect integrated wireless 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 indicators 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.

1931

Precision Dial Indicator 810

with a **constant measuring force** (Mahr-Patent)

1954

Precision Dial Indicator 810 ST

SHOCK PROOF

with a **shock proof movement**

1987

Digital Indicator Millitast 1071

23258

RS232C

The first digital indicator, already with a **data output**

MarConnect
integrated wireless

**1086 Ri
12,5 mm**
0,001 mm

MarConnect
integrated wireless

**1087 Ri
12,5 mm**
0,001 mm

1994

Digital Indicator Millitast 1085

MAX
MIN

The first digital indicator with a **combined analog and digital display**

1999

Digital Indicator MarCator 1075

MarConnect
integrated
USB   RS232C   Digimatic

The first digital indicator with the **universal MarConnect interface**

2012

**Digital Indicators MarCator
1086 Ri / 1087 Ri**

REFERENCE

MarConnect
integrated
wireless

Digital indicator with **Reference System and Integrated Wireless**

MarCator 1086 Ri

▶ I The new Digital Indicator **MarCator** 1086 Ri. With the large display and the integrated tolerance function, your measurement results are clearly visual.   I ◀
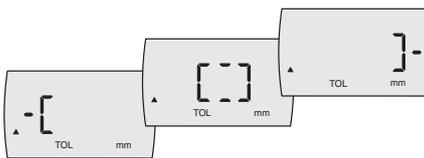
Clear display
Tolerance indication with the diplayed value
Displayed is the actual measured value and the tolerance zone position
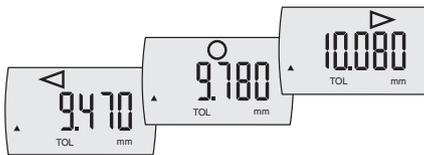
Tolerance indication without the value in the display. In and Out of tolerance will be indicated in the display as a symbol.

Error free operation

Lock function: 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.

Universal Data-Interface

MarConnect
((•)) integrated wireless

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

USB

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

Digimatic

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

RS232C

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

IP Protection class IP54 (optional)
- Protection cap is sealed
- Rubber bellows for the measuring spindle
- Sealed battery compartment

Code Initial	**IP**	International Protection
First Numeral	**5**	Dust protected
Second Numeral	**4**	Protection against splash water in all directions

ABS

Absolute function:
Digital Indicator can be set in any position to 0.000 without losing the reference to the preset value.

Battery service life is 3 years

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

REFERENCE - System
+ 2 Years
Conventional
1 Year   2 Years   3 Years

* When Integrated Wireless is deactivated

Just set once to zero

REFERENCE The new Digital Indicators 1086 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.
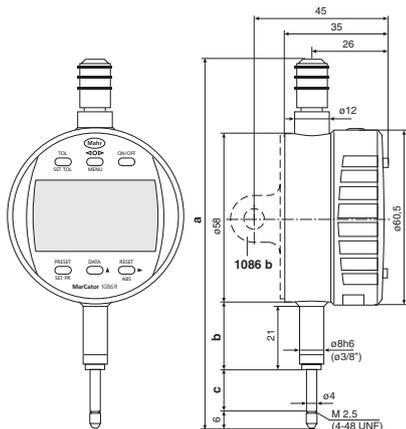
Digital Indicators MarCator 1086 Ri

| ABS | IP42 | 0 TOL | 🔒 | MarConnect USB RS232C Digimatic | MarConnect ((•)) integrated wireless |
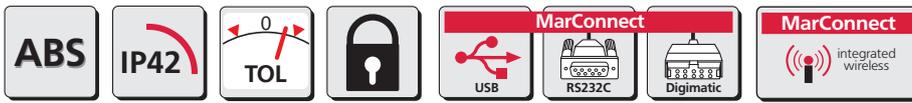
REFERENCE

4337124

4337134

Features

Functions:
ON/OFF
RESET (Set display to zero)
mm/inch
Reversal of the counting direction
PRESET (Allows the entry of any value using set buttons)
TOL (Enter tolerance limit values)
ABS (Display can be set to zero, without losing the reference to the Preset value)
<0> (Tolerance GO / NO GO display mode)
DATA (when connected with a data connection cable)
Factor (adjustable)
• Immediate measurement due to the Reference system
• Individual buttons can be locked - Lock Function
• Operating and display unit (bezel) can be rotated 280°
• High contrast LCD with 11 mm high digits
• Operating time approx. 3 years (2000 work. hrs/year)
• Maximum measuring speed 1.5 m/s (60"/s)
• Lifter protection cap on the measuring spindle
• MarConnect data output: choose either
  USB
  OPTO RS232C
  Digimatic
  Integrated Wireless
• Operating temperature 10 - 40°C
• Class of protection IP42 in accordance to IEC 60529

Supplied with:
Battery,
Operating instructions

Dimensions

45
35
26
ø12
ø58
ø60,5
1086 b
21
ø8h6 (ø3/8")
ø4
M 2,5 (4-48 UNF)

Meas. range		a	b	c
mm	(inch)	mm	mm	mm
12.5	(.5")	126.3	23	13.5
25	(1")	153.4	26.8	26.5

Technical Data

| Measuring range		Resolution	Span of error*	MarConnect Integrated wireless	Measuring force			Weight	Mounting shank	Order no.
mm	(inch)	mm / inch	mm		N			g		
12.5	(.5")	0.001 / .00005"	0.005	●	0.65	-	0.90	130	8h6	**4337124**
25	(1")	0.001 / .00005"	0.005	●	0.65	-	1.15	140	8h6	**4337125**
12.5	(.5")	0.01 / .0005"	0.02	●	0.65	-	0.90	130	8h6	**4337134**
25	(1")	0.01 / .0005"	0.02	●	0.65	-	0.15	140	8h6	**4337135**

* *in any zero point*

MarCator 1087 Ri

►| The new Digital Indicator **MarCator** 1087 Ri. The multi-functional Digital Indicator with a combined analog and digital display as well as tolerance and dynamic measuring functions. |◄
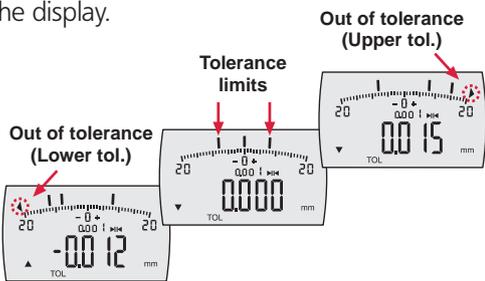
Dynamic measuring functions

- **MAX-MIN**-Function ideal for testing flatness and concentricity
- **MAX** and / or **MIN** for searching the reversal point
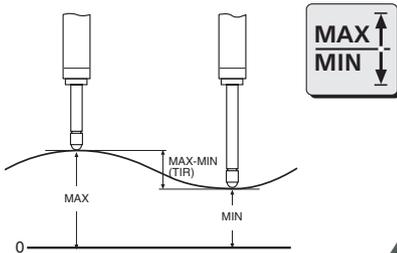
Clear display
Tolerance indication

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.

Out of tolerance (Upper tol.)

Tolerance limits

Out of tolerance (Lower tol.)

Universal Data-Interface

MarConnect
integrated wireless

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

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

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

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

ABS
Absolute function:
Digital Indicator can be set in any position to 0.000 without losing the reference to the preset value.

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***.

REFERENCE **- System**
+ 2 Years
Conventional

1 Years   2 Years   3 Years
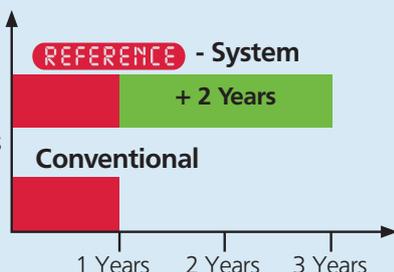
* When Integrated Wireless is deactivated
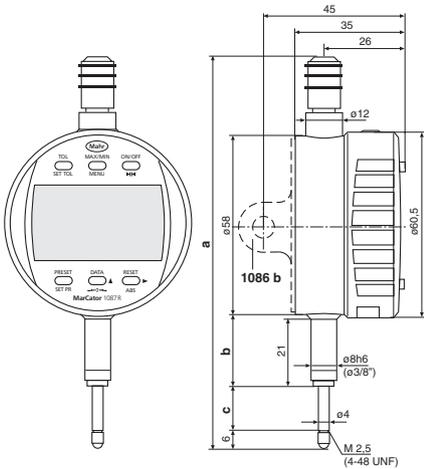
Error free operation

Lock function: 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.

Digital Indicators MarCator 1087 Ri with analog display

ABS	MAX↑/MIN↓	IP42	0 TOL	🔒	MarConnect USB / RS232C / Digimatic	MarConnect integrated wireless

REFERENCE

Features

Functions:
ON/OFF
RESET (Set display to zero)
mm/inch
Reverse the counting direction
PRESET (Allows the entry of any value using set buttons)
TOL (Enter tolerance limit values)
Tolerance band max. 1.6 mm
MAX/MIN memory, ideal for searching the reversal point
TIR (MAX-MIN) ideal for testing concentricity and flatness
ABS (Display can be set to zero, without losing the reference to the Preset value)
0 (Set analog display to zero)
DATA (when connected with a data connection cable)
Factor (adjustable)
• Immediate measurement due to the Reference system
• Individual buttons can be locked - Lock Function
• Operating and display unit (bezel) can be rotated 280°
• High contrast LCD with 8.5 mm high digits
• Operating time approx. 3 years (2000 work. hrs/year)
• Maximum measuring speed 1.5 m/s (60"/s)
• MarConnect data output: choose either
  USB
  OPTO RS232C
  Digimatic
  Integrated Wireless
• Operating temperature 10 - 40°C
• Class of protection IP42 in accordance to IEC 60529

Supplied with:
Battery,
Operating instructions

Dimensions

Meas. range		a	b	c
mm	(inch)	mm	mm	mm
12.5	(.5")	126.3	23	13.5

Analog display

Readings			Display range		
mm	/	inch	mm	/	inch
0.001	/	.00005	± 0.02	/	± .001
0.002	/	.0001	± 0.04	/	± .002
0.004	/	.0005	± 0.08	/	± .01
0.01	/	.001	± 0.2	/	± .02

Technical Data

Measuring range		Resolution		Span of error*	MarConnect integrated wireless	Measuring force	Weight	Mounting shank	Order no.
mm	(inch)	mm / inch		mm		N	g		
12.5	(.5")	0.001 / .00005"		0.005	●	0.65 - 0.90	140	8h6	**4337163**

* in any zero point

Digital Indicator MarCator 1087 BRi for 2 point inside measurement

| ABS | MAX MIN | IP42 | 0 TOL | 🔒 | MarConnect USB | RS232C | Digimatic | MarConnect (((•))) integrated wireless |

REFERENCE

### Features

Functions:
ON/OFF
RESET (Set the display to zero)
mm/inch
Reversal of the counting direction
PRESET (Allows the entry of any value using set buttons)
TOL (Enter tolerance limit values)
Tolerance band max. 1.6 mm
START/STOP for searching the reversal point
MAX/MIN memory, ideal for searching the reversal point
ABS (Display can be set to zero, without losing the reference to the Preset value)
0 (Set analog display to zero)
DATA (when connected with a data connection cable)
Factor (adjustable)
• Immediate measurement due to the Reference system
• Individual buttons can be locked - Lock Function
• Operating and display unit (bezel) can be rotated 280°
• High contrast LCD with 8.5 mm high digits
• Operating time approx. 3 years (2000 work. hrs/year)
• Max. meas. speed 1.5 m/s (60"/s)
• Sealed protection cap
• MarConnect data output: choose
  USB
  OPTO RS232C
  Digimatic
  Integrated Wireless
• Operating temperature 10 - 40°C
• Class of protection IP42 in accordance to IEC 60529
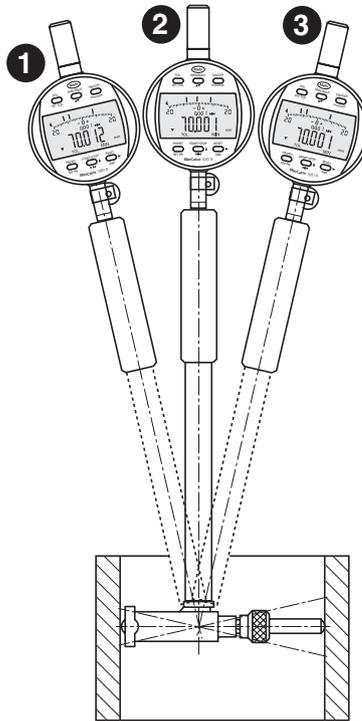• Supplied with:
  Battery,
  Operating instructions
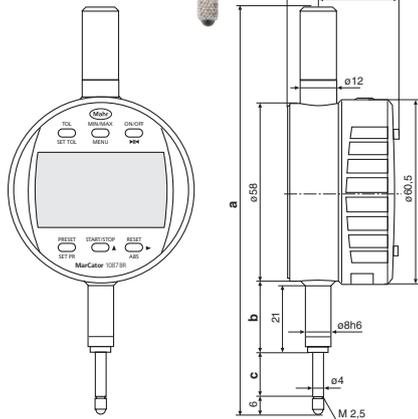
Example of application

With a 2 point inside measuring instrument the point of reversal is automatically determined through rocking back and forth. The actual value is detected and stored by the MIN function and indicated in the display (3).

Analog display

Readings			Display range		
mm	/	inch	mm	/	inch
0.001	/	.00005	± 0.02	/	± .001
0.002	/	.0001	± 0.04	/	± .002
0.004	/	.0005	± 0.08	/	± .01
0.01	/	.001	± 0.2	/	± .02

Dimensions

Meas. range		a	b	c
mm	(inch)	mm	mm	mm
12.5	(.5")	126.3	23	13.5

Technical Data

| Measuring range		Resolution	Span of error*	MarConnect integrated wireless	Measuring force			Weight	Mounting shank	Order no.
mm	(inch)	mm / inch	mm		N			g		
12.5	(.5")	0.001 / .00005"	0.005	●	0.65	-	0.90	140	8h6	**4337164**

* in any zero point

Accessories for MarCator

Accessories for 1086 Ri, 1087 Ri and 1087 BRi

		Order no.
Battery 3V, Type CR 2450		**4884464**
Mounting Lug	**1086 b**	**4337421**
Cable Release for measuring ranges 12.5 and 25 mm	**1085 a**	**4336311**
Pneumatic Lifter for measuring ranges 12.5 and 25 mm	**1082 p**	**4336237**

Additional Accessories		**Catalog page**
Contact Points	**901-913**	5-52
Special Holder	**941**	5-53
Sensor Lever	**943**	5-53

1085 a

1086 b

ø6,5

19

1082 p (12,5/25)

ø4/2 L=2 m
ø6/4 L=2 m
3 - 6 bar
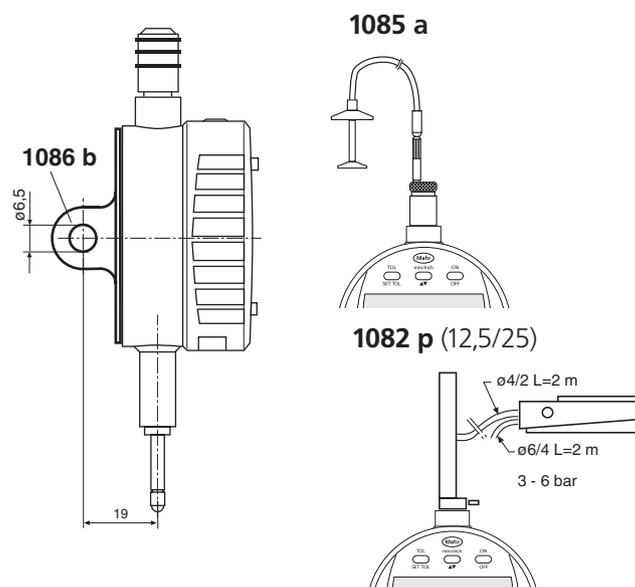
		Order no.
Data Connection Cable USB (2 m) incl. MarCom Standard	**16 EXu**	**4102357**
Data Connection Cable Opto RS232C (2 m), with SUB-D jack 9-pin	**16 EXr**	**4102410**
Data Connection Cable Digimatic (2 m), Flat plug 10-pin	**16 EXd**	**4102411**
i-Stick wireless receiver inkl. MarCom Standard		**4102220**
Software MarCom Professional 4.0		**4102552**
Software MarCom Standard 3.1		**4102551**

Accessories for Data Processing see Dimensional Metrology catalog, Chapter 11

16 EXu

16 EXr

16 EXd
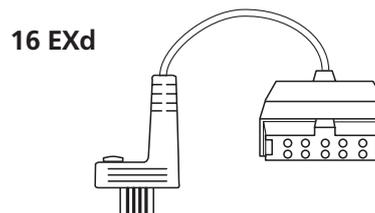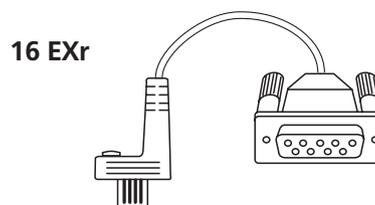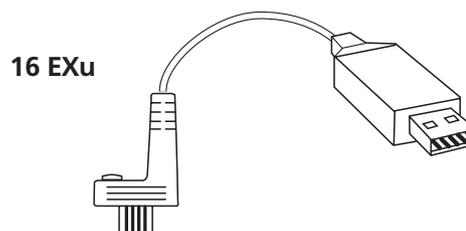
MarConnect MarCom Professional 4.0

▶ ┃ Whether you are using the tried and tested MarConnect interface or the new wireless data transmission Integrated Wireless, the MarCom software enables you to transmit data quickly and easily from a measuring station to a PC.   ┃◀

Inexpensive, . . .

. . . because no interface is required.
Data acquisition with MarCom Professional 4.0 now no longer requires an interface box; yet you still have the functionality of an interface box.

Trouble free connection to measuring . . .

. . . instruments
With MarCom all Mahr measuring instruments with MarConnect interfaces (RS232, USB) or Integrated Wireless can be connected; simply extend the measuring workplace with USB Hubs.

USB   **MarConnect** integrated wireless   **RS232C**

Flexible data transmission

Regardless of whether you are using a foot switch, directly on a measuring instrument, with a Timer function or with a PC keyboard: MarCom is extremely flexible and enables freely configurable measuring cycles.

Measuring instruments

USB

USB

Integrated Wireless

MarConnect integrated wireless

RS232

RS232C

Measured value

NEW!
Simple connection to SPC software
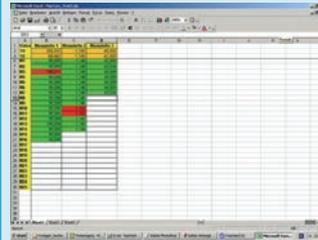
MarCom 4.0

Data acquisition

Data acquisition via SPC software

Simply connect your Mahr measuring instruments with the box emulation (Mux-50 Format) from MarCom Professional 4.0. In your SPC software select a MUX 50 compatible interface box, once selected you can start to obtain the measured values from all the connected Mahr measuring instruments.
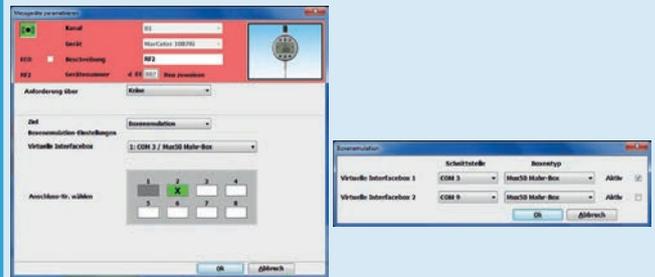
Simple acquisition in Microsoft Office Excel®

Whether you use an existing Excel template or you wish to create a customized template, the cell controller from MarCom is highly flexible.

Data acquisition with a keyboard code in

. . . a windows application
Do you use an application which the connection of a measuring instrument does not allow? No problem! With the keyboard emulation from MarCom the measured values will be directly sent to the active cells in the programme.

	Order no.
MarCom Software 4.0	**4102552**

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