MarCal. The new Generation with the Reference-System
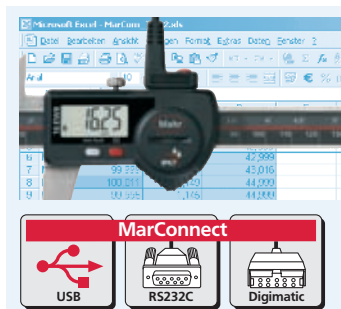## WATERPROOF CALIPERS

▶ | The water-proof digital caliper **MarCal** 16 EWR, with protection class IP67 and the Reference Lock-Function, ensures both accurate and reliable results even in the most toughest workshop conditions. | ◀

Universal SPC-interface (optional). You have a choice of **MarConnect** data outputs, select either **USB, Digimatic** or **Mahr Opto RS232**

MarConnect
USB   RS232C   Digimatic

The high-contrast display with 8.5 mm high digits enables accurate, fatigue free reading of the measurement results.

The **Reference-Lock-Function** prevents operating error caused by accidental usage of the operating buttons.
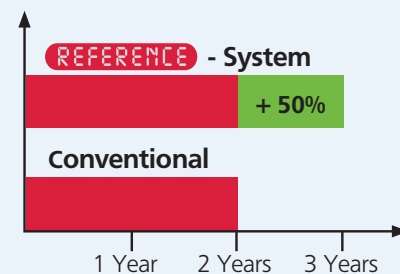
The new Reference system is extremely energy efficient as when the caliper is in standby mode; almost no power is required, thus **extending the life of the battery to up to 50%.**

REFERENCE - System
+ 50%
Conventional

1 Year   2 Years   3 Years

Lapped measuring faces for accurate measurement.

MarCal calipers have **lapped guide way surfaces**, these guarantee an even and sensitive run of the slide.

Surface of the guide way

Mahr

Lapped guide way

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

Protection class **IP67** in accordance to IEC 60529, the water proof measuring system **FPS** (Fluid Protected measuring System) with a sealed housing.

IP67

Digital Caliper MarCal 16 EWR with data output

MarConnect
USB   RS232C   Digimatic

IP67
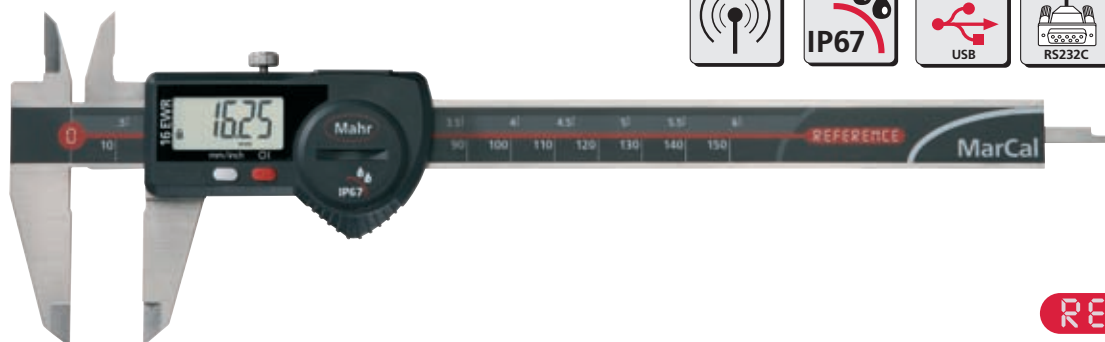
REFERENCE

Features

Functions:
ON/OFF
RESET (Set display to zero)
mm/inch
Reference-Lock/Unlock
DATA (Data transmission via connection cable)
Auto-ON/OFF

• Immediate measurement due to the Reference system

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

• MarConnect data output, choose alternatively: USB, OPTO RS232C or Digimatic

• 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 8.5 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 mm (inch)	Resolution mm / inch	Error limit G mm / inch (DIN 862)	Depth rod		Friction wheel	Order no.
150 (6")	0.01/ .0005"	0.03/ .001"	●	●		**4103064**
150 (6")	0.01/ .0005"	0.03/ .001"	●		●	**4103066**
200 (8")	0.01/ .0005"	0.03/ .001"	●		●	**4103068**
300 (12")	0.01/ .0005"	0.04/ .0015"	●		●	**4103070**
150 (6")	0.01/ .0005"	0.03/ .001"	●	●	●	**4103065**
150 (6")	0.01/ .0005"	0.03/ .001"	●		●	**4103067**
200 (8")	0.01/ .0005"	0.03/ .001"	●		●	**4103069**
300 (12")	0.01/ .0005"	0.04/ .0015"			●	**4103071**

ø1,5
3,8x1,3
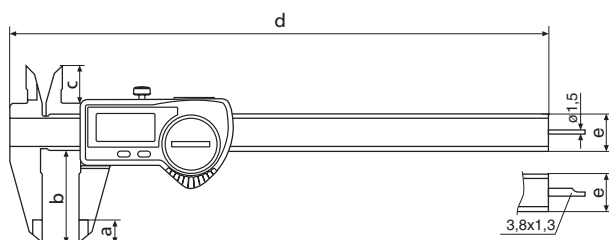
Dimensions

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
Data Connection Cable USB (2 m)	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

Accessories for Data Processing see Chapter 11

Digital Caliper MarCal 16 EWR special design
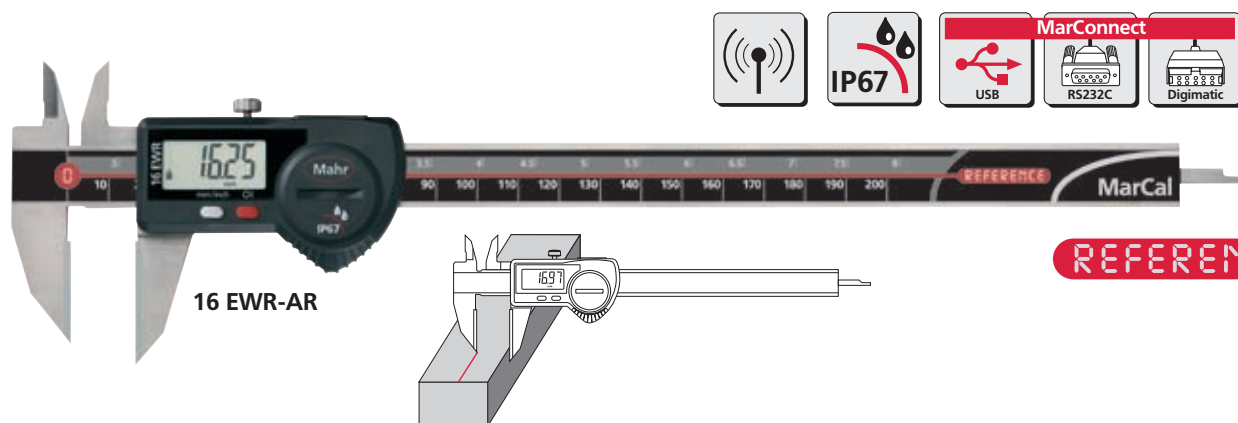
16 EWR-AR
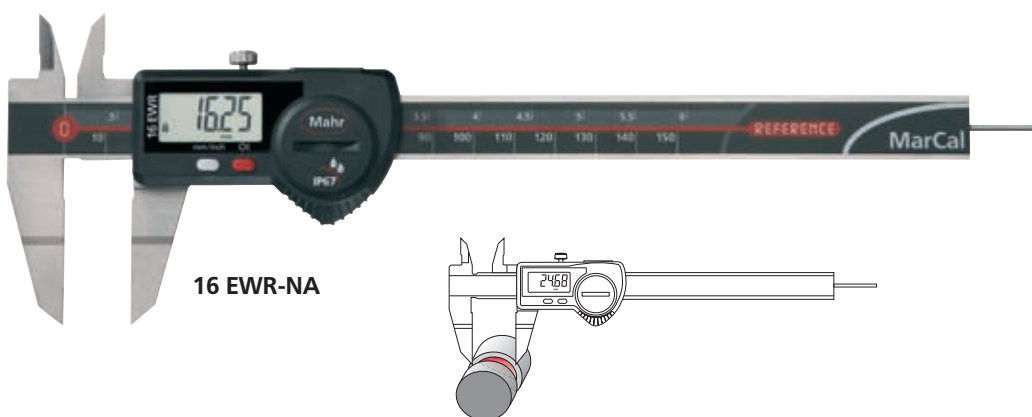
REFERENCE

16 EWR-NA

### Features

Features are the same as the MarCal 16 EWR, please refer to Page 1-6, additional features can be found in the Technical Data.
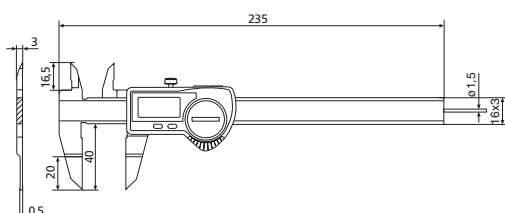
Technical Data

	Measuring range		Resolution	Error limit G	Depth rod		Order no.	Type
	mm	(inch)	mm / inch	mm	Ø1.5			
16 EWR-AR	200	(8")	0.01/ .0005"	0.03		●	**4103082**	Scribing/marking caliper
16 EWR-NA	150	(6")	0.01/ .0005"	0.03	●		**4103074**	Keyseat caliper

16 EWR-AR

285
16,5
33
40
40°
16x4

16 EWR-NA

235
3
16,5
20
40
0,5
Ø1,5
16x3
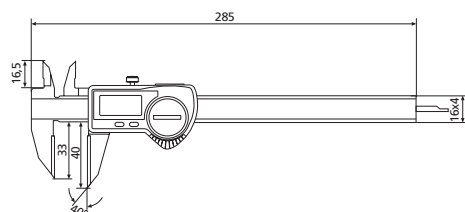
Accessories

Battery, Data Connection Cables see Page 1 - 6

Accessories for Data Processing see Chapter 11

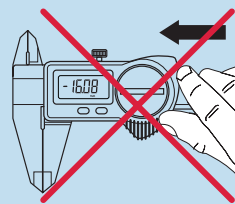## MarCal - The innovative Reference-System

Just set once to zero

All Mahr digital calipers with this logo **REFERENCE** 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.
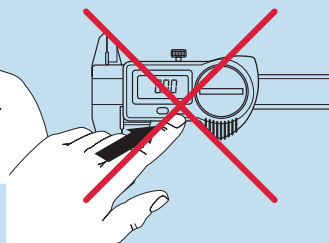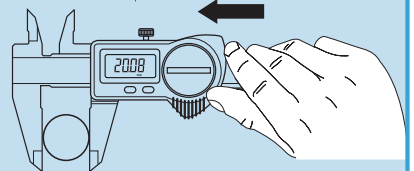
Conventional
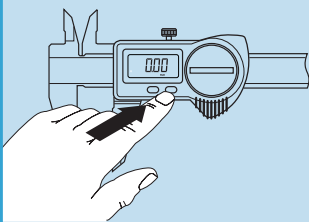
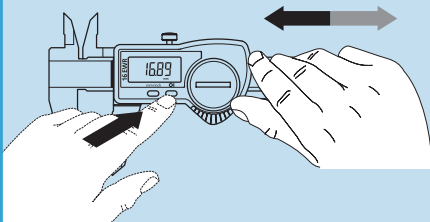① Switch ON   ② Close the measuring jaws   ③ Set to zero   ④ Results of measurement
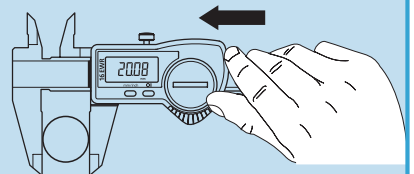
REFERENCE - **System**

① Switch ON   ② Results of measurement

Press the   or   move the slide
ON key

IP-Protection classes

First digit is the degree of protection according to IEC 60529		Second digit is the degree of protection according to IEC 60529 (approximate)	
Protection against particles, contaminants and dust		Protection against wet conditions (fluids)	
0	Not protected	0	Not protected
1	Particles > 50.0 mm	1	Falling water drops - vertical
2	Particles > 12.5 mm	2	Falling water drops - tilted < 15°
3	Particles > 2.5 mm	3	Spray water < 60°
4	Particles > 1.0 mm	4	Water splashing from all directions
5	Dust protected	5	Water jets from all directions
6	Dust tight	6	Powerful water jets
		7	Temporary immersion in water
		8	Continuous immersion in water

IP67

Example:
IP67 means that the product is "Dust tight" and is protected against "Temporary immersion in water".