

**FLUKE**®

**830**

**Laser Alignment Tool**

**Users Manual Addendum**

July 2020 PN DOC 24.103.EN

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## Introduction

This addendum explains the functions of the sensor with integrated wireless data transmission technology (the Wireless Sensor or the Sensor). Use this addendum with the Users Manual for the Fluke 830 Laser Alignment Tool (the Product). See each section for changes.

On page 28, make sure the setting for Wireless is ON.

## 2. Package

On pages 5 and 6, replace the *Package* chapter with:

### 2. Package

*Table 2-1. Package items* is a list of all the items included with the Product. The items are shown in *Figure 2-1. Items included with the Product*.

**Table 2-1. Package items**

Item	Description	Part Number
1	Fluke 830 Laser Alignment Tool	4503893
2	Storage case	4462624
3	Wireless Sensor including dust cap	5237155
4	Prism including dust cap	5144366
5	Chain-type bracket (2 no.) – each comprises two support posts and chain	4503916
6	Adapter/charger for power to Alignment Tool	4503957
7	USB Adapter/charger for power to sensor	5168024
8	Micro USB cable for power to sensor	5153070
9	PC cable	4503925
10	USB cable for USB memory stick	4503933
11	USB memory stick	4473175
12	Cleaning cloth	2687537
N/A	Quick reference guide	4473130
N/A	Safety sheets	4473148
N/A	830 Users manual	N/A
N/A	830 Users manual addendum (this document)	DOC 24.103.EN



Figure 2-1. Items included with the Product

### 3. Safety and operating notes

On page 7, replace the *IP classification* section and the first paragraph in the *Laser safety* section, with:

#### **IP classification**

Both the Product and the Wireless Sensor comply with code IP65 (dustproof and water jets resistant). The prism complies with code IP67 (dust-tight and protected against immersion).

#### **Laser safety**

This Product uses a Class 2 laser according to the requirements of IEC 60825-1:2014. This laser complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007. The laser operates at a wavelength of 630 nm – 680 nm and has a maximum radiant power <1 mW. No maintenance is necessary to keep the product compliant as outlined above.

## 4. FLUKE 830 - an overview (Change 1)

On page 17, in the *Mounting and dismounting the universal adapter/charger plug* section, replace text and Figure 4-3 as follows:

### Mounting and dismounting the universal adapter/charger plug

The universal adapter/charger comes with regional plugs for the Euro zone, the US/Canada/Japan, the UK, Australia and China.

To mount the plug:

1. Push down the latch and hold [1].
2. Insert the plug into the housing with the lip on the leading edge [2].

When the latch is pushed down, the arrow inside the charger housing shows the direction to insert the plug. The plug is locked into position when the latch release springs back into position.

To dismount a plug, push down the latch [1]. The plug pops out.

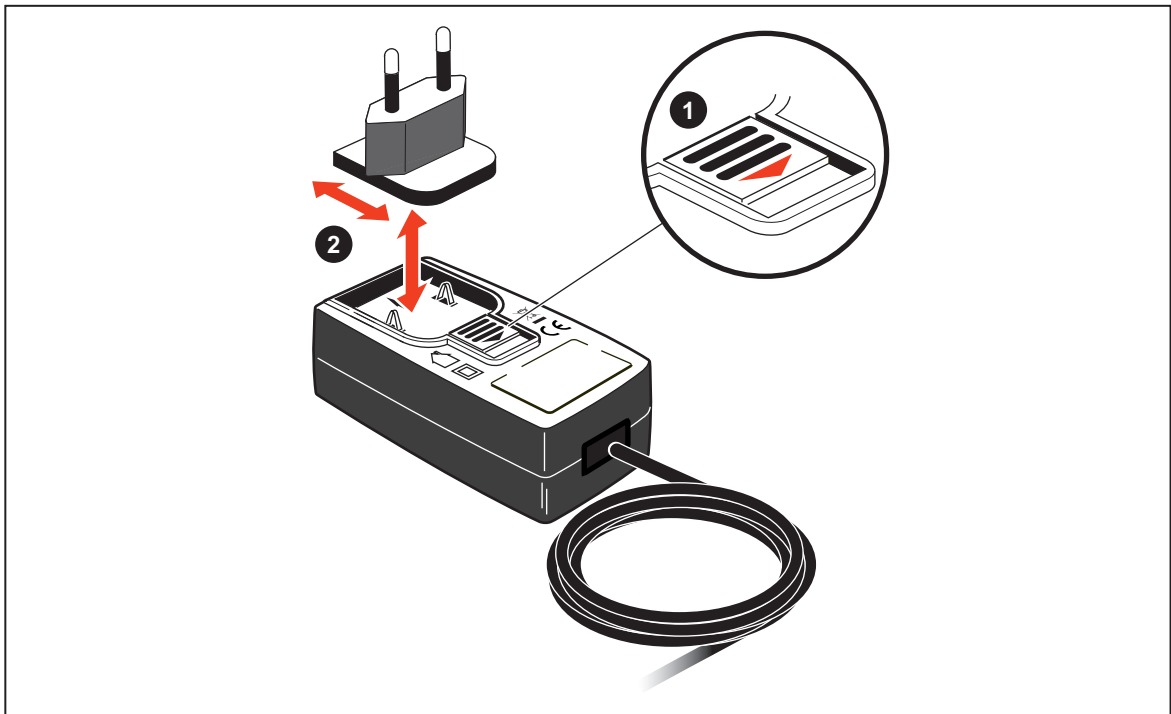


Figure 4-3. Mounting the charger plug

## 4. FLUKE 830 - an overview (Change 2)

On pages 18-19, replace the *Sensor* section with:

### Wireless Sensor

The Wireless Sensor mounts using the chain type bracket on the shaft or solid coupling of the left machine (usually stationary machine) – as viewed from the normal working position.

The Sensor contains a position detector, which measures the position of the laser beam as the shafts are rotated. The Sensor also contains an electronic inclinometer for shaft rotation measurements. The semiconductor laser diode within the Sensor emits a ray of red light (wavelength 630 nm to 680 nm) which is visible at the point it strikes a surface. The Class 2 laser beam is emitted with a diameter of approximately 5 mm (3/16”).

The Sensor has two indicator LEDs on the front. See [Figure 4-4. Parts of the Sensor](#). When facing the sensor, the left LED [1] indicates the laser beam adjustment and the charging status. The LED on the right [2] indicates the wireless communication status and lights blue when scanning and when communication is established. See [Table 4-2. Monitoring sensor LEDs](#).

The internal optics and electronics are internally sealed to prevent possible contamination. The Sensor lens, however, must be kept clean. Use the lens cleaning cloth or a fine dusting brush such as that normally used to clean other optical devices. Keep the dust cap on when not in use.

An internal rechargeable battery powers the Sensor.

To turn on the Sensor, press the On/Off switch on the Sensor. The red LED lights when sensor is switched on.

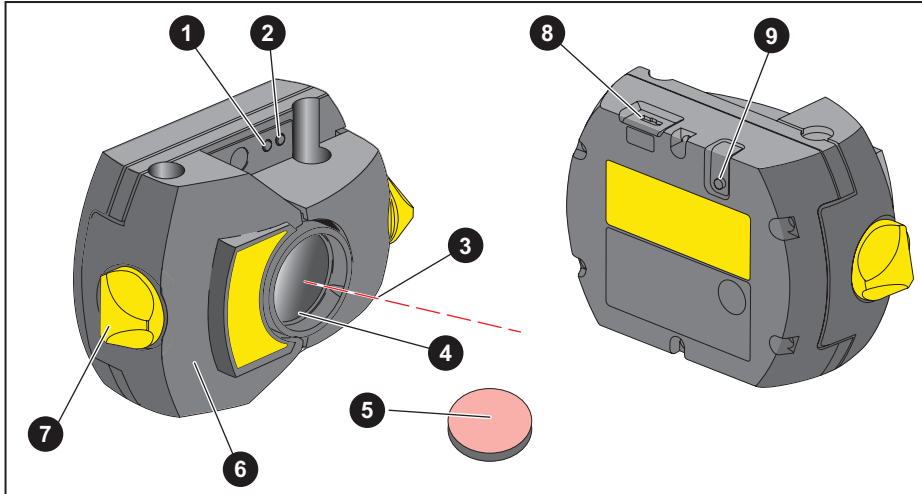
To turn off the Sensor, press and hold the On/Off switch until both LEDs are off.



### Warning

**When the Wireless Sensor is on, the laser beam is emitted. DO NOT stare into the laser beam.**





- ❶ Laser beam status and charging LED; ❷ Laser on/Communication LED;
- ❸ Laser beam; ❹ Scratch resistant lens; ❺ Sensor dust cap; ❻ Housing;
- ❼ Locking knob; ❽ Micro USB port; ❾ On/Off switch

**Figure 4-4. Parts of the Sensor**



**Caution**

**Avoid polishing the lens too vigorously to prevent irreparable damage to its anti-reflective coating.**



**Caution**

**DO NOT remove the six housing torx head screws. Removing the screws voids the warranty.**

*Note*

*Check the calibration accuracy of the Wireless Sensor every two years as indicated by the colored label located on the back of the housing. Return the Sensor to your authorized service center for calibration.*



**Warning**

**Do not stare into the beam.**

## Wireless Sensor LEDs

Table 4-2. Monitoring sensor LEDs

Activity	Status / Charging LED (left) (See [1] in Figure 4-4)	Laser On / Communication LED (right) (See [2] in Figure 4-4)
Turn on	Lights red for 1 second, then red or green (depending on the battery capacity) for another second, then blinks red	Lights blue for 1 second then blinks red (indicating laser emission)
Laser beam status	Blinks red when laser is OFF Blinks orange when laser is in END position Blinks green when laser is centered or in 'laser OK' position	When wireless communication is established, blinks blue once then red three times (indicating laser emission). This sequence repeats.
Charging	Blinks fast green during fast charge (0 % - 90 %) Blinks slowly green when charge is > 90 % Steady green when charge is 100 %	

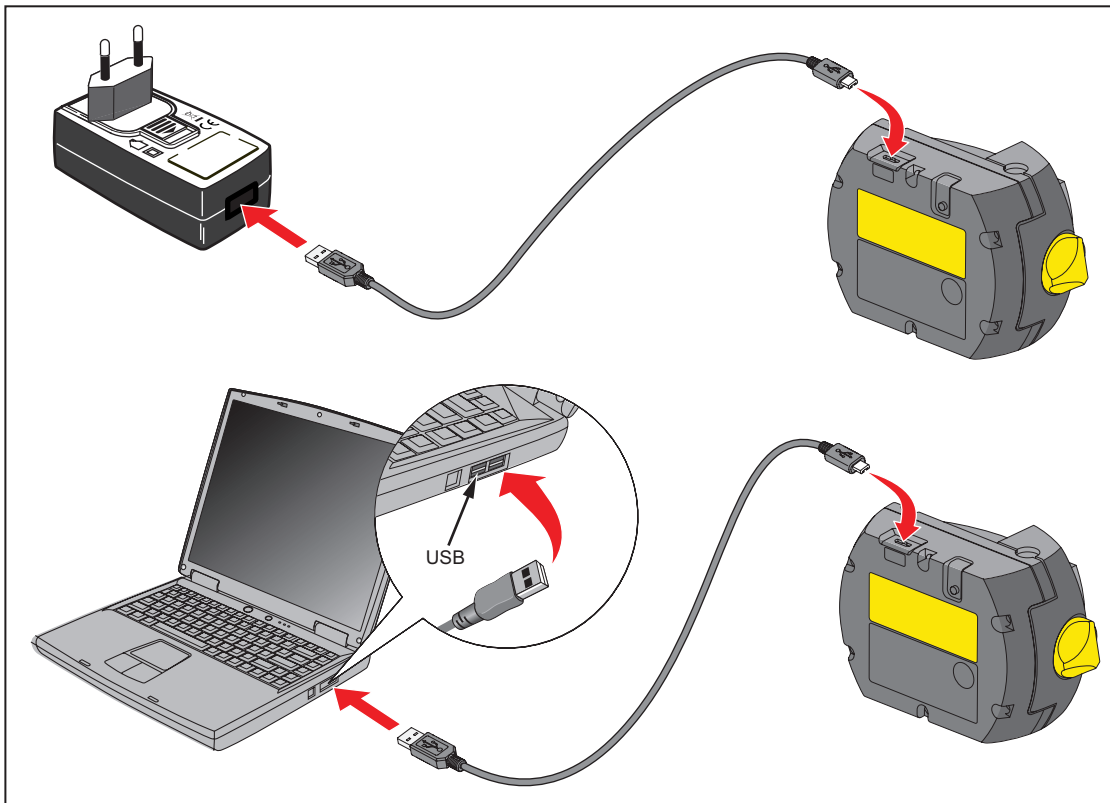
## Charging the Wireless Sensor

Use the mains supply or a PC to charge the Sensor.

### Note

*Charging the Sensor using the mains supply is faster than when charging through a PC.*

Use the supplied micro USB to connect the charging source to the Sensor. (See [Figure 4-8. Charging the non-removable rechargeable battery.](#))



**Figure 4-8. Charging the non-removable rechargeable battery**

## Wireless Sensor and reflector labeling

Labels that communicate laser safety and other general information are affixed to the housing of the system components.

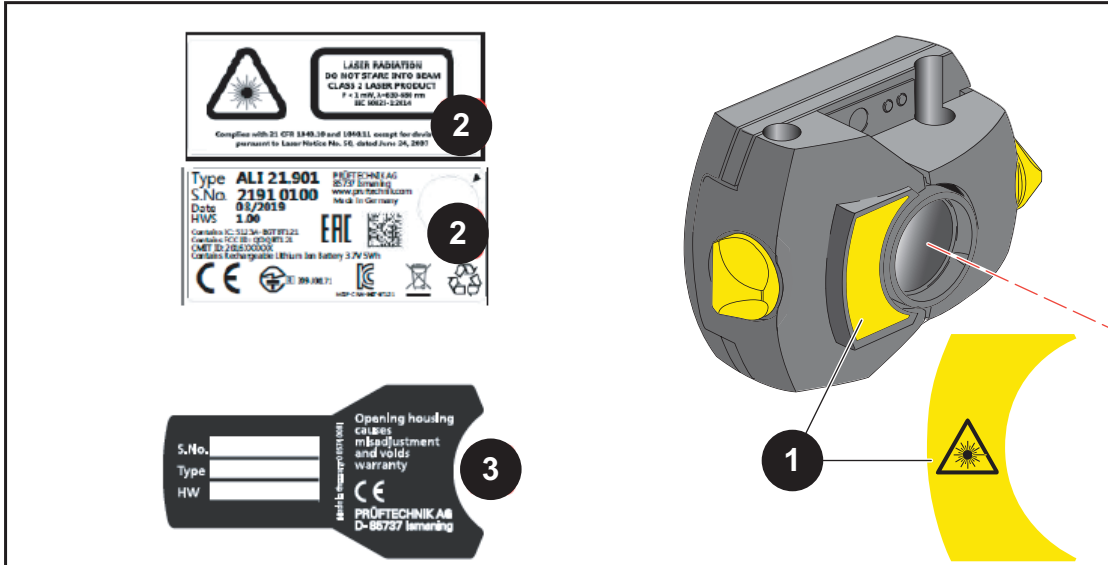


Figure 4-9. Labels affixed to the measuring components

- 1 The laser safety warning symbol label is on the front of the Sensor.
- 2 On the back of the Sensor
  - The top label is the laser safety warning.
  - The lower label contains the sensor identification, related certification, and disposal information.
  - The round calibration check label shows the calibration check due date; the black arrow points to the month when the calibration check is due. The year appears in center of the label. (Not shown.)

The labels contain this text:

LASER RADIATION  
DO NOT STARE INTO BEAM  
CLASS 2 LASER PRODUCT  
P<1 mW,  $\lambda = 630-680 \text{ nm}$   
IEC 60825-1:2014

Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

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Type	ALI 21.901	PRÜFTECHNIK GmbH
S.No.	2191 XXXX	85737 Ismaning www.pruftechnik.com Made in Germany
Date	MM-JJJJ	MM-JJJJ
HWS		
Contains IC: 5123A-BGTBT121		
Contains FCC ID: QOQBT121		
Contains Rechargeable Lithium Ion Battery 3.7 V 5 Wh		
R 209-J00171		

MSIP-CRM-BGT-BT121

- ③ The label affixed on the back of the reflector.


The label contains this text:

S.No.	XXXX XXXX	Opening housing causes misadjustment and voids warranty
Type	ALI 5.110	
HW	1.XX	
Made in Germany		PRÜFTECHNIK AG D-85737 Ismaning

## 6. Getting started (Change 1)

On page 39, replace *Set up the product* section and the figure with:

### Set up the product

1. Prepare the machines by making certain that they are locked out, tagged out and all necessary safety precautions have been taken.
2. Mount brackets, Sensor, and prism. Mount the Sensor to the **left machine** (usually stationary).
3. On the Product, press  and hold until the right LED on the Product lights up followed by a beep. Shortly after, the Setup screen appears.

### Enter dimensions

On page 39, replace Figure 6-1 in the *Enter dimensions* section as follows:

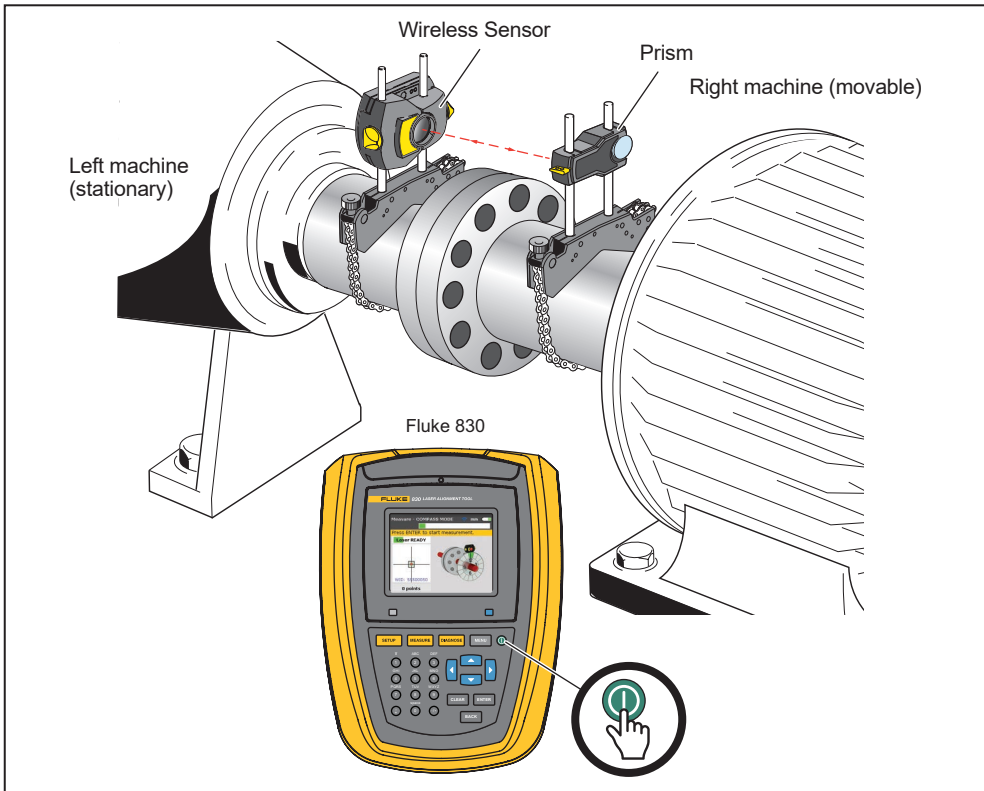


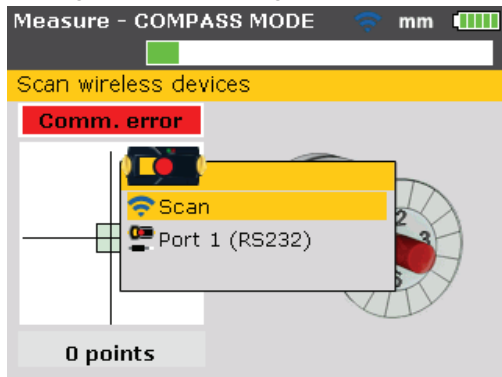
Figure 6-1. Mounting components across the coupling

## 6. Getting started (Change 2)

On page 41, in the *Wireless measurement* section, replace the text after the note with:

Press the On/Off switch to turn on the Sensor. This initializes the laser beam. Center the laser dot on the prism dust cap (see Figure 6-2).

On page 43, replace the graphics and text between the graphics with:

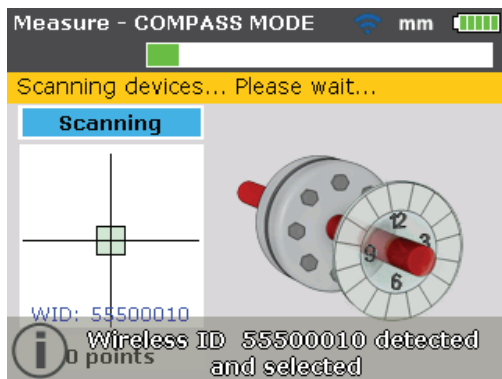


Use  /  and highlight 'Scan' then press  to scan nearby sensors.

### Note

*Make sure the Sensor is on.*

Once detected, the Sensor is selected automatically.



## 7. Horizontal machine alignment (Change 1)

On pages 50-51, in the *Mount wireless module, sensor and prism* section, replace Step 1 through Step 4 including Figure 7-2, then continue the procedure with Steps 5:

### Mount the Wireless Sensor and prism

1. Locate the bracket fixed on the shaft of the left machine (usually stationary machine) – as viewed from normal working position.
2. Mount the Sensor on the support posts of this bracket.
  - Note the orientation of the Sensor. The micro USB port must be at the top. (See [Figure 7-2. Mounting the Sensor](#), Item ①.)
  - Loosen the yellow knobs until you can slide the housing onto the support posts.
3. Tighten the yellow knobs to clamp the Sensor onto the support posts. Do not overtighten the yellow locking knobs. (See [Figure 7-2. Mounting the Sensor](#) Item ②.)
  - Make sure that the laser beam can pass over or through the coupling and is not blocked.

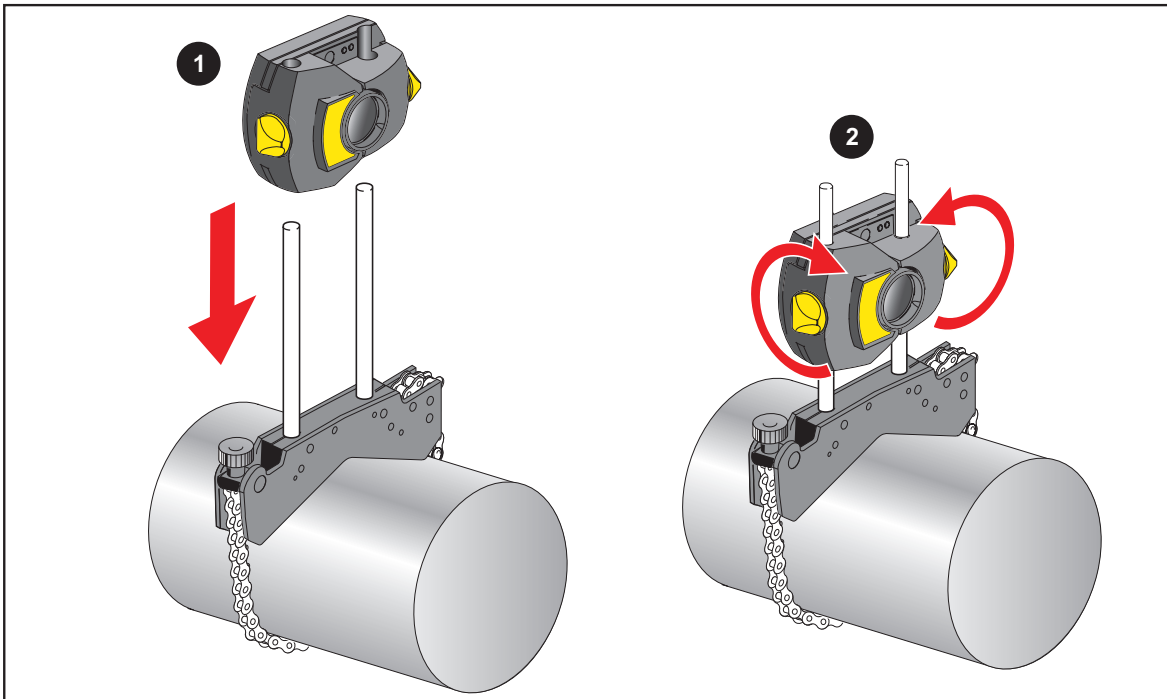


Figure 7-2. Mounting the Sensor

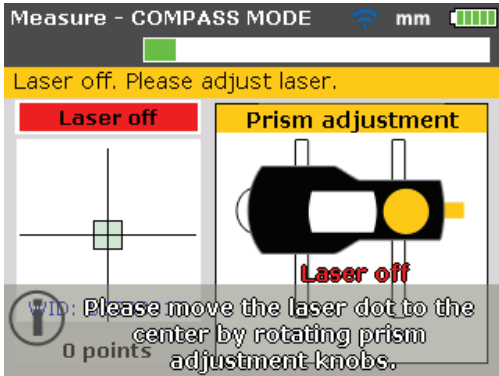


## 7. Horizontal machine alignment (Change 2)

On pages 60-64, replace the *Laser beam adjustment* section with:

### Laser beam adjustment

After entering all required dimensions, the measurement screen appears automatically.



Press the On/Off switch to turn on the Sensor. Refer to [Table 4-2. Monitoring sensor LEDs](#) to check the status of the sensor LEDs. The laser is now activated. Adjust the Sensor and prism so that the laser beam strikes the prism and is reflected back into the Sensor.

## 7. Horizontal machine alignment (Change 3)

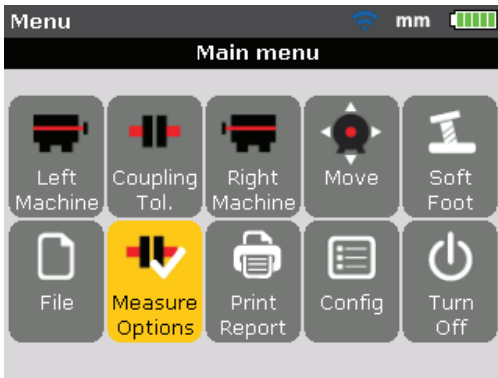
On pages 61-64, replace the *Remove prism cap and establish communication between the sensor and the Product* with:

### Remove prism cap and establish communication between the Sensor and the Product

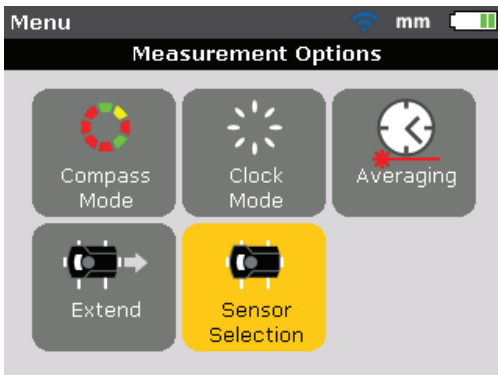
The Product collects measurement data using the Sensor.

Remove the prism dust cap to allow the beam to strike the prism and be reflected back to the Sensor, and then press . The "Main menu" window opens. Use

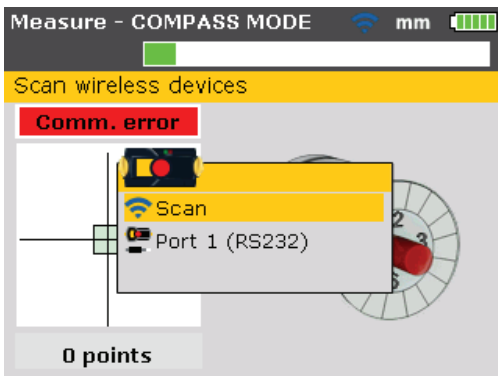
the navigation keys and highlight the icon 'Measure options'.






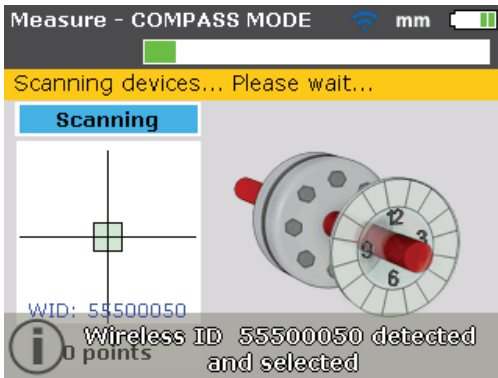
Press **ENTER** to confirm the selection. The "Measurement options" window opens. Use the navigation keys and highlight the icon 'Sensor selection'.



Press **ENTER** to confirm the selection. The selection window opens.



Use  or  to highlight 'Scan' then press  to scan nearby sensors. Once detected, the Wireless Sensor automatically connects and establishes communication with the Product.

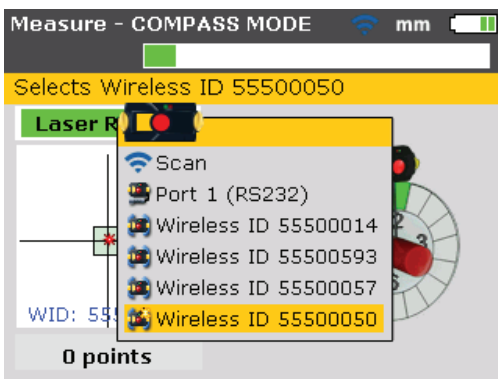





*Note*




*The serial number of the Sensor in use shows on the screen during measurement.*

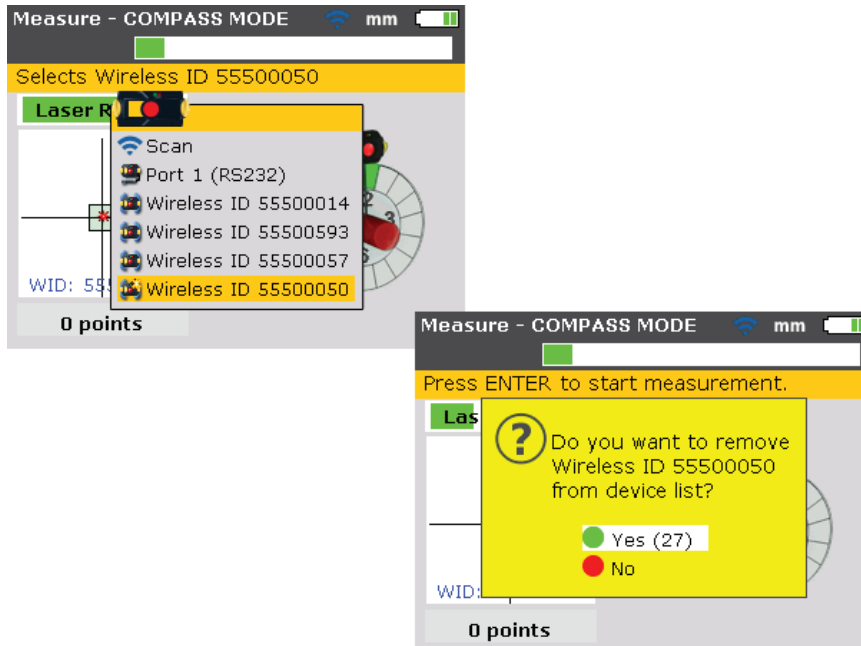
Now proceed with laser beam adjustment.

The Product remembers the sensors. Select 'Sensor selection' to show detected sensors.



Use  or  to highlight the selection and press  to confirm the selection.

You can delete sensor entries. To delete entries, access the 'Sensor selection' menu. Use  or  to highlight the selection and then press .



The Product remembers deleted Sensors if the sensor is detected during scanning.

## 7. Horizontal machine alignment (Change 4)

On page 65, replace the section, *Adjust prism until ONLY the GREEN sensor LED lights constantly, the Product's right LED turns blue*, with:

### **Adjust Wireless Sensor and prism until the laser beam status LED (left) blinks GREEN and the Product's right LED turns blue**

The Status LED (right) indicates the beam adjustment condition. This condition is simultaneously monitored by the Product's Communication LED (right).

#### *Note*

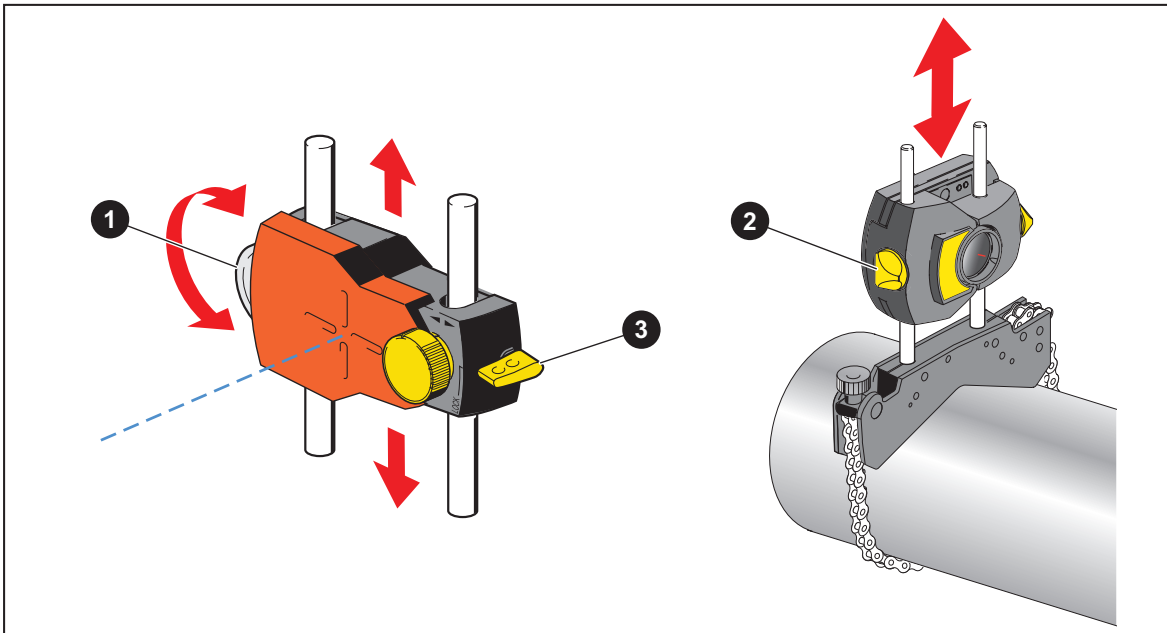
*Make sure that the prism and Sensor lens are clean. Use a soft lint-free cloth. A lens cleaning cloth is supplied.*

Adjust the Sensor and prism so that the laser beam strikes the prism and is reflected back into the Sensor.



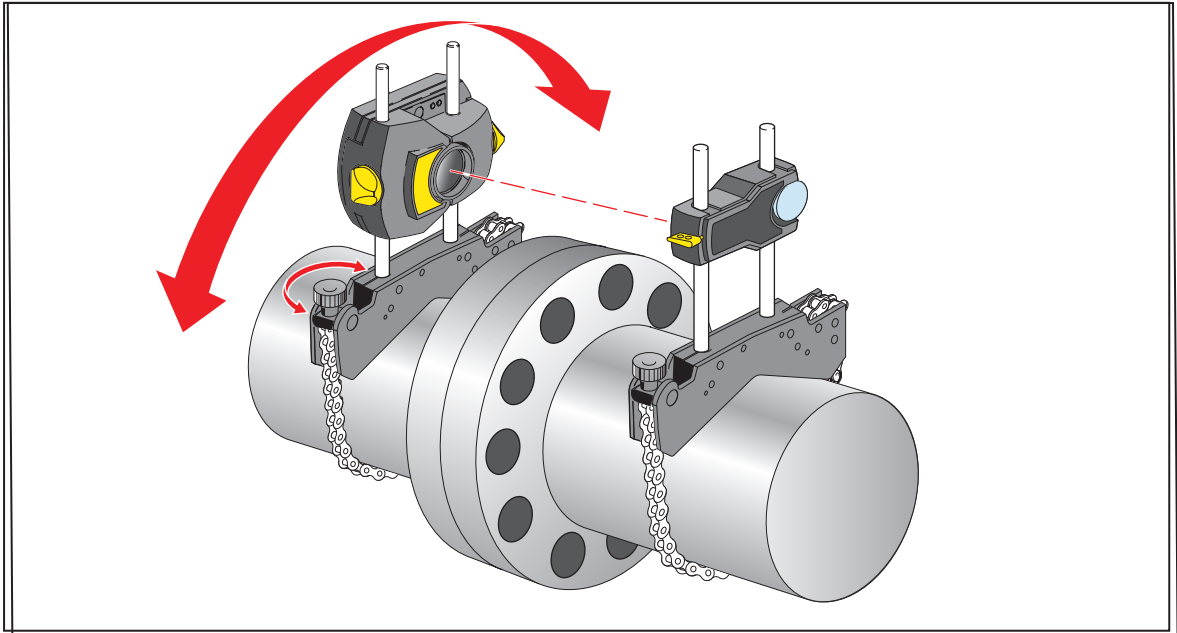
**Do not stare into the beam.**

1. Keep the prism dust cap on. If the Sensor and prism are roughly positioned with each other during mounting, the laser beam should strike the prism dust cap and is readily visible. If the beam is so far off target that the beam misses the prism completely, hold a sheet of paper in front of the prism to locate the beam and readjust it.
2. Make these adjustments:
  - Vertical adjustment: slide the prism or Sensor up and down along the support posts. Use the thumbwheel [1] on the side of the prism housing. To move the Sensor, loosen the yellow knobs [2]. The lever [3] must always be in the horizontal position except for mounting and dismounting.



**Figure 7-9. Horizontal and vertical adjustment of the laser beam**

- Horizontal adjustment: loosen one of the brackets on the shaft and rotate it slightly and then retighten.



**Figure 7-15. Horizontal adjustment of the laser beam**

Adjust the beam to the center:

1. Position the components until the laser beam strikes the center of the target on the prism dust cap.
2. Remove the prism dust cap so the laser beam strikes the prism and is reflected back to the Sensor. The Sensor's Status LED (left) indicates the beam adjustment condition.
  - If the reflected beam does not strike the detector surface, the Product's right LED turns red while the Sensor Status LED (left) blinks red. (See [Table 4-2. Monitoring sensor LEDs](#)). The message 'Laser OFF' appears on the display screen. Adjust the reflected beam using the metal thumbwheel and the yellow adjustment knob on the prism as shown on [Figure 7-9. Horizontal and vertical adjustment of the laser beam](#).
  - When the reflected beam strikes the edge of the detector, the Product's right LED turns orange while the Sensor's Status LED (left) blinks orange (refer to [Table 4-2. Monitoring sensor LEDs](#)). The message 'Laser End' appears on the display screen.

## 7. Horizontal machine alignment (Change 5)

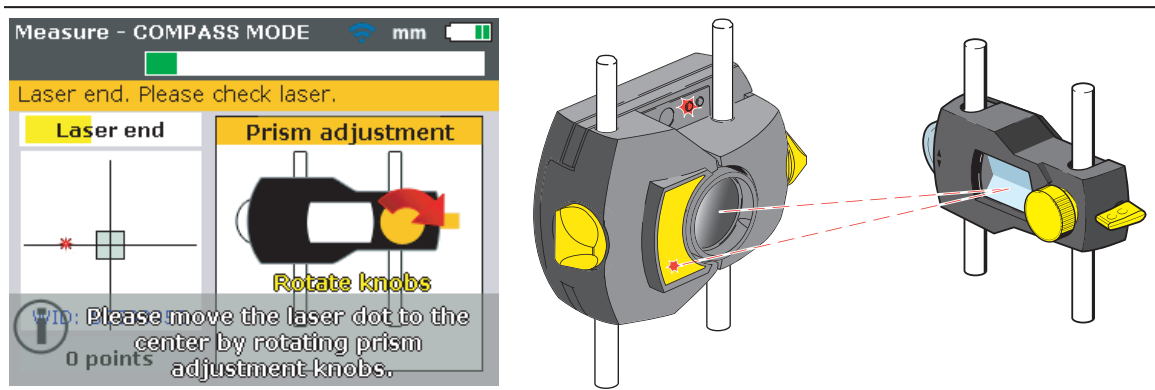
On pages 66-67, replace the section, *Center beam such that the Product's right LED turns blue* section, as follows:

### Center beam such that the Product's right LED turns blue

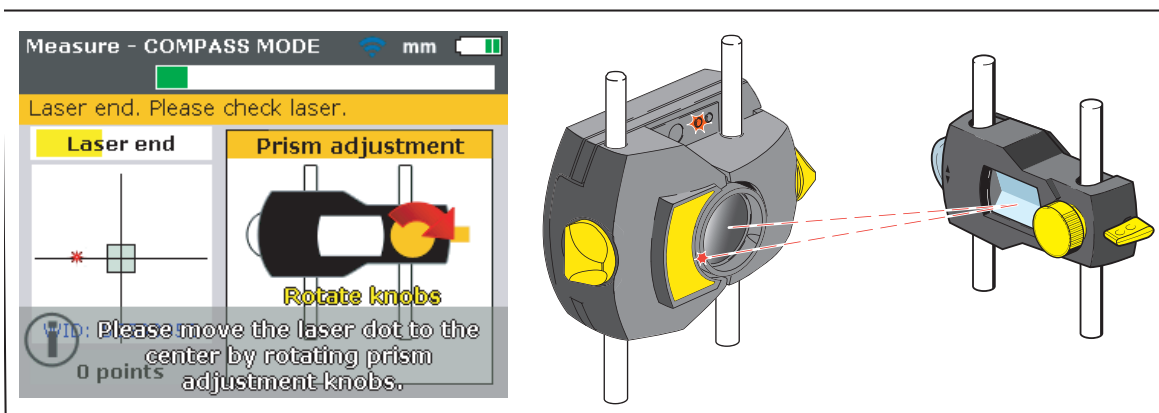
Adjust the laser beam such that the laser dot on the display screen is positioned in the green square in the center of the detector display.

- Vertical adjustment: use the side metal thumbwheel.
- Horizontal adjustment: use the yellow prism knob.

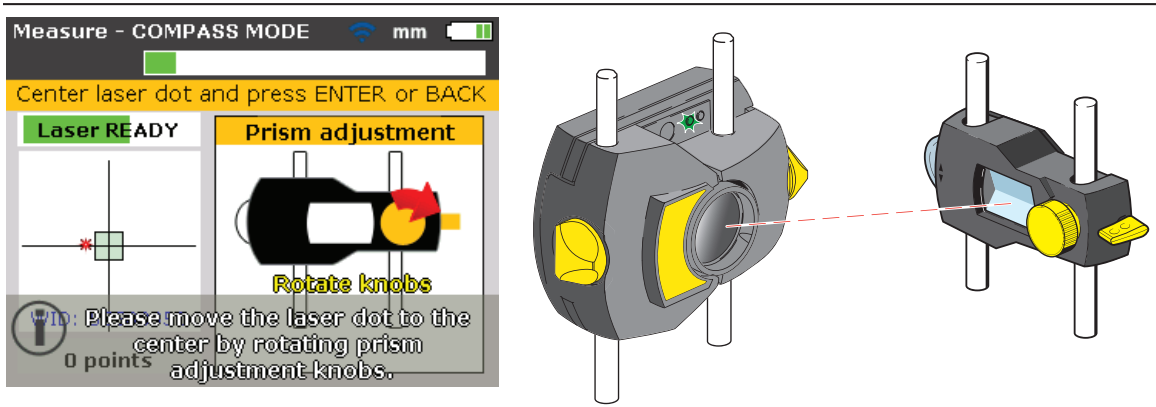
The Product's right LED shows blue.



Laser beam status LED blinks red, and the Product's RIGHT LED turns RED



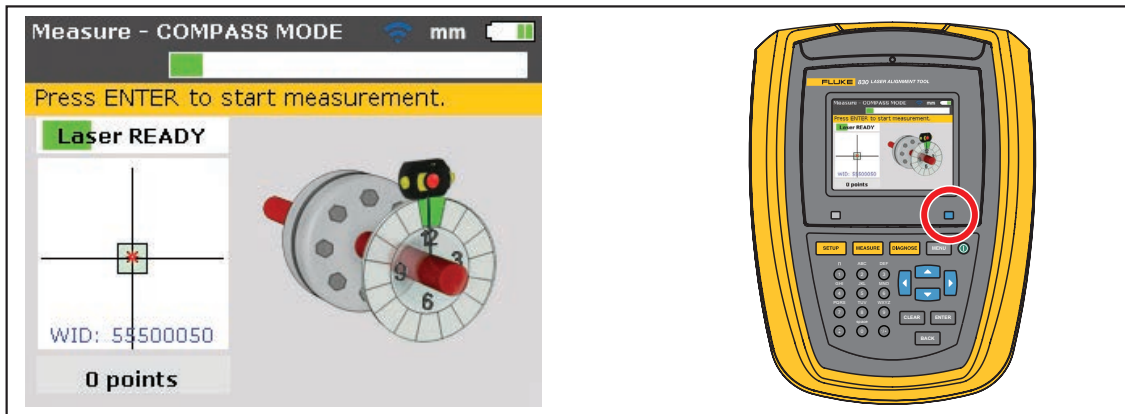
Laser beam status LED blinks orange, and the Product's RIGHT LED turns ORANGE



Laser beam status LED blinks green, and the Product's RIGHT LED turns GREEN

*Note*

The red arrow on the yellow knob indicates which way to turn the knob. The closer the beam comes to being centered, the smaller the arrow becomes. When the laser beam is inside the center square, the Status LED (left) blinks green.



The RIGHT LED turns BLUE

*Note*

If the beam is not exactly at the center of the crosshair, it will not affect measurement accuracy. However, maximum range for measurement is available when the beam is well centered.

*Note*

Once centered, do not touch the Sensor or prism, as any movement during measurement will be interpreted as misalignment. You can move these components when extending the measurement range.



## 10. Appendix

On page 134, in the *830 Laser Alignment Tool technical data* section, replace the *Sensor* technical data text as follows:

### Wireless Sensor

Measurement Principle	Coaxial reflected laser beam
LED indicators	1 LED for laser beam status and battery status 1 LED for wireless communication
Power supply	Battery: Lithium-Ion rechargeable battery 3.7 V / 5 Wh Operating time: 10 hours (continuous use) Charging time: Using charge - 2.5 h for up to 90 % 3.5 h for up to 100 %
Environmental protection	Using USB port - 3 h for up to 90 %, 4 h for up to 100 % IP65 (dustproof and water jets resistant), shockproof Relative humidity 10 % to 90 % (non-condensing)
Ambient light protection	Yes
Temperature range	Operation: -10 °C to 50 °C (14 °F to 122 °F) Charging: 0 °C to 60 °C (32 °C (32 °F to 140 °F) Storage: -20 °C to 60 °C (-4 °F to 140 °F)
Dimensions	Approx. 105 mm x 69 mm x 55 mm (4 9/64" x 2 23/32" x 2 11/64")
Weight	Approx. 210 g (7.4 oz) with dust cap
Detector	Measurement range: Unlimited, dynamically extendible Resolution: 1 µm (0.04 mil) and angular 10 µrad Accuracy (avg): >98 %
Inclinometer	Measurement range: 0° to 360° Resolution: 0.1° Inclinometer error (Ta = 22 °C): +0.3 % read out
Laser	Type: Semiconductor laser diode Wavelength: 630 nm - 680 nm (red, visible) Safety class: Class 2 according to IEC 60825-1:2014 The laser complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 Beam power: <1 mW Beam divergence: 0.3 mrad Safety precautions: Do not look into laser beam
External interface	Wireless communication
Transmission distance	Up to 30 m (98 ft) direct line-of-sight
CE conformity	Refer to the CE compliance certificate at <a href="http://www.pruftechnik.com">www.pruftechnik.com</a>
Country radio certifications	Approvals granted for specific regions (refer to <a href="http://www.pruftechnik.com">www.pruftechnik.com</a> )

On page 135, in the *830 Laser Alignment Tool technical data* section, remove the *Wireless module* section.

