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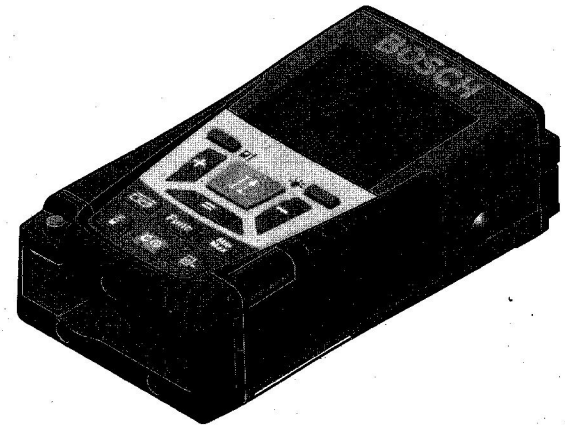
IMPORTANT: Read Before Using | **IMPORTANT :** Lire avant usage | **IMPORTANTE:** Leer antes de usar

Operating/Safety Instructions
Consignes de fonctionnement/sécurité
Instrucciones de funcionamiento y seguridad

GLR500
GLR825



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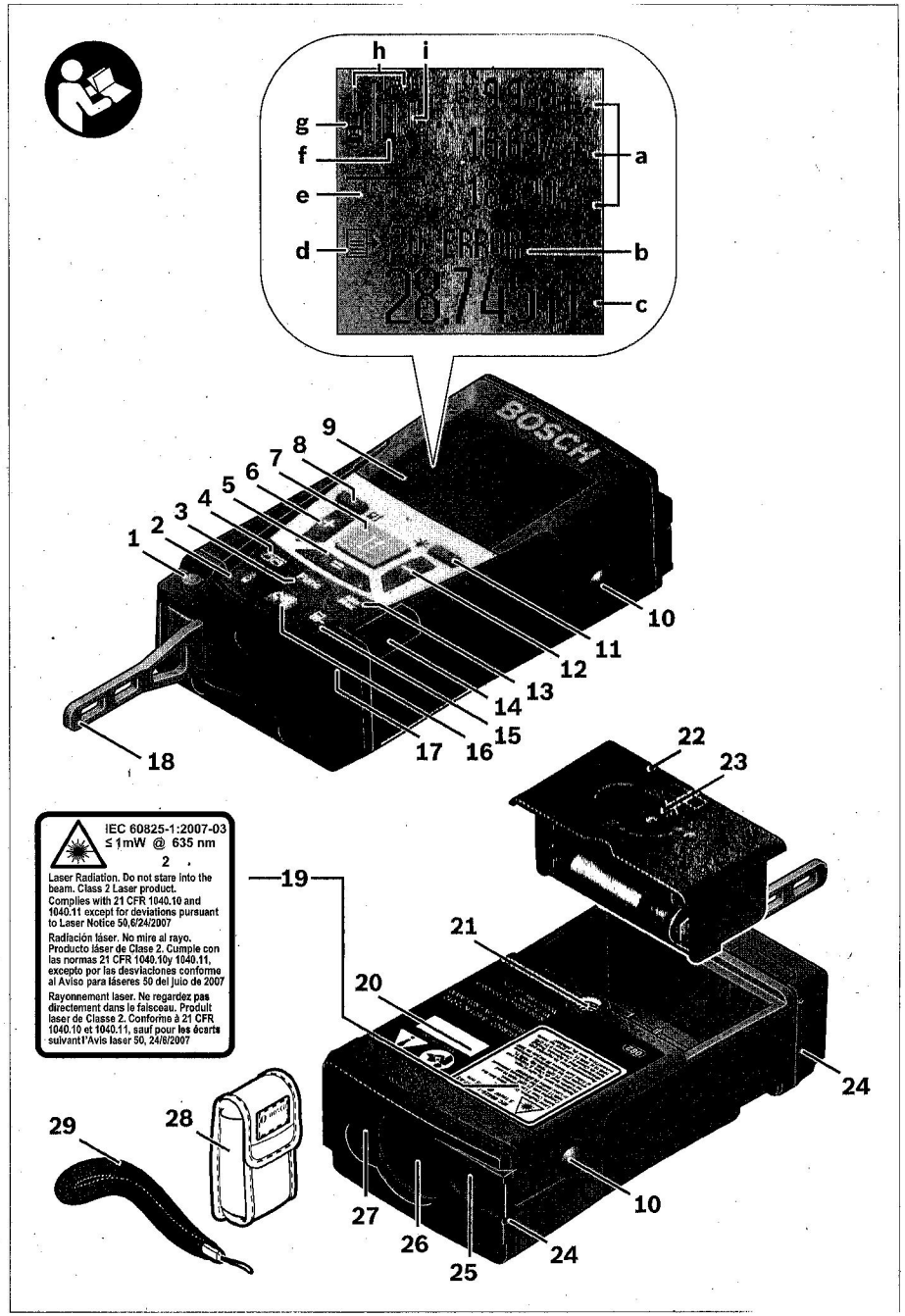
For English Version See page 6 | **Version française Voir page 18** | **Versión en español Ver la página 29**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IEC 60825-1:2007-03
≤ 1mW @ 635 nm
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Laser Radiation. Do not stare into the beam. Class 2 Laser product. Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice 50,6/24/2007
Radiación láser. No mire al rayo. Producto láser de Clase 2. Cumple con las normas 21 CFR 1040.10y 1040.11, excepto por las desviaciones conforme al Aviso para láseres 50 del julio de 2007
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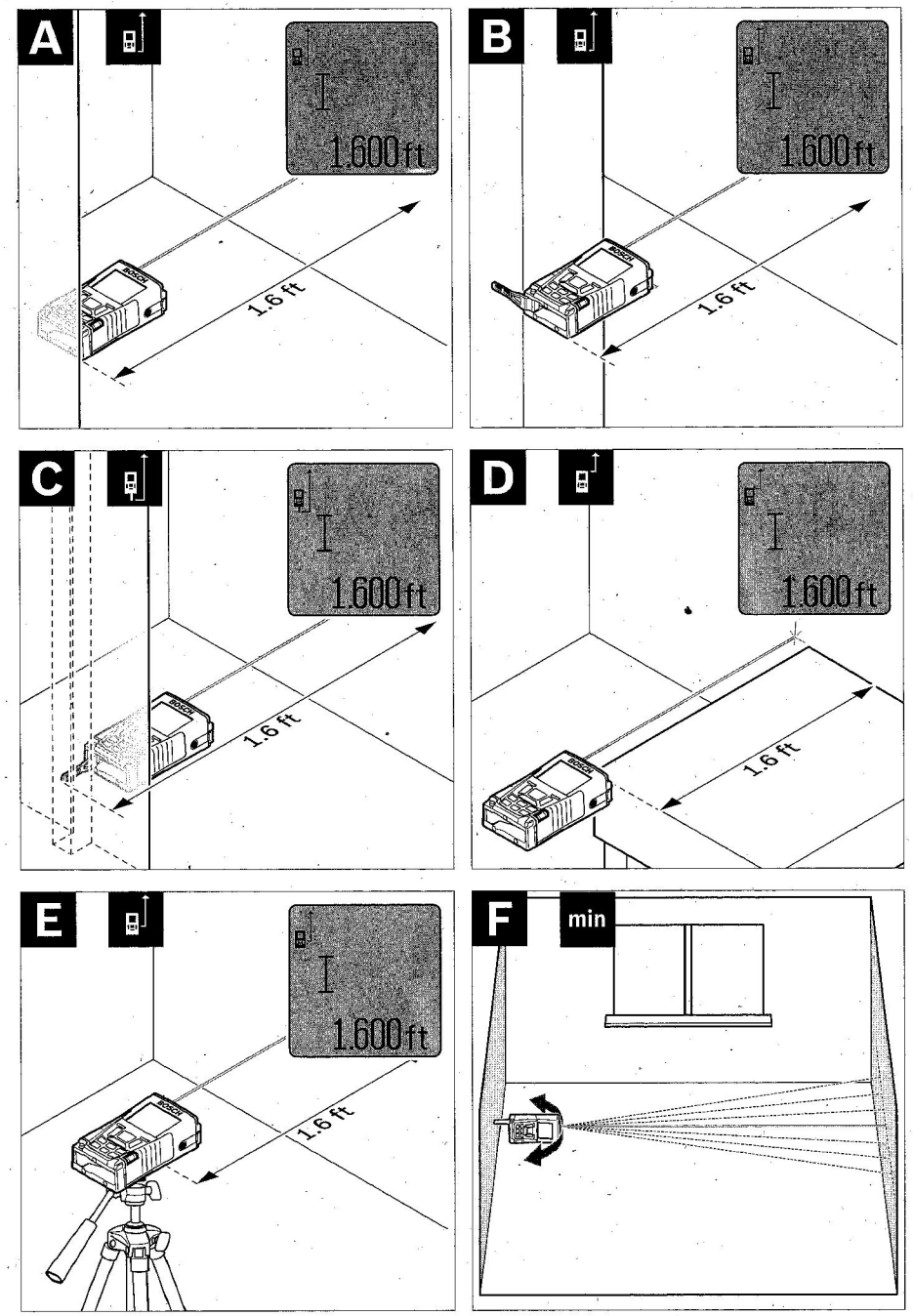
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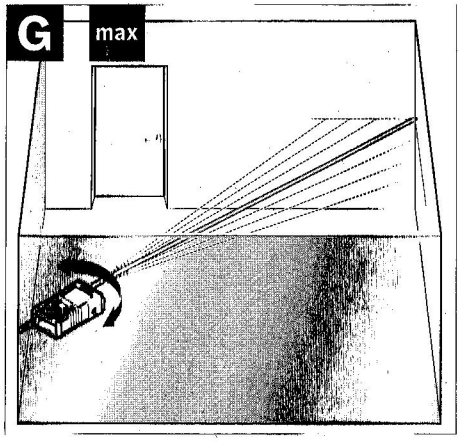
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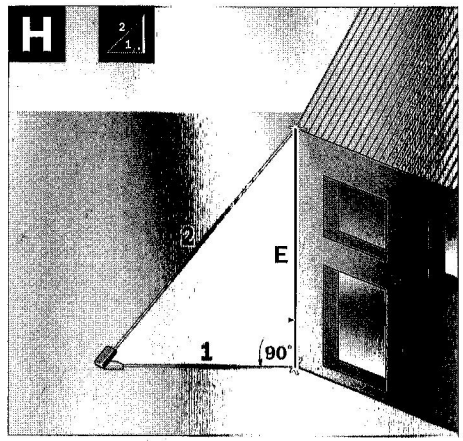
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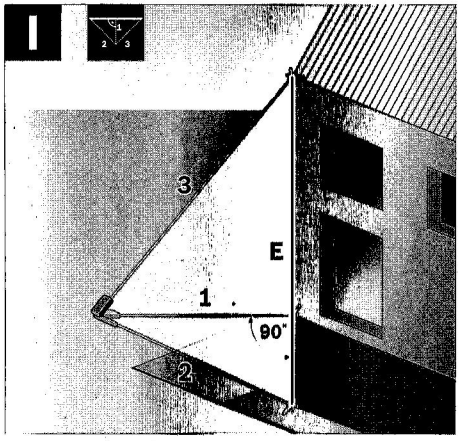
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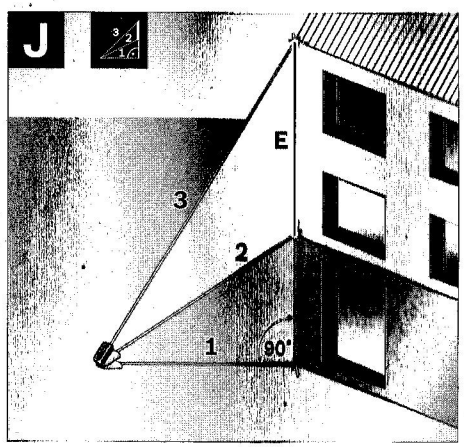
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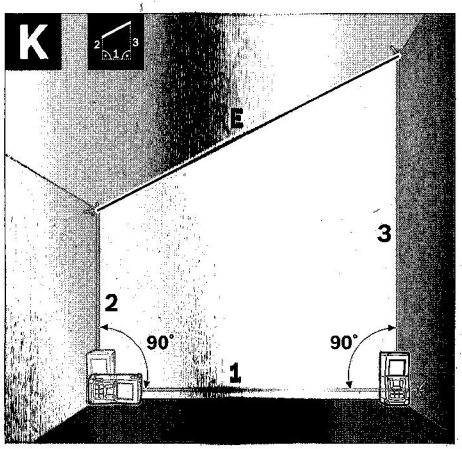
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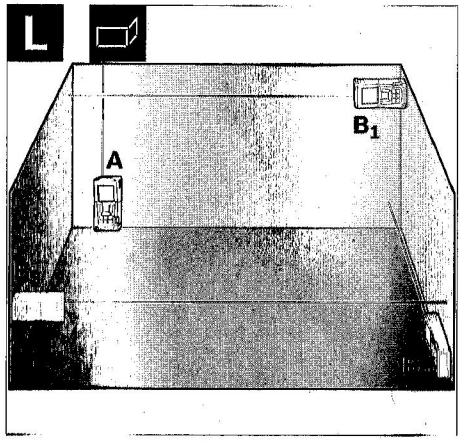
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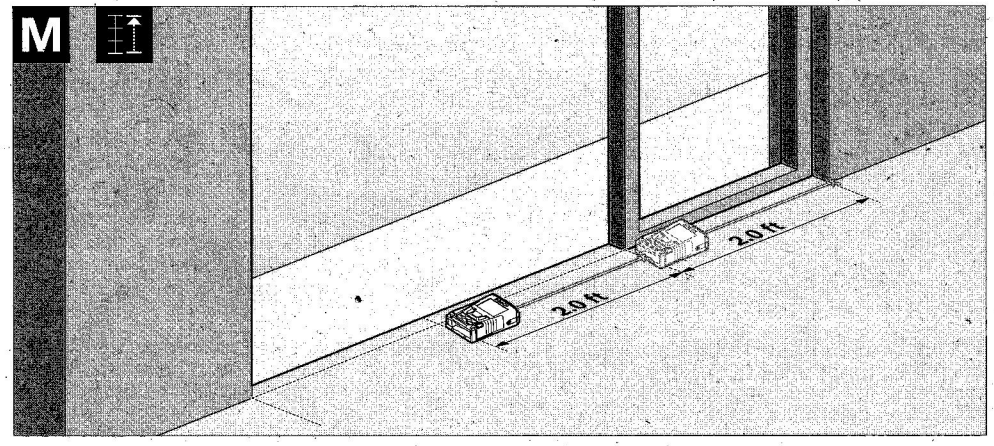
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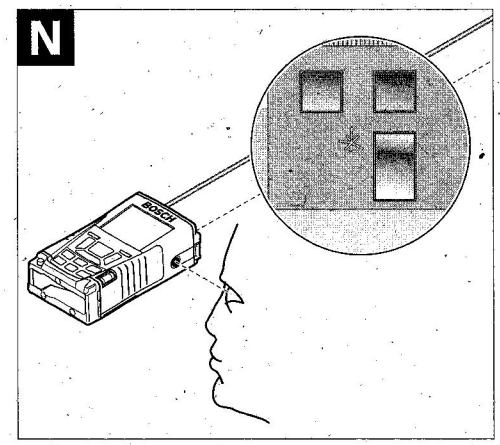
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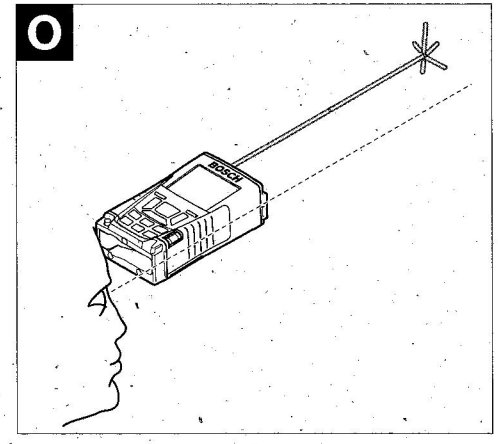
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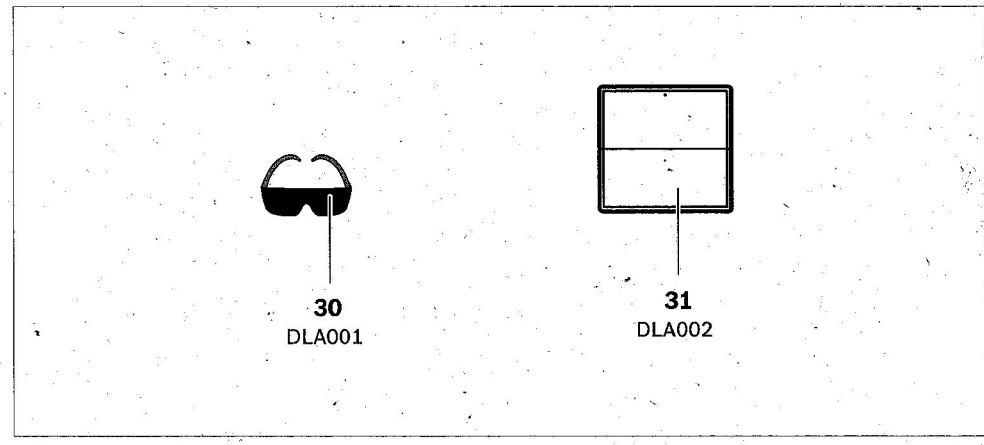
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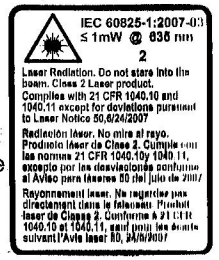
General Safety Rules

⚠ WARNING **LASER RADIATION. AVOID DIRECT EYE EXPOSURE. DO NOT stare into the laser light source. Never alm light at another person or object other than the workpiece.** Laser light can damage your eyes.

⚠ WARNING **Read all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.**

Do not direct the laser beam at persons or animals and do not stare into the laser beam yourself. This tool produces laser class 2 laser radiation and complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007. This can lead to persons being blinded.



Safety Rules for Rangefinder

Working safely with the rangefinder is possible only when the operating and safety information are read completely and the instructions contained therin are strictly followed. Never make warning labels on the Rangefinder unrecognizable.

Never aim the beam at a workpiece with a reflective surface. Bright shiny reflective sheet steel or similar reflective surfaces are not recommended for laser use. Reflective surfaces could direct the beam back toward the operator.

Take care to recognize the accuracy and range of the device. Measurement may not be accurate if used beyond the rated range of the device.

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

The use of optical instruments with this product will increase eye hazards.

Have the rangefinder repaired only through qualified specialist using original spare parts. This ensures that the safety of the rangefindor is maintained.

Do not allow children to use the rangefinder without supervision. They could unintentionally blind other persons.

Do not point the laser beam at persons or animals and do not look into the laser beam yourself, not even from a large distance.

Do not use the laser viewing glasses as safety goggles. The laser viewing glasses are used for improved visualization of the laser beam, but they do not protect against laser radiation.

Do not use the laser viewing glasses as sun glasses or in traffic. The laser viewing glasses do not afford complete UV protection and reduce color perception.

'Safe Operating Procedures

WARNING: Be sure to read and understand all instructions in this manual before using this product. Failure to follow all instructions may result in hazardous radiation exposure, electric shock, fire, and/or bodily injury.

CAUTION: Use of controls or adjustments or performance of procedures othor than those specified in this manual, may result in hazardous radiation exposure.

CAUTION: The use of optical instruments with this product will increase eye hazard.

IMPORTANT: The following labels are on your rangefinder for your convenience and safety. They indicate where the laser light is emitted by the level. ALWAYS BE AWARE of their location when using the level.

ALWAYS: Make sure that any bystanders in the vicinity of use are made aware of the dangers of looking directly into the rangefinder.

DO NOT remove or deface any warning or caution labels.
Removing labels increases the risk of exposure to laser radiation.

DO NOT stare directly at the laser beam or project the laser beam directly into the eyes of others. Serious eye injury could result.

DO NOT place the rangefinder in a position that may cause anyone to stare into the laser beam intentionally or unintentionally. Serous eye injury could result.

DO NOT use any optical tools such as, but not limited to, telescopes or transits to view the laser beam. Serious eye injury could result.

ALWAYS remove the batteries when cleaning the laser light aperture to laser lens.

DO NOT operate the rangefinder around children or allow children to operate the rangefinder.

Serious eye injury could result.

ALWAYS turn the rangefinder "OFF" when not in use. Leaving the rangefinder "ON" increases the risk of someone inadvertently staring into the laser beam.

DO NOT operate the rangefinder in combustible areas such as in the presence of flammable liquids, gases or dust.

ALWAYS position the rangefinder securely. Damage to the rangefinder and/or serious injury to the user could result if the rangefinder falls.

ALWAYS use only the accessories that are recommended by the manufacturer of your rangefinder. Use of accessories that have been designed for use with other rangefinders could result in serious injury.

DO NOT leave rangefinder "on" unattended in any operation mode.

ALWAYS repair and servicing must be performed by a qualified repair facility. Repairs performed by unqualified personnel could result in serious injury.

DO NOT use this rangefinder for any purpose other than those outlined in this manual. This could result in serious injury.

DO NOT disassemble the rangefinder. There are no user serviceable parts inside. Disassembling the laser will void all warranties on the product. Do not modify the product in any way. Modifying the rangefinder may result in hazardous laser radiation exposure.

Electrical Safety Procedures

WARNING: Batteries can explode or leak, and can cause injury or fire. To reduce this risk:

ALWAYS follow all instructions and warnings on the battery label and package.

DO NOT short any battery terminals.

DO NOT charge alkaline batteries.

DO NOT mix old and new batteries. Replace all of them at the same time with new batteries of the same brand and type.

DO NOT mix battery chemistries.

DISPOSE of batteries per local code.

DO NOT dispose of batteries in fire.

KEEP batteries out of reach of children.

REMOVE batteries if the device will not be used for several months.

Environment Protection

Recycle raw materials & batteries instead of disposing of waste. The unit, accessories, packaging & used batteries should be sorted for environmentally friendly recycling in accordance with the latest regulations.

Functional Description

INTENDED USE

The rangefinder is intended for measuring distances, lengths, heights, clearances and for calculating areas and volumes. The rangefinder is suitable for interior and exterior construction site measuring.

PRODUCT FEATURES

The numbering of the product features shown refers to the illustration of the rangefinder on the graphic page.

1 Latch of the extension pin
2 Continuous laser beam
3 Function-mode button
4 Length, area and volume measurement
5 Result button
6 Plus button
7 Measuring and continuous measuring button
8 Reference point button
9 Display
10 View finder of the optical sight (GLR825 only)
11 Display-illumination button
12 Minus button
13 Min. Max measurement button
14 Vial level
15 Measured-value list button
16 On/Off/Clear button
17 Hand strap mounting post
18 Extension pin
19 Laser warning label
20 Serial number
21 1/4" thread hole for mounting optional tripod
22 Battery compartment
23 Locking knob of the battery compartment
24 Alignment aid
25 Optical sight window (GLR825 only)
26 Reception lens
27 Laser beam outlet
28 Protective case
29 Hand strap
30 Laser viewing glasses*
31 Laser target plate*

DISPLAY ELEMENTS

a Measured-value lines
b **"ERROR"** indication
c Result line
d Measured-value list indicator
e Measuring modes
- Length measurement
- Area measurement
- Volume measurement
- Continuous measurement
- Multi-surface area measurement
- Simple indirect length measurement
- Double indirect length measurement
- Combined indirect length measurement
- Trapezoid measurement
- Timer function
- min Minimum measurement
- max Maximum measurement
- Mark-out mode

f Battery indication
g Measurement reference point
h Laser switched on
i Problem temperature indicator

*** Optional Accessories**

Technical Data

GLR500/825 Laser Rangefinder

Article number GLR500	**3601K72010**
Article number GLR825	**3601K72110**
Dimensions	2 19/32" x 4 23/32 x 1 15/32" (66 x 120 x 37 mm)
Measuring range (GLR500)[A)]	0.16 in ... 500 ft (0.05 ... 152 m)
Measuring range (GLR825)[A)]	0.16 in ... 825 ft (0.05 ... 251 m)
Distance measuring accuracy[B)]	
– typical accuracy	±0.04 in (±1.0 mm)
Optical sight (magnification 1.6X)	GLR825 only
Lowest indication unit	1/32 in; 0.001 ft; 0.1 mm
Operating temperature	+14°F ... + 122°F[C)] (– 10 °C ... +50 °C)
Storage temperature	– 4 °F ... +158 °F (–20 °C ... +70 °C)
Relative air humidity, max.	90 %
Laser class	2
Laser type	635 nm, <1 mW
Laser beam diameter (at 25°C/ 77 °F), approx.	
– at 33 ft (10 m) distance	1/4 in (6 mm)
– at 492 ft (150 m) distance	3 1/2 in (90 mm)
Batteries	4 x 1.5 V AAA (LR03)
Rechargeable battery	4 x 1.2 V AAA (KR03)
Battery service life, approx.	
– Individual measurements, approx.	30000[D)]
– Continuous measurement mode, approx..	5 Hours[D)]
Weight according to EPTA-Procedure 01/2003	8.5 oz (0.24 kg)
Protection class (excluding battery compartment)	IP 54 (dust and splash water protected)

A) The working range increases depending on how well the laser light is reflected from the surface of the target (scattered, not reflective) and with increased brightness of the laser point to the ambient light intensity (interior spaces, twilight). In unfavorable conditions (e.g. when measuring outdoors at intense sunlight), it may be necessary to use the target plate.

B) In unfavorable conditions (e.g. at intense sunlight or an insufficiently reflecting surface), the maximum deviation is ±20 mm per 150 m (±0.8 in per 492 ft). In favorable conditions, a deviation influence of ±0.05 mm/m (±0.0006 in/ft) must be taken into account.

C) In the continuous measurement function, the maximum operating temperature is +40 °C (104 °F).

D) Fewer measurements are possible when using 1.2 V rechargeable batteries as compared with 1.5 V batteries.

Please observe the article number on the type plate of your rangefinder. The trade names of the individual rangefinders may vary.

The rangefinder can be clearly identified with the serial number **20** on the type plate.

Preparation

Inserting/Replacing the Battery

Use only alkali-manganese or rechargeable batteries.

Fewer measurements are possible when using 1.2 V rechargeable batteries as compared with 1.5 V batteries.

To open the battery compartment **22**, turn the locking knob **23** to position and pull out the battery compartment.

When inserting the batteries/ rechargeable batteries, pay attention to the correct polarity according to the representation on the inside of the battery compartment.

When the battery symbol appears for the first time on the display, at least 100 individual measurements are still possible. The continuous measurement mode is deactivated.

When the battery symbol flashes, the batteries/recharge-able batteries must be replaced. Taking measurement is no longer possible.

Always replace all batteries at the same time. Only use batteries from one brand and with the identical capacity.

- **Remove the batteries/rechargeable batteries from the rangefinder when not using it for longer periods.** When storing for longer periods, the batteries/rechargeable batteries can corrode and discharge themselves.

INSTALLING HAND STRAP

Feed string loop on end of hand strap **29** under hand strap mounting post **17** and pull out on other side. Feed hand strap **29** through string loop end and pull tight.

Operation

INITIAL OPERATION

- Protect the rangefinder against moisture and direct sun irradiation.
- Do not expose the rangefinder to extreme temperatures or variations in temperature.

Switching On and Off

To **switch on** the rangefinder, the following possibilities are given:

– Pressing the On/Off button **16**: The rangefinder is switched on and is in length measurement mode. The laser is not activated.

– Briefly pressing the measuring button **7**: Rangefinder and laser are switched on. The rangefinder is in length measurement mode.

– Pressing the measuring button **7** for several seconds: Rangefinder and laser are switched on. The rangefinder is in continuous measurement mode.

⚠ WARNING **Do not point the laser beam at persons or animals and do not look into the laser beam yourself, not even from a large distance.**

To **switch off** the rangefinder, press the On/Off button **16** for a few seconds.

To save the batteries, the rangefinder switches off automatically after approx.. 5 minutes when no measurement is carried out.

When switching off automatically, all stored values are retained.

Measuring Procedure

After switching on, the rangefinder is always in length measurement or continuous measurement mode. Other measuring modes can be switched to by pressing the respective mode button (see "Measuring Modes", page 11).

After switching on, the rear edge of the rangefinder is preset as the reference level for the measurement. By pressing the reference level

button **8**, the reference level can be changed (see "Selecting the Reference point", page 10).

Upon selection of the measuring mode and the reference point, all further steps are carried out by pushing the measuring button **7**.

With the reference point selected, place the rangefinder against the desired measuring line (e.g. a wall).

Push the measuring button **7** to switch on the laser beam.

⚠ WARNING Do not point the laser beam at persons or animals and do not look into the laser beam yourself, not even from a large distance.

Aim the laser beam at the target surface. Push the measuring button **7** again to initiate the measurement.

When the laser beam is switched on permanently, the measure-ment already starts after the first actuation of the measuring button **7**. In continuous measure-ment mode, the measurement starts immediately upon switching on.

The measured value appears after 0.5 to 4 seconds. The duration of the measurement depends on the distance, the light conditions and the reflection properties of the target surface. The end of the measurement is indicated by a signal tone. The laser beam is switched off automatically upon completion of the measurement.

When no measurement has taken place approx. 20 seconds after sighting, the laser beam is switched off automatically to save the batteries.

Selecting the Reference Point (see figures A–E)

For measuring, it is possible to select from four different reference points:

- The rear edge of the rangefinder or the front edge of the laterally folded-out extension pin **18** (e.g. when measuring onward from outer corners),
- The tip of the folded-out extension pin **18** (e.g. when measuring from a corner),
- The front rangefinder edge (e.g. when measuring onward from a table edge),
- The center of the 1/4" threaded hole **21** (e.g. for measuring with the tripod).

To select the reference point, press button **8** repeatedly until the required reference point is indicated on the display. Each time after switching on the rangefinder, the rear edge of the rangefinder is preset as the reference point.

Subsequent changing of the reference point for measure- ments that have already been carried out (e.g. when indicating measuring values in the measured-value list) is not possible.

Continuous Laser Beam

If required, the rangefinder can also be switched to the continu- ous laser beam mode. For this, push the button for continuous laser beam **2**. "**LASER**" lights up continuously in the display.

⚠ WARNING Do not point the laser beam at persons or animals and do not look into the laser beam yourself, not even from a large distance.

In this setting, the laser beam also remains switched on between measurements; to take measurement, it is only required to push the measuring button **7** once.

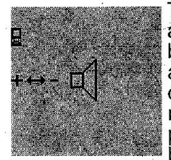
To switch off the continuous laser beam, briefly push button **2** again or switch the rangefinder off.

Switching off the continuous laser beam during a measure- ment automatically ends the measurement.

Display Illumination

The display illumination is switched on and off by pressing button **11**. When no button is pressed 10 s after switching on the display illumination, it is switched off to save the batteries.

Audio Signal



To switch the audio signal on and off, push the function- mode button **3** until the "audio signal adjust- ment" indication appears on the display. Select the required setting by pressing the plus button **6** or the minus button **12**.

The selected audio-signal adjustment is retained when switching the rangefinder off and on.

Changing the Unit of Measure

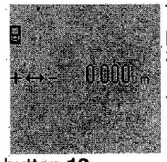
The unit of measure can be changed at any time, for display of the measured values, even for already measured or calculated values.

The following units of measure are possible:

– Length measurement: m, cm, mm, ft, ft-in, in 1/32, yd,

– Area/surface measurement: m^2, ft^2,

– Volume measurement: m^3, ft^3.



To change the unit of measure, push the function-mode button **3** until the "change unit of measure" indication appears on the display. Select the required unit of measure by pressing the plus button **6** or the minus button **12**.

The unit-of-measure setting is retained when switching the rangefinder on or off.

MEASURING MODES

Simple Length Measurement

For length measurements, push button **4** until the "length measurement" indication ⊢ appears on the display.

Push the measuring button **7** once for sighting and once more to take the measurement.

The measured value is displayed in the result line **c**.

For several subsequent length measurements, the last measur- ed results are displayed in the measured-value lines **a**.

Continuous Measurement (Tracking)

The continuous measurement function (tracking) is used for the transferring of measurements, e.g., from construction plans. In continuous measure-ment mode, the rangefinder can be moved relative to the target, whereby the measured value is updated approx. every 0.5 seconds. As an example, the user can move from a wall to the required distance, while the actual distance can be read continuously.

For continuous measurements, first select the length measuring mode and then push the measuring button **7** until the "indicator for continuous measurement" ⊢⊣ appears on the display.

The laser is switched on and the measurement starts immediately.

The current measured value is displayed in the result line **c**.

Briefly pressing the measuring button **7** ends the continuous measurement. The last measured value is displayed in the result line **c**. Pressing the measuring button **7** for several seconds restarts a continuous measuring run.

The continuous measurement automatically switches off after **5** min. The last measured value remains indicated in the result line **c**.

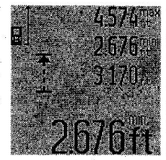
Minimum/Maximum Measurement (see figure F–G)

The minimum measurement is used to determine the shortest distance from a fixed reference point. It is used, as an example, for determining plumb lines or horizontal partitions.

The maximum measurement is used to determine the greatest distance from a fixed reference point. It is used, as an example, for determining diagonals.

For minimum/maximum measurement, first select "length measurement mode" and then push button **13** "**min**" is displayed in result line **c** for minimum measurement. For maximum measurements, push button **13** again, so that "**max**" is displayed in the result line. Then push the measuring button **7**. The laser is switched on and the measure- ment starts.

Move the laser back and forth over the requested target (e.g., the room corner for determining the diagonal) in such a manner that the reference point of the measurement (e.g., the tip of the extension pin **18**) always remains at the same location.



Depending on the set mode, the minimum or maximum value is displayed in the result line **c**. It is always overwritten, when the current length measurement value is less than the present minimal or larger than the present maximal value. The maximal ("**max**"), the minimal ("**min**") and the current measuring value are displayed in the measured-value lines **a**.

To end the minimum/maximum measurement, briefly push the measuring button **7**. Pressing the measuring button again starts a new measurement.

The minimum/maximum measurement can also be used for length measurements within other measuring modes (e.g. area/surface measurement).

For this, push button **13** once for minimal measurement and twice for maximal measurement each time when determining individual measured values. Then push the measuring button **7** to switch the laser beam on. Move the rangefinder in such a manner that the desired minimum or maximum value is measured, and push the measuring button **7** to take over the minimum or maximum value into the current calculation.

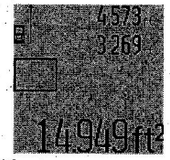
For time-delayed length measurements and when in stake-out mode, minimum/ maximum measurements are not possible.

The minimum/maximum measurement automatically switches off after 5 min.

Area Measurement

For area/surface measurements, push button **4** until the indicator for area measurement ▭ appears on the display.

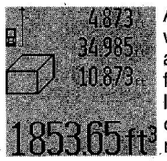
Afterwards, measure the length and the width, one after another, in the same manner as a length measurement. The laser beam remains switched on between both measurements.



After taking of the second measurement, the area is automatically calculated and displayed in the result line **c**. The individual measured values are displayed in the measured-value lines **a**.

Volume Measurement

For volume measurements, push button **4** until the indicator for volume measurement appears on the display.



Afterwards, measure the length, width and the height, one after another, in the same manner as for a length measurement. The laser beam remains switched on between all three measurements.

After taking the third measurement, the volume is automatically calculated and displayed in the result line **c**.

The individual measured values are displayed in the measured-value lines **a**.

Values above 999999 m³/ft³ cannot be indicated; "**ERROR**" and "——" appear on the display.

Divide the volume to be measured into individual measurements; their values can then be calculated separately and then summarized.

Indirect Length Measurement (see figures H–K)

The indirect length measurement is used to measure distances that cannot be measured directly because an obstacle would obstruct the laser beam or no target surface is available as a reflector. Correct results are achieved only when the laser beam and the sought distance form an exact right angle (90°) (Pythagorean Theorem)

Pay attention that the reference point of the measurement (e.g. the rear edge of the rangefinder) is at the exact same location for all individual measurements within a measuring sequence (exception: trapezoid measurements).

The laser beam remains switched on between the individual measurements.

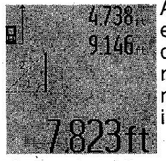
For indirect length measurements, four measuring modes are available. Each measuring mode can be used for determining different distances.

To select the measuring mode, push the function-mode button **3** until the symbol of the desired measuring mode is indicated on the display.

a) Simple Indirect Length Measurement (see figure H)

Push the function-mode button **3** until the indication for simple indirect length measurement appears on the display.

Measure distances "**1**" and "**2**" in this sequence with a length measurement. Pay attention that the line segment "**1**" and the sought distance "**E**" form a right angle.

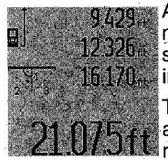


After taking the last measurement, the result for the sought distance "**E**" is displayed in the result line **c**. The individual measured values are displayed in the measured-value lines **a**.

b) Double Indirect Length Measurement (see figure I)

Push the function-mode button **3** until the indication for double indirect length measurement appears on the display.

Measure distances "**1**", "**2**" and "**3**" in this sequence with a length measurement. Pay attention that the line segment "**1**" and the sought distance "**E**" form a right angle.



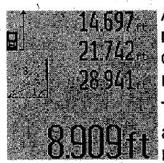
After taking the last measurement, the result for the sought distance "**E**" is displayed in the result line **c**.

The individual measured values are displayed in the measured-value lines **a**.

c) Combined Indirect Length Measurement (see figure J)

Push the function-mode button **3** until the indication for combined indirect length measurement appears on the display.

Measure distances "**1**", "**2**" and "**3**" in this sequence with a length measurement. Pay attention that the line segment "**1**" and the segment sought distance "**E**" form a right angle.



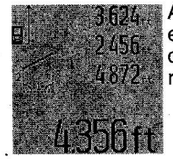
After taking the last measurement, the result for the sought distance "**E**" is displayed in the result line **c**.

The individual measured values are displayed in the measured-value lines **a**.

d) Trapezoid Measurement (see figure K)

Push the function-mode button **3** until the indication for trapezium measurement appears on the display.

Measure distances "**1**", "**2**" and "**3**" in this sequence with a length measurement. Pay attention that the measurement of distance "**3**" starts exactly at the end point of distance "**1**" and that a right angle exists between distances "**1**" and "**2**" as well as between "**1**" and "**3**".



After taking the last measurement, the result for the sought distance "**E**" is displayed in the result line **c**.

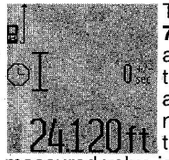
The individual measured values are displayed in the measured-value lines **a**.

Time-delayed Length Measurement

Time-delayed length measurement is helpful e.g. when measuring at hard to reach locations or when movements of the rangefinder during measuring are to be prevented.

For a time-delayed length measurement, push function- mode button **3** until the indicator for time-delayed length measure- ment appears on the display.

The time period from the actuation until the measurement takes place is displayed in the measured-value line **a**. The time period can be adjusted between 1 s and 60 s by pressing the plus button **6** or the minus button **12**.



Then push the measuring button **7** to switch the laser beam on and aim at the target point. Push the measuring button **7** again to actuate the measurement. The measurement takes place after the set time period. The measured value is displayed in the result line **c**.

The addition and subtraction of measuring results as well as minimum/maximum measurements are not possible for time-delayed length measurements.

Multi-Surface Area Measurement (see figure L)

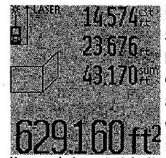
The Multi-surface area measurement is used to determine the sum of several individual surfaces with a common height.

In the example shown, the total surface of several walls that have the same room height **A**, but different lengths **B**, are to be determined.

For Multi-surface area measurements, push the function-mode button **3** until the indicator for wall surface measurement appears on the display.

Measure the room height **A** as for a length measurement. The measured value ("**cst**") is display- ed in the top measured-value line **a**. The laser remains switched on.

Afterwards, measure length **B1** of the first wall. The surface is auto- matically calcu- lated and displayed in the result line **c**. The length measurement value is displayed in the center measured value line **a**. The laser remains switched on.



Now, measure length **B2** of the second wall. The individually measured value displayed in the center measured-value line a is added to the length **B1**. The sum of both lengths ("sum", displayed in the bottom measured-value line a) is multiplied with the stored height **A**. The total surface value is displayed in the result line **c**.

In this manner, you can measure any number of further lengths **Bx**, which are automatically add- ed and multiplied with height **A**.

The condition for a correct area/ surface calculation is that the first measured length (in the example the room height **A**) is identical for all partial surfaces.

For a new multi-surface area measurement with new room height **A**, press button **16** three times.

Stake-out Mode (see figure M)

Stake-out mode is used for marking off a fixed length (stake-out value), which can either be measured or entered. It is helpful for, e.g., marking partition spaces for drywalls.

To activate the stake-out mode, push the function-mode button **3** until the stake-out mode indication appears on the display.

The stake-out value can be adjusted as follows:

- To enter a known value, pushthe plus button **6** or the minus button **12** until the desired value is displayed in the upper measured-value line a. When pressing and holding the plus button **6** or minus button **12**, the values will continuously skip through. The laser is not activated yet.
- For measuring the stake-out value, briefly push the measuring button **7** once for sighting and once more for measuring. Afterwards, the laser beam remains switched on.
- The measured or entered stake-out value can be corrected by pressing the plus button **6** or the minus button **12**.

After determining the stake-out value, press and hold the measuring button **7** to begin the measurement.

Now, move the rangefinder in the desired direction for staking out. The current measuring value of the complete measured distance is continuously displayed in the result line **c**. The selected stake-out value continues to be displayed in the upper measured- value line **a**.

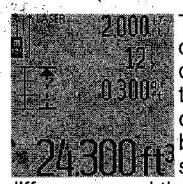
The factor ("**x**") how often the stake-out value is contained in the total measuring distance is displayed in the center measured-value line, and the difference ("**dif**") between an integral multiple of the stake-out value and the total distance is displayed in the bottom measured-value line **a**.

When the total measuring distance is somewhat less than an integral multiple, then a negative difference and the next higher multiple of the stake-out value are displayed.

Move the rangefinder until the desired multiple of the stake-out value is displayed in the center measured-value line a and the difference in the bottom measured-value line is a "0.0". Then mark off the reference point of the measurement.

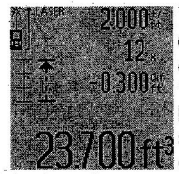
Examples:

a) Positive difference:
24.3 ft = (12 x 2.0 ft) + 0.3 ft



The stake-out value 2.0 ft is contained 12 times in a total distance of 24.3 ft. Additionally, the total distance contains a rest of 0.3 ft. Reduce the distance between the rangefinder and the starting point by 0.3 ft difference, and then mark off the length.

b) Negative difference:
23.7 ft = (12 x 2.0 ft) – 0.3 ft



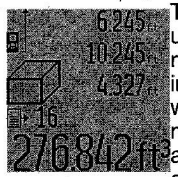
For a total distance of 23.7 ft, 0.3 ft are missing for the mark-out value 2.0 ft to be contained 12 times. Increase the distance between the rangefinder and the starting point by 0.3 ft difference, and then mark off the length.

Briefly pressing measuring button **7** ends the stake-out mode. Press and hold the measuring button **7** to restart the stake-out mode (with the same stake-out value).

The stake-out mode automatically switches off after 5 min. For prior exiting of the function, push one of the measuring-mode buttons.

List of the last Measuring Values

The rangefinder stores the last 30 measuring values and their calculations, and displays them in reverse order (last measured value first).



To recall the stored measurements, push button **15**. The result of the last measurement is indicated on the display, along with the indicator for the measured-value list "**d**" as well as a counter for the numbering of the displayed measurements.

When no further measurements are stored after pressing button **15** again, the rangefinder switches back to the last measuring function. To exit the measured-value list, push one of the measuring-mode buttons.

To delete the currently displayed measured-value list entry, briefly push button **16**. To delete the complete measured-value list, press and hold the button for the measured-value list **15** and at the same time briefly push button **16**.

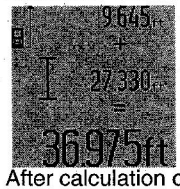
Deleting Measured Values

Briefly pressing button **16** deletes the last individual measuring value determined in all measuring functions. Briefly pressing the button repeatedly deletes the individual measured values in reverse order.

In multi-surface area measurement mode, briefly pressing button **16** the first time deletes the last individually measured value; pressing the button a second time deletes all lengths **B**x, and pressing the button a third time deletes all room heights **A**.

Adding Measured Values

To add measured values, take any measurement or select an entry from the measured-value list. Then push the plus button **6**. For confirmation, "+" appears on the display. Then take a second measurement or select another entry from the measured-value list.



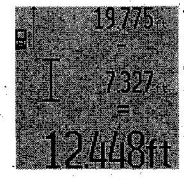
To call up the sum of both measurements, press the result button **5**. The calculation is indicated in the measured value lines **a**, and the sum in the result line **c**.

After calculation of the sum, further measured values or measured-value list entries can be added to this result when pressing the plus button **6** prior to each measurement. Pressing the result button **5** ends the addition.

Notes on the addition:

- Mixture of length, area and volume values cannot be added together. For example, when a length and area value are added, "ERROR" briefly appears on the display after pressing the result button **5**. Afterwards, the rangefinder switches back to the last active measuring mode.
- For each calculation, the result of one measurement is added (e.g. the volume value); for continuous measurements, this would be the displayed measured value in result line **c**. The addition of individual measured values from the measured-value lines a is not possible.
- For time-delayed length measurements and when in stake-out mode, additions are not possible; when changing to these modes, begun additions are interrupted.

Subtracting Measured Values



To subtract measuring values, push minus button **12**; For confirm- ation, "–" is indicated on the display. The further procedure is analog to "Adding Measured Values".

The reception lens **26** and the laser beam outlet **27** must not be covered when taking a measurement.

The rangefinder must not be moved while taking a measure- ment (except for continuous measurements, minimum/ maximum measurements and when in stake-out mode). Therefore, whenever possible, place the rangefinder against or on the measuring points

Influence Effects on the Measuring Range

The measuring range depends upon the light conditions and the reflection properties of the target surface. For improved visibility of the laser beam when working outdoors and when the sunlight is intense, use the laser viewing glasses **30** (accessory) and the laser target plate **31** (accessory), or shade off the target surface.

Influence Effects on the Measuring Result

Due to physical effects, faulty measurements are possible when measuring on different surfaces.

Included here are:

–Transparent surfaces (e.g., glass, water),

–Reflecting surfaces (e.g., polished metal, glass),

–Porous surfaces (e.g. insulation materials),

–Structured surfaces (e.g.,roughcast, natural stone).

If required, use the laser target plate **31** (accessory) on these surfaces.

Furthermore, faulty measure- ments are also possible when sighting inclined target surfaces.

Also, air layers with varying temperatures or indirectly received reflections can affect the measured value.

Measuring with the Extension Pin (see figures B, C, F and G)

The extension pin **18** is suitable for measuring out of corners (diagonal within a space) or from hard to reach areas, such as from roller-shutter rails.

Push on the extension pin latch **1** to fold it in or out, or change its position.

For measurements starting from outer corners, fold the extension pin aside; for measurements from the rear edge of the extension pin on, fold it out to the rear.

Set the corresponding reference pint for measurements with the extension pin by pushing button **8** (for measurement with extension pin aside, se to measuring from the rear edge of the rangefinder).

Aligning with the Spirit Level

The vial level **14** allows for simple leveling of the rangefinder. This allows for easier sighting of target surfaces, especially over longer distances. In combination with the laser beam, the spirit level **14** is not suitable for leveling.

Sighting with the Optical Sight (GLR825) (see figure N)

The sighting line through the optical sight and the laser beam run parallel to each other. This allows for precise sighting over long distances, when the laser dot is no longer visible with the naked eye.

For sighting, look through the viewfinder of the optical sight **10**. Take care that the optical sight window **25** is not obstructed and clean.

Note: For close vicinities, the actual and the displayed target point are not identical.

Sighting with the Alignment Aid (see figure O)

With the alignment aid **24**, sighting over larger distances is a lot easier. For this, look alongside the alignment aid on the side of the rangefinder.

The laser beam runs parallel to this sighting line.

Working with the Tripod (Accessory)

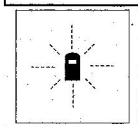
The use of a tripod (not included) is particularly advisable for larger distances because of the steadiness it provides.

The rangefinder tool can be screwed onto a commercially available tripod using the 1/4" thread **21** on the bottom side of the housing.

Set the corresponding reference point for measurement with a tripod by pushing button **8** (the reference level is the center of the thread).

Trouble Shooting

Issue	Remedy
Temperature warning indicator (i) flashing; measurement not possible	
The rangefinder is not within the operating temperature of – 10 °C to +50 °C (+14 °F to +122 °F), (in the function continuous measurement up to +40 °C (+104 °F).	Wait until the rangefinder has reached the operating temperature
Battery indication (f) appears	
Battery voltage decreasing (measurement still possible)	Replace batteries
Battery indication (f) flashes, measurement not possible	
Battery voltage too low	Replace batteries
The indications "Error." and "- - -" are indicated in the display	
The angle between the laser beam and the target is too acute.	Enlarge the angle between the laser beam and the target
The target surface reflects too intensely (e.g. a mirror) or insufficiently (e.g. black fabric), or the ambient light is too bright	Work with the laser target plate **32** (optional accessory)
The laser beam outlet **27** or the reception lens **26** are misted up (e.g. due to a rapid temperature change).	Wipe the laser beam outlet **27** and/or the reception lens **26** dry using a soft cloth
The calculated area or volume value is larger than 99990 ft² or ft³.	Divide calculation into intermediate steps
The indication "Error." flashes at the top in the display	
Addition/Subtraction of different types of measurements	Only add/subtract of the same type
Measuring result not plausible	
The target surface does not reflect correctly (e.g. water, glass).	Cover off the target surface
The laser beam outlet **27** or the reception lens **26** are covered.	Make sure that the laser beam outlet **27** or the reception lens **26** are unobstructed
Wrong reference point set	Select reference point that corresponds to measurement
Obstruction in path of laser beam	Laser point must be completely on target surface



The rangefinder monitors the correct mode for each measurement. When a defect is determined, only the symbol shown aside flashes in the display. In this case, or when the above mentioned corrective measures cannot correct an error, have the measuring tool checked by an after-sales service agent for Bosch power tools.

Accuracy Check of the Rangefinder

The accuracy of the rangefinder can be checked as follows:

- Select a permanently unchangeable measuring section with a length of approx.. 1 to 10 meters (3 to 33 feet); its length must be precisely known (e.g. the width of a room or a door opening).
- Measure the distance 10 times after another. The difference in values must not amount to more than a maximum of ±1.5 mm (±1/16 in). Keep a record of the measurements in order to compare the accuracy at a later time.

Maintenance and Service

Store and transport the rangefinder only in the supplied protective case.

Keep the rangefinder clean at all times.

Do not immerse the rangefinder into water or other fluids.

Wipe off debris using a moist and soft cloth.

Do not use any cleaning agents or solvents.

Maintain the reception lens **26** in particular, with the same care as required for eye glasses or the lens of a camera.

If the rangefinder should fail despite the care taken in manufacturing and testing procedures, repair should be carried out by an authorized service center for Bosch power tools. Do not open the measuring tool yourself.

In all correspondence and spare parts orders, please always include the 10-digit article number given on the type plate of the rangefinder.

In case of repairs, send in the rangefinder packed in its protective case **28**.

DISPOSAL

Rangefinders, batteries, accessories and packaging should be sorted for environmental-friendly recycling.

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- **2- and 3-Year Exchange.** BOSCH will replace your laser or measuring tool product that has failed when used in conformance with product instructions and warnings, with a new or reconditioned laser or measuring tool product of comparable features, for an exchange cost. This warranty does not apply if your laser or measuring tool product fails solely due to the need for recalibration.

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