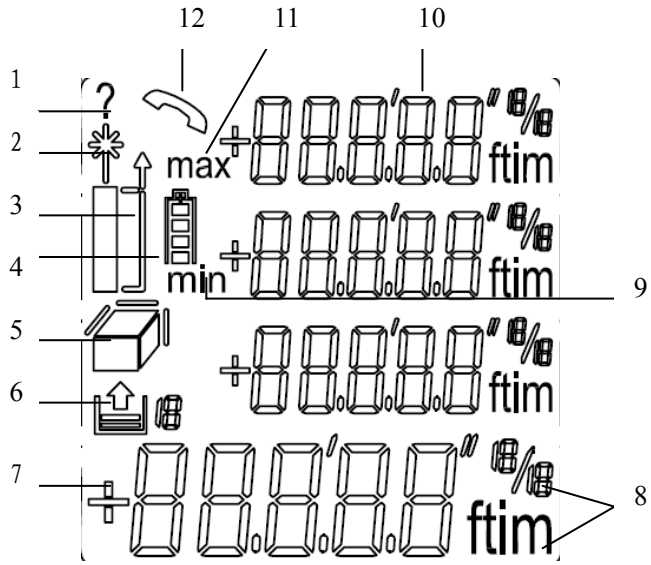
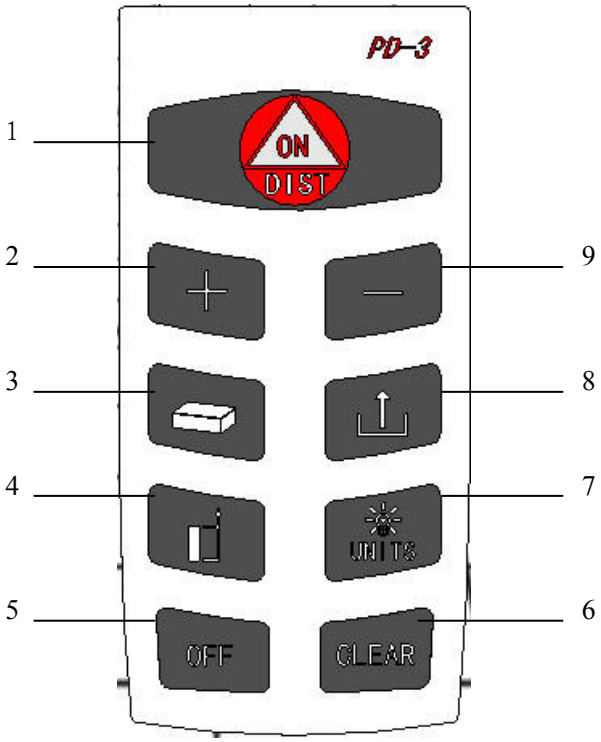
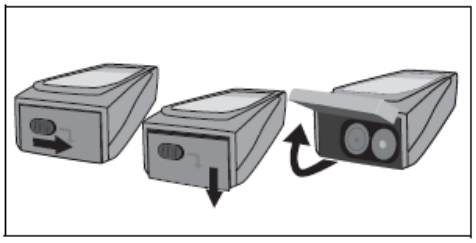

12
11
10
1
2
3
4
5
6
7
8
9
max
min
ftim
ftim
ftim
ftim

A

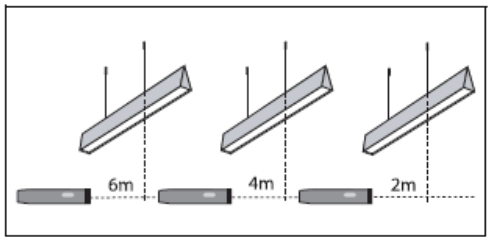

PD-3
ON
DIST
OFF
CLEAR
UNITS
1
2
3
4
5
6
7
8
9

B

C



E



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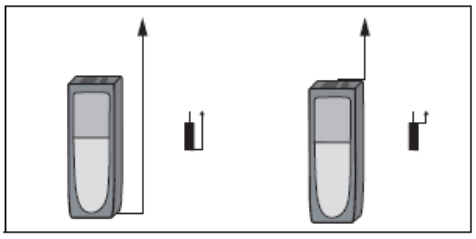
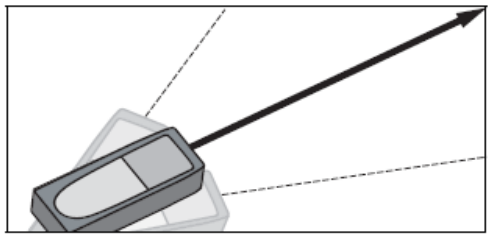
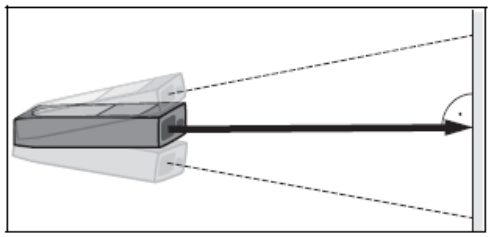


F



G



User Manual

Version 1.0

English

Congratulations on your purchase of a PD-38.

  The safety instructions can be found in a separate booklet, which accompanies this user manual. The safety instructions alone with the user manual should be read carefully before initial operation. Helpful Hint: The first and last page including the pictures should look first whilst reading through the manual. Letters and Numbers in braces {} refer to the illustrations.

Content

Start-up

Inserting / Replacing Batteries

See figure {C} Push locking mechanism to the right and push the cover of the battery compartment downwards and open it. Place the batteries in the compartment making sure they are correctly inserted. Push the cover of the compartment back and let it lock in place.

The battery symbol {A，4} appears permanently blinking in the display when the battery voltage is too low. The batteries should be replaced as soon as possible.

- Pay attention to correct polarity.
- Use alkaline batteries.
- Batteries should be removed if the device will not be used for a long time (danger of corrosion).

When changing the batteries the settings and stack content remain unchanged.

Level

The integrated bubble level allows simple horizontal leveling of the instrument.

Keypad

See figure{B}：

1 ON/MEASURING key

2 PLUS + key

3 AREA/VOLUME key

4 MEASUREMENT REFERENCE key

5 OFF key

6 CLEAR key

7 UNITS/ILLUMINATION key

8 STORAGE key

9 MINUS – key

Display

See figure{A}.

1and 2 shows at the same time , information on faulty measurements

2 Laser “ON”

3 Measurement reference (front / rear)

4 Battery indication

5 Area / Volume

6 Historical storage recall

7 Main line

8 Units with exponents（$^{2}/_{3}$）

9 Minimum value of continuous measurement

10 Three auxiliary lines（e.g. previous values）

11 Maximum value of continuous measurement

12 Hardware error

Selecting Units

Press UNITS – key {B，7}until desired unit appears.

Possible units:

Distance	Area	Volume
0.000 m	0.000 m^2	0.000 m^3
0.00 m	0.00 m^2	0.00 m^3
0.00 ft	0.00 ft^2	0.00 ft^3

0.00 1/16 ft in	0.00ft^2	0.00 ft^3
0’00” 1/16	0.00ft^2	0.00 ft^3
0.0 in	0.00ft^2	0.00 ft^3
0 1/16 in	0.00ft^2	0.00 ft^3

Operation

Seitching On/Off

ON: Press ON - key {B，1}briefly.

OFF： Press and hold OFF - key {B，5}. To maximize battery life the device will automatically turn off after 3 minutes of inactivity.

CLEAR Key

Pushing the CLEAR – key {B，6} clears the last entry or measurement. Within a function (area, volume, etc.) single measurements can be deleted step by step and re-measured.

Illumination

Pressing the ILLUMINATION – key {B，7} briefly turns on the display backlight. Another press turns it off again. Switching off the device (or automatic switch off) also turns off the light.

Reference Setting

The default reference setting is from the rear of the instrument. By pressing the REFERENCE – key {B，4}，the setting can be changed, so that the next measurement taken will be from the “front” of the

instrument. See picture {D}.

Measuring

Single Distance Measuring

Pressing DIST – key {B，1} turns the laser on. Aim at the desired target and press DIST - key {B，1} again. The measured distance is displayed immediately in the chosen unit.

Minimum/Maximum Measuring

This function allows the user to measure the minimum or maximum distance from a fixed measuring point as well as to determine spacing – see figure {E}. It is commonly used to measure diagonal distances (maximum values) or horizontal distances (minimum values).

Press and hold DIST – key {B，1} until you hear a beep, indicating the device is in a continuous measuring mode. Then slowly sweep the laser back and forth respectively up and down over the desires target point – see figure {F，G} – (e.g. a corner in the room).

Press DIST – key {B，1} again and the continuous measurement will be stopped. The current values for maximum and minimum distances are shown in the display as the last measured value in the main line.

Functions

Addition / Subtraction

Take the first measurement, addition is executed by pressing the PLUS – key {B，2} and subtraction by pressing the MINUS – key {B，9}, then

take the next measurement. This process can be repeated as many times as is required. The result is displayed in the main line, whilst the last measurement taken is also displayed. Pushing the CLEAR – key {B，6} undoes the last step.

Areas and volumes can be added / subtracted in exactly the same manner.

Area

Press AREA/VOLUME – key {B，3}. The corresponding symbol {A，5} appears in the display. The first side to be measured shows in the display. Take the two measurements, the result will be displayed in the main line.

Volume

Press AREA/VOLUME – key {B，3} twice. The corresponding symbol {A，5} appears in the display. The first distance to be measured shows in the display. When 3 measurements have been taken the result will be displayed in the main line.

Historical storage

Pressing the STORAGE – key {B，8} shows the last 20 displays in reverse order. Using the PLUS - key {B，2} and the MINUS – key {B，9} allows to navigate in the storage.

In order to leave the storage press either CLEAR – key {B，6}，DIST–key {B，1} or the AREA/VOLUME – key {B，3}. Press and hold the STORAGE – key {B，8} until a beep, allows the user to take the selected result to carry on with calculations.

Appendix

Message Codes

All message codes will be displayed with either “InFo” or “Error”.

The following mistakes can be corrected:

InFo	Cause	Remedy
204	Calculation overflow	Repeat procedure
205	Ranging transfinite	Use in allowed ranging
252	Temperature too high	Cool down instrument
253	Temperature too low	Warm up instrument
255	Receiver signal too weak, measurement time too long，	Use target plate
256	Received signal too powerful	Use target plate (grey side)
260	Laser beam interrupted	Repeat measurement

Error	Cause	Remedy
	Hardware error	Switch on/off the device several times and check if the symbol still appears. If so please call your dealer for assistance

Technical Data

Range (use target plate	0. 05m to 80m 0.02 ft to 262 ft
Measuring accuracy up to 30m（in the room）	Typ.：±2mm*
Smallest unit displayed	1mm
Laser class	Ⅱ
Laser type	635nm，<1mW
Φlaser spot (at distance)	6/30/60mm （10/15/100m）
Automatic switch off	After 180s
Illumination of display	√
Minimum, Maximum, Continuous	√
Addition/Subtraction	√
Historical storage	√（20）
Battery life, Type AAA，2×1.5V	up to 10000 measurements
IP rating	IP 54 Splash proof, dust proof
Dimension and weight	137×45×31mm，150g
Temperature range： Storage Operating	 -25℃ to +70℃ （-13℉ to +158℉） -10℃ to +50℃ （-14℉ to +122℉）

*maximum deviation occurs under unfavourable conditions such as bright sunlight or when measuring to poorly reflecting or very rough surfaces.

For distances over 30m – without using a target plate – the maximum deviation may increase to a maximum of ±10mm.

Measuring Conditions

Measuring Range

The measuring range is limited to 80m.

At night, at dusk and when the target is shadowed the measuring range without target plate is increased.

Use a target plate to increase the measurement range during daylight or if the target has a bad reflection.

Measuring Surfaces

Measuring errors can occur when measuring toward colourless liquids (e.g. water) or dust free glass, styrofoam or similar semi-permeable surfaces.

Aiming at high gloss surfaces deflects the laser beam and measurement errors can occur.

Against non-reflective and dark surfaces the measuring time can be increased.

Care

Do not immerse the unit in water. Wipe off dirt with a damp, soft cloth. Do not use aggressive cleaning agents or solutions. Treat the optical surfaces with the same care that you would apply to eyeglasses and

cameras.

Safety Instructions

Version 1.0

English

 Carefully read the Safety Instructions and the User Manual before using this product.

The person responsible for the instrument must ensure that all users understand these directions and adhere to them.

Symbols used

The symbols used in the Safety Instructions have the following meanings：

WARNING：

Indicates a potentially hazardous situation or an unintended use which, if not avoided, will result in death or serious injury.

CAUTION：

Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor injury and/or in appreciable material, financial and environmental damage.

☞ Important paragraphs which must be adhered to in practice as they enabled the product to be used in a technically correct and efficient manner.

Use of the instrument

Permitted use

- Measuring distances
- Computing functions, e.g. areas and volumes
- Storing measurements

Prohibited use

- Using the instrument without instruction
- Using outside the stated limits
- Deactivation of safety systems and removal of explanatory and hazard labels
- Opening of the equipment by using tools (screwdrivers, etc.), as far as not specifically permitted for certain cases
- Carrying out modification or conversion of the product
- Use after misappropriation
- Use of accessories from other manufacturers without the express approval of original manufacturer.
- Deliberate or irresponsible behavior on scaffolding, when using ladders, when measuring near machines which are running, or near parts of machines or installations which are unprotected
- Aiming directly into the sun
- Deliberate dazzling if third parties; also in the dark
- Inadequate safeguards at the surveying site (e.g. when measuring on roads, construction sites, etc.)

Limits of use

☞ See section “Technical Data”.

Product is designed for use in areas permanently habitable by humans, do not use the production explosion hazardous areas or in aggressive environments.

Areas of responsibility

Responsibilities of the manufacturer of the original equipment ：original manufacturer is responsible for supplying the product, including the User Manual and original accessories, in a completely safe condition.

Responsibilities of the person in charge of the instrument：

⚠WARNING

The person responsible for the instrument must ensure that equipment is used in accordance with the instructions. This person is also accountable for the deployment of personnel and for their training and for the safety of the equipment when in use.

The person in charge of the instrument has the following duties：

· To understand the safety instructions on the product and the instructions in the User Manual.

· To be familiar with local safety regulations relating to accident prevention.

· To inform original manufacturer immediately if the equipment becomes unsafe.

Hazards in use

⚠CAUTION：

Watch out for erroneous distance measurements if the instrument is defective or if it has been dropped or has been misused or modified.

Precautions：

Carry out periodic test measurements. Particularly after the instrument has been subject to abnormal use, and before, during and after important measurements.

Make sure the PD-38 optics is kept clean and that three is no mechanical damage to the bumpers.

⚠CAUTION：

In using the instrument for distance measurements or for positioning moving objects (e.g. cranes, building equipment, platforms, etc.) unforeseen events may cause erroneous measurements.

Precautions：

Only use this product as a measuring sensor, not as a control device. Your system must be configured and operated in such a way, that in case of an erroneous measurement, malfunction of the device or power failure due to installed safety measures (e.g. safety limit switch), it is assured that no damage will occur.

⚠WARNING：

Dispose of the product appropriately in accordance with the

regulations in force in your country. Always prevent access to the product by unauthorized personnel.

⚠**CAUTION：**

Aiming the telescopic viewer directly at the sun or at the reflected laser beam (reflected off metallic or mirroring surfaces, prisms……) is hazardous to the eyes.

Precautions：

Never aim the telescopic viewer directly at the sun or at highly reflecting surfaces (metallic or mirroring surfaces, prisms……).

Electromagnetic Compatibility（EMC）

The term “electromagnetic compatibility” is taken to mean the capability of the product to function smoothly in an environment where electromagnetic radiation and electrostatic discharges are present, and without causing electromagnetic interference to other equipment.

⚠**WARNING：**

The PD-38 conforms to the most stringent requirements of the relevant standards and regulations. Yet, the possibility of it causing interference in other devices cannot be totally excluded.

⚠**WARNING：**

Electromagnetic radiation can cause disturbances in other equipment, in installations (e.g. medical ones such as pacemakers or hearing aids) and in aircraft. It can also affect humans and animals.

Precautions：

Although this product conforms to the most stringent standards and regulations，original manufacturer cannot totally exclude the possibility of harm to people and animals.

· Do not use the product near petrol stations, chemical plants, in areas with a potentially explosive atmosphere and where blasting takes place.

· Do not use the product near medical equipment.

· Do not use the product in airplanes.

· Do not use the product near your body for extended periods.

⚠**CAUTION：**

Never attempt to repair the product yourself. In case of damage, contact the local dealership.

Laser classification

The PD-38 produces a visible laser beam which emerges from the front of the instrument.

It is a Class 2 laser product in accordance with：

· IEC60825-1：2001 “Radiation safety of laser products”
（Radiation safety of products）

· EN60825-1：2001 “Radiation safety of laser products”
（Radiation safety of laser products）

It is a Class Ⅱ laser product in accordance with:

· FDA 21CFR Ch.I§1040:2004(US Department of Health and Human Service, Code of Federal Regulations)

Laser Class 2/Ⅱ products：

Do not stare into the laser beam or direct it towards other people unnecessarily. Eye protection is normally afforded by aversion responses including the blink reflex.

⚠ **WARNING：**

Looking directly into the beam with optical aids (e.g. binoculars, telescopes) can be hazardous.

Precautions：

Do not look directly into the beam with optical aids.

⚠**CAUTION：**

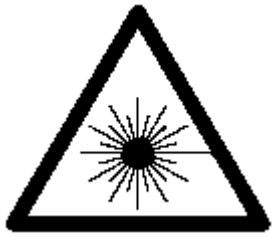
Looking into the laser beam may be hazardous to the eyes.

Precautions：

Do not look into the laser beam. Make sure the laser is aimed above or below eye level.(particularly with fixed installations, in machines, etc.)

Labelling

Laser Radiation
Do not stare into the beam
Laser class 2
acc.IEC 60825-1：2001
Maximum radiant power： < 1mW
Emitted wavelength： 620-690nm
Beam divergence： 0.16×0.6mrad
Pulse duration： 1×10^{-9}s



Position of the product label see last page!