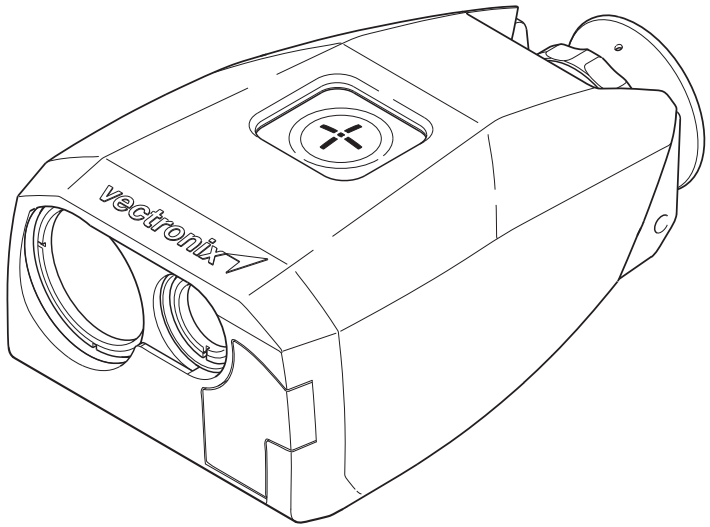


PLRF25C / PLRF25C BT

Pocket Laser Range Finder with Compass

User Manual

English, Revision B
09.2016

SAFRAN
Vectronix

General Information

Short Description PLRF25C / PLRF25C BT

The PLRF25C is a ruggedized, pocket size, handheld, one button operated laser range-finder with integrated digital magnetic compass, sighting optic and data interface. The PLRF25C is capable to provide distance, azimuth and inclination information. The version PLRF25C BT is additonally equipped with integrated Bluetooth functionality.

Meaning of the Symbols

Warning

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

Caution

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

Information

Gives reference to an important information for analysis of that important text.

For safe use of the device, please note the safety directions included in the User Manual.

Warning

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure. Do not open the device housing or attempt your own repairs. Do not manipulate or adjust the performance of the device.

Warning

Not following correct operating procedures or practices could result in personal injury or loss of life.

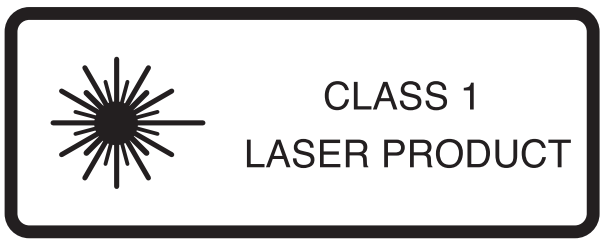
Warning

Distance measurements on reflective objects (e.g. traffic signs, number plates) may cause false readings.

Contents

Safety Notices

Laser Safety: Class 1
according to IEC60825-1 Ed 2.0 (2007-03)



The knowledge of this instruction and the local authorities instructions is the basic for a save use of the instrument.

Important!

Keep the instructions always in direct access for user and any personnel working at the instrument.

Intended purpose

The device

- is designed as a handheld observation and surveying aid;
- is to be used in addition to other instruments or techniques;
- must never be used as a sole surveying instrument.

Limitations of use

The device must not be used in the vicinity of sensitive electrical equipment.
All other usage limitations are mentioned in the technical specifications.

Inappropriate use

- Device deployment without prior knowledge of the operating instructions and safety notices.
- Changes and modifications to the device by the customer.
- Use of accessories not expressly approved by Vectronix AG.
- Working in explosive enviroment or underground.
- Testing or inspection of device not named as applications in the intended use.
- Use of the device without instruction.
- Use outside of the intended limits.
- Opening the device using tools, for example screwdriver.
- Use after misappropriation.
- Use of device with obviously recognizable damages or defects.

Inappropriate use brings the risk of

- injuries;
- instrument errors;
- damage to property;
- malfunction;

Obligation of the Operator

The person responsible for the product must ensure that

- the operators are qualified according to the local authorities directives;
- all users understand these directions and adhere to them.

Detection hazard

The detectability of the user's position is not covered in this manual. The user must take responsibility.

Avoiding storage and transport damage

- When not in use, always keep the device in its pouch.
- Remove the battery prior to prolonged storage. Battery leakage can damage the device.
- Observe the permissible storage temperatures.
- Do not expose the device to strong mechanical shocks or abrupt temperature transitions during transport (moisture condensation).
- Use the pouch and transit case or equivalent packaging for shipment.

Avoiding measurement errors

- Note the factors affecting measurement accuracy (see pages 26, 27).
- Always perform test measurements after the device has been exposed to rough handling (vibration, falls,etc.), and before carrying out important measurement tasks.
- Distance errors may occur when measuring through glass or onto highly reflective surfaces such as mirrors or water surfaces.
- The accuracy of transmitted data (BT/Data cable) always must be verified.

Blinding hazard

- Do not look into powerful light sources with the device.
- Do not open the device. The built-in laser can cause eye injuries.
- Although an eyesafe class 1 laser product, refrain from looking directly at the beam while making a measurement.

Battery safety

The battery must not be

- short-circuited;
- recharged;
- mechanically modified;
- placed in fire or exposed lonely or with the device to temperatures above +85°C (185°F).

- used or handled when damaged or leaking. If you come into contact with the electrolyte, wash the affected area with water and soap. If in contact with the eye, flush eye with water and seek medical advice. If swallowed, consult a doctor immediately.

Physical injury hazard

- Do not place the device on a vehicle parcel-shelf or dashboard – risk of injury when braking.
- Carrying strap can snag and cause strangulation or neck injury e.g. in case of a fall.
- Check the carrying strap at regular intervals, and replace it if damaged.
- Take care when holding the device up to the face to use to avoid injury to the eye or surrounding tissue.
- Using the device while walking increases the risk of injury for the user and others.

Environmental hazard

- The device does not contain extremely hazard materials. For handling and disposal of the battery and the electro-optical device the country specific regulations have to be respected.
- Deposit used batteries at a proper collection point.

Care and cleaning

The devices performance and serviceability are conditional on regular care and immediate attention to problems:

- Do not touch glass lenses with fingers.
- Do not soil the operating keys with oil or grease.
- Avoid abrupt temperature transition, since these can cause condensation moisture to develop inside the device.
- Check up the battery compartment on contamination and humidity and clean and dry it if necessary.

The device does not need special care or cleansers.

Therefore

- do not use any kind of impregnated cloth intended for cleaning spectacle lenses,
- do not use any solvent except water, e.g. no alcohol or cleansers.

Lens cleaning

Particles of dirt should be blown off or removed using a soft brush.

Finger prints may be cleaned first by wiping with a damp cloth, followed by soft, clean optical tissue or chamois leather.

Cleaning the casing

Wipe the casing with a damp cloth. Pay special attention to dirt and grease around the button.
Blow out the device interface cable socket, and clean it carefully.
Allow the device to dry fully before packing.

Cleaning the interface cable

Protect the cable from damp and dirt as much as possible! Wipe the cable with a damp cloth. Blow out soiled cable plugs with clean air, and leave them to dry.

Checking the display

To check that the display functions correctly, please perform a BIT test (see page 43).

Technical Data

Optics	
Observation	monocular
Magnification	6x
Objective diameter	30 mm
Field of view	106 mil / 6°
Focus	fixed (30 m to infinity)
Dioptric setting	+4 dpt to -4 dpt

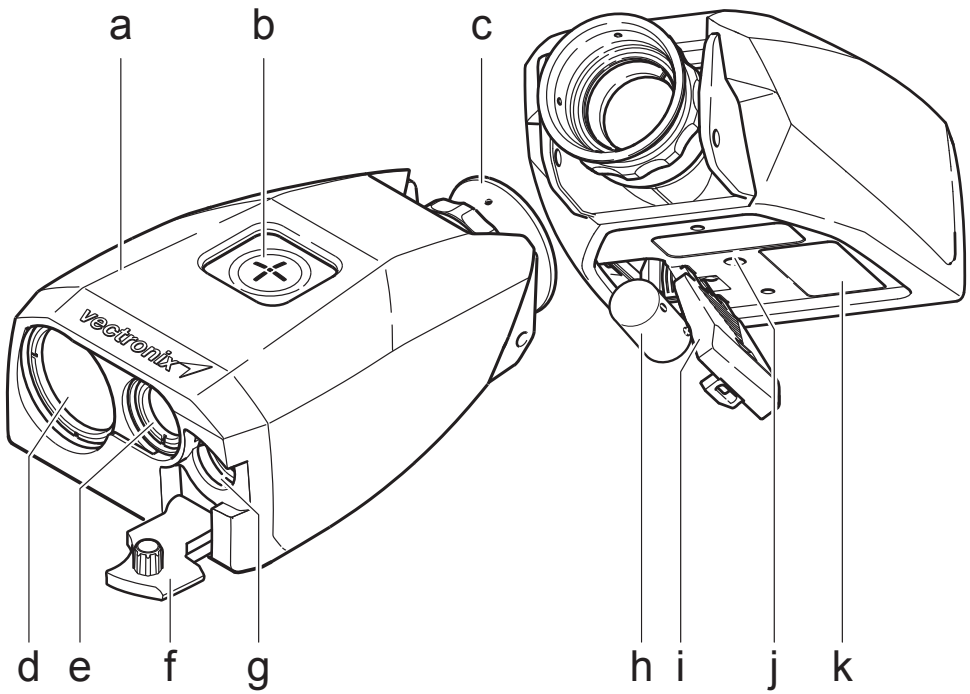
Magnetic Compass (azimuth and inclination)	
Azimuth units	360° / 6400 mil / 6300 mil / 6000 mil
Accuracy (1σ)	
Azimuth	±10 mil / ±0.6°
Azimuth with PPS calibration on tripod, typical	±5 mil / ±0.3°
Inclination angle	±3 mil / ±0.2°
Display resolution	1 mil / 1°
Max. inclination and bank angle	±45°
Compass calibration	menu driven
Declination	
Array (adjustable)	±179.9°
Increment	1 mil / 0.1°

Rangefinder	
Laser type	1550 nm
Eye safety	Class 1
Standard	IEC60825-1 Ed 2.0 (2007-03)
Range Performance	5 m to >6000 m
Specified Performance	3000 m*
Accuracy (1σ)	±2 m (50 m to 1500 m) ±5 m (<50 m / >1500 m)
Display Resolution	1 m / 1 ft / 1 yd

* at visibility 15 km, 2.3 x 2.3 m target size, albedo 0.4, detection probability >90%

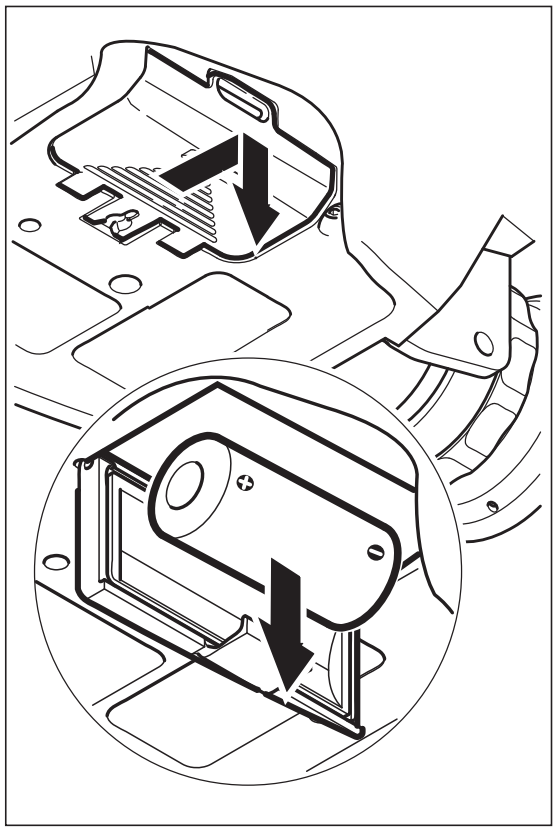
Miscellaneous	
Power supply	1x 3V lithium battery, type CR123A
Battery capacity (20°C)	> 5000 measurements
Immersion	
standard	1 m, 60 min
optional	10 m, 60 min
Operational temperature range	-35°C to +63°C / -31°F to +145°F
Storage temperature range (without battery)	-40°C to +85°C / -40°F to +185°F
Weight with battery and rubber cover	500 g / 1.1 lbs
Dimensions with rubber cover	
length	131 mm / 5.2 in
width	88 mm / 3.5 in
height	55 mm / 2.2 in
Tripod interface	1/4 inch thread
Data interface:	
PLRF25C / PLRF25C BT	RS232
PLRF25C BT	Bluetooth (Serial Port Profile)

Instrument Overview



a) Rubber Cover
b) Push Button
c) Eyecup
d) Objective – Day Optics
e) Objective – Transmitter
f) Interface Protection Cap
g) Interface Connector (5-Pin LEMO)
h) Battery, CR123A
i) Battery Case Cover
j) Tripod Mount (1/4 inch)
k) Type label (Name, Part Number, Serial Number)

Changing the battery

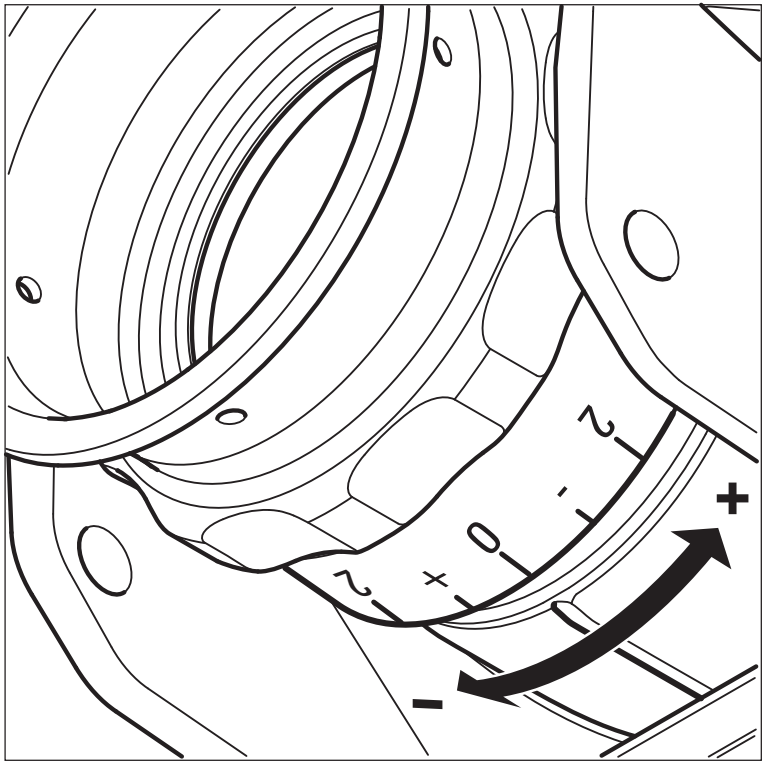


Open the battery compartment.
Insert one lithium battery type CR123 with +(positive) pole facing to the objectives.
Close the battery cover.

The device monitors the condition of the batteries. If the display shows BATT LOW, this indicates that the battery is almost used up. You can still get readings, but the battery needs to be replaced at the next occasion.
The message BATT LOW may also appear under cold conditions, since low temperature reduces the performance of the batteries.

ⓘ Remove the battery before storing.

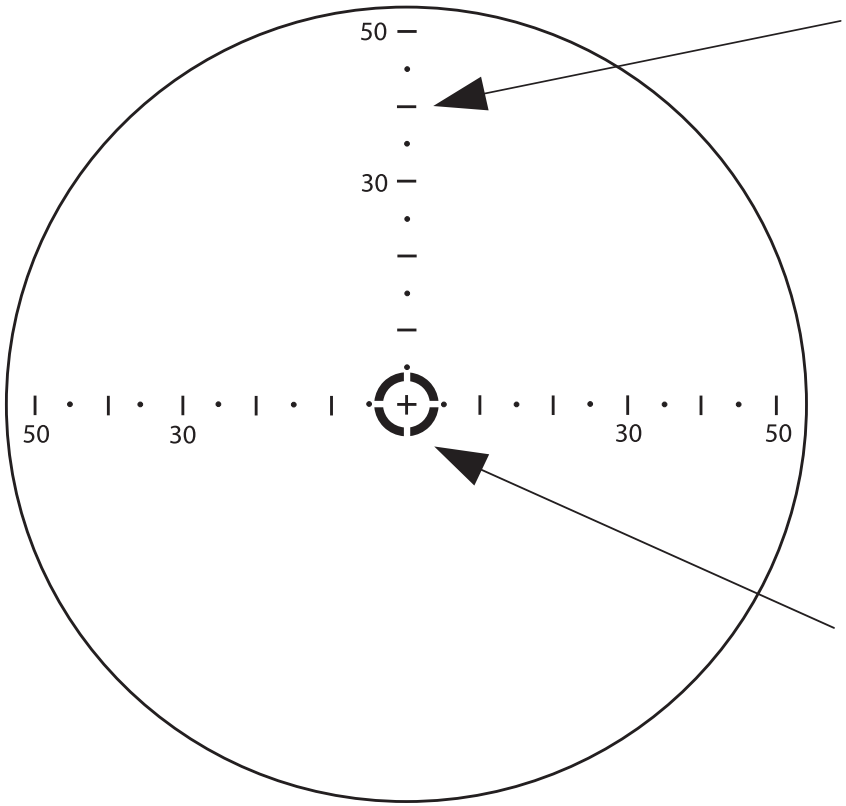
Diopter adjustment



Focus on an object farther than 100 m away and rotate the eyepiece to obtain a sharp image.
Standard setting: 0 diopter

If the device is being used by different people, remember your personal diopter setting.

Reticle



Glass reticle

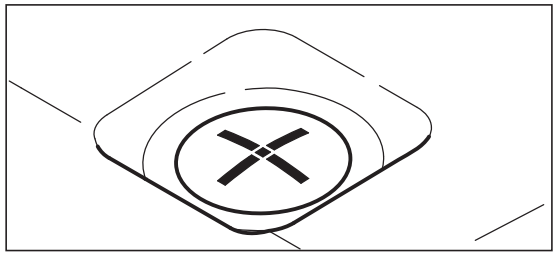
The device is equipped with an engraved glass reticle.
Line to line spacing: 10 mil
Line to point spacing: 5 mil

1 mil corresponds to 1 m spacing at a distance of 1 km.

Electronic reticle

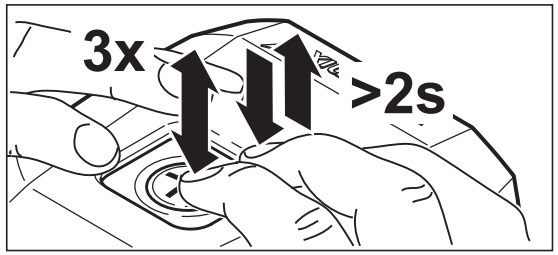
An illuminated aiming mark can be activated for the use under poor lighting conditions.

General Operations



The device is operated entirely by one push button only.

You can prolong the display period by holding down the button while the result is displayed.



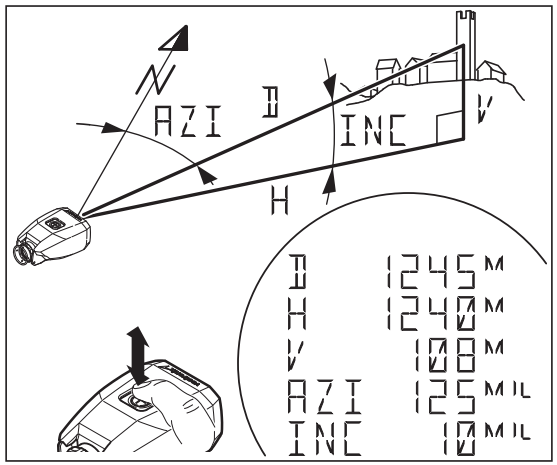
The button operation is indicated by the following symbols:

- press down the button and keep it pressed
- release the button
- press and release the button quickly (click)
- 3x number of clicks (e.g. 3 clicks)
- >2s press and hold down the button for the indicated time (e.g. >2 seconds)

Hold the device steady during measurement.
The device displays the measurement result, then switches itself off automatically after a few seconds.

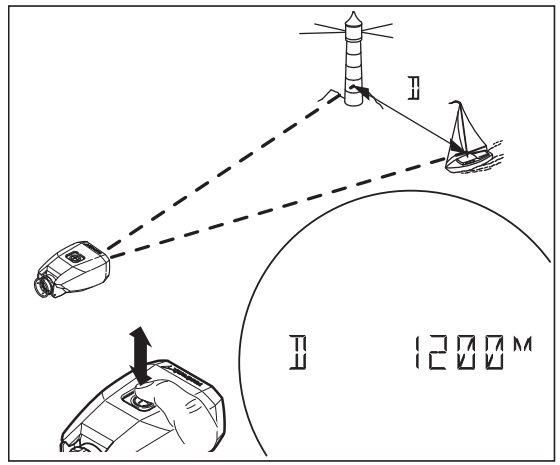
Signs And Symbols Measurement Results

Complete Measurement



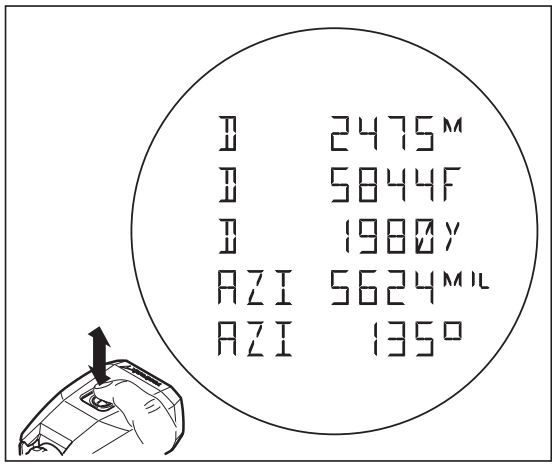
- D Distance (air-line)
- H Horizontal Distance
- V Vertical Distance
- AZI Azimuth
- INC Inclination Angle

Distance Between Two Objectes



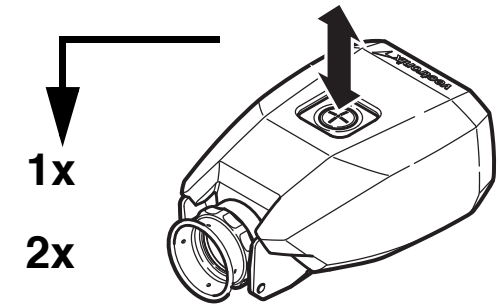
- D Distance (air-line)

Abreviations Units



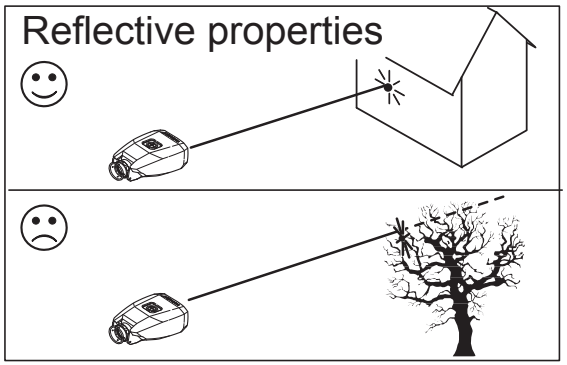
- M Meter
- F Feet
- Y Yard
- MIL Mil
- ° Degree

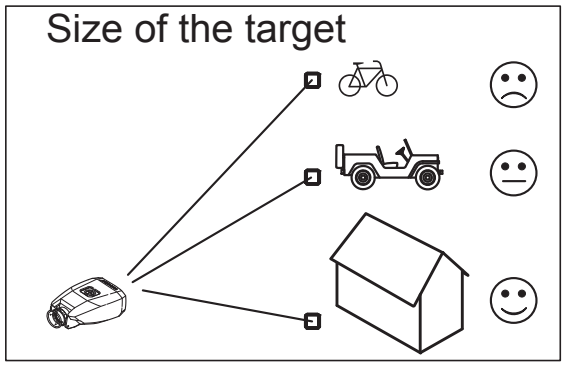
Overview Menu

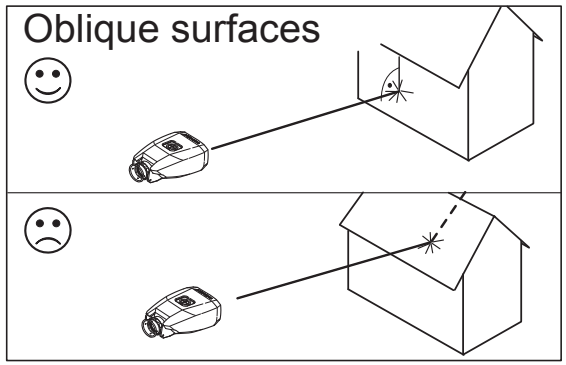


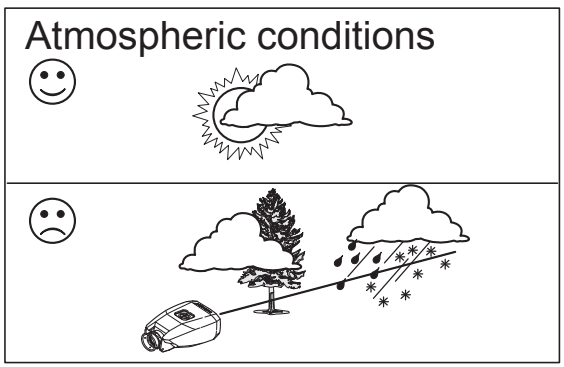
Complete Measurement with data transfer	**1x**
Distance between two points and Fall of Shot (optional)	**2x**
Distance Gate	**3x**
Compass Calibration	**4x**
Declination	**5x**
Settings (Configuration, Units & Interface)	**6x**
Built-In-Test	**7x**
Default Settings	**8x**

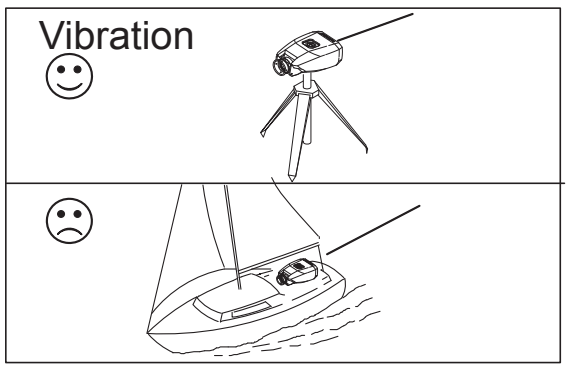
Factors affecting measurement range

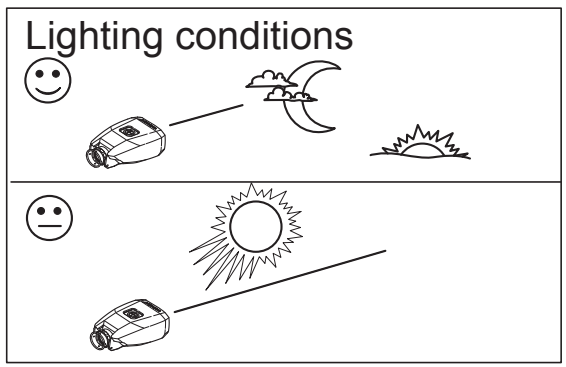




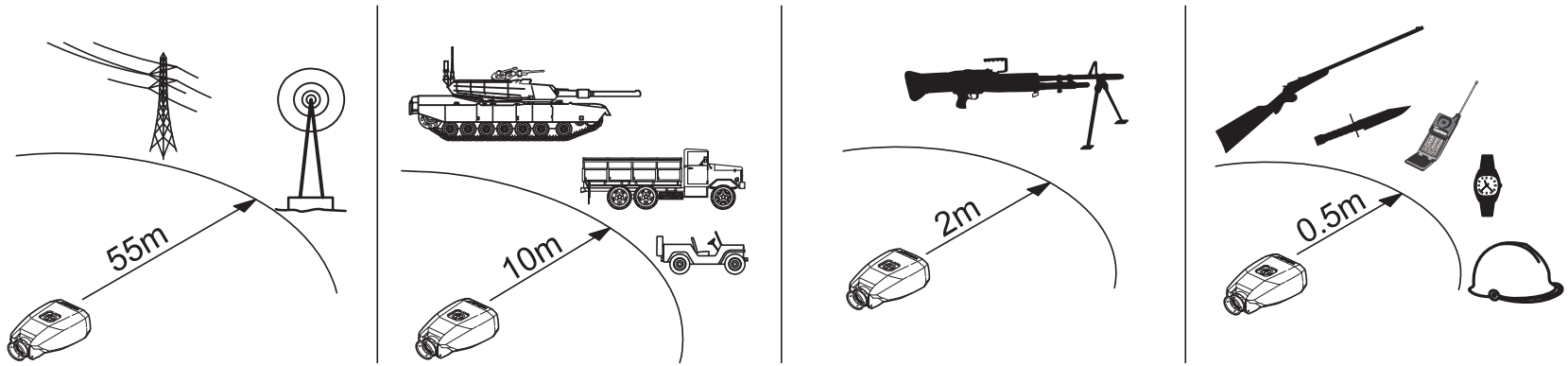








Factors influencing azimuth accuracy

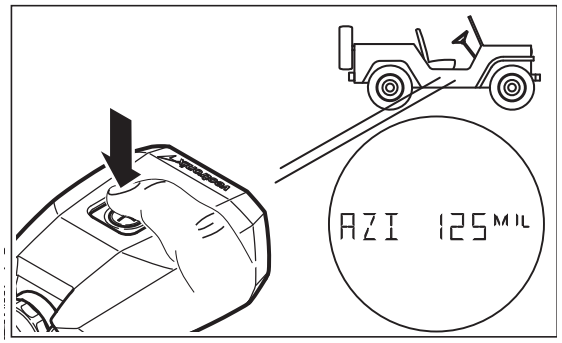


The device has a digital compass that works similar to a magnetic compass. Metal objects, magnetic fields and electronic devices (e.g. radio) can cause error in directional readings. Nonmagnetic metals and alloys do not affect the compass readings.

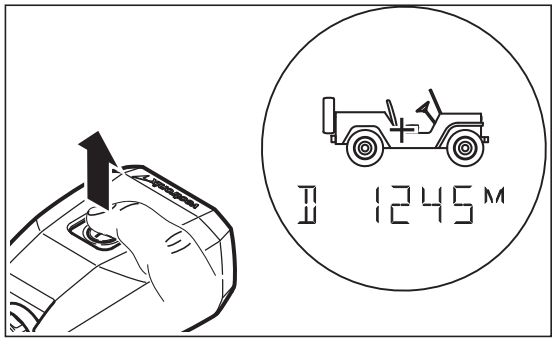
Countermeasures

- A compass calibration must be performed after every battery change (see page 32)
- Observe the minimum safe distances shown above when making azimuth measurements or compass calibration.

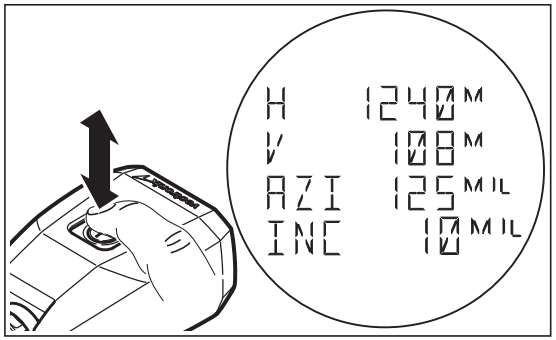
Complete measurement with data transfer (slope distance, horizontal and vertical distance, azimuth, inclination)



Press and hold the button. The azimuth appears and is updated continuously. Sight the object with the aiming mark.



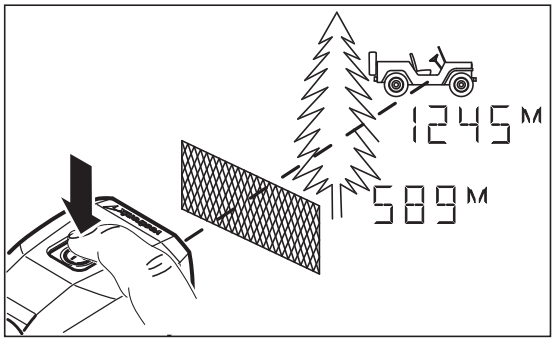
Hold the device steady as you release the button. The slope distance D is displayed.
If no distance could be detected, D---- appears.



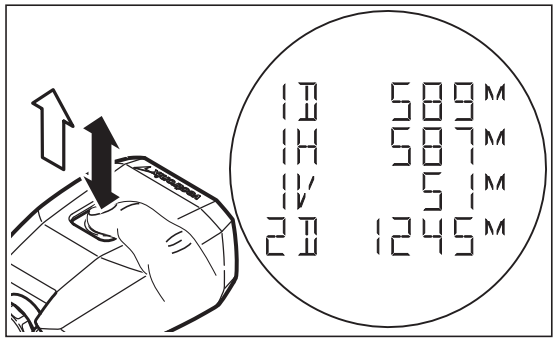
While the display is on, click the button to get the horiziontal distance H. Repeat the step above to obtain the vertical distance V, the azimuth AZI and the inclination angle INC.

The measurement data (distance, azimuth and inclination) is transmitted to the interface just after a measurement is taken.

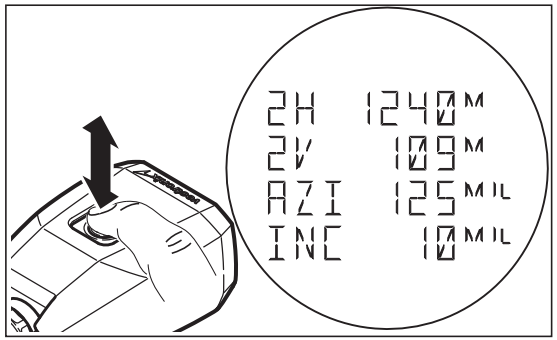
Multiple object measurement



Up to three distances in the line of sight can be obtained with a single measurement. To use this feature the function 3DIS ON must be activated (see page 40).



Perform a measurement as described before. If more than one distance has been detected, it is indicated with a number (1, 2 or 3) at the very left.

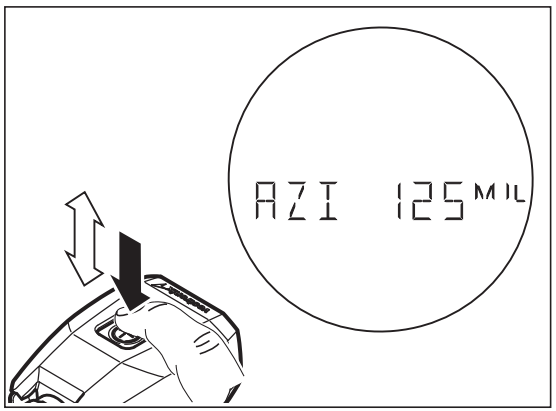


While the display is on, click the button repeatedly to display all the obtained measurement values.The order of the shown ranges is: strongest, 2nd strongest and 3rd strongest detected signal.

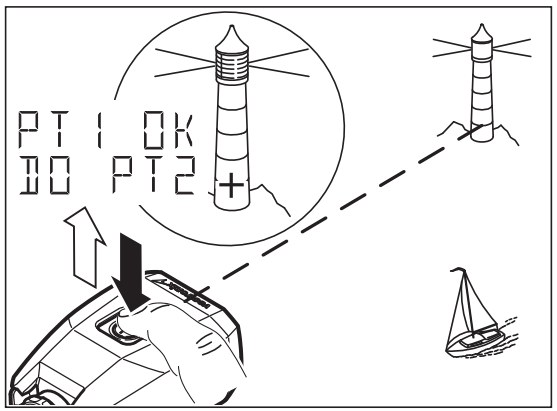
Always the distance with the strongest signal will be transmitted to the interface.

By pressing the button a subsequent measurement can be initiated.

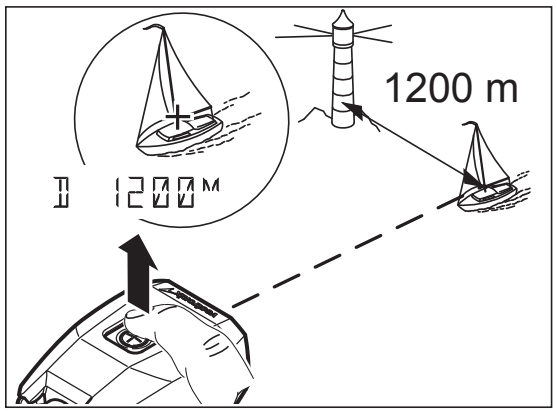
Distance between two objects



Click the button one time then immediately press and hold it down. The azimuth appears and is updated continuously. Sight the first object with the aiming mark.



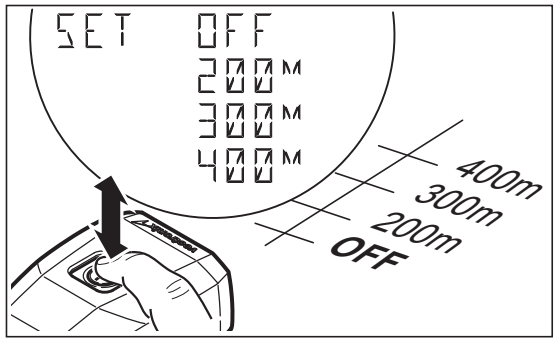
Release the button to measure the first point. PT 1 OK followed by DO PT2 is displayed. Immediately press and hold down the button again. Sight the second point.



Release the button to measure the second point. The distance D between the two points is displayed.

Distance gate

In certain cases, it may be useful to limit the closest distance the device will measure. Click the button three times in rapid succession.
DIS-GATE appears briefly followed by the current setting.



Click the button to scroll through the available values.

D GATED is displayed when a distance within the set distance gate is measured.

To store the desired setting, press and hold down the button for >2 seconds. The setting is not changed if CANCEL is displayed.

Compass calibration

General instructions

How?
There is a choice of three calibration procedures

- **12 point calibration** (recommended) provides best precision.
- **12 point calibration - Tripod mounted (PPS)**
  Provides best precision in combination with a specified tripod (e.g. SST3-3)
- **4 point calibration**
  May achieve adequate precision for many applications if time does not permit a 12 point calibration.

When?

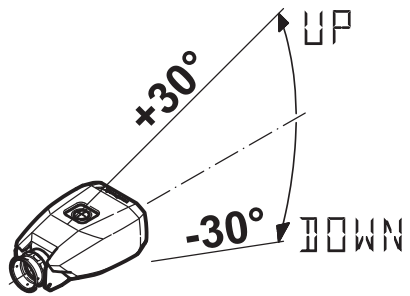
- After every battery change
- If the status of the device is not known.
- After parts have been attached or removed to the device (e.g. night vision device)

ⓘ Check the stored declination after every compass calibration and correct if necessary.

Where?
In a open area (e.g. a field) at an adequate distance from buildings and metallic objects (see page 27).
Ensure that there are no buried pipes, cables, etc. in the vicinity.

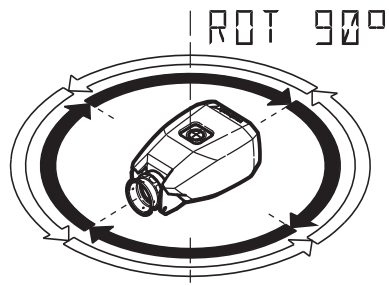
ⓘ Never calibrate the compass inside a building or in the vicinity of disruptive magnetic fields.

Calibration instructions



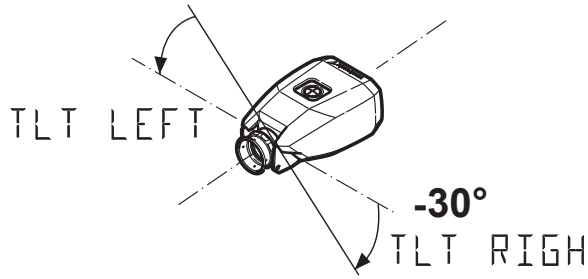
The device needs to be moved in various directions during calibration. Instructions for the movements appear successively in the display:

UP: turn up
DOWN: turn down
ROT 90°: rotate 90°



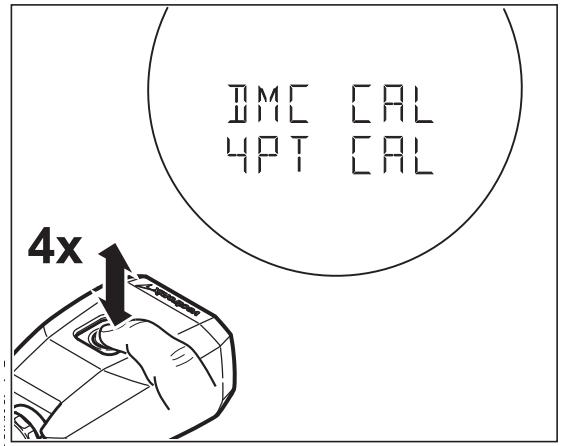
TLT RIGH: Tilt the right side of the device down.
HOLD POS: Hold the device steady at the current position
TLT LEFT: Return to horizontal.

Always turn in the same direction for all ROT 90° instructions.

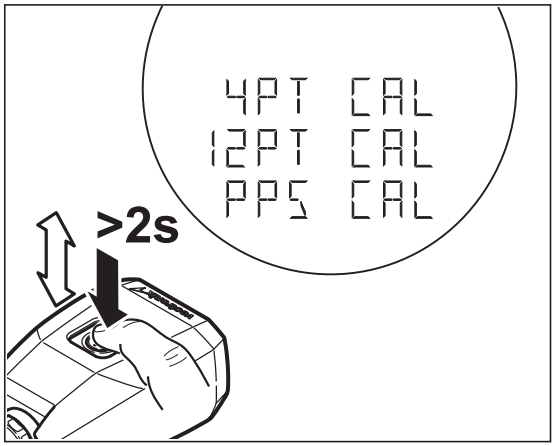


Important:
When the HOLD POS instruction is displayed, immediately hold the device still and wait for the next instruction. Perform each movement slowly and steadily, until the next instruction is displayed.

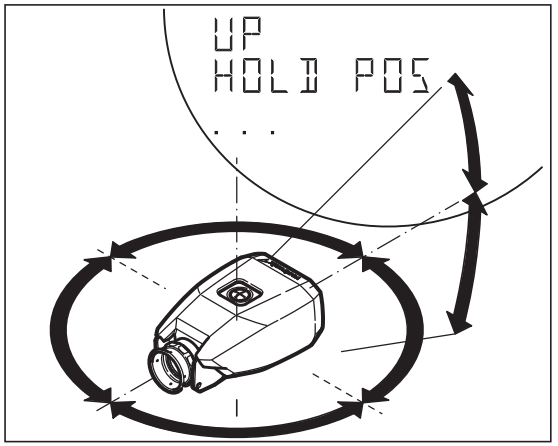
Perform compass calibration



Click the button four times in rapid succession.
DMC CAL appears briefly followed by the first available calibration procedure.

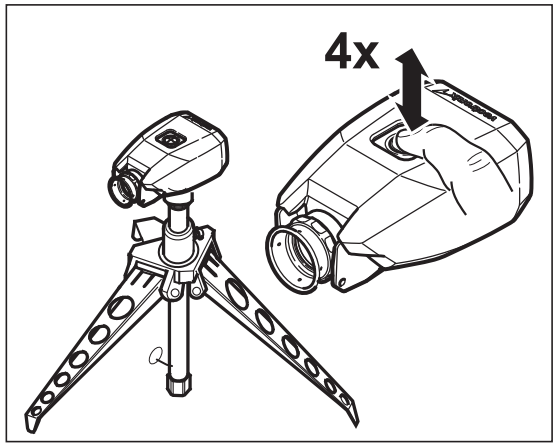


Click the button to scroll through the available calibration procedures. Press and hold down the button for >2 seconds to start the displayed procedure.

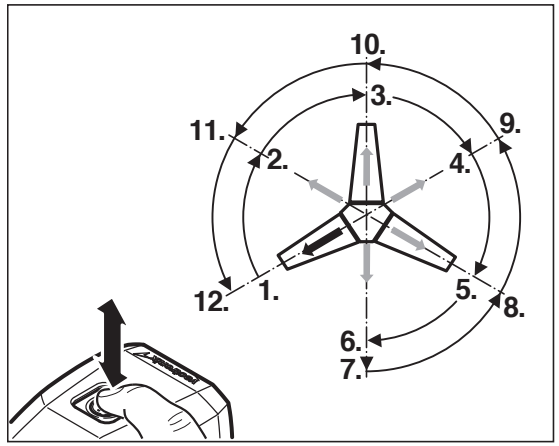


Follow the instructions in the display.

Tripod mounted PPS calibration



Place the PLRF25C on the mini-tripod SST3-3 or an equivalent one and level 30° upwards (see marking on tripod).

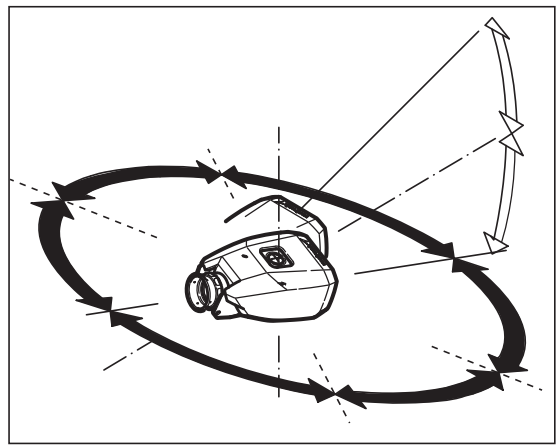


"ROT 60°": rotate from the first tripod foot to the middle position between this and the next foot, then to the next foot and so on.

ROT 60°: rotate 60°

ROT -60°: rotate -60°

CLICK OK: acknowledge position



Measurements 1-6 are made at 30° up from horizontal. Measurements 7-12 are made at 30° down from horizontal.

Results

The calibration result is displayed at the end of the procedure.
GOOD indicates a successful calibration.
If the result is BAD, perform a 12 point calibration until a GOOD is obtained. Consider to move to an alternative location.

Magnetic interferences can still lead to inaccurate measurements, even if the calibration was successful. For this reason the compass accuracy should be verified after a successful calibration by performing several azimuth measurements on known landmarks and compare the results.

Possible causes of calibration failures:

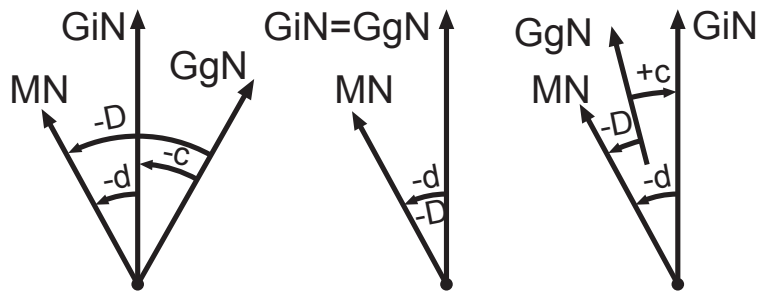
- the device was moved while HOLD POS was displayed.
- movements were performed to fast or jerkily.
- the location is to close to magnetic disturber.

Declination explanation

- Within the context of using PLRF25C, declination is understood as the deviation between **magnetic north (MN)** and **grid north (GiN)**.
- Anyway, depending on the country or region declination possibly can be understood as deviation between **magnetic north (MN)** and **geographical north (GgN)**.

To get the correct azimuth from PLRF25C in a certain coordinate system:

1. The deviation between magnetic north (MN) and grid north (GiN) of the specified coordinate system must be known.
2. This deviation must be set in the DECLNATN menu (see page 39).



- **Declination D:**
  Angle between GgN and MN
- **Declination d:**
  Angle between GiN and MN
- **Meridian convergence c:**
  Angle between GiN and GgN

ⓘ When working with geographical coordinates GgN = GiN and
therefore the declination D = d.

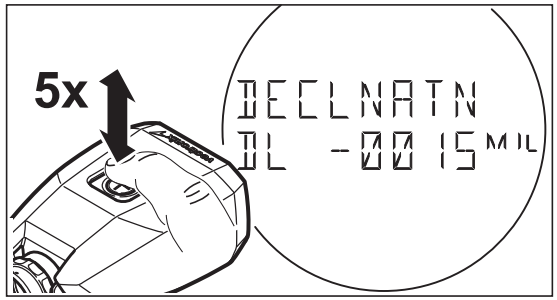
ⓘ Declination d is negative when MN lies west (left) of GiN and is positive when MN lies east (right) of GiN.

ⓘ The declination is displayed in the currently selected angular unit
(see page 40)

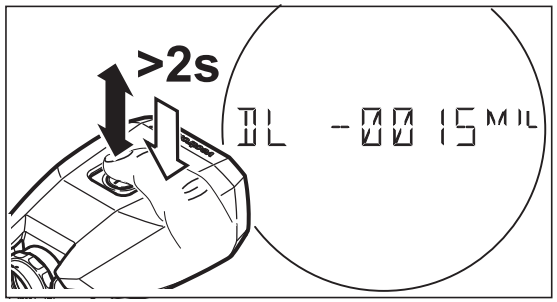
The stored declination value:

- is retained when the measurement units are changed.
- is retained when the battery is exhausted or replaced.
- is factory set to zero (0).

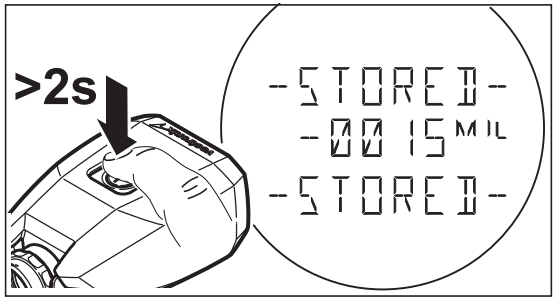
Declination setting / correction



Click the button five times in rapid succession.
DECLNATN appears briefly followed by currently set declination value.
The first digit is blinking.



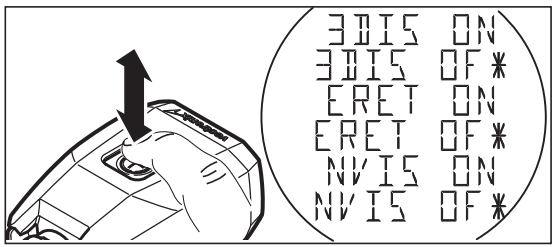
Set digit by digit from left to right. Click to change the value of the blinking digit. Press and hold for more than two seconds to store the current digit.



Storing the very last digit stores the complete set value. The setting is not changed if CANCEL is displayed.

Settings – Overview

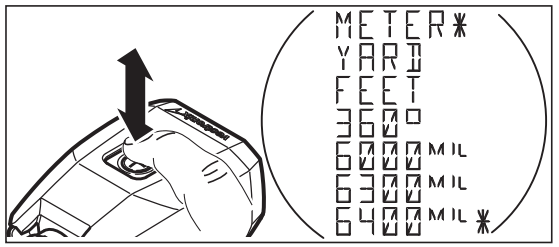
Configuration (CONFIG)



In sub-menu CONFIG, the following functions can be activated and deactivated:

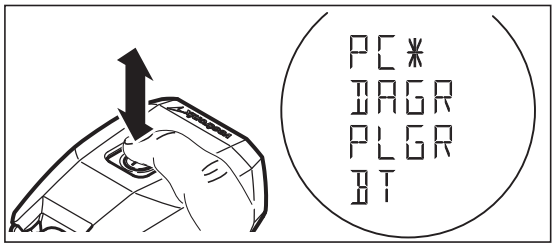
- Measuring 3 distances
- Electronic reticle
- Night Vision Mode.

Units (UNITS)



In the sub-menu UNITS, the following units can be selected:
Distance: Meter, Yard, Feet,
Angle: 360°, 6000 mil, 6300 mil, 6400 mil

Interface (INTRFACE)

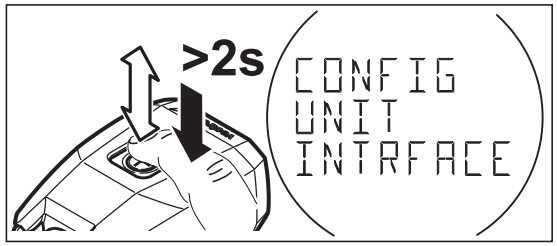


In the sub-menu INTRFACE, the available interface settings can be set. The choice depends on the model and on the options installed.

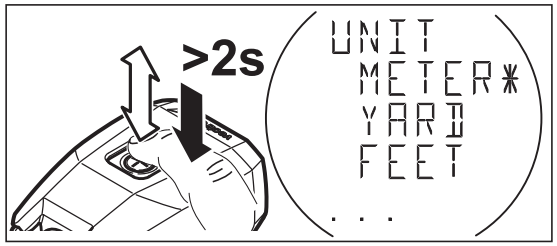
ⓘ The selected setting is marked with the star symbol (*).

Change Settings

In the menu SETTINGS there are three sub-menus: CONFIG, UNITS and INTRFACE.
Click the button 6 times in rapid succession.
SETTINGS appears briefly followed by the first sub-menu CONFIG.

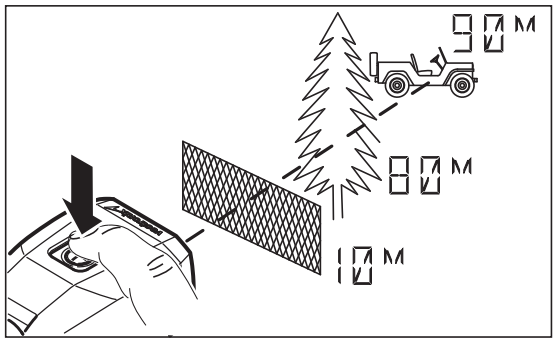


Click the button to scroll through the available submenus.
Press and hold down the button for >2 seconds to enter the desired sub-menu.



Click the button to scroll through the available settings.
To store the desired setting, press and hold down the button for >2 seconds. The setting is not changed if CANCEL is displayed at the end.

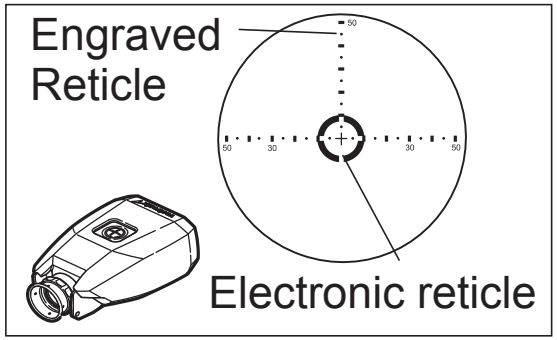
Measuring 3 distances



Function:
3DIS ON / 3DIS OF

3DIS ON allows to obtain up to three distances in the line of sight with a single measurement
(see page 29).

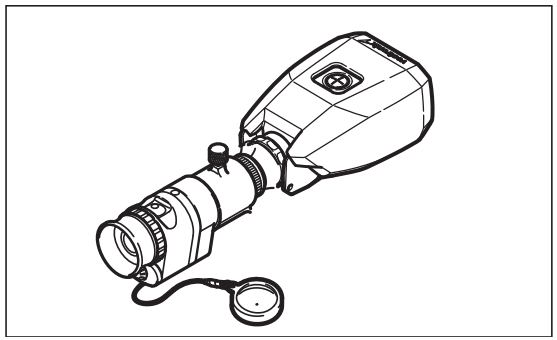
Electronic reticle



Function:
ERET ON / ERET OF

ERET ON activates the electronic aiming mark which is useful for poor lightning conditions.

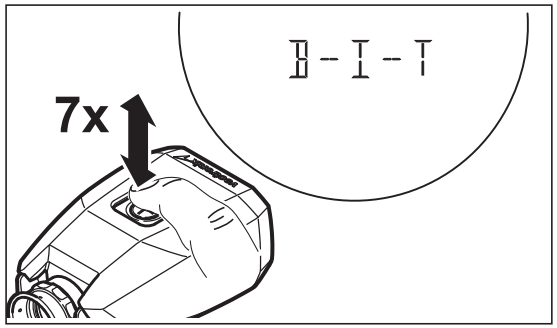
Night vision mode



Function:
NVIS ON / NVIS OF

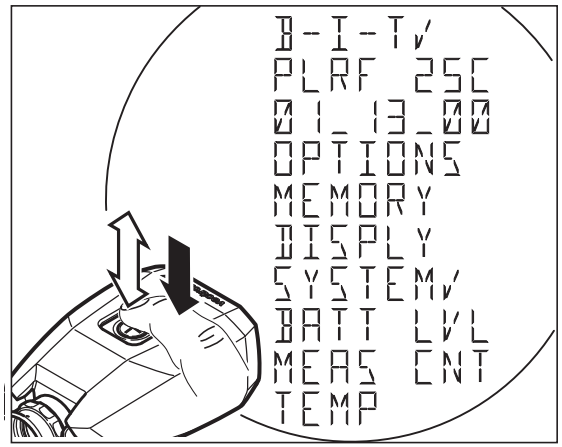
NVIS ON reduces the display brightness. This is needed in combination with an attached night vision device.

Built-In-Test



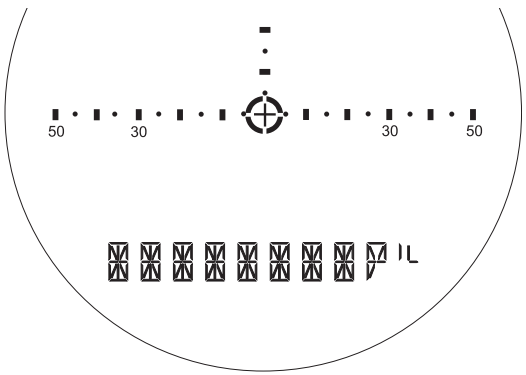
Click the button seven times in rapid succession. B-I-T appears briefly, the Built-In-Test starts automatically.

Passed is indicated with ✓, failed with ✗. In this case, please contact the customer support.



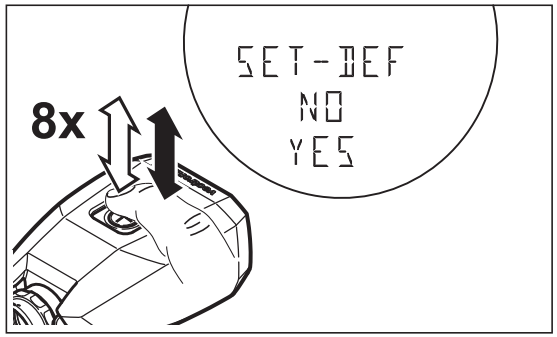
Click the button to scroll through the various items. Press and hold down to show all information of an item.

1. Model: e.g. PLRF25C
2. Software Version: e.g. SW 01_13_00
3. Enabled Options: e.g. FOS-BAGR-PLGR
4. Memory Test: Passed ✓ or Failed ✗
5. Display Test:

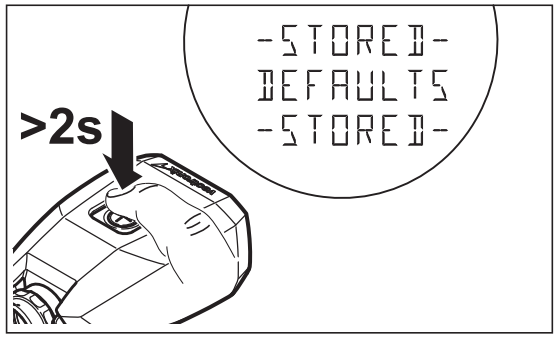


6. System Test: Passed ✓ or Failed ✗
7. Battery Level: OK = Good / BAD = Bad
8. Measuring Counter: Number of range measurements (e.g. 127)
9. Temperature: Temperature inside the device in degree Celsius (e.g. +28°C)

Set Default Settings



Click the button eight times in rapid succession. SET-DEF appears in the display followed by NO. Click again until YES is shown.



Press and hold down the button for >2 seconds to store the default settings. The default settings are not stored if CANCEL is displayed.

For customized versions, the default settings might be different.

The default settings for the standard model are:
Electronic aiming mark: ERET OF
Distance Gate: OFF
Declination: 0000MIL
Night Mode: NVIS OF
Multiple Object Measurement: 3DIS OF
Distance Unit: METER
Angular Unit: 6400MIL
Interface Setting: PC
Bluetooth Timeout: 15 SEC

Troubleshooting

Problem	Possible cause	Solution
Measurements can not be taken - no function at all	The battery has run out	Replace battery (see page 20)
	Battery contacts corroded	Clean battery contacts
	Low temperature reduces performance of battery	Warm up battery
	Extreme heat shortens batteries life	Do not store the battery at temperature over +70°C
	The device is defective	Contact the customer support

Problem	Possible cause	Solution
D---- is displayed after distance measurement	Distance is outside the specified range	Respect specified measurement range (see page 17)
	Object too small or inaccurately targeted	Respect factors affecting measurement range (see page 26)
	Bad weather conditions	
AZI---- is displayed.	Tilt angle outside specified range	Respect specified tilt angles
	Digital magnetic compass damaged	Contact customer support
INC---- is displayed.	Tilt angle outside specified range	Respect specified tilt angles
	Tilt sensors are damaged	Contact customer support

Problem	Possible cause	Solution
]GATE] is displayed after distance measurement	Measured distance is below selected distance gate	Reduce or turn off the distance gate (see page 31)
The following symbols are displayed during azimuth measurements: _ ‾ ‾ _ ‾ _ _ ‾ ‾ _ _ _ _ _ _ ‾	The allowed inclination and / or tilt angle has been exceeded tilted too far upwards tilted too far downwards tilted too far to the right tilted too far the left	Stay within specified inclination and / or tilt angle (see page 16)

Problem	Possible cause	Solution
Inaccurate azimuth values	Incorrect declination setting	Set correct declination (see page 39)
	Disruptive magnetic fields at measuring position	Respect factors affecting azimuth measurement accuracy (see page 27)
	Bad calibration	Perform compass calibration (see page 32)
	Altered magnetic conditions within the instrument (e.g. battery change)	Perform compass calibration (see page 32)
Compass calibration can not be completed	Timing out of calibration	Follow the instructions slightly faster (see page 33)

Problem	Possible cause	Solution
The electronic reticle is not visible	ERET OF is set in the configuration menu	Select ERET ON in the configuration menu (see page 40)
BATT LOW is displayed	The battery is almost used up	Replace battery (see page 20)
The device measures objects in front or behind the intended object	3DIS OF is set in the configuration menu, only the distance with the highest return signal is displayed	Select 3DIS ON in the configuration menu (see page 40)
NVIS ON is displayed after a measurement	The device is used during daylight conditions with NVIS ON selected in the configuration menu	Select NVIS OF in the configuration menu (see page 40)

Problem	Possible cause	Solution
BT FAIL is displayed	Receiver device is out of range	Reduce distance between PLRF and receiver device (< 2m)
	PLRF is not paired to receiver device	Unpair / remove existing PLRF devices in the BT setting on the receiver device and redo pairing(see page 64)
	BT function on receiver device is turned off	Turn on the BT function on the receiver device
	The program on the receiver device is not running	Start the program on the receiver device
	There is no suitable program installed on the receiver device	Install a suitable program on the receiver device

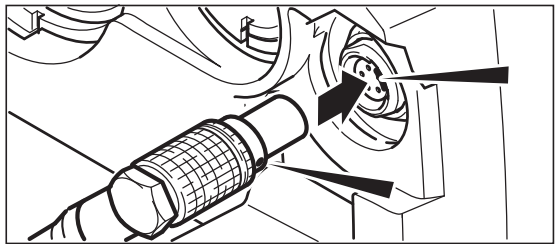
Connecting the interface cable or Bluetooth adapter

On the front side of the device is a socket for sending data to:

- personal computers or laptops
- modems
- fire control systems
- C4I systems

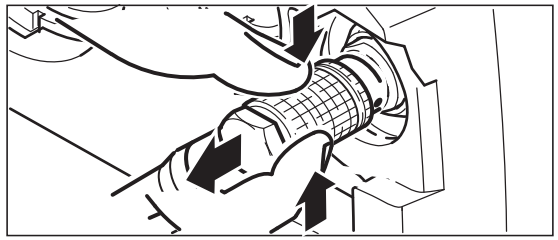
Our customer service will be pleased to inform you in details about the different possibilities.

Caution:
Incorrect handling can damage the socket or optional interface cable or Bluetooth adapter.



To plug:

1. Remove protection cap.
2. Align the respective markings on the plug and socket.
3. Slide the plug carefully into the socket until the locking mechanism engages.

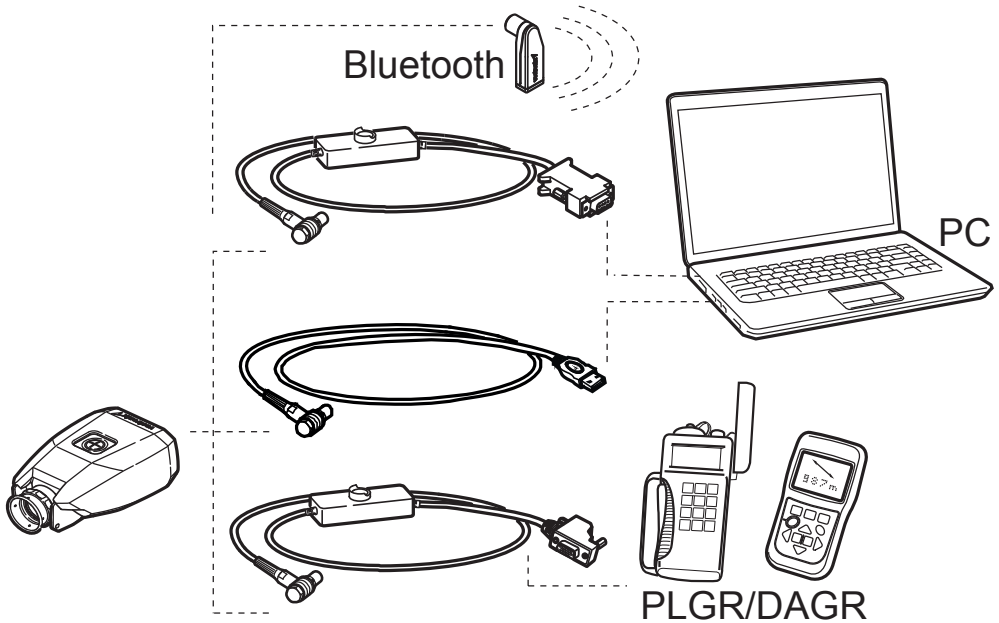


To unplug:

1. Grasp the plug grip between two fingers,
2. draw it carefully back to the stop to disengage the locking mechanism,
3. pull back a little harder until the plug slips out of the socket.
4. Attach the protection cap.

Data transfer format to PC, PLGR and DAGR

5 pin connector

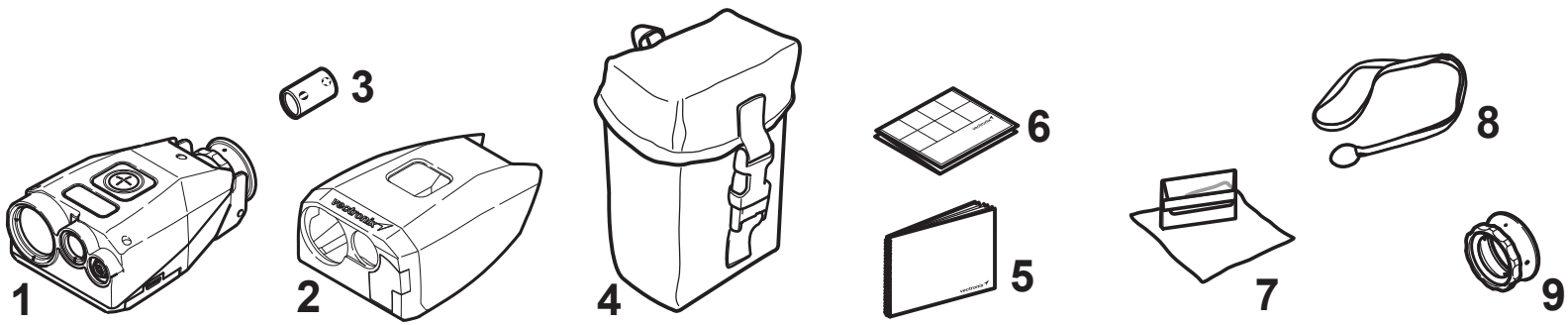


Interface parameters

Interface RS-232
Data
transmission . . . . . bidirectional
Baud rate . . . . . 9600 bps
Parity . . . . . .none
Data bits 8
Stop bits 1
Handshake . . . . . .none

Equipment

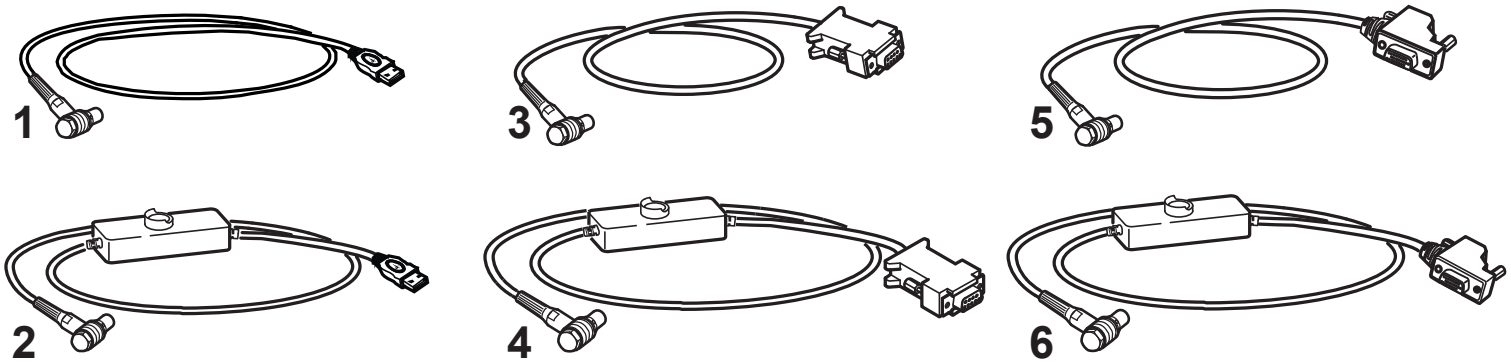
Parts List



Standard extent of delivery:

1		PLRF25C / PLRF25C BT	**4**	909 492	Pouch, black
2		Rubber cover (1x)	**5**	909 496	User Manual
	909 394	Rubber cover, black	**6**	909 493	Short Instruction
	910 389	Rubber cover, green	**7**	906 430	Micro fibre lens cloth
	910 390	Rubber cover, desert tan	**8**	909 486	Neck Strap
3	667 002	3V Li-Battery, CR123A (1x)	**9**	909 211	Eyecup (Spare Part)

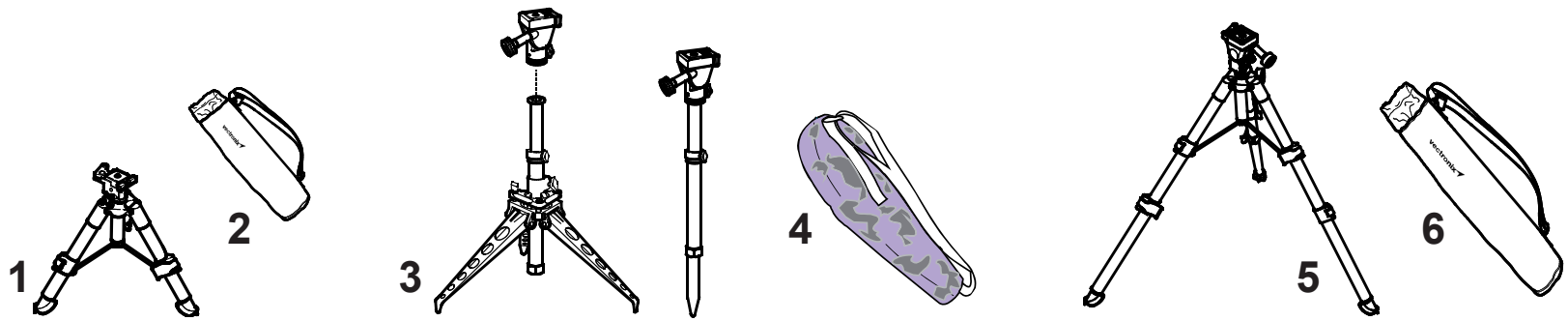
Accessories – Cables (optional)



1 910 555 SEV113 Data cable for PC – RS232 to USB
2 913 813 SEV143 Data cable with trigger for PC - RS232 to USB
3 706 271 SEV48 Data cable for PC (RS232, DB9)
4 901 854 SEV78 Data cable with trigger for PC (RS232, DB9)
5 721 951 * SEV63 Data cable for PLGR / DAGR
6 901 602 * SEV74 Data cable with trigger for PLGR / DAGR

* needs corresponding software option

Accessories – Tripods (optional)



1 908 139 TOT-XS Ultra Lightweight Tactical Operation Tripod, non-magnetic, with pan / tilt head (height: 16cm to 28cm)

2 908 263 Pouch for tripod TOT-XS, black

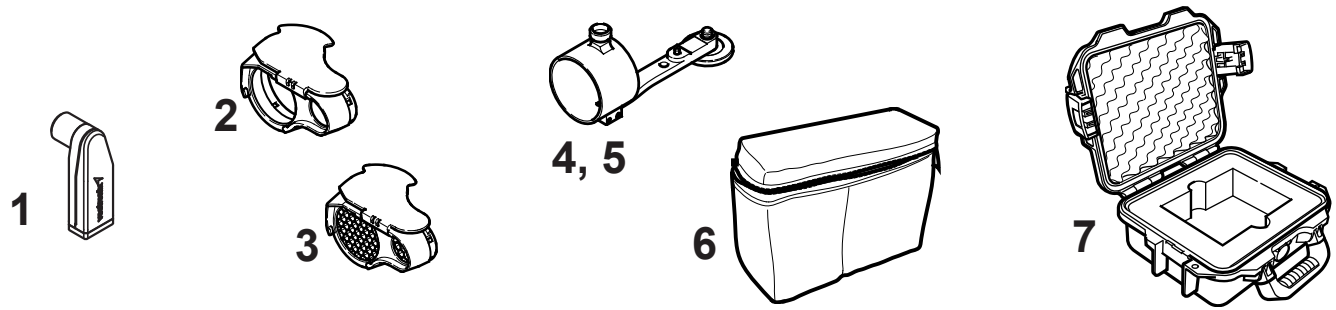
3 903 876 SST3-3 Mini Tripod and monopod in one, non-magnetic, with pan / tilt head (height: 36cm to 72cm)

4 906 355 Pouch for tripod SST3-3

5 912 267 LTT-1 Lightweight Mini Tripod, non-magnetic, with pan / tilt head and fine adjustment function (height: 22cm to 62cm)

6 911 503 Pouch for tripod LTT-1, black

Accessories – Various (optional)



1 914 384 BAL Bluetooth Adapter
2 909 490 Objective protection cap
3 909 491 Objective protection cap, anti-reflex
4 909 487 Night vision adapter for AN/PVS-14
5 909 488 Night vision adapter for AN/PVS-18
6 911 122 Pouch for PLRF25C and NV-Adapter, black
7 906 311 SVP325 Transport case for PLRF25C, black

ⓘ for additional accessories contact the customer support

Overview Interface Options

PC Setting for communication with PC. Data transfer via PC cable or Bluetooth adapter. Interface parameters (RS-232) see page 54.

PLGR Setting for communication with Rockwell Collins GPS PLGR+96 / PLGR II. Data transfer via PLGR / DAGR cable.

DAGR Setting for communication with Rockwell Collins GPS DAGR. Data transfer via PLGR / DAGR cable.

BT Setting for wireless Bluetooth communication. Allows data transfer via Buetooth and PC cable. The data format is the same as for the setting "PC" (only available on models with integrated Bluetooth function, PLRF25C BT).

Use the function **Complete Measurement with data transfer** to transmit measurement data (see page 28).

The PLRF is only an enhancement to basic fire support skills. Once a complete measurement is transfered and received, the user must verify the target location on a map and verify the measurements.

DAGR Settings

Setting the PLRF25C

- Store the interface setting DAGR, see page 40-41.

Connect the interface cable to the DAGR J2 connector.

DAGR Setup:

1. MAIN MENU/System/Select function set
   - FUNCTION SET: Advanced
2. MAIN MENU/Receiver Setup/Power Saver
   - AUTO-OFF MODE/TIMER: Off
   - AUTO-STANDBY MODE: Off
3. MAIN MENU/Receiver Setup/GPS Setup
   - OPERATING MODE: Continuous
   - POWER ON OPERATING MODE: Continuous
   - FREQUENCY: L1 Primary
   - SV CODE: All-Y
   - ELEVATION HOLD: Auto
4. MAIN MENU/Communications/COM Port Setup
   - CONFIGURATION: Standard
   - LASER RANGE FINDER (LRF) TYPE: Other
   - COM Port: COM Port 1
5. MAIN MENU/Display Setup/UNITS
   - MAGVAR TYPE: Calculated - WMM

Azimuth in PLRF25C and azimuth on DAGR may be different due to declination setting.

- **DAGR Targeting Operations:**

1. Conduct a combined measurement with data transfer, see page 28.
2. Upon receipt of LRF SHOT RECEIVED dialog, review/evaluate Azimuth, Range, and Elevation Angle. The DAGR will allow the operator to show a total of three shots at one time. Once the operator determines that he has a good targeting solution he will highlight the desired shot and: Press ENTER to continue to FIRE SUPPORT pages or Press QUIT to discard shot without creating a waypoint.
3. Check all data in the SAFETY CHECKS fields and ensure that no fields on the Fire Support Pages are blinking between grey and black text (indicates that calculation is based on invalid fix).
4. To store the target location as a LRF Waypoint, highlight the STORED AS WP field, then push the ENTER key. DAGR highlights the first available unused waypoint or highlight the desired waypoint, then push the ENTER key. Edit Name, Remark, or Identity Type of waypoint if required.

PLGR+96 / PLGR II Settings

Setting the PLRF25C

- Store the Interface setting PLGR, see page 40-41.

Setting the PLGR+96 / PLGR II

- Set the tracking mode to CONT.
- Select the position format which corresponds to the map being used.
- Select the appropriate ELEV units.
- Select the appropriate ELEV reference.
- Select the appropriate ANG units.
- Select the ANG reference (Grid).
- Select the datum which corresponds to the map being employed.

The proper datum must be selected. Improper datum selection will result in poor target position accuracy.

- Set the AUTOMATIC OFF TIMER to OFF.
- Set the SERIAL mode to standard.

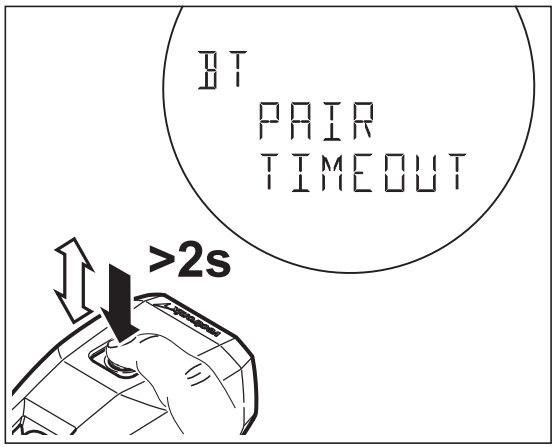
Additional setting for PLGR II

- Configure port C to IP.
- Configure the remaining ports to IP (or RTCM-NMEA).
- Set the port C baud rate at 9600-9600.
- Change the LRF mode to **TARGETING**.

Azimuth in PLRF25C and azimuth on PLGR+96 / PLGR II may be different due to declination setting.

Bluetooth Settings

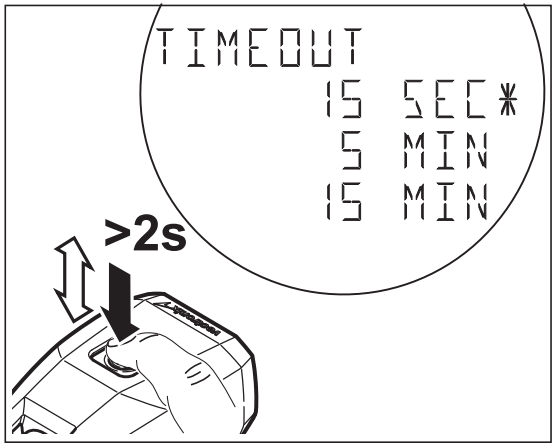
Setting the PLRF25C BT



Select the BT interface as described on page 40. To activate the paring mode select the sub-menu PAIR. Then the message PAIRING appears in the field of view.

The Bluetooth module is turned on and allows pairing with a Bluetooth receiver device. The pairing mode may be terminated manually by pressing the button, CANCEL is displayed for a short instant. After approx. 120sec. the pairing mode terminates with the message FAILED.

If the pairing mode was cancelled the default interface setting PC is activated. Bluetooth is only activated after a successful pairing procedure completed by SUCCESS.



In the sub-menu TIMEOUT, the following Bluetooth timeouts can be selected:
15 SEC, 5 MIN, 15 MIN
The Bluetooth module is enabled during the configured TIMEOUT setting. For the setting 5 MIN and 15 MIN the message BT is periodically displayed to indicate the enabled Bluetooth module.

The enabled Bluetooth module consumes additional power for the configured TIMEOUT period. It is therefore recommended to configure the standard setting of 15 SEC to save power.

Messages

BT WAIT: The PLRF tries to establish a BT connection

BT FAIL: Bluetooth data transfer failed

CANCEL or FAILED: The Bluetooth module is shut down.

PAIRING: The Bluetooth module is turned on and ready for pairing with a Bluetooth receiver device

SUCCESS: The pairing process was completed successfully

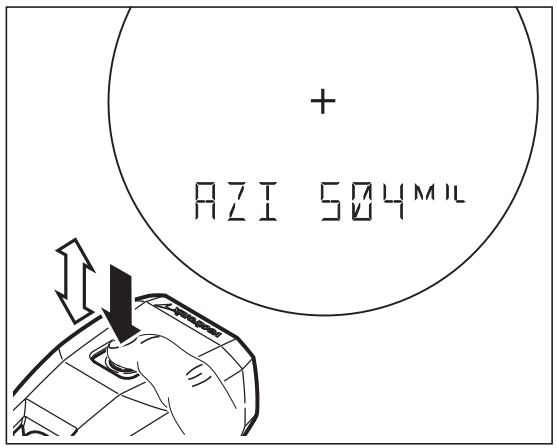
The PLRF25C BT pairing PIN code is zero (0). The PLRF25C BT supports the Bluetooth SPP (serial port profile) service.

When not using Bluetooth it is recommended to permanently disable the Bluetooth communication by choosing the interface setting PC.

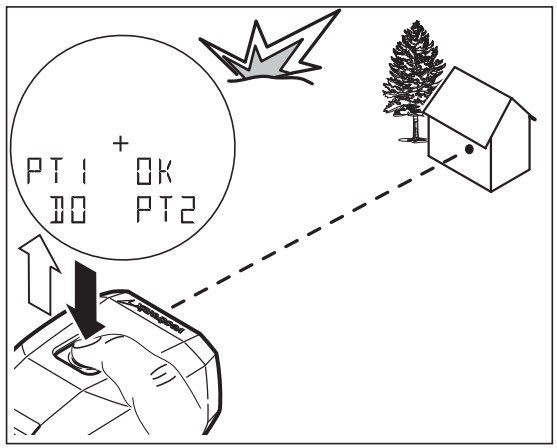
Transmission range depends on various influences. Best results are achieved with a "free line of sight" between PLRF25C BT and receiver device. Avoid shielding (e.g. hands around Bluetooth antenna or aluminum hard case for receiver device).

The integrated Bluetooth module complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) it may not cause harmful interferences, and (2) it must accept any interferences received, including interferences that may cause undesired operation.

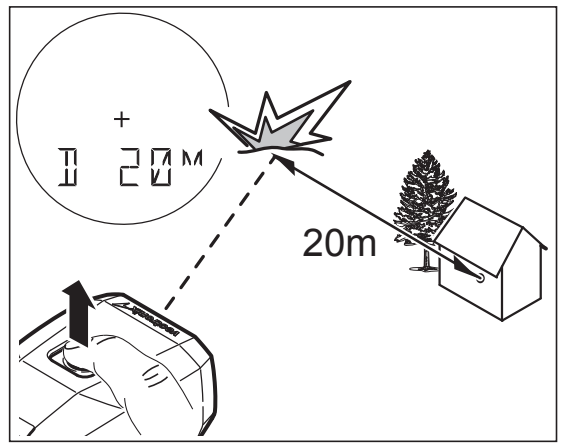
Fall of shot - FOS



Click the button once, then immediately press and hold it down.
The azimuth appears and is updated continuously. Sight the target with the aiming mark.

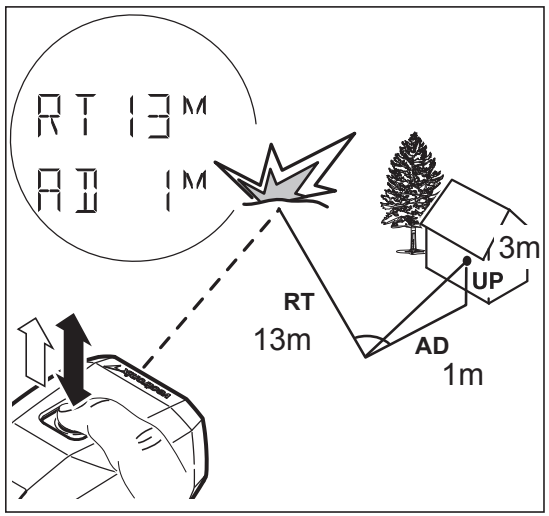


Release the button to measure the target.
PT1 OK followed by
D0 PT2 is displayed.
Immediately press and hold down the button again.
Sight the fall of shot.

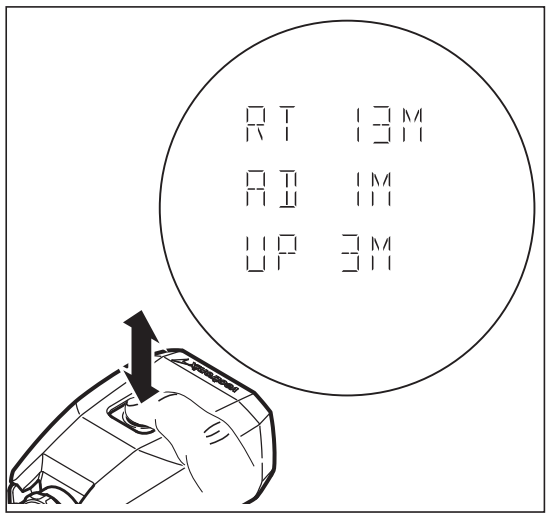


Release the button to measure the fall of shot.
The distance (D) between the target and fall of shot is displayed.

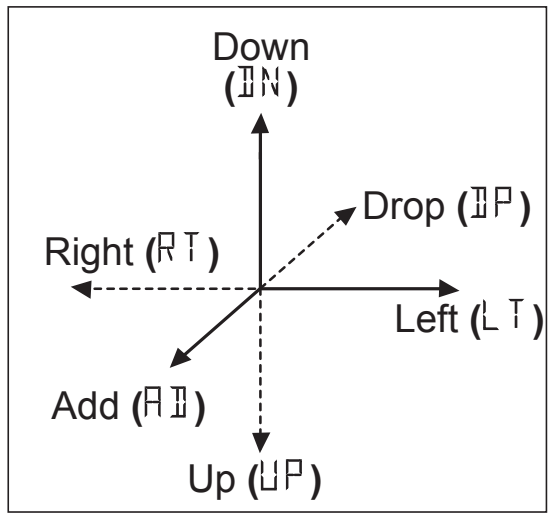
Fall of shot - FOS (continued)



While the display is on, click the button repeatedly to display the FOS correction values.



Click button repetitive to obtain the corrections again.



Example:
Is a shot left, short and to low, the corrections given are:
RT for right, AD for add and UP for up.

Customer service

Our customer and information service will be glad to offer assistance if your instrument requires maintenance, if it sustains damage, or if you require any other information:

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Quality system

For over 10 years, Vectronix AG has an Integrated Management System (IMS) in place.
The IMS is certified by the Swiss Association for Quality and Management Systems (SQS) to meet the international standards for quality management systems to ISO 9001 and Environmental management systems to ISO 14001.

With our quality policy, "We set the standards and are responsible for delivering excellent quality throughout our work processes", we are always looking for greater benefits for our customers.

The information presented in this instruction manual is believed to be accurate and correct for the intended use of the device. Should the device be used for other applications and purposes not covered herein, please contact Vectronix AG to validate its suitability. This manual, all of its contents and the devices specifications are subject to change without notice.

This manual in the English language represents the original version. In case of a dispute, the English version shall prevail.

SAFRAN

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