

# User Manual

## Transmitter PKT2 X2.0 ENG

for Vesala PK2 Drill Point Locator Transmitter PKT2 X2.0

IMPORTANT: Read carefully before use.  
Keep for future reference.



**English**

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## 1 Safety notes

To avoid possible harm, read and follow these instructions.



**DANGER:** Risk of death, personal injury, or property damage

Attaching the device to an elevated position may be dangerous if the attachment fails. Notice that moisture, dirt, surface properties, ambient temperature or aging may reduce the reliability of the supplied adhesive putty or affect the amount of adhesive putty required to reliably attach the device to a surface. If possible, restrict access to the hazard zone under the device when the device is attached to an elevated position. Always secure the device with additional supports if the device is attached to an elevated position, and it is possible that persons or animals may enter the hazard zone under the device. When the device cannot be reliably secured and the hazard zone under the device cannot be completely restricted, it is required that anyone entering the hazard zone under the device wears adequate personal protection equipment. Always remove the device before drilling.



**DANGER:** Risk of electric shock, fire, or property damage

Drilling a structure may damage a dangerously live electric cable or a pressurised pipe. Before drilling a structure, make sure the structure doesn't contain dangerously live cables or pressurised pipes. If their existence cannot be excluded, the whole installation containing the structure should be de-energized and de-pressurised before drilling begins. In some cases, a decrease in locating accuracy may move the intended drill point.



**WARNING:** Risk of electric shock, fire, or property damage

When scanning a structure for live cables with the device, notice that the effective range of the voltage detector is limited, and scanning should be done from both sides of the drilled structure before drilling begins. Certain materials or structures may block the electric field of a dangerously live cable and render the voltage detector ineffective. Only cables that are live at the time of scanning may be detected with the voltage detector.



**ATTENTION:** Risk of property damage

When scanning a structure for pipes with the device, notice that the effective range of the metal detector is limited, and scanning should be done from both sides of the drilled structure before drilling begins. Only metallic pipes may be detected with the metal detector.



**ATTENTION:** Risk of locating error due to electromagnetic conditions

Large metallic objects, radio transmitters or industrial equipment may degrade locating accuracy or may prevent locating completely. Before attempting to locate a drill hole, take care that there are no large metallic objects at or near the intended drill hole. Large metallic objects include radiators, sheet metal, foil, and wire mesh among other things. Shut down or move any radio transmitters that actively transmit on the same frequency at least 10 m away from the intended drill hole. This includes other drill point locators.



**ATTENTION:** Risk of locating error due to device misorientation

Locating drill points with misoriented devices may degrade locator performance. Instructions for properly orienting the devices are provided in section 4: Operating Transmitter PKT2.

## 2 General description

### 2.1 Intended use

Drill Point Locator Transmitter PKT2 is used to locate positions and measure distances thru non-conductive structures such as walls, floors, and ceilings before drilling or cutting. A separate receiver unit is needed to locate the position marked with PKT2: Receiver PKR2 is included in PK2 Drill Point Locator kit with Transmitter PKT2. In addition to locating, PKT2 unit may be used to detect metallic objects and power lines inside the structure before drilling or cutting. Drill Point Locator Transmitter PKT2 is intended for professional use in dry conditions.

### 2.2 Specifications

Operating temperature, LR03 batteries installed	-10°C...+40°C
Operating temperature, FR03 batteries installed	-20°C...+40°C
Humidity	10...90 % RH, non-condensing

Storage temperature, LR03 batteries installed	+5°C...+30°C
Storage temperature, batteries removed or FR03 batteries installed	-20°C...+40°C
Degree of protection	IEC 60529 IP40
Batteries	3 pcs 1.5V IEC LR03 or FR03
Current consumption	40...95 mA
Nominal battery voltage	4.5 V
Enclosure material	ABS
Enclosure size	176 x 78 x 29 mm
Weight, LR03 batteries included	200 g
Locating range	0...150 cm
Distance indication range	1...200 cm
Performance in free air, room temperature, ≥1000 mm from conductive objects	Metal detection depth, 100x100x0.3 mm steel: 30 mm Power line detection depth, 230 V 50 Hz single phase, handheld: 150 mm

Operating frequency bands, maximum power transmitted	0...700 Hz, input 9000...9183 Hz, <100 mW 433.62...434.22 MHz, <-13 dBmW
Electromagnetic environment	ETSI EN 301 489-1: Residential, commercial and light industrial environment
International standards this product is in conformance with	EN 300 220-1 EN 300 220-2 EN 300 330 EN 301 489-1 EN 301 489-3 EN 303 454

## 2.3 Package contents

PK2 Drill point locator (V11740) contains the following items

- Drill Point Locator Receiver PKR2, version X2.0 (V11744)
- Drill Point Locator transmitter PKT2, version X2.0 (V11741)
- Alkaline battery LR03, 6 pcs (J01573)
- Felt pad, 4 pcs (N05925)
- Adhesive putty, Casco 2981, 60 g (S14010)
- User manuals



Version numbers are indicated at the beginning of the serial number.



## 2.4 PKT2 parts and functions

### Centre hole and cross hair

Position hole centre at the desired point.

### Metal detector

Indicates the presence of metal.

### Voltage detector

Indicates the presence of live AC voltage.

### Power LED

Green LED indicates power on.

LED blinks if batteries should be replaced.

### Power and mute button

Long press: Toggle power on or off.

Short press: Toggle speaker mute on or off.

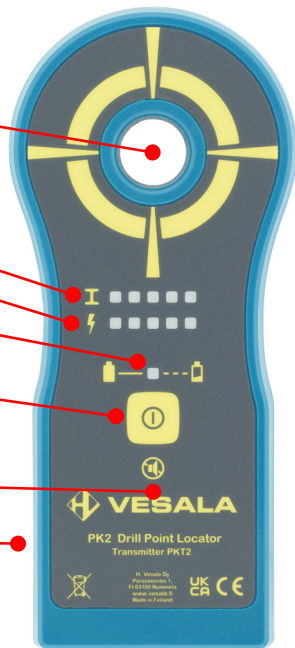
Mute resets to off at start-up.

### Speaker

Higher pitch indicates shorter distance to metal or to a live object.

### Batteries

Located backside under battery cover: 3 x 1.5 V LR03 or FR03



### 3 Commissioning

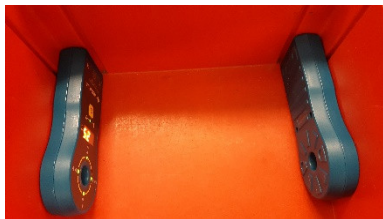
#### 3.1 Inserting and replacing batteries

1. Clean and dry the device with a soft cloth.
2. Gently press battery cover and slide towards bottom end.
3. Remove old batteries.
4. Insert three new 1.5 V LR03 (AAA) alkaline batteries or FR03 lithium batteries. FR03 batteries should be used when ambient temperature is below  $-10^{\circ}\text{C}$ . Observe that battery polarity matches markings on the battery compartment.
5. Put battery cover back on and gently close it.



### 3.2 Testing correct operation

1. Power on Transmitter PKT2 and hold it at least 20 cm away from other objects.
  - a. No metal detector LEDs should be lit.
  - b. No voltage detector LEDs should be lit.
2. Touch a large metallic object with the backside of Transmitter PKT2.
  - a. All metal detector LEDs should be lit.
  - b. The speaker should emit a high-pitched sound.
3. Touch a live extension cord with the backside of Transmitter PKT2.
  - a. All voltage detector LEDs should be lit.
  - b. The speaker should emit a high-pitched sound.
4. Power on Receiver PKR2. Align transmitter and receiver as shown either with a box that has perfectly square corners or by hanging the devices from a plastic or wooden rod thru the center holes. Place aligned devices away from metallic objects, including the floor.
  - a. Four green square LEDs should be lit on the Receiver PKR2 when the devices are aligned.



## 4 Operating Transmitter PKT2

### 4.1 Inspecting the work site for hazards

Carefully examine the drilled structure and surroundings for hazards before drilling.



**DANGER:** Risk of electric shock, fire, or property damage

Drilling a structure may damage a dangerously live electric cable or a pressurised pipe. Before drilling a structure, make sure the structure doesn't contain dangerously live cables or pressurised pipes. If their existence cannot be excluded, the whole installation containing the structure should be de-energized and de-pressurised before drilling begins. In some cases, a decrease in locating accuracy may move the intended drill point.

### 4.2 Locating hazards with Transmitter PKT2

Transmitter PKT2 includes both metal and voltage detectors. Place the transmitter against the surface of the structure and move it slowly around the intended drill spot. Do this on both sides of the structure. When the metal detector or voltage detector LEDs turn on, it may be an indication of metal or a dangerously live object nearby. The more LEDs are illuminated and the higher the pitch of the sound indication, the closer or larger the object is.



**WARNING:** Risk of electric shock, fire, or property damage

When scanning a structure for live cables with the device, notice that the effective range of the voltage detector is limited, and scanning should be done from both sides of the drilled structure

before drilling begins. Certain materials or structures may block the electric field of a dangerously live cable and render the voltage detector ineffective. Only cables that are live at the time of scanning may be detected with the voltage detector.

It is recommended to test the voltage detector on a known cable before scanning structures to familiarize oneself to the response and performance of the voltage detector. Construction materials often reduce the effective range of the voltage detector compared to the range in air.



**ATTENTION:** Risk of property damage

When scanning a structure for pipes with the device, notice that the effective range of the metal detector is limited, and scanning should be done from both sides of the drilled structure before drilling begins. Only metallic pipes may be detected with the metal detector.

It is recommended to test the metal detector on a known, exposed structure before scanning hidden structures to familiarize oneself to the response and performance of the metal detector.

#### 4.3 Objects that may decrease locating accuracy



**ATTENTION:** Risk of locating error due to electromagnetic conditions

Large metallic objects, radio transmitters or industrial equipment may degrade locating accuracy or may prevent locating completely. Before attempting to locate a drill hole, take care that there are no large metallic objects at or near the intended drill hole. Large metallic objects include radiators, sheet metal, foil, and wire mesh among other things. Shut down or move any

radio transmitters that actively transmit on the same frequency at least 10 m away from the intended drill hole. This includes other drill point locators.

Locating accuracy will be degraded if there are large metallic objects closer to the units than the distance between the units is. Additionally, distance display may indicate longer distance than actual. To avoid locating errors when large metallic objects are present, consider another drilling location, perform offset measurement or multi-point measurement.

#### 4.4 Locating accurately thru thick structures



**ATTENTION:** Risk of locating error due to device misorientation

Locating drill points with misoriented devices may degrade locator performance.

Alignment errors are highlighted when locating drill points thru thick structures. When using Transmitter PKT2 with Receiver PKR2 for straight drilling, the device bottoms should face each other on parallel planes both sides of the structure. When wedge pieces are used for angled drilling, the angle of both transmitter and receiver should be the same and they should be at the same angle to the horizontal. If necessary, use a spirit level to align the wedges.

#### 4.5 Attaching Transmitter PKT2 to structures



**DANGER:** Risk of death, personal injury, or property damage

Attaching the device to an elevated position may be dangerous if the attachment fails. Notice that moisture, dirt, surface properties, ambient temperature or aging may reduce the reliability

of the supplied adhesive putty or affect the amount of adhesive putty required to reliably attach the device to a surface. If possible, restrict access to the hazard zone under the device when the device is attached to an elevated position. Always secure the device with additional supports if the device is attached to an elevated position, and it is possible that persons or animals may enter the hazard zone under the device. When the device cannot be reliably secured and the hazard zone under the device cannot be completely restricted, it is required that anyone entering the hazard zone under the device wears adequate personal protection equipment. Always remove the device before drilling.

The supplied adhesive putty may be used to attach the Transmitter PKT2 to a dry, clean and solid surface. The putty has working temperature range of +15...+30 °C Use other attachment methods outside this temperature range or when the surface is wet or dirty.

When using other attaching methods, do not hang Transmitter PKT2 directly from a nail or a screw. Metal objects inside or near the centre hole degrade locating accuracy. Instead, attach Transmitter PKT2 to a piece of string and hang the string from a nail or a screw.

Place the device against the structure with the user interface towards the user. Place the centre hole of the transmitter on the reference point to be transferred.

Do not leave the transmitter attached for extended times because the attachment may fail. Before drilling, remove the transmitter from the structure to avoid damage or falling.

## 5 Taking care of your equipment

### 5.1 Storing

Remove batteries before storing the device for an extended period. Batteries left in the device may leak and cause damage. Store the device, batteries and accessories inside its original packaging in a dry, warm place.

### 5.2 Cleaning

If the device is dirty or wet, clean and dry the outer surface of the device with a soft cloth before changing batteries. Avoid getting dirt or water inside the device. A small amount of isopropanol can be used to remove stains and disinfect the surface. Battery compartment and battery contact surfaces inside the battery compartment should only be cleaned with isopropanol and a soft, lint free cloth.



### 5.3 Troubleshooting

If case of trouble, follow the table below for possible remedy.

<b>Problem</b>	<b>Possible explanations</b>	<b>Remedy</b>
The device does not power up or unexpectedly shuts down.	One or more battery is empty.	Replace all batteries.
	One or more battery is reversed.	Orient batteries so that polarity matches markings on the battery compartment.
Transmitter fails to indicate a metallic object.	Object is too small or too far to be detected.	Scan the structure from both sides.
		Use other means to detect metallic objects.
Transmitter fails to indicate an AC voltage source or object.	Object is too far away or too weak to be detected.	Scan the structure from both sides, use other means to detect AC objects or de-energise the whole structure before drilling.
	A conductive structure between the object and transmitter blocks electric field.	

<b>Problem</b>	<b>Possible explanations</b>	<b>Remedy</b>
Transmitter indicates AC voltage when it is moved on a structure that does not contain a voltage source.	Sliding the device on the surface generates static electricity.	Avoid direct contact with the surface.
	Static charge inside the structure is indicated.	Regularly stop the movement to detect AC voltage only.
Transmitter falls down from the wall or ceiling.	The putty is no longer adhesive as it has been used several times.	Use sufficiently sized, fresh pieces of putty.
	Insufficient amount of adhesive putty applied.	
	Surface is dusty, grainy or damp.	Clean the surface or use an additional non-metallic support to keep the transmitter in its place.

## 5.4 Modifying and misuse

Do not attempt to modify the device or accessories in any way. Do not use accessories other than specified. A modified device or accessory may work in an unpredictable way or may fail to work at all.

Do not use excessive force with the device. Do not use the device as a mechanical tool to dig soil or move objects with. Do not drop, throw or step on the device.

## 5.5 Warranty

Drill Point Locator Transmitter PKT2 has one-year warranty against material or manufacturing defects from the date of purchase. The warranty shall not cover batteries, normal wear and tear, misuse or faults resulting from modifying the product.

## 5.6 Disposal

Do not discard this product with household or general waste after its end-of-life. Return it for recycling according to EU Waste Electrical and Electronic Equipment directive (WEEE). For more information contact your supplier or local agent.



## 6 Supplier contact information

Service, spare parts, replacement user manuals and technical support:

H. Vesala Oy

Peräsimentie 1, FI-03100 Nummela, Finland

Tel. +358 44 200 2005, [info@vesala.fi](mailto:info@vesala.fi), [www.vesala.fi](http://www.vesala.fi)



## 7 Declaration of conformity

Hereby, H. Vesala Oy declares that the radio equipment type Drill Point Locator Transmitter PKT2 version X2.0 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: [vesala.fi/pk2/eudoc](http://vesala.fi/pk2/eudoc)



Hereby, H. Vesala Oy, declares that the radio equipment type Drill Point Locator Transmitter PKT2 version X2.0 is in conformity with the relevant UK legislation: S.I. 2016/1091, S.I. 2016/1101, S.I. 2017/1206 and S.I. 2012/3032. The full text of the UK declaration of conformity is available at the following internet address: [vesala.fi/pk2/ukdoc](http://vesala.fi/pk2/ukdoc)

