



User Guide



3DLG-2 **2.0 Hz Three-component Geophone**

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1.Important Notice

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This guide refers to “3DLG-2”

Torino, ITALIA 2019

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2. Warranty and safety instructions

Read these instructions carefully before using the product:

- Warranty will be void, if the product is used in any way that does not follow the instructions given in this manual.
- Warranty will be void if any part of 3DLG-2 has been tampered with.
- The device must be used only according to the instructions described in this manual. Faultless and safe operation of the device can be guaranteed only if the transport, storage, handling and operation of the device is appropriate.
- To prevent damage, use only original accessories or those approved by PASI srl. You received your 3DLG-2 with the 7-pin plug connected to a special **short circuit connector** that blocks accidental moving/shock that could seriously damage the delicate sensing elements during transportation. **This short circuit connect must be always plugged in this position during transportation.** Pls. note in case you will not use this precaution, the related damages will not be covered by warranty.

3. Description

Mod. 3DLG 2Hz three-component geophone is an electromechanical changeover device (sensor). Three 2.0 Hz geophones are orthogonally arranged (a vertical and two horizontal geophones) inside a sealed case, which indicate vertically for the Z axis, east for the X-axis and north for Y-axis respectively. It is designed to receive seismic signals simultaneously from three dimensions and convert them into electrical pulses. It has such good characters as high sensitivity, high accuracy, perfect damp factor, good consistency, solid structure, good seal and water-proof capability. There is a leveling bubble on the cover and a direction indication on the seismometer.

It can be used with a deep seismograph to detect seismic activity in applications such as earthquake prediction, structural analysis, etc.

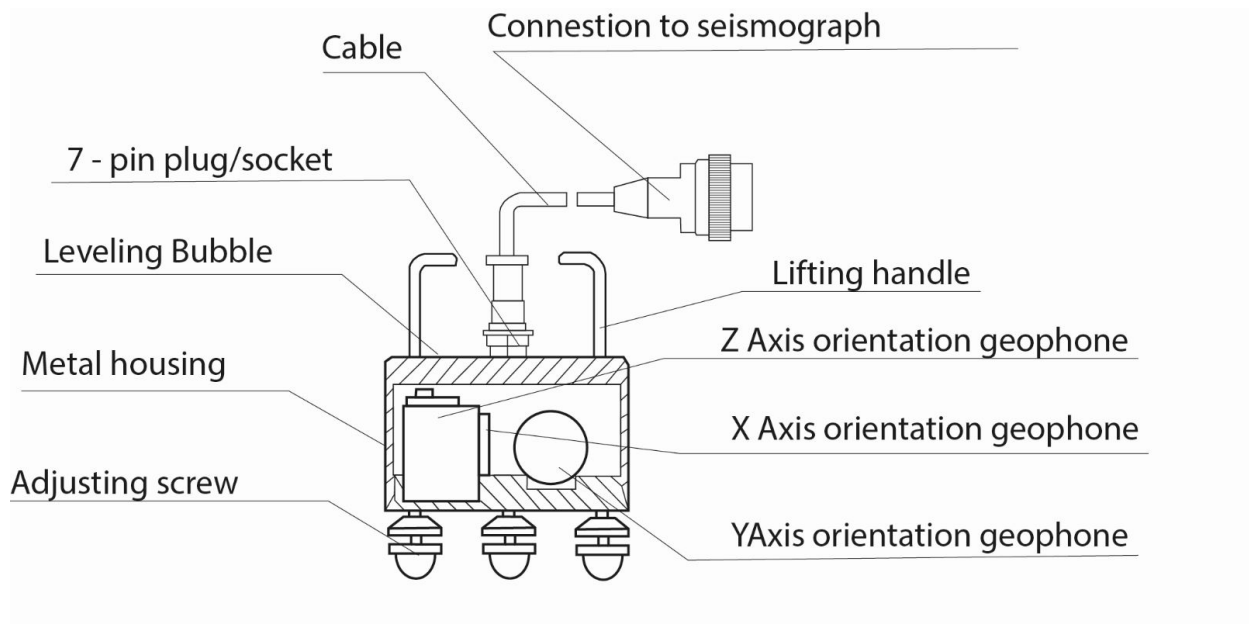
4. Technical specifications

Parameter	Specification
Natural frequency	2Hz \pm 10%
Coil resistance (Ω)	6040 \pm 10%
Sensitivity (V/cm/s)	2 +10%
Damping factor	0.7+10%
Internal resistance (Ω)	5800+5%
Insulating resistance	\geq 10M Ω
Harmonic distortion (%)	\leq 0.2
1 to 20Hz phase difference inside band (°)	\leq \pm 3
Dimensions	Φ 128x80mm (ex leveling_device)
Weight	2.3Kg
Operating temperature	-25°C to +55°C

All parameters specified at 20 °C

Note: under other temperature, sensitivity, damp factor and coil resistance should be modified with temperature factor. The formula is listed in Appendix A.

5. Structure Drawing



6. Operation and connection method

Leveling is accomplished using the three adjustable-height feet with lock nuts and the leveling bubble to make it centered on the cover before working.

The connecting instructions as shown-in the picture, such as the seven-core plug sockets, geophones, 27-pin plug and cable distribution box with three colors pulled card are described below.

- Pins 1 and 2 of 7-pin plug are connected to the Z axis orientation (vertical) geophone by a red and black wire. Pins 1 and 2 of 27-pin plug are connected to the Z axis orientation of the cable distribution box by a red plug card.
- Pins 3 and 6 of 7-pin plug are connected to the Y axis orientation geophone by a blue and white wire. Pins 5 and 6 of 27-pin plug are connected to the Y axis orientation of the cable distribution box by a blue plug card.
- Pins 5 and 7 of 7-pin plug are connected to the X axis orientation geophone by a yellow and green wire. Pins 3 and 4 of 27-pin plug are connected to the X axis orientation of the cable distribution box by a yellow plug card.

In the connections above, the pins 1, 3 and 5 represent positive. The pins 1, 3 and 5 of 27-pin represent respectively geophones positive and the pins 2, 6 and 7 represent their negative. The wide end of plug card is connected the positive and narrow is negative.

The bouncing orientation of geophones: jump up at first peak when knock it from Z axis orientation, X axis orientation (east) and Y axis orientation (north).

7.Troubleshooting

Problem	Possible cause	Solution
An exception parameter occurs	The bubble is no centering or locking nuts	Adjust it or locking nuts
No signal output	Geophone element is shorting or open circuit	Check if the internal resistance in the geophone is in good order by a multimeter
	The cable plug is disconnected	Welding the breakpoint or replace the cable

8.Precaution

- Attention should be paid to take put down gently while in transport or operating, avoid the collision and violent shaking;
- Avoid striking the leveling bubble with hard objects to prevent damage it;
- The geophone must be short connected when not in use and stored in cool and dry area;
- Put it on a special packing case holding at 45 degree in transportation and storage.

9.Packing list

1x 3DLG geophone

1x shockproof case

1x cable (one end soldered to a 7-pin plug and one end soldered to 1 27-pin plug)

1x **short circuit connector for 7-pin plug (see par.2 – Warranty & Safety Instructions)**

1x certificate

1x User Guide

Appendix A

Temperature amendment (supplement)

As temperature variation, result in the damp factor and coil resistance variation. Calculating formula is as follows:

$$\text{Damp factor: } B_t = B_{t0}(1 + \alpha (T - T_0)) \quad (1)$$

Here: B_{t0} - Damp factor (when the temperature is 20 °C)

α - Temperature coefficient is -0.002/ 1°C

T_0 =2 0°C

T is the actual environment temperature.

$$\text{Coil resistance: } R = R_0(1 + \alpha (T - T_0)) \quad (2)$$

Here: R_0 - Coil resistance (when the temperature is 20°C)

α - temperature coefficient is - 0.0041/ 1 °C

T_0 and T are the same with (1)