

TPL 310D Mini– Trapped Person Locator

TPL 310D Mini is a new extremely efficient rescue tool

The TPL 310D Series using leading edge technology.

It is based on many years of field experience and successful rescue results.

The system is very compact, is task- oriented and therefore much easier to be efficiently applied and efficiently operation, even by operators with very little training.

Typical applications range from detecting and pinpointing the location of trapped persons below and above ground, in locations to which there is no normal access, like collapsed buildings and structures, collapse caused by natural or manmade disasters.

It is assumed that the trapped persons are alive and are able to provide a minimal response to calls or knockings.

The system has a very high sensitivity and a low noise figure, thereby considerably improving the chances of detecting survivor-generated signals.



Principle of operation

- The system's task oriented design provides two basic tasks, which are: "SURVEY" and "LOCATE".

The "SURVEY" mode of operation, which should be used on the first approach to most rescue sites, should establish, if any living and conscious survivors are under the rubble. The system also provides means to communicate with these trapped persons. The acoustic sensor functions as a loudspeaker/ microphone, which can be inserted into crevices and allows to call and listen to the trapped persons.

The "LOCATE" mode should be established once some kind of communication has been made with the trapped persons. It serves to provide information about the location of the person, in or below the rescue site, so as to guide the rescue team to this location.

- The system has a LCD display, which graphically shows all essential indications, and guides the operator through the above-mentioned tasks. For night time operation backlighting is available.
- With the selection of each task, optimum signal filtering is automatically performed for each mode of operation, i.e. seismic and/ or acoustic listening, thereby assuring optimum signal detection capabilities.
- The system provides manual and automatic gain adjustments. The automatic gain adjustment is a unique feature, which enables detection of trapped person signals in high man-made noise.

Technical Features

■ TPL 310D CASE

The TPL is housed in a splash- proof, beige colored drawn- aluminum housing with a robust handle, this also serves as a tilting aid. The carrying case keeps all the TPL 310D elements safely

The housing conforms with IP 67 weatherproofing.

The system is designed to operate at a temperature range of -4° F – 140° F (-20° C to +60° C) at a relative humidity of max. 95%.

During operation of the system, a carrier vest is used in which all components of the system are assembled.

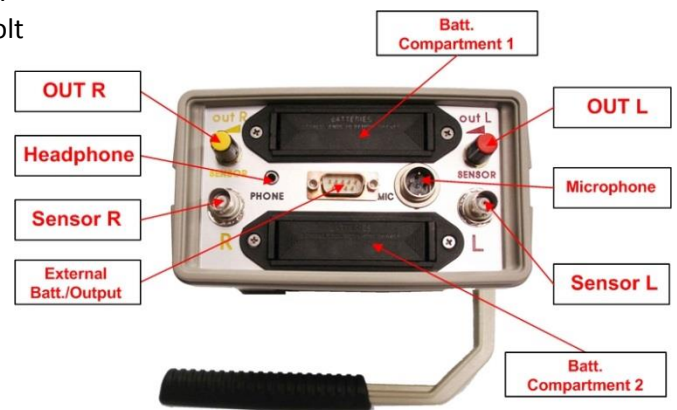
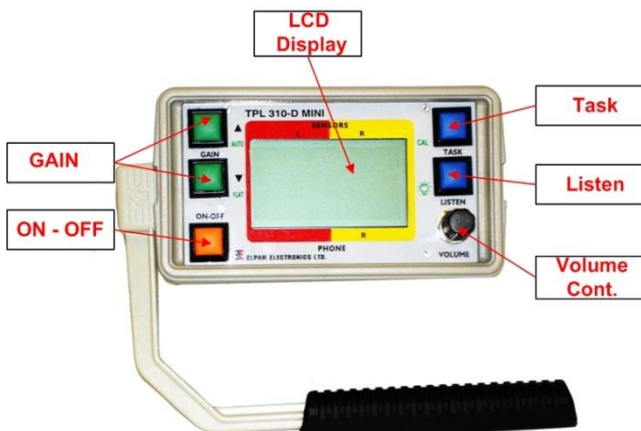


■ AMPLIFICATIONS

- The amplification of the two seismic sensors channels is 60dB Manu-able or automatic switchable in 10dB steps and 45dB additional amplification in the sensors preamplifiers.
- In the TWO WAY sensor channel, additional 18dB amplification are provided by the active filters, in the signal path, in the frequency range of approx. 300-3000 Hertz, and a loss of 18dB in the frequency rang below approx. 150 Hertz.
- In the SEISMIC sensors channels an additional 18dB amplification are provided by the active filters, in the frequency band of approx. 150-1000 Hertz, and loss of 18dB in the frequency band above approx. 1800-3000 Hertz.
- The intercom microphone amplifier provides a SPL from the acoustic sensor of 70dB measured at a distance of 1 meter.
- The listening amplifier gains are controlled by a front panel volume control in the headphones and provide an additional maximum voltage gain of 10dB.

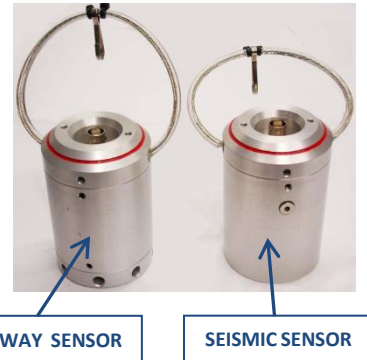
■ INPUT/OUTPUT IMPEDANCES

- The output impedance of the listening amplifier allows driving one or two 32Ω headphones.
- Sensor channels input impedances: approx. 1KΩ (each).
- Left and right channels analog outputs of at least 0.5 volt
- The source impedance at these outputs is ~ 200Ω.



■ SENSORS

- Mechanical data: Both types, seismic and acoustic sensors are assembled into an anodized aluminum enclosure, made out of solid material, in a waterproof construction. The cable connector is of the BNC type.
- Both seismic and acoustic sensors include preamplifiers powered from the TPL through the connection cable.
- The seismic sensors (TPL 3108) output signal is amplified by the enclosed preamplifier provides a voltage gain of 45dB.
- The sensor resonance is at 10Hz and the overall sensitivity exceeds the requirements.
- The TWO - WAY sensor (TPL 3111) acts both as microphone and loudspeaker.
- The assembly may be immersed into water to a depth of 1 meter.
- When functioning as a microphone, the transducer has sensitivity of 1.1 mV/ Pa at 1Khz. The output of the transducer is amplified by a preamplifier in a similar way as in the seismic sensor.



■ CABLE DISPENSERS

- The dispensers hold 33 ft. (10 meter) of coaxial, polyethylene insulated PVC covered, cable type RG 58C/U terminated with male and female BNC connectors.

■ POWER SUPPLY

- The Operating voltage of the TPL is 12 volt. It will function properly from 8.8 volt up to 16 volt. A voltage monitor will indicate the battery condition.
- Power is provided by eight type AA alkaline batteries, held in two battery holders accessible from the rear of the TPL.
- Alternatively power can be supplied to the TPL through a power cable, connecting an external 12 volt battery to the D type connector.
- The current drain with no input signal is ~40 mA. And with backlighting ~50 mA.

System Components

| TPL D SYSTEM COMPONENTS | PART NUMBER | DIMENSIONS (mm) & WEIGHT (gram/ Kg) | DIMENSIONS (ft) & WEIGHT (lbs) | QTY |
|---|-------------|-------------------------------------|------------------------------------|-----|
| TPL 310D & ACCESSORIES | 499129793 | 52.37 X 20.6 X 42.85 cm ~12 Kg | 20 ¾" X 8 5/8" X 17 ¼" 33 lbs | 1 |
| TPL 310D proper (With batteries) | 499129807 | 15.5 X 85.5 X 22.7 cm 1.85 Kg | 6.12" X 3.36" X 8.93" 3.85 lbs | 1 |
| Seismic sensor red (Geophone) | 499129815R | 60 X 91 mm 615 gram | 2.36" X 3.58" 1.35 lbs | 1 |
| Seismic sensor yellow (Geophone) | 499129815Y | 60 X 91 mm 615 gram | 2.36" X 3.58" 1.35 lbs | 1 |
| TWO - WAY sensor microphone/ speaker | 499129823 | 60 X 91 mm 470 gram | 2.36" X 3.58" 1.03 lbs | 1 |
| Cable dispenser with 33 ft (10m) long | 499129831 | 139 X 70.5 mm 1000 gram | 5.47" X 2.78" 1.46 lbs | 2 |
| Interconnection cable 3.3 ft (1m) long | 499129840 | 1 meter 58 gram | 3.3 ft 0.13 lbs | 2 |
| External battery cable 7 ft (2m) long | 499129858 | 2 meter 145 gram | 7 ft 0.28 lbs | 1 |
| Microphone hand held | 499129866 | 66 X 86 X 38.5 mm 195 gram | 2.6" X 3.4" X 1.5" 0.35 lbs | 1 |
| Headphones | 499129876 | 200 gram | 0.44 lbs | 1 |
| Vest for carrying TPL D accessories | 499129882 | 650 gram | 1.32 lbs | 1 |
| Black carrying case | 499129890 | 52.37 X 20.6 X 42.85 cm 5.4 Kg | 20 ¾" X 8 5/8" X 17 ¼" 9.89 lbs | 1 |

Assembly of TPL 310D

- 1** Carrying/Protector Case
- 2** Vest
- 3** TPL 310D Mini
- 4** Headphones
- 5** Microphone
- 6** Cable Dispensers
- 7** Two - Way Sensor Red
- 8** Seismic Sensor Red
- 9** Seismic Sensor Yellow
- 10** Coax Cables
- 11** Feed Cable



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- 12** Battery charger with rechargeable batteries .
- 13** Headphone adapter
- 14** User Guide and Activation Page



Electronic Connection Diagram

