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LDT-10

LAB TRANSMITTER

LDT-10 LAB TRANSMITTER - NOVEMBER 15, 1990

1 LAB TRANSMITTER PANEL DESCRIPTION

1.1 ON-OFF-EXT switch. This three position switch controls the source of power to the LAB TRANSMITTER. In the ON position the source for the LAB TRANSMITTER is the GDP-12 or XMT-12 attached to the INPUT connector using the LDT-IN cable. In the EXT position the power source for the LAB TRANSMITTER is the battery attached to the EXT.POWER connector using the LDT-PW cable. This is the only method to supply power when using a GDP-16, XMT-16, or XMT-12T. In the OFF position no power is supplied to the LAB TRANSMITTER.

1.2 TIME-FREQ switch. This switch in conjunction with the GDP or TRANSMITTER CONTROLLER controls the output of the LAB TRANSMITTER. If the GDP-12 does not have a TIME-FREQ switch next to the DUTY CYCLE switch, then the LAB TRANSMITTER TIME-FREQ switch will control whether the output is time domain or frequency domain. If the GDP-12 has a TIME-FREQ switch, the both the GDP-12 TIME-FREQ switch and the LAB TRANSMITTER TIME-FREQ switch must be on TIME if a time domain output of the LAB TRANSMITTER is desired. The duty cycle of the time domain signal will always be controlled by the DUTY CYCLE switch on the GDP-12 or TRANSMITTER CONTROLLER.

1.3 INPUT connector. This connector is used to connect a GDP or TRANSMITTER CONTROLLER to the LAB TRANSMITTER. If the power source for the LAB TRANSMITTER is the controlling device, cable LDT-IN must be used. If the power source is connected to the EXT.POWER connector either cable LDT-IN or LDT-CN can be used. The GDP-16 is connected using a LDT-IN/16 cable. The signals controlling the LAB TRANSMITTER are optically isolated from the controlling device to avoid ground loops between the two units.

1.4 EXT.POWER connector. This connector is used to attach a 12V battery to power the LAB TRANSMITTER using the LDT-PW cable.

1.5 OFFSET control. This control is used to shift the output waveform so that it is symmetric, about zero volts. The output can shift due to SP effects in the electrodes, the ground, or the rock sample.

1.6 RANGE select. This switch has four positions controlling the output current range.

1.7 FINE adjustment. This control is used to set the current within the range selected by the RANGE select switch. To determine the current setting multiply the lower of the two numbers indicated by the RANGE switch by the number indicated by the FINE adjust knob. For example, if the RANGE switch is set to the .01-.1mA range and the FINE adjust is set to 0.1, the output is .01mA X

0.1 = 1 microamp. As another example, if the RANGE switch is set o 1-10mA and the FINE adjust is set to 9.5 the output is 1mA X .5 = 9.5 mA.

SATURATION indicator. This is a two color light indicating mplifier saturation. If the operator has selected a current setting requiring a higher voltage than the LAB TRANSMITTER is capable of delivering, the light will flash. If the light is lashing red, the output is attempting to be greater than +10 olts. If the light is flashing green, the output is attempting to be less than -10 volts. If both colors are flashing, the utput is trying to exceed +10 volts and -10 volts.

CURRENT MONITOR binding posts. The output of the CURRENT MONITOR is proportional to the setting of the FINE adjust knob and varies etween 1 volt and 10 volts.

OUTPUT binding posts. The output wave form is constant current egulated in either time or frequency domain. The current is ontrolled by the RANGE and FINE adjust knobs. The frequency is controlled by the device attached to the INPUT connector.

2 LAB TRANSMITTER LABORATORY CONFIGURATION

Connect the GDP, LAB TRANSMITTER, and ELECTRODES as show in Figure 1A, 1B, 1C, or 1D. The ELECTRODES are specifically designed for laboratory measurements to provide a non-polarizing contact with the rock.

3 LAB TRANSMITTER DOWNHOLE CONFIGURATION

Downhole measurements can be made using the configuration shown in Figure 2. The current output should be used with the negative terminal attached to the downhole electrode. Select the current desired, up to 10 milliamps, being careful not to saturate. Current is monitored using the CURRENT MONITOR output as shown.

By using two ISOLATION AMPLIFIERS, ground loops may be reduced between the transmitter and the receiver. This connection is illustrated in Figure 3.

In making downhole measurements it is advisable to use an active probe, with a preamplifier built into the probe (see Figure 4). This reduces coupling between the transmitted and received signals. In very shallow measurements, it is possible, but not advisable, to use a passive probe. Zonge Engineering manufactures the active DOWNHOLE PROBE pictured in Figure 4.

4 POSSIBLE CABLES SUPPLIED WITH THE LDT-10

3 ea. B24-0 24" Black Pomona cable.

3 ea. B24-2 24" Red Pomona cable.

[illegible] ea. LDT-CN Control cable from either GDP-12 or XMT-12.

1 ea. LDT-IN Control and power cable from either GDP-12 or XMT-12.

[illegible] ea. LDT-PW Power cable to attach to PB1260 battery. (Battery not included.)

[illegible] ea. LDT-IN/16 Control cable from GDP-16, XMT-16, XMT-12T.

LABORATORY SETUP

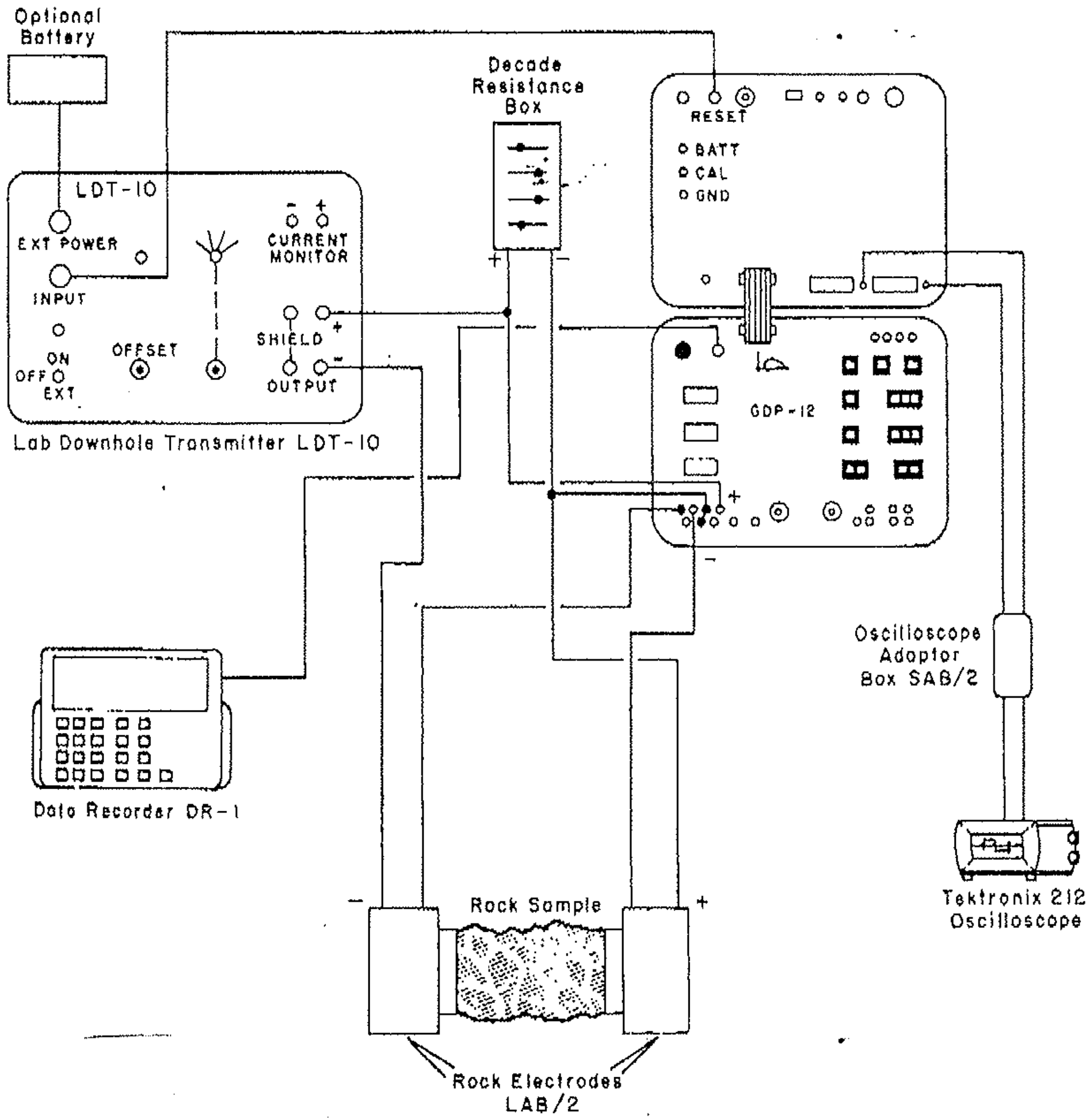


fig.1A

ALTERNATE LABORATORY SETUP

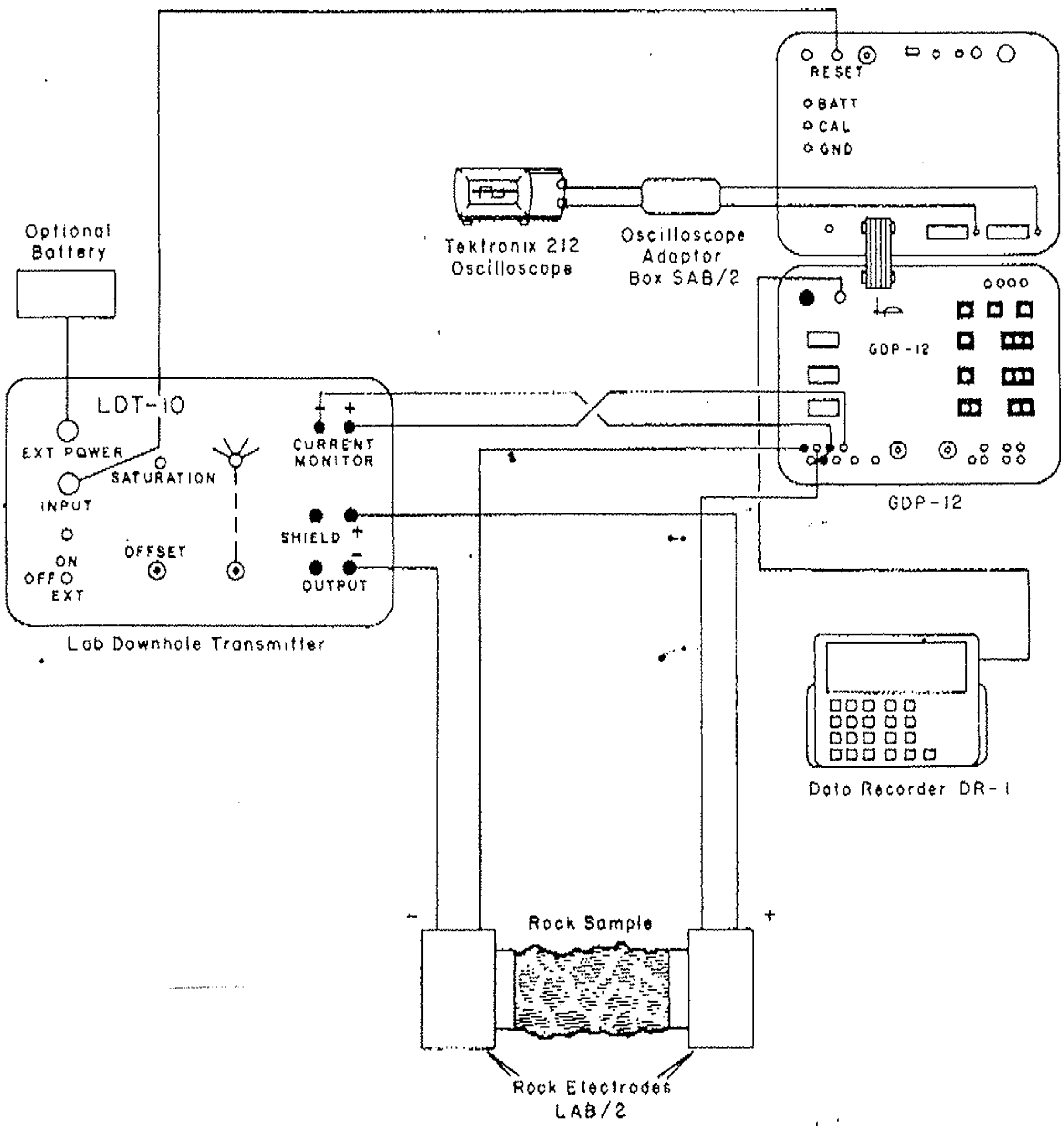


fig.1B

LABORATORY SETUP

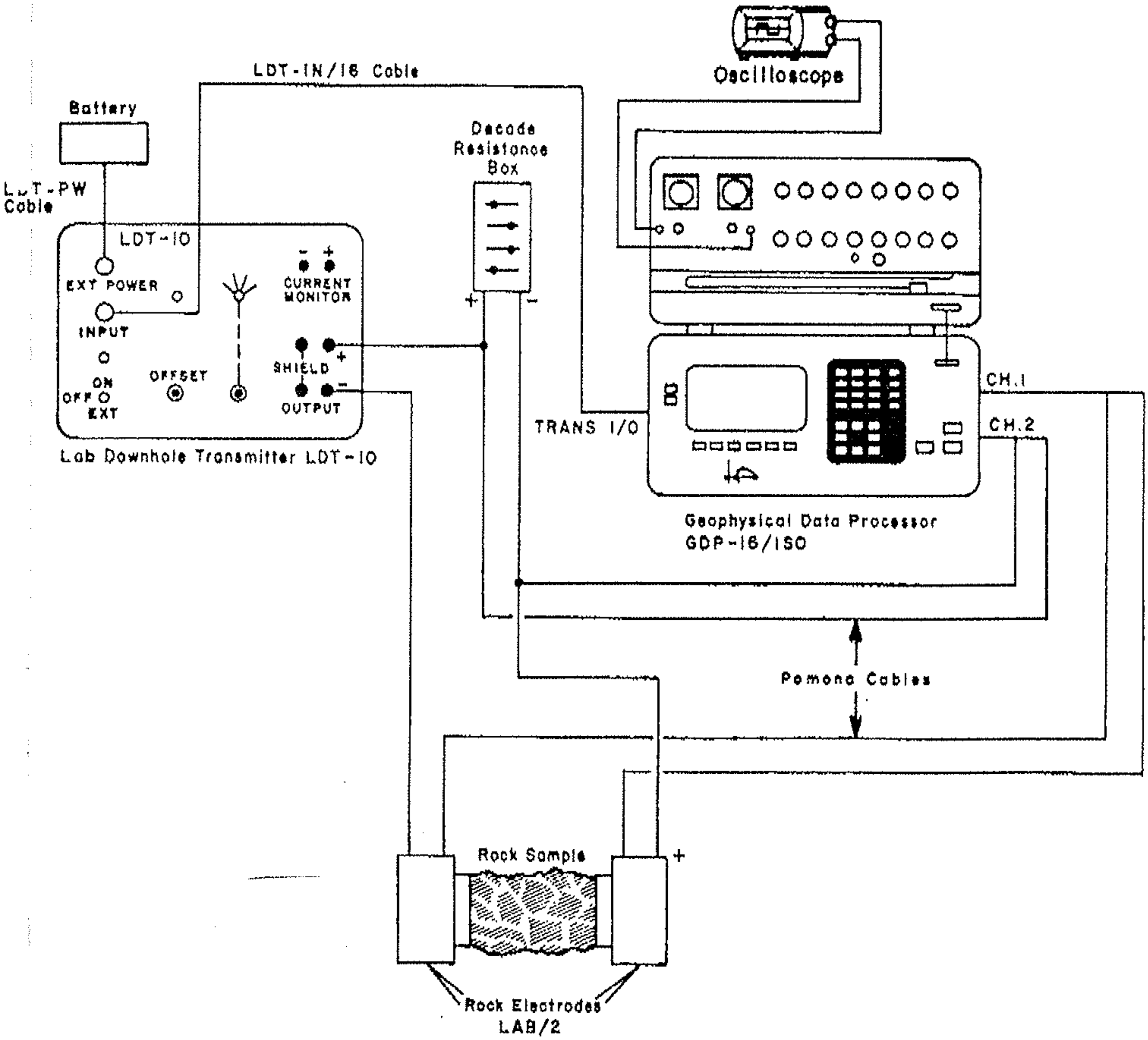


fig. 1C

ALTERNATE LABORATORY SETUP

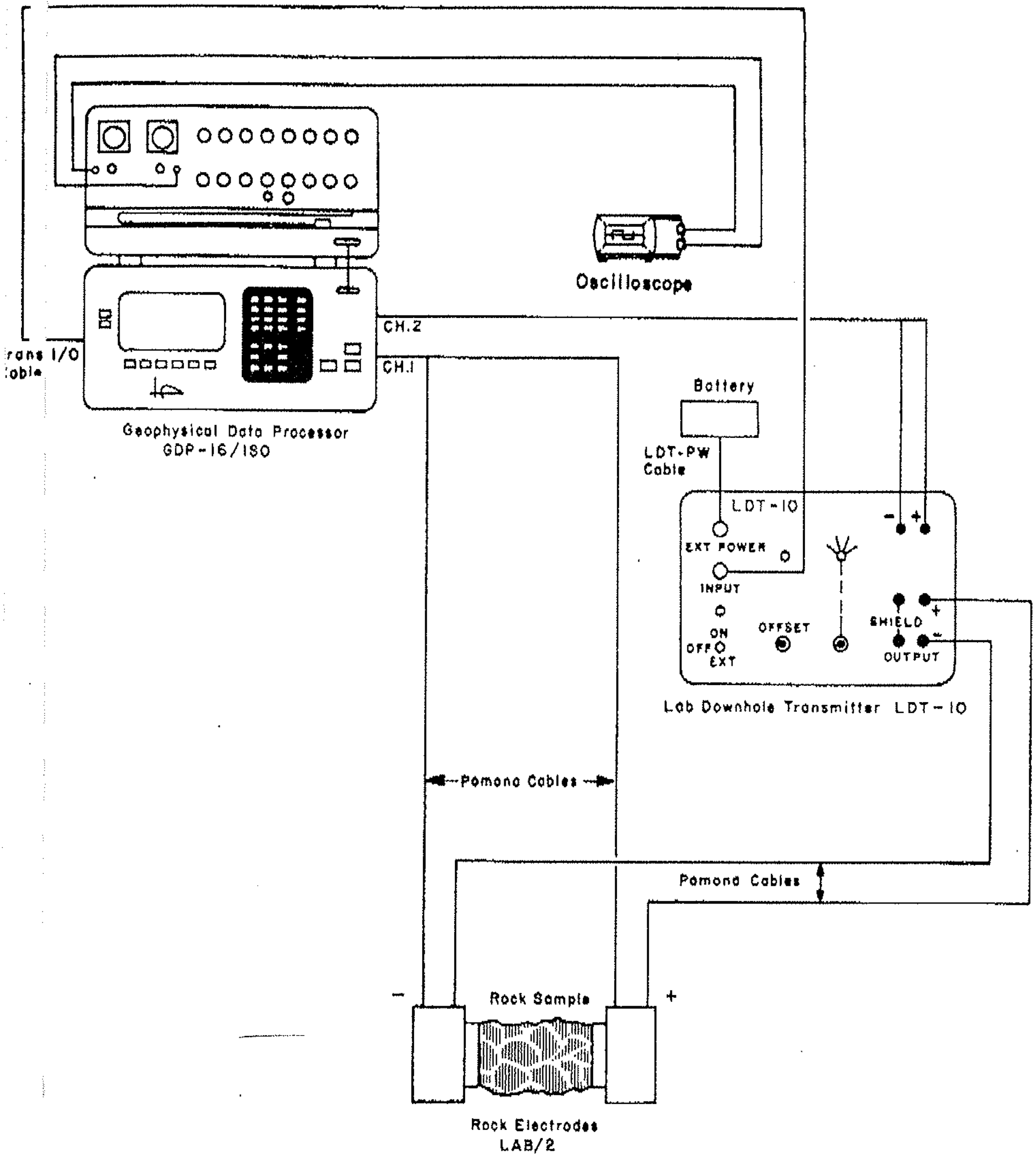


fig. 1D

Lab Transmitter Downhole Configuration

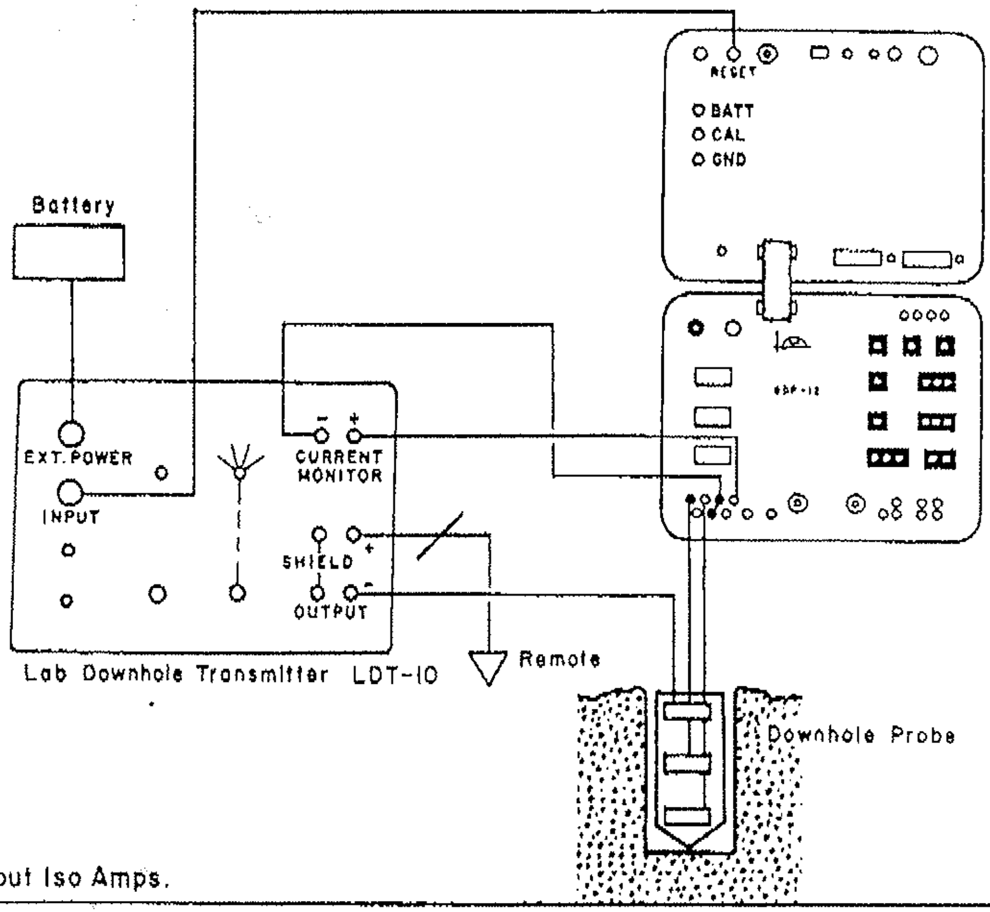


Figure 2. Without Iso Amps.

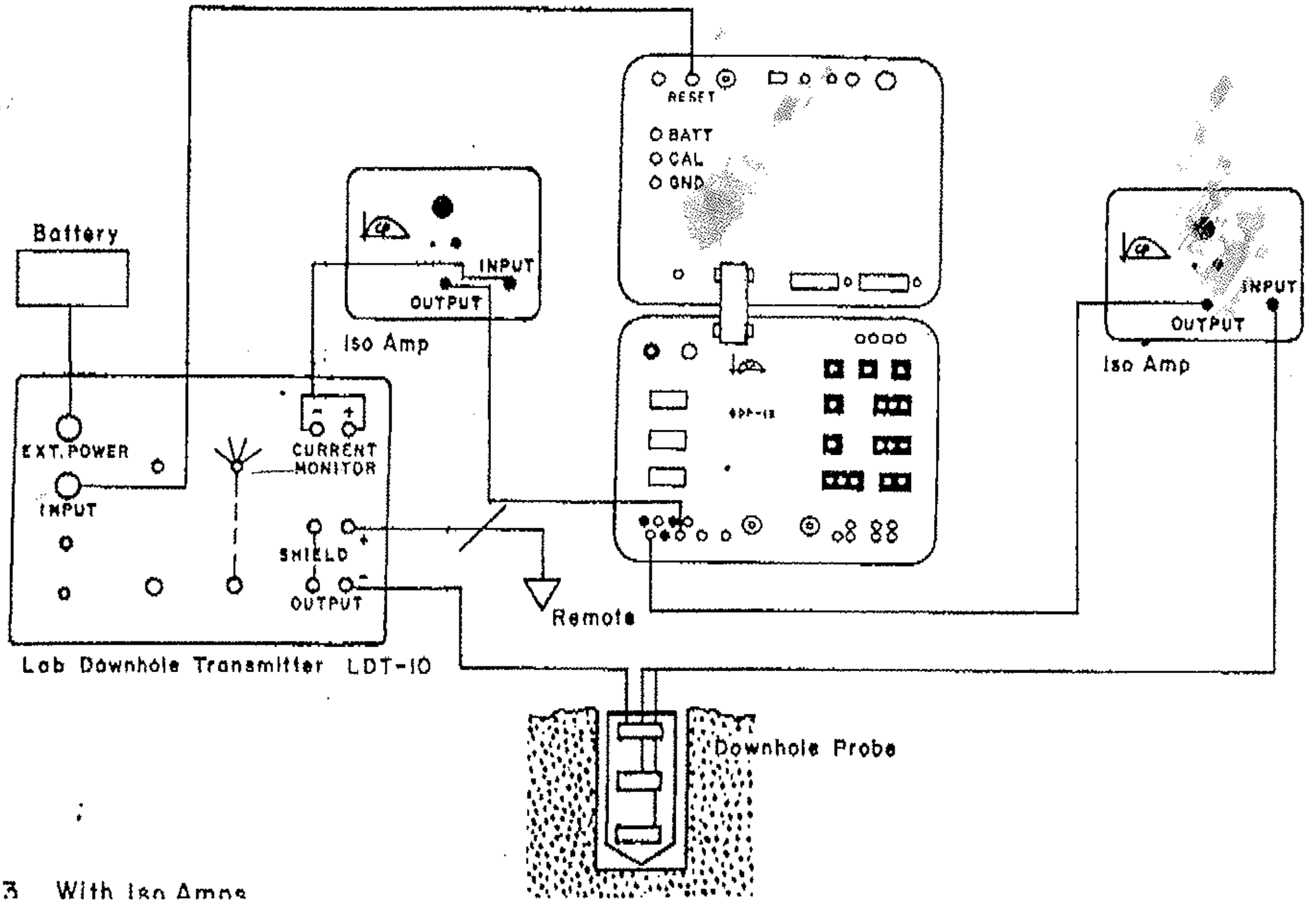
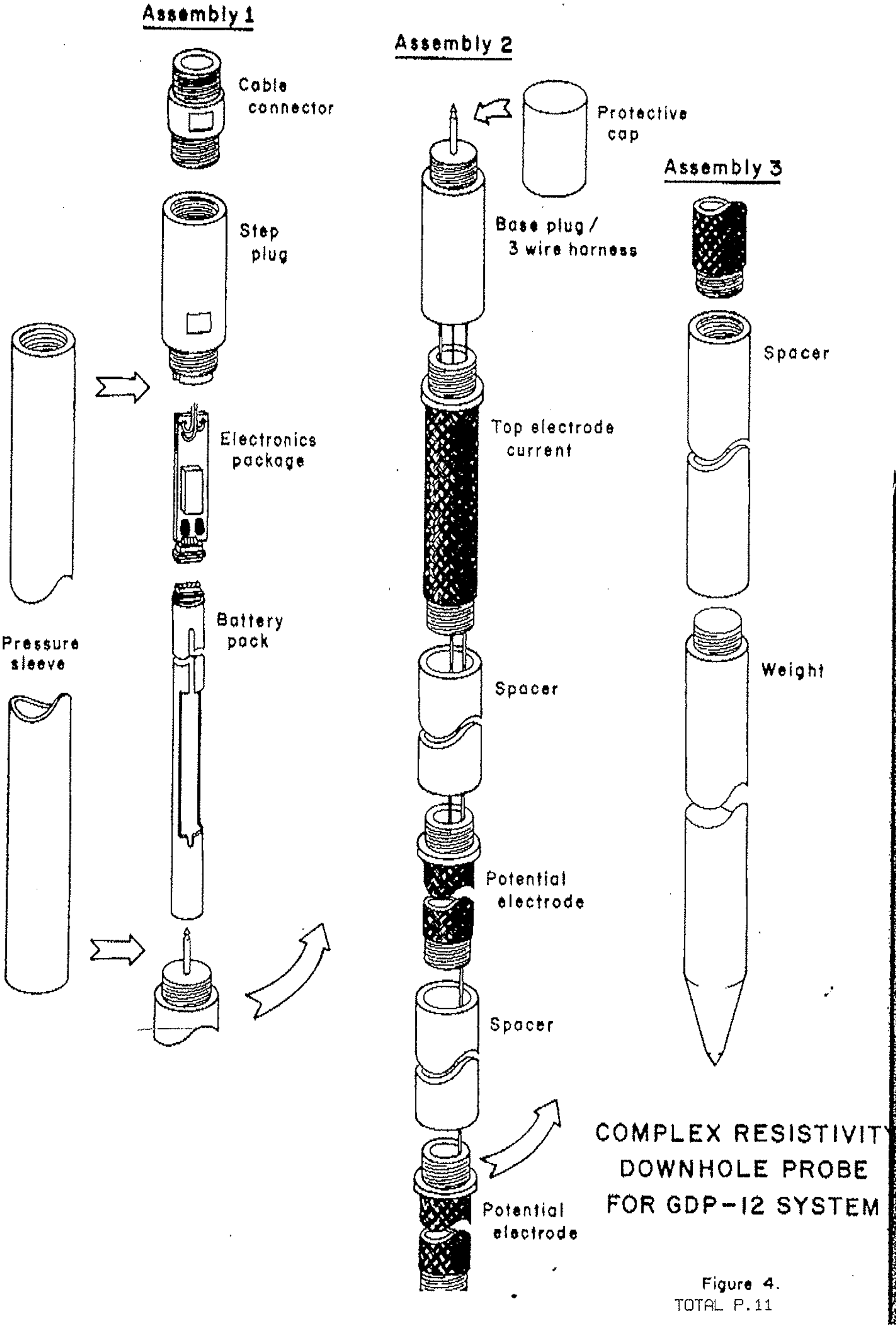


Figure 3 With Iso Amps


Assembly 1
Cable connector
Step plug
Electronics package
Battery pack
Pressure sleeve
Assembly 2
Protective cap
Base plug / 3 wire harness
Top electrode current
Spacer
Potential electrode
Spacer
Potential electrode
Assembly 3
Spacer
Weight
COMPLEX RESISTIVITY DOWNHOLE PROBE FOR GDP-12 SYSTEM
Figure 4.