5 Loc-10Tx Transmitter

Loc-10Tx Transmitter

Display



1	Frequency Being Transmitted (200 kHz available in some country)	6	Output Setting (Step) (filled box indicates current level has been reached, empty box indicates requested current level has not been achieved)
2	Digital Read Out (mAmps, volts, ohms)	7	Low Power Indicator (enabled automatically when battery becomes one bar)
3	Loudspeaker Level	8	Battery Status
4	Units (mAmps, volts, ohms)	9	High Voltage Warning (output is enabled for high voltage)
5	Mode Indication		

Pushbutton



1	On/Off Control
2	Output Decrease
3	Frequency Select
4	Output Increase
5	Information (Volume, mAmps, volts, ohms)

Connections



1	Output Connection	
2	Output Protection (Fuse)	
3	Loudspeaker	
4	Battery Charging Socket & DC Input	

5.1 Transmitter's Overview

The vLocPro transmitter is a rugged portable transmitter powered by alkaline "D" cells or Ni-MH (Nickel Metal Hydride) rechargeable batteries. The following describes the features and uses of the transmitter.

5.2 Transmitting Modes

The transmitter has three transmitting modes, which are selected automatically.

5.2.1 Induction Mode – this uses an internal antenna to induce a locating frequency onto the target pipe or cable (line). "Induction" mode is automatically selected if no connection accessories are plugged into the "output socket". An icon indicating "Induction" mode shows on the display. The icon flashes when the transmitter is transmitting. In order to generate successful induction, the transmitter should be positioned over and with the handle in line with the target line.



"Induction" mode is generally used when no access is available to make a direct connection, or a clamp connection. When using induction it is very likely that the signal being induced onto the target line will also be induced onto other lines in the area, and onto above ground features such as wire fences. This can influence the accuracy of the location, depth and current measurements. "Induction" mode is also the least efficient way of applying the transmitting signal to the target line. The distance located with "Induction" mode is generally much less than that achieved with a direct connection or clamp connection. "Induction" mode generally works better in higher frequencies, 33 kHz, 65 kHz and either 83.1kHz or 200kHz (depending on region). The advantage of induction is that no access is required to "connect" the transmitter, making it a very quick process. The antennas on the transmitter are tuned to induce specific frequencies or range of frequencies. Therefore only a limited number of frequencies can be selected in "Induction" mode.



Note:

For accurate location and depth measurement the locator receiver should be used about 50 feet/20 meters away from the transmitter.

5.2.2 Direct Connection Mode – By plugging in a connection lead to the output socket, "Direct connection" mode is selected. An icon confirming this is shown on the display. The icon flashes when the transmitter is transmitting. The direct connection lead consists of two cables, one (red clip) must be connected to the conductor being located, the other (black clip) to a suitable ground (a ground stake is provided with the transmitter). An auxiliary ground lead is also supplied. If the auxiliary ground lead is used, the ground clip of the connection lead (black clip) is attached to one end of the auxiliary ground lead.



Wherever a direct connection can be safely made without the risk of injury, damage to customer's plant, or the transmitter, it is the best way of applying the transmitter's signal.

The coupling of the transmitted signal to other pipes and cables in the area will be much less than with induction, although where commonly bonded systems are encountered – coupling cannot be avoided.

The positioning of the ground connection can also influence the degree of coupling experienced. Ground connections generally should not be made to other pipes or cables, or above ground metallic structures such as wire fences. In general the lower the frequency is, the further the signal will travel, and the less signal coupling will occur. The most common frequencies used for direct connection are between 512 Hz/640 Hz and 8 kHz.

Regulations in many countries require that power output is limited above certain frequencies. The vLocPro enables frequencies below 45 kHz to be transmitted using as much as 10 watts output, but frequencies over 45 kHz are restricted to 1 watt. Using direct connection and the higher power at the low frequencies helps significantly in achieving greater location distances. Direct connections should not be made to cables carrying greater than 35 volts (or as your safety practices allow). The transmitter is protected (250v fuse) from stray currents that may exist on the target line.

5.2.3 Clamp Mode – plugging the signal clamp supplied by Vivax-Metrotech into the output socket will place the transmitter in "Clamp" mode. An icon confirming this is displayed on the display. The icon flashes when the transmitter is transmitting. When using the clamp no ground connection is needed.



The clamp again is a precise way to apply the locating signal. It is generally used when access to the conductor cannot be achieved to make a direct connection (but there is sufficient access to place the clamp around the cable), or when it is not safe to make a direct connection because the target cable is carrying electricity.

When the locator is within range of the marker there will be a sound from the speaker and also the icon in the centre of the display (5) will start to fill up.

Move the locator forward and back, left and right, until the largest signal is detected. Note the bar graph (1) will also respond. Use the "+" and "-" pushbuttons to keep the signal on scale. The bar graph should be used to pinpoint the position of the marker.

WARNING



When applying the clamp to cables that carry electricity – be sure to follow your company's safety instructions and procedures. Beware that if applied around a high voltage cable – that cable may induce a current in the clamp causing it to snap shut or jump quite dramatically – always apply clamps carefully.

5.2.4 Connection Block



1	Output Connection	
2	Output Protection (Fuse)	
3	Loudspeaker	
4	Battery Charging Socket & DC Input	

All the connections made to the transmitter are made at the connection block except that a USB socket is mounted inside the battery compartment for programming the transmitter's processor.

The connection block consists of:

- Output (XLR) socket for the direct connection lead and clamp.
- Charger socket (to allow the retrofitting of a rechargeable battery pack – the charging socket is present even if re-chargeable batteries have not been purchased).
- Transmitter 12V power lead to power (NOT charge) the transmitter from a vehicle.
- Fuse this protects the transmitter circuitry in the event of the transmitter receiving up to 250v incoming on the output leads.
- A beeper is positioned behind the small hole.

5.2.5 Frequencies & Power Output

The transmitter can be programmed on request to transmit almost any locating frequency in "Direct connection" mode – up to 200 kHz. When purchased the unit is shipped with a standard selection of frequencies, plus any you have specifically requested.

Standard frequencies are:

- 512 Hz (where electrical systems are 60 Hz) direct connection 10 watts
- 640 Hz (where electrical systems are 50 Hz) direct connection 10 watts
- 8 kHz direct connection 10 watts
- 33 kHz direct connection, and clamp 10 watts
- 65 kHz direct connection 1 watt
- 83.1kHz direct connection 1 watt (depending on region)
- 200 kHz direct connection 1 watt (depending on region)
- Induction frequencies are 8 kHz, 33 kHz and 65 kHz or alternately 33 kHz, 65 kHz and 200 kHz (200 kHz is not permitted in some markets)



As with most manufacturers the clamps and induction antennas are tuned to specific frequencies, and do not work over a wide range of frequencies. Special winding/tuning can be provided on request.

Frequencies are selected by pressing the "Frequency" pushbutton which toggles through the available frequencies for the selection mode. The frequency is automatically selected if you don't toggle past it within 2 seconds. The frequency is shown on the display.

The output current is shown in large characters on the display – to increase or reduce the power output press "+" or "-". The vertical bar graph at the bottom of the display indicates which of the four power output steps is being used.

The current being transmitted will be limited by the impedance of the cable, therefore it is not unusual to increase the output level, but see no increase in the current displayed. This is not a fault with the transmitter.

The transmitter will always revert to first level output when switched on – this is a power saving feature – in most circumstances this output level is sufficient, increasing the power will do nothing but run the batteries down quicker. All other settings remain the same as the last setting used.

5.2.5.1 Most Used Frequencies (Frequency Selection) Feature.

This feature can be used to allow operator to choose his most used frequencies from a list of possible frequencies. Once these frequencies are selected in the main menu, pressing the "f" pushbutton, user can scroll through them. At any time user can add or remove frequencies from the above list, following the below procedure.

The advantage of this feature is that user can optimize the transmitter and activate at the main menu user's preferred frequencies, instead of having a whole list of frequencies that user has to scroll through.

To enter the "Frequency Menu" proceeds as follows:

1. Press the "i" pushbutton 5 times to get to the "Frequency selection" sub-menu.



2.

Screen will show a list of frequencies available, with the central one in a box

Frequency Menu		
200 kHz	х	
FF low		
FF high		

- 3. Pressing the "+" or "-" pushbuttons, you can scroll up or down through the available frequencies.
- 4. Once the wanted frequency is inside the box, press "f" pushbutton to select or deselect the frequency. An "x" will appear in the box for a selected frequency.

Frequer 200 kHz	Frequency Menu 200 kHz	
FF low	Х	
FF high		

After selecting for the frequencies, press the "i" pushbutton again to exit the "Frequency Menu" and the selected list of frequencies can be select from the main display screen.
Save and exit will automatically happen if there is no pushbutton press for about 5 sec while in the "Frequency Menu"

5.2.5.2 "Dual frequency" Mode

This feature can be used when user wants to energize on user's target two frequencies at the same time. Mainly, it can be used when user is not sure which frequency can be impressed better into the target.

NOTE:



- When using "dual frequency" mode, total power will be split between the two activated frequencies.
- This mode of operation is available only for frequencies below 40 kHz.
- The two frequencies have to be available in the main menu.

To enter the "Choose Second Freq." menu, proceed as follows:

- 1. Press "f" pushbutton to select the lowest frequency that user want to have in the dual combination.
- 2. Press "i" pushbutton 4 times to get to the "Choose Second Freq." sub-menu. The above frequency will be shown in a box.



3. By using the "+" and "-" pushbuttons, user can scroll through the available frequencies and bring the wanted one in the box.

Choose Second Fre			
512Hz	Х		

- 4. Press "f" pushbutton to select the second frequency and exit the submenu to return to the main display.
- 5. In the main display screen, both frequencies are displayed. The frequency will toggle between the two chosen frequencies.



NOTE:

If user is changing the selected frequency by pressing the "f" pushbutton, this mode will be deactivated. To reactivate it, user has to follow again the above procedures.

If the unit is powered down, this mode will be reset. To activate it again after power up, user has to follow the above procedures.

5.3 Information



The digits in the center of the display default to output current (in mAmps).

When the "i" (information) pushbutton is pressed, the display will show the volume level of the audio; use the "+" and "-" pushbuttons to increase/reduce the volume or turn the beeper off (off – low – medium – high).

By pressing the "i" (information) pushbutton the display can be toggled to show "voltage" and "resistance". The display indicates mAmps, as the default, and volts or ohms when selected.

5.3.1 Transmitter Battery



In most markets the transmitter is shipped with alkaline batteries (12 x D cells) unless rechargeable batteries are specified. Batteries are fitted into quick release trays - the alkaline is an open pack, to enable the batteries to be changed. The rechargeable pack is a sealed unit containing Ni-MH (Nickel Metal Hydride) batteries. These packs can only be fitted in a manner to ensure that the alkaline batteries cannot be inadvertently charged.

5.3.2 Removing the Battery Tray



clears catch plate

5.3.3 Replacing the Alkaline Battery

- To access batteries undo stainless steel screws on each battery cover
- To remove batteries turn tray upside down and give a short sharp tap of the battery tray on your hand
- Replace batteries with new batteries of the same type, be sure not to mix old and new batteries
- Do not use rechargeable batteries in the alkaline battery tray. Ensure that batteries are inserted the correct way (see label and molded "+" and "-" in the bottom of the tray)
- Refit the battery cover then refit the battery tray



WARNING! Alkaline Batteries - insert alkaline batteries (x12) as shown



5.3.4 Rechargeable Batteries

• Do not attempt to replace the rechargeable batteries or remove battery covers – return to Vivax-Metrotech or a Vivax-Metrotech approved service centers for replacement.



WARNING! Use only Vivax-Metrotech recommended charger

5.3.5 **Re-fitting the Battery Tray**



Place top of catch over catch plate



Push up button underneath the catch – where holding that up push in the bottom of the catch. You will hear a positive "click" (Do NOT force catches)

To close battery tray – slid transmitter (TX) onto tray, it will locate itself in the correct position, then close the catches.



WARNING! Power "IN" socket



Two pins are used for power in from charger (to charge rechargeable batteries). Two pins are used for power from external 12v source.



NOTE: Rechargeable pack can not be charged from a 12V source.

Contact Vivax-Metrotech or a Vivax-Metrotech approved service center for wiring diagram of plug, if attempting to repair any of the "charging" leads.

5.3.6 Battery Charging and Disposal

Follow instructions detailed in the General Safety & Care portion of this document.

5.4 Battery Condition Indication

The battery condition (charge) is displayed on the left side of the display, in the case of the rechargeable batteries the condition is indicated on the charger (red/green light).