IDEXX Telemedicine
Easy access to outstanding specialists

ECG Teletransmitter
with Limb Plate Electrodes
Operator’s Guide
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Mode of Operation</td>
<td>1</td>
</tr>
<tr>
<td>ECG Transmitting Guidelines</td>
<td>1</td>
</tr>
<tr>
<td>Accessing the Built-in Functions</td>
<td>3</td>
</tr>
<tr>
<td>Built-in Memory for User Options</td>
<td>5</td>
</tr>
<tr>
<td>Screen Legends</td>
<td>5</td>
</tr>
<tr>
<td>IDEXX Telemedicine Limb Plate Instructions</td>
<td>5</td>
</tr>
<tr>
<td>Declaration of Conformity</td>
<td>6</td>
</tr>
<tr>
<td>Specifications</td>
<td>6</td>
</tr>
</tbody>
</table>
Introduction

The IDEXX ECG Teletransmitter is a battery-powered, state-of-the-art, microprocessor-controlled transtelephonic ECG (electrocardiogram) transmitter for veterinary use only. The unit has many built-in features, including a real-time trace and memory for recording up to 60 seconds of a full diagnostic-quality ECG. Automatic transmission mode allows ECGs to be sent by simply pressing a button. Additionally, the teletransmitter has an external speaker that connects to any telephone, allowing complete hands-free operation.

Mode of Operation

The detected ECG signal is amplified and converted to an audio frequency in the 2-kHz region. This audio tone is sent down a standard telephone line simply by placing the speaker hole on the back of the unit next to the microphone piece of the telephone, or by using the 1.0-m extension lead and speaker. This extension speaker can be temporarily secured to the telephone using the attached loop. Automatic 1-mV marker signals indicate every change of lead, and the real-time ECG trace on the LCD screen allows you to assess the quality of the ECG prior to transmission. ECG signals are obtained from the animal using the standard connection of four ECG electrodes.

Important Note: Due to the resolution of the LCD screen, ECG complex heights may appear to vary from a normal ECG. This affects the screen view only. Recorded and transmitted data is unaffected.

ECG Transmitting Guidelines

An ECG records the electrical activity of the heart and is an essential tool in the evaluation of patients with potential cardiovascular disease. The procedure seldom requires sedation and can be completed in approximately 5 minutes or less using the IDEXX Telemedicine ECG Teletransmitter.

Steps:
1. Position the animal.
   - Position the animal on a nonconductive surface (e.g., laminate table or metal table covered with a blanket or rubber mat). The standard position for recording an ECG is to have the patient in right lateral recumbency. The left arm of the attendant should rest over the patient’s hindquarters. The majority of dogs and cats need no chemical restraint.
   - Positioning of the patient is not critical for monitoring of the ECG (analysis of the cardiac rhythm and/or electrocardiographic intervals) when restraint is difficult or when restraint would be hazardous to a patient in respiratory distress. In such cases, the ECG can be transmitted or recorded with the animal standing, sitting or in a recumbent position on the floor or cage as long as there is some padding. Be sure to inform our technician if the position is other than right lateral recumbency.

2. Dial 1-800-347-8300 (North America) or 1-973-339-2958 (international) and have your IDEXX Telemedicine account number ready.

3. Tell the IDEXX Telemedicine ECG technician that you want to transmit an ECG. The technician will ask you for specific information regarding the patient’s medical history, which will be attached to the consultation request.
4. Connect the ECG electrodes to the animal in the following manner:

<table>
<thead>
<tr>
<th>USA-Style Electrodes</th>
<th>UK-Style Electrodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>White—Right Fore</td>
<td>Red—Right Fore</td>
</tr>
<tr>
<td>Black—Left Fore</td>
<td>Yellow—Left Fore</td>
</tr>
<tr>
<td>Red—Left Hind</td>
<td>Green—Left Hind</td>
</tr>
<tr>
<td>Green—Right Hind</td>
<td>Black—Right Hind</td>
</tr>
</tbody>
</table>

**Note:** We suggest placing the electrode clips approximately 1 inch below elbow and knee joints to reduce potential artifact.

5. Turn your ECG teletransmitter on.
   a. When the unit is turned on, the opening screen will display the words **IDEXX Telemedicine** and the version number before proceeding to the **Transmit Mode** selection screen.
   b. Press **Next** to start sending the ECG immediately in Manual mode. The screen clears, the text “MAN” appears on the left side to indicate Manual Mode, and the unit begins transmitting Lead II, as indicated by the speaker noise.
   c. Press **Enter** for the Transmit Mode Options. The screen is replaced by a **Transmit Mode** options screen where the options are either Manual or Automatic mode.

**Note: Choosing a Transmit Mode:**
The IDEXX Telemedicine ECG Teletransmitter can transmit the ECG in either a manual mode or an automatic mode.

- **Manual Mode:** In this mode, the unit transmits the ECG information for the selected lead continuously. To change leads, you must press the NEXT button. You can send any lead for any length of time. A 1-mV marker signal is sent every time a lead change occurs.

- **Automatic Mode:** In this mode, the unit transmits predetermined lengths of ECG leads in succession before returning to Lead II and sending a long rhythm strip. The unit starts with Lead I and sends 7 seconds of all six leads before sending 20 seconds of Lead II. A 1-mV marker signal is sent at each lead change.

   d. To select the mode, press **Next** to move the arrow between **Manual** and **Auto**. To confirm your selection, press **Enter**.

   - **Selecting Manual Mode:** The screen clears and is replaced by a real-time trace of Lead II. The text “MAN” appears in the left corner to indicate Manual mode.

   - **Selecting Automatic Mode:** The screen clears and is replaced by a real-time trace of Lead I. The text “AUT” appears in the left corner of the screen to indicate Automatic Mode. After 7 seconds the display changes to show Lead II information. This is repeated for all leads. At the end of the transmission, the speaker is silenced.

6. Once the transmission is complete, pick up the telephone; our technician will assess the transmission quality and provide you with any necessary guidance.

7. Turn the ECG Teletransmitter off.
Accessing the Built-in Functions

The IDEXX Telemedicine ECG Teletransmitter has seven built-in functions. These are:

- Exit
- Auto Tx
- Replay
- Record
- Speed control
- Height control
- Contrast control

To access these functions, press **Enter** whenever an ECG trace is being displayed. To move to the desired function, press **Next**. To activate a selected function, press **Enter**.

**Exit:**
Selecting this function returns you to the normal, manual mode of transmission. If “recording” or “replay” was in progress, then the process is terminated. In the case of “recording,” all the data is saved.

**Auto Tx:**
This function sets the unit to automatically transmit an ECG with predetermined lengths for all the leads, starting with Lead I and followed by a long Lead II rhythm strip. A 1-mV marker is sent between each lead. The unit’s speaker is silenced at the end of the transmission.

**Replay:**
This function replays the ECG stored in the transmitter’s 60-second memory. As in Transmit Mode, the replay can be either Manual or Automatic. When you select **Replay**, a new screen appears allowing you to select either Manual or Automatic mode.

- In Manual mode, you must change between ECG Leads. As a result, any ECG Lead can be sent for any length of time.
- In Automatic mode, the stored ECG is transmitted in the predetermined format, as in Automatic Live mode.

At the end of the recorded transmission, the text **Replay End** is shown on the screen and the speaker is silenced.

When transmitting a recorded ECG, it should be noted that on every lead change the ECG is sent from the beginning of the recorded time. In this manner, all lead segments are synchronized to the start of the recording.
Record:
This function starts the recording process for up to 60 seconds of recorded data. Before recording commences, a warning screen appears advising that to continue recording will overwrite any existing recorded ECG data. Make your selection to continue or not by pressing Next.

1. To abort and keep the prerecorded data, select No and press Enter.
2. To record new data, select Yes and press Enter. The unit starts recording all ECG Leads immediately, and the text “REC” appears on the left side of the screen to indicate that recording is in process.

   Note: In Record mode, all ECG Leads are saved to memory irrespective of what Lead is displayed on the screen. Also note that in Record mode, there is no marker signal produced when leads are changed.

3. To stop recording at any time, press Enter. This automatically saves all the recorded data up to this point. If recording exceeds the 60-second limit, then the data is automatically saved. After the 60-second limit has been reached, the screen returns to Manual mode as shown by the appearance of “MAN” in the left side of the screen.

Speed Control:
The default trace speed is 25 mm/s. For very fast heart rates, it may be desirable to view these at a faster sweep speed to improve complex clarity. Selecting this function allows a speed of either 25 mm/s or 50 mm/s to be selected.

1. Make the selection using the Next button.
2. To confirm the selection, press Enter. Note that this has no effect on the quality of the stored ECG, only on the screen view.

Height Control:
The IDEXX Telemedicine ECG Teletransmitter has seven selectable Gain Values for viewing the ECG on screen. This allows the viewing of ECG complexes from 0.1 mV up to 10 mV. The default Gain Value is 4.

After selecting the Height Control function, the screen is split into two. The right side shows the actual ECG, and the left side shows the current Gain Value.

1. Pressing Next increases the gain up to a value of 7, after which it returns to 1. The ECG trace shows the actual ECG as it will be viewed for each Gain Value.
2. When you have selected the appropriate Gain Value, press Enter to confirm your selection.
Contrast Control:
The IDEXX Telemedicine ECG Teletransmitter has a user-adjustable contrast control to allow the optimum setting of the screen contrast. When you select this function, a text screen appears.

1. Press **Next** to change the contrast.
2. When the correct contrast is selected, press **Enter**.
   
   **Note:** The control rolls over, so that continually pressing **Next** results in the screen going from very dark to very light and then back to very dark again.

Built-in Memory for User Options
The IDEXX Telemedicine ECG Teletransmitter has its own memory for user-selectable options. Every time you make a selection, the user preferences are saved and used the next time you turn the unit on. Specifically, the following options are saved: Speed, Contrast and Gain Controls.

Screen Legends
Various legends may appear in the left side of the screen during different operating modes. Their meanings are as follows:

- **MAN**—Manual Transmission Mode
- **AUT**—Automatic Transmission Mode (live data)
- **REP**—Replay Mode (manual or automatic)
- **REC**—Record Mode
- **BAT**—The unit’s battery voltage is too low. Replace the battery.
- **I, II, III, AVR, AVL, AVF**—Indicates which lead is currently being transmitted.

IDEXX Telemedicine Limb Plate Instructions

Limb plate electrode tips:

- Clips and/or limb plates should be saturated with alcohol (not water or gel).
- Cotton or gauze soaked in alcohol can be placed between the clip and the skin to increase patient comfort.

To set up the limb plates:

1. Uncoil the hook-and-loop limb plates on a flat, even surface.
2. Remove the clips from all the leads.
3. Insert the pin at the end of each lead into the cylinder on each limb plate.
To place the limb plates on an animal:
1. Wet (saturate) the lower area of each leg with alcohol.
2. Place a limb plate on each limb according to the lead’s label (e.g., Red: L. Hind).
3. Place the flat plate on the flat part of the leg just above the paw (where we would wear a watch).
4. Wrap the hook-and-loop side of the strap around the leg to make a snug fit.

To use the limb plate electrodes on small animals:
1. Place the limb plate electrode on the limb just above the carpus on the front limb or on the metatarsal area on the hind limb.
2. Secure the electrode firmly in place using the wraparound hook-and-loop strap.
3. If not already fitted, push the banana plug from each lead into the connector of the limb plate.
4. Thoroughly wet the area using surgical spirit or electrolyte solution.

NOTE: The broad area of the limb plate and the wetness of the fur are usually sufficient to provide good contact and ECG signals, without the need to clip any fur.

Declaration of Conformity
This unit conforms to the following standards:

EN 50 082 Generic immunity standard* and EN55 024 (EN55 101) part 2.
EN 50 081 Generic emission standard and EN 55 022 Class B, radiated emissions.
(EN 55 022 equivalents: CISPR22, BS6527, VDE0878 part 3)
FCC Rules Part 15 (1990) emission standard Class B and Class A.

*It is noted that in the application of this standard, the manufacturer declares that some degradation of performance is expected under strong R.F. fields as per IEC 801 part 3. Such degradation is temporary and self-recoverable. This may limit use in the presence (within 50 cm) of some mobile telephones or walkie-talkie devices.

Specifications
Size: 125 x 80 x 38 mm
Weight: 175 g
Construction: Dark Grey ABS
Power Supply: 9 Volt PP3 battery @ 6.5 mA
6-channel Lead ECG amplifier (4 Limb Leads)
Transmission by frequency modulation of audio carrier wave
Maximum Recording Time: 57 seconds
Memory Banks: One memory store for up to 57 seconds of recorded data
Recorded Data: Lead I, Lead II, Lead III, Lead aVL, Lead aVR, Lead aVF.
Sampling Frequency: 300 samples per second
IDEXX Telemedicine

Phone Numbers

U.S. and Canada
ECG Teletransmissions 1-800-347-8300
Customer Care and Billing 1-800-726-1212

All Other International
ECG Teletransmissions 1-973-339-2958

E-Mail Address
Send requests for information to: telemedicinesupport@idexx.com

Internet
Web Site: idexx.com/telemedicine
Case Submission: vetmedstat.com

Switchboard Hours of Operation (Eastern Time)
Monday through Friday 7:30 a.m.–11:00 p.m.
Saturday 8:00 a.m.–9:00 p.m.

Holiday Closures
New Year’s Eve (close at 8:00 p.m.) • New Year’s Day • Memorial Day • Fourth of July
Labor Day • Thanksgiving • Christmas Eve (close at 8:00 p.m.) • Christmas Day