

Transmitter Manual – DAI 10

5.3

INTRODUCTION

The DAI 10-channel telephonic EEG transmitter is a precision clinical test instrument, designed for use in conjunction with a remote receiver and an EEG writer unit to form a complete system for the telephonic transmission of 10-channels of EEG data. The DAI 10-channel transmitter has been designed for simplicity of operation and incorporates many features intended to make this instrument as uncomplicated and easy to use as possible. The quality of the final EEG recording, however, requires the conscientious efforts of the transmitting technician in patient handling, history taking, electrode application and adherence to assigned test procedures. These and other areas are covered in depth by additional technical literature available upon request from TELEMEDX Corporation. The scope of this manual is limited to those topics which relate directly to the actual operation of the transmitter.

EQUIPMENT DESCRIPTION

This section describes the operation of all controls, switches, and indicators on the DAI-0 transmitter. As you read through this section be sure to locate each feature as it is described in the reference figures, as well as the actual unit. As the transmitting technician, it is your responsibility to familiarize yourself with the location and operation of all transmitter controls.

2.1 Front Panel Features (see Figure 1)

1. The FUNCTION (CHARGE/OFF-TALK-TRANSMIT) switch is used to turn the transmitter ON for telephone communication and data transmission or to the OFF position to charge the internal battery when connected to the battery charger.

The CHARGE/OFF position turns off the transmitter and will recharge the internal battery when connected to the battery charger.

The TRANSMIT position: The center, TRANSMIT position allows the transmission of the patient EEG data to the Receiving Center.

2. The CHARGE section contains a charge light and jack. The CHARGE light verifies proper BATTERY/CHARGER interface. With the battery charger plugged into the transmitter CHARGE jack, the battery charge light will turn "ON" when batteries are being charged. **NOTE: The battery charger should never be connected when transmitting.**
3. BATTERY CHECK: With the transmitter in the TALK or TRANSMIT position, push the red BATTERY CHECK button: the green light will turn "ON" if the battery is fully charged; if "OFF" (there is no green light illuminated), the battery needs charging.

Do not attempt to operate the transmitter if the battery test light does not turn ON, indicating a low BATTERY. In this condition the unit must be charged (preferably overnight) before operation.

4. The CALL light, when flashing, indicates that the Receiving Center wishes to communicate with the transmitting tech. Return to the telephone for instructions.
5. The red SIGNAL button is used to alert the Receiving Center that you wish to communicate with them or to mark the record for changes in procedure, i.e. EO, EC, HV, start and stop. After pushing the CALL button, return to the telephone for instructions.
6. TIMER SECTION: The PRESET "U" button will sequence the time display up and the "D" button will sequence the display down. The START-STOP button is used to start and stop the digital timer. Set the "U" button to the desired time display. When the START-STOP button is pushed, the timer will start and display the elapsed time in minutes and seconds. When the timer reaches zero a tone will be generated. By pressing both the "U" button and the START-STOP button simultaneously the timer will reset to your original setting.
7. The MONTAGE switch is used to change the Run or Montage and selects the electrodes for connection to the amplifier for any given Run.

In the CAL position an internal calibration signal is transmitted. This signal verifies proper transmitter operation and telephone interface. With the Montage switch in the CAL position, the CAL light will be "ON" during the calibration.

8. The SENSITIVITY controls determine the sensitivity of the transmitter's amplifiers in microvolts per millimeter (uv/mm). These controls are normally set at "10", unless otherwise instructed by the Receiving Center. Sensitivity settings of 2, 5, 10, 30 and 75 are available.
9. The ELECTRODE CHECK section is used to test the individual electrodes. To test the impedance of applied electrodes, select an electrode on the ELECTRODE CHECK switch, place the 3-position toggle switch (TEST-TRANSMIT-CAL) to the TEST position, and read the meter. Good electrode contact is indicated by a reading of 2-10 K-Ohms on the scale. All electrodes on the ELECTRODE CHECK switch are tested in reference to the ground electrode.

Figure 1: Front Panel

2.2 Back Panel Features (see Figure 2)

1. TELEPHONE JACK: This jack is used to connect the transmitter to the telephone system when used in conjunction with a modular telephone cord, "T" adaptor and telephone set.
2. The FUSE protects the transmitter's battery operated circuitry and is located on the back panel of the transmitter. If the POWER is turned ON and the transmitter does not function, this fuse should be checked.
3. The ELECTRODE JACK-BOX (Headbox) connector is the means for connecting the electrodes to the transmitter and contains 22 tip jacks which are located and labeled according to the International 10-20 System. These jacks accept the individual disc electrode plugs, ear clip plugs, accessory input sensors and headband or electro-cap adaptor cables, depending upon which system is used. When a plug is inserted into an electrode jack it should fit tightly. A firm grip at the base of the plug (not the wire) is needed to insert or remove an electrode. A loose-fitting jack can be a potential source of artifacts.

There is a secondary jack on the end of the jack-box to accommodate the electro-cap or headband system.

Figure 2: Back Panel

2.3 Transmitter Accessories (see Figure 3)

The following are standard and optional accessories which may be supplied with the transmitter, but do not include electrodes, headband or electro-cap systems.

1. The BATTERY CHARGER is intended only for use in recharging the internal battery.* One of the two wires coming from the Battery Charger is inserted into a 115V A.C. electrical outlet, and the other is plugged into the BATTERY CHARGER jack located on the front panel of the transmitter.

The battery charger should be cycled 12 hours on charge (plugged in) and 12 hours off (unplugged). A standard 24-hour timer can be used to cycle the charge time.

***NOTE: FOR MAXIMUM PATIENT SAFETY AND ELIMINATION OF ELECTRICAL INTERFERENCE, THE BATTERY CHARGER MUST BE DISCONNECTED PRIOR TO PATIENT CONNECTION AND TRANSMITTER OPERATION.**

2. **POWER PACK:** The power pack consists of two (2) nickel cadmium rechargeable batteries. The batteries are installed in battery compartment located on the bottom panel. Two screws hold the cover plate in place.

To install the batteries:

- a) Remove the battery cover plate.
 - b) Remove the adjustable battery "end plate".
 - c) Insert each battery, matching the "black" and "red" polarity markers on the battery to the compartment.
 - d) Insert the battery "end plate". Check to see if the battery clips are making contact with the battery terminals.
 - e) Replace and securely tighten the battery cover plate before proceeding with normal operation.
3. **BACK UP BATTERY SUPPLY:** For temporary use, it is possible to transmit data using eight (8) new "D" size alkaline flashlight batteries. When utilizing flashlight cells, the battery "end plate" must be relocated to compensate for the difference in battery size. Reposition approximately 2" from the inside-end of the battery compartment. **DO NOT CHARGE ALKALINE BATTERIES.**
 4. The **MODULAR TELEPHONE CORD** is a seven-foot phone line connection cord. One end of the telephone cord connects to the jack on the back panel of the transmitter. The other end connects to the modular "T" adaptor.
 5. The **MODULAR "T" ADAPTOR** is a small plastic device which permits the telephone and the transmitter to be connected simultaneously to a single RJ11 modular telephone jack.

TELEPHONE CONNECTION

3.1 Modular Connection (see Figure 3)

This is the preferred method of connecting the transmitter to the telephone line, requiring a modular telephone T-adaptor (Type RJ11) and a telephone which plugs into this jack with a modular telephone cord. It is the standard type of installation now being provided. If you do not have this type of phone equipment at your facility, we strongly suggest that you contact your local telephone company and have them install it for you.

Please refer to Figure 3. There is a telephone cord extending from your telephone set which is plugged into the modular telephone jack (which is usually mounted on the wall). Pressing down on the small plastic tab on the connector will permit the phone cord to be removed from the jack. The "T" adaptor is then inserted into this jack. The phone cord may now be reinserted into either of the available "T" adaptor jacks. The plastic plug end of the modular data cord is then connected to the remaining "T" adaptor jack. The other end of the modular data cord is attached to the transmitter at the telephone jack on the back panel.

Figure 3. TELEPHONE CONNECTION

To use the telephone for dialing or communication, the FUNCTION switch must be turned to TALK. After you have reached the Receiving Center and when you are ready for transmission, turn the knob to the TRANSMIT position and hang up the telephone – in that order. While the transmitter is on and sending data, the telephone must be hung up to prevent the background room noise from causing artifacts or interference on the record.

If the Receiving Center technical staff wishes to talk to you, turn the FUNCTION switch to TALK, and return to the telephone.