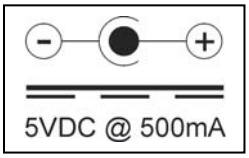
DTS Analog Output Module®

User Manual

P-5818 Rev B (July 2010)

Icons and Symbols

The following international icons and symbols are found on the DTS Analog Output Module enclosure. Their meaning is described below.



Power Supply Symbol: This symbol indicates that the DTS Analog Output Module requires a 5 VDC power supply capable of providing at least 500 mA of current.

Attention: This icon alerts the user to important information. Carefully read and understand all sections of this document displaying this symbol.

DTS Analog Output Module Introduction

The DTS Analog Output Module is designed to output up to 16 channels of DTS EMG/Sensor data to a data capture system. A DB25 Stripped & Tinned cable connects the DTS Analog Output Module to any third party system that accepts analog data. The Analog Output Module requires wall power and the DTS Belt Receiver. This configuration does not support USB. Consequently, the unit cannot output analog data and simultaneously send data to the PC via USB. When the Belt Receiver is connected to the Analog Output Module, it cannot be connected to a PC via USB. If you need analog output and USB simultaneously, you will need to purchase the TeleMyo 2400R G2 receiver.

TeleMyo 2400 DTS Analog Output Module Setup

Step #1 – *UNPACK ALL ITEMS AND CHECK INVENTORY*

The following items should be included with the DTS Analog Output Module (see following figures).

1. DTS Analog Output Module (Part # 581)
2. DTS Analog Output Module 5VDC Power Supply (Part # 581A)
3. DB25 Analog Output Stripped & Tinned Cable (Part # 2917A)
4. DTS Analog Output Module Manual (This Document) (Part # 581B)

DTS Analog Output Module Components

1. DTS Analog Output Module (Part # 581)

2. 5VDC Power Supply (Part #581A)

3. DB25 Analog Output Stripped & Tinned Cable

Controls and Displays

Front side:

1. Power Supply receptacle

Back Side:

2. Link port with cable attached

Right Side:

3. Analog Out DB25 connector

Step #2 – *CONNECT THE SYSTEM*

Overview

Belt Receiver:

1. Assign sensors to channel numbers. (This step is usually done before the unit is shipped.)
2. Enable channels you are using; Disable channels you are not using.
3. Set the Sensor Delay

Analog Output Module:

4. Connect the DB25 Stripped & Tinned cable to the Analog Output Module and the data capture system.
5. Insert Power Supply (part # 581A) into the Analog Output Module, then into the wall outlet.
6. Insert the Analog Output Module link cable (attached to unit) into the Belt Receiver.
7. Start a measurement.

Details

1. On the Belt Receiver, assign sensors to channel numbers

Pairing EMG Sensors and Other Sensors with the TeleMyo DTS

Before a measurement can be started the TeleMyo DTS must be informed which sensors it will be using. This is accomplished by assigning sensor serial numbers to each available channel.

Serial number on DTS Probe

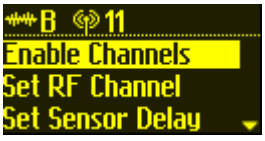
1) Turn on the TeleMyo DTS Belt Receiver 	**2)** Press Enter to get the Main Setup screen. 
3) Select "Setup Sensors" and press Enter. 	**4)** Select "Assign Sensors" and press Enter. 
5) Select the Channel Number you would like to change and press Enter. 	**6)** Use the Up and Down arrow keys to change the selected digit. Use the Left and Right arrow keys to select the digit you want to change. 
7) Select "OK" and press Enter when finished. 	**8)** Repeat steps 5-7 for each Channel you want to change.
9) When finished, scroll to the bottom of the channel list, select "Save" and press Enter. 	**Enter Button** 

NOTE: After the sensor channel assignments are set up, the settings are stored in the Belt Receiver. Most users will not need to change these settings unless they purchase additional EMG Sensors or sensors.

2. On the Belt Receiver, Enable channels you are using; Disable channels you are not using.

Enabling Channels when using the Analog Output Module

When measuring with the Analog Output Module, the channels need to be enabled and/or disabled in the Belt Receiver.

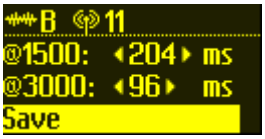
<table>
<tr>
<td>1) Press Enter to get the Main Menu.
 
</td>
<td>2) Select Setup Sensors and press Enter.
 
</td>
</tr>
<tr>
<td>3) Select Enable Channels and press Enter.
 
</td>
<td>4) For each channel, use the Left/Right keys to enable/disable measurement for the current channel.
 
</td>
</tr>
<tr>
<td>5) Select Save at the bottom of the list and press Enter. The settings will be saved in memory until you change them again.
 
</td>
<td>Enter Button  </td>
</tr>
</table>

NOTE: For the system to work properly, you must turn off (disable) the channels you are not using.

3. On the Belt Receiver, set the Sensor Delay.

The DTS sensors have a selectable delay buffer. Each sensor buffers (stores) older data in case the belt receiver does not receive it. If data is lost due to RF interference, the belt receiver can request a data packet be resent. A longer delay allows a longer time for data to get through under poor conditions. However, it results in extra delay that may not be desirable for biofeedback situations. The current sensor delay is displayed on the belt receiver during each measurement. The Sensor Delay is configurable via the belt receiver Sensor Setup menu.

To set the delay:

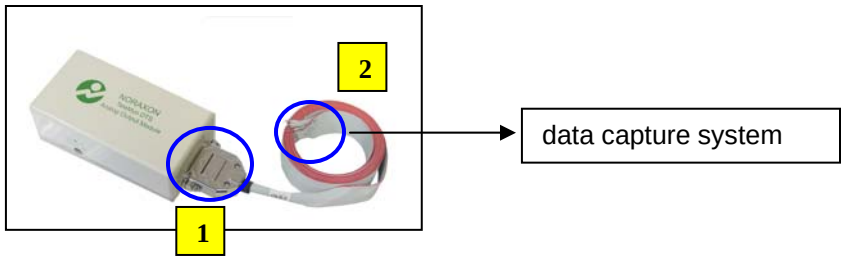
<table>
<tr>
<td>1) Press Enter to get the Main Menu.
 
</td>
<td>2) Select Setup Sensors and press Enter.
 
</td>
</tr>
<tr>
<td>3) Select Set Sensor Delay and press Enter.
 
</td>
<td>4) Use the Left/Right keys to set the desired delay. If a longer delay is not a problem, set the delay to the highest setting for optimum data integrity.
 
</td>
</tr>
<tr>
<td>5) Select Save and press Enter.
 
</td>
<td>Enter Button  </td>
</tr>
</table>

NOTE: Although the Belt Receiver shows a sampling rate of 3000 Hz, the DTS Analog Output Module only operates at 1500 Hz. If you set the sampling rate to 3000 Hz on the Belt Receiver, it will default to 1500 Hz when a measurement is started.

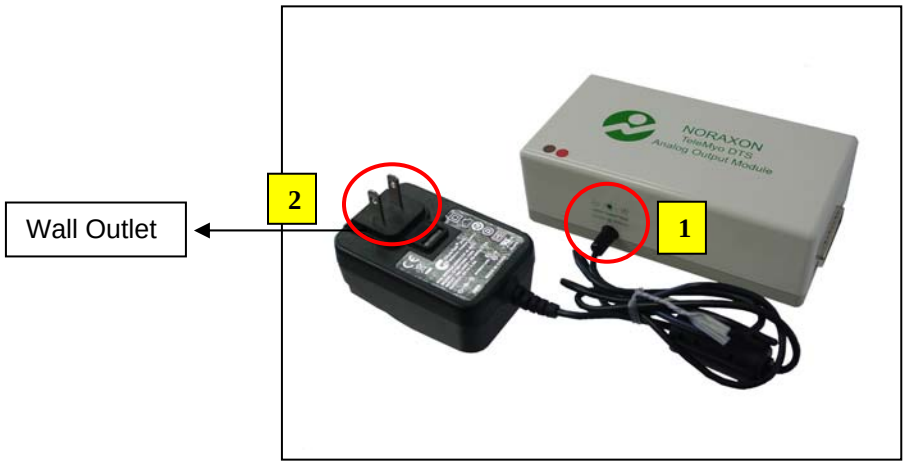
NOTE: The minimum delay for the DTS Analog Output Module is 84 ms at 1500 Hz. If a lower value is selected, it will default to 84 ms.

4. Connect the DB25 Stripped & Tinned cable to the Analog Output Module and the data capture system.

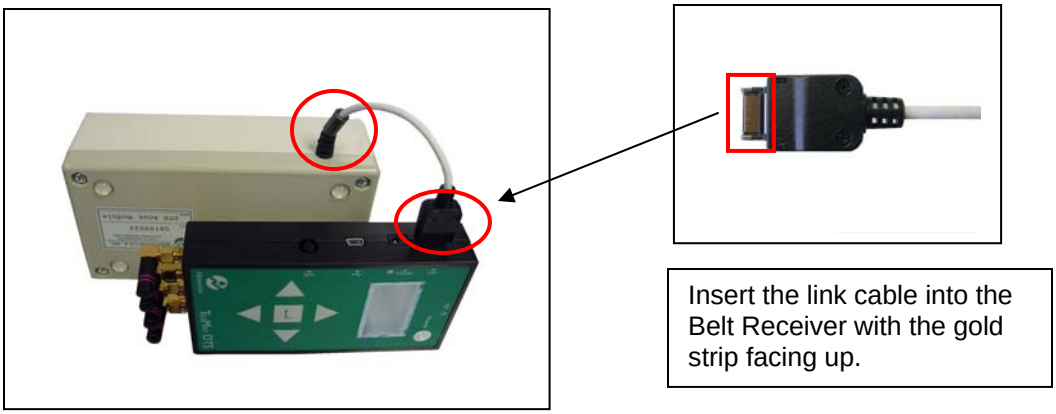
1) Insert the DB25 connector into the Analog Output Module DB25 receptacle.
2) Connect the Stripped & Tinned wires to your data capture system. Refer to page 11 for the DB25 cable pinout.



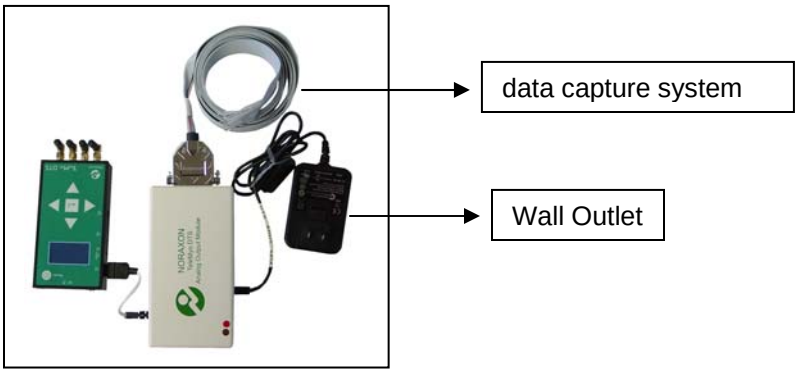
5. Insert Power Supply (part # 581A) into the Analog Output Module (1), then into the wall outlet (2).



6. Insert the Analog Output Module link cable (attached to unit) into the Belt Receiver.

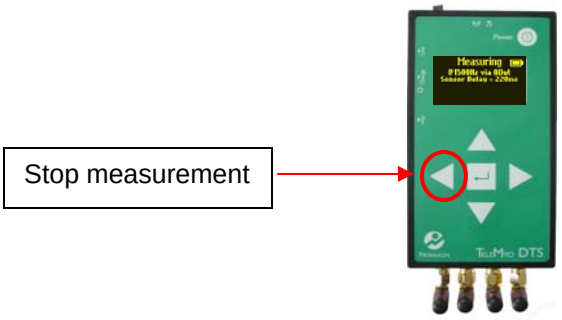


Your system should look like this:



7. Turn on the Belt Receiver and start a measurement. (Press the right arrow key to start a measurement.)

8. When finished, press the left arrow key on the Belt Receiver to stop the measurement.



Maintenance

The DTS Analog Output Module is designed to be maintenance free.
Care should be exercised not to place or stack objects (especially liquids) on top of the Analog Output Module.

Cleaning

The DTS Analog Output Module can be wiped down with a damp cloth using a mild soap or detergent and water. Before cleaning any portion of the system, the Analog Output Module should be unplugged from the wall.

DTS Analog Output Module Cable and Accessory Connection/Disconnection.

1. AC Power Adapter

The Universal AC to 5 VDC Power Converter is used to power the DTS Analog Output Module. Use only Noraxon part number 581A.

2. DB-25 Analog Connector and Cable

This connector is available for general use with cables supplied by Noraxon or other manufacturers. All analog signals vary between +/- 5 volts. The DB-25 connector pin assignments are as follows:

All Signals Are Outputs

pin	upper row signals	pin	lower row signals
1	EMG lead 1 (red wire)	14	EMG lead 14
2	*EMG lead 2*	*15*	*EMG lead 15*
3	*EMG lead 3*	*16*	*EMG lead 16*
4	*EMG lead 4*	*17*	*analog signal common*
5	*EMG lead 5*	*18*	*analog signal common*
6	*EMG lead 6*	*19*	*analog signal common*
7	*EMG lead 7*	*20*	*analog signal common*
8	*EMG lead 8*	*21*	*analog signal common*
9	*EMG lead 9*	*22*	*analog signal common*
10	*EMG lead 10*	*23*	*not connected*
11	*EMG lead 11*	*24*	*not connected*
12	*EMG lead 12*	*25*	*analog signal common*
13	*EMG lead 13*	*shell*	*not connected*

Specifications

Power Requirements:

- Operates on 5 VDC at 500 mA using a 110-240 VAC 50/60 Hz external supply

Analog Outputs

- All outputs +/- 5V full scale
- All reconstructed analog output channels have low pass smoothing filters to remove sampling frequency artifacts.
- Selectable signal regeneration delay: 84 - 312 ms +/- 1ms
- Supports 1500 Hz sampling frequency

Dimensions:

- 5⅞″ L x 3⅛″ W x 1⅞″ H (14.923 cm L x 7.938 cm W x 4.763 cm H)
- Weight: 7.3 oz (207 grams)

Schematics and Parts List

Noraxon will make available (on request) circuit diagrams, components parts lists and calibration instructions to assist qualified technical personnel in the service and maintenance of the DTS Analog Output Module. Please contact Noraxon World Headquarters USA or the Authorized European Representative.

Noraxon USA, Inc.
13430 N. Scottsdale Road Suite 104
Scottsdale, AZ 85254
Toll Free: (800) 364-8985 (US/Canada Only)
Phone: (480) 443-3413
Fax: (480) 443-4327
www.noraxon.com
info@noraxon.com

EC REP **Authorized European Representative:**
Velamed GmbH
Contact: Ingrid Konrad
Grafen-von Bergstr. 10
Cologne, Germany 50769
Phone: (49) 221-7910976
Fax: (49) 221-9792992
www.velamed.com
i.konrad@velamed.com

Transport and Storage

The DTS Analog Output Module is capable of transport and storage in environmental conditions within the following ranges:

Ambient Temperature: -40 degrees C to +70 degrees C
Relative Humidity: 10% to 100%
Atmospheric Pressure: 500hPa to 1060hPa