

Product Manual

Wireless Sync Trigger System Manual



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Noraxon Wireless Sync Trigger System Checklist

The Wireless Sync Trigger is a versatile system. It can be used with various systems along with Noraxon's MyoSystem 1400A and TeleMyo 2400T/R to set markers in the data or determine a common start time. It can also be used to sync the video to the EMG data.

Step #1 – Unpack All Items and Check Inventory

The following items should be included with the Noraxon Wireless Sync Trigger System (See figures on page 3)

1. Wireless Sync Transmitter (Part # 232)
Note: Part #232A is for North American radio (914 MHz)
Part #232B is for European radio (868 MHz)
2. Wireless Sync Receiver (Part # 233)
Note: Part #233A is for North American radio (914 MHz)
Part #233B is for European radio (868 MHz)
3. 1.5v AA Battery x 2 (Transmitter) (part #BATT2) Not Pictured
1.5v AA Battery x 2 (Receiver) (part #BATT2) Not Pictured
4. Cables – Single Active Lead Adapter Cable (3.5mmF to Alpha) (part #CBL5)
Other cables may be provided depending on use
5. Wireless Sync Trigger Nylon Belt Pouch for receiver (part # 085D)
6. Wireless Sync User Manual (part #238A) This document

Wireless Sync Trigger Components



1. Wireless Sync Trigger Transmitter (Part #232)



2. Wireless Sync Trigger Receiver (Part #233)



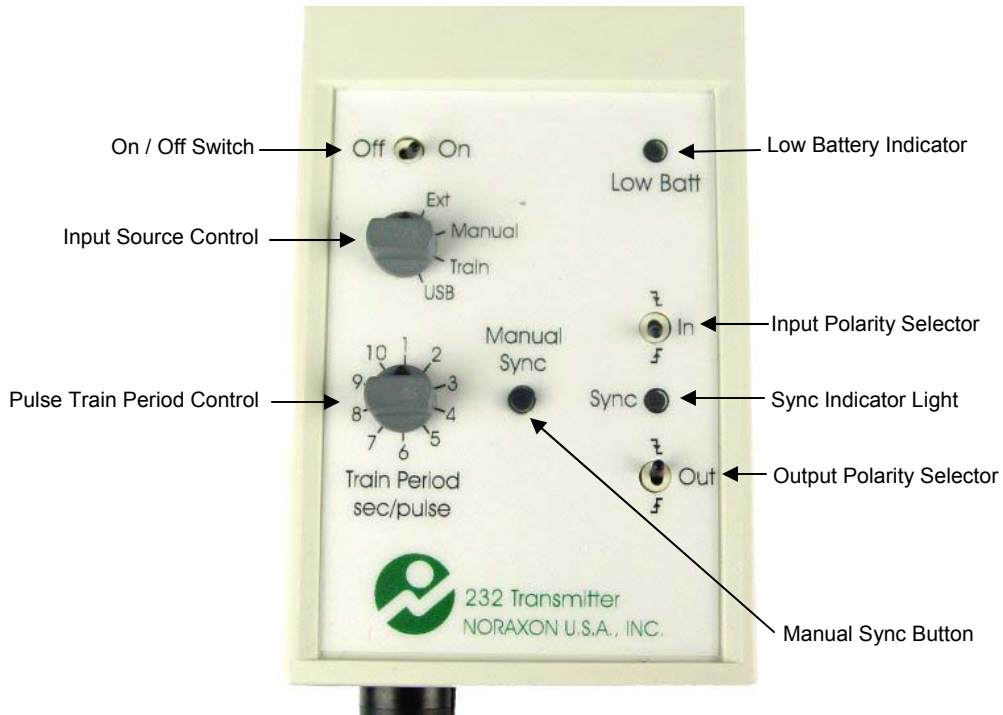
3. Single Active Lead Adapter Cable
(Part # CBL5)



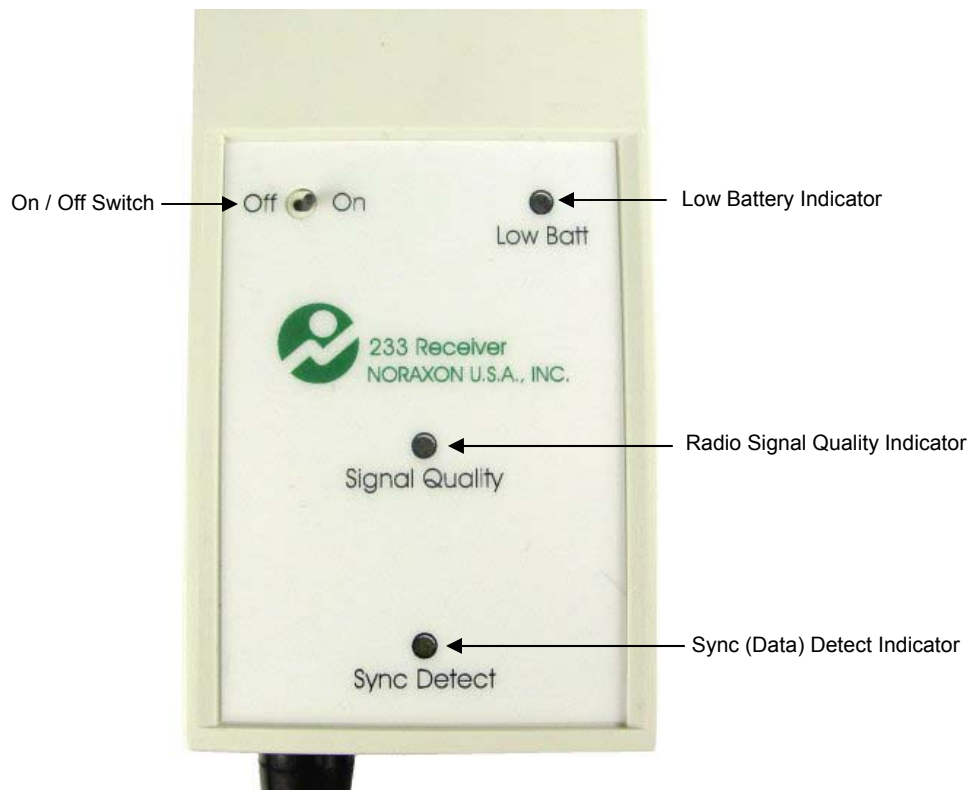
4. Wireless Sync Trigger Nylon
Belt Pouch (Part # 085D)

Controls and Displays

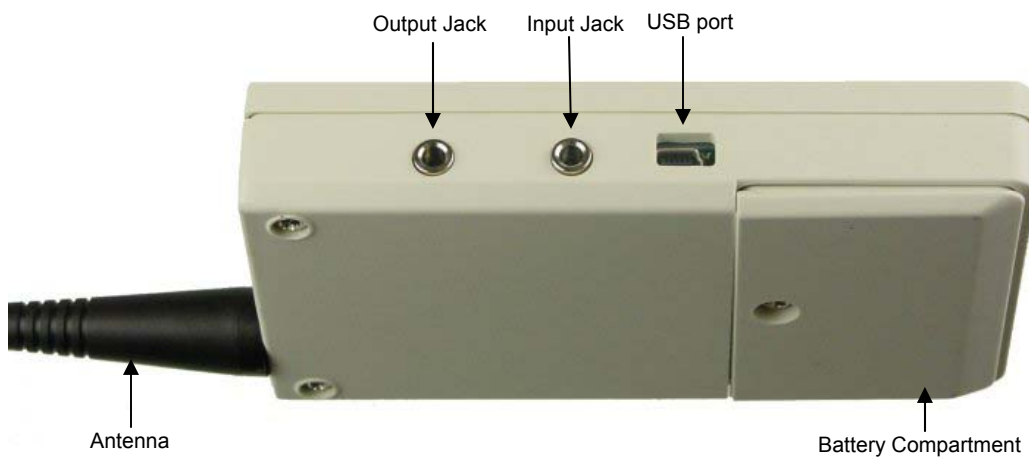
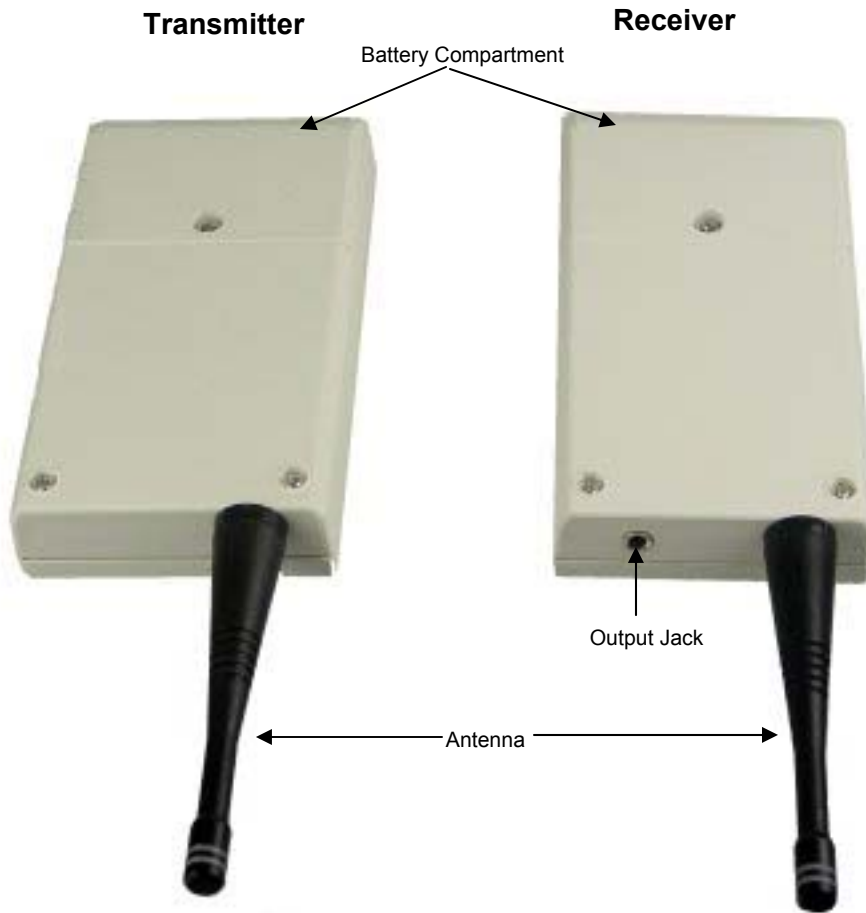
Transmitter Front Panel



Receiver Front Panel



Rear & Bottom Panel



Transmitter Right Side

Explanation of Controls

Transmitter

Front Panel:

On or Off Switch: Place this switch in the “on” position to operate the Transmitter.

Input Source Control:

Ext: “External Source” Use this setting if an external system (e.g. motion capture or isokinetic system) will be sending the sync signal to the Noraxon system.

Manual: The sync signal will be sent to the third-party system and the receiver by pressing the “Manual Sync” button on the Transmitter.

Train: A pulse will be sent at a defined period set. This period set is an automatic 100ms pulse spaced by the number of seconds set by the “Pulse Train Period Control”.

USB: Future development

Pulse Train Period Control: This control is used when the “Input Source Control” is set to “Train”. This dial determines the number of seconds (from 1 to 10) between the pulses.

Low Battery Indicator: This light illuminates when the battery is low and needs to be replaced.

Input Polarity Selector: This Selector is used when an external system is sending the sync signal. The switch is set according to the polarity of the signal being sent by the external system.

Output Polarity Selector: This Selector is used when the Noraxon system is sending the sync signal to an external system. The switch is set according to the polarity of the external system.

Sync Indicator: This light illuminates to indicate that a sync signal was sent to the receiver.

Manual Sync Button: This button is used to manually send a sync signal to the Noraxon and external system.

Back Panel:

Battery Compartment: Unscrew the battery compartment panel with a Phillips screwdriver and replace the old batteries with two 1.5 Volt AA batteries.

Right Side Panel:

USB port: future development

Input Jack: A 3.5mm stereo plug from an external system is plugged into this jack. External systems send the sync signal to the Noraxon system.

Output Jack: A 3.5mm stereo plug from an external system is plugged into this jack. A sync signal is sent from the Noraxon system to the external system.

Receiver

Front Panel:

On or Off Switch: Place this switch in the “on” position to operate the Receiver.

Low Battery Indicator: This light illuminates when the battery is low and needs to be replaced.

Radio Signal Quality Indicator: This light indicates the quality of the radio signal. A green light indicates a good signal and a yellow light indicates a poor signal.

Sync (Data) Detect Indicator: This light illuminates when a sync signal is sent to the receiver by the transmitter.

Rear Panel:

Battery Compartment: Unscrew the battery compartment panel with a Phillips screwdriver and replace the old batteries with two 1.5 Volt AA batteries.

Bottom Panel:

Output Jack: A 3.5mm stereo plug is inserted into this jack (cable 5) and the other end (binder connector) is plugged into the TeleMyo 2400T. The sync signals from the transmitter are captured by the receiver and sent to the transmitter to be recorded in MyoResearch XP.

Antenna: Ensure that the antenna is pointing down away from the patient’s/subject’s face.

Wireless Sync Trigger Applications

Wireless Marker Scheme

The most common application for the Wireless Triggers is as a wireless marker. The wireless trigger allows a system, e.g. motion capture, external trigger device, force plate, to set a common marker in all of the data acquisition systems. This means that at a point in time a marker is set in the Noraxon system and in the external system, e.g. motion capture. This information can be used later when the data is analyzed. For Noraxon's MyoSystem 1400A or TeleMyo 2400T/R, an EMG channel is used for the marker. MyoResearch 98 or MyoResearch XP is able to take this data and automatically set markers in the EMG data. The device settings used in MyoResearch 98 or XP for the marker channel will vary depending on the device used for the marker.

Common Start Time

Another common application is to start all the systems at the same time. With all the systems in monitoring mode, the common trigger will be sent to the systems which will cause them to start recording. In MyoResearch XP, this needs to be set up using the option "Recording Options" in the "Meas. Options" menu. After choosing "Recording Options", choose "Continuous Recording". Click on the "Triggering" tab. Indicate at which point to start recording, e.g. when the marker channel rises above 2V. You can also set a stop recording point or limit how long you want to record after the trigger.

Sync Video to EMG

Sometimes the video may lose sync with the EMG. The Wireless Sync Triggers can generate a marker that can be used in conjunction with a flash or light source to synchronize the video with EMG. With a special adapter, the marker may be fed into the audio input of the video camera instead.

Noraxon Wireless Sync Trigger Hardware Setup

Step #2 – Setting Up the Wireless Sync Trigger

1. If you are using the Nylon Belt Pouch, place the Wireless Sync Receiver into a pouch.
2. Connect the proper cable from the system that will be setting the marker, to the Wireless Sync Transmitter. Refer to the following pages for detailed information.
3. Connect the proper cable (CBL5 in most cases) from the Wireless Sync Receiver to the Noraxon system. The Receiver can be connected to the TeleMyo 2400T/R using one of the 4 pin analog input channels.

The wireless transmitter unit would normally be attached to the non-Noraxon system. If the non-Noraxon system has a “start” or “trigger” output signal, it is used as an input to the wireless transmitter. If the non-Noraxon system has a “start” or “trigger” input, then the wireless transmitter is used to create a manual trigger command using the “Manual Sync” button.

TeleMyo 2400T connected to the Wireless Sync Receiver



Step #3 – Setting Up MyoResearch

The setup for MyoResearch 98 and XP will vary depending on the system used for the trigger. Below are some values for the Multi-Mode FootSwitch as an example.

MyoResearch XP Software: Open the MyoResearch XP software on your computer and click on the measure button. Enter the measurement channels making sure you select the proper channels as indicated above for each system.

Multi-Mode FootSwitch Settings:

Min Volt: 0 Max Volt: 4
Min Value: 0 Max Value: 4.000
Amplitude: 5 Units: Volts # Dec: 3 (# of decimal places)

MyoResearch 98 Software: Open the MyoResearch software and click on the measure button. Enter the measurement channels making sure you select the proper channels as indicated above for each system.

Multi-Mode FootSwitch Settings:

Min Volt: 0 Max Volt: 4
Min Value: 0 Max Value: 4000
Amplitude: 5000 Units: mV

(Note: Values are calculated using mV because three decimal places are rounded to the nearest whole number in the software.)

Technical Specifications

System

- Power: two 1.5 Volt AA batteries
- Transmitter operates at 3VDC 15-30mA
- Receiver operates at 3VDC 30mA
- Battery Life: 60 hrs continuous use

Carrier Frequency

- European version: 869.85 MHz
- North American version: 914.5 MHz

Transmitter Input Signal Requirements

- Pulse Lo < 0.4V
- Pulse Hi > 0.7V Max (+5.0 V)
- Pulse frequency from DC-200 Hz

Transmitter (Cable) Output

- Pulse Lo \leq 0.4V
- Pulse Hi \geq 2.4V Max (3.3V)

Receiver Output

- Pulse Lo \leq 0.4V
- Pulse Hi \geq 2.4V Max (3.3V)
- Pulse Latency < 0.8 ms

Physical (enclosure only – antenna and knobs/switches are not included)

- Length: 4.75" (12 cm)
- Width: 2.5" (6.4 cm)
- Height: .875" (2.2 cm)
- Weight: Transmitter - 4.9 oz (138.91 gm), Receiver – 5.3 oz (150.25 gm)

Physical (Including antenna and knobs/switches)

- Length: 6.5" (16.51 cm)
- Width: 2.5" (6.4 cm)
- Height: Transmitter – 1.00" (2.6 cm), Receiver – 0.9" (2.3 cm)

Range:

- Inside: 80 ft (25 meters)
- Outside: 240 ft (75 meters)