



MEASURING FOR EXCELLENCE

# MYO SYNC® User Manual



For questions, concerns or additional assistance please contact Noraxon or its Authorized Representative as specified below.

## - Manufacturer:

Noraxon U.S.A. Inc.  
15770 North Greenway-Hayden Loop, Suite 100  
Scottsdale, AZ 85260  
Tel: (480) 443-3413  
Fax: (480) 443-4327  
Email: [info@noraxon.com](mailto:info@noraxon.com)  
Support Email: [support@noraxon.com](mailto:support@noraxon.com)  
Web Site: [www.noraxon.com](http://www.noraxon.com)

## - Authorized European Representative:

EC	REP	Advena Limited, Tower Business Centre, 2nd Flr., Tower Street, Swatar, BKR 4013 Malta
----	-----	--

Website: <http://www.advenamedical.com>



**CE Mark:** This symbol indicates the clearance to market this product in the European Community.

No part of this document may be copied, photographed, reproduced, translated, or reduced to any electronic medium or machine-readable form without prior written consent of Noraxon U.S.A. Inc.

Noraxon and myoRESEARCH are registered trademarks and the Noraxon logo, myoANALOG, myoFORCE, myoMETRICS, myoMOTION, myoMUSCLE, myoPRESSURE, myoVIDEO, myoSYNC, NiNOX, TRUsync and Ultium are common-law trademarks of Noraxon U.S.A., Inc. All other trademarks are the property of their respective owners. ©2018, all rights reserved.

## TABLE OF CONTENTS

<b>Section 1: Introduction</b>	
<a href="#">Brief Description</a>	1
<a href="#">Intended Use</a>	1
<a href="#">Contraindications</a>	1
<b>Section 2: Definitions</b>	
<a href="#">Graphic Symbols and Meanings</a>	2
<a href="#">Glossary of Terms</a>	2
<b>Section 3: Identification</b>	
<a href="#">Model Designation</a>	3
<a href="#">Product Versions and Configurations</a>	3
<b>Section 4: General Warnings and Cautions</b>	
<a href="#">Risks and Benefits</a>	4
<a href="#">Safety Information Summary</a>	4
<b>Section 5: Getting Started</b>	
<a href="#">Quick Start Guides</a>	4
<b>Section 6: Preparing the Product for Use (Setup Instructions)</b>	
<a href="#">Unpacking and Component Identification</a>	5
<a href="#">Component Inputs, Outputs and Indicators</a>	5
<a href="#">Component Interconnections</a>	6
<a href="#">Device Communication (Driver) Software Installation</a>	7
<a href="#">Companion Software Installation</a>	7
<a href="#">Companion Software Configuration</a>	7
<b>Section 7: Pre-use Check-out</b>	
<a href="#">Normal Appearance of Signals</a>	9
<a href="#">Attaching the MyoSync to a System</a>	9
<a href="#">Calibration</a>	9
<b>Section 8: Operating Instructions</b>	
<a href="#">Safety Information Summary</a>	10
<a href="#">Normal Functions with Interface in PC</a>	10
<a href="#">Exceptional Functions/Situations (error messages)</a>	10
<b>Section 9: Accessories and Optional Modules</b>	
<a href="#">Accessories</a>	11
<a href="#">Interfaces to Other Devices</a>	12
<b>Section 10: Cleaning</b>	
<a href="#">Safety Precautions When Cleaning</a>	13
<a href="#">Cleaning by Users</a>	13
<b>Section 11: Maintenance</b>	
<a href="#">Safety Precautions When Performing Maintenance</a>	14
<a href="#">Maintenance by Users</a>	14
<a href="#">Maintenance by Qualified Individuals</a>	14
<b>Section 12: Trouble-shooting, Fault Diagnosis</b>	
<a href="#">Troubleshooting Chart</a>	15
<a href="#">Website Link to FAQ</a>	15
<b>Section 13: Service and Repair</b>	
<a href="#">Availability of Circuit Diagrams and Component Lists</a>	16
<a href="#">Warranty Information</a>	16
<a href="#">Submitting Service Requests</a>	16
<a href="#">Returning Equipment</a>	16

**Section 14: List of Spare Parts and Consumables**

<a href="#">Consumable Items (electrodes and sensor elements)</a> .....	17
<a href="#">Replaceable Items (fuses, batteries, lead sets)</a> .....	17

**Section 15: Taking Product Out of Operation**

<a href="#">Disposal of Equipment and Batteries</a> .....	17
---	----

**Section 16: Specifications of the Product**

<a href="#">Expected Useful Lifetime</a> .....	18
<a href="#">Dimensions and Weight</a> .....	18
<a href="#">Performance Characteristics</a> .....	18
<a href="#">Energy Consumption, Condition of Use</a> .....	18
<a href="#">Environmental Conditions for Storage and Transport</a> .....	18
<a href="#">IP (Ingress Protection) Rating</a> .....	18

**Section 17: Technical Information**

<a href="#">Block Diagram</a> .....	19
<a href="#">Theory of Operation</a> .....	19

## SECTION 1: INTRODUCTION

### Brief Description

The MyoSync is a versatile synchronization system that can be used with various Noraxon systems as well as video. This special sync device is for use with a multi-device Noraxon setup and the Noraxon MR3 software to synchronize all signals received by the software.

The MyoSync utilizes both wireless and cable connections to send a sync signal to the connected devices. The MyoSync has a wireless sync transmitter (262A) option that can be purchased separately. This option will enable a wireless sync signal to be sent to a wireless sync receiver connected to the Noraxon device being used. Without the wireless sync transmitter the MyoSync sends a sync pulse solely via sync cables.

All connections to the MyoSync are stereo connections while the other end of the sync cable will vary depending between systems. The MyoSync receives its signal from one of two sources: PC or external. When connected to the PC via USB, the MyoSync can use this connection to generate a sync source, or it can receive a sync pulse from an external device that generates the sync signal.

### Intended Use

The MyoSync is intended to send out a sync pulse to all connected systems. This sync pulse can then be used to synchronize the various signals retrieved from multiple systems. In combination with the MR3 software, the synchronization of these signals is done automatically and signals are displayed in synchronization. The only exception to this is some video cameras which have to be manually synchronized and this option is only available with the MyoVideo module.

#### Intended Users

Researchers or individuals trained in physical medicine, physical therapy or ergonomics

#### Subject Populations – Medical

Individuals with cerebral palsy, physical injuries, post-surgical or post stroke conditions

#### Subject Populations – Non medical

Athletes, workers at their worksite, subjects in new product trials

#### Common Applications

Synchronizing different signals received from a multi-device setup







### Contraindications

None

## SECTION 2: DEFINITIONS

### Graphic Symbols and Meaning

The following international icons and symbols are found on the MyoSync enclosures and in this user manual. Their meaning is described below.

	The device generates radio frequency energy during operation.
	The USB cable is applied to this connection.
	Read material in the Instruction Manual wherever this symbol appears.
	Identifies the manufacturer of the device.
	Identifies the serial number of the device.
	Additional information available in a separate document

### Glossary of Terms

Pulse – A generic term for sync signal.

Sync – Short for synchronization. A number of events, in this case signals, are coordinated to operate in unison.

Sync Signal – The signal transmitted from the MyoSync that is used to coordinate all the signals. In MR3, the software reads the sync signals and lines everything up in unison.

## SECTION 3: IDENTIFICATION

### Model Designation



Model 262 MyoSync (Master Sync)

### Product Versions and Configurations

The model 262 MyoSync can accommodate a single sync in pulse and up to 5 sync out pulses and 1 inverted sync out pulse.

For additional equipment details refer to Section 9 of this manual.

As the MyoSync requires software to perform its function, the equipment is offered in combination with the following computer program packages:

Model 430-433 myoMUSCLE  
Model 440/443 myoVIDEO  
Model 460/463 myoMOTION  
Model 450-452 myoPRESSURE

## SECTION 4: GENERAL WARNINGS AND CAUTIONS

### Risks and Benefits

There is **no identified risk of physical harm or injury** with use of the MyoSync product. The benefit provided by use of the device is the provision of synchronization of signals from multiple Noraxon devices.

### Safety Information Summary



#### Warnings

- Do not expose the MyoSync to water or liquid
- Do not use the equipment on individuals undergoing MRI, Electro Surgery or Defibrillation

## SECTION 5: GETTING STARTED

### Quick Start Guides

**Please see the Manual for the devices connected to MR3 to see their specific quick start guide.**



**Note:** The Noraxon Mast Sync is automatically inserted into configurations with devices where sync is selected, so the icon will not appear as an insertable device.



## SECTION 6: PREPARING THE PRODUCT FOR USE

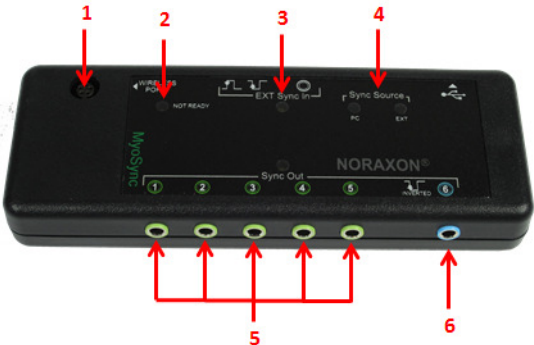
### (SET-UP INSTRUCTIONS)

#### Unpacking and Component Identification

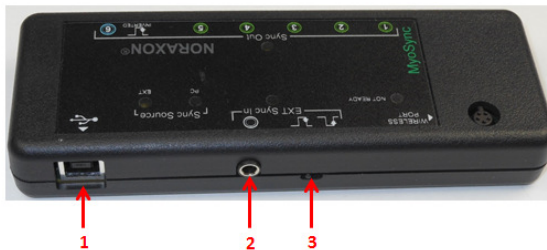
	MyoSync (part #262)
	A to B USB Cable (part #CBL2)
<b>Additional contents not illustrated</b>	
MyoSync User Manual (part #262C) <i>This document</i>	

If additional accessories have been included please see Section 9, Accessories for component identification.

#### Component Inputs, Outputs and Indicators

<p><b>1A MyoSync (top)</b></p> 	<p><u>1 Wireless Port</u> – To plug in wireless sync transmitter module</p> <p><u>2 Not Ready Indicator</u>– Illuminated when device is not set up appropriately</p> <p><u>3 External Sync Indicator</u> – Illuminates when there is an external sync source plugged in</p> <p><u>4 Sync Source</u> – Illuminates to indicate the sync signal is generated by the computer (PC) or an external source (EXT)</p> <p><u>5 Sync Out Port</u> – Ports to plug in sync cables so the MyoSync can transmit a sync signal to other devices</p> <p><u>6 Sync Out Inverted</u> – Port to plug in sync cable to transmit an inverted sync signal to another device</p>
--	--

### 1b MyoSync (side)



- 1 USB Port – A to B style to USB connection
- 2 External Sync Port – Sync in allows the MyoSync to accept a sync signal from another source and time
- 3 Invert Signal – Inverts or does not invert the sync signal depending on the direction of the switch

## Component Interconnections

### Step 1



Insert the mating (smaller) end of the USB cable (CBL2) into the USB connector on the side of the MyoSync.

Insert the opposite end of the USB cable into an available USB port on the computer.

### Step 2a



If using an external source to generate the sync pulse, plug the sync cable from the external source into the external sync port.

### Step 2b



If using wireless sync, insert the wireless sync transmitter into the wireless sync port.

### Step 2c



Plug in the sync cables for the systems receiving a sync pulse from the MyoSync into the Sync Out ports. The other end will plug into the Sync In port of the system.

## Device Communication (Driver) Software Installation

No driver installation is needed. The MyoSync uses the standard Windows HID driver for communication over the USB port.

## Companion Software Installation

The MyoSync is compatible with Noaxon's MR3 software. Identify the companion software that accompanied the equipment (MR3) and follow the appropriate instructions given next.

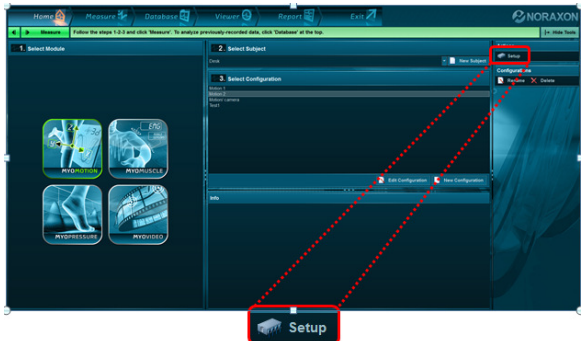
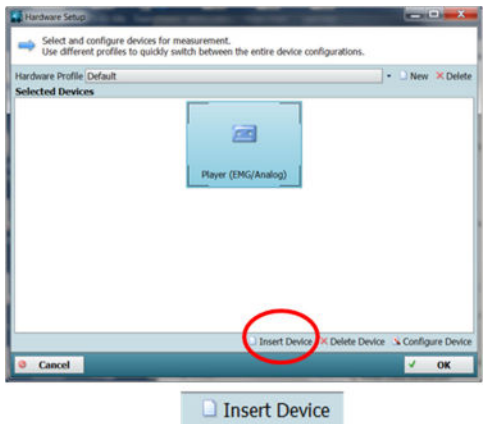
### MR3 Installation

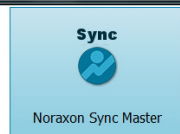
1. Insert the MR3 USB card into the PC
2. A menu will automatically pop up
3. Click on "Install MR3" and follow the Wizard's instructions

## Companion Software Configuration

Before the MyoSync system can be used, the companion software must be configured to recognize the different components that make up the system. Refer to the following configuration instructions for the MR3 software.

### MR3 Configuration

	<p><b>Step 1</b></p> <p>Open the MR3 program and click on the Setup button.</p>
	<p><b>Step 2</b></p> <p>Make sure the MyoSync is attached to the USB port of the computer.</p> <p>Click on the Insert Device button</p>

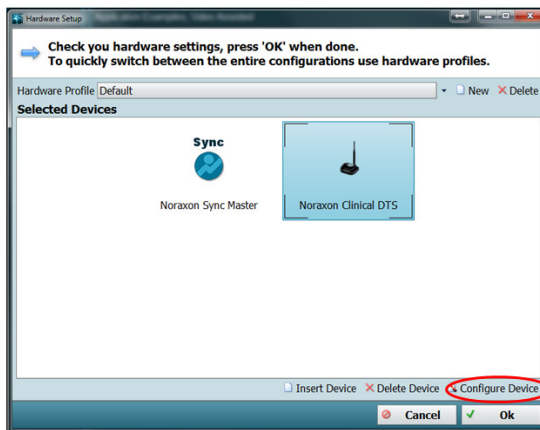


### Step 3

Double-Click on the Noraxon Master Sync Icon to insert the MyoSync into the hardware setup.

#### Note:

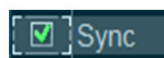
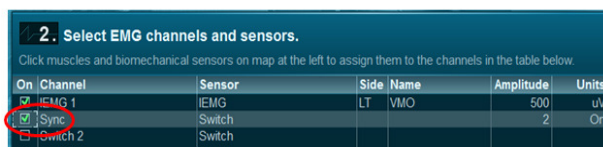
The MyoSync Icon will not be displayed if the device is not attached to the USB port of the computer. If absent go back to step 2.



Configure Device

### Step 4

There is no further configuration for the MyoSync, but every system utilizing the sync pulse will need to be configured to accept a Sync In pulse. This process will vary depending on the system, but is generally done during the Hardware Setup under configure device.



### Step 5

For each system utilizing the sync signal, if the user would like to visually see the sync signal for verification or to synchronize with certain cameras, the Sync channel will have to be selected in the Measurement Setup.

## SECTION 7: PRE-USE CHECK-OUT

### Normal Appearance of Signals

The MyoSync's Sync Source indicator provides a means of communicating its operational state. In the PC state the PC light will illuminate to indicate the sync pulse is generated by the PC. In the EXT state the EXT light will illuminate to indicate the sync pulse is generated by an external source plugged into the external Sync In port.

If the Not Ready indicator is red, the MyoSync is not setup properly.

**Note:** When first plugged in, the Not Ready light will illuminate until the setup process is complete.

### Attaching the MyoSync to a System

Normally systems are connected to the MyoSync using one of the attachment ports (Wireless, EXT Sync In, or Sync Out) as described previously in section 6. If the indicators are illuminating properly but the software is giving an error when running a measurement, check to make sure the connectors are secure in their ports and no individual wires or cables are disconnected.

### Calibration

Calibration of the MyoSync itself is not required.

## SECTION 8: OPERATING INSTRUCTIONS

### Safety Information Summary

Strictly follow all safety practices given in section 4 of this manual. The most critical ones are repeated here.

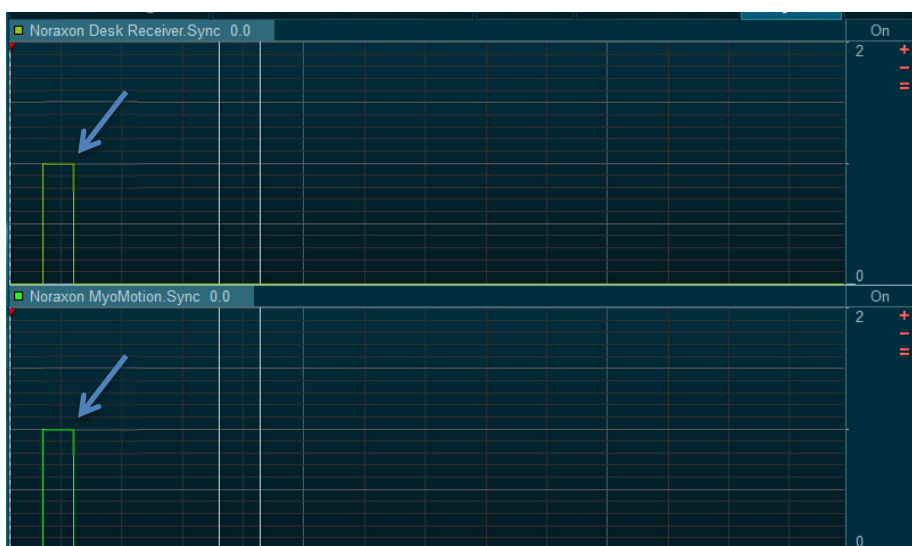


#### Warnings

- Do not immerse the MyoSync in any water or liquid

### Normal Functions with Sync Signal

When used with the companion software the MyoSync System synchronizes the signals within the records. If the user has chosen to display the sync signals they will appear as a separate channel similar to the following.



Consult the user manual for descriptions of the setup, playback and analysis of the data acquired by the different Noraxon systems










### Exceptional Functions/Situations (error messages)


Error Message	Meaning
Unable to find item, Noraxon myosync	The Noraxon MyoSync device is not plugged into the computer
No sync signal detected	The Noraxon MyoSync device is not plugged into the computer or the sync cable is not

plugged into the MyoSync or synced Noraxon device.

## SECTION 9: ACCESSORIES AND OPTIONAL MODULES

### Accessories and Options

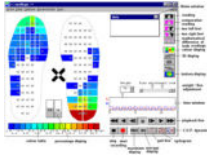
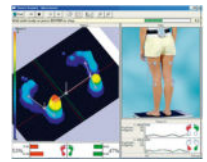
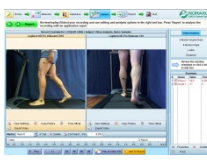


Part No.	Image	Description	More...
228		Sync Light	
262A/B		Wireless sync transmitter plug in module	
232		Wireless Sync Transmitter	
233A/B		Self-powered wireless sync receiver	
234A/B		Inline wireless sync receiver	
CBLS1		Standard sync cable – stereo plug to stereo plug	
CBLS23		Splitter cable – phone plug to dual phone jacks	
2912C		BNC sync cable – phone plug to BNC	
CBLM1/2		Medilogic sync cable for sync receiver	

2912D		Push button cable for manual triggering	
-------	---	---	--


As new accessories may be available after the time of printing, please check Noraxon's website at this link for the latest offerings.

<http://noraxon.com/products/>

## Interfaces to Other Devices

Package	Image	Description
Medilogic Insoles		Measures foot pressure profiles using insoles
Pressure Plate (Stationary)		Measures foot pressure profiles using a plate (Can be used to assess balance)
Pressure Plate (Treadmill)		Measures foot pressure and center of gravity while walking
MyoMotion		Measures human motion in three degrees of freedom (3 DOF)
MyoVideo		2D motion capture system



MyoMuscle		Most Noraxon EMG systems; measures the biopotential signals created by the muscles
-----------	---	--

## SECTION 10: CLEANING

### Safety Precautions When Cleaning



#### **WARNING**

**Only use a damp cloth with mild soap and water or isopropyl alcohol to clean the MyoSync system.**

**Do not immerse the enclosure in any water or liquid.**

### Cleaning by Users

If needed the MyoSync can be cleaned with a cloth slightly dampened with a solution of mild soap and water or isopropyl alcohol.

## SECTION 1 1: MAINTENANCE

### Safety Precautions When Performing Maintenance

No precautions required.

### Maintenance by Users

No routine maintenance is required for the MyoSync system.

### Maintenance by Qualified Individuals

The following activities should only be undertaken by PC support (IT) personnel, equipment technicians, or those with suitable training.

#### Companion Software Updates

- Perform a backup of the data folders to a separate drive as a precaution.
- Click on the Patch/Update link provided in the email or as given on the Noraxon website <http://noraxon.com/software-downloads>
- Download the Patch/Update file.
- To install the Patch/Update, click “Run” on the dialog box. No password is required.

#### Device Software (firmware) Updates

The internal program (firmware) inside the MyoSync can be updated through the use of a special utility program available at this link:

<http://noraxon.com/software-downloads>

The installed program will permit updates to the MyoSync.

## SECTION 12: TROUBLE SHOOTING, FAULT DIAGNOSIS

### Troubleshooting Chart

Symptom: <b>Problem with the PC recognizing the MyoSync</b>	
Possible Reason	Remedial Action
USB cable is disconnected or loose	Check USB cable connection at both receiver and computer
The USB port on the computer is in power save mode or a USB hub is not powered.	Disable the power saving mode on a laptop computer. If used check that a USB hub is powered.

### Website Link to FAQ

Answers to common questions can be found at Noraxon's Frequently Asked Questions (FAQ) website page at this link:

<http://noraxon.com/faq>

Other educational material is available at this link:

<http://noraxon.com/educational-materials>

## SECTION 13: SERVICE AND REPAIR

### Availability of Circuit Diagrams and Component Lists

Noraxon will make available on request circuit schematics, component parts lists and calibration instructions to assist qualified technical personnel in the service and maintenance of the MyoSync system.

### Warranty Information

Noraxon equipment including optional items is guaranteed to be free from defects in material and workmanship for 1 year from the date of purchase. The warrant period begins on the date of product shipment from Scottsdale, Arizona.

Warranty coverage does not apply to damage incurred through accident, alteration, abuse or failure to follow instructions contained in this document.

An optional extended warranty is available. Please contact Noraxon USA for further details.

### Submitting Service Requests

A Service Request can be submitted using the online form available at this link:

<http://noraxon.com/service-request>

Provide all information requested by the form including a **detailed** description of the problem being experienced and your telephone number or e-mail address.

### Returning Equipment

Be sure to obtain an RMA Number (return material authorization) before returning any equipment. Completing the online service request form will assign an RMA Number. Otherwise contact Noraxon USA.

Send the equipment **postage prepaid** and **insured** to the address below. Include the RMA Number on the shipment label. Mark the package "Goods to be repaired – Made in USA" to avoid unnecessary customs charges. (Beware listing a Customs or Insurance value of \$5,000.00 USD or more will result in a delay at United States Customs.)

Noraxon USA  
15770 N. Greenway-Hayden Loop  
Suite 100  
Scottsdale, AZ  
85260, USA


If you are shipping from outside the USA please use UPS, FedEx, DHL, or EMS (US Postal Service) and **not a freight-forwarder**. Using a freight-forwarder incurs additional brokerage fees. If a package is shipped to Noraxon via a carrier other than the ones listed above, it may be refused.

## SECTION 14: SPARE PARTS AND CONSUMABLES

### Consumable Items

None

### Replaceable Items

Part No.	Image	Description
CBL2		USB Type A to B cable set

## SECTION 15: TAKING PRODUCT OUT OF OPERATION

### Disposal of Equipment and Batteries

Please check with the governing authorities in your location before disposing of MyoSync and its contents.

## SECTION 16: SPECIFICATIONS OF THE PRODUCT

### Expected Useful Lifetime

The MyoSync has a usable life of seven years.

### Dimensions and Weight

- MyoSync Dimensions: coming soon  
13.99cm L x 5.12cm W x 2.03cm H (5.51" L x 2.02" W x H)
- MyoSync Weight: 3.5oz (99.2g)

### Performance Characteristics

#### System

- Coming Soon

#### Output & Transmission Frequency (Depending on country)

- Coming soon

### Energy Consumption, Condition of Use

- The MyoSync is powered by USB host 5V USB at 150 ma

### Environmental Conditions for Storage and Transport

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

### IP (Ingress Protection) Rating

The MyoSync enclosure has a low ingress protection rating (IP20). The MyoSync is not waterproof. Care must be taken to avoid exposure to all liquids.

## SECTION 17: TECHNICAL INFORMATION

### Block Diagram

#### Model 262 MyoSync

Coming soon...

### Theory of Operation

Coming soon...