MC ETD2

Prosthetist Manual

Fillauer®
Motion Control®

Special Precautions

Risk Management

To minimize the risk of device damage or injury to the user while maximizing the functions of this device, follow the instructions for installation, and use this device as described in this manual.

The MC ETD is water-resistant, not waterproof

While the Motion Control ETD2 is water-resistant, the quick disconnect wrist is not. Do not submerge the ETD2 beyond the wrist. Please see the Waterproof Quick Disconnect wrist (# 3011020) for more info.

Flammable Gases

Caution should be used when operating the ETD2 around flammable gases. The ETD2 utilizes an electric motor that can ignite volatile gases.

Do not bend fingers

While the MC ETD2 is robust, body weight represents a great deal of force. Do not apply full body weight on the fingers. A fall with the force directed to the fingers could cause damage. Additionally, when pushing forcefully with the ETD2 do not push on the open, moveable finger. Push only with the ETD2 in the closed position. This includes pushing up from a chair. If the fingers do become bent or out of alignment, return the ETD2 to your prosthetist.

Safety Release

Do not force the ETD2 fingers opened or closed. This will result in serious damage to the device. The safety release will allow easy opening and closing of the ETD2. If the release mechanism does not allow motion, the device requires service by Fillauer Motion Control.

Setup Using the User Interface

While the default settings in the MC ETD2 may allow the patient to operate the system, it is highly recommended the prosthetist utilize the User Interface to customize the settings for the wearer.

Safety Caution

Use caution when using this device in situations where injury to yourself or others may occur. These include but are not limited to activities such as driving, operating heavy machinery, or any activity where injury may occur. Conditions such as a low or dead battery, loss of electrode contact, or mechanical/electrical malfunction (and others) may cause the device to behave differently than expected.

Repairs or Alterations

Do not attempt to repair or alter any of the mechanical or electronic components of the MC ETD. This will likely cause damage, additional repairs and void the warranty.

Serious Incidents

In the unlikely event a serious incident occurs in relation to the use of the device, users should seek immediate medical help and contact their prosthetist at the earliest possible convenience. Clinicians should contact Motion Control immediately in the event of any device failure.

Introduction

The Motion Control ETD2 marks the second generation of the Motion Control Electric Terminal Device. Continuing the features of the original ETD, the ETD2 is robust, lightweight, and water-resistant, to provide a high level of functionality to persons with upper extremity limb loss.

The ETD2 is manufactured with metal inserts in the fingers, over molded with plastic for strength and durability. The result is a sleek, aesthetically integrated form. The Gripping Pads can be quickly and easily replaced. The safety release allows the fingers to be opened in case of emergency.

At 1⅛ inches (3 cm) shorter than the original ETD, the ETD2 more closely matches the length of most prosthetic hands on the market. The shorter length also allows the use of the ETD2 with patients who have longer residual limbs, and provides greater versatility in using the Motion Control Flexion or Multi-Flex wrists.

The ETD2 is a member of the ProPlus Family of Motion Control devices. The ProPlus on-board microprocessor makes the ETD2 interchangeable with almost all other hands and terminal devices. Additionally, the on-board microprocessor allows use of a brushless DC motor which makes the device quieter and more dependable.

Bluetooth® provides convenient communication between the ETD2 and an iPhone®, iPad® or iPod® Touch. This allows quick and easy connection and adjustment of the device. The patient is also able to connect via their iPhone®, iPad® or iPod® Touch and make a limited number of appropriate adjustments. FLAG, Force Limiting Auto-Grasp, is available as an optional feature.

Instructions for Use

Before attaching the MC ETD2 to the forearm, locate the power switch at the base of the ETD2. Ensure it is switched OFF (see diagram).

Insert the quick disconnect wrist on the ETD2 into the wrist on the forearm. While pushing it in firmly, rotate the ETD2 until an audible click is heard. It is advisable to rotate the ETD2 both directions several clicks, then attempt to pull the ETD2 off to ensure it has attached firmly.

MC ETD2

Large opening, wide surface area for cylindrical objects

Outside Friction Pads

SAFETY RELEASE

POWER SWITCH

Replaceable Gripping Pads

Sleeve Rentention Ring

Quick Disconnect Wrist

FLAG Option

Power Switch

The power switch is located at the base of the ETD2. Pushing from the side opposite the fingertips will turn the ETD2 ON. Pushing from the fingertip side will turn the ETD2 OFF.

PUSH ON
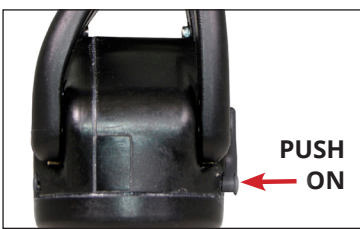
Safety Release

On a Left ETD2, the safety release is located on the same side as the fingertips. On a Right ETD2, the safety release is located on the side opposite the fingertips.

PUSH OFF
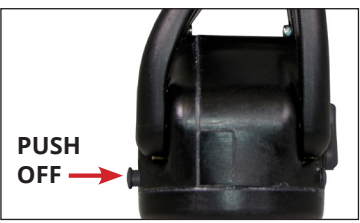
To engage the fingers, ensure the safety release lever points toward the fingertips. To release the fingers, rotate the lever 90 degrees, toward the moveable finger.

SAFETY RELEASE

Now, push the power switch in the opposite direction and the ETD2 is ON and ready for use.

To disconnect the ETD2, first turn it OFF, then rotate it either direction until a slightly more difficult click is felt. Overcoming this click will disconnect the ETD2 from the forearm. This allows interchangeability with another terminal device, such as the MC ProPlus Hand.

User Interface Adjustments

Each of the ProPlus family of Motion Control products contains a microprocessor that can be adjusted and set for a specific individual's needs. Wearers without EMG signals can also be accommodated, but some additional hardware may be necessary. The software necessary to make these adjustments is provided at no charge to the prosthetist or end user.

iOS User Interface

The ETD2 underwent a core upgrade in mid 2025. Devices purchased before this date use the Motion Control User Interface (MCUI) App for configuration. Models purchased after that time will require use of the Motion Arm User Interface (MAUI) for setup. Both are available for free from the Apple Store, android devices aren't supported. Please refer to your specific device and the Quick Setup Guides at the end of the manual.

Patient/Prosthetist Controls

Upon opening the iOS Application you will be asked "Patient" or "Prosthetist"—select "Patient". While you as a patient are allowed to navigate the entire application, many of the adjustments are "grayed out" as those can only be changed by your prosthetist.

However, you are still able to see the strength of your EMG, or other input signals, to allow you to exercise those muscles.

Additionally, you may change any adjustments that are not "grayed out". These include such settings as buzzers, and several of the FLAG adjustments (FLAG is an optional feature).

User Profiles

You are able to save your profile in the User Profile section of the iOS User Interface. It is advisable to save your Profile on your device, and your prosthetist is advised to save it on his, also. This will provide a backup in case any repairs or firmware updates are required.
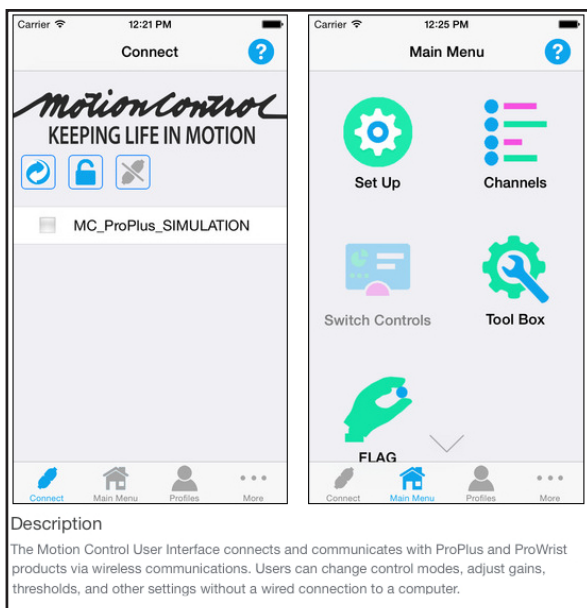

Description

The Motion Control User Interface connects and communicates with ProPlus and ProWrist products via wireless communications. Users can change control modes, adjust gains, thresholds, and other settings without a wired connection to a computer.

Auto-Cal

Auto-Cal is a useful feature in every ProPlus device. By triggering an "Auto-Cal event" via the iOS User Interface, the wearer can readjust the gain settings throughout the day. Auto-Cal does have limitations:

• Auto-Cal is only available in Dual Channel control

• Auto-Cal automatically sets Control Type to First Over

• Thresholds are automatically set at 21% (adjustable by the prosthetist)

Auto-Cal will automatically save the previous settings and ask the wearer if they would like to return to those settings. Performing multiple Auto-Cal events will delete custom settings. Wearers should be advised to not Auto-Cal if you have customized the settings.
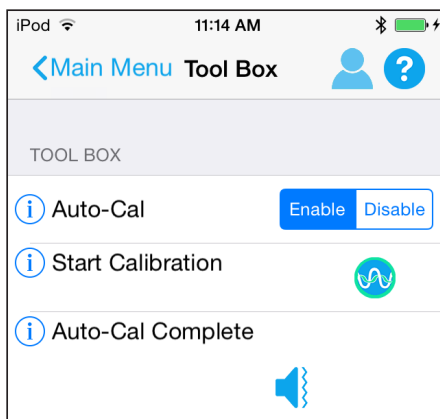
Note: When you accept Auto-Cal settings, your previous settings are lost. If your prosthetist has set up custom settings, do *not* trigger Auto-Cal calibration.

FLAG (Optional Feature)

FLAG (Force Limiting, Auto Grasp) is a special feature that allows a patient to limit grip force, whenever more care when holding something delicate, like a child's hand, or a light bulb is needed. With FLAG on, a quick, inadvertent opening signal will result in a single "pulse" increase in grip force to prevent dropping an object.

Turn FLAG On/Off

Upon power up, FLAG is turned off. The TD should be closed, then opened, before using FLAG. To turn FLAG on, give the device a "Hold Open" signal (for ~ 3 sec.)**. When FLAG turns on, the wearer will feel one long vibration. After you enable FLAG the device speed is reduced to about half of normal. A "Hold Open" signal (for ~ 3 sec.)** will turn FLAG off, and two short vibrations will be felt by the wearer.

Note: If a series of **5 vibrations** is felt upon a "Hold Open", it could indicate a malfunction in the FLAG sensor. Turn the device off, and back on, then completely open and completely close the device. Retry the "Hold Open" signal to activate FLAG. If 5 vibrations are felt again, the device will still function but FLAG will be disabled. The device must be returned to Motion Control for the FLAG sensor to be repaired.

Dual Channel FLAG

Force Limiting

1. With FLAG on, closing is still proportional, with maximum speed lowered by 50%**.
2. On closing, when the fingers contact an object, force will be limited to ~ 2 lbs/9N of grip force – then the wearer feels one short vibration.
3. To increase force, the wearer relaxes below threshold, followed by a strong close signal** for a short effort** and the grip force "pulses" up.
4. Grip force can be pulsed up to 10 times to a maximum of ~ 18 lbs/80N of pinch force**.
5. An open signal will open the terminal device proportionally.

Single Channel FLAG

With Single Channel Control, FLAG is best used in Alternating Direction Control Mode.

Force Limiting

1. With FLAG on, the terminal device will close at approximately 50% speed**, proportionally.
2. When the device contacts an object, force will be limited to ~ 2 lbs/9N.
3. A quick and strong signal** above the threshold, then relaxation below the threshold, will create one pulse in the force**.
4. This can be repeated up to 10 times for ~ 18 lbs/80N of pinch force.
5. A sustained signal of about 1 second will open the terminal device.

2-CHANNEL SETTING	ACTION	FEEDBACK
Turn On	Hold Open 2-3 seconds	Buzz
Close to Grip	Close signal ±1 second	Short Buzz
Pulse force up	Close signal ±1 second	Short Buzz
Turn Off	Hold Open 2-3 seconds	Double Buzz

1-CHANNEL SETTING	ACTION	FEEDBACK
Turn On	Signal 2-3 seconds	Buzz
Close to Grip	Signal ±1 second	Short Buzz
Pulse force up	Quick Signal ±1 second	Short Buzz
Open	Strong Signal 2-3 sec.	None, direction will reverse as usual
Turn Off	Open the hand then Signal 2-3 seconds	Double Buzz

Using FLAG with Alternate Inputs (including Touch Pad, Linear Potentiometer or Force Sensor): In the User Interface, set Control Type to Alternate Input, and choose Single or Dual Channel. The Gain settings must be set so the wearer's output signal is high enough to exceed the Hold Open Threshold necessary to turn FLAG on or off.

MCUI User Interface for iOS

Quick Setup Guide*

1. From the Apple® App Store download and install the MCUI.

2. Enter the Prosthetist Code: **PR-MCAK**. *Patients do not require a code.*

3. Open the App and follow the Tutorial.

4. Go to the Connect screen and tap Scan.

5. The device should now connect to the MCUI.

6. To disconnect, tap the Connect icon in the lower left corner, then tap Disconnect.

System Requirements

Apple® App Store account, and any of the following devices:
- iPad® (3rd gen and later)
- iPad mini™, iPad Air®, iPad Air® 2
- iPod touch® (5th gen and later)
- iPhone® 4S and later.

Troubleshooting

- Make sure the battery on the device is fully charged
- Check connection of the device in the quick disconnect wrist
- Confirm the device is turned on
- Verify that you are not in "Tutorial Mode" by double tapping the Home key, then swiping MCUI off the screen, and reopening MCUI
- Bluetooth® must be turned on in Settings on the iOS device
- The Information icon provides information about a function
- To repeat the tutorial, go to and tap Reset on Reset Guided Tutorial.

*For configuring devices before mid 2025. See your specific device.

MAUI App for iOS

Quick Setup Guide*

- From the Apple® App Store Ⓐ download the MAUI app.
- Enter the Prosthetist Code: **PR-MCAK**. *Patients do not require a code.*
- Open the App and follow the Tutorial.
- Go to the Connect screen 🖊 and tap Scan. 🔄
- Input the Pairing Key that came with the device. *This key should be kept in the Patient's record.*
- The device is now connected to the MAUI.
- To disconnect, tap the Connect icon in the lower left corner, 🖊 then tap Disconnect. ✖️

Troubleshooting

- Make sure the battery on the device is fully charged
- Confirm the device is turned on
- Verify that you are not in "Simulation Mode" by double tapping the Home key, then swiping MAUI off the screen, and reopening the app
- Bluetooth® must be turned on in Settings ⚙️ on the iOS device
- The Information icon ⓘ provides information about a function
- To repeat the tutorial, go to ❓ and tap Reset on Reset Guided Tutorial

System Requirements
- iOS 11 minimum
- iPad® (5th gen and later)
- iPad mini® (2nd gen and later)
- iPad Air®
- iPad Pro®
- iPod Touch® (6th gen and later)
- iPhone® 5s and later

*For configuring devices released after mid 2025. See your specific device.

Single Patient Use
Each amputee is unique. The shape of their residual limb, the control signals each generates and the tasks an amputee performs during the day require specialized design and adjustment of the prosthesis. Motion Control products are manufactured to be fit to one individual.

Disposal/Waste Handling
This device, including any associated electronics and batteries should be disposed of in accordance with applicable local laws and regulations. This includes laws and regulations regarding bacterial or infectious agents, if necessary.

Limited Warranty
Seller warrants to Buyer that the equipment delivered hereunder will be free from defects in materials and manufacturing workmanship, that it will be of the kind and quality described and that it will perform as specified in Seller's written quotation. The limited warranties shall apply only to failures to meet said warranties that appear within the effective period of this Agreement. The effective period shall be one year (12 months) from the date of delivery to the fitting center that has purchased the components. Refer to the shipping receipt for the date of shipment.

Return Policy
Returns are accepted for a full refund up to 90 days from date of shipment as long as the item is in resalable condition. Beyond 90 days, returns are not accepted.

Technical Specifications
Operating Temperature: -5° to 60° C (23° to 140° F)
Transport & Storage Temperature: -18° to 71° C (0° to 160° F)
Pinch Force: At 7.2 volts nominal: 11 kg (24 lbs, or ~ 107N)
Operating Voltage Range: 6 to 8.2 Vdc - MC ETD 2
Load Limit: 22 kg / 50 lbs in all directions (+/- 10%)

Declaration of Conformity
The product herewith complies with Medical Device Regulation 2017/745 and is registered with the United States Food and Drug Administration. (Registration No. 1723997)

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