MC ProPlus ETD

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

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

Do not bend fingers
While the MC ETD is robust, body weight represents a great deal of force. Do not apply full body weight on the fingers. Additionally, a fall with the force directed to the fingers could cause damage. If the fingers do become bent or out of alignment, return the ETD to Motion Control.

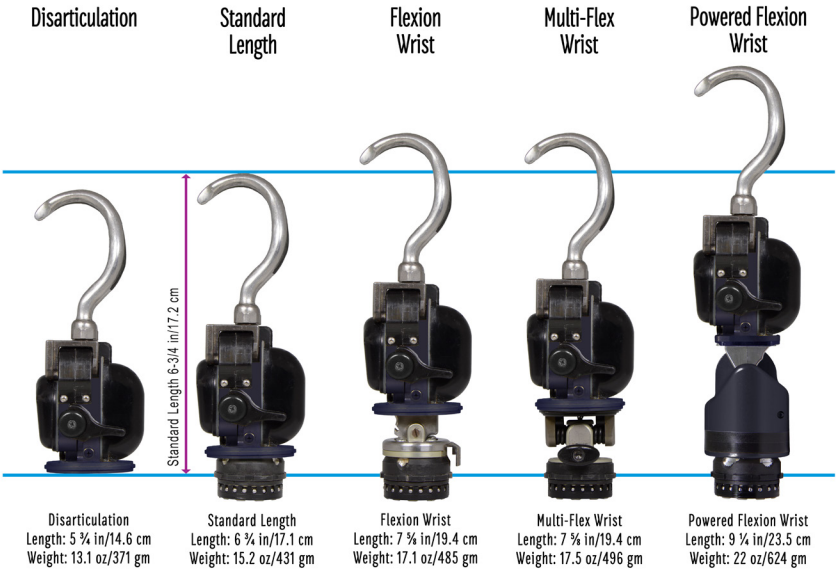
Safety Release
Do not force the ETD fingers opened or closed. This will result in serious damage to the device. The safety release will allow easy opening and closing of the ETD. If the release mechanism does not allow motion, the device requires service by Motion Control.

Setup Using the User Interface
While the default settings in the MC ProPlus ETD 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

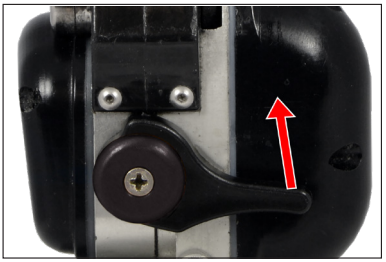
The Motion Control (MC) ProPlus Electric Terminal Device (ETD) is a high performance electric terminal device for persons with upper extremity limb loss. The MC ETD contains a battery-saver circuit for longer battery life, wide-opening fingers, and a unique safety release.

The MC ETD is manufactured as a robust device for high-use wearers. The fingers are lightweight aluminum, but are also available in titanium for increased strength. The MC ETD is water-resistant to the IPX7 standard, allowing it to be submerged to the quick disconnect wrist.

The MC ETD allows the addition of two different types of Motion Control flexion wrists, the Flexion Wrist or Multi-Flex Wrist, without major increases in length. In cases where the residual forearm length is rather long, choose the Wrist Disarticulation version, which is shorter by 2.4 cm (1.0 in) by sacrificing the Q/D and fabricating directly to the forearm.

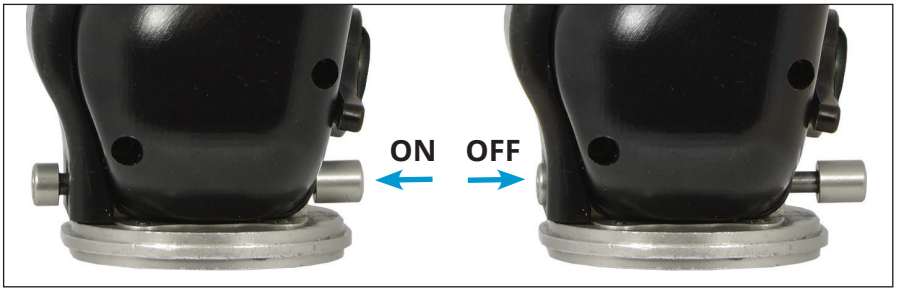
The MC ProPlus ETD has an ultra long-life brushless DC motor and on-board controller. This versatile microprocessor provides easy adjustability via wireless Bluetooth® communication to iOS devices (iPhone®, iPad®, and iPod Touch®), a variety of input sensors, and high performance. The MC ProPlus ETD can be used with other MC ProPlus components, such as the MC ProWrist Rotator, and easily interchanged with the MC ProPlus Hand, and other manufacturers' devices.

MC ProPlus ETD green coax receptacle (replaces earlier red receptacle)



Safety Release

Pushing the safety release lever UP disengages the fingers, allowing the ETD to be easily opened.



Power Switch

The power switch is located at the base of the ETD, on axis with the opening of the fingers. Pushing on the same side as the safety release turns the ETD ON. Pushing on the opposite side turns the ETD OFF.

Instructions for Use

Before attaching the MC ETD to the forearm, locate the power switch at the base of the ETD. Ensure it is switched OFF (see diagram, page 3).

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

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

To disconnect the ETD, first turn it OFF, then rotate it either direction until a slightly more difficult click is felt. Overcoming this click will disconnect the ETD 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 needed to make these adjustments is provided at no charge to the prosthetist or end user.

iOS User Interface

The ProPlus ETD 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, the user responds as "Patient" or "Prosthetist". If "Patient" is chosen, many of the adjustments are grayed out. EMG signals are visible for training purposes. Several adjustments such as buzzers, some FLAG adjustments, and Auto-Cal are accessible to the wearer. Familiarize your patients with these adjustments.

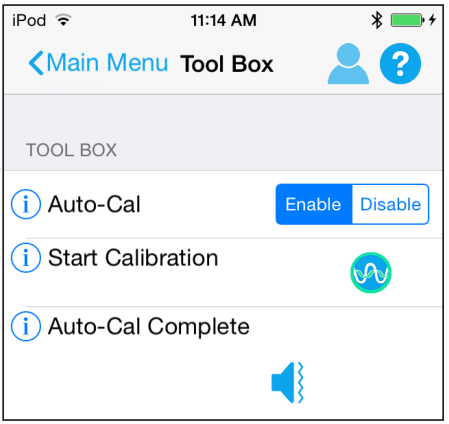
If “Prosthetist” is chosen, a code is requested. This allows access to all the adjustments of the device.

User Profiles

User Profiles can be saved on your Apple® device. It is advisable to save the settings not only on the prosthetist’s device as a part of the wearer record, but also on the wearer’s Apple® device so they can reset their ETD if the settings are lost.

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 previous settings. Performing multiple Auto-Cal events will delete custom settings. Wearers should be advised to not Auto-Cal if you have customized the settings.

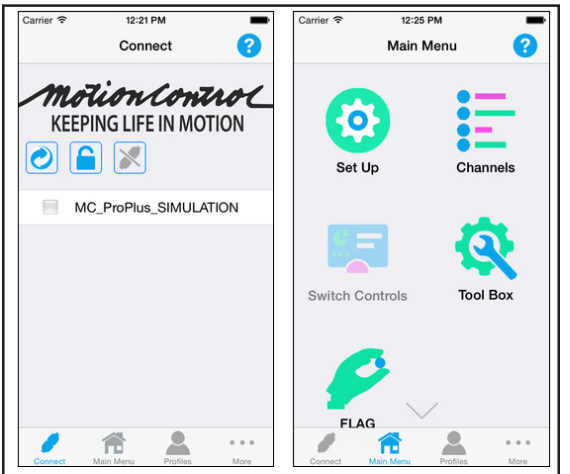
FLAG (Optional Feature)

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.



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.

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 ProPlus ETD
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)

FDA REGISTERED RoHS COMPLIANT CE Bluetooth®

Motion Control Device Patent Information: US 10,004,611 B2; US 7438,724,B2; US 7914,587 B2; US 7,114,430 B2 (exp); US 7,041,141 B2 (exp)

Customer Support

Americas, Oceania, Japan
Fillauer Motion Control
115 N. Wright Brothers Drive
Salt Lake City, UT 84116
801-326-3434
motioninfo@fillauer.com

Europe, Africa, Asia
Fillauer Europe
Kung Hans väg 2
192 68 Sollentuna, Sweden
+46 (0)8 505 332 00
support@fillauer.com

Fillauer®

Fillauer
2710 Amnicola Highway
Chattanooga, TN 37406
423.624.0946
www.fillauer.com

EC REP **Fillauer Europe**
Kung Hans väg 2
192 68 Sollentuna, Sweden
+46 (0)8 505 332 00

CE