



i-digits™ quantum User Manual

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This document provides information for i-digits™ quantum users and should be used in conjunction with advice from your clinical team.



This symbol signifies important information and is used throughout the manual.

Refer to www.touchbionics.com/downloads/document-library to ensure you have the latest copy of this document.

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1.0 i-digits™ quantum

1.1 Product Description

design. dexterity. intelligent motion.

Based on the industry-leading design of our i-limb™ product range, i-digits™ quantum combines unsurpassed functionality with style. i-digits™ quantum incorporates gesture control via the patented and ground-breaking i-mo™ technology and is the first partial hand prosthesis that can change grips with a simple gesture.

Key features include:

- Smarter
 - gesture control powered by i-mo™ technology uses simple gestures to change grips
 - proximity control made available via grip chips™ technology
- Faster
 - adjustable speed boost increases speed up to 30%
- Stronger
 - up to 30% more power when needed
 - improved component design for easier and more reliable fabrication
 - 50% longer battery life
- Smaller
 - new form fitting design decreases device size in every dimension
 - smaller digits now available

We are pleased that you and your clinical team decided that i-digits™ quantum is the most appropriate prosthesis for your needs. You will have discussed your functional goals with your clinical team. This manual, along with the training and support of your clinical team, should help you understand how i-digits™ quantum will help you accomplish these goals.

1.2 Intended Use

i-digits™ quantum is intended to be used by individuals with partial hand loss or deficiency. Devices are suited to individuals with any 3, 4 or 5 digit loss, while patients or users with 1 or 2 digit loss are also indicated when the digits of loss are either the thumb or the main digits of opposition, namely the index and middle fingers.



i-digits™ quantum is a fully customized partial hand prosthesis with individually powered fingers. i-digits™ quantum fingers move independently and bend at the joint to work in conjunction with any remaining fingers to help significantly increase functional capabilities.

Each digit of the device has its own motor that allows the digits to run until they meet the object being grasped. The result of this is the device taking the shape of that object (compliant grip). The power for the prosthesis comes from two batteries which are located in the wristband. Initially, you and your clinical team will develop control of opening and closing your hand. At this stage, you should be able to carry out a wide range of functional daily activities using your i-digits™ quantum device. It takes time and practice to gain control and master the best way to perform tasks with your prosthetic device. The pace at which individuals gain this control varies.

Your i-digits™ quantum is covered under the Touch Care program. Please contact your clinician for details about your specific Touch Care coverage.

1.3 Prosthesis overview

Each i-digits™ quantum has a unique identifying number called the serial number as depicted on the image to the right (fig.1). This is an important piece of information and we recommend that you make a note of it on page 16 of this manual.

i-digits™ quantum will not provide you with sensation and so you will not be able to feel things such as heat and moisture. i-digits™ quantum cannot absorb any shock as your own body is able to do. If high degrees of force are applied, you may cause damage to your i-digits™ quantum. If this does happen, then please contact your clinical team who will contact Touch Bionics Customer Support team to resolve the matter as quickly as possible. To best protect the hand when carrying objects, the weight should be distributed evenly across the digits as close to the knuckles and palm of the device as possible rather than out on the tips of the digits. The image to the right (fig.2) is an example of how to correctly carry objects.

i-digits™ quantum is like any other electrical device so do not immerse in water and do not pour water over the device. When cleaning the covering use a damp cloth to remove any dirt.



Do not use i-digits™ quantum without an approved cover.

If you have any specific questions about your i-digits™ quantum device then please contact your clinical team or visit the Touch Bionics website www.touchbionics.com for the latest information and news.

Fig. 1: Serial Number



Fig. 2: Weight distribution



1.4 Prosthesis Overview: Control Strategies

i-digits™ quantum can access automated grips using a range of control options.

gesture control:

By enabling *i-mo™ technology*, gesture control allows an automated grip to be accessed through a smooth and natural motion of the prosthesis in 1 of 4 directions.

To access gesture control:

- Device must be in full open hand mode
- Hold arm parallel to ground (elbow bent to 90°)
- Maintain an open signal until finger twitches
- Move the hand (within 1 second) in direction assigned to desired grip
- i-digits™ quantum will adopt the grip

app control:

i-digits™ quantum can access a grip at the touch of an icon on the *my i-limb™ app*, enabling all automated grips to be available. These are called *quick grips™*.

i-digits™ quantum will exit automated grip when icon is tapped again, or by selecting another grip icon.

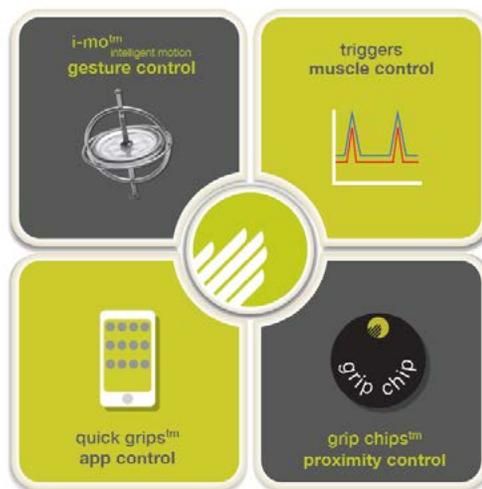
Speed boost is also available on the app using a simple slider bar. This increased speed can provide benefits of a more responsive action, more natural appearance of motion and increased grip force.

muscle control:

Triggers are specific muscle signals that you can use to instruct i-digits™ quantum to activate an automated grip. There are 4 potential triggers: hold open, double impulse, triple impulse and co-contraction.

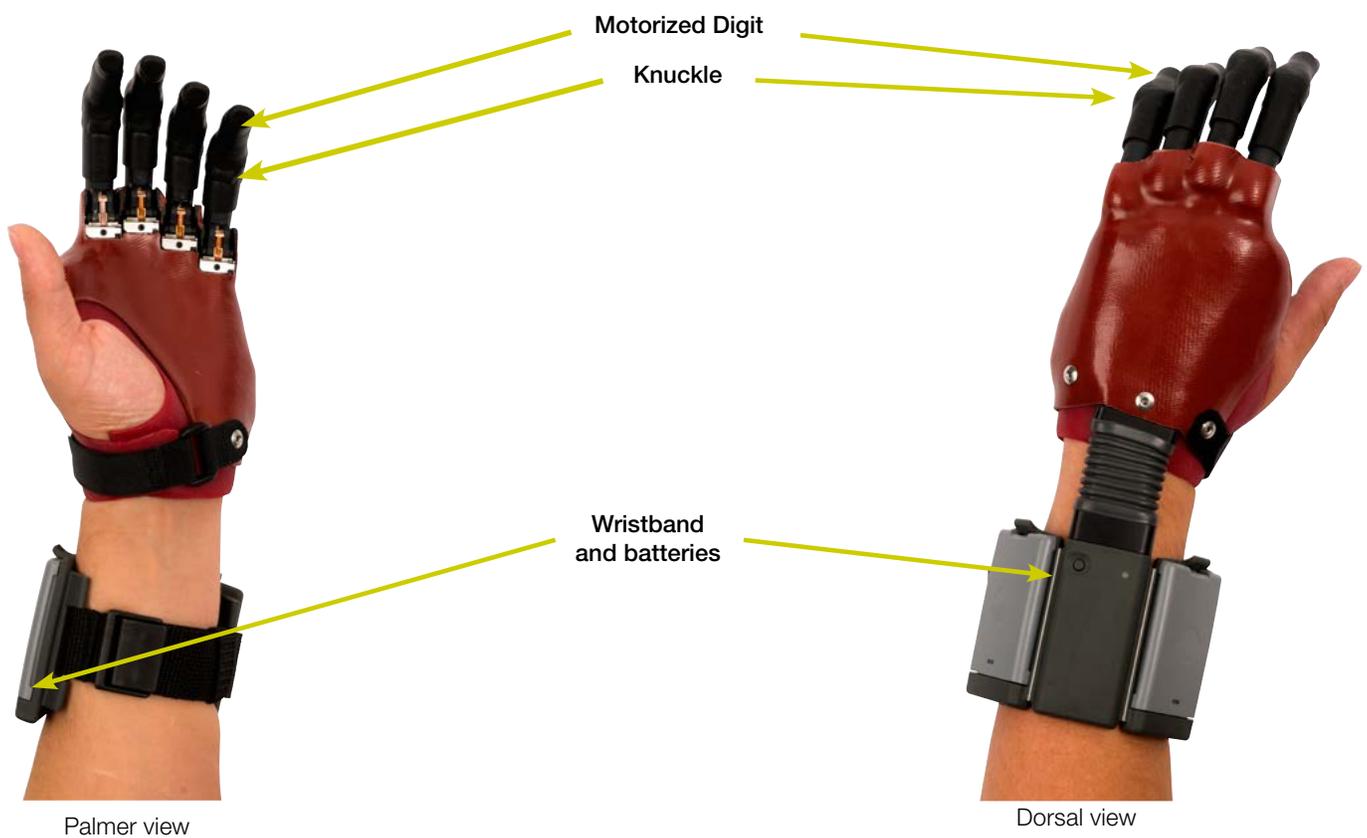
proximity control:

Grip chips™ are small Bluetooth chips which can change the grip programming of i-digits™ quantum when you position it near to the chip. The *grip chips™* can be positioned around the user's environment in practical locations to allow access to the optimum grip for particular daily tasks. Individual *grip chips™* can be programmed using the *biosim™* or *my i-limb™* app.



2.0 Control and Batteries

Fig. 3: Prosthesis overview



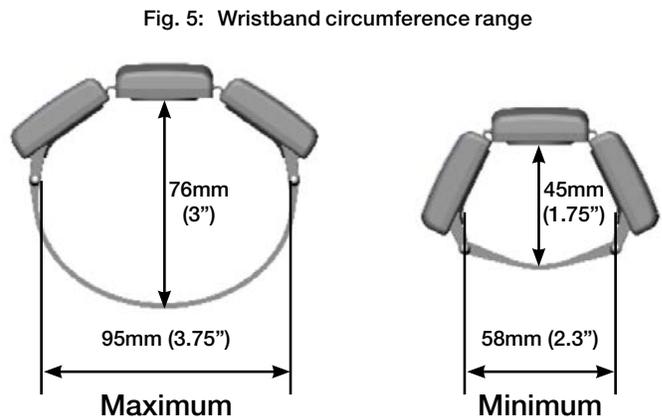
This illustration above depicts an i-digits™ quantum for users with sound thumb and 4 i-digits™.

2.1 Wristband componentry

The Wristband houses the microprocessor and the batteries unit. It is buckle fastened, designed to fit loosely around the forearm. To switch the device on, press the button and the LED light will illuminate. To switch it off, press the button again and the LED will light momentarily.



The wristband is designed to fit loosely around the forearm. It is not designed to be used for suspension of the prosthesis or to hold electrodes in position against the skin.



2.2 Control Options

To fit i-digits™ quantum a socket interface has been specially created by your prosthetist team. They will have made this to ensure it is comfortable and fits directly to your residual hand. You may experience some minor redness on your residual hand but this should not last very long after you remove the device. If the device is causing you discomfort or affecting you using your i-digits™ quantum then we recommend that you contact your clinician.

As part of the fitting process, your prosthetist selected the best method for you to provide control of your device. This communicates to the processor whether you want i-digits™ quantum device to open or close. The most common control option is called an electrode. Electrodes pick up on the electrical activity that your body gives off when you contract a muscle. While gaining good control may take time and practice, your method of input should not cause pain. Talk with your prosthetist if you do not understand how your input control is working or if it is causing discomfort.

2.3 Battery Charging

i-digits™ quantum is powered by two, 800mAh, 3.7 Volt batteries which have been specifically designed to meet the power requirements of i-digits™ devices. Four batteries are provided, two for the wristband and two spares. Two 3.7v batteries will be needed with the Wristband (the wristband will not work with only one battery).

Each battery is equipped with a LED display alerting you when the battery is low on charge. If the battery is low on charge the LED will illuminate RED. The LED will remain illuminated until the battery is adequately charged.

Please view the below instruction for proper battery charging.



Only use supplied Touch Bionics charger to charge batteries. Depending on your location, you will receive one of the chargers shown on the right side (fig. 8).

If you intend to travel outside of your home country you will need to ensure that you have a Touch Bionics charger that will work in the country to which you are traveling. Additional chargers are available from Touch Bionics (see fig.7).

As an alternative to charging directly from domestic power, a car charger is also provided with the i-digits™ quantum.

Fig. 6: batteries



Fig. 7: charger

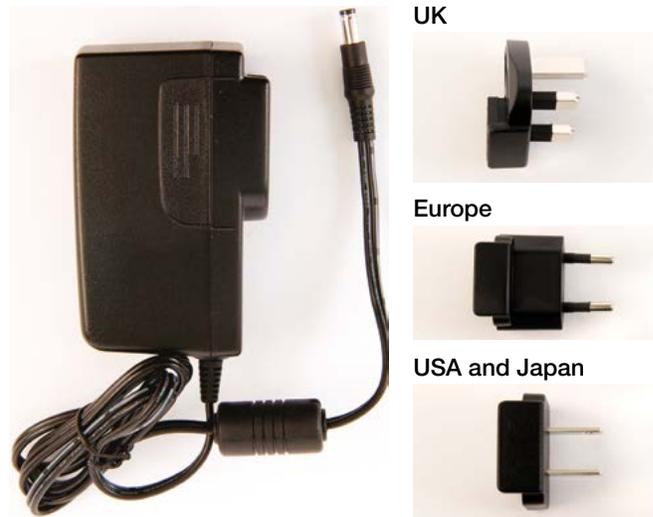


Fig. 8: car charger



Batteries are fitted into the Wristband battery housing and secured by the holding catch at the wrist side of the Wristband. Release the holding catch to remove the battery.



The batteries provided are designed to work specifically with the Touch Bionics i-digits™ Wristband and are not to be used with any other device.



Only Touch Bionics batteries are approved for use with i-digits™, use of alternative batteries will invalidate the warranty.

Fig. 9: wristband battery housing



Charging time from full discharge is approximately 2 hours.

i-limb™ Power Pack batteries for i-digits™ quantum should only be charged using the Touch Bionics battery charger (fig.7) supplied. Place the batteries in the charger as illustrated. Insert the charger lead from the battery powerpack into the charge port. Insert the charger into the power outlet (fig.10).

Fig. 10: charge port



On the base plate of the charger you will see the various light sequences:

- Middle light on: Charger is plugged in
- 2nd and 5th lights blinking Green: Batteries are charging
- 2nd and 5th lights solid Green: Batteries are charged
- 1st and 4th Red lights on: Battery fault, unplug and try again. If lights continue to illuminate, contact Touch Bionics or your clinical team.



To ensure i-digits quantum is continually functional, charge at the end of each day.



Replace the battery annually for optimal performance.



Do not pull cable to remove the lead.



Switch the device OFF to preserve battery power when not in use.

3.0 Covers

3.1 Cover Options

Coverings are an important part of the appearance and durability of upper limb prostheses. The Touch Bionics i-digits™ quantum products are the first prosthetics and fingers to imitate the individual digit articulation of the human hand, and we provide flexible coverings which enable that articulation.

Covers will be provided for i-digits™ quantum device. Digit covers will be ready to fit and are designed to cover each digit.

Touch Bionics' approved digit covers must be used with each digit of the device. The warranty will become void if the device is used without an approved cover.



3.2 General Precautions

- i-digits™ quantum device must be used with approved Touch Bionics' digits covers.
- Ensure covers are fitted properly.

i-digits™ quantum covers do not provide full protection from moisture, oil, dust and dirt ingress. Caution should be observed.

4.0 Grip Review

i-digits™ quantum has 20 different grip options available and 12 customizable *my grips*™ (not shown). These grips can be accessed and programmed through the software package called *my i-limb*™ app. The following features catalogue reviews the various available grips and provide a functional description of each.

The range of grips available is dependent on your i-digits™ quantum device configurations and the level of absence. The range of grips are represented below as per a 5 digit device.

4.1 Grip Options

Precision Pinch Grip Options

Standard Precision Pinch Opened

middle, ring and little finger remain fully opened and switch off. Index finger and thumb provide grip.



Standard Precision Pinch Closed

middle, ring and little finger automatically close and switch off. Index finger and thumb provide grip.



Thumb Precision Pinch Opened

middle, ring and little finger remain fully opened and switch off. Thumb automatically moves to a partially closed position. Index finger will move to provide grip against a fixed thumb.



Thumb Precision Pinch Closed

middle, ring and little finger automatically close and switch off. Thumb automatically moves to a partially closed position. Index finger will move to provide grip against a fixed thumb.



Tripod Grip Options

Standard 3 Jaw Chuck (Tripod) Opened

ring and little finger remain fully opened and switch off. Thumb, index and middle fingers move to provide grip.



Standard 3 Jaw Chuck (Tripod) Closed

ring and little finger move to terminal close. Thumb, index and middle fingers move to provide grip.



Thumb 3 Jaw Chuck (Tripod) Opened

ring and little finger remain fully opened and switch off. Thumb automatically moves to a partially closed position. Index and middle fingers move to provide grip against a fixed thumb.



Thumb 3 Jaw Chuck (Tripod) Closed

ring and little finger move to terminal close. Thumb automatically moves to a partially closed position. Index and middle fingers move to provide grip against a fixed thumb.



Additional Grip and Gesture Options

Thumb Park Continuous

all four fingers remain open and switch off, only the thumb will move.



Thumb Park Quick

all four fingers remain open and switch off, for 1.5 seconds the thumb will close and then automatically return to an open position.



Lateral Grip

all four fingers fully close and switch off. Only thumb will move.



Index Point

thumb, little, ring and middle fingers close and switch off. Only the index finger will move.



Custom Gesture

all fingers automatically move to a user defined fully opened or fully closed position and switch off.



Custom Grip

all fingers automatically move to a user defined position. The user can choose to keep certain digits active and switch others off.



Grasp

hand forms a shape appropriate for grasping an object. Fingers flex rapidly when any user signal is applied



One Finger Trigger

hand forms a shape appropriate for using a spray bottle with the index finger active



Handshake

hand forms a shape appropriate for shaking another persons hand



Thumb Trigger

hand forms shape appropriate for using an aerosol spray can with thumb active



Mouse

hand forms shape appropriate for using a computer mouse



Trigger Two Finger

hand forms a shape appropriate for using a spray bottle with the index and middle finger active



5.0 Support Information

5.1 Storage and Maintenance

Always turn off your i-digits™ quantum device when not in use.

Aim to charge the battery each day after use.

Replace the batteries every 12 months.

Ensure your i-digits™ quantum is serviced every 12 months.

5.2 Troubleshooting

Problem	Action
Prosthesis does not operate	Ensure the prosthesis is switched on Ensure the battery is connected Ensure the battery is charged Check the electrodes have good contact
One digit does not operate	Check if the digit operates correctly using the Hand Health Check in my i-limb™ app
Device stops halfway during an action	Contact your Prosthetist
Prosthesis opens when a close signal is provided	Contact your Prosthetist
Battery is not working	Check the battery is connected Check the battery is charged Check the device using one of the spare i- digits™ quantum batteries

For additional FAQ's please visit our website at: www.touchbionics.com

5.3 General Safety, Warnings and Precautions

i-digits™ quantum

Do not use without an approved cover.

Do not use under water.

Do not use to operate heavy / industrial machinery.

Do not use with machinery with moving parts that may cause personal injury or damage.

Users must comply with local regulations on the operation of automobiles, aircraft, sailing vessels of any kind and any other motorized vehicle or device.

Do not use for extreme activities that may cause injury to a natural hand.

Do not expose to excessive moisture, liquid, dust, vibration or shock.

Do not expose to high temperatures.

Do not expose to flames.

Do not use or expose to explosive atmospheres.

Do not disassemble componentry or modify in any way.

Maintenance, repairs and upgrades may only be performed by qualified Touch Bionics technicians and technical partners.

Do not use with a damaged cover.

Damaged covers must be replaced or repaired by a qualified Touch Bionics technician or technical partner.

Only approved Touch Bionics accessories and tooling may be used with i-digits™ quantum.

Do not use an i-digits™ quantum device to operate your mobile device whilst it is connected to a mains outlet, as this can affect EMG signal.

Failure to comply with the above guidelines will invalidate the warranty.

Batteries

Do not bend or exert excessive pressure on the battery.

Do not pierce the battery.

Do not disassemble.

Do not expose to high temperatures.

Do not incinerate batteries.

Do not short circuit the battery.

Do not store batteries inside a vehicle.

Dispose of batteries in accordance with US, European or local regulations.

Only use the appropriate Touch Bionics charger to charge Touch Bionics batteries.

If the battery has visibly ballooned or swelled:

- discontinue the charging process immediately
- disconnect the battery
- remove to a safe area
- leave and observe for 15 minutes
- replace with new battery
- do not re-use
- dispose of any leaking batteries in an appropriate manner

Failure to comply with the above guidelines will invalidate the warranty.



If you experience technical problems with i-digits™ quantum contact Touch Bionics as follows:

North America (Canada, Mexico & US)

Tel: +1 855 MYiLIMB (694 5462)

Germany/Europe:

Tel: +49 6221 357 9060

France:

Tel: 0805 110478

UK/International

Tel: +44 1506 438 556

6.0 User Information

6.1 User Details

Provision of the following information will enable easy identification of your device, should it be returned to customer service. Please forward to Touch Bionics as per the contact information on the back page of this manual.

User Name:

Fitting Date:

Device Purchase Date:

Device Serial Number:

Prosthetist Name & Contact Information:

Therapist Name & Contact Information:

It is recommended that the above information is also included in the user notes.

7.0 Appendix

7.1 Technical Information

i-digits™ quantum	
Voltage	7.4 V (nominal)
Max. Current	5 A
Battery Capacity	Rechargeable lithium polymer 7.4 V (nominal); 800 mAh capacity
Max device load	20kg
Finger Carry Load (static limit)	5kg
Time from full open to full close	0.8 seconds

7.2 i-digits™ quantum Information

Hazardous Area Classification	
i-digits™ quantum device is not intended for use outside the boundaries of the environments listed below. The user of i-digits™ quantum device should assure that it is not used in such environments.	
Condition	Level
Maximum temperature	+70°C
Minimum temperature	-40°C
Hazardous Area Classification	Non Hazardous

7.3 Component Compatibility

Please refer to www.touchbionics.com/downloads/document-library for Electro Magnetic Compatibility (EMC) and Electrical Information for i-digits™ quantum products.

7.4 Warranty

Refer to www.touchbionics.com/downloads/document-library to review warranty information.

	<p>Consult instructions for use</p>
	<p>Class II equipment – provides double Isolation to protect against electric shock</p>
<p>IP40</p>	<p>Degree of protection – IP40</p> <p>Protection against penetration by solid particles with diameters larger than 1 mm. No special protection against penetration by water</p>
	<p>Serial Number</p>
	<p>For i-digits™ quantum devices: The unique serial number for i-digits™ quantum devices is a “DM” with a 4 digit alpha / numeric number.</p>
	<p>WEEE Compliance</p>
	<p>Catalogue number</p>
	<p>Manufacturer/Date of Manufacture</p>
	<p>European Conformity</p>



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