User Instructions

V-TEC io1 Smart Hook PFL

Fall Protection

Order No.: 10215637_r0

Print Spec:

CR: 8000000XXXX

WARNING!

Read this manual carefully before using or maintaining the device. The device will perform as designed only if it is used and maintained with the manufacturer's instructions. Otherwise, it could fail to perform as designed, and persons who rely on this device could sustain serious injury or death.

The warranties made by MSA with respect to the product are voided if the product is not installed and used in accordance with the instructions in this manual. Please protect yourself and your employees by following the instructions.

Please read and observe the WARNINGS and CAUTIONS inside. For additional information relative to use or repair, call 1-800-MSA-222 during regular working hours.

The Declaration of Conformity can be found under the following link: https://MSAsafety.com/DoC.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

English:

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

French:

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

MSA
The Safety Company

1000 Cranberry Woods Drive
Cranberry Township, PA 16066
USA

For your local MSA contacts please go to our website www.MSAsafety.com

Contents

1 Safety Regulations

1.1 Correct Use

The V-TEC io1 Smart Hook Personal Fall Limiter (PFL) (V-TEC io1) is intended for use as part of a complete personal fall protection system.

The V-TEC io1 is intended to provide real-time audible and visual feedback to users, relaying their connection status to their PPE.

The V-TEC io1 is intended for use in applications where connections will be made with overhead-mounted personal fall limiters. The primary application for the V-TEC io1 is Order Picker-type Powered Industrial Trucks.

⚠ WARNING!

Use in other applications including, but not limited to, material handling, recreational or sports related activities, or other activities not described in these user instructions, are not approved by MSA and could result in serious injury or death.

Failure to follow this warning can result in serious personal injury or death.

1.2 Warnings

⚠ WARNING!

- Device is not Intrinsically Safe. Do not use this device in flammable or explosive environments.
- This device is only to be used by trained users in workplace applications
- Users of the V-TEC io1 shall be medically fit and suitably trained. The V-TEC io1 shall not be used by pregnant women, minors or those under the influence of alcohol or drugs.
- The V-TEC io1 is intended to be used as a connecting element between a full body harness and anchor point. A full body harness is the only acceptable body holding device to be used with a V-TEC io1. If supplied as part of a complete system, components shall not be substituted.
- TheV-TEC io1 is only to be used for its intended purpose and within its limitations. Further clarification can be obtained from MSA.
- For use in accordance with acceptable locations (Table 3). Do not use over an edge or in a situation where a fall would result in contact with an edge.
- For single user only within the weight range 60 - 140 kg (130 - 310 lbs) (including tools). Suitable for use up to 181 kg (400 lbs) (including tools) under OSHA only.
- The V-TEC io1 must be protected from sharp edges, abrasive surfaces, fire, acids, caustic solutions, or temperatures outside the range -40 °C to 54 °C (-40 °F to 130 °F).
- The lifeline shall not come into contact with hot surfaces (such as hot pipes); become entangled with moving machinery; or contact with electrical hazards (such as power lines).
- Unsuitable for use on unstable surfaces, fine grain materials, or particulate surfaces such as sand or coal.
- Additional lanyard connectors shall not be connected., as this would serve to lengthen the lifeline and increase freefall.
- The V-TEC Mini PFL webbing 1.8 m (6 ft) is specifically tested and suitable for use on MEWPs (Mobile Elevating Working platforms) in Europe (Prüfgrundsatz PG -06-07). Injuries caused by impact with work basket or boom cannot be excluded.
- V-TEC PFL top connector attached to either the full body harness or anchor point. Attach one end of the V-TEC PFL to a suitable anchor or anchor connector, attach the other end to the designated fall arrest attachment of a full body harness. When used on a MEWP the device shall be secured to the harness dorsal d-ring and the Lanyard connected to the basket

anchor point as illustrated in Figure 2. Failure to connect in accordance with instructions may result in damage or failure of the device.

- Ensure both V-TEC io1s connectors are compatible with the attachments to which they are connected (to prevent roll-out), and are fully closed and locked before use. See Table 1 for system requirements.
- Ensure the V-TEC PFL is attached to a compatible anchor – flexible anchors, such as anchor lines or cantilever structures can affect the ability of the V-TEC PFL to lock-on in the case of a fall. For further clarification, contact MSA .
- In use, the V-TEC io1 lifeline will extract and retract without hesitation. Do not allow the lifeline to pass through legs or under arms, or wrap around structure. If the lifeline does not retract in use, fully extract the lifeline and slowly allow it to retract. If the lifeline continues to hesitate in retraction, contact MSA .
- When not in use, store with the lifeline fully retracted as prolonged periods of full extraction may weaken the retraction spring. If the lifeline is released it will retract at high speed potentially damaging internal parts, causing kinks in the lifeline and/or deploying the load indicator.

Failure to follow these warnings can result in serious personal injury or death.

2 Description

- The V-TEC io1 consists of a V-TEC PFL and a permanently integrated Smart Hook component on the snaphook that monitors and communicates connection status between the snaphook and a “tagged’ harness.
- Motion wakes the V-TEC io1 from sleep mode. During wake-up, an initial alarm sound beeps once to give the initial reminder to connect.
- If a connection is present when awake, the V-TEC io1 will pulse a single green LED indicating good connection.
- During a connection event, a tri-beep is played to signal connection. No alarms are sounded during the connected period. During a disconnection event, a tri-beep is played to signal disconnection.
- If a connection is not present when awake, the V-TEC io1 will “count down” a timer and eventually go into alarm sequence, beeping 90 dB alarm sounds and blinking red lights.

  Scenario 1: After waking, the hook goes into alarm in 15 seconds if no connections are found.

  Scenario 2: After disconnection from the harness, the hook alarms after 30 seconds if no new connections are found.
- Motion sensors within hook allow it to fall asleep when no motion is felt.
- The units are calibrated to fall asleep when no movement being sensed. This allows the hook to fall asleep naturally when it should, such as an order picker stepping off and leaving the hook to rest.
- Reference the V-TEC PFL manual, P/N 63011-98EN, included in the box, for additional information about the Personal Fall Limiter and Fall Protection Connector Safety.

2.1 Physical Contents

Components	Part Number
V-TEC io1 Smart Hook PFL	
Charging Line Components *includes battery, wires, connector/adapter, cable ties, peel and stick cable tie mounts*	
Carabiner	
RFID Tag/Screws	
V-TEC PFL User Instructions	63011-96EN-03
V-TEC io1 Smart Hook PFL User Instructions	10215637

3 Specifications

3.1 Physical Specifications

Capacity	310 lbs (141 kg)
Anchorage Strength	3,6000 lbf (16 kN)
Dimensions	13.5" x 3.4" x 2.75"
Product Weight	V-TEC io1 PFL only: Entire Product Kit:
Standards	ANSI Z359.14-2014 CSA Z259.2.2-98 OSHA 1910.140, OSHA1926.503
	FCC

3.2 Electrical Specifications

Component	Specification	
24V Converter	Input Range:	8V - 40V DC via 16AWG wires
	Output Voltage:	5V DC
	Output Current:	2.5A max
	Output Connection Type:	Female USB Type A
	Operating Temperature:	-10°C to +70°C
	Compliance:	Meets SAE J-1113, Integrated Short Circuit Protection
	Certifications:	FCC, Industry Canada, CE, WEEE, RCM, e-Mark and RoHs Compliant USB 2.0 BC 1.2 DCP Support
USB A to Micro-B Adapter	Interface:	USB 2.0
	Connector 1:	USB Type Micro-B Male
	Connector 2:	USB Type-A Mal
Power Pack	Outputs:	USB-A / 1A and 2.1A
	Inputs:	USB Micro
	Weight:	8.2 oz
	Dimensions:	5.16 x 2.76 x 0.59 inches
15' USB Cable	Interface:	USB 3.0/3.1 Gen 1 (5 Gb/s)
	Connector 1:	USB Type-C Male
	Connector 2:	USB Type-A Male

Component	Specification	
V-TEC io1 Smark Hook	Input:	USB C 5V
	Battery Capacity:	350mAh LiPo/nom. 3.7V
	Charge Current:	350mA (1C Charging)
	Charge Threshold:	35mA

For PFL, Rescue, Training, and Inspection content related to the lanyard itself please reference included PFL manual, MSA P/N 63011-98EN

4 Installation

4.1 Installing the V-TEC io1

<<image if applicable>>

(1) Disconnect power from the Powered Industrial Truck (PIT) electrical system.

<<image if applicable>>

(2) Remove the access panel/s over the control area. Find the open power receptacle and clean as needed.

(3) Plug the input end of the power cord into the available power source. The white-striped wire of the power cord is positive (+) and must be hardwired to a power source of 12-24 V. Use any leftover cable clips and cable ties to manage access wires.

<<image if applicable>>

a) Confirm the supplied io1 system power connector will mate with the power receptacle. Each PIT manufacturer has a slightly different preferred location. If unsure where to connect to a hardwired power source on your truck, contact your local PIT authorized service center.

b) Ensure the connector is fully connectedand that there are no loose wires.

<<image if applicable>>

(4) Clean the area of attachment for the auxiliary power pack. This should be a flat location on the control wall where the auxiliary battery pack will fit.

⚠ WARNING!

Wipe away dust and dirt from the electrical leads with degreaser and a cloth

Failure to follow this warning can result in serious personal injury or death.

(5) Mount the combined 24v to USB converter and power pack module to the face of the control wall using the peel and stick foam panel.

<<image if applicable>>

Apply pressure to ensure a good adhesion is made. Use zip-ties to add physical restraint, if possible and placement permits.

NOTE: If possible and placement permits, use zip-ties to add physical restraint.

⚠ WARNING!

Confirm this location has the required clearance between the control wall and the panel that will be placed over it.

Failure to follow this warning can result in serious personal injury or death.

<<image if applicable>>

(6) Mount the V-TEC io1 system onto overhead fall protection rail.

<<image if applicable>>

(7) Locate a place for the charging line holder on one of the overhead vertical slats that allows the charging line to hang freely.

⚠ WARNING!

Hook must hang freely

Failure to follow this warning can result in serious personal injury or death.

<<image if applicable>>

(8) Connect the 10’ USB cable to the USB C port on the back of the io1 hook.

<<image if applicable>>

(9) Route the cable back to the right cabin pillar and secure it in the upper corner near the roof leaving some slack in the cable as shown.

NOTE: Use the provided cable ties and peel and stick cable tie mounts as needed.

<<image if applicable>>

(10) Route the USB cable down along the pillar and display post as needed to control the wire path and prevent it from interfering with other components.

NOTE: Use the provided cable ties and peel and stick cable tie mounts as needed.

<<image if applicable>>

(11) Pass the cable down into the open access area and pull all slack cable through to the access area to easily reach the already attached power pack.

<<image if applicable>>

(12) Connect the USB type A end of the USB cord to the open port on the power pack.

NOTE: Look for the charge LED near the USB-C port on the hook to light either red or green to confirm connection.

<<image if applicable>>

(13) Route the USB cable from the power pack back along the control wall and to the entry point into the access compartment.

NOTE: Use the provided cable ties and peel and stick cable tie mounts as needed to control the wire path and prevent it from interfering with other components.

<<image if applicable>>

(14) Coil any excess wire inside the access area.

NOTE: Use cable ties to secure it so that it does not interfere with any other components or the closing of the access door.

<<image if applicable>>

(15) Disconnect the USB cable from the hook.

(16) With the magnetic clip base attached to the end of the USB cable, select a location near the right pillar to af¬ix the magnetic clip base.

<<image if applicable>>

NOTE: This location should be easy for the worker to reach and not allow the stowed cable to interfere with typical picking actions.

NOTE: Wipe the surface clean of grease, dust, debris, or other surface contaminants that may affect adherence of the magnetic clip base.

<<image if applicable>>

(17) Peel the paper off the magnetic clip base and firmly stick the base to this area.

<<image if applicable>>

(18) Reconnect the PIT electrical system to the battery.

NOTE: Be sure power reaches the power pack by looking for the charging lights on the pack.

<<image if applicable>>

(19) Replace the access panel(s) over the control area.

5 Operation

5.1 Using the V-TEC io1 System

Connecting the Snaphook to the D-ring

Attach the snaphook to the D-ring.

NOTE: When contact is made, the smart device on the snaphook will play a "connection" tri-tone sound and an LED will gently pulse green.

⚠ WARNING!

Ensure the snaphook turns green.

Failure to follow this warning can result in serious personal injury or death.

If after several tries the smart device on the snaphook is still red when the attached to the D-ring, use a paperclip to reset the device as shown, or contact MSA Customer Service .

NOTE: While the snaphook and D-ring are connected the smart device will pulse green in X second intervals.

NOTE: If the snaphook and D-ring become disconnected, a 15 second countdown to reconnect will begin. An alarm will sound at 30 seconds if no connection is made.

Sleep Mode

When the smart device on the snaphook does not detect motion, the device will enter sleep mode.

The smart device on the snaphook “wakes up” when the RFID tag detects motion.

Battery Service Life

When the battery has 20% service life remaining, the device will beep at a X second interval until the snaphook is plugged into the USB-C port.

Charging the Snaphook

(1) Park the order picker truck.

(2) Insert the charging cable into the USB-C port on the snaphook as shown.

When the battery is fully charged, the device will pulse green.

NOTE: When a low battery is charging the device will turn red.

5.2 Status Indicators

Table 1 Status Indicators

Hook Behavior	Occurs When
TBD	Smart Hook has woken up from sleep mode
Ascending Single Tri-Beep Tone	Smart Hook connection has been made between hook and harness tag
Descending Single Tri-Beep Tone	Smart Hook disconnection is registered between hook and harness tag (X second delay from physical disconnection)
Pulsing Red LED Light	Smart Hook is disconnected
Intermittent Pulsing Green LED Light	Smart Hook is connected

6 Inspection

Inspection Component	Inspect For:
Smart Hook Case	Inspect for cracks, dents, and chipping.
Alarm Sounding Hole	Inspect for debris blocking alarm hole (remove if present), Confirm Alarm sounds according to 'Hook Behavior' Chart above.
Charging Line	Inspect charging line and verify they are free of any cuts or abrasions. The cables should be fully secured at the each connection point and there should be no loose portions of wire.
Labels	Inspect labels to ensure they are present and all information is legible. The labels should be free from abrasions or peeling.

See MSA V-TEC PFL Manual, MSA P/N 63011-98EN (included in box) for Retractable Lanyard portion.

7 Troubleshooting

If the V-TEC io1 is not working, perform a hard reset. See Table 1 for status indicators.

Press the reset button on the side of the Smart Hook plastic housing with a small paperclip to turn it off. Do this again to turn the Smart Hook back on.

8 Warranty

Express Warranty – MSA warrants that the product furnished is free from mechanical defects or faulty workmanship for a period of one (1) year from first use or eighteen (18) months from date of shipment, whichever occurs first, provided it is maintained and used in accordance with MSA's instructions and/or recommendations. Replacement parts and repairs are warranted for ninety (90) days from the date of repair of the product or sale of the replacement part, whichever occurs first. MSA shall be released from all obligations under this warranty in the event repairs or modifications are made by persons other than its own authorized service personnel or if the warranty claim results from misuse of the product. No agent, employee or representative of MSA may bind MSA to any affirmation, representation or modification of the warranty concerning the goods sold under this contract. MSA makes no warranty concerning components or accessories not manufactured by MSA, but will pass on to the Purchaser all warranties of manufacturers of such components. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AND IS STRICTLY LIMITED TO THE TERMS HEREOF. MSA SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Exclusive Remedy – It is expressly agreed that the Purchaser's sole and exclusive remedy for breach of the above warranty, for any tortious conduct of MSA, or for any other cause of action, shall be the repair and/or replacement, at MSA's option, of any equipment or parts thereof, that after examination by MSA are proven to be defective. Replacement equipment and/or parts will be provided at no cost to the Purchaser, F.O.B. Purchaser's named place of destination. Failure of MSA to successfully repair any nonconforming product shall not cause the remedy established hereby to fail of its essential purpose.

Exclusion of Consequential Damages – Purchaser specifically understands and agrees that under no circumstances will MSA be liable to Purchaser for economic, special, incidental, or consequential damages or losses of any kind whatsoever, including but not limited to, loss of anticipated profits and any other loss caused by reason of the non-operation of the goods. This exclusion is applicable to claims for breach of warranty, tortious conduct or any other cause of action against MSA.

For additional information please contact the Customer Service Department at 1-800-MSA-2222 (1-800-672-2222).