SuperSpeed 7-Port USB 3.1 Gen 1 Hub with SeaLATCH USB Parts

User Manual | HUB7SSBA

Contents

Safety Instructions

Electrostatic Discharges (ESD)

A sudden electrostatic discharge can destroy sensitive components. Proper packaging and earthing rules must therefore be observed. Always take the following precautions.

1. Transport boards and cards in electrostatically secure containers or bags.
2. Keep electrostatically sensitive components in their containers, until they arrive at an electrostatically protected workplace.
3. Only touch electrostatically sensitive components when you are properly earthed.
4. Store electrostatically sensitive components in protective packaging or on anti-static mats.

Grounding Methods

The following measures help to avoid electrostatic damages to the device:

5. Cover workstations with approved antistatic material. Always wear a wrist strap connected to workplace as well as properly grounded tools and equipment.
6. Use antistatic mats, heel straps, or air ionizers for more protection.
7. Always handle electrostatically sensitive components by their edge or by their casing.
8. Avoid contact with pins, leads, or circuitry.
9. Turn off power and input signals before inserting and removing connectors or connecting test equipment.
10. Keep work area free of non-conductive materials such as ordinary plastic assembly aids and Styrofoam.
11. Use field service tools such as cutters, screwdrivers, and vacuum cleaners which are conductive.
12. Always place drives and boards PCB-assembly-side down on the foam.

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Introduction

Overview

The HUB7SSBA is a SuperSpeed 7-port USB 3.1 hub. Supported in all USB aware operating systems, the HUB7SSBA requires no separate software drivers and is easy to install.

The HUB7SSBA integrates SeaLATCH™ USB 3.1 ports, which are fully compatible with standard USB cables. When used with the optional USB cable with a SeaLATCH type B USB connector, the metal thumbscrew provides a secure metal-to-metal connection to the hub and prevents accidental cable disconnection. The hub's seven SeaLATCH type A USB connectors can secure USB peripherals to the hub in the same way.

Features

- Increases the number of SuperSpeed USB ports from a single computer port
- SeaLATCH USB 3.1 connectors provide locking connection
- Status LEDs indicate when a downstream USB connection to the host is established
    - Green LED when a USB 3.1 connection is established
    - Yellow LED when USB 2.0/1.1 connection is established
- USB 3.1 compliant with transfer rates up to 5 Gbps
- Backwards compatible with USB 2.0/1.1/1.0 devices
- Plug-and-Play; no drivers required for Windows XP/7/8/10™ and Linux operating systems
- Includes 7 USB charging downstream ports that enable concurrent data transfer and charging at up to 1500mA per port (2400mA on port 7)
- Dedicated charging configuration (no host computer)

- Individual overcurrent detection and protection for each port
- ESD protection on SuperSpeed data lines to ±15 kV
- ESD protection on High-Speed data lines to ±8kV
- Automatic link and speed detection
- Rugged all-metal enclosure designed for use in industrial applications

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Before You Get Started

What's Included

The HUB7SSBA is shipped with the following items. If any of these items is missing or damaged, please contact Sealevel for replacement.

- **HUB7SSBA – SuperSpeed 7-Port USB 3.1 Hub with SeaLATCH USB Ports**
- **CA783 – USB 3.1 Type A to USB Type B Cable, 2 meters in Length**
- **9723K88 (x4) - PVC Flat Top Bumper 1/2" diameter (Rubber Feet)**
- **104456 – Pluggable, Locking Screw Terminal (2-pos; 5.08mm)**

Advisory Conventions

Warning
The highest level of importance used to stress a condition where damage could result to the product, or the user could suffer serious injury.

Important
The middle level of importance used to highlight information that might not seem obvious or a situation that could cause the product to fail.

Note
The lowest level of importance used to provide background information, additional tips, or other non-critical facts that will not affect the use of the product.

Optional Items

Depending upon your application, you are likely to find one or more of the following cable items useful with the HUB7SSBA. Additional items can be found in the Mounting Options section of this manual. All items can be purchased from our website or by calling +1 864-843-4343.

Cables

100-240 VAC to 24 VDC @ 2.71A, Desktop Power Supply w/ Tinned Leads (Item# TR152)	
The TR152 is a desktop power supply rated for universal 100-240 VAC input and 24 VDC output at 2.7 amps (65 watts). The TR152 conforms to DoE requirements for Level VI Energy Efficiency, features over voltage, short circuit, and over current protection, and operates over a 0 to +40C temperature range. The DC output wire is approximately 6 feet in length; the positive lead is marked with red shrink tubing and both leads are stripped and tinned.	

SeaLATCH USB 3.1 Type A and SeaLATCH USB 3.1 Type B Device Cable, 78" (Item# CA746)	
The CA746 is a USB 3.1 device cable with SeaLATCH USB type A and SeaLATCH type B connectors. The metal thumbscrew on each connector provides a secure metal-to-metal connection to devices with SeaLATCH USB ports.	

SeaLATCH USB 3.1 Type A and USB 3.1 Type B Device Cable, 78" (Item# CA747)	
The CA747 is a USB 3.1 device cable with SeaLATCH USB type A and standard type B connectors. The metal thumbscrew on the SeaLATCH connector provides a secure metal-to-metal connection to devices with SeaLATCH USB ports.	

USB 3.1 Type A and SeaLATCH USB 3.1 Type B Device Cable, 78" (Item# CA748)	
The CA748 is a USB device cable with standard USB type A and SeaLATCH type B connectors. The metal thumbscrew on the SeaLATCH connector provides a secure metal-to-metal connection to devices with SeaLATCH USB ports.	

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Legacy Accessories

SeaLATCH USB Type A and SeaLATCH Type B Device Cable, 72" (Item# CA332)	
The CA332 is a USB device cable with SeaLATCH USB type A and type B connectors. The metal thumbscrew on each connector provides a secure metal-to-metal connection to devices with SeaLATCH USB ports.	

SeaLATCH USB Type A to USB Type B Device Cable, 72" (Item# CA355)	
The CA355 is a USB device cable with a SeaLATCH USB type A connector and standard type B connector. This cable secures the HUB7M to legacy USB peripheral devices.	

USB Type A to SeaLATCH Type B Device Cable, 72" (Item# CA356)	
The CA356 is a USB device cable with a SeaLATCH USB type B connector and standard type A connector. This cable is included with all Sealevel USB products with an integrated SeaLATCH type B USB port.	

USB Type A to USB Type A, 3 Meter Extension Cable (Item# CA214)	
The CA214 is a fully rated USB extension cable that adds three meters to any existing USB cable (maximum 5 meters). The CA214 has a type A male connector on one end and a type A female connector on the other end.	

USB Type A to USB Type B, 72" Device Cable (Item# CA179)	
The CA179 is a 72" USB device cable that connects USB peripherals with a Type B connector to the Type A connector on a host computer. The CA179 is USB 2.0 compliant and is compatible with USB 1.1 and 1.0 devices.	

USB Type A to USB Type B, 5 Meter Device Cable (Item# CA215)	
The CA215 is a fully rated 5 meter device cable that connects USB peripherals with a type B connector to the type A connector on a host PC. This cable provides the maximum 5 meters (16 feet) for a USB connection.	

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Installation

Windows XP/7/8/10™ Operating Systems

1. The HUB7SSBA is fully supported as a generic USB 3.1 hub device in Windows 8/10™ operating systems and requires no separate drivers.

2. The HUB7SSBA is supported as a generic USB hub device in Windows XP/7™ and other USB-aware operating systems and requires no separate drivers.

3. Simply connect the desktop power supply to the HUB7SSBA and connect to an AC outlet.

4. Using the included USB device cable (CA783), plug the HUB7SSBA's Upstream Host Port into an available USB 3.1 port on your host system.

5. The 'Found New Hardware' screen will appear, and the hub will be automatically recognized as both a Generic USB 2.1 Hub device and a Generic SuperSpeed USB Hub device.

6. The hub is ready to use when you see the screen 'Your USB hub is installed and ready to use.'

N Windows NT is not USB aware and thus cannot support this device.

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Hardware Description

USB Ports

The HUB7SSBA integrates SeaLATCH USB 3.1 ports, which are fully compatible with standard USB cables. When used with the optional USB cable with a SeaLATCH USB 3.1 type B connector (CA746/CA748), the metal thumbscrew provides a secure metal-to-metal connection to the hub and prevents accidental cable disconnection.

The SeaLATCH USB 3.1 type B locking connector and standard USB 3.1 type B port is shown below:

The HUB7SSBA's seven SeaLATCH USB 3.1 type A locking connectors can secure USB peripherals to the hub in the same way. Two of the SeaLATCH USB 3.1 type A ports are shown below. Each of the seven downstream type A USB ports provides up to1500mA to USB peripherals with port seven providing up to 2400mA.

Each downstream port of the HUB7SSBA has its own transaction translator to provide the best USB performance no matter what class of USB device is connected it.

1500mA Ports :

Each HUB7SSBA has six CDP ports that can supply up to 1500mA. When there is no upstream host connection, these ports are dedicated charging ports, supporting vendor specific charging (RapidCharge; Apple® 2.0A).

2400mA Port:

Each HUB7SSBA has a single, high-power port that can supply up to 2400mA. When there is no upstream host connection, the high-power port is a dedicated charging port, supporting vendor specific charging (RapidCharge; Apple® 2.4A).

Status LEDs

Each downstream port has a status LED that is visible from the front of the HUB7SSBA module to indicate the following information:

- **USB 2.0/1.1/1.0 Connection with Host (Yellow) – Lights when a USB 2.0, 1.1, or 1.0 connection is established with the upstream host.**
- **USB 3.1 Connection with Host (Green) – Lights when a USB 3.1 connection is established with the upstream host.**

External Power

The HUB7SSBA can be ordered with an optional industrial grade desktop power supply (Item# TR152) that outputs 24VDC @ 2.71A. Power is input via a 5mm 2-position removable screw terminal block (shown below). To prevent accidental disruption of power, the terminal block includes captive mounting screws for securing to the hub. The HUB7SSBA accepts a wide input voltage range from 9VDC to 30VDC for use with alternative power supplies.

The HUB7SSBA is powered via 2-pin terminal-block and is configured as a self-powered device that consumes less than 1 mA of upstream VBUS current. Each downstream port is configured as a Charging Downstream Port (CDP) capable of delivering up to 1500mA with port 7 capable of delivering up to 2400mA.

SeaLATCH® USB 3.1

The HUB7SSBA integrates SeaLATCH USB 3.1 ports, which are fully compatible with standard USB cables. When used with the optional USB cable (Item# CA748) with a SeaLATCH USB type B connector, the metal thumbscrew provides a secure metal-to-metal connection to the hub and prevents accidental cable disconnection.

The hub's seven SeaLATCH type A USB 3.1 connectors can secure USB peripherals to the hub in the same way. Sealevel incorporates SeaLATCH locking USB ports on many USB I/O devices. Accidental cable disconnection is the most common point of failure with USB industrial I/O devices and SeaLATCH cables and connectors prevents that while being fully compatible with standard USB cables.

Examples of the HUB7SSBA with SeaLATCH equipped Sealevel I/O devices are shown below:

Any USB Peripheral Device

SeaI/O USB

SeaLink USB

SeaDAC Lite USB
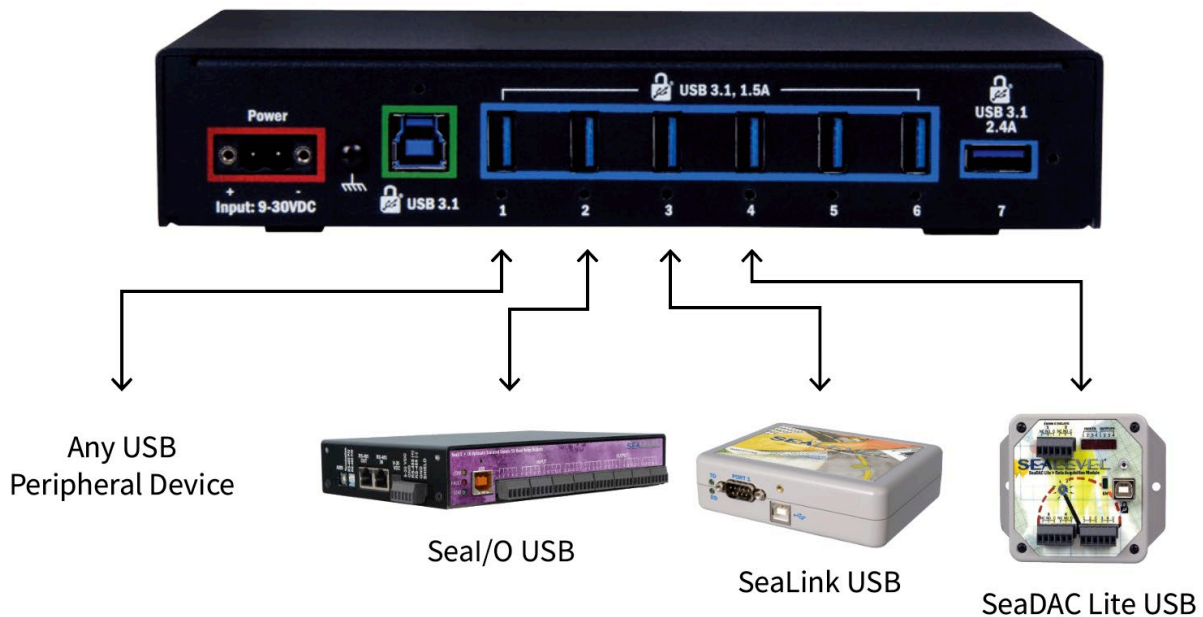
SeaLATCH Locking USB 3.1 Cables

SeaLATCH locking USB 3.1 cables integrate a small thumbscrew into each USB connector. SeaLATCH USB 3.1 cables are fully interchangeable with standard USB cables. The thumbscrew provides a secure metal-to-metal connection preventing accidental disconnection. SeaLATCH USB 3.1 cables are available in three configurations.

SeaLATCH USB Connectors

Type B   Type A
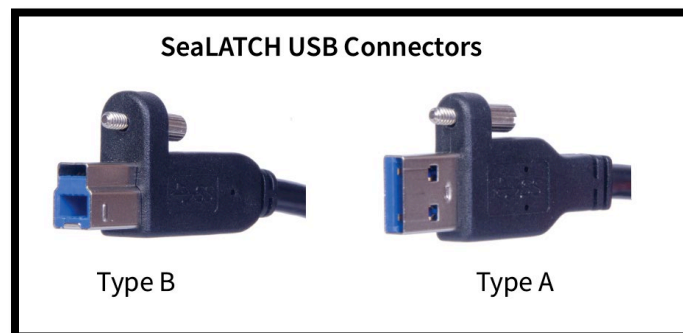
Mounting Options

DIN Rail Mounting
The HUB7SSBA is available with a factory-installed DIN-rail mounting clip. Alternatively, DIN-rail mounting clips can be ordered as a field upgrade kit (Item# DR106). The bracket with clip is easily attached using two included #4-40 Phillips head machine screws.

Technical Specifications

Power Requirements

9-30 VDC @ 65W

Dimensions

Length	Width	Height
7.500"	5.100"	1.750"
19.05cm	12.95cm	4.45cm

Weight

1.03 lbs / 0.47 kg

Environmental Specifications

Specification	Operating	Storage
Temperature Range	-40°C − 85°C (-40°F − 185°F)	-40°C − 85°C (-40°F − 185°F)
Humidity Range	10 to 90% R.H. Non-Condensing	10 to 90% R.H. Non-Condensing

Manufacturing

All Sealevel Systems Printed Circuit boards are built to UL 94V0 rating and are 100% electrically tested. These printed circuit boards are solder mask over bare copper or solder mask over tin nickel.
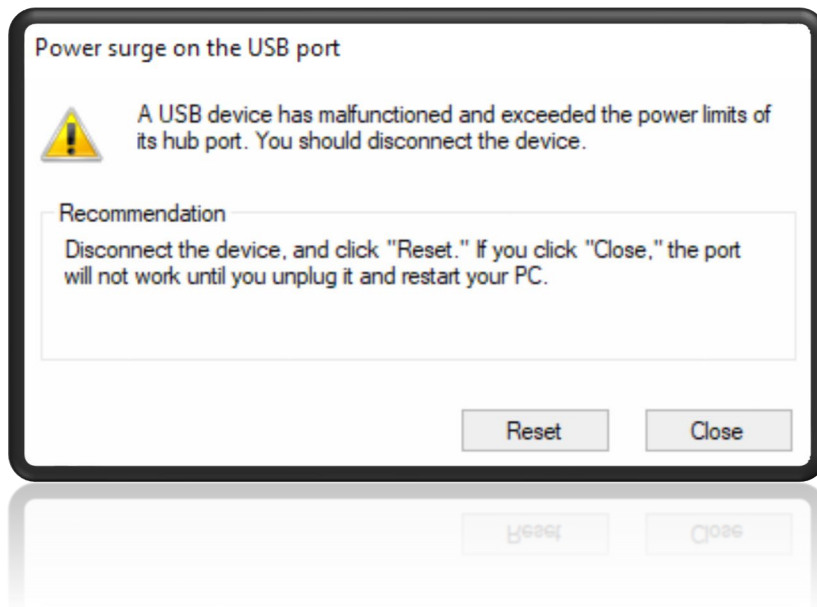
Appendix A - Troubleshooting

The HUB7SSBA is a generic SuperSpeed USB hub and should provide years of trouble-free service. Should the device appear to not be functioning correctly, the following tips can eliminate most common problems without the need to call Technical Support.

1. Make sure the power supply is connected to the hub and to a live AC power outlet.

2. Make sure the hub is connected to a USB port using the included USB cable or quality replacement USB cable.

3. The hub is fully supported as a USB 3.1 hub device in any operating system that supports SuperSpeed USB hub devices, including Windows 8 & Windows 10.

4. The hub is supported as a USB 2.0 hub device in any USB-aware operating system including Windows XP/7, Linux (kernel v2.4 or better), Apple (Apple OS X 10.4+), and other USB-aware operating systems. Check to make sure that USB support is enabled in the System BIOS and it is functioning properly in the operating system. This can be done by using Device Manager in Windows.

5. When a portable device (PD) is connected to a downstream port of the HUB7SSBA, the PD enumerates with either a SuperSpeed connection or a legacy USB connection (High-Speed, Full-Speed, or Low-Speed).

    a. If a SuperSpeed USB connection is established, the corresponding LED for that port will illuminate green.

    b. If a non-SuperSpeed USB connection is established, the corresponding LED for that port will illuminate yellow.

    c. The LEDs should remain unlit until a USB connection is detected.

6. When a downstream USB peripheral pulls more than 1500mA of power from ports 1,2,3,4,5, or 6, the overcurrent protection will shut down the port until the problem is resolved.

7. When a downstream USB peripheral pulls more than 2400mA of power from port 7, the overcurrent protection will shut down the port until the problem is removed.

8. On Windows 10, If the problem device is not removed from the HUB7SSBA within 3 seconds, the overcurrent event will be reported to the host as shown below:

9. Click on the "Power surge on the USB port" notification to open the prompt shown below:

Power surge on the USB port

⚠️ A USB device has malfunctioned and exceeded the power limits of its hub port. You should disconnect the device.

Recommendation
Disconnect the device, and click "Reset." If you click "Close," the port will not work until you unplug it and restart your PC.

[Reset]   [Close]

10. The LED associated with the downstream port will turn off when in overcurrent shutdown; use the state of the LEDs to determine which port incurred the overcurrent shutdown. Disconnect your USB peripheral attached to the port in overcurrent shutdown. If the port remains unpowered, reset the HUB7SSBA by disconnecting the upstream host & external power and then reconnect them. Inspect the problem USB peripheral and replace, if necessary. Try connecting a different USB peripheral to the problem port. If the port remains unpowered after following the steps above, contact technical support for further assistance.

If these steps do not solve your problem, please call Sealevel's Technical Support at +1 864-843-4343. Our technical support is free and available from 8:00 AM to 5:00 PM Eastern Time Monday through Friday. For email support, contact support@sealevel.com.

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Appendix B - How To Get Assistance

Please refer to: Appendix A -- Troubleshooting Guide prior to calling Technical Support.

Begin by reading through the Trouble Shooting Guide in Appendix A. If assistance is still needed, please see below.

When calling for technical assistance, please have your user manual and current adapter settings. If possible, please have the adapter installed in a computer ready to run diagnostics.

Sealevel Systems provides an FAQ section on its web site. Please refer to this to answer many common questions. This section can be found at http://www.sealevel.com/faq.asp.

Sealevel Systems maintains a web page on the Internet. Our home page address is www.sealevel.com. The latest software updates, and newest manuals are available via our web site.

Technical support is available Monday to Friday from 8:00 AM to 5:00 PM Eastern Time. Technical support can be reached at (864) 843-4343.

RETURN AUTHORIZATION MUST BE OBTAINED FROM SEALEVEL SYSTEMS BEFORE RETURNED MERCHANDISE WILL BE ACCEPTED. AUTHORIZATION CAN BE OBTAINED BY CALLING SEALEVEL SYSTEMS AND REQUESTING A RETURN MERCHANDISE AUTHORIZATION (RMA) NUMBER.

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Appendix C – Silk Screen – HUB7SSBA PCB

Appendix E - Compliance Notices

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to 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.

European Community

This equipment has been evaluated or tested and found in compliance with the requirements of the following directives issued by the European Commission:

- EMC Directive **2014/30/EU**

- RoHS Directive **2011/65/EU + (EU) 2015/863**

Warranty

Sealevel's commitment to providing the best I/O solutions is reflected in the Lifetime Warranty that is standard on all Sealevel manufactured I/O products. We are able to offer this warranty due to our control of manufacturing quality and the historically high reliability of our products in the field. Sealevel products are designed and manufactured at its Liberty, South Carolina facility, allowing direct control over product development, production, burn-in and testing. Sealevel achieved ISO-9001:2015 certification in 2018.

Warranty Policy

Sealevel Systems, Inc. (hereafter "Sealevel") warrants that the Product shall conform to and perform in accordance with published technical specifications and shall be free of defects in materials and workmanship for the warranty period. In the event of failure, Sealevel will repair or replace the product at Sealevel's sole discretion. Failures resulting from misapplication or misuse of the Product, failure to adhere to any specifications or instructions, or failure resulting from neglect, abuse, accidents, or acts of nature are not covered under this warranty.

Warranty service may be obtained by delivering the Product to Sealevel and providing proof of purchase. Customer agrees to ensure the Product or assume the risk of loss or damage in transit, to prepay shipping charges to Sealevel, and to use the original shipping container or equivalent. Warranty is valid only for original purchaser and is not transferable.

This warranty applies to Sealevel manufactured Product. Product purchased through Sealevel but manufactured by a third party will retain the original manufacturer's warranty.

Non-Warranty Repair/Retest

Products returned due to damage or misuse and Products retested with no problem found are subject to repair/retest charges. A purchase order or credit card number and authorization must be provided in order to obtain an RMA (Return Merchandise Authorization) number prior to returning Product.

How to obtain an RMA (Return Merchandise Authorization)

If you need to return a product for warranty or non-warranty repair, you must first obtain an RMA number. Please contact Sealevel Systems, Inc. Technical Support for assistance:

Available	Monday – Friday, 8:00AM to 5:00PM EST
Phone	864-843-4343
Email	support@sealevel.com

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