## FEATURES

- 7-port USB 3.1 Gen 1 hub with data transfers up to 5Gbps
- Rugged, industrial grade (-40˚C to 85˚C) operation
- Locking upstream, downstream, and power connectors prevent accidental disconnects, perfect for USB3 Vision applications
- SuperSpeed (5Gbps), Hi-Speed (480Mbps), Full-Speed (12Mbps), and Low-Speed (1.5Mbps) transfers supported
- Supports bus-powered and self-powered modes, accessible via DC power jack or a removable pair of screw terminals
- LED for power, and per port RGB LEDs to indicate overcurrent fault, High-Speed, and SuperSpeed
- Compact, steel, low-profile enclosure
- RoHS compliant
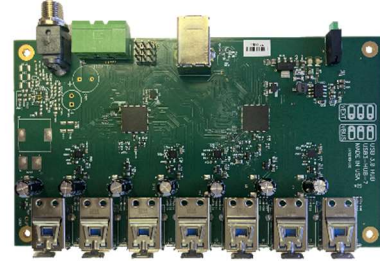
FACTORY OPTIONS

- OEM (board only) option
- Economy version equipped with standard, instead of locking connectors
- Wide input external power accepts from 7-28VDC
- Tantalum capacitors for flight and space based applications
- Conformal coating

FUNCTIONAL DESCRIPTION

The USB3-HUB-7 is an industrial-grade 7-port USB hub optimized for harsh and rugged environments. This hub has latching / locking connectors on upstream and downstream ports as well as power, preventing accidental disconnects - making it perfect for applications that require vibration proofing. By using a USB-IF and Windows Hardware Quality Lab (WHQL) certified hub controller, compatibility is assured. The rugged steel enclosure, positive retention connections, and -40˚C to +85˚C operation makes the USB3-HUB-7 stand out compared to commercially available hubs.

Each connection has been designed for rugged use without loose or intermittent cables disrupting your application. When externally powered, the removable screw terminal block or locking DC Jack and cable secure the power connection. Screw-locks on the enclosure around the Type B USB connector and jackscrews on the cable secure the upstream connection. Latching Type A ports provide high-retention (50N) downstream connections compatible with all industry-standard USB cables.

The hub supports SuperSpeed (SS), Hi-Speed (HS), Full-Speed, and Low-Speed on all ports. Each downstream port indicator lights Red, Green, or Blue (RGB) to indicate fault, USB2/High-Speed, or USB3/SuperSpeed, respectively. The hub also supports bus-powered and self-powered applications. If downstream peripherals require more current, the USB3-HUB-7 can be configured in self-powered mode: bring external +5V to the board so downstream power is drawn from the external supply. The optional ACCES PWR-ACDC-5V5A will provide 900mA to each downstream port. Power can be brought in via the DC locking jack / plug or via a convenient 2-position removable screw terminal.

This product is fully protected from faulty peripherals. Each downstream port utilizes a power distribution switch providing overcurrent and short circuit protection. If a fault occurs, the power distribution switch will disable that port and illuminate the LED red. The disabled port can be re-enabled by clearing the fault and cycling power to the port.

The board is designed to be used in rugged industrial environments, but is small enough to fit nicely onto any desk or testing station. The module is sized at 3.250" × 5.750", while the enclosure is approximately 3.46" × 6.26" × 1.0".

ACCESSORIES

Available accessories include the MP104-DIN for DIN rail mounting the USB3-HUB-7 and an external instrument grade power supply.

SOFTWARE

No software is provided or needed with this board. There is no need to install any drivers to use the USB3-HUB-7. It will enumerate as a Generic Hub which uses the USB Hub Class Driver that is built in Windows OS or Linux, et al.
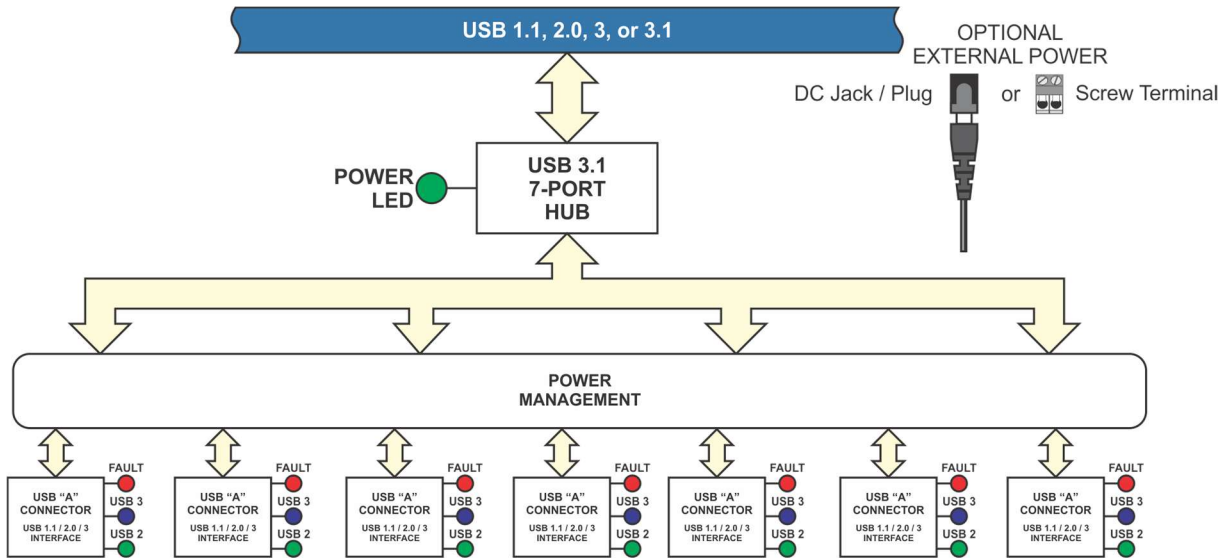
BLOCK DIAGRAM

SPECIFICATIONS

Bus Type:	USB 3.1 Gen 1 / 2.0 / 1.1 Super (5Gbps) / Hi (480Mbps) Full (12Mbps) / Low (1.5Mbps) Seven Type A downstream ports

Environmental

Operating & Storage:	-40° to +85°C
Humidity:	5-95% non-condensing
Board Size:	3.250" × 5.750"
Enclosure Size:	3.46" × 6.26" × 1.0"
Weight:	TBD grams (with enclosure) TBD grams (-OEM version)
Cable	6' USB3 Vision cable Type B with thumbscrews to standard Type A
Power	No external power *required*
Optional ext. power	Connect via screw terminals, a locking DC jack / plug or standard jack / plug

Note: Preliminary Datasheet, power specification is TBD

USB3.1	Up to TBD mA at 5VDC required
Bus Powered	Up to TBD mA for a single port and as little as TBD mA shared between all four ports is available to power downstream devices
Externally Powered	TBD mA available per downstream port
USB2.0	Up to TBD mA at 5VDC required
Bus Powered	Up to TBD mA for a single port and as little as TBD mA shared between all four ports is available to power downstream devices
Externally Powered	TBD mA available per downstream port (depends on +5V supply current)

Connectors

USB Type A Latching	Retention up to 50 Newtons Physical shock: Per EIA-364-27 Condition H (11ms 30G) Vibration: Per EIA-364-28D Condition V, Test A
USB Type B & A	8 Newtons disconnect non-locking
DC Jack (locking) (MIL-STD-202G)	Vibration: Method 201A Ins. Resistance: Method 302 ConditionB

Thermal Shock: Method 107G
Temperature: -40-105°C (-40-+221°F)
DC Jack (non-locking) 2.22 Newtons disconnect

Ordering Guide

USB3-HUB-7	RoHS compliant industrial USB 3.1 Gen 1 hub with locking/latching connectors in rugged enclosure (includes 6' high-quality USB 3.1 locking cable)
USB3-HUB-7-E	Economy version with standard non-latching power and data connections (includes 6' high-quality USB 3.1 cable)

Model Options

-OEM	Board only version (no enclosure)
-WI	Accepts external power 7 to 48VDC Note: VDC above 24V must use screw terminal power inputs
-TAN	Tantalum Capacitors instead of Electrolytic for high altitude usage
-CC	Conformal Coating for use in high humidity and dusty environments

Optional Accessories

PWR-ACDC-5V5A	External Power Supply
PWR-ACDC-5V5A-L	External Power Supply with locking connector
CAB-USB3LL	6' high-quality USB 3.1 cable with screw locks on A and B ends
MP104-DIN	DIN rail mounting provision

USB 3.1 vs USB 3.0
USB 3.0 was renamed to "USB 3.1 Gen 1" and operates at up to 5Gbps
USB 3.1 Gen 2 supports 10Gbps
For full details see user manual