ACCES I/O PRODUCTS, INC.

FEATURES
- 4-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
- 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 and a 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 with PC/104 mounting holes and footprint for convenience in embedded applications
- 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 USB3-104-HUB is an industrial-grade 4-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 USB3-104-HUB 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 screw terminal or threaded DC Jack and cable secure the power connection. Screwlocks 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 USB3-104-HUB can be configured in self-powered mode. External +5V can be supplied to the board, which will provide 900mA to each downstream port. Power can be brought in via the DC locking jack / plug or 2-position 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 PC/104 sized at 3.550" by 3.775", while the enclosure is approximately 4" x 4" x 1".

ACCESSORIES
Available accessories include the MP104-DIN for DIN rail mounting the USB3-104-HUB 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 USB3-104-HUB. It will enumerate as a Generic Hub which uses the USB Hub Class Driver that is built in Windows OS or Linux, et al.
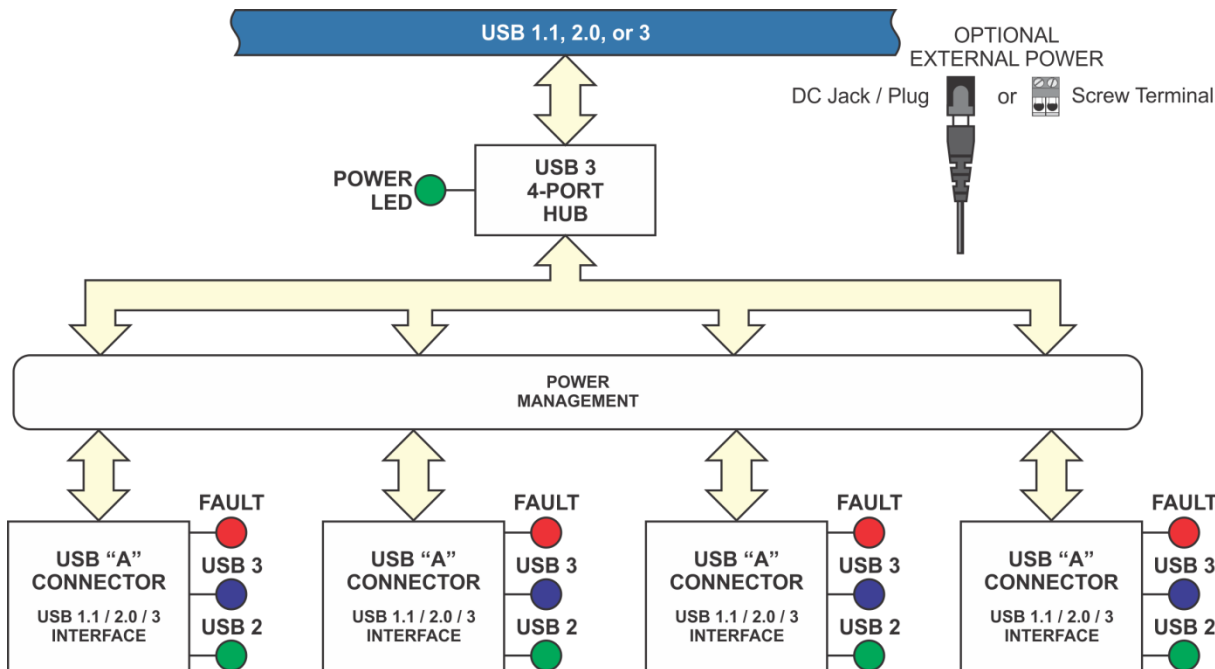
BLOCK DIAGRAM

SPECIFICATIONS

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

Environmental

Operating & Storage: -40° to +85°C
Humidity: 5-95% non-condensing
Board Size: 3.550" x 3.775"
Enclosure Size: 3.985" x 3.990" x 1.045"
Weight: 284 grams (with enclosure)
65.8 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

USB3.1 Up to 480mA at 5VDC required

Bus Powered Up to 620mA for a single port and as little as 420mA shared between all four ports is available to power downstream devices

Externally Powered 900mA available per downstream port

USB2.0 Up to 200mA at 5VDC required

Bus Powered Up to 390mA for a single port and as little as 300mA shared between all four ports is available to power downstream devices

Externally Powered 900mA available per downstream port

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) Vibration: Method 201A
(MIL-STD-202G) 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

USB3-104-HUB 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)

USB3-104-HUB-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 28VDC
-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