

Specifications

USB-SSR24



**MEASUREMENT
COMPUTING™**

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Specifications

Typical for 25 °C unless otherwise specified.

Specifications in *italic text* are guaranteed by design.

I/O module configuration

Table 1. I/O module configuration specifications

Modules 1-8	Selectable via switch S1 "A" position as either input modules or output (default) modules. Switch settings for direction can be read back via software. Do not mix input and output modules within this bank of eight.
Modules 9-16	Selectable via switch S1 "B" position as either input modules or output (default) modules. Switch settings for direction can be read back via software. Do not mix input and output modules within this bank of eight.
Modules 17-20	Selectable via switch S1 "CL" position as either input modules or output (default) modules. Switch settings for direction can be read back via software. Do not mix input and output modules within this bank of four.
Modules 21-24	Selectable via switch S1 "CH" position as either input modules or output (default) modules. Switch settings for direction can be read back via software. Do not mix input and output modules within this bank of four.
Pull-up/pull-down on digital I/O lines	Configurable via switch S3 with 2.2 K ohm resistor network. Switch settings for pull-up/pull-down selection can be read back via software. Default to pull-up. Switch settings are applicable during power up conditions of output modules only. Modules are active low. When switched to pull-up, modules are inactive on power up. When switched to pull-down, modules are active on power up.
I/O module logic polarity	Selectable via switch S2. Switch settings for polarity can be read back via software. Default to non-inverted. For input modules, invert mode returns a "1" when module is active; non-invert mode returns a "0" when module is active. For output modules, invert mode allows users to write a "1" to activate the module; non-invert mode allows users to write a "0" to activate the module.

Power

Table 2. Power specifications

Parameter	Conditions	Specification
USB +5 V input voltage range		4.75 V min. to 5.25 V max.
USB +5 V supply current	All modes of operation	10 mA max
External power supply (required)	MCC p/n CB-PWR-9	9 V $\pm$ 10% @ 1 A
Voltage supervisor limits - PWR LED	$V_{ext} < 6.0\text{ V}$, $V_{ext} > 12.5\text{ V}$	PWR LED = Off (power fault)
	$6.0\text{ V} < V_{ext} < 12.5\text{ V}$	PWR LED = On
External power consumption	All modules on, 100 mA downstream hub power	800 mA typ, 950 mA max
	All modules off, 0 mA downstream hub power	200 mA typ, 220 mA max

External power input

Table 3. External power input specifications

Parameter	Conditions	Specification
External power input		+6.0 VDC to 12.5 VDC (9 VDC power supply included)
Voltage supervisor limits - PWR LED (Note 1)	$6.0\text{ V} > V_{\text{ext}}$ or $V_{\text{ext}} > 12.5\text{ V}$	PWR LED = Off (power fault)
	$6.0\text{ V} < V_{\text{ext}} < 12.5\text{ V}$	PWR LED = On
External power adapter (included)	MCC p/n CB-PWR-9	+9 V $\pm 10\%$, @ 1 A

Note 1: The USB-SSR24 monitors the external +9 V power supply voltage with a voltage supervisory circuit. If this power supply exceeds its specified limit, the PWR LED will turn off indicating a power fault condition.

External power output

Table 4. External power output specifications

Parameter	Conditions	Specification
External power output - current range		4.0 A max.
External power output (Note 2)	Voltage drop between power input and daisy chain power output	0.5 V max
Compatible cable(s) for daisy chain	C-MAPWR-x	x = 2, 3, or 6 feet

Note 2: The daisy chain power output option allows multiple Measurement Computing USB boards to be powered from a single external power source in a daisy chain fashion. The voltage drop between the module power supply input and the daisy chain output is 0.5 V max. Users must plan for this drop to assure the last module in the chain will receive at least 6.0 VDC.

USB specifications

Table 5. USB specifications

USB "B" connector	Input
USB device type	USB 2.0 (full-speed)
Device compatibility	USB 1.1, USB 2.0
USB "A" connector	Downstream hub output port
USB hub type	Supports USB 2.0 high-speed, full-speed and low-speed operating points
	Self-powered, 100 mA max downstream VBUS capability
Compatible products	MCC USB Series devices
USB cable type (upstream and downstream)	A-B cable, UL type AWM 2527 or equivalent. (min 24 AWG VBUS/GND, min 28 AWG D+/D-)
USB cable length	3 meters max.

Digital I/O transfer rates

Table 6. Digital I/O transfer rate specifications

Digital I/O transfer rate (software paced)	System dependent, 33 to 1000 port reads/writes or single bit reads/writes per second typ.
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Mechanical

Table 7. Mechanical specifications

Card dimensions without modules	431.8 mm (L) x 121.9 mm (W) x 22.5 mm (H)
	17.0" (L) x 4.8" (W) x 0.885" (H)
Enclosure dimensions	482.6 mm (L) x 125.7 mm (W) x 58.9 mm (H)
	19.00" (L) x 4.95" (W)x 2.32" (H)

Environmental

Table 8. Environmental specifications

<i>Operating temperature range</i>	<i>0 to 70 °C</i>
<i>Storage temperature range</i>	<i>-40 to 85 °C</i>
<i>Humidity</i>	<i>0 to 90% non-condensing</i>

Main connector

Table 9. Main connector specifications

Connector type	Screw terminal
Wire gauge range	12-22 AWG

Screw terminal pin out

Table 10. Screw terminal pin out

Pin	Signal name
1+	Module 1+
1-	Module 1-
2+	Module 2+
2-	Module 2-
3+	Module 3+
3-	Module 3-
4+	Module 4+
4-	Module 4-
5+	Module 5+
5-	Module 5-
6+	Module 6+
6-	Module 6-
7+	Module 7+
7-	Module 7-
8+	Module 8+
8-	Module 8-
9+	Module 9+
9-	Module 9-
10+	Module 10+
10-	Module 10-
11+	Module 11+
11-	Module 11-
12+	Module 12+
12-	Module 12-
13+	Module 13+
13-	Module 13-
14+	Module 14+
14-	Module 14-
15+	Module 15+
15-	Module 15-
16+	Module 16+
16-	Module 16-
17+	Module 17+
17-	Module 17-
18+	Module 18+
18-	Module 18-
19+	Module 19+
19-	Module 19-
20+	Module 20+
20-	Module 20-
21+	Module 21+
21-	Module 21-
22+	Module 22+
22-	Module 22-
23+	Module 23+
23-	Module 23-
24+	Module 24+
24-	Module 24-

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