

# Specifications

## Switch & Sense 8



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# Specifications

Typical for 25°C unless otherwise specified.

Specifications in *italic text* are guaranteed by design.

## USB compliance

<i>Device type</i>	<i>USB Version 1.1 Low Speed (1.5 Mbs) device</i>
Device compatibility	USB 1.1, USB 2.0

## Power consumption

5 V USB Bus power	20 mA typical , 25 mA max.	
External 9V unregulated supply (Power supply included)	All relays off	30 mA typical, 40 mA max.
	All relays on	500 mA typical, 625 mA max.
Power supply voltage range	7.5V – 20V	

## Output specification

Number	8
Contact configuration	8 FORM C (SPDT) NO, NC and Common available at connector
<i>Contact rating</i>	<i>6 amperes (A) @ 120 volts AC (VAC) or 28 volts DC (VDC) resistive</i>
Contact Type	Gold overlay silver
Contact resistance	100 milliohms (mΩ) max
<i>Operate time</i>	<i>10 milliseconds(ms) max</i>
<i>Release time</i>	<i>5 ms max</i>
<i>Vibration</i>	<i>10 to 55 hertz (Hz) (Dual amplitude 1.5 millimeters (mm))</i>
<i>Shock</i>	<i>10 G (11 ms)</i>
<i>Dielectric isolation</i>	<i>500 V (1 minute)</i>
<i>Life expectancy</i>	<i>10 million mechanical operations, min</i>
Power on RESET state	Not energized. NC in contact to Common.

## Isolated inputs

Number	8	
Isolation	500 volts (V)	
Resistance	1.6K ohms ( $\Omega$ ) min.	
Voltage range	DC	Input high +5.0 VDC min or -5.0 VDC min
		Input low +1.5 VDC max. or -1.5VDC max.
		Input range ! 30 VDC max
	AC (with filter)	Input high 3.0 V <sub>rms</sub> min (50-1000 Hz)
		Input low 1.5 V <sub>rms</sub> max (50-1000 Hz)
Response	w/o filter	20 $\mu$ s
	w/ filter	5 ms
Filters	Time constant	5 ms (200 Hz)
	Filter control	Software programmable at each input.
	Power-up /reset	Filters off

## USB connection

Captive pigtail cable	USB Type A connector
Length	2 meters

## Read/write benchmark timing

The following benchmarks are provided for reference only and were obtained with a single Switch & Sense 8 on a 500 MHz Pentium III running Windows 98 Second Edition. Performance figures can vary based on system configuration.

Read timing reflects the total time to execute one read operation using the input functions provided in the interface DLL. Write timing reflects the total time to execute one write operation using the output functions provided in the interface DLL. The “write time” specified in the table below is the time to assert the relay control line from the software interface

Write timing	Throughput	20 mS typical
	Relay Set	10 mS (write time) + 10 mS (operate time) = 20 mS
	Relay Clear	10 mS (write time) + 5 mS (release time) = 15 mS
Read timing	Throughput	20 mS typical

## Environmental

Operating temperature range	0 to 70 °C
Storage temperature range	-40 to 100 °C
Humidity	0 to 95% non-condensing

## Mechanical

Card dimensions	165 mm long x 150 mm wide x 20 mm high, 6.5 in. long x 5.9 in. wide x 0.8 in. high
Case dimensions	185 mm long x 160 mm wide x 46 mm high, 7.3 in. long x 6.3 in. wide x 1.8 in. high
<i>Case material</i>	<i>20 gage steel</i>
Weight of complete unit	2.1 lbs.
Weight of card alone	0.6 lbs.

## Screw terminal

<i>Wire sizes</i>	<i>12-20 AWG</i>
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## Miscellaneous

Case strain relief rating	20 lbs.
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## Screw terminal pinouts

Pin	Signal Name	Pin	Signal Name
IP0A	Input 0 terminal A	IP4A	Input 4 terminal A
IP0B	Input 0 terminal B	IP4B	Input 4 terminal B
IP1A	Input 1 terminal A	IP5A	Input 5 terminal A
IP1B	Input 1 terminal B	IP5B	Input 5 terminal B
IP2A	Input 2 terminal A	IP6A	Input 6 terminal A
IP2B	Input 2 terminal B	IP6B	Input 6 terminal B
IP3A	Input 3 terminal A	IP7A	Input 7 terminal A
IP3B	Input 3 terminal B	IP7B	Input 7 terminal B
0-NO	Relay 0 Normally Open contact	4-NO	Relay 4 Normally Open contact
0-C	Relay 0 Common contact	4-C	Relay 4 Common contact
0-NC	Relay 0 Normally Closed contact	4-NC	Relay 4 Normally Closed contact
1-NO	Relay 1 Normally Open contact	5-NO	Relay 5 Normally Open contact
1-C	Relay 1 Common contact	5-C	Relay 5 Common contact
1-NC	Relay 1 Normally Closed contact	5-NC	Relay 5 Normally Closed contact
2-NO	Relay 2 Normally Open contact	6-NO	Relay 6 Normally Open contact
2-C	Relay 2 Common contact	6-C	Relay 6 Common contact
2-NC	Relay 2 Normally Closed contact	6-NC	Relay 6 Normally Closed contact
3-NO	Relay 3 Normally Open contact	7-NO	Relay 7 Normally Open contact
3-C	Relay 3 Common contact	7-C	Relay 7 Common contact
3-NC	Relay 3 Normally Closed contact	7-NC	Relay 7 Normally Closed contact

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