

Known Differences Between IP440 and the IP440A

The IP440A has been designed as a drop-in replacement for the IP440. The known differences between the models include changes in the input hysteresis, threshold voltages, input on/off time, and other general specifications. Our testing indicates that the new IP440A should work in all current customers' applications.

Input Hysteresis/Threshold Voltage Comparison

The new IP440A design incorporates improved input hysteresis. This change is designed to improve noise immunity. Specifications for the threshold voltages have changed to reflect this improved hysteresis. In current published specifications only the On voltage had been specified, new documentation will provide both the On voltage and Off voltage specification. These new specifications are provided in the table below. Note that the table values represent the entire temperature range of -40°C to 85°C. Further breakdown of the minimum and maximum threshold values for each transition and the corresponding commercial and industrial ranges can be found in the user's manual.

Board	Input Range	Threshold Voltage (V)				Typical Input Hysteresis (V) ¹	Current-Limiting Resistor (Ω)
		MIN	Off to On TYP ¹	On to Off TYP ¹	MAX		
IP440-1	±4 to ±18	±1	±2	±2	±4	0.08 ²	2200
IP440A-1	±4 to ±18	±1	±2	±1.75	±4	0.25	1620
IP440-2	±16 to ±40	±4	±6.4	±6.4	±16	0.08 ²	12000
IP440A-2	±16 to ±40	±3	±6.8	±5.7	±16	1.10	10000
IP440-3	±38 to ±60	±8	±12.9	±12.9	±38	0.08 ²	27000
IP440A-3	±38 to ±60	±7	±13.75	±11.2	±38	2.55	21500

1. Typical defined at 25°C

2. Typical values are not specified for individual ranges. IP440 board minimum is 0.08V

Turn-On/Turn-Off

On/Off time performance has improved on the IP440A as detailed in the table below.

	Typical On-Time¹	Typical Off-Time¹
IP440-X	15 μ S	35 μ S
IP440A-X	10 μ S	15 μ S

1. Typical values are average at 25°C

Other Features

➤ Start-Up Time

The IP440A requires 200mS (max) of configuration time immediately after power-up. During this period, the IP module will not respond to any input.

➤ Improved Input Rise/Fall Time

The IP440A design incorporates Schmitt Triggers allowing for a static input at any acceptable voltage level.

➤ Reduced Input Capacitance

The IP440A has an Input capacitance of 30pF.

➤ Improved Debounce Accuracy

The debounce no longer has an –25% interval range. The error is now only ± 250 nS on the IP440A.

➤ Improved Storage Temperature Range

The IP440A has a storage temperature range of -55°C to 150°C.

➤ ESD Protection

The ESD protection has decreased on the IP440A to ± 2.5 kV.