



# Enthusiast System Architecture Certification Feature Requirements

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This document provides PC component vendors with guidelines pertaining to the minimum certification requirements for Enthusiast System Architecture (ESA) devices (chassis, power supply, and water cooling). The intent of certification is to provide end users with the ability to easily identify ESA-certified components and to ensure an overall-system great user experience.

ESA-certified components will be eligible to carry the ESA brand upon logo grant. All ESA-certified components must abide with the Enthusiast Ecosystem Specifications.

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## USB Compliance

All ESA devices must pass USB2.0 Logo Compliance.

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## Chassis Certification Requirements

This section outlines the technical requirements an ESA chassis must adhere to in order to pass the ESA certification process.

### Temperature Sensing

- A minimum of two temperature sensors must be supported: One must be located in the vicinity of the GPU add-in cards, and the second must be located at the front of the chassis.
- Sensor accuracy should be at minimum  $\pm 2$  °C (measured at 25 °C ambient temperature).

### Fan Control

- A minimum of two fans must be supported.
- Fans can either be pulse-width modulation (PWM) controlled or voltage controlled for ON/OFF operation; RPM sensing is optional for PWM-controlled fans.
- Each fan must be associated with, and located near, a temperature sensor.

## Status LED Support

- A status LED is required to indicate fan failures or thermal limit violations.
- The LED must be placed at the front panel display, next to power/HDD LEDs.
- The LED must support RED color for status indication.

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## Power Supply Certification Requirements

This section outlines the technical requirements an ESA power supply must adhere to in order to pass the ESA certification process.

### Temperature Sensing

- A minimum of one temperature sensor must be supported.
- The temperature sensor must measure the highest temperature point within the power supply unit. Typically, this is measured at the field-effect transistors (FETs) of the output stage of the DC-DC voltage conversion circuit.
- Sensor accuracy should be at minimum  $\pm 2$  °C, at a maximum power supply load (measured at 25 °C ambient temperature).

### Current Sensing

- Output current sensing for 5 V, 12 V, -12 V, and 3.3 V rails is required; the number of current sensors supported will vary depending on the power supply design.
- Total current sensing accuracy should be at minimum  $\pm 10\%$ , at a maximum load (measured at 25 °C ambient temperature).

### Voltage Sensing

- Output voltage sensing for 5 V, 12 V, -12 V, and 3.3 V rails is required; the number of current sensors supported will vary depending on the power supply design.
- Voltage sensing accuracy should be at minimum  $\pm 3\%$ , at a maximum load (measured at 25 °C ambient temperature).

## Status LED Support

- A status LED is required to indicate thermal and/or power consumption limit violations.
- The LED must be placed at the back of the power supply, next to the power supply switch button.
- LED must support RED color for status indication.

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## Water Cooling Certification Requirements

This section outlines the technical requirements an ESA water cooling solution must adhere to in order to pass the ESA certification process.

### Temperature Sensing

- A minimum of two water temperature sensors must be supported: one measuring radiator inlet water temperature, and another measuring pump outlet temperature.
- Sensor accuracy should be at minimum  $\pm 2$  °C (measured at 25 °C ambient temperature).

### Pump Status Indication

- The electrical pump status sensor must be supported to indicate whether the pump is dysfunctional.

### Status LED Support

- A status LED is required to indicate thermal violations and/or pump failure.
- LED must support RED color for status indication.

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## Motherboard Certification Requirements

This section outlines the technical requirements an ESA motherboard must adhere to in order to pass the ESA certification process.

An ESA-certified motherboard must support the following features:

- Support at least three USB2.0 headers for ESA-certified component connectivity
- Provide host software that exposes all ESA functionality
- Comply with ESA External HID specification

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