

XDE Module Comparison

Supporting a high throughput of 1 Gbps to 40 Gbps, these modules provide hardware-enforced data evaluation and control, without exposing the secure network to risk. Developed with FPGA (Field Programmable Gate Array) filtering technology, these miniaturized modules are disrupting the market due to their size, flexibility, power, and speed and can be designed directly into industrial control systems. Compare the XDE modules below and determine the best fit for your use case.

		XDE Radium	XDE Cobalt	XDE Titanium
HARDWARE	Processor	NA	NXP LS1012A	NA
	FPGA LUTs	50K × 2	80K	160K
	Memory (Flash, RAM)	None	QSPI Flash, eMMC Flash	eMMC Flash
	Connectors	2 × 1Gb RJ-45	2 × 1Gb SGMII, 1 × USB	2×1 GbE, 2×10GbE, or 2×40GbE SFP (selectable)
	Physical Isolator	Optical Diode or Magnetic Isolator	FPGA	FPGA
	Input Power	Board-Mounted Connectors	3.3v Input via M.2 Connector	12v input
	Dimensions	101.6mm × 38.1mm	80mm × 22mm	101mm × 57.1mm
	Operating Temperature	-40 to 70 Celcius	-40 to 70 Celcius	-40 to 70 Celcius
	Cooling	Ambient Air	Ambient Air	External cooling for 10GbE and 40GbE options
SOFTWARE	FPGA	Custom firmware and configurations	Custom firmware and configurations	Custom firmware and configurations
	Processor	NA	Embedded OS	NA
PERFORMANCE	Functionality	Hardware-enforced, one-way transfer, with a secure protocol break (no routable information is passed between the source and destination networks)	FPGA-based protocol validation and firewall rule enforcement, with hardware-controlled, one-way, or two-way, data flows and line-rate data filtering	High-speed, FPGA-based protocol validation and firewall rule enforcement, with hardware-controlled, one-way, or two-way, data flows and line-rate protocol inspection
	Throughput (Nominal)	1Gbps	1Gbps	"1 / 10 / 40 Gbps (depending on connector type)"
	Protocol Support	UDP, various military and industrial control protocols	TCP/IP, UDP, various military and industrial control protocols	UDP, various military and industrial control protocols
	IP Sec, TLS Session Support	No	Yes	No
	Target Devices	Smart sensors, PLC modules, RTU modules, Gateways	PLC modules, RTU modules, Gateways, Switches, Servers, Cloud Connectors	Historians, Switches, Servers, Cloud Connectors
COMPLIANCE	RoHS	Yes	Yes	Yes
	Certifications	EAL 4+ (in progress)	EAL 4+ (planned)	EAL 4+ (planned)