

ioPAC 6500 Series (65M) Firewall Modules

Firewall communication modules for modular programmable IIN controllers



Features and Benefits

- Supports multiple IT/OT protocols for seamless communication between SCADA, Plant Information System, and cloud applications
- Tool-free hardware installation and hot-swap design for maximizing operation efficiency
- Fully modular design for maximum deployment flexibility
- Turbo Ring, Turbo Chain, and RSTP/STP for network redundancy

Certifications



Introduction

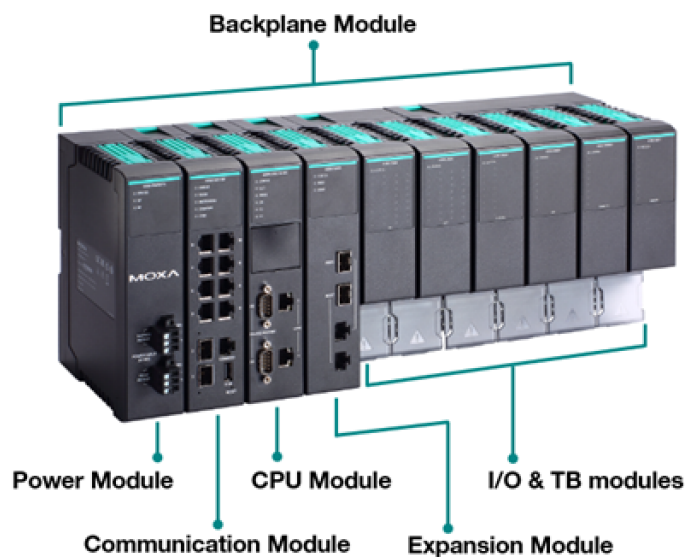
The ioPAC 6500 Series (also referred to as Intelligent Integrated Node or IIN) is an advanced Linux-based RTU featuring a built-in Layer-2 managed switch. Equipped with an Arm Cortex-A53 quad-core CPU, the ioPAC 6500 Series delivers robust performance.

Network Redundancy



Fully Modular Design

The ioPAC 6500 Series features a unique Lego-like mechanical design that allows for flexible deployment while minimizing installation efforts. The series can be divided into the components: Backplane modules, power modules, communication modules, expansion modules, CPU modules, I/O modules, and terminal-block modules.



Specifications

Ethernet Interface

10/100/1000BaseT(X) Ports (RJ45 connector)	4 Auto MDI/MDI-X connection Auto negotiation speed Full/Half duplex mode
1000BaseSFP Slots	2
Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.1Q for VLAN Tagging IEEE 802.3ad for Port Trunk with LACP IEEE 802.3x for flow control IEEE 802.1X for authentication

Ethernet Software Features

Broadcast Forwarding	IP directed broadcast, broadcast forwarding
Management	Back Pressure Flow Control DDNS DHCP Server/Client Web Console (HTTP/HTTPS) LLDP QoS/CoS/ToS SNMPv1/v2c/v3 Telnet TFTP HTTPS SSH
Redundancy Protocols	STP RSTP Turbo Ring v2 Turbo Chain
Routing Throughput	50K packets per second / 500 Mbps (based on RFC 2544)
Routing Table	Max. 4K routing rules
Concurrent Connections	Max. 120K (based on RFC 3511)
Connections Per Second	Max. 6K (based on RFC 3511)
Routing Redundancy	VRRP

Security	Secure Boot IPsec L2TP (server) RADIUS Trust access control TACACS+ SCP SFTP NTP authentication Syslog authentication
Time Management	NTP Server/Client SNTP
Unicast Routing	OSPF RIPv1/V2 Static Route
Multicast Routing	Static Route
Filter	IGMP v1/v2/v3

Switch Properties

VLAN ID Range	VID 1 to 4094
IGMP Groups	1000
Max. No. of VLANs	32

LED Interface

LED Indicators	STATUS, MSTR/HEAD, CPLR/TAIL, VRRP/HA, VPN, USB
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DoS and DDoS Protection

Technology	ARP-Flood FIN Scan ICMP Flood TCP Sessions Without SYN NMAP-ID Scan NMAP-Xmas Scan Null Scan SYN/FIN Scan SYN/RST Scan SYN-Flood Xmas Scan
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Firewall

Filter	DDoS Ethernet protocols ICMP IP address MAC address Ports
Stateful Inspection	Router firewall Transparent (bridge) firewall
Deep Packet Inspection	Modbus TCP Modbus UDP DNP3 IEC 60870-5-104 IEC 61850 MMS EtherNet/IP MELSEC Omron FINS OPC UA Siemens S7 Comm. Siemens S7 Comm. Plus Additional protocols will be supported through future firmware updates.

Intrusion Prevention System	Requires an additional license.
Throughput	Firewall: Max. 80K packets per second / 1000 Mbps (based on RFC 2544) IPS: Max. 40K packets per second / 500 Mbps (based on RFC 2544)
IPsec VPN	
Authentication	RSA (key size: 1024-bit, 2048-bit) MD5 and SHA (SHA-256) X.509 v3 certificate
Concurrent VPN Tunnels	Max. 50 IPsec VPN tunnels
Encryption	DES 3DES AES-128 AES-192 AES-256 AES-256-GCM
Protocols	IPsec L2TP (server) PPTP (client)
Throughput	Conditions: AES-256, SHA-256 Max. 45K packets per second / 300 Mbps (based on RFC 2544)
NAT	
Features	1-to-1 N-to-1 Port forwarding NAT loopback
Real-Time Firewall / VPN Event Log	
Event Type	Firewall event VPN event
Media	Local storage SNMP Trap Syslog server
Serial Interface	
Console Port	RS-232 (TxD, RxD, GND), 8-pin RJ45 (115200, n, 8, 1)
Input/Output Interface	
Buttons	Reset button
USB Ports	USB 2.0 Type A Only supports Moxa's ABC-02-USB backup and storage device.
Power Parameters	
Input Current	0.89 A @ 12 VDC
Physical Characteristics	
IP Rating	IP20
Housing	Plastic
Dimensions	42 x 177 x 131.5 mm (1.65 x 6.97 x 5.18 in)
Weight	600 g (1.32 lb)
Installation	DIN-rail mounting Rack mounting (with optional kit)

Environmental Limits

Operating Temperature	Without SFP module installed: -40 to 75°C (-40 to 167°F) With SFP module installed: -40 to 65°C (-40 to 149°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Altitude	2000 m

Standards and Certifications

EMC	EN 55032/35 EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 2 kV (AC), 1 kV (DC); Signal: 1 kV IEC 61000-4-5 Surge: DC Power: 0.5 kV L-N, 1 kV L/N-PE; AC Power: 1 kV L-N, 2 kV L/N-PE; Signal: 1 kV; IO: 0.5 kV IEC 61000-4-6 CS: DC Power: 10 Vrms; Signal: 10 Vrms IEC 61000-4-8: 30 A/m IEC 61000-4-11
Safety	UL 61010-1 UL 61010-2-201
Shock	Half sine wave; acceleration: 15 g; time: 11 ms IEC 60068-2-27
Vibration	IEC 60068-2-6 DIN-rail mounted: 7 mm peak-peak (p-p) (2 to 8.42 Hz), 1 g (8.42 to 150 Hz) Rack-mounted (with optional kit): 7 mm peak-peak (p-p) (2 to 8.42 Hz), 0.5 g (8.42 to 150 Hz)
Package Drop Test	ISTA 1A
Package Vibration Test	ISTA 1A

MTBF

Time	2,667,365 hrs
Standards	Telcordia Standard SR-332

Warranty

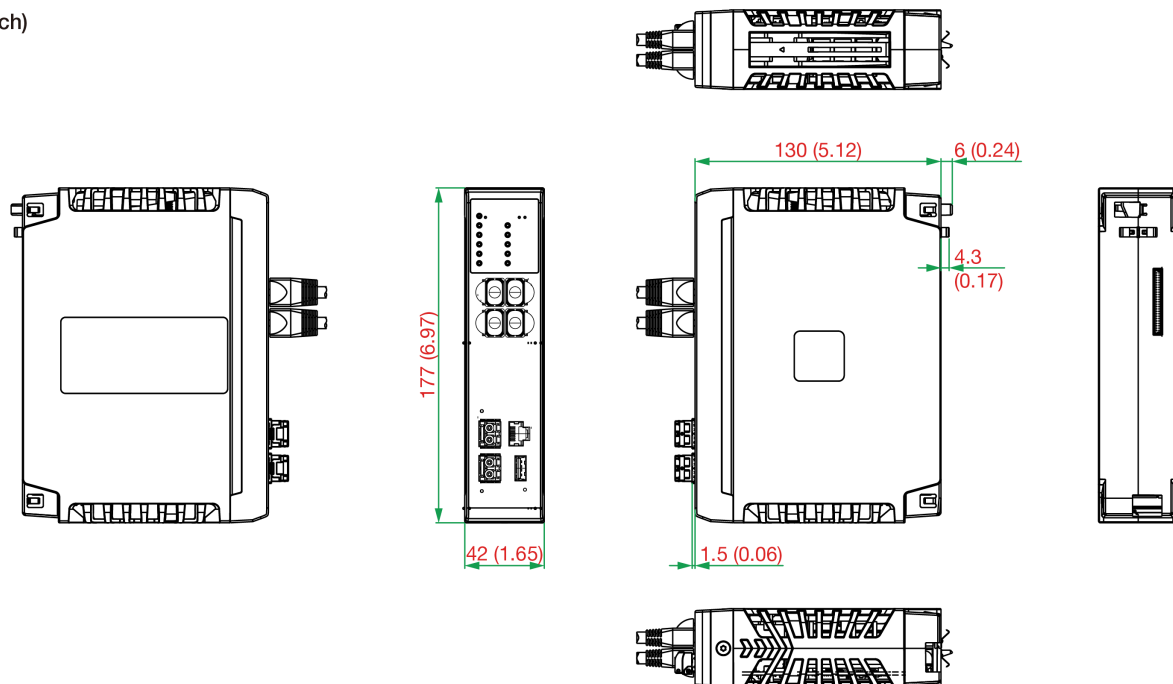
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x ioPAC 6500 Series (65M) Firewall Module
Installation Kit	4 x cap, plastic, for RJ45 port 2 x cap, plastic, for SFP slot
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	10/100/1000BaseT(X) Ports (RJ45 Connector)	1000BaseSFP Ports	Conformal Coating	Operating Temperature
65M-5621-CT-T	4	2	Yes	-40 to 65°C (with SFP module installed)

Accessories (sold separately)

Storage Kits

ABC-02-USB-T	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, -40 to 75°C operating temperature
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SFP Modules

SFP-1G10ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G10BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1G20ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G20BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1G40ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G40BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1GLHLC-T	SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, -40 to 85°C operating temperature
SFP-1GLHXL-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXL-T	SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, -40 to 85°C operating temperature
SFP-1GLXL-T	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°C operating temperature

SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, -40 to 85°C operating temperature
SFP-1GZXLC-T	SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, -40 to 85°C operating temperature

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