

PT-7728 Series

IEC 61850-3 / EN50155 24+4G-port Gigabit modular managed rackmount Ethernet switches



- > IEC 61850-3, IEEE 1613 (power substations), and EN50155/EN50121-4 (railway applications) compliant
- > Turbo Ring, Turbo Chain, RSTP/STP, and MSTP* for network redundancy
- > VLAN Unaware: Supports priority-tagged frames to be received by specific IEDs
- > Up to 12 ports with M12 connectors
- > Isolated redundant power inputs with universal 24/48 VDC or 110/220 VDC/VAC power supply range
- > NERC CIP compliance
- > -40 to 85°C operating temperature range

*Available in Q3, 2011



IEC 61850-3 IEEE 1613

EN50155



Introduction

The PowerTrans PT-7728 is designed to meet the demands of power substation automation systems (IEC 61850-3, IEEE 1613), and railway applications (EN50155/EN50121-4). The PT-7728's Gigabit and fast Ethernet backbone, redundant ring, and 24/48 VDC or 110/220 VDC/VAC dual isolated redundant power supplies increase the reliability of your communications and save on cabling/wiring costs. The modular

design of the PT-7728 also makes network planning easy, and allows greater flexibility by letting you install up to 4 Gigabit ports and 24 fast Ethernet ports. Along with the optional front or rear wiring, these features together make the PT-7728 suitable for a variety of industrial applications.

General Features and Benefits

- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- Software-based IEEE 1588 PTP V2* (Precision Time Protocol) for precise time synchronization of networks
- VLAN Unaware: Supports priority-tagged frames to be received by specific IEDs
- DHCP Option 82 for IP address assignment with different policies
- EtherNet/IP* and Modbus/TCP industrial Ethernet protocols supported
- Turbo Ring, Turbo Chain, RSTP/STP, and MSTP for network redundancy
- IGMP snooping and GMRP for filtering multicast traffic from industrial Ethernet protocols

- Supports advanced VLAN capability with Q-in-Q tagging*
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- Bandwidth management prevents unpredictable network status
- Multi-port mirroring for online debugging
- Automatic warning by exception through email, relay output
- RMON for efficient network monitoring and proactive capability
- Automatic recovery of connected device's IP addresses
- Line-swap fast recovery
- Configurable by Web browser, Telnet/Serial console, CLI*, Windows utility, and ABC-01 automatic backup configurator

*Available in Q3, 2011

Cyber-security Features

- User passwords with multiple levels of security protect against unauthorized configuration
- SSH/HTTPS is used to encrypt passwords and data
- Lock switch ports with 802.1x port-based network access control so that only authorized clients can access the port
- Disable one or more ports to block network traffic

- 802.1Q VLAN allows you to logically partition traffic transmitted between selected switch ports
- Secure switch ports so that only specific devices and/or MAC addresses can access the ports
- Radius/TACACS+ allows you to manage passwords from a central location (available in Q1 Y2011)
- SNMPv3 provides encrypted authentication and access security

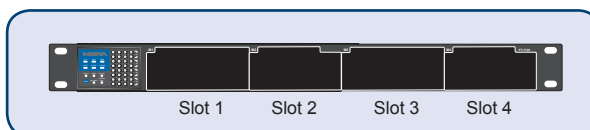
Specifications

Technology

Standards:

IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseT(X) and 100Base FX
IEEE 802.3ab for 1000BaseT(X)
IEEE 802.3z for 1000BaseX
IEEE 802.3x for Flow Control
IEEE 802.1D for Spanning Tree Protocol

Modular Rackmount Ethernet Switch System, PT-7728



IEEE 802.1w for Rapid STP
 IEEE 802.1Q for VLAN Tagging
 IEEE 802.1p for Class of Service
 IEEE 802.1X for Authentication
 IEEE 802.3ad for Port Trunk with LACP

Protocols: IGMPv1/v2, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, BootP, TFTP, SNTP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SSH, Syslog, DHCP Option 66/67/82, LLDP, Modbus/TCP, IEEE 1588 PTP, IPv6, SNMP Inform

MIB: MIB-II, Ethernet-like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

Flow Control: IEEE 802.3x flow control, back pressure flow control

Switch Properties

Priority Queues: 4

Max. Number of Available VLANs: 64

VLAN ID Range: VID 1 to 4094

IGMP Groups: 256

Interface

Fast Ethernet: Slots 1, 2, and 3 for combinations of 2, 4, 6, 7, or 8-port PM-7200 fast Ethernet modules with 10/100BaseT(X) (TP/M12 interface), 100BaseFX (SC/ST/MTRJ connector), or 100BaseSFP.

Gigabit Ethernet: Slot 4 for 2 or 4-port PM-7200 Gigabit Ethernet combo module, 10/100/1000BaseT(X) or 1000BaseSFP

Console Port: RS-232 (RJ45)

System LED Indicators: STAT, PWR1, PWR2, FAULT, MSTR/HEAD, CPLR/TAIL

Mode LED Indicators: LNK/ACT, FDX/HDX, RING/CHAIN PORT, COUPLER PORT, SPEED

Alarm Contact: 1 relay output with current carrying capacity of 3 A @ 30 VDC or 3 A @ 240 VAC

Power Requirements

Input Voltage:

- 24 VDC (18 to 36 V)
- 48 VDC (36 to 72 V)
- 110/220 VDC/VAC (88 to 300 VDC, 85 to 264 VAC)

Input Current: (all ports are equipped with fiber)

- Max. 2.58 A @ 24 VDC
- Max. 1.21 A @ 48 VDC
- Max. 0.64/0.33 A @ 110/220 VDC
- Max. 0.53/0.28 A @ 110/220 VAC

Overload Current Protection: Present

Connection: 10-pin terminal blocks

Reverse Polarity Protection: Present

Physical Characteristics

Housing: IP30 protection

Dimensions: 440 x 44 x 325 mm (17.32 x 1.73 x 12.80)

Weight: 5900 g

Installation: 19" rack mounting

Environmental Limits

Operating Temperature: -40 to 85°C (-40 to 185°F), cold start requires min. of 100 VAC at -40°C

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Standards and Certifications

Safety: UL 60950-1, CSA C22.2 No. 60950-1, EN 60950-1

EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A

Power Automation: IEC 61850-3, IEEE 1613

Rail Traffic: EN 50155, EN 50121-4

Note: Please check Moxa's website for the most up-to-date certification status.

Warranty

Warranty Period: 5 years

Details: See www.moxa.com/warranty

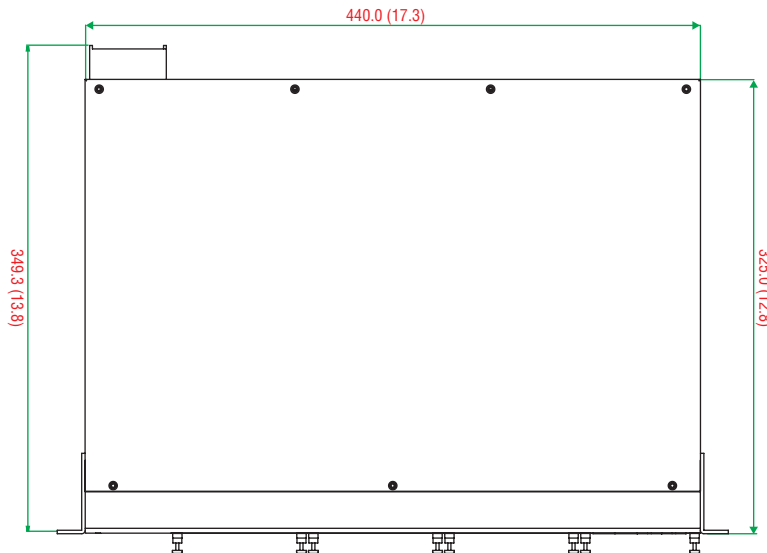
Dimensions

Unit: mm (inch)

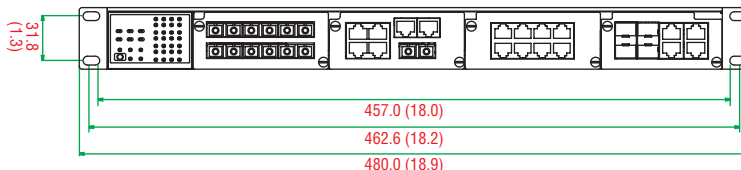
Rear View



Top View



Front View



Side View

: Ordering Information

Step 1: Select Ethernet switch system

PT-7728 with power supply

Step 2: Select interface modules

PM-7200 modules
(Gigabit or fast Ethernet)

Note: The PT-7728 Ethernet switch system is delivered without interface module. See page 2-42 to choose PM-7200 interface modules.

PT-7728 Modular Rackmount Ethernet Switch System

The PT-7728 switch system consists of 18 modular managed rackmount Ethernet switch systems with 3 slots for fast Ethernet modules, and 1 slot for a Gigabit Ethernet module. A total of 28 or 24+4G ports can be installed, and the switch can be used in a temperature range from -40 to 85°C.

Available Models		Power Supply					
Front Cabling, Front Display	Rear Cabling, Front Display	Isolated Power Supply 1			Isolated Power Supply 2		
		24 VDC (18 to 36 V)	48 VDC (36 to 72 V)	HV: 88 to 300 VDC and 85 to 264 VAC	24 VDC (18 to 36 V)	48 VDC (36 to 72 V)	HV: 88 to 300 VDC and 85 to 264 VAC
PT-7728-F-24	PT-7728-R-24	1	–	–	–	–	–
PT-7728-F-24-24	PT-7728-R-24-24	1	–	–	1	–	–
PT-7728-F-24-48	PT-7728-R-24-48	1	–	–	–	1	–
PT-7728-F-24-HV	PT-7728-R-24-HV	1	–	–	–	–	1
PT-7728-F-48	PT-7728-R-48	–	1	–	–	–	–
PT-7728-F-48-48	PT-7728-R-48-48	–	1	–	–	1	–
PT-7728-F-48-HV	PT-7728-R-48-HV	–	1	–	–	–	1
PT-7728-F-HV	PT-7728-R-HV	–	–	1	–	–	–
PT-7728-F-HV-HV	PT-7728-R-HV-HV	–	–	1	–	–	1

Note: The PT-7728 Ethernet switch systems provide combinations of 1 slot for a Gigabit Ethernet interface module, 3 slots for fast Ethernet interface modules. See page 2-42 to select the PM-7200 Gigabit Ethernet and fast Ethernet interface modules that you need for your own application.

PT-7728-F series
(Front Cabling, Front Display)



PT-7728-R series
(Rear Cabling, Front Display)



Gigabit/Fast Ethernet Modules for the PT-7728

	Interface Modules																																
	PM-7200-4GTXSFP	PM-7200-2GTXSFP	PM-7200-1MSC	PM-7200-1MST	PM-7200-2MSC	PM-7200-2MST	PM-7200-1SSC	PM-7200-2SSC	PM-7200-8TX	PM-7200-2MSC4TX	PM-7200-2MST4TX	PM-7200-2SSC4TX	PM-7200-4MSC2TX	PM-7200-4MST2TX	PM-7200-4SSC2TX	PM-7200-6MSC	PM-7200-6MST	PM-7200-6SSC	PM-7200-1LSC6TX	PM-7200-1MST6TX	PM-7200-1SSC6TX	PM-7200-1MSC6TX	PM-7200-8PoE	PM-7200-8SFP	PM-7200-4MT12	PM-7200-2MTRJ	PM-7200-8MTRJ	PM-7200-4MST-FL	PM-7200-4TX-PTP	PM-7200-4MST-PTP	PM-7200-4MSC-PTP	PM-7200-1BNC2MST-PTP	
Slot 1	-	-	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Slot 2	-	-	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Slot 3	-	-	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Slot 4	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Optional Accessories (can be purchased separately)

MXview: Moxa industrial network management software with 50, 100, 250, 500, or 1000 nodes

EDS-SNMP OPC Server Pro: OPC server software that works with all SNMP devices

ABC-01 Series: Configuration backup and restoration tool for managed Ethernet switches, 0 to 60°C operating temperature

Package Checklist

- PT-7728 series switch
- RJ45-to-DB9 console port cable
- Protective caps for unused ports
- 2 rackmount ears
- Documentation and software CD
- Hardware installation guide
- Warranty card

PM-7200 Series

Gigabit and fast Ethernet modules for PT and IKS series switches

Specifications



PM-7200-4GTXSFP



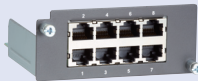
PM-7200-2GTXSFP

Interface

RJ45 Ports: 10/100/1000BaseT(X) auto negotiation speed, and auto MDI/MDI-X connection

Fiber Ports: 1000BaseSFP slots

Note: The PM-7200-2G/4G series Gigabit Ethernet combo modules support 2 or 4 SFP slots. See page 1-87 to select the SFP-1G series Gigabit Ethernet modules for your application.



PM-7200-8TX



PM-7200-6MSC
PM-7200-6SSC



PM-7200-6MST



PM-7200-4MSC2TX
PM-7200-4SSC2TX



PM-7200-4MST2TX



PM-7200-2MSC4TX
PM-7200-2SSC4TX



PM-7200-2MST4TX



PM-7200-1LSC6TX



PM-7200-2MSC
PM-7200-2SSC



PM-7200-2MST



PM-7200-1MSC
PM-7200-1SSC



PM-7200-1MST



PM-7200-1MST6TX



PM-7200-1MSC6TX
PM-7200-1SSC6TX



PM-7200-8PoE



PM-7200-8SFP*



PM-7200-4M12



PM-7200-2MTRJ



PM-7200-8MTRJ



PM-7200-4MST-FL



PM-7200-4TX-PTP



PM-7200-4MST-PTP



PM-7200-4MSC-PTP



PM-7200-1BNC2MST-PTP

* See page 1-87 and 1-89 to select SFP-1G/1FE series Gigabit Ethernet and fast Ethernet modules.

Interface

RJ45 Ports: 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection

Fiber Ports: 100BaseFX ports (SC/ST/MTRJ or SFP LC connector)

PoE Ports: IEEE 802.3af Power-over-Ethernet Technology, provide up to 15.4 watts per port

M12 Ports: 10/100BaseT(X) auto negotiation speed, and auto MDI/MDI-X connection

BNC Ports: Time clock signal PPS (pulses per second) output for IEEE 1588 time synchronization

Optical Fiber

	100BaseFX		
	Multi-mode	Single-mode	Single-mode, 80 km
Wavelength	1300 nm	1310 nm	1550 nm
Max. TX	-10 dBm	0 dBm	0 dBm
Min. TX	-20 dBm	-5 dBm	-5 dBm
RX Sensitivity	-32 dBm	-34 dBm	-34 dBm
Link Budget	12 dB	29 dB	29 dB
Typical Distance	5 km ^a 4 km ^b	40 km ^c	80 km ^d
Saturation	-6 dBm	-3 dBm	-3 dBm

a. 50/125 μm, 800 MHz*km fiber optic cable

b. 62.5/125 μm, 500 MHz*km fiber optic cable

c. 9/125 μm single-mode fiber optic cable

d. 9/125 μm single-mode fiber optic cable (80 km)

Ordering Information

PT-7828/PT-7728-PTP/
PT-7728



PT-7710



IKS-6726



IKS-6726-8PoE



IKS-6324



		Interface Modules																															
		PM-7200-4GTXSFP	PM-7200-2GTXSFP	PM-7200-1MSC	PM-7200-1MST	PM-7200-2MSC	PM-7200-2MST	PM-7200-1SSC	PM-7200-2SSC	PM-7200-8TX	PM-7200-2MSC4TX	PM-7200-2MST4TX	PM-7200-2SSC4TX	PM-7200-4MSC2TX	PM-7200-4MST2TX	PM-7200-4SSC2TX	PM-7200-6MSC	PM-7200-6MST	PM-7200-6SSC	PM-7200-1MSC6TX	PM-7200-1MST6TX	PM-7200-1SSC6TX	PM-7200-1LSC6TX	PM-7200-8PoE	PM-7200-8SFP*	PM-7200-4M12	PM-7200-2MTRJ	PM-7200-8MTRJ	PM-7200-4MST-FL	PM-7200-4TX-PTP	PM-7200-4MST-PTP	PM-7200-4MSC-PTP	PM-7200-1BNC2MST-PTP
PT-7828 PT-7728	Slots 1-3	-	-	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	-	-	-	-
	Slot 4	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PT-7728-PTP	Slots 1-3	-	-	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	
	Slot 4	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	
PT-7710	Slot 1	-	-	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	-	-	-	-
	Slot 2	-	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
IKS-6726	Slots 1-2	-	-	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	-	-	-	-	-	
	Slot 3	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
IKS-6726-8PoE	Slot 1	-	-	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	
	Slot 2	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
IKS-6324	Slot 1	-	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

* If you are using an SFP-1FELLC module, the operating temperature is limited to -40 to 75°C (-40 to 167°F).

Gigabit Ethernet Modules for PT and IKS Series Rackmount Ethernet Switches, PM-7200-2G/4G Series

Available Models	Port Interface	
	Combo Port, 10/100/1000BaseT(X) or 1000BaseSFP*	
PM-7200-2GTXSFP	2	
PM-7200-4GTXSFP	4	

Fast Ethernet Modules for PT and IKS Series Rackmount Ethernet Switches, PM-7200 Series

Available Models	Port Interface									
	10/100BaseT(X)			100BaseFX					100BaseSFP	PPS output, BNC connector
	TP	PoE	M12	Multi-mode, SC Connector	Multi-mode, ST Connector	Multi-mode, MTRJ Connector	Single-mode, SC Connector	Single-mode, SC Connector, 80 km		
PM-7200-8TX	8	—	—	—	—	—	—	—	—	—
PM-7200-6MSC	—	—	—	6	—	—	—	—	—	—
PM-7200-6MST	—	—	—	—	6	—	—	—	—	—
PM-7200-6SSC	—	—	—	—	—	—	6	—	—	—
PM-7200-4MSC2TX	2	—	—	4	—	—	—	—	—	—
PM-7200-4MST2TX	2	—	—	—	4	—	—	—	—	—
PM-7200-4SSC2TX	2	—	—	—	—	—	4	—	—	—
PM-7200-2MSC4TX	4	—	—	2	—	—	—	—	—	—
PM-7200-2MST4TX	4	—	—	—	2	—	—	—	—	—
PM-7200-2SSC4TX	4	—	—	—	—	—	2	—	—	—
PM-7200-1LSC6TX	6	—	—	—	—	—	—	1	—	—
PM-7200-2MSC	—	—	—	2	—	—	—	—	—	—
PM-7200-2MST	—	—	—	—	2	—	—	—	—	—
PM-7200-2SSC	—	—	—	—	—	—	2	—	—	—
PM-7200-1MSC	—	—	—	1	—	—	—	—	—	—
PM-7200-1MST	—	—	—	—	1	—	—	—	—	—
PM-7200-1SSC	—	—	—	—	—	—	1	—	—	—
PM-7200-1MSC6TX	6	—	—	1	—	—	—	—	—	—
PM-7200-1MST6TX	6	—	—	—	1	—	—	—	—	—
PM-7200-1SSC6TX	6	—	—	—	—	—	1	—	—	—
PM-7200-8SFP	—	—	—	—	—	—	—	—	8	—
PM-7200-4M12	—	—	4	—	—	—	—	—	—	—
PM-7200-2MTRJ	—	—	—	—	—	2	—	—	—	—
PM-7200-8MTRJ	—	—	—	—	—	8	—	—	—	—
PM-7200-4MST-FL	—	—	—	—	4	—	—	—	—	—
PM-7200-4TX-PTP	4	—	—	—	—	—	—	—	—	—
PM-7200-4MST-PTP	—	—	—	—	4	—	—	—	—	—
PM-7200-4MSC-PTP	—	—	—	4	—	—	—	—	—	—
PM-7200-1BNC2MST-PTP	—	—	—	—	2	—	—	—	—	1
PM-7200-8PoE	—	8	—	—	—	—	—	—	—	—

Tento produkt můžete zakoupit u společnosti AutoCont IPC a.s.



AutoCont IPC a.s.

Váš dodavatel průmyslových počítačů, komponent a speciálních průmyslových IT systémů.

 Uhlířská 1064/3, 710 00 Ostrava, Česká republika

 obchod@autocont-ipc.cz

 +420 552 301 002

 www.autocont-ipc.cz



PRŮMYSLOVÉ POČÍTAČE

fanless embedded PC, do racku, ...



POČÍTAČE S DISPLEJEM

panelové PC, terminály, do vozidel, ...



AUTOMATIZACE A SBĚR DAT

převodníky, karty, moduly, switche, ...



PERIFERIE A KOMPONENTY

monitory, klávesnice, desky, skříně, ...



NOTEBOOKY A TABLETY

odolné, windows, android, IP65, ...



INFORMAČNÍ KIOSKY

interiérové, venkovní, ...



MEDICÍNSKÁ TECHNIKA

počítače, tablety, LCD, klávesnice, ...



SOFTWAREVÁ ŘEŠENÍ

pro výrobu, zaměstnance, kiosky, ...



PŘEJÍT DO E-SHOPU

eshop.autocont-ipc.cz



DOPRAVA ZDARMA

Doprava zdarma v ČR a SR při
objednávce nad 10 000 Kč bez DPH
nebo nad 400 EUR.



PRODLOUŽENÁ ZÁRUKA

Záruka 2 roky na vyráběné počítače
s možností jejího prodloužení
až na 5 let.



ODMĚNA ZA VĚRNOST

Pravidelní zákazníci u nás nakupují
za nižší ceny. Výše slevy se odvíjí
od realizovaného obrátu.



SERVIS ON-SITE A IN-TIME

K projektovým dodávkám nabízíme
rozšířenou podporu a servis s garancí
výměny zařízení do 48 hodin.