



Product information MACH104-16TX-PoEP

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-153064/en/conf/uisstate>

Name	MACH104-16TX-PoEP
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 2 Professional, Store-and-Forward-Switching, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 2 Professional, Store-and-Forward-Switching, IPv6 Ready
Port type and quantity	20 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP)
Type	MACH104-16TX-PoEP
Order No.	942 030-001
More Interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	n/a
10G-Single mode fiber (SM) 9/125 µm	n/a
Network size - cascading	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	100-240 VAC, 50-60 Hz
Heat dissipation	119 Btu (IT) h
Heat dissipation at max. PoE power	235 Btu (IT) h
Power consumption	35 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/FTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Command line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HiDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Client Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation
Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support,



Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP

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	Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	4500 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5–8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4–150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-16TX-PoEP-L3P

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-352350/en/conf/ui/istate>

Name	MACH104-16TX-PoEP-L3P
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 3 Professional, Store-and-Forward-Switching, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 3 Professional, Store-and-Forward-Switching, IPv6 Ready
Port type and quantity	20 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP)
Type	MACH104-16TX-PoEP-L3P
Order No.	942 030-002
More Interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	n/a
10G-Single mode fiber (SM) 9/125 µm	n/a
Network size - cascading	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	100-240 VAC, 50-60 Hz
Heat dissipation	119 Btu (IT) h
Heat dissipation at max. PoE power	235 Btu (IT) h
Power consumption	35 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/FTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Command line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HIDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Client Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation
Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support,



Industrial Ethernet: Workgroup Switches: Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports: MACH104-16TX-PoEP-L3P

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	Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Layer 3	Full wired speed IPv4 routing with lowest latency Multinetting (Aliasing), Net directed broadcasts, Port based router interfaces, Proxy ARP, Static routing with ECMP (Equal Cost Multiple Path), VLAN based router interfaces, CIDR (Classless Inter Domain Routing), ICMP Router Discovery (IRDP), Double VLAN Tagging, Protocol based VLANs Multicast Routing (DVMRP, IGMPv1/v2/v3, Multicast routing and IGMP Unknown Multicast Filtering simultaneously, PIM-DM, PIM-SM / SSM, Router Redundancy (VRRP, VRRP tracking, E-VRRP, Interface Tracking, OSPFv2, Ping Tracking, RIPv1, RIPv2, Tracking of static routes)
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	4500 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5–8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4–150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-16TX-PoEP +2X

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP +2X

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-158784/en/conf/ui/istate>

Name	MACH104-16TX-PoEP +2X
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 2 Professional, Store-and-Forward-Switching, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 2 Professional, Store-and-Forward-Switching, IPv6 Ready
Port type and quantity	22 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP) and 2 x 10GE XFP
Type	MACH104-16TX-PoEP +2X
Order No.	942 031-001
More interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	see LWL-Modul M-XFP SR/LC
10G-Single mode fiber (SM) 9/125 µm	see LWL-Modul M-XFP ER/LC, and LWL-Modul M-XFP LR/LC, and LWL-Modul M-XFP ZR/LC
Network size - cascading	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	100-240 VAC, 50-60 Hz
Heat dissipation	153 Btu (IT) h
Heat dissipation at max. PoE power	281 Btu (IT) h
Power consumption	45 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/TFTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Comand line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HIDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Client Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation



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Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support, Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	4500 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5-8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4-150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-16TX-PoEP +2X-L3P

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP +2X-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-352356/en/conf/uisstate>

Name	MACH104-16TX-PoEP +2X-L3P
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 3 Professional, Store-and-Forward-Switching, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 3 Professional, Store-and-Forward-Switching, IPv6 Ready
Port type and quantity	22 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP) and 2 x 10GE XFP
Type	MACH104-16TX-PoEP +2X-L3P
Order No.	942 031-002
More interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	see LWL-Modul M-XFP SR/LC
10G-Single mode fiber (SM) 9/125 µm	see LWL-Modul M-XFP ER/LC, and LWL-Modul M-XFP LR/LC, and LWL-Modul M-XFP ZR/LC
Network size - cascading	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	100-240 VAC, 50-60 Hz
Heat dissipation	153 Btu (IT) h
Heat dissipation at max. PoE power	281 Btu (IT) h
Power consumption	45 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/TFTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Comand line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HIDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Client Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation



Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP +2X-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-352356/en/conf/uistate>

Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support, Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Layer 3	Full wired speed IPv4 routing with lowest latency Multinetting (Aliasing), Net directed broadcasts, Port based router interfaces, Proxy ARP, Static routing with ECMP (Equal Cost Multiple Path), VLAN based router interfaces, CIDR (Classless Inter Domain Routing), ICMP Router Discovery (IRDP), Double VLAN Tagging, Protocol based VLANs Multicast Routing (DVMRP, IGMPv1/v2/v3, Multicast routing and IGMP Unknown Multicast Filtering simultaneously, PIM-DM, PIM-SM / SSM,Router Redundancy (VRRP, VRRP tracking, E-VRRP, Interface Tracking, OSPFv2, Ping Tracking, RIPv1 ,RIPv2, Tracking of static routes)
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	4500 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5–8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4–150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-16TX-PoEP -R

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP -R
<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-158780/en/conf/uisstate>

Name	MACH104-16TX-PoEP -R
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 2 Professional, Store-and-Forward-Switching, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 2 Professional, Store-and-Forward-Switching, IPv6 Ready
Port type and quantity	20 Ports geamt; 16 x (10/100/1000 BASE-TX, RJ45) PoEPlus und 4 x Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 oder 100/1000 BASE-FX, SFP)
Type	MACH104-16TX-PoEP -R
Order No.	942 026-001
More Interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC and SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	n/a
10G-Single mode fiber (SM) 9/125 µm	n/a
Network size - cascading	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	100-240 VAC, 50-60 Hz (redundant)
Heat dissipation	119 Btu (IT) h
Heat dissipation at max. PoE power	235 Btu (IT) h
Power consumption	35 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/FTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Command line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HiDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Client Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation
Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support,



Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP - R

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-158780/en/conf/uistate>

	Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	4500 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5–8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4–150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-16TX -PoEP-R-L3P

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX -PoEP-R-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-352352/en/conf/uisstate>

Name	MACH104-16TX -PoEP-R-L3P
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 3 Professional, Store-and-Forward-Switching, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 3 Professional, Store-and-Forward-Switching, IPv6 Ready
Port type and quantity	20 Ports geamt; 16 x (10/100/1000 BASE-TX, RJ45) PoEPlus und 4 x Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 oder 100/1000 BASE-FX, SFP)
Type	MACH104-16TX -PoEP-R-L3P
Order No.	942 026-002
More Interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC and SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	n/a
10G-Single mode fiber (SM) 9/125 µm	n/a
Network size - cascadiability	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	100-240 VAC, 50-60 Hz (redundant)
Heat dissipation	119 Btu (IT) h
Heat dissipation at max. PoE power	235 Btu (IT) h
Power consumption	35 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/FTPT, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Comand line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HIDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Cliant Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation
Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support,



Industrial Ethernet: Workgroup Switches: Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports: MACH104-16TX -PoEP-R-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-352352/en/conf/uistate>

	Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Layer 3	Full wired speed IPv4 routing with lowest latency Multinetting (Aliasing), Net directed broadcasts, Port based router interfaces, Proxy ARP, Static routing with ECMP (Equal Cost Multiple Path), VLAN based router interfaces, CIDR (Classless Inter Domain Routing), ICMP Router Discovery (IRDP), Double VLAN Tagging, Protocol based VLANs Multicast Routing (DVMRP, IGMPv1/v2/v3, Multicast routing and IGMP Unknown Multicast Filtering simultaneously, PIM-DM, PIM-SM / SSM, Router Redundancy (VRRP, VRRP tracking, E-VRRP, Interface Tracking, OSPFv2, Ping Tracking, RIPv1, RIPv2, Tracking of static routes)
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	4500 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5–8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4–150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-16TX-PoEP +2X -R

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP +2X -R

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-158783/en/conf/uisstate>

Name	MACH104-16TX-PoEP +2X -R
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 2 Professional, Store-and-Forward-Switching, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 2 Professional, Store-and-Forward-Switching, IPv6 Ready
Port type and quantity	22 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP) and 2 x 10GE XFP
Type	MACH104-16TX-PoEP +2X -R
Order No.	942 033-001
More interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	see LWL-Modul M-XFP SR/LC
10G-Single mode fiber (SM) 9/125 µm	see LWL-Modul M-XFP ER/LC, and LWL-Modul M-XFP LR/LC, and LWL-Modul M-XFP ZR/LC
Network size - cascading	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	100-240 V AC, 50-60 Hz (redundant)
Heat dissipation	153 Btu (IT) h
Heat dissipation at max. PoE power	281 Btu (IT) h
Power consumption	45 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/TFTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Comand line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HIDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Client Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation



Industrial Ethernet: Workgroup Switches: Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports: MACH104-16TX-PoEP +2X -R

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-158783/en/conf/uisstate>

Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support, Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	5100 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5-8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4-150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-16TX-PoEP +2X -R-L3P

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP +2X -R-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-352358/en/conf/uisstate>

Name	MACH104-16TX-PoEP +2X -R-L3P
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 3 Professional, Store-and-Forward-Switching, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 3 Professional, Store-and-Forward-Switching, IPv6 Ready
Port type and quantity	22 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP) and 2 x 10GE XFP
Type	MACH104-16TX-PoEP +2X -R-L3P
Order No.	942 033-002
More interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	see LWL-Modul M-XFP SR/LC
10G-Single mode fiber (SM) 9/125 µm	see LWL-Modul M-XFP ER/LC, and LWL-Modul M-XFP LR/LC, and LWL-Modul M-XFP ZR/LC
Network size - cascading	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	100-240 V AC, 50-60 Hz (redundant)
Heat dissipation	153 Btu (IT) h
Heat dissipation at max. PoE power	281 Btu (IT) h
Power consumption	45 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/TFTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Comand line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HIDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Client Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation



Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP +2X -R-L3P

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Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support, Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Layer 3	Full wired speed IPv4 routing with lowest latency Multinetting (Aliasing), Net directed broadcasts, Port based router interfaces, Proxy ARP, Static routing with ECMP (Equal Cost Multiple Path), VLAN based router interfaces, CIDR (Classless Inter Domain Routing), ICMP Router Discovery (IRDP), Double VLAN Tagging, Protocol based VLANs Multicast Routing (DVMRP, IGMPv1/v2/v3, Multicast routing and IGMP Unknown Multicast Filtering simultaneously, PIM-DM, PIM-SM / SSM, Router Redundancy (VRRP, VRRP tracking, E-VRRP, Interface Tracking, OSPFv2, Ping Tracking, RIPv1 ,RIPv2, Tracking of static routes)
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	5100 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5–8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4–150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-16TX-PoEP -E

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP -E

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-158781/en/conf/uisstate>

Name	MACH104-16TX-PoEP -E
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 2 Professional, Store-and-Forward-Switching, fan less Design, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 2 Professional, Store-and-Forward-Switching, fan less Design, IPv6 Ready
Port type and quantity	20 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP)
Type	MACH104-16TX-PoEP -E
Order No.	942 027-001
More Interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	n/a
10G-Single mode fiber (SM) 9/125 µm	n/a
Network size - cascadiability	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	44-57 V DC (min. 52 V DC for PoEPlus)
Heat dissipation	119 Btu (IT) h
Heat dissipation at max. PoE power	146 Btu (IT) h
Power consumption	30 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/FTPT, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Comand line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HIDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Cliant Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation
Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support,



Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP -E

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-158781/en/conf/uistate>

	Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	4500 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5–8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4–150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-16TX-PoEP-E-L3P

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP-E-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-352354/en/conf/uisstate>

Name	MACH104-16TX-PoEP-E-L3P
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 3 Professional, Store-and-Forward-Switching, fan less Design, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports), managed, Software Layer 3 Professional, Store-and-Forward-Switching, fan less Design, IPv6 Ready
Port type and quantity	20 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-FX, SFP)
Type	MACH104-16TX-PoEP-E-L3P
Order No.	942 027-002
More Interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	n/a
10G-Single mode fiber (SM) 9/125 µm	n/a
Network size - cascadiability	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	45 - 57 V DC (min. 52 V DC for PoEPlus)
Heat dissipation	119 Btu (IT) h
Heat dissipation at max. PoE power	146 Btu (IT) h
Power consumption	30 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/FTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Command line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HiDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Client Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation
Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support,



Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP-E-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-352354/en/conf/uistate>

	Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Layer 3	Full wired speed IPv4 routing with lowest latency Multinetting (Aliasing), Net directed broadcasts, Port based router interfaces, Proxy ARP, Static routing with ECMP (Equal Cost Multiple Path), VLAN based router interfaces, CIDR (Classless Inter Domain Routing), ICMP Router Discovery (IRDP), Double VLAN Tagging, Protocol based VLANs Multicast Routing (DVMRP, IGMPv1/v2/v3, Multicast routing and IGMP Unknown Multicast Filtering simultaneously, PIM-DM, PIM-SM / SSM,Router Redundancy (VRRP, VRRP tracking, E-VRRP, Interface Tracking, OSPFv2, Ping Tracking, RIPv1 ,RIPv2, Tracking of static routes)
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	4500 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5–8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4–150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-16TX-PoEP +2X -E

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP +2X -E

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-158782/en/conf/ui/istate>

Name	MACH104-16TX-PoEP +2X -E
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 2 Professional, Store-and-Forward-Switching, Fan less Design, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 2 Professional, Store-and-Forward-Switching, Fan less Design, IPv6 Ready
Port type and quantity	22 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP) and 2 x 10GE XFP
Type	MACH104-16TX-PoEP +2X -E
Order No.	942 032-001
More interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	see LWL-Modul M-XFP SR/LC
10G-Single mode fiber (SM) 9/125 µm	see LWL-Modul M-XFP ER/LC, and LWL-Modul M-XFP LR/LC, and LWL-Modul M-XFP ZR/LC
Network size - cascading	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	45 - 57 V DC (min. 52 V DC for PoEPlus)
Heat dissipation	136 Btu (IT) h
Heat dissipation at max. PoE power	180 Btu (IT) h
Power consumption	40 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/TFTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Comand line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HIDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Client Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation



Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP +2X -E

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-158782/en/conf/uisstate>

Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support, Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	4500 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5-8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4-150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-16TX-PoEP +2X -E-L3P

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP +2X -E-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-352360/en/conf/uisstate>

Name	MACH104-16TX-PoEP +2X -E-L3P
	
	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 3 Professional, Store-and-Forward-Switching, Fan less Design, IPv6 Ready
Delivery informations	
Availability	available
Product description	
Description	20 Port Gigabit Ethernet Industrial Workgroup Switch + 2 x 10GE Uplinks (16 x GE TX PoEPlus Ports, 4 x GE SFP combo Ports, 2 x 10GE XFP), managed, Software Layer 3 Professional, Store-and-Forward-Switching, Fan less Design, IPv6 Ready
Port type and quantity	22 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP) and 2 x 10GE XFP
Type	MACH104-16TX-PoEP +2X -E-L3P
Order No.	942 032-002
More interfaces	
Power supply/signaling contact	1 x terminal block 2-pins, contact manually or automatically (max. 1 A, 24 V DC or 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
10G-Multimode fiber (MM) 50/125 µm	see LWL-Modul M-XFP SR/LC
10G-Single mode fiber (SM) 9/125 µm	see LWL-Modul M-XFP ER/LC, and LWL-Modul M-XFP LR/LC, and LWL-Modul M-XFP ZR/LC
Network size - cascading	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	45 - 57 V DC (min. 52 V DC für PoEPlus)
Heat dissipation	136 Btu (IT) h
Heat dissipation at max. PoE power	180 Btu (IT) h
Power consumption	40 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/TFTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Comand line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HIDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Client Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation



Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-16TX-PoEP +2X -E-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-352360/en/conf/uistate>

Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support, Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Layer 3	Full wired speed IPv4 routing with lowest latency Multinetting (Aliasing), Net directed broadcasts, Port based router interfaces, Proxy ARP, Static routing with ECMP (Equal Cost Multiple Path), VLAN based router interfaces, CIDR (Classless Inter Domain Routing), ICMP Router Discovery (IRDP), Double VLAN Tagging, Protocol based VLANs Multicast Routing (DVMRP, IGMPv1/v2/v3, Multicast routing and IGMP Unknown Multicast Filtering simultaneously, PIM-DM, PIM-SM / SSM, Router Redundancy (VRRP, VRRP tracking, E-VRRP, Interface Tracking, OSPFv2, Ping Tracking, RIPv1 ,RIPv2, Tracking of static routes)
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	4500 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5–8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4–150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	Device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

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Product information MACH104-20TX-F-4PoE

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-20TX-F-4PoE

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-83681/en/conf/uistate>

Name	MACH104-20TX-F-4PoE
	
	24 port Gigabit Ethernet Industrial Workgroup Switch (20 x GE TX ports, there from 4 x PoE ports, 4 x GE SFP combo ports), managed, Software Layer 2 Professional, Store-and-Forward-Switching, IPv6 Ready, fanless design
Delivery informations	
Availability	available
Product description	
Description	24 port Gigabit Ethernet Industrial Workgroup Switch (20 x GE TX ports, there from 4 x PoE ports, 4 x GE SFP combo ports), managed, Software Layer 2 Professional, Store-and-Forward-Switching, IPv6 Ready, fanless design
Port type and quantity	24 Ports in total; 20x (10/100/1000 BASE-TX, RJ45) therefrom 4 x PoE and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP)
Type	MACH104-20TX-F-4PoE
Order No.	942 003-201
More Interfaces	
Power supply/signaling contact	1 x plug-in terminal block, 2-pin, output manual or automatic switchable (max. 1 A, 24 V DC bzw. 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
Network size - cascading	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	50 (reconfiguration time < 0.3 sec.)
Power requirements	
Operating voltage	100-240 V AC, 50-60 Hz
Heat dissipation	170 Btu (IT) h
Rated current	n/a
Power consumption	110 W
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/TFTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, egress/ingress traffic configurable, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic [temperature, optical input and output power (µW and dBm)], Trap for configuration saving and changing, duplex mismatch detection, disable learning, Port Monitor
Configuration	Comand line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HiDiscovery, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), automatic script load from ACA21, integrated DHCP server per port, DHCP relay, automatic invalid configuration undo, Offline Configuration, SFP Whitelist, ARC automatic ring configuration (MRP), automatic port shutdown (link flapping), configuration signature (water marking), overload detection
Security	ACL/QoS, ACL Layer 4 fragment support, Port Security (IP and MAC) with multiple addresses (MAC 50 per port), SNMP V3, SSH, Authentication (IEEE802.1x), 802.1x Multi Client Authentication, Guest VLAN and Unauthenticated VLAN, Port based Radius VLAN assignment, MAC notification
Redundancy functions	HIPER-Ring, MRP, MSTP, RSTP - IEEE802.1D-2004, MRP and RSTP gleichzeitig, Link Aggregation
Filter	QoS 8 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), Voice VLAN, shared VLAN learning, Q-in-Q double VLAN tagging, multicast IGMP v1/v2/v3, (snoothing/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D, Jumbo Frame Support, Industrial Profiles, EtherNet/IP und PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation, software tools like e.g. STEP7, oder Control Logix IEC61850 protocol (MMS Server, Switch Model)



Industrial Ethernet: Workgroup Switches: Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports: MACH104-20TX-F-4PoE

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-83681/en/conf/ui/state>

Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast), Ingress / Egress
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Dimensions (W x H x D)	448 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	4600 g
Protection class	IP20
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 5–8.4 Hz, 10 cycles, 1 octave/min; 1 g, 8.4–150 Hz, 10 cycles, 1 octave/min
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80-3000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line
EN 61000-4-6 conducted immunity	10 V (150 kHz-80 MHz)
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Safety of information technology equipment	cUL 60950-1
Scope of delivery and accessories	
Scope of delivery	MACH100 device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual
Accessories to order separately	Fast Ethernet SFP modules, Gigabit Ethernet SFP modules, autoConfiguration Adapter ACA21-USB, terminal cable, Industrial Hivision Network Management software

For more information please contact:

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Product information MACH104-20TX-F-4PoE-L3P

Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-20TX-F-4PoE-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-353006/en/conf/uisstate>

Name	MACH104-20TX-F-4PoE-L3P
	
	24 port Gigabit Ethernet Industrial Workgroup Switch (20 x GE TX ports, there from 4 x PoE ports, 4 x GE SFP combo ports), managed, Software Layer 3 Professional, Store-and-Forward-Switching, IPv6 Ready, fanless design
Delivery informations	
Availability	available
Product description	
Description	24 port Gigabit Ethernet Industrial Workgroup Switch (20 x GE TX ports, there from 4 x PoE ports, 4 x GE SFP combo ports), managed, Software Layer 3 Professional, Store-and-Forward-Switching, IPv6 Ready, fanless design
Port type and quantity	24 Ports in total; 20x (10/100/1000 BASE-TX, RJ45) therefrom 4 x PoE and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP)
Type	MACH104-20TX-F-4PoE-L3P
Order No.	942 003-202
More Interfaces	
Power supply/signaling contact	1 x plug-in terminal block, 2-pin, output manual or automatic switchable (max. 1 A, 24 V DC bzw. 24 V AC)
V.24 interface	1 x RJ11 socket, serial interface for device configuration
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Multimode fiber (MM) 62.5/125 µm	see SFP LWL-Module M-FAST SFP-MM/LC and SFP LWL-Module M-SFP-SX/LC
Single mode fiber (SM) 9/125 µm	see SFP LWL-Module M-FAST SFP-SM/LC und SFP LWL-Module M-SFP-LX/LC
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP LWL-Module M-FAST SFP-SM+/LC
Network size - cascadiability	
Line - / star topology	any
Power requirements	
Operating voltage	100-240 V AC, 50-60 Hz
Software	
Management	serial Interface, web interface, SNMP V1/V2, HiVision file transfer SW HTTP/TFTP, LLDP-MED
Diagnostics	LEDs, log-file, syslog, signal contact, RMON (statistic, history, alarms, events), port mirroring, topology discovery 802.1AB, cable tester
Configuration	Comand Line Interface (CLI), TELNET, BootP, DHCP, DHCP Option 82, HIDiscovery, auto-configuration adapter (ACA11, ACA21-USB), watchdog Configuration, integrated DHCP server
Security	Port security (IP and MAC), SNMP V3, SSH, authentication (802.1x)
Redundancy functions	HIPER-ring, MRP, RSTP - IEEE802.1D-2004, MRP and RSTP in parallel, redundant network/ring coupling
Filter	n/a
Industrial Profiles	n/a
Time synchronisation	PTP IEEE 1588 v1/v2 Boundary and Transparent Clock hardware time stamping with accuracies of 30ns, SNTP server, realtime clock with energy buffer
Flow Control	n/a
Ambient conditions	
Operating temperature	0 °C ... 50 °C
Storage/transport temperature	-20 °C ... 85 °C
Relative humidity (non-condensing)	10 % ... 95 %
MTBF	n/a
Mechanical construction	
Mounting	19" control cabinet
Weight	4600 g
Protection class	IP20



Industrial Ethernet:Workgroup Switches:Gigabit/10 Gigabit Ethernet PoE Workgroup Switches, 22-24 Ports:MACH104-20TX-F-4PoE-L3P

<http://www.e-catalog.beldensolutions.com/link/57078-24455-49848-85613-353006/en/conf/uisstate>

Mechanical stability

IEC 60068-2-27 shock 15 g, 11 ms duration, 18 shocks

EMC interference immunity

EN 61000-4-2 electrostatic discharge (ESD) 4 kV contact discharge, 8 kV air discharge

EN 61000-4-3 electromagnetic field 10 V/m (80-3000 MHz)

EN 61000-4-4 fast transients (burst) 2 kV power line, 4 kV data line

EN 61000-4-5 surge voltage power line: 2 kV (line/earth), 1 kV (line/line), 4 kV data line

EN 61000-4-6 conducted immunity 10 V (150 kHz-80 MHz)

EMC emitted immunity

FCC CFR47 Part 15 FCC 47 CFR Part 15 Class A

EN 55022 EN 55022 Class A

Approvals

Safety of industrial control equipment cUL 508

Scope of delivery and accessories

Scope of delivery MACH100 device, terminal block for signal contact, 2 brackets with fasteningscrews (pre-assembled), housing feet - stick-on, non-heating appliance cable - Euro model, CD-ROM with user manual, installation user manual

For more information please contact:

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