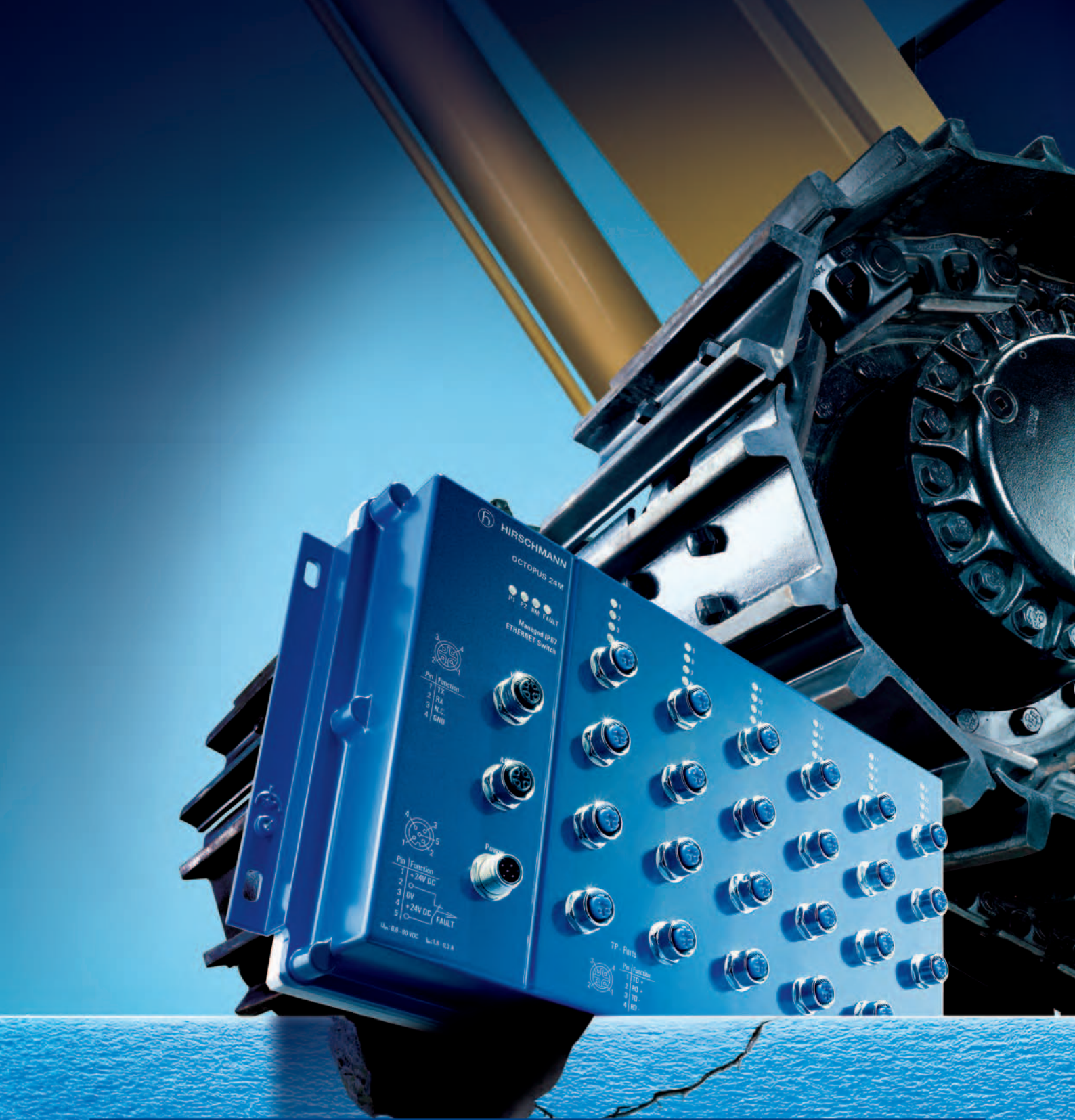


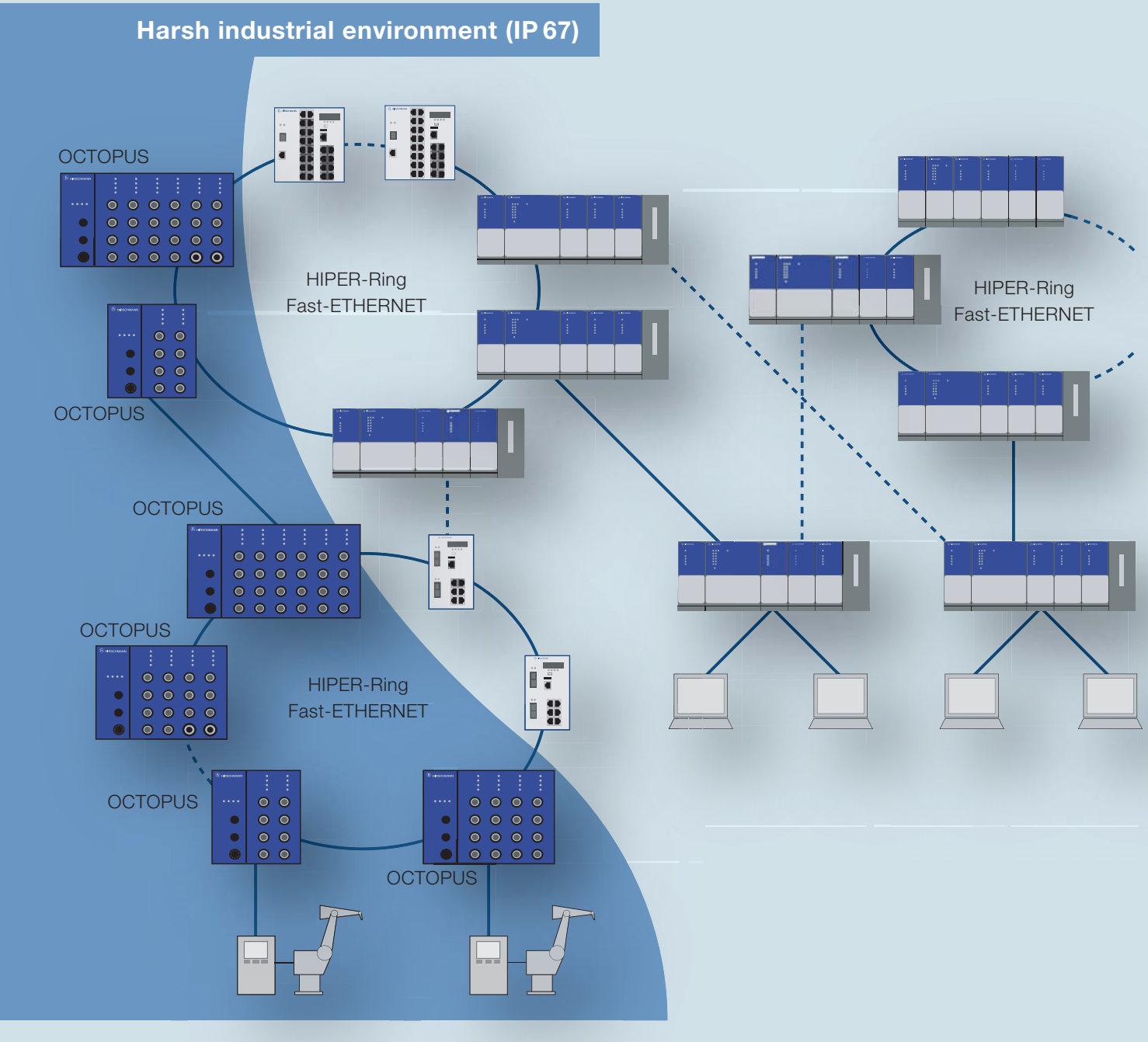
Withstands any load:

The new OCTOPUS family with up to 24 ports.

- First manageable IP 67 switch
- Extended management by SNMP
- Redundancy via HIPER-Ring and Rapid Spanning Tree
- Access control by IEEE 802.1X
- Mixed use with MACH and MICE possible

HIRSCHMANN

Intelligent Industrial ETHERNET solutions are conquering the field bus level.



Applications

Wherever reliable, intelligent and efficient data transmission has to be guaranteed under extreme conditions, the OCTOPUS family is at home: Not only at the field level, in factory and process automation, but also in trains or on board ships.

Regardless of whether it needs to withstand great mechanical stress, moisture and condensation, dirt, dust or vibrations – the OCTOPUS family is always able to monitor a HIPER-Ring and send status messages to the central management, for example.

Product features

The new OCTOPUS family, which complies with all the relevant industrial standards, unites the advantages of the robust IP 67 design with those of the managed Hirschmann switches. The OCTOPUS 8/16/24 have the intelligence and all functional characteristics of the modular MICE series and can therefore be implemented in a mixed environment of modular devices, permanently installed Rail Switches and open mounted IP 67 switches.

- Standardized 4-pin-M12-D technology for the connection of terminating equipment
- Totally encapsulated design
- Management via SNMP v1, v2, v3, Web GUI or TELNET
- Support for autoconfiguration adapter
- Redundancy mechanisms such as Rapid Spanning Tree and HIPER-Ring
- Access check according to IEEE 802.1X
- Filter possibilities per port
- Flow control with prioritization and traffic shaping
- Fast commissioning according to the plug&play principle
- Redundant power supply for high availability
- LED display for device and network status
- External signaling of alarms via signal contact
- Compatible with PROFINET, EtherNet/IP, Modbus TCP etc.

Due to their compact design, the products of the OCTOPUS family can be mounted either on the wall or directly on the machine. The IP 67 variants of the proven manageable Hirschmann switches have either 8/16/24 twisted pair ports, designed in standardized 4-pin-M12-D technology. Since the switches can be cascaded as you whish, networks with a distributed structure and short transmission distances to the terminating equipment can be implemented. Optionally the 16 and 24 port versions are available with 2 uplink ports 100 BASE-FX (*micro***FX**).

Hirschmann Competence Center

If not only products but also economical total solutions are sought, the Hirschmann Competence Center is the right place to contact. Here you will get highly qualified consulting, service and support from the pioneer in industrial network technology. Contact us about your individual requirements.

www.hicomcenter.com

A real OCTOPUS is not easily shaken.

Robust design
- Die-cast metal housing
- Screwed housing base
- Can be screwed directly to the machine

Efficient connection technology
- Fast and uncomplicated assembly
- Few parts
- Captive gasket

Autoconfiguration
- USB support via ACA 21-M12 connector
- Saves several versions of the configuration data and operating software of connected switches
- Simple commissioning
- Fast exchange of manageable switches

Extensive functions
- HIPER-Ring and Rapid STP
- Packet filter (ACL)
- SNMP v3
- IEEE 802.1X … and a lot more besides

High cost effectiveness
- No special data distributor required
- Low wiring costs through optimized cable lengths
- Time saved by assembly on site
- Increased flexibility without fixed data installation sockets

HIPER-Ring
- Optional fiberoptic uplinks with *micro***FX** connectors

Requirements and solutions

In future, standardized, low-cost transmission technologies such as Industrial ETHERNET and IP will increasingly be used in the close-to-machine process levels which were previously clearly dominated by field bus systems such as Profibus, CAN or Interbus. The prerequisite for this is Industrial ETHERNET components which are able to cope with harsh factory floor conditions, and operate there fault-free over the long term.

In addition to an IP 67 switch, an appropriately robust and compact M 12 connector is required to guarantee reliable real time transmission with high availability. At the same time, high installation and wiring costs can be reduced by using switches directly in the field. But this demands the appropriate intelligent, manageable Industrial ETHERNET switches which are also able to provide redundancy mechanisms such as HIPER-Ring or access control according to IEEE 802.1X.

With the new OCTOPUS family, the first manageable switches at the field level, Hirschmann offers the optimum solution. The OCTOPUS family has the necessary internal resources for extended management by SNMP, as well as prioritization and traffic shaping. This means that Industrial ETHERNET with extended scope of functions can now also be used in previously inaccessible places – without large-scale cabling.

And for the first time IP 67 switches can be integrated in ETHERNET rings to conveniently link the field level.

The OCTOPUS family

Type of product	OCTOPUS 8M	OCTOPUS 16M
Product description		
Description	Managed IP 67 switch in accordance with IEEE 802.3, store and forward switching mode, Layer 2 Software Professional, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Managed IP 67 switc store and forward sw ETHERNET (10 Mbit/s
Port type and quantity	8 x 10/100 BASE-TX, M12 D coding, 4-pole, 2-pair TP cable Auto-crossing, auto-negotiation, auto-polarity	16 x 10/100 BASE-TX, Auto-crossing, auto-
Type	OCTOPUS 8M	OCTOPUS 16M
Order No.	943 931-001	943 912-001
More Interfaces		
Power supply/signaling contact	1 M12 A coding 5-pin connector	1 M12 A coding 5-pi
V.24 interface	1 M12 A coding 4-pin socket	1 M12 A coding 4-pi
USB interface	1 M12 A coding 5-pin socket	1 M12 A coding 5-pi
Network size – length of cable		
Twisted pair (TP)	0 – 100 m	0 – 100 m
Multimode fiber (MM) 50/125 µm		
Multimode fiber (MM) 62.5/125 µm		
Network size – cascadibility		
Line/star topology	Any	Any
Ring structure (HIPER-Ring)	50 (reconfiguration time <0.5 sec.)	50 (reconfiguration ti
Power requirements		
Operating voltage	9.6 up to 60 V DC	9.6 up to 60 V DC
Power consumption	max. 6.2 W	max. 9.5 W
Current consumption at 24 V DC	200 mA	380 mA
Service		
Management	Serial interface, Web Interface, SNMP V1/V2/V3, LLDP (HiVision/Industrial HiVision)	Serial interface, Web
Diagnostics	LEDs (Power 1, Power 2, link status, data, redundancy manager, error) cable tester, signal contact (24 V DC/1A), RMON (statistics, history, alarms, events) Syslog, Port mirroring	LEDs (Power 1, Powe contact (24 V DC/1A)
Configuration	Command Line Interface (CLI), autoconfiguration adapter (ACA21-M12), TELNET, BootP, DHCP Option 82, HiDiscovery	Command Line Interf DHCP Option 82, HiD
Security	Port security (MAC and IP address), SNMPv3, Access Control to Agent (VLAN/IP), 802.1x	Port security (MAC a Access Control to Ag
Other services	QoS 4 classes, priority (IEEE 802.1D/p), VLAN (802.1Q), Multicast (IGMP Snooping/ Querier) GMRP, Broadcast limiter, Flow Control IEEE 802.3x, Topology Discovery 802.1ab, PTP (Precision Time Protocol, IEEE 1588), SNTP (Simple Network Time Protocol)	QoS 4 classes, priori GMRP, Broadcast lim (Precision Time Proto
Prepared for	ACL, Traffic Shaping, Link Aggregation 802.1ad, MSTP 802.1s	ACL, Traffic Shaping,
Redundancy		
Redundancy functions	HIPER-Ring (ring structure), RSTP (Rapid Spanning Tree Protocol), redundant network/ring coupling, (master/receiver), dual homing (master/receiver), redundant 24 V power supply	HIPER-Ring (ring stru coupling, (master/rec
Ambient conditions		
Operating temperature	– 40° C up to + 70° C	– 40° C up to + 70° C
Storage/transport temperature	– 40° C up to + 85° C	– 40° C up to + 85° C
MTBF		
Mechanical construction		
Dimensions (W x H x D)	184 mm x 189 mm x 70 mm	261 mm x 189 mm x 70
Mounting	Wall mounting, DIN rail mounting with adapter	Wall mounting, DIN r
Weight	1510 g	2020 g
Protection class	IP 67	IP 67
Mechanical stability		
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks	15 g, 11 ms duration,
IEC 60068-2-6 vibration	1 mm, 2 – 13.2 Hz, 90 min.; 0.7 g, 13.2 – 100 Hz, 90 min.; 3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.; 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.	1 mm, 2 – 13.2 Hz, 90 3.5 mm, 3 – 9 Hz, 10 c 1 g, 9 – 150 Hz, 10 cyc
EMC interference immunity		
EN 61000-4-2 electrostatic discharge (ESD)	4 kV contact discharge, 8 kV air discharge	4 kV contact discharg
EN 61000-4-3 electromagnetic field	10 V/m (80 – 1000 MHz)	10 V/m (80 – 1000 MH
EN 61000-4-4 fast transients (burst)	2 kV power line, 1 kV data line	2 kV power line, 1 kV
EN 61000-4-5 surge voltage	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (line/
EN 61000-4-6 conducted immunity	3 V (10 – 150 kHz), 10 V (150 kHz – 80 MHz)	3 V (10 – 150 kHz), 10 V
EMC emitted immunity		
FCC CFR47 Part 15	FCC CFR47 Part 15 Class A	FCC CFR47 Part 15 C
EN 55022	EN 55022 Class A	EN 55022 Class A
Approvals		
Safety of industrial control equipment	cUL 508 (pending)	cUL 508 (pending)
Hazardous locations		
Safety of information technology equipment		
Germanischer Lloyd	GL (pending)	GL (pending)
Electronic mechanisms on rail-mounted vehicles	EN 50155	EN 50155
Employment in vehicles	E1 (pending)	E1 (pending)
Scope of delivery and accessories		
Scope of delivery	Covers for sealing unused ports, description and operating instructions	Covers for sealing un description and oper

	OCTOPUS 24M	OCTOPUS 16M-2
h in accordance with IEEE 802.3, witching mode, Layer 2 Software Professional, s) and Fast-ETHERNET (100 Mbit/s)	Managed IP 67 switch in accordance with IEEE 802.3, store and forward switching mode, Layer 2 Software Professional, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Managed IP 67 sw store and forward ETHERNET (10 Mb
M12 D coding, 4-pole, 2-pair TP cable negotiation, auto-polarity	24 x 10/100 BASE-TX, M12 D coding, 4-pole, 2-pair TP cable Auto-crossing, auto-negotiation, auto-polarity	14 x 10/100 BASE- Auto-crossing, aut
	OCTOPUS 24M	OCTOPUS 16M-2
	943 923-001	943 912-002
n connector	1 M12 A coding 5-pin connector	1 M12 A coding 5-
n socket	1 M12 A coding 4-pin socket	1 M12 A coding 4-
n socket	1 M12 A coding 5-pin socket	1 M12 A coding 5-
	0 – 100 m	0 – 100 m
		0 – 5000 m, 8 dB Li
		0 – 4000 m, 11 dB L
	Any	Any
me <0.5 sec.)	50 (reconfiguration time <0.5 sec.)	50 (reconfiguration
	9.6 up to 60 V DC	9.6 up to 60 V DC
	max. 13.5 W	max. 13.0 W
	500 mA	480 mA
Interface, SNMP V1/V2/V3, LLDP (HiVision/Industrial HiVision)	Serial interface, Web Interface, SNMP V1/V2/V3, LLDP (HiVision/Industrial HiVision)	Serial interface, W
r 2, link status, data, redundancy manager, error) cable tester, signal , RMON (statistics, history, alarms, events) Syslog, Port mirroring	LEDs (Power 1, Power 2, link status, data, redundancy manager, error) cable tester, signal contact (24 V DC/1A), RMON (statistics, history, alarms, events) Syslog, Port mirroring	LEDs (Power 1, Po contact (24 V DC/1
face (CLI), autoconfiguration adapter (ACA21-M12), TELNET, BootP, Discovery	Command Line Interface (CLI), autoconfiguration adapter (ACA21-M12), TELNET, BootP, DHCP Option 82, HiDiscovery	Command Line Int DHCP Option 82,
nd IP address), SNMPv3, gent (VLAN/IP), 802.1x	Port security (MAC and IP address), SNMPv3, Access Control to Agent (VLAN/IP), 802.1x	Port security (MAC Access Control to
ty (IEEE 802.1D/p), VLAN (802.1Q), Multicast (IGMP Snooping/ Querier) miter, Flow Control IEEE 802.3x, Topology Discovery 802.1ab, PTP ocol, IEEE 1588), SNTP (Simple Network Time Protocol)	QoS 4 classes, priority (IEEE 802.1D/p), VLAN (802.1Q), Multicast (IGMP Snooping/ Querier) GMRP, Broadcast limiter, Flow Control IEEE 802.3x, Topology Discovery 802.1ab, PTP (Precision Time Protocol, IEEE 1588), SNTP (Simple Network Time Protocol)	QoS 4 classes, pri GMRP, Broadcast (Precision Time Pr
, Link Aggregation 802.1ad, MSTP 802.1s	ACL, Traffic Shaping, Link Aggregation 802.1ad, MSTP 802.1s	ACL, Traffic Shapi
ucture), RSTP (Rapid Spanning Tree Protocol), redundant network/ring ceiver), dual homing (master/receiver), redundant 24 V power supply	HIPER-Ring (ring structure), RSTP (Rapid Spanning Tree Protocol), redundant network/ring coupling, (master/receiver), dual homing (master/receiver), redundant 24 V power supply	HIPER-Ring (ring s coupling, (master/
	– 40° C up to + 70° C	– 40° C up to + 70°
	– 40° C up to + 85° C	– 40° C up to + 85°
0 mm	338 mm x 189 mm x 70 mm	261 mm x 189 mm x
ail mounting with adapter	Wall mounting, DIN rail mounting with adapter	Wall mounting, DIN
	2530 g	2030 g
	IP 67	IP 67
18 shocks	15 g, 11 ms duration, 18 shocks	15 g, 11 ms duratio
min.; 0.7 g, 13.2 – 100 Hz, 90 min.; ycles, 1 octave/min.; les, 1 octave/min.	1 mm, 2 – 13.2 Hz, 90 min.; 0.7 g, 13.2 – 100 Hz, 90 min.; 3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.; 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.	1 mm, 2 – 13.2 Hz, 1 3.5 mm, 3 – 9 Hz, 1 1 g, 9 – 150 Hz, 10 c
ge, 8 kV air discharge	4 kV contact discharge, 8 kV air discharge	4 kV contact disch
z)	10 V/m (80 – 1000 MHz)	10 V/m (80 – 1000 M
data line	2 kV power line, 1 kV data line	2 kV power line, 1
/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (li
V (150 kHz – 80 MHz)	3 V (10 – 150 kHz), 10 V (150 kHz – 80 MHz)	3 V (10 – 150 kHz), 1
Class A	FCC CFR47 Part 15 Class A	FCC CFR47 Part 1
	EN 55022 Class A	EN 55022 Class A
	cUL 508 (pending)	cUL 508 (pending)
	GL (pending)	GL (pending)
	EN 50155	EN 50155
	E1 (pending)	E1 (pending)
nused ports, ating instructions	Covers for sealing unused ports, description and operating instructions	Covers for sealing description and op

2FX	OCTOPUS 24M-2FX
itch in accordance with IEEE 802.3, switching mode, Layer 2 Software Professional, it/s) and Fast-ETHERNET (100 Mbit/s)	Managed IP 67 switch in accordance with IEEE 802.3, store and forward switching mode, Layer 2 Software Professional, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)
TX, M12 D coding, 4-pole, 2-pair TP cable to-negotiation, auto-polarity, 2 x 100 Base-FX MM, *micro***FX**	22 x 10/100 BASE-TX, M12 D coding, 4-pole, 2-pair TP cable Auto-crossing, auto-negotiation, auto-polarity, 2 x 100 Base-FX MM, *micro***FX**
FX	OCTOPUS 24M-2FX
	943 923-002
-pin connector	1 M12 A coding 5-pin connector
-pin socket	1 M12 A coding 4-pin socket
-pin socket	1 M12 A coding 5-pin socket
	0 – 100 m
ink Budget at 1300 nm, A = 1 dB/km, 3 dB Reserve, B = 800 MHz x km	0 – 5000 m, 8 dB Link Budget at 1300 nm, A = 1 dB/km, 3 dB Reserve, B = 800 MHz x km
Link Budget at 1300 nm, A = 1 dB/km, 3 dB Reserve, B = 500 MHz x km	0 – 4000 m, 11 dB Link Budget at 1300 nm, A = 1 dB/km, 3 dB Reserve, B = 500 MHz x km
	Any
n time <0.5 sec.)	50 (reconfiguration time <0.5 sec.)
	9.6 up to 60 V DC
	max. 14.9 W
	550 mA
eb Interface, SNMP V1/V2/V3, LLDP (HiVision/Industrial HiVision)	Serial interface, Web Interface, SNMP V1/V2/V3, LLDP (HiVision/Industrial HiVision)
wer 2, link status, data, redundancy manager, error) cable tester, signal 1A), RMON (statistics, history, alarms, events) Syslog, Port mirroring	LEDs (Power 1, Power 2, link status, data, redundancy manager, error) cable tester, signal contact (24 V DC/1A), RMON (statistics, history, alarms, events) Syslog, Port mirroring
terface (CLI), autoconfiguration adapter (ACA21-M12), TELNET, BootP, HiDiscovery	Command Line Interface (CLI), autoconfiguration adapter (ACA21-M12), TELNET, BootP, DHCP Option 82, HiDiscovery
C and IP address), SNMPv3, Agent (VLAN/IP), 802.1x	Port security (MAC and IP address), SNMPv3, Access Control to Agent (VLAN/IP), 802.1x
ority (IEEE 802.1D/p), VLAN (802.1Q), Multicast (IGMP Snooping/ Querier) limiter, Flow Control IEEE 802.3x, Topology Discovery 802.1ab, PTP otocol, IEEE 1588), SNTP (Simple Network Time Protocol)	QoS 4 classes, priority (IEEE 802.1D/p), VLAN (802.1Q), Multicast (IGMP Snooping/ Querier) GMRP, Broadcast limiter, Flow Control IEEE 802.3x, Topology Discovery 802.1ab, PTP (Precision Time Protocol, IEEE 1588), SNTP (Simple Network Time Protocol)
ng, Link Aggregation 802.1ad, MSTP 802.1s	ACL, Traffic Shaping, Link Aggregation 802.1ad, MSTP 802.1s
structure), RSTP (Rapid Spanning Tree Protocol), redundant network/ring receiver), dual homing (master/receiver), redundant 24 V power supply	HIPER-Ring (ring structure), RSTP (Rapid Spanning Tree Protocol), redundant network/ring coupling, (master/receiver), dual homing (master/receiver), redundant 24 V power supply
C	– 40° C up to + 70° C
C	– 40° C up to + 85° C
x 70 mm	338 mm x 189 mm x 70 mm
N rail mounting with adapter	Wall mounting, DIN rail mounting with adapter
	2540 g
	IP 67
n, 18 shocks	15 g, 11 ms duration, 18 shocks
90 min.; 0.7 g, 13.2 – 100 Hz, 90 min.; 0 cycles, 1 octave/min.; cycles, 1 octave/min.	1 mm, 2 – 13.2 Hz, 90 min.; 0.7 g, 13.2 – 100 Hz, 90 min.; 3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.; 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.
harge, 8 kV air discharge	4 kV contact discharge, 8 kV air discharge
MHz)	10 V/m (80 – 1000 MHz)
kV data line	2 kV power line, 1 kV data line
ne/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line
10 V (150 kHz – 80 MHz)	3 V (10 – 150 kHz), 10 V (150 kHz – 80 MHz)
5 Class A	FCC CFR47 Part 15 Class A
	EN 55022 Class A
	cUL 508 (pending)
	GL (pending)
	EN 50155
	E1 (pending)
unused ports, perating instructions	Covers for sealing unused ports, description and operating instructions

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