



Automation and Network Solutions



**INDUSTRIAL ETHERNET HAS NOW EXTENDED  
ITS GRIP TO THE PRODUCTION LEVEL:  
OCTOPUS IP 67 SYSTEM**

- STANDARDIZED M 12 TECHNOLOGY
- D-CODING • OPEN SYSTEM
- QUICK CONNECTIONS • HIGH PROTECTION TYPE IP 67
- GLOBALLY STANDARDIZED INTERFACES



**HIRSCHMANN**

# A CAMPAIGN BACKED BY A SYSTEM: OCTOPUS IP 67

## Requirements and Solutions

In the future, sensors and actuators will be linked together using Industrial ETHERNET rather than proprietary field bus systems. Hence the need arise for Industrial ETHERNET switches offering a high degree of industrial protection. Fortunately, Hirschmann already has many years of expertise and experience in both Industrial ETHERNET and Industrial CONNECTOR technology. So who better to trust for a solution?

## Product features

The OCTOPUS IP 67 System, using standard M12 technology offers users the security of installing open, standard systems for ETHERNET connectivity even at machine level. In addition, simple self-terminating cable connectors offer the advantage of fast and reliable connections in the field. And since today's large automation manufacturers are all using ETHERNET based protocols for sensor and actuator control, the OCTOPUS IP 67 System as the future of the factory floor securely in its grip.

## OCTOPUS IP 67 System:

- **ETHERNET plug connector M 12 with D-coding**
- **IP 67 ETHERNET switch OCTOPUS 5 TX**
- **control cabinet lead-in bushings/ transition from RJ45 to M 12 for Industrial ETHERNET**
- **M 12 installation bushing in various versions**
- **media module for MICE switches with 4xTP port M 12 D-coding**
- **patch cable in various lengths**





*Dirt, temperature fluctuations and other critical environmental conditions at the field level? OCTOPUS has the ability for usage under extreme conditions: IP 67.*



*The course of the future has now been set: In some areas, the use of the Industrial ETHERNET Standard at the field level can no longer be prevented.*



## Facts and Figures



Product		
		
Type	OCTOPUS 5TX	MM3-4TX5 OCTOPUS
Order No.	943 844 – 001	943 841 – 001
Function		
Description	Switch in accordance with IEEE 802.3, Store and Forward-Switching-Mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Media module for MICE-Switches (MS...) ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)
Interfaces		
Port type and quantity	5 x 10/100 BASE-TX, M 12 "D" 4-pin 2-pair TP Cable Autocrossing, Autonegotiation, Autopolarity Length of a TP segments: max. 100 m	4 x 10/100 BASE-TX, M 12 "D" 4-pin 2-pair TP Cable Autocrossing, Autonegotiation, Autopolarity Length of a TP segments: max. 100 m
Power requirements		
Operating voltage	1 x M12 "A" 5-pin, 24 VDC (– 25 % to + 30 %)	Power supply via backplane of the MICE switch
Power consumption at 24VDC	max. 2.4 W	max. 0.8 W
Ambient conditions		
Operating temperature	0 °C to +60 °C	0 °C to +60 °C
Storage/transport temperature	– 25 °C to +70 °C	– 25 °C to +70 °C
Relative humidity (non condensing)	10 % to 95 %	10 % to 95 %
Protection class	IP 67	IP 20
Mechanical construction		
Dimensions (W x H x D)	60 mm x 126 mm x 31 mm	38 mm x 134 mm x 77 mm
Weight	210 g	170 g
Approvals		
cUL508	pending	pending






*The open system with standardized M 12 technology is ideal for field use – wherever space is extremely precious.*



## Facts and Figures

Product		
		
Type	EM 12 S OCTOPUS	EM 12 S 001Lxxxx OCTOPUS
Order No.	934 445 – 001	934 497 – xxx
Function		
Description	Field attachable Industrial ETHERNET M12 Connector	Industrial ETHERNET patchcords with 2 x M12 Connector
Technical data		
Data rate	10 BASE-T, 100 BASE-TX	10 BASE-T, 100 BASE-TX
Poles	4	4
Connector/Coding	M12 "D"-coded according IEC 61076-2-101 Amendment 1	M12 "D"-coded according IEC 61076-2-101 Amendment 1
Protection class	IP 67	IP 67
Termination	IDC	–
Temperature range	–25 °C to +85 °C	–25 °C to +90 °C
Operating voltage	250 V	250 V
Operating current	4 A (Derating)	4 A (Derating)
Attachable cables		
Cable diameter	6.0 mm to 8.0 mm	–
Type of conductor	Stranded Wire/Solid Wire	–
Connecting leads	AWG 24 – AWG 22	–
Pairs of connecting leads	2	–
Cable length	–	1 m, 2 m, 3 m, 5 m, other lengths on request
Approvals		
cUL	pending	pending

Product				
				
Type	EF12 RJ45 OCTOPUS	EF12 M OCTOPUS	EF12 L OCTOPUS	EF12 LW OCTOPUS
Order No.	934 498 – 001	934 450 – 021	934 451 – 021	934 451 – 521
Function				
Description	Bulkhead M12 to RJ45 for Industrial ETHERNET	Industrial ETHERNET M12 socket, mounting thread with connection leads	Industrial ETHERNET M12 socket, front panels and circuit board installation	Industrial ETHERNET M12 socket, front panels and circuit board installation
Technical data				
Data rate	10 BASE-T, 100 BASE-TX	10 BASE-T, 100 BASE-TX	10 BASE-T, 100 BASE-TX	10 BASE-T, 100 BASE-TX
Poles	4	4	4	4
Connector/Coding	M12 "D" in accordance with IEC 61076-2-101 Amendment 1 and RJ45	M12 "D" in accordance with IEC 61076-2-101 Amendment 1	M12 "D" in accordance with IEC 61076-2-101 Amendment 1	M12 "D" in accordance with IEC 61076-2-101 Amendment 1
Protection class	IP 67	IP 67	IP 67	IP 67
Termination	–	Connection leads, length max. 8 cm	soldering, straight pins	soldering, angled pins
Mounting thread	–	M16 x 1.5	–	–
Front panel mounting	Ø 15.2 mm/PG 9	–	Ø 12.5 mm	Ø 12.5 mm
Temperature range	0 °C to +70 °C	–25 °C to +90 °C	–25 °C to +90 °C	–25 °C to +90 °C
Operating voltage	60 V	250 V	250 V	250 V
Operating current	1.5 A	4 A (Derating)	4 A (Derating)	4 A (Derating)
Approvals				
cUL	pending	pending	pending	pending

- **IP 67 solution for Industrial ETHERNET**
- **Industrial standard M12 used for Industrial ETHERNET**
- **Interface technology M12 "D" standardized (IEC 61076-2-101 Amendment 1)**
- **approved by the most important user organizations: IAONA, ProfiNet, ODVA**
- **for harsh environments complete system: switches, connectors, accessories**
- **IP 67 switch with a small form factor**
- **fast and easy attachable connector makes the system suitable for all applications**
- **10 BASE-T and 100 BASE-TX**



## Applications

In factory and process automation, space comes at a high premium. Increasingly components are being placed directly on machines with no requirement for a control cabinet. In this context, critical environmental conditions such as dirt, dust, heat, vibrations and shocks at the field level, routinely pose challenges to the most robust solutions. With the need for Industrial ETHERNET components to be installed in these aggressive environments without extraneous protective casings, they have to satisfy the highest protection related requirements.

However, with the many variations of IP 67 connectors supporting Industrial ETHERNET, the problem for users has got worse not better – until now. Hirschmann, with an intensive focus on the world wide accepted standard of M 12 4 pin “D” technology has permanently solved this problem. M 12 connectors are accepted by all industrial users and all industrial user organizations. As a result, the future of automation has been put back on course.

*In sensor and actuator applications, control that was being handled by proprietary field bus systems is now done using Industrial ETHERNET.*

*In all areas of automation, the OCTOPUS IP 67 System save space and costs. Now you can install the intelligent solution directly in the field without the need for addition protective housings.*



*High MTBF figures as well as high IP rating ensure the robustness of the OCTOPUS IP 67 System.*



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