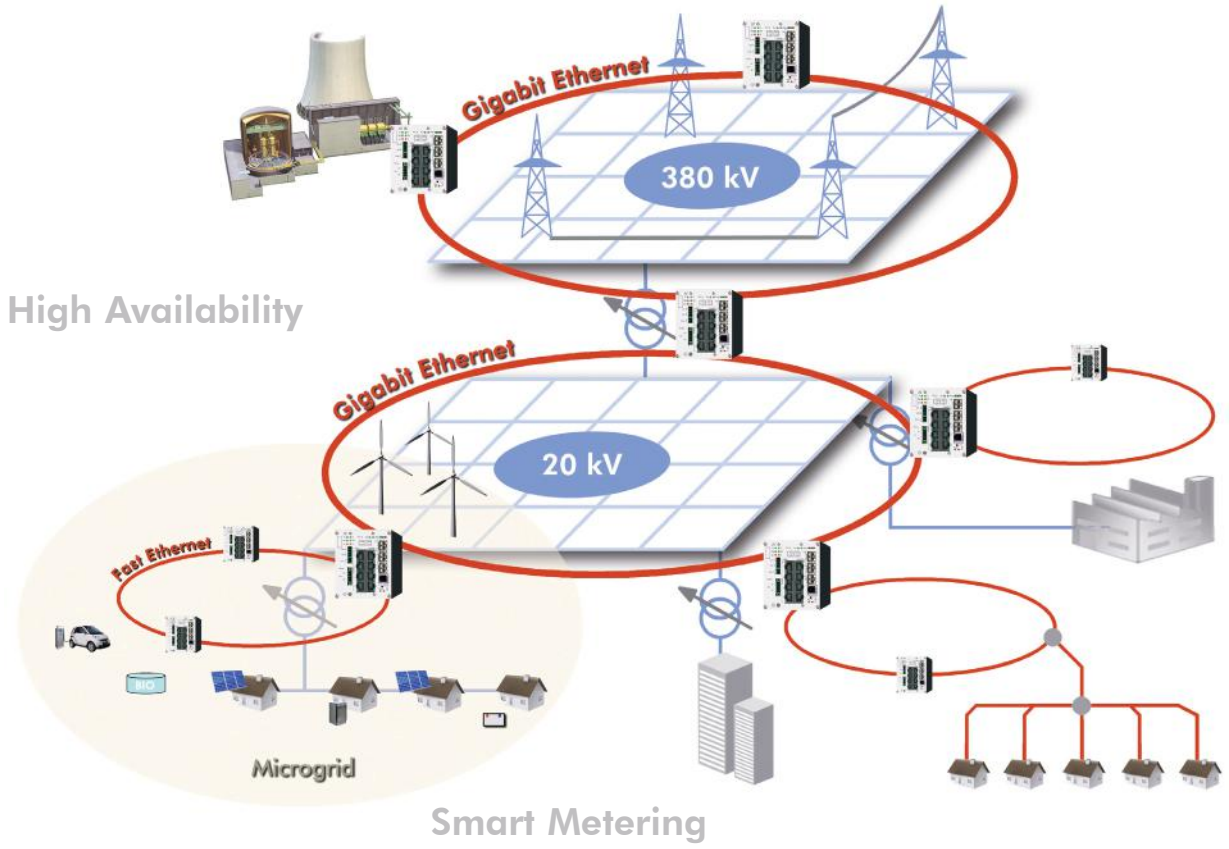
Nexans

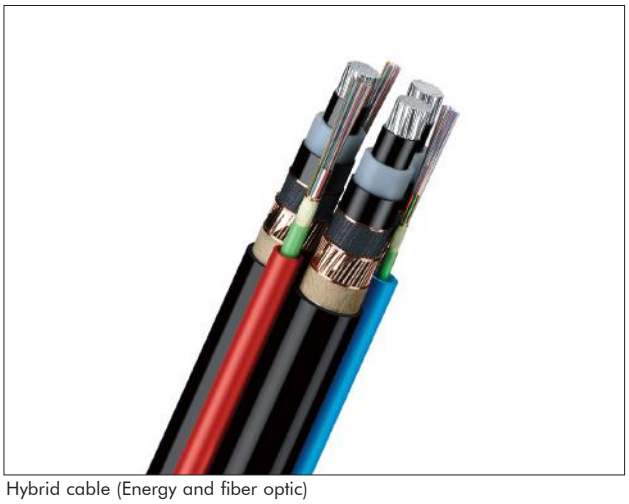
Advanced Networking Solutions

Active Switch Systems for Harsh Environments

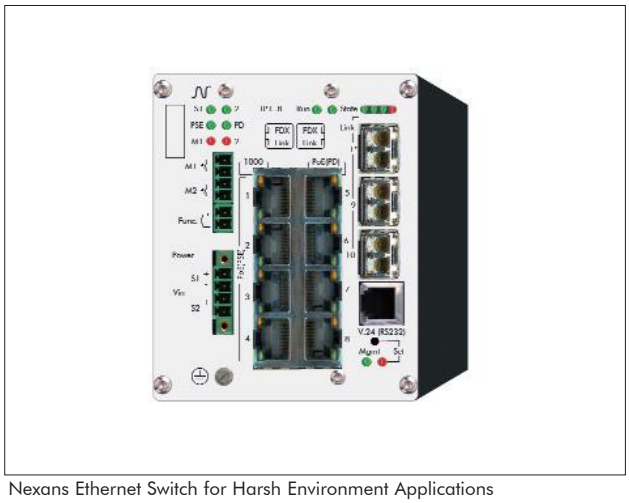
IEC 61850-3
-40°C … +85 °C
* only E-Series

Based on more than 25 years of experience in the field of high-performance optical fiber and copper networks, Nexans is offering state-of-the-art active Ethernet based switch systems for converging energy and broadband applications. Fields of application include the control of wind turbines, the networking of transformer substations, remote monitoring of power meters (e.g. automatic metering), and security (e. g. access control, video surveillance, etc.).





Hybrid cable (Energy and fiber optic)



Nexans Ethernet Switch for Harsh Environment Applications
(iSwitch G 1043E)

Features

Ethernet interfaces from 10 Mbps, 100 Mbps up to 1000 Mbps Ethernet are supported. Switches with SFP interface can be adapted to the application by using the corresponding pluggable modules (Fast Ethernet or Gigabit SFP). They are designed for a wide input voltage and operating temperature range (S-Series: -25°C up to +70 °C / E-Series: -40°C up to +85 °C). This underlines the economic efficiency and the flexibility of the Nexans industrial series.

Management
The management allows an easy configuration and administration from a central location. Media Redundancy Protocol (MRP), Rapid Spanning Tree Protocol (RSTP), Radius, Prioritisation and SNMP-Traps are just a few of the implemented features. The replacement and the backup of a configuration can be realized by using an optional memory card (alternatively incl. MAC-address).

The iSwitch Management is also offering SSH and SNMPv3 capabilities.

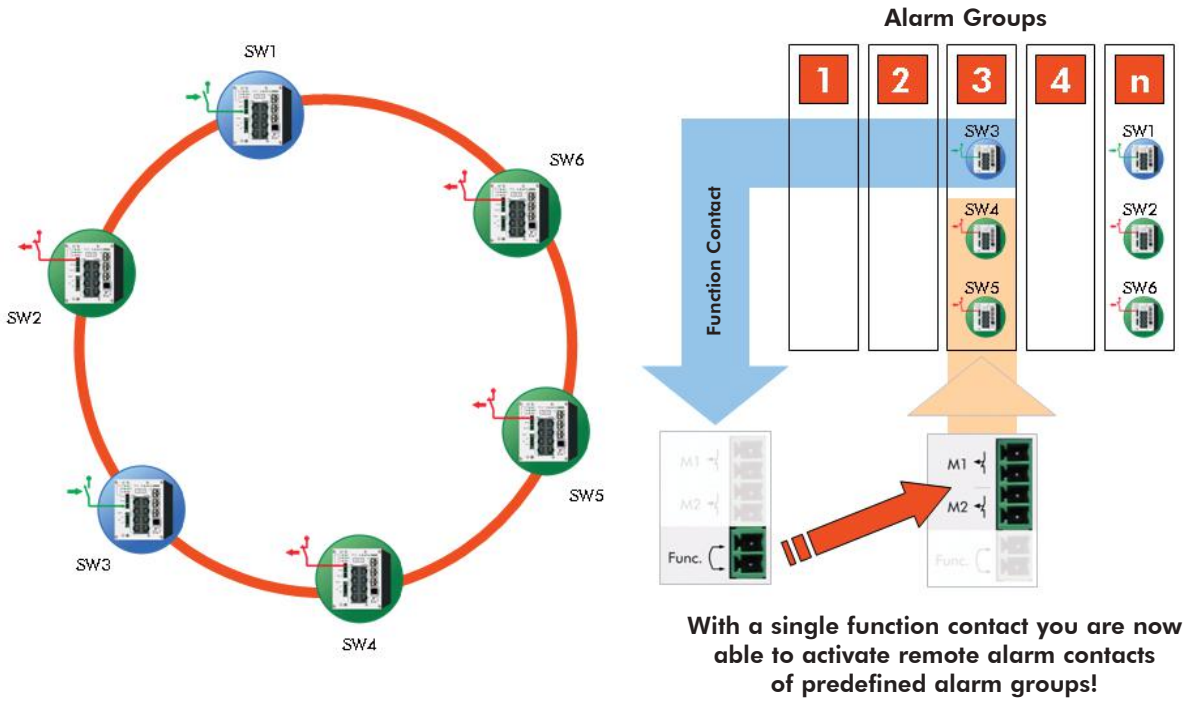
Function/Alarm Contact Interconnection Features

New multifunctional function/alarm contact features allow an interconnection of iSwitch function contacts with alarm contacts of other iSwitch systems.

With these features a status change notification of one location (e.g. activation of an iSwitch function contact by a frequency or voltage protection relay) can be transmitted to and processed at other predefined locations (e.g. activation of iSwitch alarm contacts in remote 10kV transformer stations) immediately.

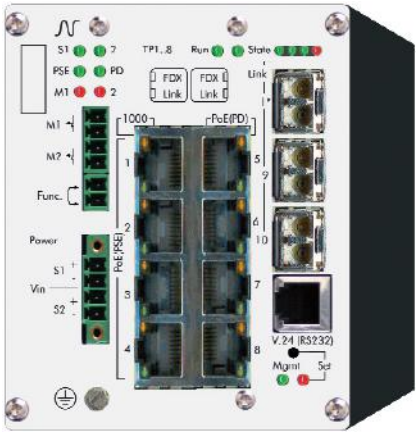
Alarm Acknowledgement
The acknowledgement and reset of an iSwitch function contact alarm message can be done manually or automatically. All configurations can be done with the Nexans switch manager in a very easy way.

Fast Signalisation and Activation of Alarm Contacts
Due to the very fast signalisation of alarms and activation of alarm contacts within predefined alarm groups (< 20ms), this function also allows the realisation of time critical applications.



With a single function contact you are now able to activate remote alarm contacts of predefined alarm groups!

Features



Features:

- Power over Ethernet (PSE and PD*)
- System Configuration Backup on SD card and boot up with Memory Card MAC address and Configuration
- Vario-SFP-Interface (Fast Ethernet or Gigabit Ethernet) with threshold alarm function (Syslog, SNMP-Trap etc.)
- Cable Diagnostic Function for exact localization of errors on the twisted pair cable links
- All configuration settings and status queries via telnet command line interface (CLI) possible
- Automatic upload of CLI configuration files via BootP
- Extended operating temperature range -40°C ... +85°C (E-Series)
- IEC 61850-3 compliance (E-Series)
- Cisco Interoperability

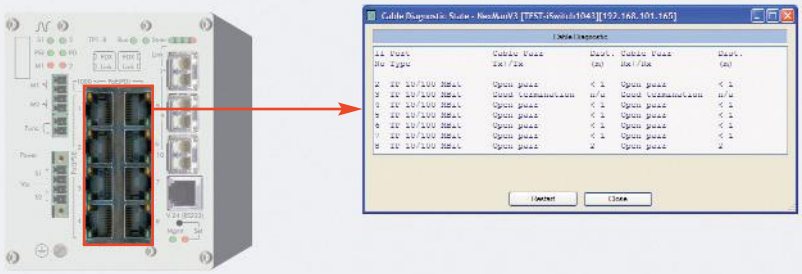
Included in Delivery:
- Basic System
- Management Hardware (Vers. 3)
- Professional Firmware (PRO3)
- Solid stainless steel DIN-rail mounting clip

Options/Accessories:
- Power over Ethernet
- SD Memory Card
- SFP Modules, Power Supplies etc.

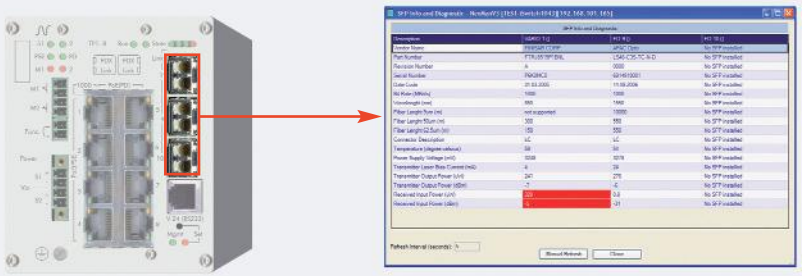
* not supported by iGigaSwitch 542

IEC 61850-3
-40°C ... +85 °C
* only E-Series

Cable Diagnostic Monitoring Function for TP-Ports



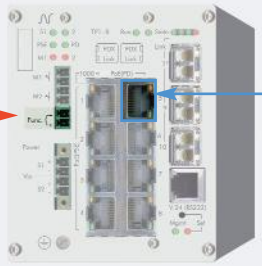
SFP-Readout-Function with threshold definition



Powered Device (PD)*

Multifunctional Input
e.g. for the connection of door contacts etc.

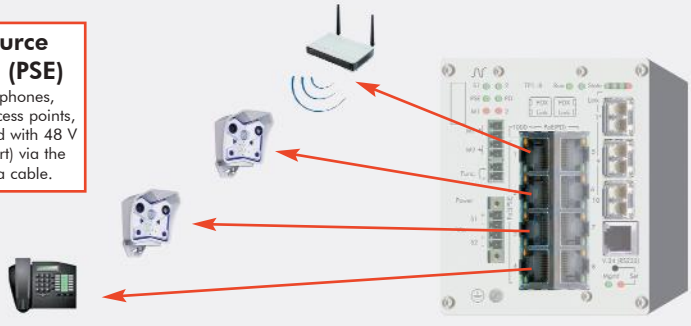
Optional transmission of appropriate alarm messages when activated.



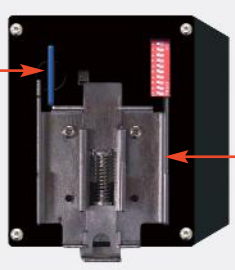
Power Source Equipment

Optionally the switch can also be supplied with power via an RJ45 external connection.

Power Source Equipment (PSE)
Uo to four VoIP phones, IP cams, WLAN access points, etc. can be supplied with 48 V (up to 15.4 W/port) via the Twisted Pair data cable.



SD Memory Card
To save and/or recover the complete system configuration or boot the system with the Memory Card MAC Address.



Solid stainless steel DIN-rail mounting clip

Frequently Asked Questions (FAQs)

Nexans Advanced Networking Solutions has developed a comprehensive line of active Ethernet based switch systems designed for office, harsh environments, industrial, and specialty applications. Based on more than 25 years of experience in the field of high-performance optical fiber and copper networks, Nexans is offering state-of-the-art active network solutions.

Where are these systems typically used?

Fields of application include the control of wind turbines, the networking of transformer substations, remote monitoring of power meters (e.g. automatic metering), and security (e. g. access control, video surveillance). Traffic management applications and the control of machines are just a few further examples of the diverse applications0 of the Nexans iSwitch systems.

How can the initial configuration be performed?

In order to ensure simple configuration and management of these devices, Nexans has designed an easy to use tool specifically tailored to the requirements of the user. The Nexans Switch Manager NexMan V3 ensures the automated distribution of master configurations and software updates to any number of industrial switches. Distribution of the complete or partial configuration is all possible. Another important feature of NexMan V3 is the central archiving of all switch configurations in a database. In case of failure, this key feature will ensure the rapid reconfiguration of the switch parameters and minimize downtime.

How can the systems be monitored?

NexMan V3
The NexMan V3 user interface provides the administrator with a complete overview of the current state and accessibility of the switch systems available in the network. By simply selecting a switch system, you can set several parameters such as port configuration, SNMP trap receiver, 802.1x, Radius, and many more.

The user does not need to have knowledge of complex management software systems in order to perform this function.

What management interfaces are supported?

WEB, TELNET, SSH, SNMP and V.24 management interfaces are also supported. The integration into higher management systems like HP Openview, Spectrum, etc. is further made possible.

Is the early detection of changes on the optical link possible?

A multitude of parameters can be read out from systems with SFP interface via the management system. Changes in the link characteristics (e.g. attenuation increases) can be detected and resolved on the basis of threshold values prior to a possible total failure of the link. Appropriate messsages (SNMP traps, Syslog) can also be sent to a central management system.

How can faults be detected on a twisted-pair cable link?

Cable Diagnostic Function
The iSwitch series ensures the easy and fast localization of possible faults on the copper twisted-pair cable links. Identification of short circuits, interruptions, impedance mismatches or reversals, can be localized to the meter via the management feature.

Can IP cams or wireless access points and similar devices be powered via the switch?

The implemented manageable Power over-Ethernet (PoE) feature (optional) makes it further possible to power e. g. IP cameras, wireless access points, VoIP phones or multifunctional terminals directly via the switch system. Thereby, the user does not need any plug-in power supplies for the terminal units.

Can the switch itself be powered via the RJ45 socket?

Almost all systems can also be supplied with power via an RJ45 external connection. This enables the systems to be used at remote locations where no 24VDC or 48VDC power supply is available.

How can the configuration be transferred to the new system after a possible system failure?

The Nexans systems provide a unique concept for the recovery of the complete system configuration. This allows untrained staff to easily reconfigure the system after a failure. All iSwitch systems are equipped with an integrated SD card slot through which the complete system configuration may be saved as a backup copy. In the event of a failure, the user only needs to swap out the SD card from the old switch, insert it into the new switch, and the configuration will automatically be mirrored to the new device. As an option the switch can even be booted with the MAC address of the SD card, so the superior address tables (e.g. in routers) all remain unaffected.

How do you prevent unauthorized access to network?

Nexans Switch systems support all relevant security mechanisms such as IEEE802.1x and MAC-based access control. In connection with a central authentication server, e.g. RADIUS, security in enterprise networks is considerably improved. Maximum security is achieved by access control directly at the user port of the Nexans iSwitch system. Thus the identity of the client is verified directly at the connection point and not only at the bundled port of the central switch.

Any potential abuse of the network connection, e.g. by listening in on traffic, is thus principally excluded.

What happens in case of a link failure?

All switch systems support the Media Redundancy Protocol (MRP) and Rapid Spanning Tree Protocol (RSTP). This guarantees the automatic and fast switchover to a redundant link in the event of the failure of a transmission link. This feature clearly improves the availability of the network!

What happens in case of a power failure?

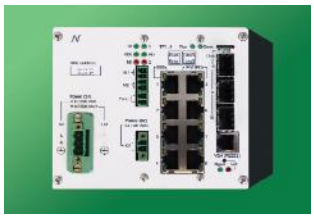
The redundant power supply feature further guarantees the operational safety of the systems. Power failures can be signaled via alarm contacts, SNMP traps or Syslog messages.

Where do I find up-to-date information on the systems?

Please visit our website for the most up-to-date information on our active device solutions: **www.nexans.de/ans**.

	iSwitch 742S	iSwitch G 1042S SX GI(SC)	iSwitch G 1042S LX SM(SC)
-25°C ... +70°C			
Order Numbers	88305114 (SFP-Version)	88305160 (Multimode-Version)	88305161 (Singlemode-Version)
Option Power over Ethernet (PSE)	88301262	88301262	88301262
LAN Interfaces			
User Interfaces (RJ45)	5x 10/100BASE-T(X)	1x 10/100/1000BASE-T(X)	1x 10/100/1000BASE-T(X)
		7x 10/100BASE-T(X)	7x 10/100BASE-T(X)
	(four of them with PoE according to IEEE802.3af)	(four of them with PoE according to IEEE802.3af)	(four of them with PoE according to IEEE802.3af)
Uplink Interfaces	2x 100 Mbps SFP	2x 1000 Mbps SC Duplex (multimode)	2x 1000 Mbps SC Duplex (singlemode)
General			
Housing design	Anodised / varnished aluminium case	Anodised / varnished aluminium case	Anodised / varnished aluminium case
Dimensions	75 mm x 105 mm x 106 mm	85 mm x 105 mm x 106 mm	85 mm x 105 mm x 106 mm
IP degree of protection	IP30	IP30	IP30
Ambient temperature	Operation: -25°C ... +70 °C	Operation: -25°C ... +70 °C	Operation: -25°C ... +70 °C
	Storage: -40°C ... +85 °C	Storage: -40°C ... +85 °C	Storage: -40°C ... +85 °C
Relative humidity	up to 95 % non-condensing	up to 95 % non-condensing	up to 95 % non-condensing
Weight	740 g	800 g	800 g
Power Supply and PoE (for the use of PoE an input voltage between 46 VDC and 57 VDC is required)			
Input voltage	21 ... 57 VDC redundant	21 ... 57 VDC redundant	21 ... 57 VDC redundant
Power consumption (without PoE)	max. 7 W (at 24 VDC)	max. 12 W (at 24 VDC)	max. 12 W (at 24 VDC)
Interface connector	4-pin terminal block, screw-on type	4-pin terminal block, screw-on type	4-pin terminal block, screw-on type
PoE output power per Port	15,4 W	15,4 W	15,4 W
PoE Mode	Mode B, Pin 4-5/7-8	Mode A, Pin 1-2/3-6	Mode A, Pin 1-2/3-6
Contacts and Digital I/O			
Alarm contacts	2x independent relay outputs each	2x independent relay outputs each	2x independent relay outputs each
	with 1A / 30 VDC (normally closed)	with 1A / 30 VDC (normally closed)	with 1A / 30 VDC (normally closed)
Function contact	2-pin input (e.g. for door contacts, etc.) / change of status indication via the management		
Switch functional parameters			
Switching method	Store and forward, self-learning	Store and forward, self-learning	Store and forward, self-learning
Data throughput (per 100 Mbps Port)	148.800 Packets/sec.	148.800 Packets/sec.	148.800 Packets/sec.
Data throughput (per 1.000 Mbps Port)	-	1.488.000 Packets/sec.	1.488.000 Packets/sec.
Packet buffer	1 Mbit	1 Mbit	1 Mbit
MAC address table, entries	8 k	8 k	8 k
Aging Timer	typ. 300 sec.	typ. 300 sec.	typ. 300 sec.
Flow control in HDX mode	Back pressure through 96 bit JAM	Back pressure through 96 bit JAM	Back pressure through 96 bit JAM
Flow control in FDX mode	Flow control according to IEEE 802.3x	Flow control according to IEEE 802.3x	Flow control according to IEEE 802.3x
Management (List of management features see page 11)			
WEB-Management	yes	yes	yes
TELNET-Management	yes	yes	yes
SNMP	yes	yes	yes
Standards			
Electrical safety	EN 60950		
Emission	EN 61000-6-4, EN 55022 Class A, EN 55011 Class A		
Immunity	EN 61131-2, EN 61000-4-2, Class 3 / EN 61000-4-3 / EN 61000-4-4, Class 4 / EN 61000-4-5, Class 2 / EN 61000-4-6		
Temperature	EN 61131-2, EN 60068-2-1, EN 60068-2-2		
Vibration	EN 60068-2-6		
Shock	EN 60068-2-27		
Free fall	EN 60068-2-32		
Humidity	EN 60068-2-30		
Others	CE, cUL 60950 / cUL 508 (in preparation)		
Fiber optic parameters 1000BASE-SX			
Wavelength	depending on SFP-version	typ. 850 nm	-
Dynamic (MM G50/125 µm)	depending on SFP-version	typ. 7,5 dB	-
Range	depending on SFP-version	typ. 2 km	-
Fiber optic parameters 1000BASE-LX			
Wavelength	depending on SFP-version	-	typ. 1.310 nm
Dynamic (SM E9/125 µm)	depending on SFP-version	-	typ. 11,5 dB
Range	depending on SFP-version	-	typ. 10 km

Technical Data S-Series

	iSwitch G 1043S	iSwitch G 1043S PSG	iGigaSwitch 542S
-25°C ... +70°C			
Order Numbers	88305251 (SFP-Version)	88305271 (SFP-Version)	88305300 (SFP-Version)
Option Power over Ethernet (PSE)	88301262	88301262	88301262
LAN Interfaces			
User Interfaces (RJ45)	1x 10/100/1000BASE-T(X)*	1x 10/100/1000BASE-T(X)*	4x 10/100/1000BASE-T(X)*
	7x 10/100BASE-T(X)	7x 10/100BASE-T(X)0	
	(four of them with PoE according to IEEE802.3af)	(four of them with PoE according to IEEE802.3af)	(four of them with PoE according to IEEE802.3af)
Uplink Interfaces	3x 100/1000 Mbps SFP (Varioport)	3x 100/1000 Mbps SFP (Varioport)	2x 100/1000 Mbps SFP (Varioport)
General			
Housing design	Anodised / varnished aluminium case	Anodised / varnished aluminium case	Anodised / varnished aluminium case
Dimensions	85 mm x 105 mm x 106 mm	126 mm x 105 mm x 106 mm	75 mm x 105 mm x 106 mm
IP degree of protection	IP30	IP30	IP30
Ambient temperature	Operation: -25°C ... +70 °C	Operation: -25°C ... +70 °C	Operation: -25°C ... +70 °C
	Storage: -40°C ... +85 °C	Storage: -40°C ... +85 °C	Storage: -40°C ... +85 °C
Relative humidity	up to 95 % non-condensing	up to 95 % non-condensing	up to 95 % non-condensing
Weight	750 g	1250 g	670 g
Power Supply and PoE (for the use of PoE an input voltage between 46 VDC and 57 VDC is required)			
Input voltage	21 ... 57 VDC redundant	180 ... 250 VAC, 21 ... 57 VDC	21 ... 57 VDC redundant
Power consumption (without PoE)	max. 12 W (at 24 VDC)	max. 12 W (at 24 VDC)	max. 9,2 W (at 24 VDC)
Interface connector	4-pin terminal block, screw-on type	4-pin terminal block, screw-on type	4-pin terminal block, screw-on type
PoE output power per Port	15,4 W	15,4 W	15,4 W
PoE Mode	Mode A, Pin 1-2/3-6	Mode A, Pin 1-2/3-6	Mode A, Pin 1-2/3-6
Contacts and Digital I/O			
Alarm contacts	2x independent relay outputs each	2x independent relay outputs each	2x independent relay outputs each
	with 1A / 30 VDC (normally closed)	with 1A / 30 VDC (normally closed)	with 1A / 30 VDC (normally closed)
Function contact	2-pin input (e.g. for door contacts, etc.) / change of status indication via the management		
Switch functional parameters			
Switching method	Store and forward, self-learning	Store and forward, self-learning	Store and forward, self-learning
Data throughput (per 100 Mbps Port)	148.800 Packets/sec.	148.800 Packets/sec.	148.800 Packets/sec.
Data throughput (per 1.000 Mbps Port)	1.488.000 Packets/sec.	1.488.000 Packets/sec.	1.488.000 Packets/sec.
Packet buffer	1 Mbit	1 Mbit	1 Mbit
MAC address table, entries	8 k	8 k	8 k
Aging Timer	typ. 300 sec.	typ. 300 sec.	typ. 300 sec.
Flow control in HDX mode	Back pressure through 96 bit JAM	Back pressure through 96 bit JAM	Back pressure through 96 bit JAM
Flow control in FDX mode	Flow control according to IEEE 802.3x	Flow control according to IEEE 802.3x	Flow control according to IEEE 802.3x
Management (List of management features see page 11)			
WEB-Management	yes	yes	yes
TELNET-Management	yes	yes	yes
SNMP	yes	yes	yes
Standards			
Electrical safety	EN 60950		
Emission	EN 61000-6-4, EN 55022 Class A, EN 55011 Class A		
Immunity	EN 61131-2, EN 61000-4-2, Class 3 / EN 61000-4-3 / EN 61000-4-4, Class 4 / EN 61000-4-5, Class 2 / EN 61000-4-6		
Temperature	EN 61131-2, EN 60068-2-1, EN 60068-2-2		
Vibration	EN 60068-2-6		
Shock	EN 60068-2-27		
Free fall	EN 60068-2-32		
Humidity	EN 60068-2-30		
Others	CE, cUL 60950 / cUL 508 (in preparation)		
Fiber optic parameters 1000BASE-SX			
Wavelength	depending on SFP-version	depending on SFP-version	depending on SFP-version
Dynamic (MM G50/125 µm)	depending on SFP-version	depending on SFP-version	depending on SFP-version
Range	depending on SFP-version	depending on SFP-version	depending on SFP-version
Fiber optic parameters 1000BASE-LX			
Wavelength	depending on SFP-version	depending on SFP-version	depending on SFP-version
Dynamic (SM E9/125 µm)	depending on SFP-version	depending on SFP-version	depending on SFP-version
Range	depending on SFP-version	depending on SFP-version	depending on SFP-version

* - if SFP-Varioport 1* is not equipped with SFP

	iSwitch 742E+	iSwitch G 1042E SX GI(SC)	iSwitch G 1042E LX SM(SC)
-40°C ... +85°C IEC 61850-3			
Order Numbers	88306119 (SFP-Version)	88306160 (Multimode-Version)	88306161 (Singlemode-Version)
Option Power over Ethernet	88301262	88301262	88301262
LAN Interfaces			
User Interfaces (RJ45)	5x 10/100BASE-T(X)	1x 10/100/1000BASE-T(X)	1x 10/100/1000BASE-T(X)
		7x 10/100BASE-T(X)	7x 10/100BASE-T(X)
	(four of them with PoE according to IEEE802.3af)	(four of them with PoE according to IEEE802.3af)	(four of them with PoE according to IEEE802.3af)
Uplink Interfaces	2x 100 Mbps SFP	2x 1000 Mbps SC Duplex	2x 1000 Mbps SC Duplex
General			
Housing design	Anodised / varnished aluminium case	Anodised / varnished aluminium case	Anodised / varnished aluminium case
Dimensions	75 mm x 105 mm x 106 mm	85 mm x 105 mm x 106 mm	85 mm x 105 mm x 106 mm
IP degree of protection	IP30	IP30	IP30
Ambient temperature	Operation: -40°C ... +85 °C	Operation: -40°C ... +85 °C	Operation: -40°C ... +85 °C
	Storage: -40°C ... +85 °C	Storage: -40°C ... +85 °C	Storage: -40°C ... +85 °C
Relative humidity	up to 95 % non-condensing	up to 95 % non-condensing	up to 95 % non-condensing
Weight	740 g	800 g	800 g
Power Supply and PoE (for the use of PoE an input voltage between 46 VDC and 57 VDC is required)			
Input voltage	21 ... 57 VDC redundant	21 ... 57 VDC redundant	21 ... 57 VDC redundant
Power consumption (without PoE)	max. 7 W (at 24 VDC)	max. 12 W (at 24 VDC)	max. 12 W (at 24 VDC)
Interface connector	4-pin terminal block, screw-on type	4-pin terminal block, screw-on type	4-pin terminal block, screw-on type
PoE output power per Port	15,4 W	15,4 W	15,4 W
PoE Mode	Mode B, Pin 4-5/7-8	Mode A, Pin 1-2/3-6	Mode A, Pin 1-2/3-6
Contacts and Digital I/O			
Alarm contacts	2x independent relay outputs each	2x independent relay outputs each	2x independent relay outputs each
	with 1A / 30 VDC (normally closed)	with 1A / 30 VDC (normally closed)	with 1A / 30 VDC (normally closed)
Function contact	2-pin input (e.g. for door contacts, etc.) / change of status indication via the management		
Switch functional parameters			
Switching method	Store and forward, self-learning	Store and forward, self-learning	Store and forward, self-learning
Data throughput (per 100 Mbps Port)	148.800 Packets/sec.	148.800 Packets/sec.	148.800 Packets/sec.
Data throughput (per 1.000 Mbps Port)	-	1.488.000 Packets/sec.	1.488.000 Packets/sec.
Packet buffer	1 Mbit	1 Mbit	1 Mbit
MAC address table, entries	8 k	8 k	8 k
Aging Timer	typ. 300 sec.	typ. 300 sec.	typ. 300 sec.
Flow control in HDX mode	Back pressure through 96 bit JAM	Back pressure through 96 bit JAM	Back pressure through 96 bit JAM
Flow control in FDX mode	Flow control according to IEEE 802.3x	Flow control according to IEEE 802.3x	Flow control according to IEEE 802.3x
Zero Loss Redundancy	yes	no	no
Management (List of management features see page 11)			
WEB-Management	yes	yes	yes
TELNET-Management	yes	yes	yes
SNMP	yes	yes	yes
Standards			
Electrical safety	EN 60950		
Emission	EN 61000-6-4, EN 55022 Class A, EN 55011		
Immunity	EN 61131-2, EN 61000-4-2, Class 3 / EN 61000-4-3 / EN 61000-4-4, Class 4 / EN 61000-4-5, Class 4 / EN 61000-4-6		
	IEC 61850-3		
Temperature	EN 61131-2, EN 60068-2-1, EN 60068-2-2, EN 60068-2-14		
Vibration	EN 60068-2-6		
Shock	EN 60068-2-27		
Free fall	EN 60068-2-32		
Humidity	EN 60068-2-30, IEC 60870-2-2, Class C3/Ct2 (tmin), Class C3/Dt1 (tmax), Class Cm (mech.), Class C1 (3K5 %)		
Others	CE, cUL 60950 / cUL 508 (in preparation) , IEC 61850-3 /-10, IEEE 1613		
Fiber optic parameters 1000BASE-SX			
Wavelength	depending on SFP-version	typ. 850 nm	-
Dynamic (MM G50/125 µm)	depending on SFP-version	typ. 7,5 dB	-
Range	depending on SFP-version	typ. 2 km	-
Fiber optic parameters 1000BASE-LX			
Wavelength	depending on SFP-version	-	typ. 1.310 nm
Dynamic (SM E9/125 µm)	depending on SFP-version	-	typ. 11,5 dB
Range	depending on SFP-version	-	typ. 10 km

Technical Data E-Series

	iSwitch G 1043E+	iSwitch G 1003E+ PSF	iGigaSwitch 542E+
-40°C ... +85°C IEC 61850-3			
Order Numbers	88306251 (SFP-Version)	88306261 (SFP-Version)	88306300 (SFP-Version)
Option Power over Ethernet	88301262	-	88301262
LAN Interfaces			
User Interfaces (RJ45)	1x 10/100/1000BASE-T(X)*	1x 10/100/1000BASE-T(X)*	4x 10/100/1000BASE-T(X)*
	7x 10/100BASE-T(X)	7x 10/100BASE-T(X)	
	(four of them with PoE according to IEEE802.3af)	(No PoE Function)	(four of them with PoE according to IEEE802.3af)
Uplink Interfaces	3x 100/1000 Mbps SFP (Varioport)	3x 100/1000 Mbps SFP (Varioport)	2x 100/1000 Mbps SFP (Varioport)
General			
Housing design	Anodised / varnished aluminium case	Anodised / varnished aluminium case	Anodised / varnished aluminium case
Dimensions	85 mm x 105 mm x 106 mm	126 mm x 105 mm x 106 mm	75 mm x 105 mm x 106 mm
IP degree of protection	IP30	IP30	IP30
Ambient temperature	Operation: -40°C ... +85 °C	Operation: -40°C ... +85 °C	Operation: -40°C ... +85 °C
	Storage: -40°C ... +85 °C	Storage: -40°C ... +85 °C	Storage: -40°C ... +85 °C
Relative humidity	up to 95 % non-condensing	up to 95 % non-condensing	up to 95 % non-condensing
Weight	750 g	1250 g	670 g
Power Supply and PoE (for the use of PoE an input voltage between 46 VDC and 57 VDC is required)			
Input voltage	21 ... 57 VDC redundant	110...220 VDC/110 ... 250 VAC/21 ... 57 VDC	21 ... 57 VDC redundant
Power consumption (without PoE)	max. 12 W (at 24 VDC)	max. 12 W (at 24 VDC)	max. 9,2 W (at 24 VDC)
Interface connector	4-pin terminal block, screw-on type	4-pin terminal block, screw-on type	4-pin terminal block, screw-on type
PoE output power per Port	15,4 W	-	15,4 W
PoE Mode	Mode A, Pin 1-2/3-6	-	Mode A, Pin 1-2/3-6
Contacts and Digital I/O			
Alarm contacts	2x independent relay outputs each	2x independent relay outputs each	2x independent relay outputs each
	with 1A / 30 VDC (normally closed)	with 1A / 30 VDC (normally closed)	with 1A / 30 VDC (normally closed)
Function contact	2-pin input (e.g. for door contacts, etc.) / change of status indication via the management		
Switch functional parameters			
Switching method	Store and forward, self-learning	Store and forward, self-learning	Store and forward, self-learning
Data throughput (per 100 Mbps Port)	148.800 Packets/sec.	148.800 Packets/sec.	148.800 Packets/sec.
Data throughput (per 1.000 Mbps Port)	1.488.000 Packets/sec.	1.488.000 Packets/sec.	1.488.000 Packets/sec.
Packet buffer	1 Mbit	1 Mbit	1 Mbit
MAC address table, entries	8 k	8 k	8 k
Aging Timer	typ. 300 sec.	typ. 300 sec.	typ. 300 sec.
Flow control in HDX mode	Back pressure through 96 bit JAM	Back pressure through 96 bit JAM	Back pressure through 96 bit JAM
Flow control in FDX mode	Flow control according to IEEE 802.3x	Flow control according to IEEE 802.3x	Flow control according to IEEE 802.3x
Zero loss redundancy	yes	yes	yes
Management (List of management features see page 11)			
WEB-Management	yes	yes	yes
TELNET-Management	yes	yes	yes
SNMP	yes	yes	yes
Standards			
Electrical safety	EN 60950		
Emission	EN 61000-6-4, EN 55022 Class A, EN 55011		
Immunity	EN 61131-2, EN 61000-4-2, Class 3 / EN 61000-4-3 / EN 61000-4-4, Class 4 / EN 61000-4-5, Class 4 / EN 61000-4-6		
	IEC 61850-3		
Temperature	EN 61131-2, EN 60068-2-1, EN 60068-2-2, EN 60068-2-14		
Vibration	EN 60068-2-6		
Shock	EN 60068-2-27		
Free fall	EN 60068-2-32		
Humidity	EN 60068-2-30, IEC 60870-2-2, Class C3/Ct2 (tmin), Class C3/Dt1 (tmax), Class Cm (mech.), Class C1 (3K5 %)		
Others	CE, cUL 60950 / cUL 508 (in preparation) , IEC 61850-3 /-10, IEEE 1613		
Fiber optic parameters 1000BASE-SX			
Wavelength	depending on SFP-version	depending on SFP-version	depending on SFP-version
Dynamic (MM G50/125 µm)	depending on SFP-version	depending on SFP-version	depending on SFP-version
Range	depending on SFP-version	depending on SFP-version	depending on SFP-version
Fiber optic parameters 1000BASE-LX			
Wavelength	depending on SFP-version	depending on SFP-version	depending on SFP-version
Dynamic (SM E9/125 µm)	depending on SFP-version	depending on SFP-version	depending on SFP-version
Range	depending on SFP-version	depending on SFP-version	depending on SFP-version

* - if SFP-Varioport 1* is not equipped with SFP

Accessories

SD Memory Card

- To save and/or recover the complete system configuration or boot the system with the Memory Card MAC Address
- MRP functionalities activated by SD card with MRP Multi instances licence

Order Numbers:

SD Memory Card for i-Series with MAC-Address 88300692
SD Memory Card for i-Series MRP-Multi 88300694

With "Digital Diagnostic Monitoring Interface" to readout specific parameters (e.g. temperature, optical input/output power).

SFP 100 Pluggable Transceiver (100 Mbps)

- Fast Ethernet
- Fiber Optic LC Connector
- Digital Diagnostic Monitoring Interface

Order Numbers:

Nexans SFP 100 Transceiver GI(LC)E 88646010
Nexans SFP 100 Transceiver SM(LC)E L10 88646011
Nexans SFP 100 Transceiver SM(LC)E L40 88646012
Nexans SFP 100 Transceiver SM(LC)E L80 88646013

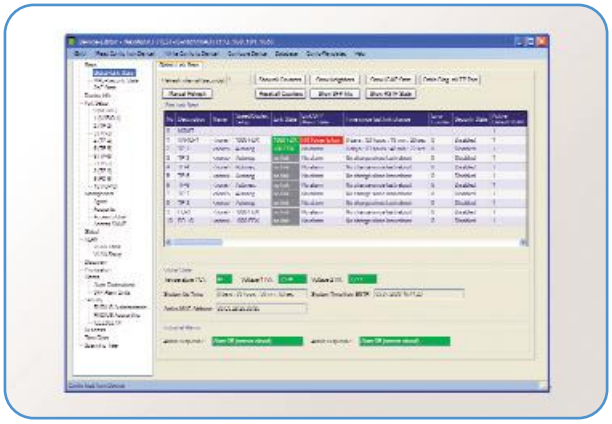
With "Digital Diagnostic Monitoring Interface" to readout specific parameters (e.g. temperature, optical input/output power).

SFP 1000 Pluggable Transceiver (1.000 Mbps)

- Gigabit Ethernet
- Fiber Optic LC Connector
- Digital Diagnostic Monitoring Interface

Order Numbers:

Nexans SFP 1000 Transceiver GI(LC)E 88646015
Nexans SFP 1000 Transceiver SM(LC)E L10 88646016
Nexans SFP 1000 Transceiver SM(LC)E L40 88646017
Nexans SFP 1000 Transceiver SM(LC)E L80 88646018



Nexans Switch Manager (NexManV3)

- Individual generation of master configurations (also single parameters selectable)
- Storage of configurations in a database (up to 100 history-entries)
- Layer 2 + 3 autodiscovery
- Time for the software update can be preset

Order Numbers:

NexMan V3 (Single license) 88301908
NexMan V3 (Company license) 88301909

Management Features (abstract)

	iSwitch Professional Firmware
Access Control / Authentication Management	
Admin account with Read/Write access for HTTP/HTTPS, Telnet/SSH/V.24 console and NexManV3	•
Access Policy Mode with disabling function for unsecure protocols, activation of SSHv2, HTTPS, SNMPv3 and "Password Checker"	•
Gratuitous ARP function guarantees that the switch can be reached after change of IP address	•
Securely encrypted transfer of configuration und firmware via SCP- Secure Copy	•
ready for IPv6 (upgradable)	•
WEB / HTTP / HTTPS Access	
WEB interface (no proxy server required), can be disabled or set to Read/Only access	•
TCP port number can be set for WEB access	•
Telnet / SSH and V.24 Console	
Telnet console (no proxy server required) and Cisco-like command line interface	•
Telnet or V.24 console can be disabled respectively Telnet and V.24 console authentication via RADIUS server	•
Secure 256-bit encrypted SSH / SSL transfer and use of 1024-bit RSA keys.	•
SNMP Access, SNMP Traps and Syslog Messages	
Configuration of switch possible via 'SNMP Set Request'	•
MIB-II (RFC1213) system, interface, at, ip	•
ETHERLIKE MIB (RFC2665) dot3StatsTable	•
IF MIB (RFC2863) ifXTable	•
BRIDGE MIB (RFC4188) dot1dBase, dot1dStp, dot1dTp	•
RSTP MIB (RFC4318)	•
RMON MIB (RFC2819) statistics	•
Eight IP addresses can be set as event receivers for SNMP traps, Alarm and Syslog messages	•
Up to 27 different event types can be enabled per receiver	•
Portsecurity	
Loop/broadcast limiter for protection against accidental or malicious packet storms	•
Active loop protection with automatic disablement of short-circuited ports	•
Manual definition of three authorized MAC addresses per port	•
Automatic learning of up to three authorized MAC addresses per port	•
Port switches off, when an unauthorized MAC address is detected	•
SNMP trap/syslog message for newly detected or for unauthorized MAC address	•
Transparent transmission of IEEE802.1x packets can be enabled/disabled	•
RADIUS authentication of up to three MAC addresses per port	•
Port authentication according to IEEE802.1x in connection with the RADIUS server	•
Unauthenticated ports are switched into a freely selectable Unsecure-Default-VLAN	•
VLAN Support / Trunking	
VLAN table selectable with up to 64 VLAN IDs,	•
Default-VLAN ID can be set for each port	•
Default-VLAN can be disabled for trunking ports	•
Trunking with tagging in accordance with IEEE802.1q can be enabled/disabled for each port	•
Prioritization of the VLAN tags selectable according to IEEE802.1p	•
Prioritization	
Prioritization selectable per each port according to IEEE802.1p / IPv4 and IPv6	•
Four output queues selectable for prioritization weighting per port	•
4 Prioritization scheme {strict queuing}, {8,4,2,1 weighted fair queuing} , {3 strict/2,1,0 weighted}, {2,3 strict/1,0 weighted}	•
Discovery Protocols	
LLDP (Link Layer Discovery Protocol)	•
CDP (Cisco Discovery Protocol)	•
Switch Information / Configuration	
Configuration of IP parameters via DHCP and manual configuration of IP parameters possible	•
Configuration of IP parameters possible without pressing configuration switches (NexConV3)	•
Loading of a Switch Configuration or firmware via Telnet/SSH/V.24/DHCP/BOOTP console possible	•
Output of the running configuration in Telnet as CLI script and optional saving on an external TFTP server.	•
Firmware and Configuration Management via Nexans Switch Manager V3	
Prevention of corruption through firmware update in separate FLASH segment	•
Avoid corruption of configuration changes with dual configuration management	•
NexManV3 authentication via RADIUS server	•
Download / upload of the configuration and archiving in a database on the PC	•
Upload of a new configuration into the switch is made On-The-Fly (no reboot required)	•
Firmware update possible without interruption of operation	•
Archiving of the configuration in an offline database (using NexManV3)	•
Securely encrypted configuration via SNMPv3	•
Redundancy	
RSTP - Rapid Spanning Tree Protocol	•
MRP - Media Redundancy Protocol	•
MSTP - Multiple Spanning Tree Protocol	•
Zero Loss Redundancy	•
Power over Ethernet	
Detection, monitoring and display of PoE related values, voltage and consumption	•
Power Setup, Off / On / Auto - 802.3af / Auto 802.3af High-Power /Auto 802.3at High-Power	•
Environmental monitoring/Diagnostic/Mirroring	
Display of internal operating voltages and housing temperature	•
SNMP trap/alarm and syslog messages, if temperature is exceeded	•
Logbook for permanent internal saving of syslog messages	•
35 counters for packets, bytes, Unicasts, Broadcasts, etc. per port	•
Port monitor for individual ports	•
Switch can be set to VLAN mirroring	•
Display of SFP Information: Vendorname, Part Number, Serial Number, Datecode, etc.	•
Display of SFP Diagnostics: TX and RX power in uW and dBm, temperature, voltage, bias current	•
Configurable Alarm limits for TX- and RX-Power as well as for Laser-Bias-Current	•
SNMP-Trap/Syslog-message activation for preset alarm limits	•
Other Network Protocols	
IGMP Snooping (Internet Group Management Protocol) can be activated globally, IGMP protocol versions 1 or 2 can be selected	•
SNTP (Simple Network Time Protocol) can be activated globally	•

Nexans

Nexans network solutions are used throughout the world and have proved their reliability in many different ways. Our customers and references include leading companies in the world, power utilities, railway companies, airports, industrial properties, harbours and waterways. A LAN System which can grow with the needs of its users has to be designed right from the very start with such a level of flexibility to ensure that support is provided in particularly with frequent moves, adds and changes.

With more than 25 years experience in the development and production of optical solutions, the systems from Nexans provide the reliability and the security you expect from your network.

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