iGigaSwitch 16xx E+ HW5 Series

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LANactive Industry 16 Port Managed Full Gigabit Ethernet Switch

- 16 ports in total, variable number of SFP ports
- Up to 12x PoE ports with max. 360W power budget
- Optionally with integrated I/O module
- IEC 61850 compliancy is tested and certified by KEMA/DNV-GL
- Wide operating temperature range: -40 ... +85°C

IEC 61850

KEMA

Made in Germany

Description

Aginode managed Industrial Ethernet iGigaSwitch 16xx E+ HW5 family is designed for installing robust and reliable networks in harsh environments and to provide maximum network availability, security, longest lifetime in harsh environments and making the network maintenance easier. The iGigaSwitch 16xx E+ HW5 family provides great flexibility in network design - it has 16 Gigabit ports including 2, 4, 8 or 12 SFP ports. The iGigaSwitch is designed for DIN-Rail mounting and comes with an external power supply to operate in the needed power range.

I/O Interfaces
The optionally I/O interfaces of the iGigaSwitch 16xx allows a fast, simple and low-cost integration of non-IP based devices directly e.g. different sensors, controllers, buttons etc. The iGigaSwitch is offering extensive management functionalities with interactions, sending of messages as well as the activation of alarms.

Power over Ethernet (PoE/PoE+)
Up to 12x connected devices can be supplied with Power over Ethernet. In accordance with the latest IEEE 802.3at (PoE+) standard, up to 30W are available for each connected device, with total budget of 360Watts.

IEC 61850
Aginode iGigaSwitch family comply to IEC 61850 requirements (parts 6, 7-1, 7-2, 7-3, 7-4, 8-1, 9-1 and 9-2 Communication networks and systems for power utility automation). This functionality is critical for Smart grid and allows to use standardized equipment to ensure correct and reliable communication of all networked devices of Smart grid infrastructure (including switches, PLCs, different controllers, sensors etc.) with each other and with central SCADA.

The compliance is tested and confirmed by KEMA/DNV-GL.

LANactive

Standards

IEEE 802.3
IEEE 802.3u
IEEE 802.3ab
IEEE 802.3af
IEEE 802.3at
IEEE802.3az
IEEE 802.3z
IEEE 802.3x
IEEE 802.1AB
IEEE 802.1D
IEEE 802.1Q
IEEE 802.1X
IEEE 802.1AX
IEEE 802.3ad

IEC 61850-6, 7-1, 7-2, 7-3, 7-4, 8-1, 9-1, 9-2
IEC 61850-3

Designed for harsh environments
PoE/PoE+
Compact Design
Interoperability
Easy Maintenance
Redundancy
Security and Reliability
High Availability

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Hardware Features

Ordering Information	iGigaSwitch 1604 E+ SFP-4VI HW5	iGigaSwitch 1608 E+ SFP-8VI HW5	iGiga Switch 1612 E+ SFP-12VI HW5
Article Number	903500	903501	903502
Interfaces			
User Ports (RJ45)	12x 10/100/1000Mbps	8x 10/100/1000Mbps	4x 10/100/1000Mbps
Uplink Ports (SFP)	4x 100/1000Mbps	8x 100/1000Mbps	12x 100/1000Mbps
RJ45 Ports	Auto-Negotiation, MDI/MDI-X Auto-Cross Over and Auto-Polarity		
Digital Diagnostics Monitoring Interface	Yes		
Twisted Pair Cable Diagnostic	Yes		
I/O Interface Connector	Optionally via iOption, see Accessories		
Memory Card	SD-Card, optionally with fixed MAC-Address		
Power over Ethernet			
Max. Number of PoE+ Ports	12	8	4
Max. PoE Power Budget	360W	240W	120W
PoE Mode	30W per Port, Mode A, Pin 1-2/3-6		
General			
Dimensions [WxHxD]	95mm x 184mm x 125mm		
IP Protection Class	IP30 (EN 60529)		
Mounting	35mm DIN-Rail Mounting according to EN 60715, (EN 50022) Different mounting positions of DIN-Rail clip - vertical and horizontal switch mounting. Optional: wall mounting.		
Material	Anodised/Varnished Aluminium		
Colour	Black		
Ambient Temperature	Operation: -40 ... 85°C, Storage: -40 ... 85°C		
Relative Humidity	20 - 90% (non-condensing)		
Weight	1800g		
MTBF	> 500,000h		
Power Supply			
Input Voltage for Switch	18 … 60V DC		
Input Voltage for PoE+	52 … 57 V DC (typ. 54V DC)		
Power Consumption (without PoE)	13W (standby) … 15W (typ.) ... 28W (fully connected)		
Heat Output	52 BTU(IT)/h (typ.)		
Connector	2x 3-pin terminal blocks, screw-on type (up to 2.5 mm²) / (+) (-) (FPE)		
Connector PoE	3-pin terminal blocks, screw-on type (up to 2.5 mm²) / (+) (-) (FPE)		

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Software Features

Switching Parameters	
Switching Type	Store-and-Forward, self-learning
Switching Capacity	50Gbps, non-blocking
Packet Forwarding Rate	2x 1.488Mpps per port
Max. Frame Size	9.600Bytes (Support of Jumbo frames)
Packet Buffer	512 kBytes
Latency (RFC1242)	100Mbps / 64Byte (FIFO/LIFO) 9µs / 9.3µs 100Mpbs / 1518Byte (FIFO/LIFO) 125µs / 4µs 1000Mbps / 64Byte (FIFO/LIFO) 2.7µs / 2.2µs 1000Mpbs / 1518Byte (FIFO/LIFO) 15µs / 2.5µs
MAC-Address Table	8.192 MAC-Addresses
VLANs	IEEE802.1q with up to 256 Groups
Quality of Service Layer 2	IEEE802.1p Class of Service (4 Queues per Port)
Quality of Service Layer 3	RFC2474/3168 DSCP (4 Queues per Port)
Bandwidth Limitation	Bitrate and Number of Packets
Fabric Attach	Basic Fabric Attach Client Support
Management	On-Board High-Performance Management
LEDs	Management, Port Status and Activity, Memory Card
Zero-Touch Configuration	Via LANactive Manager Controller
IP-Address	IPv4, IPv6
DHCP-Client	DHCP, DHCPv6
DHCP Relay Agent	Yes
File Transfer	TFTP, SCP
Console Port	V.24 with Aginode Console Cable
Web-Interface	HTTP, HTTPS
Command Line Interface	SSH, Telnet
Scripting	Yes
SNMP	SNMPv1, v2c, v3
Further Management Protocols	Syslog, LLDP, LLDP-MED, CDP
Time Synchronisation	SNTP
Port Statistics	Detailed per Port
Redundancy	
Redundancy Protocols	STP, RSTP, MSTP, MRP
Link Aggregation	LACP
Security	
Password Protection	Two Access Levels (R/W or R/O)
Authentication via Radius and TACACS+	CLI and LANactive Manager
Access Control List	Layer 2 and Layer 3
ACL for Management Interface	Up to 16 Access Control Lists
Portsecurity via MAC-Address	Up to 3 predefined MAC-Addresses
Portsecurity via Radius	IEEE802.1x
DHCP Snooping	Yes
Loop and Broadcast Limiter	Yes
Firmware Update	Dual Firmware Image
Configuration-/Reset Button	Yes / Yes (can be configured)

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Standards

CE - Conformity	
Electro Magnetic Capability Directive	2014/30/EU
Low Voltage Directive	-
RoHS 2	2011/65/EU
Engineering Standards	EN 62368-1, EN 61000-6-2, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3, EN 50581, IEC 61850-3, -6, -7-1, -7-2, -7-3, -7-4, -8-1, -9-1, -9-2

Dimensions