# KN-LGIPR38-28AD

- **19" L2/L3 switch with PoE+ 720W**
- **copper ports: 24 x 10/100/1000TX**
- **fibre ports: 4 x SFP/SFP+ 1 G/10G**
- **Manageable, Ring capable, Dynamic Routing**
- **Automatic upload of configuration and firmware via USB**
- **IEEE 1588 V2, PTP**
- **Fanless**
- **Extended Temperature Range -40 to +75°C**
- **Power supply 230VAC & 52VDC, redundant**

This layer-2 and layer-3 switch for industrial use was developed specially for applications with high data loads, such as video over IP and video streaming, including in conjunction with multicast. The switch has extensive security functions that protect both the switch itself and the network traffic. The PoE allows IP cameras to be supplied with power via the data cable. The switch's extensive management options mean that even complex network requirements can be met. The switch can be supplied with redundant power.

# Product information

**Brief description**
19" switch with management, strong security functions and PoE +, redundant supply

**Special Feature for Video Networks**
**Active camera monitoring**
The switch continuously monitors PoE-powered cameras. If a camera fails, the switch automatically restarts the camera. At the same time, the switch sends an SNMP message.
**Active and graphical monitoring of the PoE power supply**
If a defective camera, for example, demands too much power from the switch, the switch will trigger an alarm via SNMP. The PoE power is continuously displayed.

**Active management of PoE power**
When the switch is started up, the individual PoE ports can be started up in a delayed manner in order to prevent overloading of the PoE power supply units.
**Jumbo Frames also at 100 Mbit/s**
Jumbo Frames up to 10'240Bytes are also supported at 100 Mbit/s.

**Special Features**
The switch has extensive security features. For example, the ACL not only allows the switch itself to protect traffic on

the network.

**System Notes**
The switch supports PTP, precision time protocol according to IEEE1588 v2 and IEC 61588, a feature used in industrial automation, professional audio-video applications for audio-video bridging and telecommunications, among others.

# Technical data

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| Copper Ports | 24 x 10/100/1000BaseT, PoE, PoE+, RJ45 |
| Fiber Ports | 4 x SFP/SFP+, 1G/10G<br>We recommend the use of our barox SFPs.<br>The compatibility of our devices with SFPs of other brands is not tested and not guaranteed by us. |
| Console Port | 1xRJ45, console<br>1xUSB-B socket, for FW, configuration, logs |
| Switching Contact | DO: max. 1A, 24VDC<br>DI: For "0", -35 - 1*VDC, for "1" 13-30VDC |
| Supply Voltage | 90-264VAC, 50-60Hz and 48-57VDC, redundant power possible<br>With PoE+ min. 50VDC |
| Power Consumption | Without PoE: Max. 26W<br>With PoE: If only AC-fed: 348W, AC/DC or only DC fed: 720W |
| MTBF | 25°C: 266'508h<br>40°C: 158'506h |
| Operating temperature | -40 to +75°C |
| Dimensions | 440 x 44 x 331mm (WxHxL) |
| Weight | Gross weight: 0.00 kg<br>Net weight: 0.00 kg |
| Test Standards | **EMI**<br>FCC Part 15 Subpart B Class A,<br>CE EN55032/EN61000-6-4 Class A<br><br>**EMS**<br>CE EN55035/EN61000-6-2 Class A:<br>IEC61000-4-2 (ESD<br>IEC61000-4-3 (RS)<br>IEC61000-4-4 (EFT)<br>IEC61000-4-5 (Surge)<br>IEC61000-4-6 (CS)<br>IEC61000-4-8 (Magnetic Field) |

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| | **Freier Fall**<br>IEC60068-2-32<br><br>**Schock**<br>IEC60068-2-27<br><br>**Vibration**<br>IEC60068-2-6 |
| Backplane | 128GBit/s |
| Configuration | Console, Web GUI, SNMPv1, v2c and v3 Mini USB |
| PoE Management | **Port configuration**<br>Supports PoE configuration function per port.<br><br>**PoE scheduling**<br>Supports per-port PoE scheduling to turn PoE devices (PDs) on/off.<br><br>**Automatic check**<br>Check the connection status of the PDs. Restart the PDs if there are no responses.<br><br>**Power delay**<br>The PoE ports can be turned on with a time delay to protect the switch from overload. |
| Port Status Display | Display per port: speed, link status, flow control status, autonegotiation status, trunk status |
| Layer3 Functions | IPv4 and IPv6 Unicast: Static Routing<br>RIP v1/v2: Routing Information Protocol (RIP) is an internal routing protocol based on distance vector routing used within an autonomous system.<br>OSPF v2/v3 : OSPF is a link-state routing protocol. It is designed for internal operation in a single autonomous system. Each OSPF router maintains an identical database that describes the topology of the autonomous system. A routing table is calculated from this database by creating a shortest-path tree. |
| Communication Redundancy | Standard Spanning Tree (STP), IEEE802.1d<br>Rapid Spanning Tree (RSTP), IEEE802.w<br>Multiple Spanning Tree (MSTP), IEEE802.1s |
| VLAN | **Tag-based VLAN according to 802.1Q**<br>Supports up to 4K VLANs simultaneously (out of 4096 VLAN IDs)<br><br>**Port-based VLAN**<br>A port member of a VLAN can be isolated to other isolated ports of the same VLAN and private VLANs.<br><br>**Private VLAN edge (PVE).**<br>Private VLANs are based on the source port mask and there are no connections to VLANs. This means that VLAN IDs and private VLAN IDs can be identical.<br><br>**Voice VLAN** |

The Voice VLAN feature allows voice traffic to be forwarded on the Voice VLAN.

**Guest VLAN**
The IEEE 802.1X Guest VLAN feature allows a guest VLAN to be configured for each 802.1X port on the device to provide restricted services to non-802.1X compliant clients.

**Q-in-Q (double tag) VLAN**
This can be used to set specific requirements for VLAN IDs and the number of VLANs to support.

**802.1v protocol VLAN**
Classifying multiple protocols into a single VLAN often forces VLAN boundaries that are inappropriate for some of the protocols. This requires the presence of a non-standard entity that forwards frames containing the protocols for which the VLAN boundaries are unsuitable between VLANs.

**MAC-based VLAN**
The MAC-based VLAN feature allows incoming untagged packets to be assigned to a VLAN, classifying traffic based on the source MAC address of the packet.

**IP subnet-based VLAN**
In an IP subnet-based VLAN, all end workstations in an IP subnet are assigned to the same VLAN. In this VLAN, users can move their workstations without having to reconfigure their network addresses.

**Management VLAN**
Management VLAN is used to manage the switch from a remote location using protocols such as Telnet, SSH, SNMP, Syslog, and so on.

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| Link Aggregation | IEEE 802.3ad LACP / Static Trunk, supports five groups of 16-port trunks or static trunk. |
| QoS | **Hardware queue**<br>Supports eight hardware queues.<br><br>**Classification**<br>Port-based: Traffic QoS by port.<br>802.1p: VLAN priority-based Layer 2 CoS QoS class of service is a parameter used in data and voice protocols to distinguish the types of payloads included in the transmitted packet.<br>DSCP-based Differentiated Services (DiffServ) Layer 3 DSCP QoS: IP packets can carry either an IP priority value (IPP) or a Differentiated Services Code Point (DSCP) value. QoS supports the use of both values because DSCP values are backward compatible with IP priority values.<br>Classification and re-marking of TCP/IP ACLs: QoS through ACL<br><br>**Rate-limiting**<br>Ingress policing<br>Egress shaping and per-port speed control<br><br>**Scheduling**<br>Strict Priority and Weighted Round Robin (WRR): Weighted Round Robin is a scheduling algorithm that uses the weights assigned to queues to determine how |

much data is emptied from a queue before it is moved to the next queue.

Security

**Certified authentication**
A private HTTPS key can be stored for management access.

**User management**
User rights can be freely set in up to 15 levels.

**ACL**
The switch allows up to 512 entries. Drop or rate restriction based on source/destination MAC/IP address or VLAN ID. Rules and conditions for incoming packets can be set per port. Rules include protocols, IP ports, and address ranges. Rules can be set using either the authorization or exclusion method. Criteria are: TCP/ UDP source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packet.

**Port Security**
MAC address management per port and IP source guard: MAC address can be checked in combination with IP address.

**Storm Control**
Prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast flood on a port.

**RADIUS Authentication, 802.1X**
Authorization and accounting, MD5 hash, guest VLAN, single/multiple host mode, and single/multiple sessions.
Supports IGMP RADIUS-based 802.1X
Dynamic VLAN assignment

**TACACS+ authentication**
The switch supports TACACS+ authentication. Switch as a client.

**Secure Shell (SSH)**
SSH secures Telnet traffic into or out of the switch, SSH v1 and v2 are supported.

**Secure Socket Layer (SSL)**
SSL encrypts HTTP traffic, providing advanced secure access to the browser-based management GUI in the switch.

**HTTPS & SSL (Secured Web)**
Hyper Text Transfer Protocol Secure (HTTPS) is the secure version of HTTP.

**BPDU Guard**
BPDU Guard, an extension of STP, removes a node that reflects BPDUs back into the network. It enforces the boundaries of the STP domain and keeps the active topology predictable by not allowing network devices behind a BPDU Guard-enabled port to participate in STP.

**DHCP Snooping**
With DHCP Snooping, the switch has a feature that acts as a firewall between untrusted hosts and trusted DHCP servers.

**Loop Protection**

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| | Loop Protection prevents unknown unicast, broadcast, and multicast loops in Layer 2 switching configurations. |
| Multicast | **IGMP v1/v2/v3 Snooping**<br>IGMP restricts bandwidth-intensive multicast traffic to requesters. Supports 1024 multicast groups.<br><br>**IGMP Querier**<br>IGMP Querier is used to support a Layer 2 multicast domain of snooping switches when no multicast router is available.<br><br>**IGMP Proxy**<br>IGMP Snooping with proxy reporting or report suppression actively filters IGMP packets to reduce load on the multicast router.<br><br>**MLD v1/v2 Snooping**<br>Delivers IPv6 multicast packets only to the required receivers.<br><br>**Multicast VLAN Registration (MVR)**<br>A dedicated, manually configured VLAN, called the Multicast VLAN, to forward multicast traffic over a Layer 2 network in conjunction with IGMP snooping. |
| Standards | IEEE 802.3 10Base-T<br>IEEE 802.3u 100Base-TX/100BASE-FX<br>IEEE 802.3z Gigabit SX/LX<br>IEEE 802.3ab Gigabit 1000T<br>IEEE 802.3x Flow Control and Back pressure<br>IEEE 802.3ad Port trunk with LACP<br>IEEE 802.1d Spanning tree protocol<br>IEEE 802.1w Rapid spanning tree protocol<br>IEEE 802.1s Multiple spanning tree protocol<br>IEEE 802.1p Class ofservice<br>IEEE 802.1Q VLAN Tagging<br>IEEE 802.1x Port Authentication Network Control<br>IEEE 802.1ab LLDP<br>IEEE 802.3af/at Power over Ethernet<br>IEEE 802.az Energy Efficient Ethernet |