# RY-LPITE-442XGME

Industrial L2/L3 switch with management, strong security features and PoE ++ 10Gbit SFP ports

- DIN rail mounting with PoE++
- Copper ports: 8 x10/100/1000TX
- Fiber Ports: 2 x SFP/SFP+ 1G/10G
- Manageable, ring capable, L3 capabilities

- Non Stop PoE
- OSPFv2/v3 and RIPv1/v2
- IEEE 1588 V2, PTP
- Power 48-57VDC, redundant

This robust, high-quality switch is designed for use in powerful 10, 100 and 1000MBit/s Ethernet ring network structures according to IEEE802.x. The eight copper ports feature Power over Ethernet with PoE, PoE+ and PoE++. These devices have been specially developed for video networks. The switch allows the construction of one or more error tolerant rings via two or more connections. In the event of an interruption, the ring closes automatically in less than 50ms. This increases the availability of the system. The system controls the layer 3 protocols OSPFv2/v3 and RIPv1/v2.

Two SFP sockets for 1/10 Gbit/s BaseSX/LX/ZX are available for the backbone, which can be equipped either for multimode or singlemode. The switches can also be used as stand-alone devices, for point-to-point connections or as connection modules. The extensive possibilities of the management software also allow the use of the switches in systems with high demands on the functionality of the network. Installation is very quick and easy thanks to the mounting device for mounting rails. The electrical and optical connections are ensured by standardized plugs (RJ45 or LC).

## Video network special features

**Active surveillance of the camera**
Cameras powered by the switch via PoE are continuously monitored. In the event of a camera failure, the switch restarts the camera automatically. If this fails, the switch sends an alarm message via SNMP.

**Active monitoring of PoE power supply**
If, for example, a defective camera requires too much power from the switch, the switch alerts via SNMP.

**Active management of PoE performance**
When the switch is started up, the individual PoE ports can be started up with a time delay to prevent the PoE

power supply from being overloaded.

**Additional video-friendly features**
Extra high backplane performance for smooth video transmission with full port occupancy. Jumbo frames up to 9600Bytes are also supported at 100MBit/s. Port security through MAC address limitation.

## More information

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| Special features | The switch has extensive security features. E.g. the ACL allows to protect not only the switch itself, but also the traffic in the network.<br>Non-stop PoE: When the switch is rebooted, the PoE power supply to the connected cameras is not interrupted. As soon as the switch is operational again, so are the camera images. |
| System notes | The switch supports PTP, precision time protocol according to IEEE1588 v2 and IEC 61588, which is used in industrial automation, professional audio-video applications for audio-video bridging and telecommunications, among others.<br>Furthermore, the switch supports the dynamic routing protocols OSPFv2/v3 and RIPv1/v2.<br>S-VLAN can be used for VLAN setup with service providers. |

## DMS

### DMS (Device Management System)

This switch has an integrated network monitoring and control system, which gives the user a very simple overview of the entire network. This DMS system has the following features:

**Graphical network overview**
The view of the network topology allows a quick overview of all switches and end devices available in the network, such as IP cameras or servers, with details of the IP address, device type and name. Plans and maps can be stored as background images, allowing the user to quickly access certain network devices even without knowledge of the IP structure,

**Device search functions**
This function allows access to a specific device even in larger networks. Newly added devices, e.g. a replaced IP camera, are displayed immediately and allow the user immediate access without requiring the IP address.

**Data traffic display**
The data traffic per port can be graphically displayed over a time axis.

**Error handling and security**
Network diagnostics between master switch and connected terminals.
Protection mechanisms such as data rate limitation provide effective protection against unwanted access.
IEEE802.3ah and IEEE802.1ag provide tools for structuring networks.

# Technical data

## General properties

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| supply voltage | 48 -56 VDC |
| power consumption | Max. 15W (without PoE) / 375W (with PoE) |
| MTBF | 25°C: 188'146h<br>50°C: 59'932h |
| operating temperature | -40°C bis +75°C |
| dissipation loss | 136 BTU, specification without considering the PoE power.<br>239 BTU at maximum PoE power output of 240W. |
| dimensions | 170x70x130mm (HxWxL) |
| weight | 1.15 kg |

## interfaces

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| copper ports | 8 x 10/100/1000TX, 4 x PoE+, 4 x PoE++, RJ45<br>Maximum PoE power over all ports: 360W<br>Port 1-4 PoE+ and Port 5-8 PoE++ |
| optical fibre ports | 2 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 | 1 x RS232, RJ45 115,2kBit/s, 8, N, 1, RJ45 |

## network properties

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| management | HTTP/HTTPS, SSH, Telnet Client, IPv6 Management<br>SNMP v1, v2c, v3 supports traps and USM<br>DHCP Client / DHCPv6 Client<br>DHCP Server<br>PTP, Precision Time Protocol, IEEE1588 v2<br>OSPFv2/v3 and RIPv1/v2<br>Embedded RMON agent supports RMON groups 1,2,3,9 (history, statistics, alarms and events) for improved traffic management, monitoring and analysis |
| backplane | 56GBit/s |
| MAC-table | 16k |
| configuration | Web GUI, DMS, SNMPv1, v2c and v3, console, Telnet, RMON<br>Individual management accesses can be disabled |
| PoE Management | **Port configuration**<br>Supports the PoE configuration function per port.<br><br>**PoE Scheduling**<br>Supports per-port PoE scheduling to power on/off PoE devices (PDs).<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 switched on with a time delay to protect the switch from overload.<br><br>**Non-Stop PoE, Soft Reboot**<br>The switch supplies the PDs with power even during the soft reboot. |
| port settings | Port disable/enable, Autonegotiation 10/100/100/1000Mbps, Flow Control disable/enable, data rate control on each port, max. Framesize, Power Control |
| port status | Display per port: speed, link status, flow control status, autonegotiation status, trunk status.<br>Switchable to PoE status display. |
| layer3 functions | IPv4 and IPv6 unicast: static and dynamic routing<br>OSPFv2/v3 / RIPv1/v2 |
| communications redundancy | Standard Spanning Tree (STP), IEEE802.1d<br>Rapid Spanning Tree (RSTP), IEEE802.w<br>Multiple Spanning Tree (MSTP), IEEE802.1s<br>Ethernet Linear Protection Switching (ELPS), ITU-T G.8031<br>Ethernet Ring Protection Switching, (ERPS), ITU-T G.8032 |

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| 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**<br>The Voice VLAN feature allows voice traffic to be forwarded on the Voice VLAN.<br><br>**Guest VLAN**<br>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.<br><br>**Q-in-Q (double tag) VLAN**<br>This can be used to set specific requirements for VLAN IDs and the number of VLANs to support.<br><br>**802.1v protocol VLAN**<br>Classifying multiple protocols into a single VLAN often forces VLAN boundaries that are unsuitable 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.<br><br>**MAC-based VLAN**<br>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.<br><br>**IP subnet-based VLAN**<br>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.<br><br>**S-VLAN**<br>QinQ-based S-VLAN.<br><br>**Management VLAN**<br>Management VLAN is used to manage the switch from a remote location using protocols such as Telnet, SSH, SNMP, Syslog, and so on. |
| link aggregation | IEEE 802.3ad LACP / Static Trunk, supports five groups of 16-port trunks or static trunk. |

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| 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. |

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| security | **Certified authentication**<br>A private HTTPS key can be stored for management access.<br><br>**User management**<br>User rights can be freely set in up to 15 levels.<br><br>**ACL**<br>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.<br><br>**Port Security**<br>MAC address management per port and IP source guard: MAC address can be checked in combination with IP address.<br><br>**Storm Control**<br>Prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast flood on a port.<br><br>**RADIUS Authentication, 802.1X**<br>Authorization and accounting, MD5 hash, guest VLAN, single/multiple host mode, and single/multiple sessions.<br>Supports IGMP RADIUS-based 802.1X<br>Dynamic VLAN assignment<br><br>**TACACS+ authentication**<br>The switch supports TACACS+ authentication. Switch as a client.<br><br>**Secure Shell (SSH)**<br>SSH secures Telnet traffic into or out of the switch, SSH v1 and v2 are supported.<br><br>**Secure Socket Layer (SSL)**<br>SSL encrypts HTTP traffic, providing advanced secure access to the browser-based management GUI in the switch.<br><br>**HTTPS & SSL (Secured Web)**<br>Hyper Text Transfer Protocol Secure (HTTPS) is the secure version of HTTP.<br><br>**BPDU Guard**<br>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.<br><br>**DHCP Snooping**<br>With DHCP Snooping, the switch has a feature that acts as a firewall between untrusted |

hosts and trusted DHCP servers.

**Loop Protection**
Loop Protection prevents unknown unicast, broadcast, and multicast loops in Layer 2 switching configurations.
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| 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/bt Power over Ethernet<br>IEEE 802.az Energy Efficient Ethernet<br>IEEE 1588v2 PTP Precisison Time Protocol |

# Product variants

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