

# Consist Switch

28 ports + PoE+

KONUENDO NETWORKING



**VDS Rail**  
The onboard networking company



The Consist Switch is a Fast/Gigabit/10Giga Ethernet Layer 2 managed switch specifically designed for network applications in Rolling-Stock environments. Besides providing wire speed layer 2 forwarding, it supports also Layer 3 capabilities allowing IPv4 unicast and multicast routing among different VLANs. Its purpose is to enable the implementation of network topologies in a train. The Consist Switch is ready for next generation TSN (Time Sensitive Network). The Consist Switch can have up to five (5) 10GBASE-T ports.

The Consist Switch provides advanced traffic switching capabilities, including support for VLANs, IGMP, Spanning Tree protocols (STP/RSTP) and the possibility to apply Quality of Service (QoS) policies. Layer 3 extensions include inter-VLAN routing with packet filtering together with NAT. OSPF and RIP dynamic protocols are also supported. IPv4 router redundancy can be provided through standard VRRP protocol. Moreover, it has an integrated Per Port DHCP server. The bypass feature makes the device completely transparent to the network in case of power loss or failure, thus avoiding or reducing the impact of possible local drop-outs or malfunction on network performance. Available in different models, the Consist Switch supports up to five (5) 10GBASE-T Ethernet ports (up to 2 pairs with bypass function), eleven (11) 1000BASE-T Ethernet ports (4 with PoE+ capability) and twelve (12) 100BASE-T ports with optional PoE+ capability.

Designed to operate in harsh environmental conditions typical of rolling-stock applications, the Consist Switch is fully EN 50155 compliant and provides the highest level of reliability and robustness required by the railway industry. Besides the standard features provided by this class of devices, the Consist Switch provides advanced software facilities for on-board network discovery and configuration. The device includes a sophisticated programming interface and is capable of completely auto-configure itself from an abstract project definition right after power-on.

Both these features dramatically ease maintenance activities and provide smart tools for fine-grained control over device operations and configuration.

## Technical specifications

- Up to five (5) 10GBASE-T Ethernet ports or five (5) 1000BASE-T Ethernet ports
- Eleven (11) 1000BASE-T Ethernet ports - four (4) of them with optional PoE+ capability
- Twelve (12) 100BASE-T Ethernet ports with optional PoE+ capability
- M12 circular connectors for Ethernet ports
- M23 circular connector for power supply
- IPv4 protocol supported
- Up to 2 hardware bypasses for maximum reliability
- Spanning tree (STP 802.1D) and Rapid Spanning Tree (RSTP 802.1w)
- Link aggregation protocol (LACP 802.3ad)
- Up to 4096 802.1Q VLANs
- DHCP option 82 handling
- Advanced and flexible per-port DHCP server
- IGMP versions 1, 2 and 3 snooping
- SNMP v1, v2c, v3 device management
- Extended RMON counters
- Link Layer Discovery Protocol (LLDP 802.1ab)
- 802.1X port authentication
- RADIUS authentication
- DSCP/802.1p Class of Service
- Static IPv4 unicast and multicast routing
- OSPF and RIP dynamic routing protocols
- VRRP v3 Router Redundancy for IPv4
- Network Address Translation (SNAT, DNAT and R-NAT)
- Packets filtering
- Eight (8) output hardware queues for each port
- Strict priority or weighted (WRR) schedule
- Ingress/egress/broadcast traffic rate limiting
- In-band (SSH) and out-of-band (console) CLI interface for device management
- In-band and out-of-band firmware upgrade

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## Technical Specifications

### PHYSICAL DATA

System status indicators:	8 LEDs
Fast Ethernet connectors:	M12, female, 4-ways, D-coding
Gigabit Ethernet connectors:	M12, female, 8-ways, X-coding
10 Gigabit Ethernet connectors:	M12, female, 8-ways, X-coding
Power supply connector:	Power-M23, male, 6-ways
Maintenance port connector:	M12, female, 8-ways, A-coding
Power supply voltage range (insulated)	
<b>No PoE version</b>	
Nominal 24÷110Vdc	Range according to EN 50155
<b>PoE Version</b>	
Nominal 24Vdc	Range according to EN 50155
Nominal 37.5 Vdc	Range according to IEEE Std 1476-2000
Nominal 48 Vdc	Range according to EN 50155
Nominal 72 Vdc	Range according to EN 50155
Nominal 96÷110 Vdc	Range according to EN 50155
Interruption voltage supply class:	S2, according to EN 50155
PoE class:	0, 1, 2, 3 and 4, according to IEEE 802.3 at Type-2
PoE budget:	150 W
Power consumption (PoE excluded):	
10GbE version	50 W max
no 10GbE version	30 W max
Overall dimensions:	315 x 240 x 73 mm (without connectors)
Weight:	4.5 Kg
Operating temperature:	
Standard	-25 ÷ +70 °C (OT3+ ST1 class according to EN 50155)
Optional	-40 ÷ +70 °C (OT4+ ST1 class according to EN 50155)
Relative humidity (non condensing):	0 ÷ 95 %
Storage temperature:	-40 ÷ +85 °C
Color codes:	Pantone 430 / RAL 7045 (frame) Pantone 431 / RAL 7046 (front panel)
Degree of protection:	IP65

### APPROVALS / COMPLIANCE

EN 50155	Railway Applications (Electronic equipment used on rolling stock)
EN 50121-3-2	Electromagnetic compatibility rolling stock apparatus
EN 60068-2-1	Environmental testing: Tests - Test Ad: Cold
EN 60068-2-2:2007	Environmental testing - Tests - Test Bd: Dry heat

### APPROVALS / COMPLIANCE

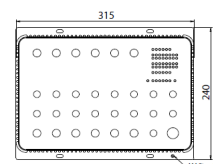
EN 60068-2-30	Environmental testing: Tests - Test Db Variant 2: Damp heat
EN 61373	Shock & Vibration - Category 1 class B
EN 50124-1	Insulation coordination
EN 45545	Fire & Smoke

### INTERNET WORKING STANDARDS

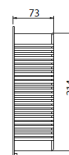
IEEE 802.3	Fast Ethernet (100BASE-T) 1 Gigabit Ethernet (1000BASE-T) 10 Gigabit Ethernet (10GBASE-T)
IEEE 802.1Q	Tagged VLANs
IEEE 802.1D	Spanning Tree Protocol
IEEE 802.1w	Rapid Spanning Tree protocol
IEEE 802.1X	Port-based network access control
IEEE 802.1AB	Link Layer Discovery Protocol (LLDP)
IEEE 802.3ad	Link Aggregation Protocol (LACP)
RFC 2328	OSPF v2
RFC 2453	RIP v2
RFC 3768	VRRP v2
RFC 5798	VRRP v3
802.1AS, 802.1Qat, 802.1Qav and 802.1Qbv	Time Sensitive Networking (TSN)

### Wall Mounting

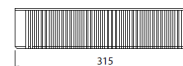
Dimensions only for reference



FRONT VIEW



SIDE VIEW



TOP VIEW