RS2 – IP67 Unmanaged 8-Port Industrial Ethernet Switch with PoE

- **Unmanaged 8-port rugged Ethernet switch**
- **Rugged aluminum enclosure (220 x 130 x 70 mm)**
- **Fanless and maintenance-free**
- **8 Fast Ethernet ports via M12 connectors**
- **Power over Ethernet (PoE) PSE (ports 1 and 2)**
- **2x 24 VDC or 110 VDC nom. redundant power supply, service interface via M12 connectors**
- **Status LEDs for ports, PoE and switch state**
- **-40 to +70(+85)°C operating temperature**
- **EN 50155 class Tx (railways) and IP67 compliant**
- **ISO 7637-2 compliant (E-mark for automotive)**

The RS2 is an industrial, IP67 stand-alone Fast Ethernet switch. It is unmanaged and provides eight Ethernet channels and a Gigabit uplink port on M12 connectors. The rugged switch supports full-duplex and half-duplex operation with auto-negotiation, high-speed non-blocking store-and-forward switching, Quality of Service (QoS) support with four traffic classes IEEE 802.1p and three-level 802.1x security. The switch is fault tolerant and restores itself on its own: If a link is temporarily unavailable, frames can be sent via backup/ redundant links (link aggregation) and no data loss occurs. Its built-in test mechanisms make the RS2 an even more reliable component in the communication system.

By using an application-specific configuration EEPROM, the RS2 can act similarly to a managed switch with fixed settings. This enables features untypical for unmanaged models like 802.1p priority and port based priority, port based VLAN or IEEE 802.1q VLAN IDs. Additionally, a service port is accessible at the front panel on an M12 connector, enabling authorized personnel to configure the switch via an SPI interface.

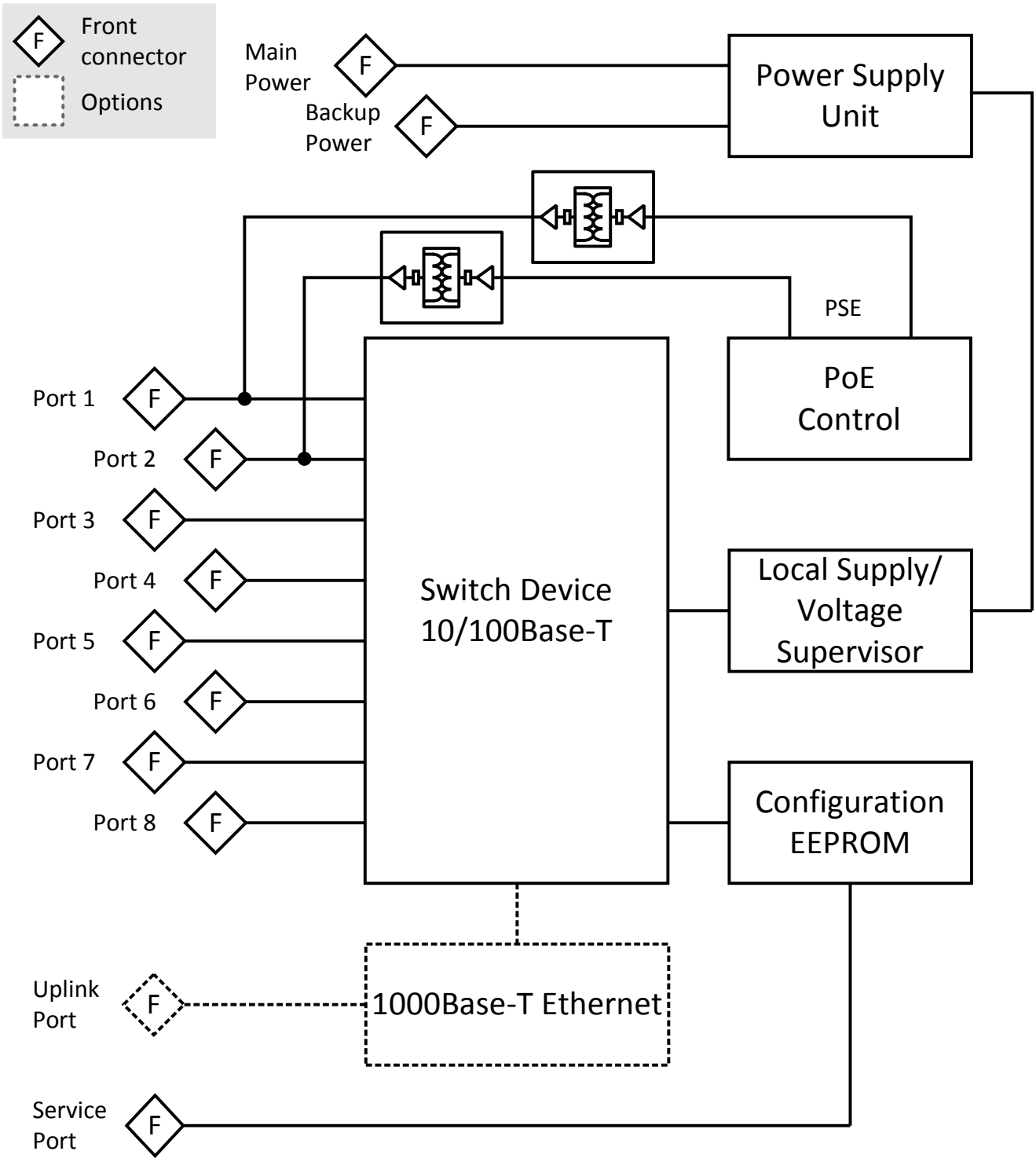
The RS2 has two power inputs on M12 connectors, making it possible to connect a backup power source (e.g., a battery). If the primary supply fails, the unit switches to the secondary supply automatically. The unit offers Power over Ethernet (PoE) PSE functionality to supply two other devices on ports 1 and 2.

The RS2 is one of the first members of the MIPIOS® family of extremely rugged IP67 compliant products designed for Ethernet connectivity and highly demanding applications, e.g., for redundancy systems.

The industrial-grade unit is fully compliant with EN 50155 railway standard. All components inside the enclosure are specified for -40..+85° C operation, thus enabling the device for EN 50155 class Tx operation. Additionally, the device is is compliant to ISO 7637-2 (E-mark for automotive). Convection cooling is sufficient. There are no socketed components, hardening the box against shock and vibration. The internal electronics are prepared for conformal coating.

The Ethernet switch is prepared for wall or DIN-rail mounting.

Diagram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Front connector
Options
Main Power
Backup Power
Power Supply Unit
PSE
PoE Control
Port 1
Port 2
Port 3
Port 4
Port 5
Port 6
Port 7
Port 8
Switch Device 10/100Base-T
Local Supply/ Voltage Supervisor
Configuration EEPROM
1000Base-T Ethernet
Uplink Port
Service Port

Technical Data

Key Features	■ High-speed non-blocking, store-and-forward switching ■ Eight 10/100Base-T ports at front panel (Electrical isolation: 1500 Vrms) ■ One Gigabit uplink port at front panel ■ Port configuration: copper, 10/100 Mbit/s ■ Auto-negotiation / Auto MDI/MDIX crossover on all ports ■ Layer2-based Policy Control List ■ 8K MAC address lookup table with automatic learning and aging ■ Up to 4096 VLANs
Supported Protocols and Standards	■ Ethernet flow control (IEEE 802.3x) ■ Link aggregation LACP / EtherChannel (IEEE 802.3ad, 2005) ■ Priority-based switching, Quality of Service/DiffServ, tagged frames, Layer2-based 801.1Q VLAN-ID packet routing (IEEE 802.1p) ■ Port-based authentication on registered MAC Address Lists ■ Power over Ethernet support (IEEE 802.3af / IEEE 802.3at, Type 1) ■ TCP/IP v4 and v6 ■ VLAN/port-based VLANs GVRP/MVRP (IEEE 802.1Q Rev D5.0, 2005)
Power Over Ethernet Features	■ Power over Ethernet functions on ports 1 and 2 □ PSE (Power Sourcing Equipment) function □ Supplies one PD class 0 device or two PD class 2 devices (up to 15 W total)
Service Interface	■ M12 connector at front ■ SPI interface for external SPI programmer
Front I/O	■ Eight Ethernet ports via M12 connectors ■ Gigabit uplink port □ 8-pin M12 connector, A-coded ■ One service interface via M12 connector ■ Two redundant power inputs via M12 connectors ■ Link and activity Ethernet status LEDs (two per channel) ■ Power over Ethernet status LEDs ■ Status LEDs for power and reset
Electrical Specifications	■ Power input □ Nominal input voltage 24 VDC (9 to 36 V) or 110 VDC (77 to 150 V) according to EN50155 □ Two redundant inputs □ Power-on threshold: 0.7xUn = 16.8 V (for 24 VDC PSU) or 77 V (for 110 VDC PSU) □ Power change-over threshold (when a secondary power source is connected): 12 V (for 24 VDC PSU) or 66 V (for 110 VDC PSU) (lower input voltage results in automatic switch to secondary power source) □ Minimum input voltage when no secondary power source is connected: 9 V (for 24 VDC PSU) or 66 V (for 110 VDC PSU) ■ EN50155 power interruption class S2 ■ Isolation (according to EN50155) □ 1500 Vrms ■ Power consumption at Unom (24 V): 24 W (incl. 15 W PoE)
Mechanical Specifications	■ Dimensions: 220 mm x 130 mm x 70 mm (without connectors) ■ Prepared for wall or DIN-rail mounting with special mounting plates (available separately) ■ Weight: 1.9 kg

Technical Data

Environmental Specifications	■ Temperature range (operation): □ -40..+70°C (+85°C) with up to 85°C for 10 minutes according to class Tx (EN50155) □ Airflow: natural convection ■ Temperature range (storage): -40..+85°C ■ Relative humidity (operation): max. 95% non-condensing ■ Relative humidity (storage): max. 95% non-condensing ■ Altitude: -300 m to + 3000 m ■ Shock: 50 m/s², 30 ms (EN 61373) ■ Vibration (function): 1 m/s², 5 Hz - 150 Hz (EN 61373) ■ Vibration (lifetime): 7.9 m/s², 5 Hz - 150 Hz (EN 61373) ■ Conformal coating on request ■ Climatic tests according to EN68068 ■ IP67 compliant ■ Fully EN 50155-compliant (Power Interruption Class 2, Temperature Class Tx)
MTBF	■ 292 031 h @ 40°C according to IEC/TR 62380 (RDF 2000)
Safety	■ Flammability □ PCBs manufactured with a flammability rating of 94V-0 by UL recognized manufacturers
EMC	■ Tested according to the following railway standards: □ EN50121 (radio disturbance) □ EN61000-4-2 (ESD) □ EN61000-4-4 (burst) □ EN61000-4-5 (surge) ■ Conforming to E1 requirements of the German Federal Motor Transport Authority ■ Tested according to the following automotive standards: □ CISPR25/CISPR16 (radiated emission) □ ISO7637-2 (conducted emission - power line) □ ISO7637-2 (conductive immunity - power line) □ ISO7637-3 (capacitive immunity - signal line) □ ISO11452-2, ISO11452-5 (radiation immunity) □ EN50121 (radio disturbance)

Configuration & Options

Standard Configurations

Article No.	Channels	Uplink port	Management	PSU	PoE
06RS01-01	8x 100Base-T	1Gb uplink	managed	24 VDC in (S2)	2x PSE
06RS01-05	8x 100Base-T	1Gb uplink	managed	110 VDC in (S2)	2x PSE
06RS02-01	8x 100Base-T	1Gb uplink	unmanaged	24 VDC in (S2)	2x PSE
06RS02-05	8x 100Base-T	1Gb uplink	unmanaged	110 VDC in (S2)	2x PSE

Options

Ethernet Switch Functions / Mechanical Specifications	■ No Gigabit Uplink port
Electrical Specifications	■ Other nominal input voltages: 36, 48, 72 or 96 VDC □ Wide input range (according to EN50155): 0.7 x nominal voltage < nominal voltage < 1.25 x nominal voltage

Ordering Information

Standard RS2 Models	**06RS02-01**	Unmanaged, 8 x 100BaseT, 1 x Gbit Uplink Port, 2 x PoE, PSU 24V (9-36V), -40...+70°C screened, EN50155 compliant, IP67
	06RS02-05	Unmanaged, 8 x 100BaseT, 1 x Gbit Uplink Port, 2 x PoE, PSU 110V (77-150V), -40...+70°C screened, EN50155 compliant, IP67
Related Hardware	**06RS01-01**	Managed, 8 x 100BaseT, 1 x Gbit Uplink Port, 2 x PoE, PSU 24V (9-36V), -40...+70°C screened, EN50155 compliant, IP67
	06RS01-05	Managed, 8 x 100BaseT, 1 x Gbit Uplink Port, 2 x PoE, PSU 110V (77-150V), -40...+70°C screened, EN50155 compliant, IP67
Miscellaneous Accessories	**05RS01-00**	DIN-Rail mounting plate for MIPIOS® family, -40..+85°C
	05RS01-01	Wall-mounting plate for MIPIOS® family, -40..+85°C
	05RS01-03	Cable set for G302, RSx and 19" rack-mountable SFx switches, consisting of: 4 Ethernet cables (M12 to RJ45), 1 service adapter (M12 to D-sub), 1 service cable, 1 dongle adapter (D-Sub to M12), 1 power cable (M12 to open end), -40..+85°C
Documentation	Compare Chart Industrial Ethernet switches for different platforms » Download	
	20RS02-00	RS2 User Manual

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