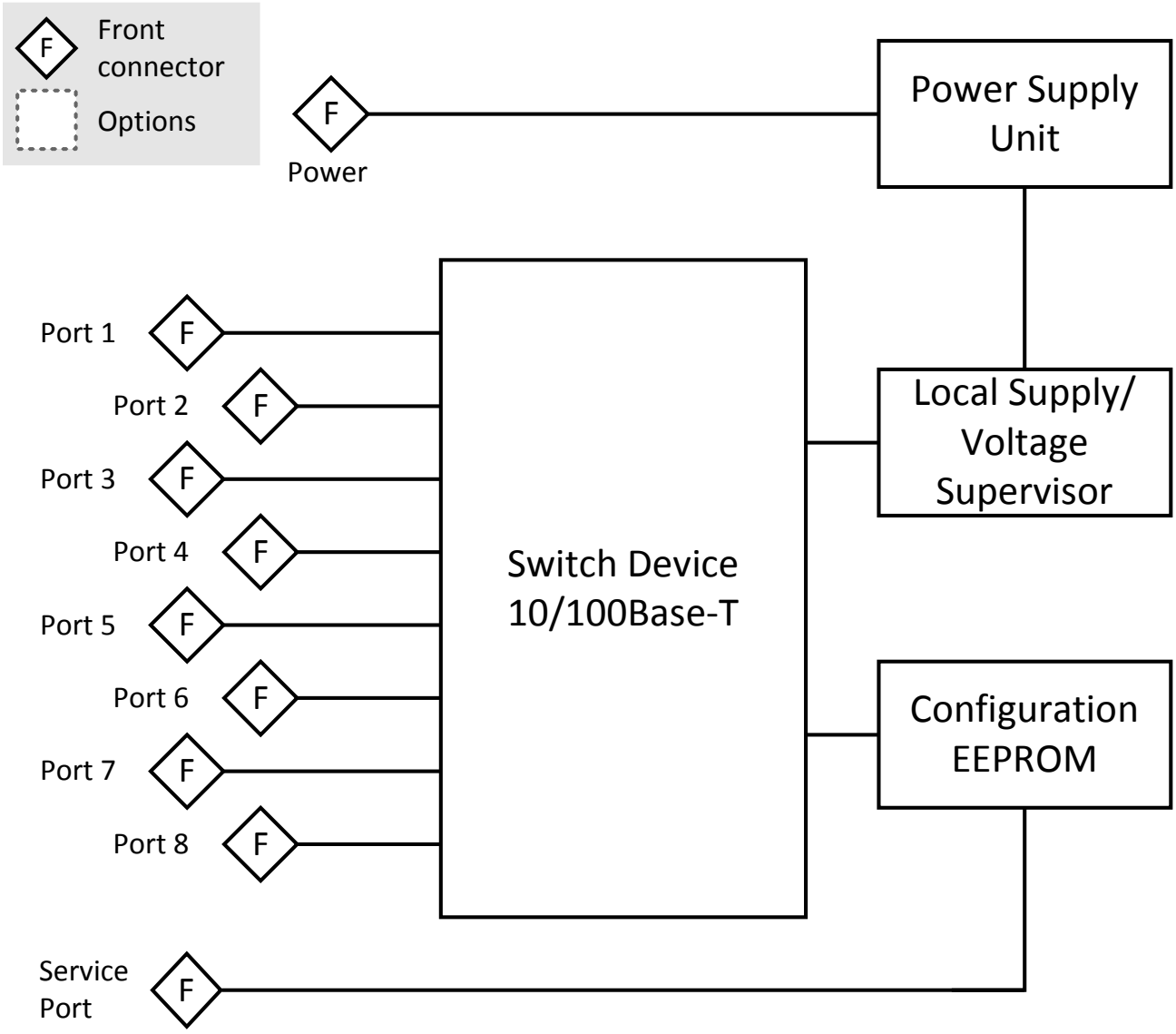
RS4 – IP67 Industrial Ethernet Switch

- **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**
- **24 VDC nom. (9 to 36 V) power supply and service interface via M12 connectors**
- **Status LEDs for ports 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 RS4 is an industrial, IP67 stand-alone Fast Ethernet switch. It is unmanaged and provides eight Ethernet channels 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 RS4 an even more reliable component in the communication system.
By using an application-specific configuration EEPROM, the RS4 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 RS4 is a member 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 to +85°C operation, thus enabling the device for EN 50155 class Tx operation. Additionally, the device is compliant with 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


F
Front connector
Options
F
Power
Power Supply Unit
Port 1
F
Port 2
F
Port 3
F
Port 4
F
Port 5
F
Port 6
F
Port 7
F
Port 8
F
Switch Device 10/100Base-T
Local Supply/ Voltage Supervisor
Configuration EEPROM
Service Port
F

Technical Data

Key Features	■ High-speed non-blocking, store-and-forward switching ■ Eight 10/100Base-T ports at front panel (Electrical isolation: 1500 Vrms) ■ 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 ■ TCP/IP v4 and v6 ■ VLAN/port-based VLANs GVRP/MVRP (IEEE 802.1Q Rev D5.0, 2005)
Service Interface	■ M12 connector at front ■ SPI interface for external SPI programmer
Front I/O	■ Eight Ethernet ports via M12 connectors ■ One service interface via M12 connector ■ One power input via M12 connector ■ Link and activity Ethernet status LEDs (two per channel) ■ Status LEDs for power and reset
Electrical Specifications	■ Power input □ Nominal input voltage 24 VDC (9 to 36 V) according to EN50155 ■ EN50155 power interruption class S2 ■ Isolation (according to EN50155) □ 1500 Vrms ■ Power consumption: 5 W
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
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 ■ Fully EN 50155-compliant (Power Interruption Class 2, Temperature Class Tx) ■ IP67 compliant
MTBF	■ 944 046 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

Technical Data

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	Management	PSU
06RS03-00	8x 100Base-T	managed	24 VDC in
06RS04-00	8x 100Base-T	unmanaged	24 VDC in

Options

Ethernet Switch Functions / Mechanical Specifications	■ 4 Ethernet ports
Electrical Specifications	■ Other nominal input voltages: 36, 48, 72, 96 or 110 VDC □ Wide input range (according to EN50155): 0.7 x nominal voltage < nominal voltage < 1.25 x nominal voltage

Ordering Information

Standard RS4 Models	**06RS04-00**	Unmanaged, 8x 100BaseT, PSU 24/48V, -40..+70°C screened, EN50155 class Tx compliant, IP67
Related Hardware	**06RS03-00**	Managed, 8x 100BaseT, PSU 24/48V, -40...+70°C screened, EN50155 class Tx 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	
	20RS04-00	RS4 User Manual

Contact Information

Germany

MEN Mikro Elektronik GmbH
Neuwieder Straße 3-7
90411 Nuremberg
Phone +49-911-99 33 5-0
Fax +49-911-99 33 5-901

info@men.de
www.men.de

France

MEN Mikro Elektronik SA
18, rue René Cassin
ZA de la Châtelaine
74240 Gaillard
Phone +33 (0) 450-955-312
Fax +33 (0) 450-955-211

info@men-france.fr
www.men-france.fr

USA

MEN Micro Inc.
860 Penllyn Blue Bell Pike
Blue Bell, PA 19422
Phone (215) 542-9575
Fax (215) 542-9577

sales@menmicro.com
www.menmicro.com