



On your rail, get set, go:

## The new, rugged rail switches from Hirschmann.

- Rugged Fast-ETHERNET rail switch
- New design with metal housing
- DIN rail or wall mounted
- Modular design for maximum versatility
- Extended temperature range:  $-40^{\circ}\text{C}$  up to  $+85^{\circ}\text{C}$
- Extremely high EMI and vibration immunity

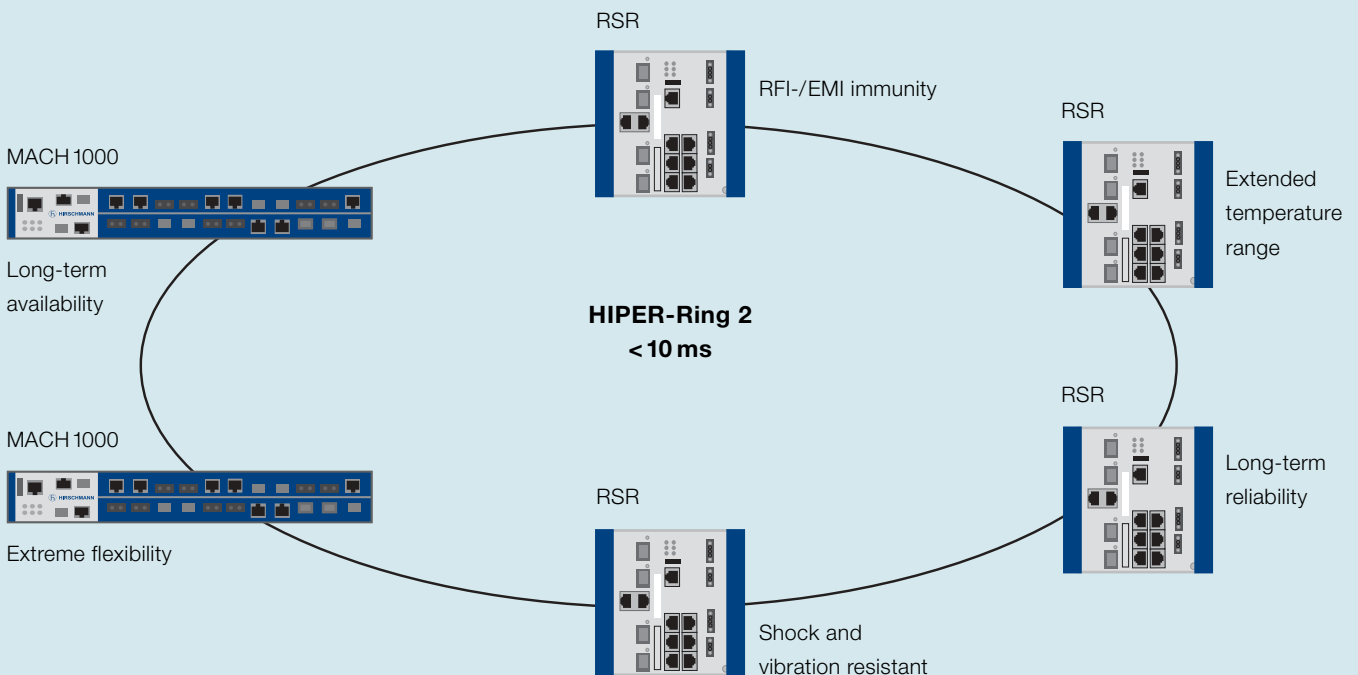


**HIRSCHMANN**

A Belden Company

# Built to take the punishment: The rugged new rail switches.

Maximum reliability in mission-critical applications.



## Applications

When the going gets tough for DIN rail switches (i. e. shock, vibration and temperatures fluctuating between  $-40^{\circ}\text{C}$  and  $+85^{\circ}\text{C}$ ), the rugged new Hirschmann rail switches deliver the performance you need. Hirschmann rail switches are built to take the punishment in marine, rail, road and other transportation automation applications including fiberoptic rail networks, train station passenger information systems, conveyors and airport runway lights. Other examples include traffic surveillance

on superhighways, bridges or in tunnels, toll collection systems as well as video on demand and air conditioning systems onboard ocean-going liners. Industrial ETHERNET is rapidly becoming the standard solution in military applications, and the new Hirschmann rail switches are an excellent choice for systems onboard navy ships and aircraft carriers.

All of this is available as a robust complete solution, for example in combination with the MACH 1000.

# Hirschmann rail switches: The ideal enhancement to the MACH 1000.

## Power and performance: the MACH 1000.

- Extremely high EMI immunity
- Shock and vibration protection
- Modular design for maximum versatility
- Extended temperature range:  $-40^{\circ}\text{C}$  up to  $+85^{\circ}\text{C}$
- Compact design, high port density, up to 26 ports
- Simple, user-friendly ring configuration



## Requirements and Solutions

The new Hirschmann rail switches deliver excellent performance in substations and any other applications and environments where there is a need for extremely rugged DIN rail switches. The new Hirschmann family is the solution of choice whenever rugged design, long-term reliability and very good EMI immunity are required to withstand extreme operating conditions such as temperature, shock and vibration. The range of applications includes marine systems, transportation automation and extremely harsh industrial environments.

The new rugged rail switches cover the entire spectrum from stand-alone solutions, with models ranging from the 8-port TX to the 10-port full fiber switch, to complete ruggedized solutions. The rail switches can be combined with the powerful MACH1000 to create a unique, rugged, virtually indestructible complete package for extreme DIN rail applications. This solution from the market leader in industrial ETHERNET offers the OpenRail versatility and quality that you expect from Hirschmann.

### Configuration

- Command Line Interface (CLI), TELNET, BootP, DHCP, DHCP Option 82, HiDiscovery, Auto Configuration Adapter (ACA21-USB)

### Software

- OpenRail Layer 2 Professional, a powerful software platform which offers the same functionality for all products

### Ambient conditions

- Temperature -40° C up to +85° C
- Optional conformal coating
- Extremely high RF/EMI immunity

### Operating voltage

- Wide input range, 16,8-60 VDC or 48-320 VDC and 90-265 VAC

### Approvals

- IEC 61850-3, IEEE 1613, NEMA TS2, EN 50121-4, EN 50155

### Redundancy functions

- HIPER Ring, RSTP, redundant ring topology, link aggregation

### Security

- Port Security (MAC and IP based) SNMP V3, Authentication (802.1x), SSH, VLAN

### Diagnostic tools

- LEDs, log file, syslog, 2 signal contacts, RMON, port mirroring, topology discovery, 802.1ad, cable diagnostics (TX)



<b>RSR 30</b>	<b>Model</b>	RSR20 Rail Switch Rugged Fast-ETHERNET RSR30 Rail Switch Rugged Gigabit-ETHERNET uplink ports																						
<b>09</b>	<b>Ports Fast-ETHERNET</b>	06 6 x100 Mbit ETHERNET 07 7 x100 Mbit ETHERNET 08 8 x100 Mbit ETHERNET 09 9 x100 Mbit ETHERNET																						
<b>02</b>	<b>Ports Gigabit-ETHERNET</b>	00 0 x1000 Mbit ETHERNET 02 2 x1000 Mbit ETHERNET 03 3 x1000 Mbit ETHERNET																						
<b>S2</b>	<b>Ports Type 1. Uplink</b>	<table border="0"> <tr> <td>CC 2 x Combo Port Gigabit-ETHERNET</td> <td>O7 Combo Port Gigabit-ETHERNET</td> </tr> <tr> <td>OO 2 x SFP Slot Gigabit-ETHERNET</td> <td>O6 SFP Slot Gigabit-ETHERNET</td> </tr> <tr> <td>TT 2 x Twisted Pair (Tx)/RJ 45</td> <td>T1 Twisted Pair (Tx)/RJ 45</td> </tr> <tr> <td>MM 2 x Multimode FX SC</td> <td>M2 Multimode FX SC</td> </tr> <tr> <td>JJ 2 x Multimode FX MTRJ</td> <td>M3 Multimode FX MTRJ</td> </tr> <tr> <td>NN 2 x Multimode FX ST</td> <td>M4 Multimode FX ST</td> </tr> <tr> <td>VV 2 x Singlemode FX SC</td> <td>S2 Singlemode FX SC</td> </tr> <tr> <td>UU 2 x Singlemode FX ST</td> <td>S4 Singlemode FX ST</td> </tr> <tr> <td>LL 2 x Singlemode Long Haul FX SC</td> <td>L2 Singlemode Long Haul FX SC</td> </tr> <tr> <td>GG 2 x Singlemode Long Haul+ FX SC (200 km)</td> <td>G2 Singlemode Long Haul+ FX SC (200 km)</td> </tr> <tr> <td>ZZ 2 x SFP Slot (100 Mbit)</td> <td>Z6 SFP Slot (100 Mbit)</td> </tr> </table>	CC 2 x Combo Port Gigabit-ETHERNET	O7 Combo Port Gigabit-ETHERNET	OO 2 x SFP Slot Gigabit-ETHERNET	O6 SFP Slot Gigabit-ETHERNET	TT 2 x Twisted Pair (Tx)/RJ 45	T1 Twisted Pair (Tx)/RJ 45	MM 2 x Multimode FX SC	M2 Multimode FX SC	JJ 2 x Multimode FX MTRJ	M3 Multimode FX MTRJ	NN 2 x Multimode FX ST	M4 Multimode FX ST	VV 2 x Singlemode FX SC	S2 Singlemode FX SC	UU 2 x Singlemode FX ST	S4 Singlemode FX ST	LL 2 x Singlemode Long Haul FX SC	L2 Singlemode Long Haul FX SC	GG 2 x Singlemode Long Haul+ FX SC (200 km)	G2 Singlemode Long Haul+ FX SC (200 km)	ZZ 2 x SFP Slot (100 Mbit)	Z6 SFP Slot (100 Mbit)
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<b>T1</b>	<b>Remaining Ports</b>	T1 Twisted Pair (Tx)/RJ 45 Z6 SFP Slot (100 Mbit)																						
<b>U</b>	<b>Temperature range</b>	S Standard 0° C up to +60° C U Extended -40° C up to +85° C F Extended -40° C up to +85° C inclusive Conformal Coating																						
<b>C</b>	<b>Voltage range 1</b>	C 24/36/48 V DC K 60/120/250 V DC and 110/230 V AC																						
<b>C</b>	<b>Voltage range 2</b>	9 Not available C 24/36/48 V DC K 60/120/250 V DC and 110/230 V AC																						
<b>H</b>	<b>Approvals</b>	H UL508; GL; IEC61850; IEEE 1613; EN 50121 C UL508; GL; IEC61850; IEEE 1613; EN 50121-4; EN50155																						
<b>P</b>	<b>Software version</b>	P Professional																						
<b>H</b>	<b>Configuration</b>	H Hirschmann																						
<b>H</b>	<b>OEM-Type</b>	H Hirschmann																						
<b>04.0.</b>	<b>Software release</b>	04.0. Software release 4.0. XX.X. newest software release																						

Compulsory field

Optional

## Rail Switch

<b>Productname</b>	<b>RSR20-xx</b>	<b>RSR30-xx</b>
<b>Description</b>	ETHERNET/Fast-ETHERNET Switch	ETHERNET/Fast-ETHERNET/ Gigabit-ETHERNET Switch
	managed, industrial switch for DIN rail, store-and-forward-switching, fanless design, Software Layer 2 professional	
Port type and quantity	Fast-ETHERNET ports in total: up to 9	Gigabit-ETHERNET ports in total: up to 3; Fast-ETHERNET ports in total: up to 8
<b>More Interfaces</b>		
V.24 interfaces	1 x RJ 11 socket	
USB interface	1 x USB to connect auto-configuration adapter ACA21-USB	
<b>Gigabit-ETHERNET Network size – length of cable</b>		
Twisted Pair (TP)	0 – 100 m	
Multimode fiber (MM) 50/125 µm	0 – 550 m, 7.5 dB link budget (with M-SFP-SX/LC)	
Multimode fiber (MM) 62.5/125 µm	0 – 275 m, 7.5 dB link budget (with M-SFP-SX/LC)	
Singlemode fiber (SM) 9/125 µm	0 – 20 km, 11 dB link budget (with M-SFP-LX/LC)	
Singlemode fiber (LH) 9/125µm	16 – 80 km, 6 – 22 dB link budget (with M-SFP-LH/LC) 44 – 120 km, 13 – 32 dB link budget (with M-SFP-LH+/LC)	
<b>Fast ETHERNET Network size – length of cable</b>		
Twisted Pair (TP)	0 – 100 m	
Multimode fiber (MM) 50/125 µm	0 – 5000 m, 8 dB link budget	
Multimode fiber (MM) 62.5/125 µm	0 – 4000 m, 11 dB link budget	
Singlemode fiber (SM) 9/125 µm	0 – 32.5 km, 16 dB link budget	
Singlemode fiber (LH) 9/125µm	24 – 87 km, 7 – 29 dB link budget	
<b>Network size – cascadiability</b>		
Line/star topology	any	
Ring structure (HIPER-Ring)	10/100/200 switches	
Fault recovery time (ring)	< 10 ms / < 40 ms / < 60 ms	
<b>Power requirements</b>		
Operating voltage	24/36/48 V DC (16.8 – 60 V), or 60/120/250 V DC (48 – 320 V) and 110/230 VAC (90 – 265 V)	
Current consumption at 24 VDC	appr. 160 – 400 mA	appr. 200 – 500 mA
Current consumption at 48 VDC	appr. 80 – 200 mA	appr. 100 – 250 mA
Current consumption at 230 VAC	appr. 15 – 45 mA (appr. 4 – 10 W)	appr. 20 – 50 mA (appr. 5 – 12 W)
Power output in Btu (IT) h	appr. 17 – 36	appr. 18 – 40
<b>Software</b>		
Management	Serial interface, web-interface, SNMP V1/V2, HiVision file transfer SW HTTP/TFTP	
Diagnostics	LEDs, log file, syslog, signal contact, RMON, port mirroring, topology discovery 802.1AB, cable tester (TX)	
Configuration	Comand line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HiDiscovery, auto configuration adapter (ACA21-USB)	
Security	Port security (IP and MAC), SNMP V3, SSH, authentication (802.1x)	
Redundancy functions	HIPER-Ring, RSTP 802.1w, redundant network/ring coupling, link aggregation, redundant 24 V power supplies	
Filter	QoS 4 classes, port priority (IEEE 802.1D/p), VLAN (IEEE 802.1Q), multicast (IGMP snooping/querier), unknown multicast detection, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D	
Realtime	SNTP Server, PTP/IEEE 1588	
Flow Control	Flow Control 802.3x	
<b>Ambient conditions</b>		
Operating temperature	– 40° C up to + 85° C	
Storage/transport temperature	– 40° C up to + 85° C	
Protective lacquer on PCB	optional conformal coating	
Relative humidity (non-condensing)	10 % up to 95 %	
<b>Mechanical construction</b>		
Dimensions (W x H x D)	appr. 125 x 140 x 120 mm	
Mounting	DIN rail and wall	
Weight	appr. 1 kg	
Protection class	IP 30	
<b>Mechanical stability</b>		
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks	
IEC 60068-2-6 vibration	1 mm, (2 – 13.2 Hz), 90 min.; 0.7 g, (13.2 – 100 Hz), 90 min.; 3.5 mm, (3 – 9 Hz), 10 cycles, 1 octave/min.; 1 g, (9 – 150 Hz), 10 cycles, 1 octave/min.	
<b>EMC interference immunity</b>		
EN 61000-4-2 electrostatic discharge (ESD)	8 kV contact discharge, 15 kV air discharge	
EN 61000-4-3 electromagnetic field	35 Vpp/m (80 – 2700 MHz); 1 kHz, 80 % AM	
EN 61000-4-4 fast transients (burst)	4 kV power line, 4 kV signal- and data line	
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line) IEEE 1613: power line: 5 kV (line/earth)	
EN 61000-4-12 damped oscillatory wave	2.5 kV line/earth, 1 kV line/line (1 MHz)	
EN 61000-4-16 mains frequency voltage	30 V; 50 Hz continuous; 300 V, 50 Hz 1 s	
<b>EMC emitted immunity</b>		
FCC CFR47 Part 15	FCC CFR47 Part 15 class A	
EN 55022	EN 55022 class A	
<b>Approvals</b>		
Safety of industrial control equipment	cUL 508 (pending)	
Ship	GL optional (pending)	
Substation	IEEE 61850-3, IEEE 1613	
Transportation	NEMA TS2	



## Product features

The Hirschmann family of rail switches offers you complete, standardized DIN rail solutions. These user-friendly, high-reliability products reduce your installation, configuration and maintenance costs to a minimum.

- NEMA TS2, IEEE 1613, IEC 61850-3 and EN 50155 compliant
- Extended temperature range:  $-40^{\circ}\text{C}$  up to  $+85^{\circ}\text{C}$
- Fast, hassle-free DIN rail or wall mounting
- Extreme EMI immunity
- Up to 3 Gigabit-ETHERNET Ports
- Models ranging from the simple 8 TX to the 10-port fiber optic version
- Uplink ports can be configured separately

## Hirschmann Competence Center

When you need cost-effective total solutions as well as top quality products, the Hirschmann Competence Center gives you the help you need. You get professional consulting, service and support from the

pioneer in industrial network technology. Contact us to discuss your specific needs.

[www.hicomcenter.com](http://www.hicomcenter.com)



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- Production bases
- Sales subsidiaries
- Selected distribution partners

## **Hirschmann Automation and Control GmbH**

Industrial ETHERNET

FiberINTERFACES

Industrial Connectors

Electronic Control Systems

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*"The information/details in this publication merely contain general descriptions or performance factors which, when applied in an actual situation, do not always correspond with the described form, and may be amended by way of the further development of products. The desired performance factors shall only be deemed binding if these are expressly agreed on conclusion of the contract.*

*Please note that some characteristics of the recommended accessory parts may differ from the appropriate product. This might limit the possible operating conditions for the entire system."*