

## GREYHOUND 19" Ruggedized Rack-Mount Switches and Media Modules





The GREYHOUND Gigabit Ethernet switches are offered in two basic versions. The configuration options include:

- 16 Fast Ethernet TX ports
- Eight Fast Ethernet TX ports, plus eight Fast Ethernet small form-factor pluggable (SFP) ports
- It is also possible to add four Gigabit Ethernet Combo ports

The basic units offer a media module slot that allows customers to add or change ports in the field, as their network design requirements change in the future. The modules can be ordered in versions from all-copper to all-fiber, depending on the individual need.



### Technical Information

Product Description Basic Units		
Type	GRS1020/1120-xx	GRS1030/1130-xx
		
Description	Modular Managed Industrial Switch, fanless design	
Port Type and Quantity	Ports in total up to 24 Basic unit: 16 FE TX ports, or 8 FE TX ports/8 FE SFP slots expandable with one slot for media modules with 8 FE ports	Ports in total up to 28 Basic unit: 4 x FE/GE Combo ports plus 16 FE TX ports, or 8 FE TX ports/8 FE SFP slots expandable with one slot for media modules with 8 FE ports
Number of Fiber Ports	20 fiber ports: 4 GE/FE plus 8 FE basic unit plus 8 FE with media module	
Additional Interfaces		
V.24 Interface	1 x RJ45 socket	
USB and SD Interface	1 x to connect auto-configuration adapter ACA22 (USB)	
Power Requirements		
Operating Voltage	24 to 48 V DC redundant, or 110 to 250 V DC and 110 to 240 V AC optional redundant	
Power Consumption	7.5 to 18 W depending on the variant	
Mechanical Construction		
Weight	3.55 to 3.8 kg depending on the variant	
Protection Class	IP30	
Dimensions (WxHxD)	448 x 44 x 315 mm	
Software		
Supported HiOS Software Levels	Layer 2 Standard (L2S)	

**NOTE:** These are the prominent technical specifications. For complete technical specifications visit: [www.hirschmann.com](http://www.hirschmann.com)



## Technical Information

Product Description Media Modules for GREYHOUND	
Type	GRM20-xx
Port Type and Quantity	up to 8 FE ports, more details in the configurator for ST, SC, RJ45, SFP slots
Power Consumption	2 to 9 W depending on the variant
Weight	450 to 650 g depending on the variant

NOTE: These are the prominent technical specifications. For complete technical specifications visit: [www.hirschmann.com](http://www.hirschmann.com)



## Common Technical Data Basic Units and Media Modules

Gigabit ETHERNET Network Size	
Twisted Pair (TP)	0 to 100 m
Multimode Fiber (MM) 50/125 $\mu\text{m}$	0 to 550 m, 7.5 dB link budget; 62.5/125 $\mu\text{m}$ 0 to 275 m, 7.5 dB link budget (with M-SFP-SX/LC)
Singlemode Fiber (SM) 9/125 $\mu\text{m}$	0 to 20 km, 11 dB link budget (with M-SFP-LX/LC); 14 to 42 km, 5 to 20 dB link budget (with M-SFP-LX+/LC)
Singlemode Fiber (LH) 9/125 $\mu\text{m}$	23 to 80 km, 5 to 22 dB link budget (with M-SFP-LH/LC); 71 to 128 km, 15 to 30 dB link budget (with M-SFP-LH+/LC)
Fast ETHERNET Network Size	
Twisted Pair (TP)	0 to 100 m
Multimode Fiber (MM) 50/125 $\mu\text{m}$	0 to 5000 m, 8 dB link budget; 62.5/125 $\mu\text{m}$ , 0 to 4000 m, 11 dB link budget (with M-Fast SFP-MM/LC)
Singlemode Fiber (SM) 9/125 $\mu\text{m}$	0 to 25 km, 13 dB link budget (with M-Fast SFP-SM/LC); 25 to 65 km, 10 to 29 dB link budget (with M-Fast SFP-SM+/LC)
Singlemode Fiber (LH) 9/125 $\mu\text{m}$	47 to 104 km, 10 to 29 dB link budget (with M-Fast SFP-LH/LC)
Network Size – Cascadability	
Line-/Star Topology	Any
Ring Structure	>200 switches MRP
Ambient Conditions	
Operating Temperature	0 °C to +60 °C, or -40 °C to +70 °C, IEC 60068-2-2 Dry Heat Test +85 °C 16 hours, optional conformal coating
Relative Humidity (non-condensing)	5% to 95%
Approvals Configurable	
Safety of Industrial Control Equipment	EN 60950-1, EN 61131-2, cUL60950-1
Substation	IEC 61850-3, IEEE 1613
Ship	GL – Germanischer Lloyd (pending)
Hazardous Locations	ISA-12.12.-01 Class 1 Div. 2 Group A, B, C, D (pending)
Transportation	NEMA TS2, EN 50121-4
Accessories	
Device Replacement and Logging	ACA22-USB EEC 942 124-001

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**GREYHOUND GRS1020/GRS1120/GRS1030/GRS1130 Switch Configurations**
**GRS1 0 30 - 16T9 S M M V9 H H S E 2S 04.1**
**Design**
**GRS1** = GREYHOUND 19" Rugged Switch

**Port Position**
**0** = Ethernet ports on front and power supply input on rear  
**1** = Ethernet ports and power supply input on rear (cabling side)

**Data Rate**
**20** = FE-Switch  
**30** = FE-Switch with GE-Uplink Ports

**Number of Fast Ethernet Ports**
**16T9** = 16 Fast Ethernet TX Ports  
**8T8F** = 8 Fast Ethernet TX Ports and 8 Fast Ethernet SFP Slots

**Temperature Range**
**S** = 0 °C to +60 °C  
**T** = -40 °C to +70 °C  
**E** = -40 °C to +70 °C conformal coating

**Power Supply 1**
**C** = 24 to 48 V DC  
**M** = 110 to 250 V DC and 110 to 240 V AC

**Power Supply 2**
**C** = 24 to 48 V DC  
**M** = 110 to 250 V DC and 110 to 240 V AC  
**9** = No second power supply

**Approvals**

Z9 = CE; FCC; EU Safety	Y9 = Z9, US Safety
X9 = Z9, US Safety, Hazardous Location	V9 = Z9, Substation
VY = Z9, US Safety, Substation	VU = Z9, US Safety, Substation, Marine
VT = Z9, US Safety, Substation, Transportation	U9 = Z9, Marine
UY = Z9, US Safety, Marine	UT = Z9, US Safety, Marine, Transportation
UX = Z9, US Safety, Marine, Hazardous. Location	T9 = Z9, Transportation
TY = Z9, US Safety, Transportation	

**Customization**
**HH** = Hirschmann Standard

**Hardware Configuration**
**S** = Standard

**Software Configuration**
**E** = Standard

**Software Level**
**2S** = HiOS Layer 2 Standard

**Software Version**
**04.1** = Software Version 04.1  
 XX.X = Current Software Release



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## GREYHOUND GRM20 Media Modules Configurations

**GRM20-MM-MM-TT-TT-SV9HHS**

### Design

**GRM** = GREYHOUND Switch Media Modules

### Data Rate

**20** = 10/100 Mbit/s Ports

### Port Configuration 1 and 2

**TT** = 2 x Twisted Pair TX, RJ45, 100 Mbit/s  
**MM** = 2 x Multimode FX, DSC, 100 Mbit/s  
**VV** = 2 x Singlemode FX, DSC, 100 Mbit/s

**ZZ** = 2 x SFP Slots, 100 Mbit/s  
**NN** = 2 x Multimode FX, ST, 100 Mbit/s  
**UU** = 2 x Singlemode FX, ST, 100 Mbit/s

### Port Configuration 3 and 4

**TT** = 2 x Twisted Pair TX, RJ45, 100 Mbit/s  
**MM** = 2 x Multimode FX, DSC, 100 Mbit/s  
**VV** = 2 x Singlemode FX, DSC, 100 Mbit/s  
**99** = Not equipped

**ZZ** = 2 x SFP Slots, 100 Mbit/s  
**NN** = 2 x Multimode FX, ST, 100 Mbit/s  
**UU** = 2 x Singlemode FX, ST, 100 Mbit/s

### Port Configuration 5 and 6

**TT** = 2 x Twisted Pair TX, RJ45, 100 Mbit/s  
**MM** = 2 x Multimode FX, DSC, 100 Mbit/s  
**VV** = 2 x Singlemode FX, DSC, 100 Mbit/s  
**99** = Not equipped

**ZZ** = 2 x SFP Slots, 100 Mbit/s  
**NN** = 2 x Multimode FX, ST, 100 Mbit/s  
**UU** = 2 x Singlemode FX, ST, 100 Mbit/s

### Port Configuration 7 and 8

**TT** = 2 x Twisted Pair TX, RJ45, 100 Mbit/s  
**MM** = 2 x Multimode FX, DSC, 100 Mbit/s  
**VV** = 2 x Singlemode FX, DSC, 100 Mbit/s  
**99** = Not equipped

**ZZ** = 2 x SFP Slots, 100 Mbit/s  
**NN** = 2 x Multimode FX, ST, 100 Mbit/s  
**UU** = 2 x Singlemode FX, ST, 100 Mbit/s

### Temperature Range

**S** = 0 °C to +60 °C  
**T** = -40 °C to +70 °C  
**E** = -40 °C to +70 °C conformal coating

### Approvals

**Z9** = CE, FCC, EU Safety  
**X9** = Z9, US Safety, Hazardous Location  
**VY** = Z9, US Safety, Substation  
**VT** = Z9, US Safety, Substation, Transportation  
**UY** = Z9, US Safety, Marine  
**UX** = Z9, US Safety, Marine, Hazardous. Location  
**TY** = Z9, US Safety, Transportation

**Y9** = Z9, US Safety  
**V9** = Z9, Substation  
**VU** = Z9, US Safety, Substation, Marine  
**U9** = Z9, Marine  
**UT** = Z9, US Safety, Marine, Transportation  
**T9** = Z9, Transportation

### Customization

**HH** = Hirschmann Standard

### Hardware Configuration

**S** = Standard

## MACH1000 19" Ruggedized Rack-Mount Switches



### Fast Ethernet Uplink Ports, Gigabit Ethernet Uplink Ports, and Full Gigabit Ethernet Switches

The MACH1000 is available in a 24 port custom configurable design with 2 or 4 additional Gigabit uplink (RJ45 and/or SFP for fiber) and PoE ports. The MACH1000 is also available in an all-Gigabit version, offering 16 10/100/1000 RJ45/SFP combo ports to provide countless copper/fiber combinations. These Über-Rugged™ switches are available with Layer 2 or Layer 3 capabilities. The fanless design and extremely efficient components are optimized for minimal heat generation and high MTBF (mean time between failure). The 16 port GE switches offer sub-10 second boot times and offer time synchronization IEEE 1588v2, precision 30 ns.



#### Technical Information

Product Description			
Type	MAR1020 Series 1x2x	MAR1030 Series 1x3x	MAR1040 Series 1x4x
Available Ports	2 to 24	2 to 28	16 (Full Gigabit)
Construction			
Mounting	19" Control Cabinet		
Protection Class	IP30		
Dimensions (WxHxD)	445 x 44 x 308 mm		
Weight	appr. 5 kg		
Ambient Conditions			
Operating Temperature	0 °C to +60 °C, -40 °C to +85 °C, or -40 °C to +85 °C (inclusive Conformal Coating)		
Storage/Transport Temperature	-40 °C to +85 °C		
Relative Humidity (non-condensing)	10% to 95%		
Conformal Coating	Yes (variant dependent)		
Interfaces			
V.24 Interface	1 x RJ11 socket		
USB Interface	1 x USB (ACA21-USB adapter)		
Software			
Supported Classic Software Levels	Layer 2 Professional (L2P)		Layer 2 Professional (L2P), Layer 3 Professional (L3P)
Power Requirements			
Operating Voltage	24/36/49 V DC or 110/250 V DC, 110/230 V AC		
PoE (802.3af) Ports Supported	Yes (variant applicable)		
PoE Plus (802.3at) Ports Supported	n/a		
Regulatory Approvals			
Safety of Industrial Control Equipment	cUL508		
Hazardous Locations	cULus ISA12.12.01		
Ship	Germanischer Lloyd		
Transportation	NEMA TS2 (non-PoE models)		
Railway	EN 50121-4, EN 50155		
Substation	IEC 61850-3, IEEE 1613		
Reliability			
MTBF Range	21.5 to 38.9 years	20 to 47.6 years	27.1 to 27.8 years
Warranty	5 years standard		

**NOTE:** These are the prominent technical specifications. For complete technical specifications visit: [www.hirschmann.com](http://www.hirschmann.com)



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## MACH1000 19" Ruggedized Rack-Mount Switch Configurations

Fast Ethernet Uplink Ports: **MAR1020-** | **MAR1022-** | **MAR1120-** | **MAR1122**

**MAR1020-99** **MMMMMVVZZTTTTTTTTTT99** **U** **G** **C** **H** **P** **E** **H** **XX.X**

### Design/Models

- MAR1020** = Fast Ethernet Uplink
- MAR1022** = Fast Ethernet Uplink with 4 Ports PoE
- MAR1120** = Fast Ethernet Uplink with Ports at the back (20 Ports max. 100 Mbit/s)
- MAR1122** = Fast Ethernet Uplink with Ports at the back and 4 Ports PoE (20 Ports max. 100 Mbit/s)

### Gigabit Ethernet Ports

- 99** = None (not present)

### Fast Ethernet Ports (1 to 24 Ports)

- MM** = 2 x Multimode 100 Mbit/s SC
- VV** = 2 x Singlemode 100 Mbit/s SC
- ZZ** = 2 x SFP Slots 100 Mbit/s SFP
- TT** = 2 x Twisted Pair (TX) 10/100 Mbit/s RJ45
- 99** = None (not present)
- RR** = 2 x Twisted Pair (TX) 10/100 Mbit/s M12
- FF** = 2 x Multimode 10 Mbit/s ST
- JJ** = 2 x Multimode 100 Mbit/s MTRJ
- UU** = 2 x Singlemode 100 Mbit/s ST
- LL** = 2 x Singlemode LH 100 Mbit/s SC
- GG** = 2 x Singlemode LH+ 100 Mbit/s SC

### Temperature Range

- S** = 0 °C to +60 °C
- U** = -40 °C to +85 °C
- F** = -40 °C to +85 °C inclusive Conformal Coating

### Power Supply 1 (options)

- C** = 24/36/48 V DC (spring clip)
- G** = 110/250 V DC, 110/230 V AC (spring clip)
- L** = 24/36/48 V DC (plug-in connector)
- M** = 110/250 V DC, 110/230 V AC (plug-in connector)

### Power Supply 2 (options)

- C** = 24/36/48 V DC (spring clip)
- G** = 110/250 V DC, 110/230 V AC (spring clip)
- 9** = None (not present)

### Approvals

- H** = cUL508, cUL1604 Class 1 Div2, Germanischer Lloyd, IEC 61850-3, IEEE 1613, EN 50121

### Software Version (see page 12-15 for additional Management Software Functionality details)

- P** = Layer 2 Professional: extended diagnostics, redundancy and security features

### Configuration

- H** = Standard
- E** = EtherNet/IP (pre-setting)
- P** = PROFINET (pre-setting)

### OEM Type

- H** = Standard
- X** = Customer Specific

### Software Release

- XX.X** = Current Software Release

**NOTE:** The last three part number categories (**Configuration**, **OEM Type** and **Software Release**) are optional.

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## MACH1000 19" Ruggedized Rack-Mount Switch Configurations

Gigabit Ethernet Uplink Ports: **MAR1030- | MAR1032- | MAR1130- | MAR1132**

**MAR1030-CCMMMMMVVZZTTTTTTTTTT99UCCCHPHHX.X**

### Design/Models

- MAR1030** = Gigabit Ethernet Uplink
- MAR1032** = Gigabit Ethernet Uplink with 4 Ports PoE
- MAR1130** = Gigabit Ethernet Uplink with Ports at the back (20 Ports max. 100 Mbit/s)
- MAR1132** = Gigabit Ethernet Uplink with Ports at the back and 4 Ports PoE (20 Ports max. 100 Mbit/s)

### Gigabit Ethernet Ports

- CC** = 2 Ports Combo (2 x 10/100/1000 TX or 2 x GE SFP)
- 4O** = 4 Ports GE SFP
- 4T** = 4 Ports 10/100/1000TX
- OT** = 2 Ports GE SFP and 2 Ports 10/100/1000 TX

### Fast Ethernet Ports (1 to 24 Ports)

- |  |   |
|--|---|
| <b>MM</b> = 2 x Multimode 100 Mbit/s SC              | <b>RR</b> = 2 x Twisted Pair (TX) 10/100 Mbit/s M12 |
| <b>VV</b> = 2 x Singlemode 100 Mbit/s SC             | <b>FF</b> = 2 x Multimode 10 Mbit/s ST              |
| <b>ZZ</b> = 2 x SFP Slots 100 Mbit/s SFP             | <b>JJ</b> = 2 x Multimode 100 Mbit/s MTRJ           |
| <b>TT</b> = 2 x Twisted Pair (TX) 10/100 Mbit/s RJ45 | <b>UU</b> = 2 x Singlemode 100 Mbit/s ST            |
| <b>99</b> = None (not present)                       | <b>LL</b> = 2 x Singlemode LH 100 Mbit/s SC         |
|  | <b>GG</b> = 2 x Singlemode LH+ 100 Mbit/s SC        |

### Temperature Range

- S** = 0 °C to +60 °C
- U** = -40 °C to +85 °C
- F** = -40 °C to +85 °C inclusive Conformal Coating

### Power Supply 1 (options)

- C** = 24/36/48 V DC (spring clip)
- G** = 110/250 V DC, 110/230 V AC (spring clip)
- L** = 24/36/48 V DC (plug-in connector)
- M** = 110/250 V DC, 110/230 V AC (plug-in connector)

### Power Supply 2 (options)

- C** = 24/36/48 V DC (spring clip)
- G** = 110/250 V DC, 110/230 V AC (spring clip)
- 9** = None (not present)

### Approvals

- H** = cUL508, cUL1604 Class 1 Div2, Germanischer Lloyd, IEC 61850-3, IEEE 1613, EN 50121

### Software Version (see page 12-15 for additional Management Software Functionality details)

- P** = Layer 2 Professional: extended diagnostics, redundancy and security features

### Configuration

- H** = Standard
- E** = EtherNet/IP (pre-setting)
- P** = PROFINET (pre-setting)

### OEM Type

- H** = Standard
- X** = Customer Specific

### Software Release

- XX.X** = Current Software Release

**NOTE:** The last three part number categories (**Configuration, OEM Type and Software Release**) are optional.



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## MACH1000 19" Ruggedized Rack-Mount Switch Configurations

Full Gigabit Ethernet Switches: **MAR1040- | MAR1042- | MAR1140- | MAR1142**

**M A R 1 0 4 0 - 4 C 4 C 4 C 4 C 9 9 9 S M L H R H H X X . X**

### Design/Models

- MAR1040** = Full Gigabit Ethernet Switch
- MAR1042 = Full Gigabit Ethernet Switch with PoE
- MAR1140 = Full Gigabit Ethernet Switch with Ports on the rear
- MAR1142 = Full Gigabit Ethernet Switch with Ports on the rear, PoE

### Gigabit Ethernet Ports

**4C4C4C4C999** = 16 RJ45/SFP Combo Ports (support 100 and 1000 Mbit/s SFP)

### Temperature Range

- S** = Standard, 0 °C to +60 °C
- T = Extended, -40 °C to +70 °C
- E = Extended, -40 °C to +70 °C inclusive Conformal Coating

### Power Supply 1

- L = 24/36/48 V DC (plug-in connector)
- M** = 110/250 V DC, 110/230 V AC (plug-in connector)

### Power Supply 2

- L = 24/36/48 V DC (plug-in connector)
- M = 110/250 V DC, 110/230 V AC (plug-in connector)
- 9 = None (not present)

### Approvals

- H** = cUL508 (pending), cUL1604 Class 1 Div 2 (pending), Germanischer Lloyd (pending), EN 50121-4, EN 50155 (pending), NEMA TS2, IEC 61850-3, IEEE 1613

### Software Version (see page 12-15 for additional Management Software Functionality details)

- P = Layer 2 Professional: extended diagnostics, redundancy and security features
- R** = Layer 3 Professional: routing capabilities

### Configuration

- H** = Standard

### OEM Type

- H** = Standard

### Software Release

**XX.X** = Current Software Release

**NOTE:** The last three part number categories (**Configuration**, **OEM Type** and **Software Release**) are optional.