RJ Switch

Harsh Environment
Industrial Ethernet Switch

Industrial IP67 sealed and Rugged Switches

Rugged & Waterproof Switch

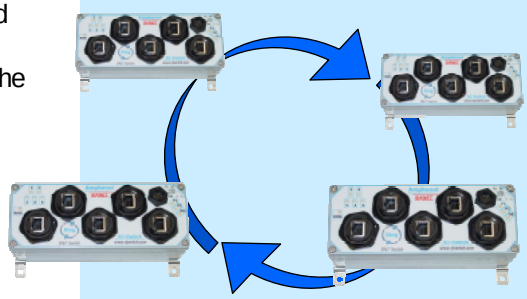
Amphenol offers a small size 5 ports waterproof Ethernet Switch that can withstand a variety of extreme conditions - low & high temperatures, shocks & vibrations, dust particles or even liquid immersion. This is an easy way to make the Ethernet networks of your manufacturing site, automation or control units deterministic.

Amphenol IP67 Industrial Ring Switch

Amphenol IP67 Ring Ethernet switch is a combination of very fast, **fault-tolerant network redundancy** Sixnet technology and **IP67 sealed** & rugged packaging, specifically designed for the harshest environments.
Rings self-configure and just run, without any complex configuration.
The switch board is sealed within a waterproof IP67 polyester enclosure suitable for highly corrosive environments. The polyester material is glass fiber reinforced. This makes it very rugged against shocks and vibration.
The I/O interfaces are waterproof & rugged RJ45 connectors from the RJ FIELD plastic circular series.

Amphenol and Sixnet combination:

- ✓ Plug and Play simplicity
- ✓ IP67 waterproof
- ✓ Ring redundancy



Key Features

- ✓ Waterproof **IP67** Rating (NEMA 6)
- ✓ **Reduced Installation Costs** with the patented RJStop® system.
  - ✓ Use **any standard RJ45 cordset**
- ✓ Rugged **Enclosure** in Polyester reinforced with 30% glass fiber
- ✓ **Redundant power** inputs with surge/spike protection
- ✓ Ultra reliable **1,000,000 hours** Mean Time Between Failure (MTBF)
- ✓ **Zone 2** hazardous location
- ✓ **Ring Switch** Networking Features (**managed features** available !!!)
  - ✓ Real-Time Ring for ultra-fast fault-tolerant loops
    - Recovery time of 30 ms + 5 ms per hop!
  - ✓ Modbus monitoring over Ethernet
    - Ideal for **deterministic** systems and PLCs
  - ✓ Real-time **traffic prioritization (QoS and CoS)**
    - Assure delivery of real-time data
    - Improve network utilization
    - User settable priority assignments
  - ✓ Advanced switch features
    - User configurable port settings
    - Port mirroring for traffic diagnostics
    - Pre-configurable for Plug-And-Play simplicity

Exceeds MIL-STD-1275

Industrial Applications

- Factory Automation
- Robotics
- Process Control
- Transportation Systems
- Data Acquisition & Transmission

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IP67 Unmanaged and Ring Switch Features

RoHS

IEEE Ethernet Standards

IEEE 802.3	10Mbps Ethernet
IEEE 802.3u	100Mbps Fast Ethernet
IEEE 802.3x	Full-Duplex with Flow Control
IEEE 802.1p standard	QoS/CoS - Quality/Class of Service for Ring model only

Regulatory Approvals

DNV tested for marine and off-shore use

EMI emissions	EN55022, FCC part 15, ICES-003
EMC immunity:	IEC61326-1, IEEE C37.90
Vibrations:	IEC60068-2-6 (3-13.2Hz: +/-1mm / 13.2-100Hz: 0.7g)
Hazardous Location:	UL1604, CSA C22.2/213 (Class 1, Div. 2), EN50021/Zone 2

Ethernet features

Ports	5 Shielded RJ45 ports 10/100BaseTX
Ethernet switch type	Intelligent store & forward
Full / Half Duplex	Configurable
RJ45 speed	10 or 100 Mbps auto-negotiation
RJ45 MDI/MDIX	Auto-crossover connection
RJ45 TD and RD polarity	Auto-polarity
Typical latency	16 us + frame time @ 10 Mbps (varies on load and settings) 5 us + frame time @ 100 Mbps
MAC addresses supported	2048
Memory bandwidth	3.2 Gbps
Ethernet isolation	1500 Vrms 1 minute
Ring features (for Ring model only)	Link loss recovery time: 30 ms plus 5 ms per hop Maximum switches in ring: 50+ Dual Ring support

Power Supply

Input power (typical)	ES: 2,4 W ; RS: 2,7 W

Status Reporting (for Ring model only)

“OK” contact output	Output current: 0.5 A max
“OK” contact State	OFF when a fail occurs ON when power and switching is OK
Modbus status registers	Modbus Ethernet over UDP

Environmental

Operating Temperature	- 40°C to +75°C
Storage Temperature	- 40°C to +85°C

Weight

0.54 kg

Exceeds MIL-STD-1275

Power ratings	Industrial specifications (Standard models)	MIL-STD-1275 Specifications (-EP models)
Input voltage	10-30 VDC	10-50 VDC (Derate 1.8°C / V above 30V)
Surge protection		100 V for 1s
Transient protection	15 KW peaks	15 KW peaks
Spike protection	5 KW (10x for 10 µs)	5 KW (10x for 10 µs) 250 V (50x for 100 µs)

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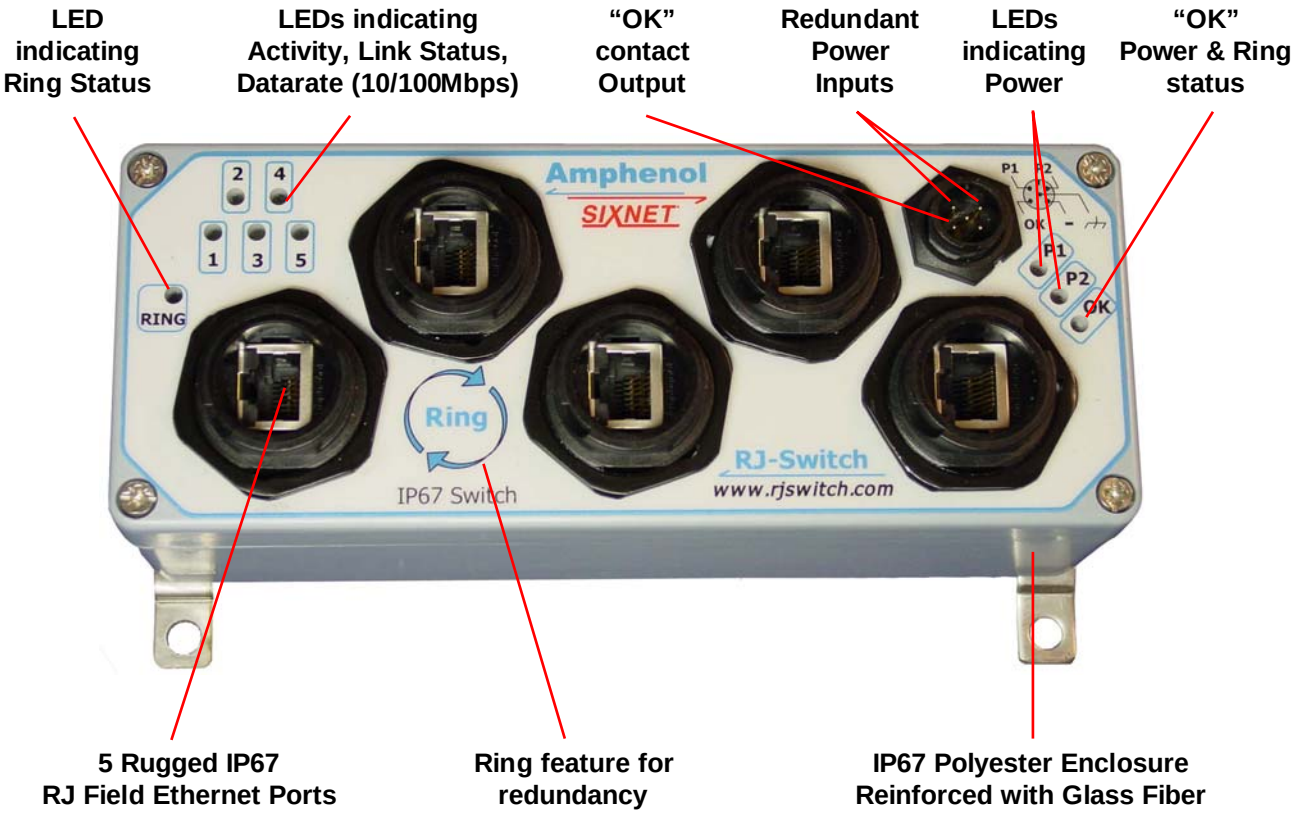
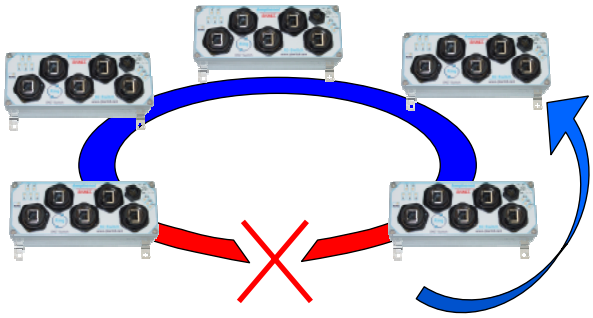
Description (example for Ring model)



Real-Time Ring Switches

Amphenol Real-Time Ring switches combines the Plug&Play **simplicity** of an unmanaged switch with **high performances** of Sixnet Ring managed switches.

- ✓ **Real-Time fault-tolerant Ring**
  Recovery time of 30 ms + 5 ms per hop!
- ✓ **Real-Time traffic prioritization (QoS & CoS)**
  Assure delivery of real-time data
- ✓ **Available Managed features**
  User configurable port settings
  Port mirroring for traffic diagnostics
  Pre-configurable for Plug & Play simplicity



The use of such switches provides a fast network and avoids faults. When a break occurs, the switch instantly transfers data to new path. The link loss recovery is 30 ms plus 5 ms times the number of Ring switches in the ring. For example, 10 ring switches will recover in less than 80 ms. Rings can be pre-configured to "just run". They don't need an assigned IP address. But if you like, you can fine tune the performance of the ring by using a simple Windows wizard (which is free).
Ring networks can be divided into multiple "sub-rings" which enhance reliability and recovery speed through the small ring paths.

The prioritization of the messages assure delivery of real-time data. Some applications need to force no-real-time data (such as video information) to lower priority and force critical real-time data at higher priority. The network utilization is improved.

This concentrate of Ethernet technology associated with rugged and sealed protective enclosure is the ideal solution to deliver deterministic performance to your industrial systems even in the harshest environment!

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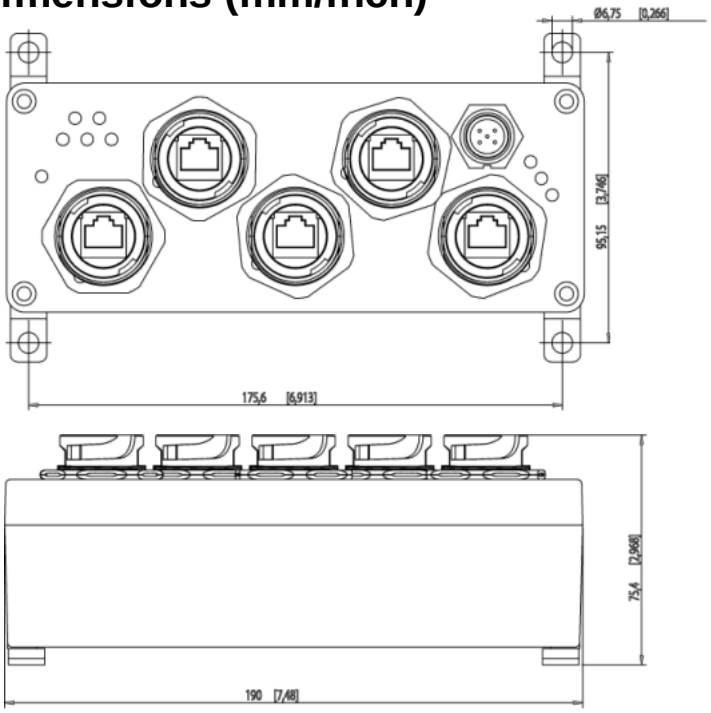
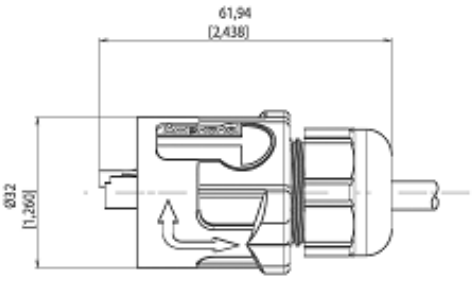
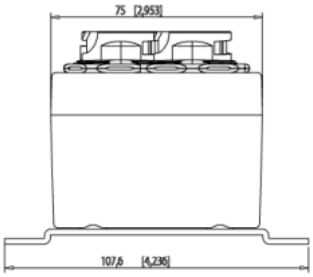
Dimensions (mm/inch)





Accessory: Plugs for RJ45 ports



Part Numbers

Series **IP67 RJ-Switch, with polyester body**	**RJS-PC**	**5RS**	**1**	**-**

Type of Electronics
5RS : 5 ports 10/100 Mbps, Ring switch (standard order)
5ES : 5 ports 10/100 Mbps, Unmanaged switch (special order)

Connectors
1 : RJ45 ports, 10/100BaseT(X)
1CAPS : Caps are attached on both power and data receptacles

Military rated protection
***Blank* :** Industrial protection (standard order)
EP : Extended Power protection exceeds MIL-STD-1275 (special order)

Example: IP67 Ethernet Ring switch, 5 ports 10/ 100 Mbps, with caps attached on the receptacles: **RJS-PC-5RS-1CAPS**

Note: The Ring model is pre-set for 1 ring enabled on the ports 4 and 5. You may change the configuration by using the free windows configuration tool. Simply choose the desired pair of ports for your new enabled ring.

However, for other pre-set configuration, please consult us.

Accessories

Free Windows configuration tool

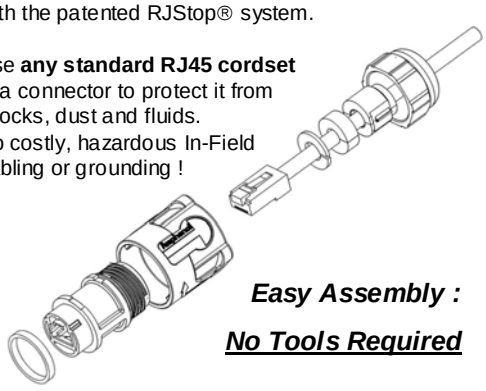
Download it at www.rjswitch.com

P/N: RJF PC5 PWR
Plug for power port
Sealing protection: IP67

P/N: RJF RB 6
Plugs for RJ45 ports
Sealing protection: IP67

✓ **Reduced Installation Costs**
with the patented RJStop® system.

Use **any standard RJ45 cordset** in a connector to protect it from shocks, dust and fluids.
No costly, hazardous In-Field cabling or grounding !



Easy Assembly :
No Tools Required

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