

# RS-405F/RSM-405F Series

5-port Real-time Redundant Ring Switch with 2-Fiber Port

RS-405FC/FCS Series

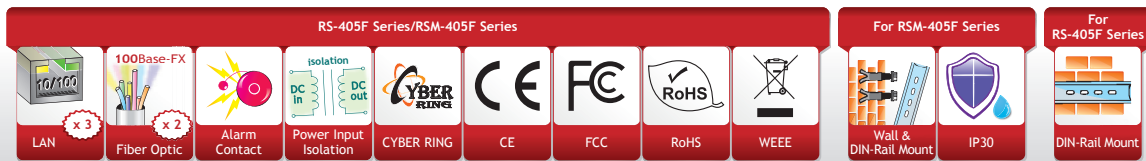
RS-405FT Series

RSM-405FC/FCS Series

RSM-405FT Series



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## Features ▶▶▶

- Automatic MDI/MDI-X crossover for plug-and-play
- 3.2 Gbps high performance memory bandwidth
- Each port supports both 10/100 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Supports wide operating temperature from 0 °C ~ +70 °C
- Redundant Dual Power Inputs +10 V<sub>DC</sub> ~ +30 V<sub>DC</sub>  
Power failure alarm by relay output
- Modbus remote monitoring
- Supports Modbus OPC Server
- Store-and-forward architecture
- Built-in Cyber-Ring redundant technique
- Frame buffer memory: 512 Kbit
- 1024 MAC addresses
- DIN-Rail Mounting

## Introduction

The RS-405F/RSM-405F series is a 5-port Industrial Ethernet Real-time Redundant Ring Switch with 2-Fiber Port that secures data transmission by using fiber optic transmission to provide immunity from EMI/RFI interference.

Built-in ICP DAS Cyber-Ring technique enables multiple switches to be placed into a redundant ring. Typically the switch detects and recovers from a fiber or copper link failure within approximately 20 ms – for the majority of application, it is seamless. After unpacking the shipping case, it just takes one or two dip or rotary switch to make it work.

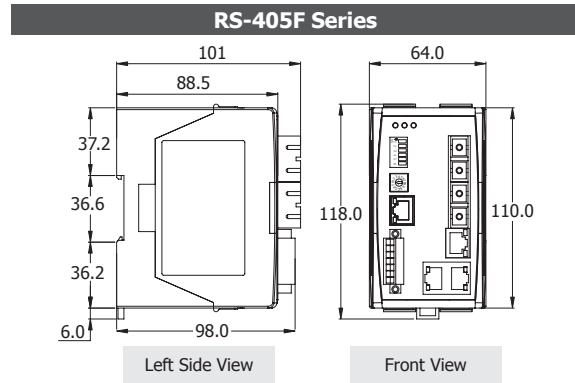
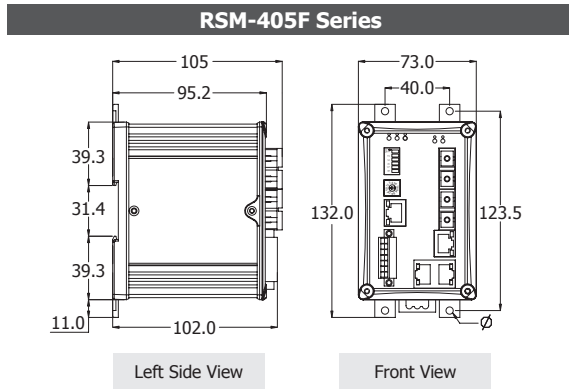
RS-405F/RSM-405F provides two power inputs that can be connected simultaneously to live DC power sources. If one of the power inputs fails, the other live source will act as a backup to automatically support the its power needs. And the relay output facility can deliver warning signal while power or network link failure.

## Specifications

Models	RS-405F Series	RSM-405F Series
<b>Technology</b>		
<b>Standards</b>	IEEE 802.3, 802.3u and 802.3x	
<b>Processing Type</b>	Store & forward, wire speed switching	
<b>MAC Addresses</b>	1024	
<b>Memory Bandwidth</b>	3.2 Gbps	
<b>Frame Buffer Memory</b>	512 Kbit	
<b>Flow Control</b>	IEEE 802.3x flow control, back pressure flow control	

Models		RS-405F Series	RSM-405F Series
<b>Interface</b>			
<b>RJ-45 Ports</b>		10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection	
<b>Fiber Optics Port</b>		100 Base-FX	
<b>LED Indicators</b>		10/100M, Link/Act, Full duplex/Half duplex (Fiber Port)	
<b>Ethernet Isolation</b>		1500 V <sub>rms</sub> 1 minute	
<b>Multi-mode</b>	<b>Multi-mode Fiber Cables</b>	50/125, 62.5/125 or 100/140 μm	
	<b>Distance</b>	2 km, (62.5/125 μm recommended) for full duplex	
	<b>Wavelength</b>	1300 or 1310 nm	
	<b>Min. TX Output</b>	-20 dBm	
	<b>Max. TX Output</b>	-14 dBm	
	<b>Max. RX Sensitivity</b>	-32 dBm	
	<b>Min. RX Overload</b>	-8 dBm	
	<b>Budget</b>	12 dBm	
<b>Single-mode</b>	<b>Single-mode Fiber Cables</b>	8.3/125, 8.7/125, 9/125 or 10/125 μm	
	<b>Distance</b>	30 km, (9/125 μm recommended) for full duplex	
	<b>Wavelength</b>	1300 nm or 1310 nm	
	<b>Min. TX Output</b>	-15 dBm	
	<b>Max. TX Output</b>	-8 dBm	
	<b>Max. RX Sensitivity</b>	-34 dBm	
	<b>Min. RX Overload</b>	-5 dBm	
	<b>Budget</b>	19 dBm	
<b>Single-mode (60T)</b>	<b>Single-mode Fiber Cables</b>	8.3/125, 8.7/125, 9/125 or 10/125 μm	
	<b>Distance</b>	60 km, (9/125 μm recommended) for full duplex	
	<b>Wavelength</b>	1300 nm or 1310 nm	
	<b>Min. TX Output</b>	-5 dBm	
	<b>Max. TX Output</b>	0 dBm	
	<b>Max. RX Sensitivity</b>	-35 dBm	
	<b>Min. RX Overload</b>	-5 dBm	
	<b>Budget</b>	30 dBm	
<b>Ethernet Transmission Distance</b>	<b>Ethernet</b>	2-pair UTP/STP Cat.3, 4, 5, EIA/TIA-568 100 Ω	
	<b>Fast Ethernet</b>	2-pair UTP/STP Cat. 5, EIA/TIA-568 100 Ω	
<b>COM1</b>		RS-232 (TxD, RxD and GND); Non-isolated	
<b>COM2</b>		RS-485 (D2+, D2-; Self-Tuner ASIC inside); Non-isolated	
<b>Frame Ground for EMS Protection</b>		Yes	
<b>Power</b>			
<b>Input Voltage Range</b>		+10 V <sub>dc</sub> ~ +30 V <sub>dc</sub> Redundant Dual Inputs (Isolated)	
<b>Power Consumption</b>		0.4 A @ 24 V <sub>dc</sub>	
<b>LED Indicator</b>		Yes	
<b>Protection</b>		Power reverse polarity protection	
<b>Frame Ground for EMS Protection</b>		Yes	
<b>Connector</b>		7-Pin Removable Terminal Block	
<b>Mechanical</b>			
<b>Casing</b>		Plastic	Metal
<b>Environmental Rating</b>		Flammability UL 94V-0	IP30 Protection
<b>Dimensions (W x L x H)</b>		64 mm x 101 mm x 118 mm	73 mm x 105 mm x 132 mm
<b>Installation</b>		DIN-Rail Mounting	DIN-Rail Mounting or Wall Mounting
<b>Environmental</b>			
<b>Operating Temperature</b>		0 °C ~ +70 °C	
<b>Storage Temperature</b>		-20 °C ~ +85 °C	
<b>Ambient Relative Humidity</b>		10% ~ 90% RH, non-condensing	
<b>Accessories</b>			
<b>Included Cable</b>		CA-090510 x 1	

## Dimensions (Units: mm)



## LED Functions

Standard RJ-45 female connectors are provided. A standard RJ-45 plug cable is all that is necessary to connect your device to the unit since switch that supports auto crossover.

### RS/RSM-405F Series LED Indicator Functions

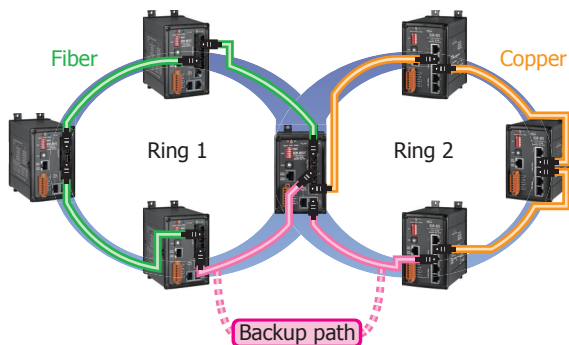
LED	Color	Description
Master	Red On	The switch is master of ring network
	Red Off	The switch is slave of ring network
PWR1	Orange On	Power input 1 is alive
	Orange Off	Power input 1 is offline
PWR2	Green On	Power input 2 is alive
	Green Off	Power input 2 is offline
Ethernet Port	Orange On	Link to 100 Mbps
	Orange Off	Link to 10 Mbps
	Orange Blink	Backup Port
	Green Blink	Data Transmission
Fiber Port	Orange Blink	Fiber1 is active port
	Orange Off	Fiber1 backup port
	Green Blink	Fiber2 is active port
	Green Off	Fiber2 backup port

## Applications

### Ring Coupling

The Ring Coupling topology can connect separate Cyber-Ring network together. It is ideal for two-ring application scene.

The Ring Coupling topology not only construct individual Cyber-Ring network for each floor but also provide backup path to each other. It is a cost-effective solution to coupling ring topology.



## DIP/Rotary Switches

### SW1: Redundancy mode configuration



	OFF	ON
1	Redundancy Mode	Tradition Mode
2	Normal State	Default Setting
3	Primary Switch	Secondary Switch
4	Ring Protocol	STP Protocol
5	Disable Ring Pair2	Enable Ring Pair2
6	Disable Ring Pair1	Enable Ring Pair1

### SW2: Max. Recovery time selection



State	Time	State	Time	State	Time
F	1.5 s	9	900 ms	3	300 ms
E	1.4 s	8	800 ms	2	200 ms
D	1.3 s	7	700 ms	1	100 ms
C	1.2 s	6	600 ms	0	N/A
B	1.1 s	5	500 ms		
A	1.0 s	4	400 ms		

## Ordering Information

RS-405FT CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Multi-mode, ST Connector (RoHS)
RSM-405FT CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Multi-mode, ST Connector; metal case (RoHS)
RS-405FC CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Multi-mode, SC Connector (RoHS)
RSM-405FC CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Multi-mode, SC Connector; metal case (RoHS)
RS-405FCS CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Single-mode, SC Connector (RoHS)
RSM-405FCS CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Single-mode, SC Connector; metal case (RoHS)

## Accessories

CA-090510	9-Pin Female D-Sub & RJ-45 Cable, 1 M Cable
MDR-20-24	24 V/1 A, 24 W Power Supply with DIN-Rail Mounting
DIN-KA52F	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting
DR-120-24	24 V/5 A, 120 W Power Supply with DIN-Rail Mounting