RS-405/RSM-405 Series/RSM-405-R

5-port Real-time Redundant Ring Switch

Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 2048 MAC addresses
- Supports wide operating temperature -40 °C ~ +75 °C
- Redundant Dual Power Inputs +10 V_{DC} ~ +30 V_{DC}
  Power failure alarm by relay output
- Modbus remote monitoring
- Supports Modbus OPC Server
- Frame buffer memory: 1 Mbit
- Store-and-forward architecture
- 3.2 Gbps high performance memory bandwidth
- Absolutely free of software setting
- DIN-Rail Mounting

Introduction

The RS-405/RSM-405/RSM-405-R series is a 5-port Industrial Ethernet (10/100 Base-TX) Real-time Redundant Ring Switch. RS-405/RSM-405/RSM-405-R supports 10/100M auto negotiation feature and auto MDI/MDI-X function, it can automatically switch the transmission speed (10 Mbps or 100 Mbps) for corresponding connections.

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 copper link failure within approximately 20 ms – for the majority of applications, seamless.

The RS-405/RSM-405/RSM-405-R series is much more easy to use and absolutely free of software setting. After unpacking the shipping case, it just takes one or two dip or rotary switch to make it work.

RS-405/RSM-405/RSM-405-R 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 it's power needs. And the relay output facility can deliver warning signal while power or network link failure.

Specifications

Models	RS-405	RSM-405	RSM-405-R
Technology			
Standards	IEEE 802.3, 802.3u and 802.3x		
Processing Type	Store & forward, wire speed switching		
MAC Addresses	2048		1024
Memory Bandwidth	3.2 Gbps		
Frame Buffer Memory	1 Mbit		
Flow Control	IEEE 802.3x flow control, back pressure flow control		
Interface			
RJ-45 Ports	10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection		
LED Indicators	Power, 10/100M, Link/Act, Master		
Ethernet Isolation	1500 V_{rms} 1 minute		
COM1	RS-232 (TxD, RxD and GND); Non-isolated		
COM2	RS-485 (D2+, D2-; self-tuner ASIC inside); Non-isolated		–
Frame Ground for EMS Protection	Yes		
Power			
Input Voltage Range	+10 V_{DC} ~ +30 V_{DC} Redundant Dual Inputs (Isolated)		+12 V_{DC} ~ +48 V_{DC} Redundant Dual Inputs (Non-isolated)
Power Consumption	0.22 A @ 24 V_{DC}		
Protection	Power reverse polarity protection		
Frame Ground for EMS Protection	Yes		
Connector	7-Pin Removable Terminal Block		6-Pin Removable Terminal Block
Mechanical			
Casing	Plastic	Metal	Metal
Environmental Rating	Flammability UL 94V-0	IP30 Protection	IP30 Protection
Dimensions (W x L x H)	65 mm x 120 mm x 99 mm	DIN-rail mounting: 73 mm x 118 mm x 103 mm Wall mounting: 73 mm x 132 mm x 103 mm	25 mm x 168 mm x 119 mm
Installation	DIN-rail mounting	DIN-rail mounting or wall mounting	DIN-rail mounting
Environmental			
Operating Temperature	-40 °C ~ +75 °C		
Storage Temperature	-40 °C ~ +85 °C		
Ambient Relative Humidity	10% ~ 90% RH, non-condensing		

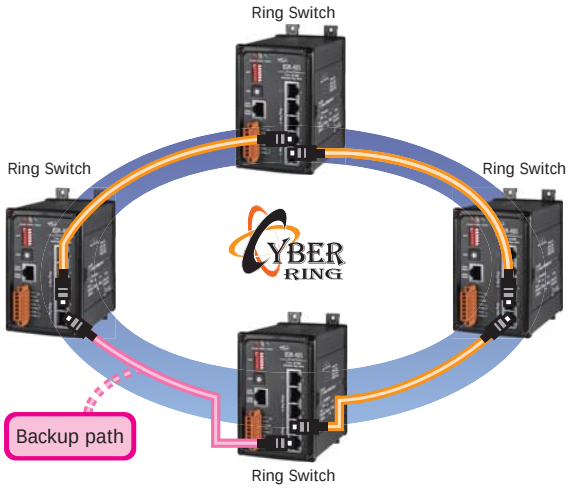
Comparison Table of 5-port Real-time Redundant Ring Switch

Mode Name	RS-405	RSM-405	RSM-405-R
Input Voltage Range	+10 V_{DC} ~ +30 V_{DC}		+12 V_{DC} ~ +48 V_{DC} (Non-isolated)
Casing	Plastic	Metal	Metal
Installation	DIN-Rail Mounting	DIN-Rail Mounting or Wall Mounting	DIN-Rail Mounting
Dimensions (W x L x H)	64 mm x 118 mm x 98 mm	73 mm x 132 mm x 103 mm	25 mm x 168 mm x 119 mm

Applications

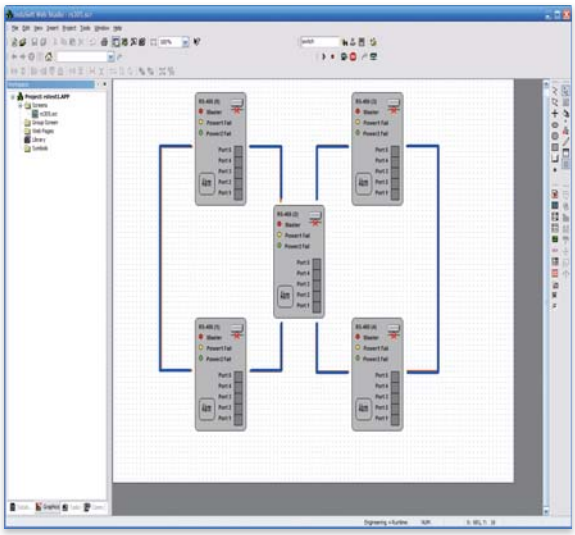
Ring Topology

A Single Ring network topology with Cyber-Ring technology can satisfy the requirement for link-lose-backup in the industrial field application. (In normal operation, traffic on the backup path is either blocked or ignored. If any network node or cable segment of active path is failure, Cyber-Ring will redirect traffics to the backup path automatically. After repair of the failed path, the network is again reconfigured to normal operation stat.



HMI Monitor

Use HMI (Human Machine Interfaces) to monitor Redundant Ring Network status.



LED Functions

RS/RSM-405 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

DIP/Rotary Switches

SW1: Redundancy mode configuration

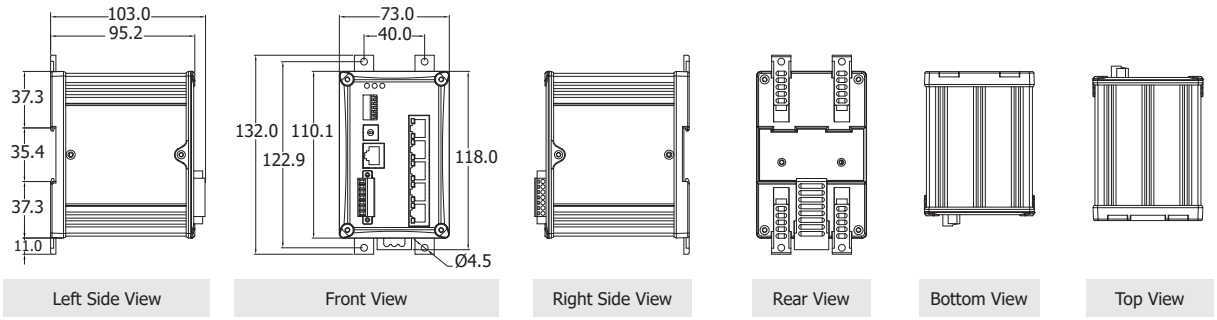
	OFF	ON
1	Redundancy Mode	Tradition Mode
2	Normal State	Default Setting
3	Primary Switch	Secondary Switch
4	Ring Protocol	STP Protocol
5	Disable Ring Pair2	Enable Ring Pair2
6	Disable Ring Pair1	Enable Ring Pair1

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		

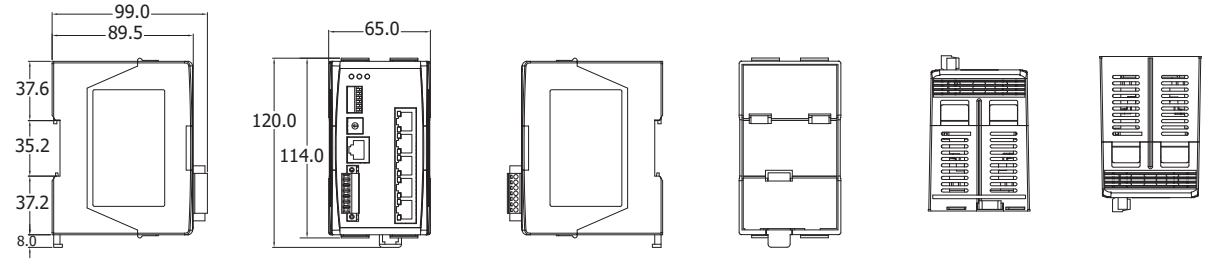
Dimensions (Units: mm)

RSM-405



Left Side View | Front View | Right Side View | Rear View | Bottom View | Top View

RS-405



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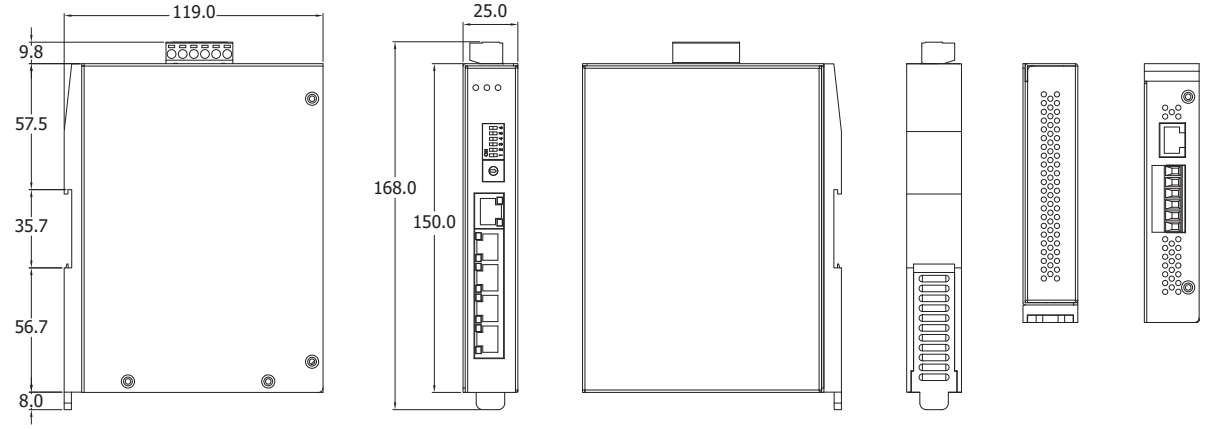
RSM-405-R



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Ordering Information

RS-405 CR	5-Port Real-time Redundant Ring Switch (RoHS)
RSM-405 CR	5-Port Real-time Redundant Ring Switch with metal case (RoHS) Includes 4SNPNA010021G Wall mount
RSM-405-R CR	5-Port Real-time Redundant Ring Switch with metal case (+12 ~ +48 VDC, non-isolation) (RoHS)

Accessories

CA-090510 CR	DB9 Female to RJ-45 Cable, 1M (RoHS)	