RightWON Satellite Ethernet switch module (ESM), multi-mode

Figure 1: RWU 030004 ESM multi-mode

Description

The RightWON Satellite Ethernet switch module (**RWU 030004**, also known as the *MCU*) is modular, scalable and configurable. It has four Ethernet ports that connect the RightWON Satellite to a redundant Ethernet network star topology such as spanning tree protocol (STP) and real time streaming protocol (RSTP), or ring topology (DT-Ring protocols).

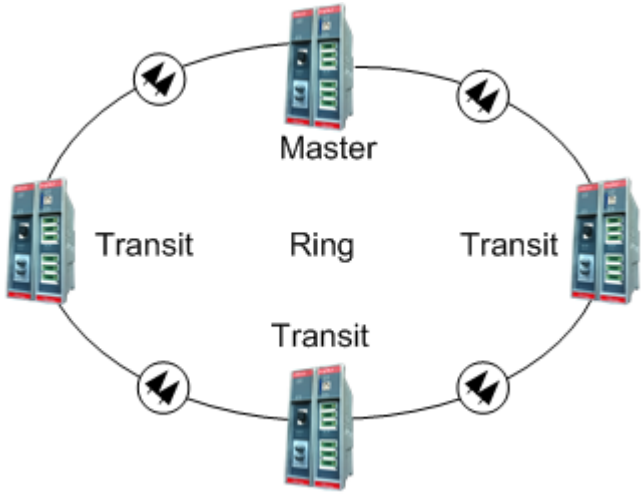


Figure 2: DT ring network

The RWU 030004 has two multi-mode 100BASE-FX fiber optic ports and two 10/100BASE-T ports. It also has two expansion ports for connecting additional RightWON Satellites. The RWU 030004 is equipped with an RS-232 console port for configuration, as well as an alarm system default (**System OK** application).

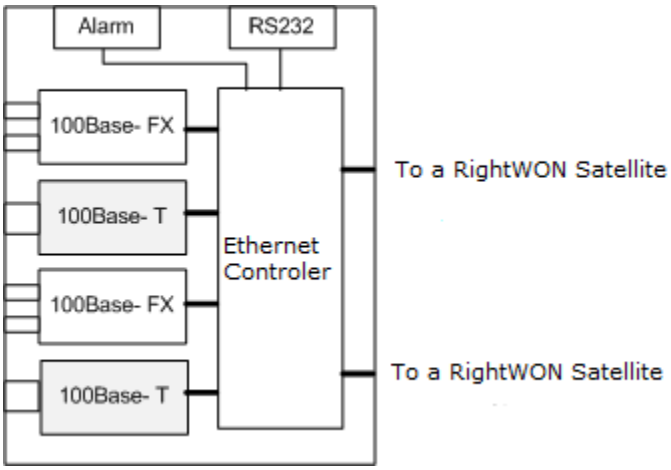


Figure 3: ESM ports

The features of the RWU 030004 are:

- Supports the STP, RSTP (IEEE802.1w/d) and DT-Ring protocols.
- Operates in ring, chain, star, tangent ring topologies.
- Supports CLI, TELNET, WEB, SNMP V1/V2/V3 and OPC management methods.
- Integrated Internet Group Management protocol (IGMP) snooping; QoS, VLAN (IEEE802.1q), ACL, port trunking and port mirroring.
- Operates in daisy-chain mode using the store-and-forward method.
- Fiber optic interfaces: two multi-mode 100BASE-FX interfaces – 1310 nm, 2 km with ST-type connector.
- Two 10/100BASE-T interfaces with RJ-45 connectors.

Characteristics

The RWU 030004 has the following characteristics:

Power

- Power range: 8 to 30 V dc
- Power: <10 W
- Recommended ac/dc supply: Lambda DPP30-24 (85-260 V ac, 90-375 V dc, 30 W)

Environment

- Storage temperature: –40 °C to 85 °C
- Operating temperature: –40 °C to 65 °C
- Relative humidity: 5% to 95%, non-condensing
- Immunity: IEC 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6

Mechanical

- Chassis: Aluminum

- Dimensions: 152 mm H x 44.5 mm W x 133 mm D (6" H x 1.75" W x 5.25" D)
- Weight: 720 g (1.6 lb.)
- Mounting: DIN rail
  Panel mount with optional RWA AA0000 adapter

Compliance

IEEE802.3, IEEE802.3u, IEEE802.3x, IEEE802.1d, IEEE802.1w, IEEE802.1p, IEEE802.1q

- **Environmental**: ROHS
- **Marking**: Canadian Standards Association: ; UL: ; Conformité Européene (CE): ; Federal communications commission:

Interfaces

The interfaces on the RWU 030004 are described below.

100BASE-FX fiber optic ports

Two integrated 100Base-FX ports:

- Supports Ethernet communications over optical fiber at 100 Mbps (100BASE-FX version of IEEE 802.3u)
- Duplex ST interface connector
- 1300 nm with optical performance compliant with the FDDI PMD standard (ISO/IEC 9314-3:1990 and ANSI X3.166 - 1990)
- Supports up to 2 km of multi-mode optical fiber.

100BASE-T ports

Two 100BASE-T ports:

- Supports Ethernet communications (IEEE802.3 standard) over twisted-pair copper wire (category 5) at 10 Mbps (10BASE-T) and 100 Mbps (100BASE-T)
- RJ-45 connector
- Auto-MDI/MDIX interface
- 1500 V rms isolation

RS-232 console port

An integrated console port on the top panel can be used to configure the RWU 030004 using a console terminal; however, the Web interface is recommended.

- Communication mode: RS-232
- Connector: DB-9 female
- Communication mode: RS-232, TX-RX only

Digital output

One digital output is provided for signaling an alarm. The contact opens if a fault is detected.

- Maximum 250 V dc, 250 V ac
- Maximum 0.5 A
- 2000 V rms isolation

Expansion ports

The RWO 0300004 has two expansion ports for connection to the RightWON or to up to two additional ESMs.

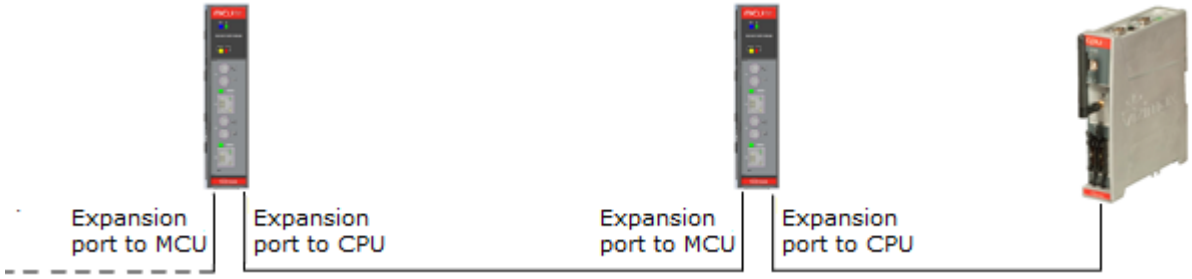


Figure 4: ESM expansion ports

The expansion port has a communication speed of 100 Mbps.

Refer to RWM000050-MA-en, *RightWON Satellite User Manual* to connect the RWU 030004 to a RightWON.

Status LEDs

The RWU 030004 is equipped with six status LEDs on the front panel, and two LEDs on the top panel: the expansion LED and the Uplink LED.

Table 1: Status, expansion and uplink LEDs

LED	Color	State	Description
Power	Blue	ON	Unit powered
		OFF	No dc power supply
Controller state	Green	ON	Application running
		OFF	Application startup
Master	Yellow	ON	The ESM is master on the DT ring
		Flashing	The ESM is slave on the DT ring (transit)
		OFF	The ESM is not configured for the DT-ring
Alarm	Red	ON	Communication link on the ring is down
		OFF	No alarm
LINK/ACT 1 & 2 (Fibre optic link status)	Green	ON	(LEDs located above each fiber optic link.) Link is available
		Flashing	Activity on the link
		OFF	No active connection
Expansion (top left)	Green	ON	Link is available
		OFF	No active connection
Uplink (top right)	Green	ON	Link to the RightWON CPU or ESM on the right is available
		OFF	No active connection

The RJ-45 connectors on the front panel have two integrated LEDs:

Table 2: RJ-45 LEDs

LED	Color	State	Description
Activity/Link status	Green	ON	Link is available
		Flashing	Activity on the link
Communication speed	Yellow	ON	Speed is 100 Mbps
		OFF	Speed is 10 Mbps

Hardware configuration

No hardware configuration is required on the ESM card.

Connector pin assignments

A **Reset** button is located on the front panel of the ESM. Use a pointed object such as a paper clip to restart the ESM without rebooting the RightWON Satellite.

Power

The dc power source for the RightWON system is connected to the bottom of the ESM.

Note: Connections from the power source to the RightWON Satellite or ESM are identical. Both units should be powered from the same source (8 to 30 V dc).

The pin assignment is as follows:

Pin number	Assignment
1 (front)	Earth
2	Negative (0 V dc)
3 (rear)	Positive (8 to 30 V dc)

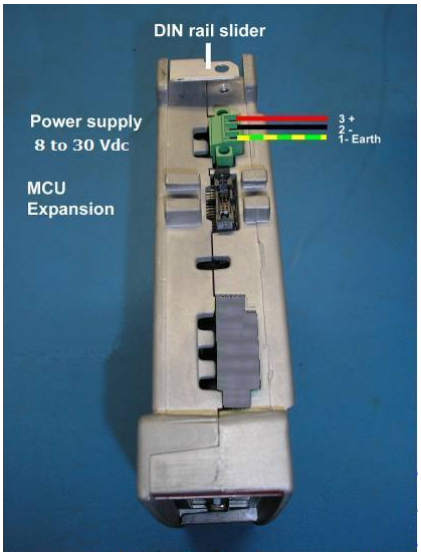


Figure 5: Power connection

⚠ Recommendations for the power supply:

- Vizimax recommends the use of a dc power supply compliant with the IEC/EN 60950 standard.
- If you are using a power supply capable of providing more than 5 amps or a battery without current limiting, provide a fuse at 5 amps maximum.
- Vizimax recommends an isolated 30 W power supply such as the Lambda DPP30-24 (85 to 260 V ac, 90 to 375 V dc, 30 W) or XP Power DNR30US24. Select a power supply according to the requirements of the application, with the applicable regulatory agency approvals (CSA/UL/CE).

RS-232 service connector pin assignment

The Serial-1 DB9 female connector supports RS-232 communication mode only, with no modem controls. The pin assignment is as follows:

Pin number	RS-232	
	Assignment	Direction
1	-	-
2	RXD	Input
3	TXD	Output
4	-	-
5	SGND	-
6	-	-
7	-	-
8	-	-
9	-	-

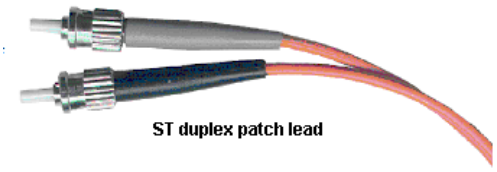
Digital alarm output connector

The screw-type connector at the rear of the RightWON is connected to the output signal. The output is not polarized and is completely isolated from the power source.

Cable requirements

ST connector

The 100BASE-FX fiber optic transceiver supports multi-mode fiber with a core/cladding diameter of 62.5/125 µm or 50/125 µm. Two fibers are required (Tx and Rx, duplex cable) with ST type connectors. On the ECM, the lower ST connector is the receiver (Rx, inbound traffic) and the upper ST connector is the transmitter (Tx, outbound traffic).



The fiber optic transceiver has the following characteristics:

- Optical output power (min. /max.): -20/-14 dBm (62.5/125 µm fiber)
  -23.5/-14 dBm (50/125 µm fiber)
- Optical receiver sensitivity (avg.): -35 dBm
- Maximum receiver power (avg.): -14 dBm
- Typical optical power budget (dB): 12.5 dB (62.5/125 µm fiber)
  9 dB (50/125 µm fiber)
- Maximum segment length: 2 km

The power budget is used to calculate the maximum attenuation of the cable. To select the appropriate fiber optic cable, follow the guidelines of the Fiber Optic Association (http://www.thefoa.org/tech/lossbudg.htm):

- Attenuation of 0.75 dB per ST connector (a minimum of two connectors is required: one at each end of the cable)
- Attenuation of 0.3 dB per splice on the cable (if applicable)
- Add a safety margin of 3 dB for link degradation

RJ-45 connector for 100BASE-T port

Use a standard Ethernet cable with an RJ-45 connector (category 5) to connect your equipment to a 100BASE-T port on the ESM.

Install and integrate the ESM in a network

To install and integrate the ESM, refer to the RWM000051-MA-en, *RightWON Satellite MCU - ESM-4, ESS-4 - User Manual*.

Ordering information

RWU 030004 - RWU/SAT/MCU/ESM-4/E ESM with multi-mode FO 100BASE-FX interfaces

See also:

RWU 030005 - RWU/SAT/MCU/ESS-4/E ESM with single-mode FO 100BASE-LX10 interfaces