



One controller, thousands of applications. With a multicore processor, a massive database, and options for Ethernet or MS/TP connectivity in a compact shell, the RC-FLEXone® advanced unitary BACnet Building Controller from Reliable Controls is designed to effortlessly handle a wide variety of equipment and room control applications. The RC-FLEXone features innovative FLEX I/O universal input/output technology that lets facility professionals customize its inputs and outputs to meet the unique demands of any building.

Project:	Dealer Information:  EMS Energy Management Systems (Pvt) Ltd.
Engineer:	
Approved by:	

PRODUCT FEATURES

Database? More like *database*

- With tons of nonvolatile memory, the RC-FLEXone has enough space to handle the most challenging applications now and in the future. It automatically logs all input, output, value, calendar, loop, and schedule objects, which each stores more than 2,000 records. That's enough for over 1 million data points. It also has space for 64 control programs, each large enough to run advanced energy sequencing, integrated fault detection and diagnostics, and much more.

Backward compatible, future ready

- Reliable Controls tests every product it manufactures to ensure compatibility with previous-generation controllers. The RC-FLEXone is no different. You can add it to networks that host previous-generation controllers without the need to purchase costly third-party gateways or accessories. To further future-proof your investment, the RC-FLEXone features an open-source Linux operating system, renowned for its cybersecurity resilience and global community of programming support.

Ultimate flexibility

- FLEX I/O universal input/output technology takes the legendary Reliable Controls flexibility to a new level. Change each FLEX I/O terminal from an input to an output remotely. Interact with many signal and output types including pulse counting, milliamp, voltage, and more. Gone are the days when a job site change means a new order and a delay—transforming your system is just a click away.

Better by design

- RC-FLEX controllers are equipped with a versatile USB application port that provides convenient access to a technician today and extended capabilities tomorrow. You can power the controller via USB from a laptop to permit configuration, firmware updates, programming, and graphics creation. You can also use the USB port to access the entire BACnet network.
- All input, output, and communication ports are hardware-protected against transient surges and spikes, which hardens the controller against field-wiring mistakes and improves resilience.

Sustainable hardware

- Reliable Controls rigorously engineers its products to minimize their impact on the environment and provide years of dependable, high-performance service. Products are manufactured in an ISO 9001- and 14001-certified facility and feature an industry-recognized 5-year warranty. Made from highly recyclable materials, they also comply with RoHS 3, WEEE, and R2 directives to ensure easy, clean disposal at the end of their useful life.

Network resilience

- To improve Ethernet network resilience and safeguard against common failures, all RC-FLEX family controllers come standard with Copper Switch™ technology and support for Rapid Spanning Tree Protocol (RSTP). Copper Switch ensures that data still passes through if a controller loses power, maintaining uptime. RSTP lets you connect controllers in a ring topology, which provides inherent redundancy with a duplicate network path; controllers maintain communications even if one part of the ring is severed.

TECHNICAL SPECIFICATIONS

Ethernet Communications

The RC-FLEXone is a nonrouting, unitary controller that requires a network host controller.

- Two IEEE 802.3 Ethernet 10/100BASE-T ports, with a maximum distance of 50 m (164 ft) between Ethernet connections using Category 5, 5e, or 6 cabling. Each device uses one IP address. The second Ethernet port is a switched port; use it to line-connect additional devices.
- Automatic hardware coupling of Ethernet dual ports when controller loses power.
- Routing host controllers support up to 74 additional BACnet/IP-connected devices.
- Supports IPv4 and IPv6.
- Supports one BACnet/Ethernet network of up to 100 devices.
- RSTP: Rapid Spanning Tree Protocol.
 - Allows ring topology for up to 40 devices isolated by a managed network switch.
- LLDP: Link Layer Discovery Protocol.
 - Provides details of up to five of the neighboring devices.

MS/TP Communications (-M Models)

The RC-FLEXone is a non-routing, unitary controller that requires a network host controller.

- One EIA-485 port that supports a baud rate up to 76.8 kbps
- Auto-baud detection.
- 24 VAC overvoltage protection with built in resettable fuses.
- Software switched End of Line termination (EOL) with amber LED indicator.
- Status LED illuminates green to indicate MS/TP network operation and red to indicate miswired MS/TP.

Processor and Memory

- Three cores: two 500 MHz high-performance, one 125 MHz, 32-bit embedded microprocessor.
- All nonvolatile flash memory with 10 years of data retention.
- Operating system firmware can be upgraded at any time over network.
- 2 GB database memory available; each trend log supports more than 2,000 records.
- Device status LED indicates operational modes for field service.

Universal Inputs

- Standard 16-bit A/D converter.
- Software selectable 0–10 VDC, 4–20 mA, thermistor/dry-contact.
- Impedance:
 - 3 M Ω on 0–10 VDC range.
 - 249 Ω on 4–20 mA range.
 - 20 k Ω on thermistor range.
- Pulse counting up to 150 Hz. Supports flow meters.
- 24 VAC overvoltage protection.

Universal Outputs

- 16-bit D/A converter.
- Analog: 0–12 VDC.
- Binary: Software configurable between 0–12 VDC.
- Output power: 75 mA at 12 VDC source, -10 mA sink.
- 24 VAC overvoltage and short protection.

Solid-State Relay Output

- Switch 24 VAC/VDC.
- 500 mA maximum.

TECHNICAL SPECIFICATIONS

SMART-Net Communications

- SMART-Net port with four-wire terminal block supports up to eight devices.

USB

- USB-A port with maximum cable length of 5 m (16.4 ft).

256 Single-point Trend Logs

- Manually defined logs.

16 Multipoint Trend Logs

- Store up to eight objects in each trend log.
- Record values by polling or change of value.
- User assigned.

16 Charts

- Combine data from multiple trend logs into a single view.

256 Notification Classes

- Specify broadcast destinations.

Eight Tables

- For creating custom scaling functions.

32 System Groups

- Group related objects on one display.
- System Groups accommodate up to 320 objects.
- Host custom user interfaces for integrated fault detection and diagnostics.

64 Programs

- Freely programmable control strategy in a readable, BASIC-like language.
- 6,400 bytes per program.

32 Loops

- Standard P, PI, or PID controllers for closed loop control.

FLEX I/O

- Software selectable universal input, universal output, or solid-state relay.
- Inputs can be configured for S0 pulse counting applications.

FLEX Outputs

- Use software to select as universal or solid-state relay.

Hand/Off/Auto (-H option)

- Hand/Off/Auto switch.
- Hand provides adjustable 0–12 VDC or solid-state on/off.
- LED indicator glows proportionally.

Supply Voltages

- 24 VAC $\pm 10\%$ 40 VA maximum, 50/60 Hz.
- 24 VDC $\pm 10\%$ 28 W maximum.

Custom Units

- Eight analog engineering units.
- Eight binary engineering units.
- Eight multistate units with eight states.

256 Net Ins

- Maximum number of shares from other devices.

128 Net Outs

- Maximum number of writes to other devices.

512 Values

- Select standard and custom ranges as well as fixed or program-driven values.

64 Calendars

- Designate days of the year as holidays.

TECHNICAL SPECIFICATIONS

16 Schedules

- Up to seven on/off cycles for each weekday or exception.

32 Arrays

- Up to 128 elements in a one-dimensional array.

Ambient Limits

- Operating: -20°C to 55°C (-4°F to 131°F).
- Shipping: -40°C to 60°C (-40°F to 140°F).
- Humidity: 10%–90% RH noncondensing.

Enclosure

- 6063-T6 anodized aluminum extrusion and powder-coated die-cast aluminum end caps.

Weight

- 0.9 kg (2 lbs).

Mounting

- Supplied with 35 mm DIN rail.

Dimensions

- 17.7 cm L x 9.1 cm W x 6.0 cm H
(6 15/16" L x 3 1/2" W x 2 1/2" H).

Wiring Terminals

- 16–24 AWG (1.31–0.21 mm²).
- Stranded or solid core.
- Copper conductors only.
- 5 mm (0.20") rising-cage screw terminal blocks.

Real-Time Clock (-C option)

- Option adds real-time clock with 72 hours of capacitor backup.

Warranty

- 5 years.

Certifications

- BTL Listed (B-BC) (Pending for Ethernet models).
- CE.
- CFR 47 Part 15/B Class B.
- UL 60730-1 Open Energy Management.
- WEEE.
- EN 60730-1.
- Canada ICES-003(B)/NMB-003(B).

Certification details

- Purpose and action of control: Type 1 Operating Control.
- Pollution degree: 2.
- Impulse voltage: 330 V.

ORDERING

RCFO-242

- RC-FLEXone controller with dual Ethernet and USB communications, two universal inputs, four FLEX I/O, and two FLEX outputs.

RCFO-M-242

- RC-FLEXone controller with MS/TP and USB communications, two universal inputs, four FLEX I/O, and two FLEX outputs.

RCFO-444

- RC-FLEXone controller with dual Ethernet and USB communications, four universal inputs, four FLEX I/O, and four FLEX outputs.

RCFO-M-444

- RC-FLEXone controller with MS/TP and USB communications, four universal inputs, four FLEX I/O, and four FLEX outputs.

RCFO-646

- RC-FLEXone controller with dual Ethernet and USB communications, six universal inputs, four FLEX I/O, and six FLEX outputs.

RCFO-M-646

- RC-FLEXone controller with MS/TP and USB communications, six universal inputs, four FLEX I/O, and six FLEX outputs.

RCFO-848

- RC-FLEXone controller with dual Ethernet and USB communications, eight universal inputs, four FLEX I/O, and eight FLEX outputs.

RCFO-M-848

- RC-FLEXone controller with MS/TP and USB communications, eight universal inputs, four FLEX I/O, and eight FLEX outputs.

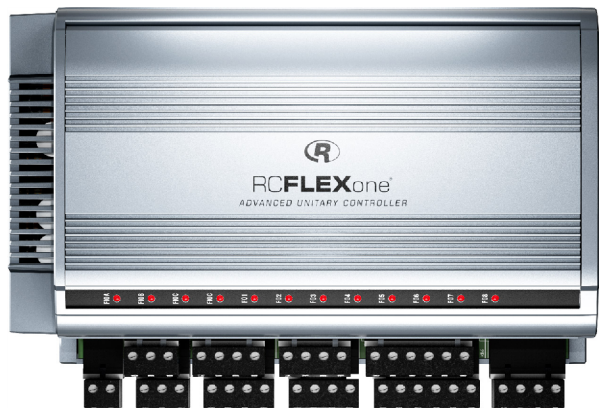
Options

- -H adds Hand/Off/Auto (HOA) switch.
- -C adds real-time clock with capacitor backup.

Build your order

To create the order number, add your options to the base model. For example, RCFO-646-C-H is the order number for an RC-FLEXone with six universal inputs, four FLEX I/O, and six FLEX outputs, real-time clock with capacitor backup, and Hand/Off/Auto (HOA) switch.

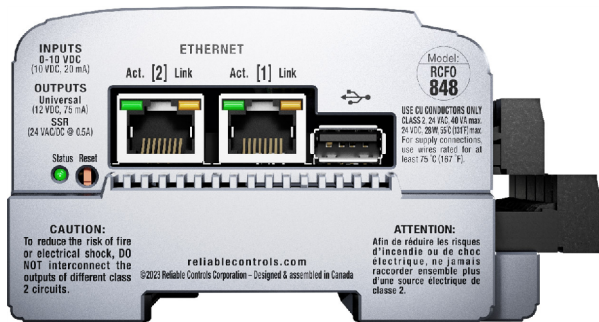
PRODUCT IMAGES



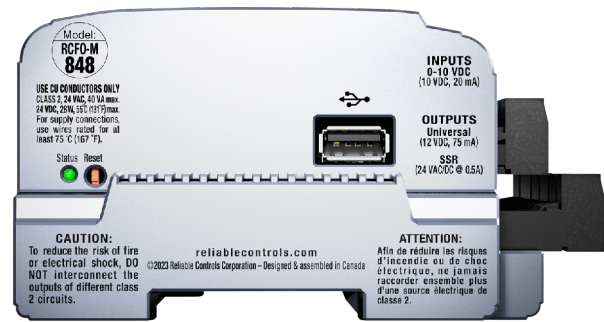
RC-FLEXone



RC-FLEXone wiring terminals

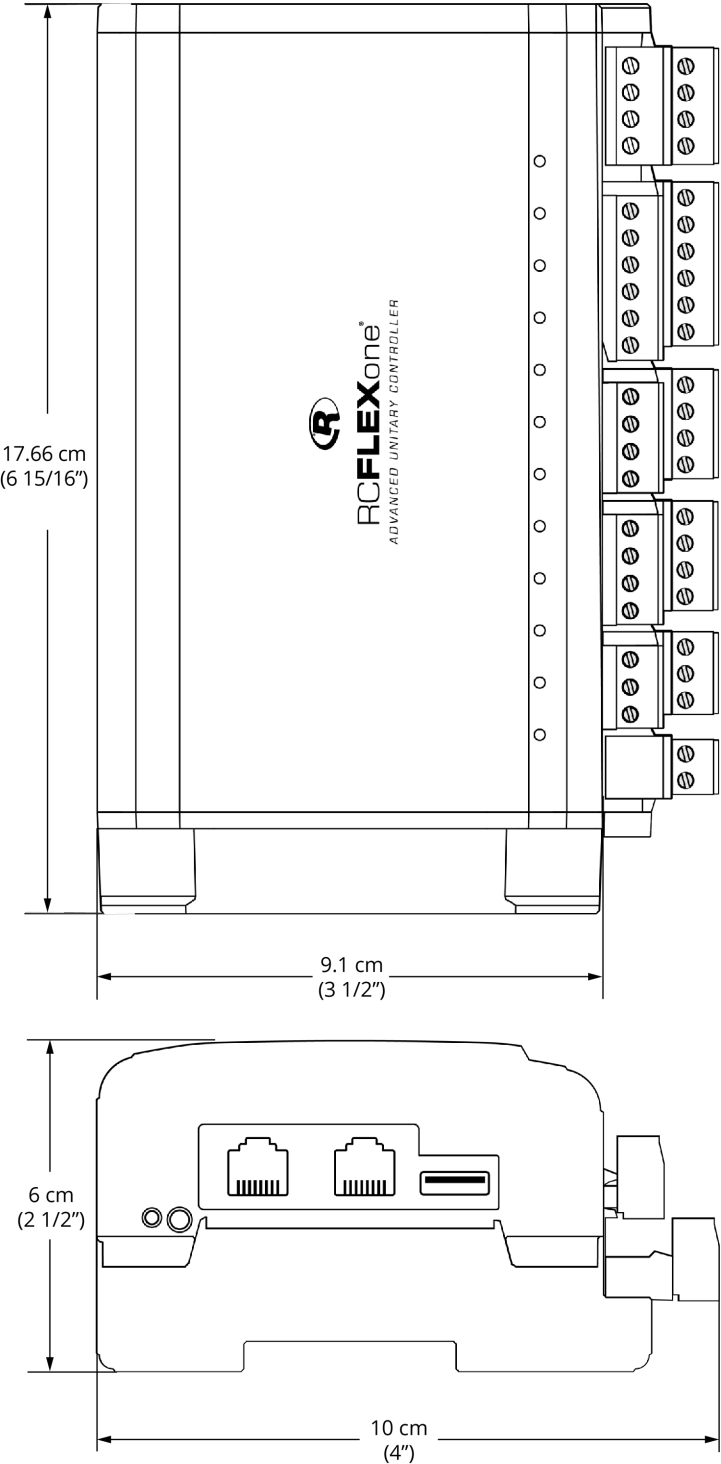


RC-FLEXone Ethernet side view

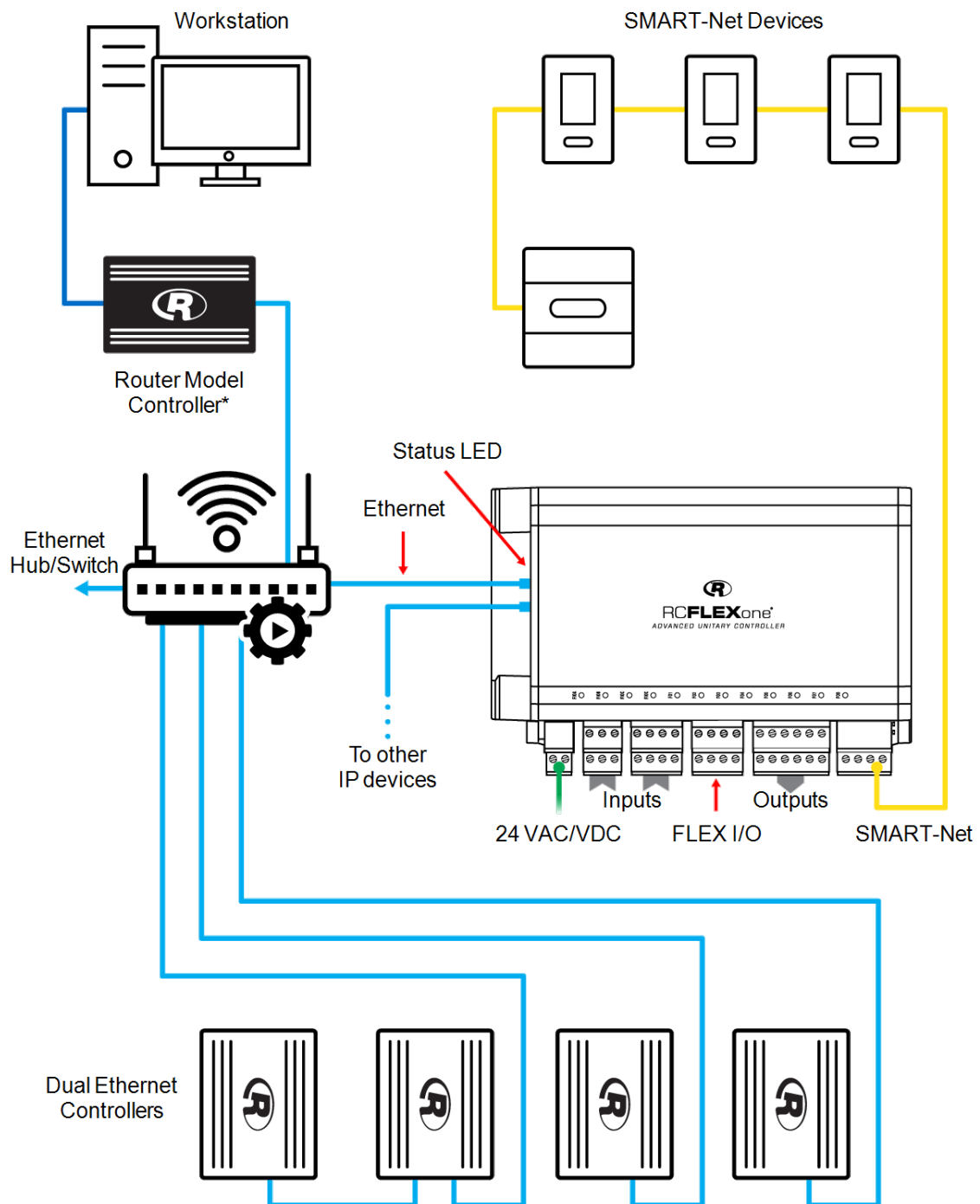


RC-FLEXone MS/TP side view

DIMENSIONS



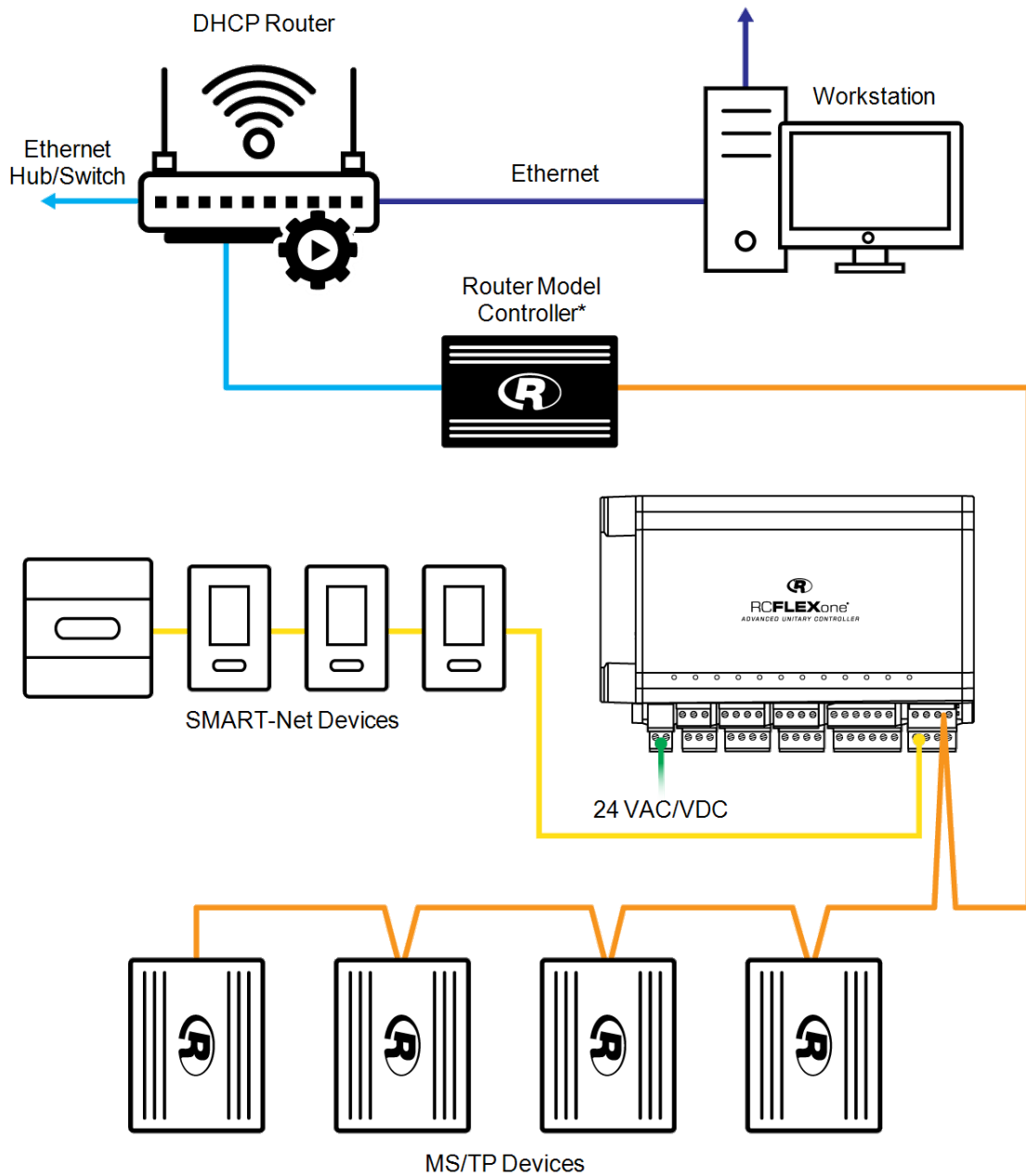
APPLICATION DIAGRAMS



Dual Ethernet connection diagram

* Router-model controllers can be MACH-Pro(Web)Com/Sys or MACH-ProView -R models.

APPLICATION DIAGRAMS



MS/TP connection diagram

* Router-model controllers can be MACH-Pro(Web)Com/Sys or MACH-ProView -R models.

TERMINAL LAYOUTS

Model	Connector Orientation
RCFO-848	F05 GND F06 R~2 F07 GND F08 R~4 FIOC GND FIOD IN5 GND IN6 GND IN7 GND IN8 -M Model REF B+ A-
	F01 GND F02 R~1 F03 GND F04 R~3 FIOA GND FIOB IN1 GND IN2 GND IN3 GND IN4 CLK 5V GND Data
RCFO-646	R~2 F05 GND F06 R~4 FIOC GND FIOD IN4 GND IN5 GND IN6 GND IN7 -M Model REF B+ A-
	F01 GND F02 R~1 F03 GND F04 R~3 FIOA GND FIOB IN1 GND IN2 GND IN3 GND IN4 CLK 5V GND Data
RCFO-444	R~4 FIOC GND FIOD IN3 GND IN4 -M Model REF B+ A-
	F01 GND F02 R~1 F03 GND F04 R~3 FIOA GND FIOB IN1 GND IN2 CLK 5V GND Data
RCFO-242	-M Model REF B+ A-
	F01 GND F02 R~1 FIOA GND FIOB R~2 FIOC GND FIOD IN1 GND IN2 CLK 5V GND Data

Terminals labeled as FIO are FLEX I/O.

Terminals labeled as FO are FLEX outputs.