

Designed to be an expandable workhorse of the industry, the Reliable Controls MACH-Pro2™ is a rugged, flexible, fully programmable BACnet Building Controller (B-BC) ideal for large rooftop equipment or midsize mechanical room applications.

The MACH-Pro2 controller features 12 universal inputs and eight universal outputs, and it can be expanded to have up to 84 inputs or 64 outputs. The MACH-Pro2 ships with removable connectors, proportional status LEDs on each input and output, and support for 16 SMART-Sensor devices.

Project:	Dealer Information:
Engineer:	
Approved by:	

## PRODUCT FEATURES

### Protocols

- BACnet.
  - MS/TP and PTP.

### Eight Outputs

- Universal ranges.
- Optional Hand/Off/Auto (HOA) switches with position feedback to RC-Studio<sup>®</sup>.
- Add up to three MACH-ProPoint™ expansion modules to accommodate up to 56 additional outputs.

### 64 Loops

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

### 64 Calendars

- Designate days of the year as holidays.

### 64 System Groups

- Group related objects on one display.
- 160 objects per group.

### Multipoint Trend Logs

- Store up to eight objects in each trend log.
- Record values at user-defined intervals.
- Dynamic; user assigned.

### Single-point Trend Logs

- Record values user-defined intervals or based on change of value.
- Dynamic; user assigned.

### 24 Custom Units

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

### 12 Inputs

- Universal ranges.
- Use a jumper to select thermistor/dry contact, 4–20 mA, or 0–10 VDC.
- Add up to three MACH-ProPoint expansion modules to accommodate up to 72 additional inputs.

### 512 Values

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

### 32 Schedules

- Up to 7 on/off cycles for each weekday or exception.

### 20 Tables

- For creating custom scaling functions.

### 64 Programs

- Freely programmable control strategy in a readable, BASIC-like language.
- 3,200 bytes per program.

### Runtime Report

- Total the on time and record the on/off times of every binary object.
- Automatically generated.

### 128 User Passwords

- Protect access to the system.
- Assign each user with a username and access level.
- Multiple levels of security.

### 128 Arrays

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

### SMART-Net Port

- Network up to 16 SMART-Sensor devices.

## PRODUCT FEATURES

### 256 Net Ins

- The maximum number of shares from other devices.

### Real-Time Clock

### Warranty

- 5 years.

### 128 Net Outs

- The maximum number of writes to other devices.

## TECHNICAL SPECIFICATIONS

### Processor

- 100 MHz high-performance 32-bit embedded microcontroller.

### Supply Voltages

- 24 VAC  $\pm 10\%$ , 75 VA maximum, 50/60 Hz.
- 24 VDC  $\pm 10\%$  26 W maximum.

### Universal Inputs

- 12 universal inputs.
- 12-bit A/D converter.
- Analog: 0–10 VDC, 4–20 mA, thermistor.
- Binary: Dry contact.
- Impedance:
  - 1 M $\Omega$  for 0–10 VDC range.
  - 250  $\Omega$  for 4–20 mA range.
  - 20 k $\Omega$  pull-up for thermistor/dry contact range.
- Pulse counting up to 150 Hz. Supports flow meters.
- 24 VAC overvoltage protection.

### Expansion Modules

- Add up to three MACH-ProPoint expansion modules.

### Real-Time Clock

- $\pm 1$  second per day.

### Memory

- 8 MB operating RAM.
- 1 MB nonvolatile RAM for trends and dynamic values.
- 4 MB Flash EEPROM operating system, database, and controller configuration.

### Communication Options

- Two EIA-485 ports that support a baud rate up to 76.8 kbps. Auto baud detection.
- One EIA-232 port that supports a baud rate up to 115.2 kbps. PC or modem.
- One SMART-Net port that supports up to 16 devices on a SMART-Net network.

### Universal Outputs

- 12-bit D/A converter.
- Analog: 0–12 VDC.
- Binary: Software-configurable between 0–12 VDC.
- Manual on provides adjustable 0–12 VDC on controller with HOA option.
- LED indicator glows proportionally.
- Maximum 75 mA each.
- 24 VAC overvoltage and short protection.

## TECHNICAL SPECIFICATIONS

### Memory/RTC Backup

- 72-hour backup.
- 10 years for database.

### Wiring Terminals

- 12–22 AWG (3.31–0.33 mm<sup>2</sup>).
- Stranded or solid core.
- Copper conductors only.

### Dimensions

- 25.4 cm L x 13.7 cm W x 3.9 cm H  
(10" L x 5 3/8" W x 1 1/2" H).

### 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.

### Peripheral Power

- Onboard variable 15–24 VDC power supply provides up to 200 mA of DC power to peripheral devices. If powered by VDC, the maximum voltage output is 22 VDC.

### Weight

- 0.60 kg (1.3 lb).

### Mounting

- #8 clearance holes on 23 cm L x 11 cm W  
(9 1/16" L x 4 5/16" W).
- Screw depth 25 mm (1").

### Certifications

- BTL Listed (B-BC).
- UL 916 Listed.
- FCC CFR 47 Part 15 Class B.
- CE.
- WEEE.

## ORDERING

### Models

#### MP2

- MACH-Pro2.

### Options

- -H adds HOA switches.

### Accessories

#### MP-DINRAIL

- Two-piece adapter kit to mount controller on a 35 mm x 7.5 mm top hat DIN rail. DIN rail not included.

#### MPP-IO

- MACH-ProPoint Input/Output expansion module.

#### MPP-I-DL-LASER

- MACH-ProPoint Input expansion module door label sheet for laser printer.

#### MPP-I-DL-INKJET

- MACH-ProPoint Input expansion module door label sheet for inkjet printer.

#### MPP-O

- MACH-ProPoint Output expansion module.

#### MPP-O-H

- MACH-ProPoint Output expansion module with HOA switches.

## ORDERING

### MPP-IO-H

- MACH-ProPoint Input/Output expansion module with HOA switches.

### MPP-IO-U

- MACH-ProPoint Input/Output Universal expansion module.

### MPP-IO-U-H

- MACH-ProPoint Input/Output Universal expansion module with HOA switches.

### MPP-IO-DL-LASER

- MACH-ProPoint Input/Output expansion module door label sheet for laser printer.

### MPP-IO-DL-INKJET

- MACH-ProPoint Input/Output expansion module door label sheet for inkjet printer.

### MPP-I

- MACH-ProPoint Input expansion module.

### MPP-I-B

- MACH-ProPoint Binary Input expansion module.

### MPP-O-DL-LASER

- MACH-ProPoint Output expansion module door label sheet for laser printer.

### MPP-O-DL-INKJET

- MACH-ProPoint Output expansion module door label sheet for inkjet printer.

### RM

- Package of 10 relay output modules.

### TM

- Package of 10 TRIAC output modules.

### UM

- Package of 10 universal output modules.

### SS-RJ11TB-B

- RJ11 to six-pole terminal block base.

### SS-RJ11TB-C

- RJ11 to six-pole terminal block cable; 30 cm (1 ft).

### SNX

- SMART-Net Expansion Board.

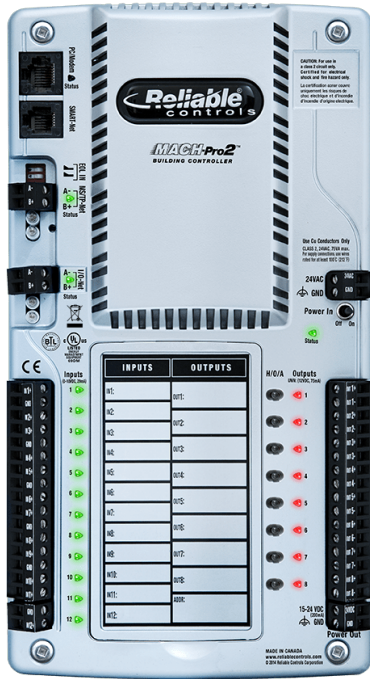
### SSX

- SMART-Sensor Expansion Board.

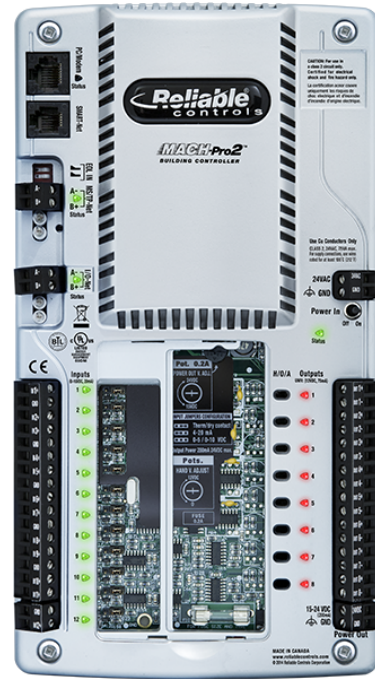
## Build Your Order

To create the order number, add your options to the base model. For example, MP2-H is the order number for a MACH-Pro2 with HOA switches.

PRODUCT IMAGES



MACH-Pro2

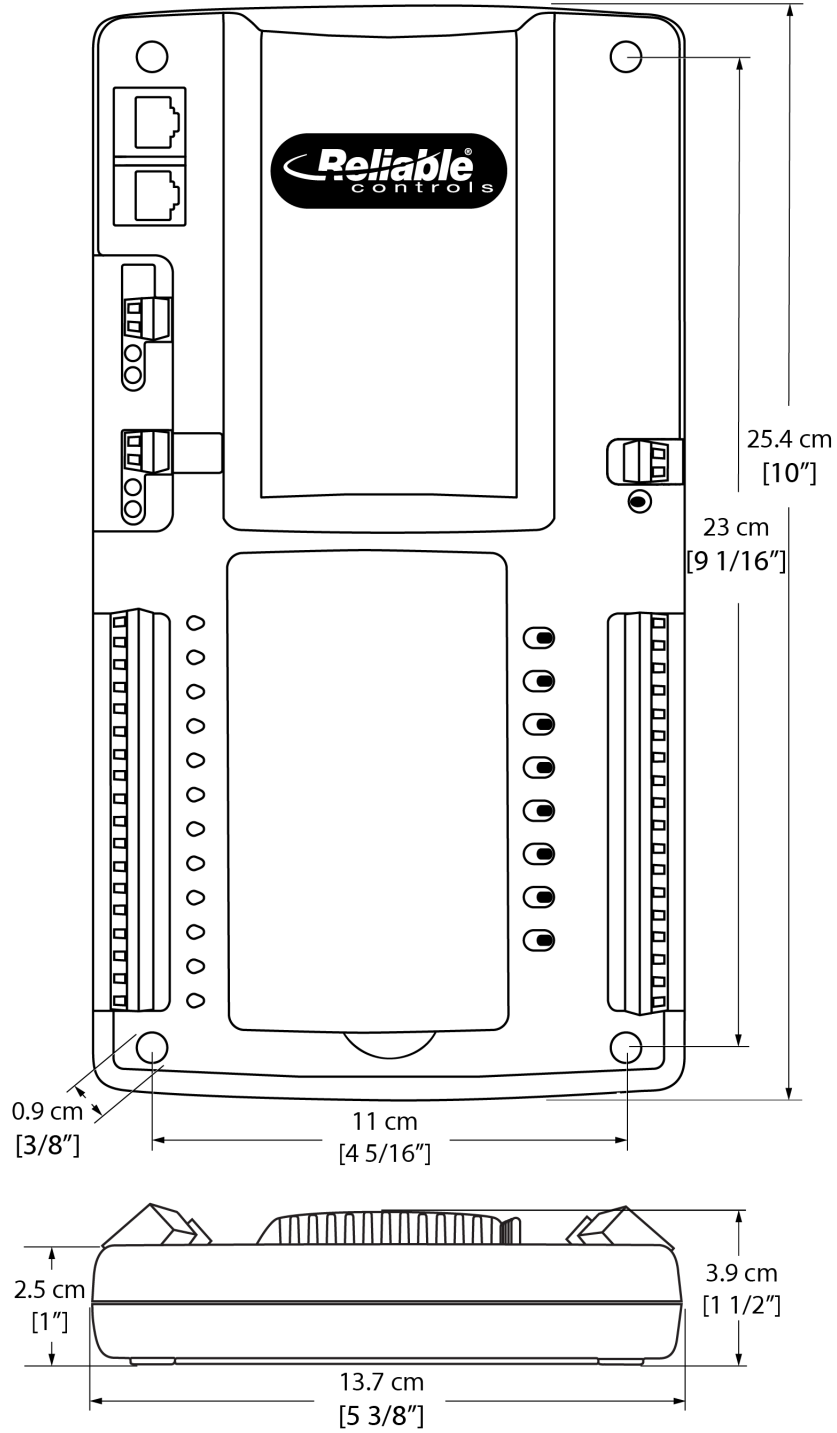


MACH-Pro2 with door open

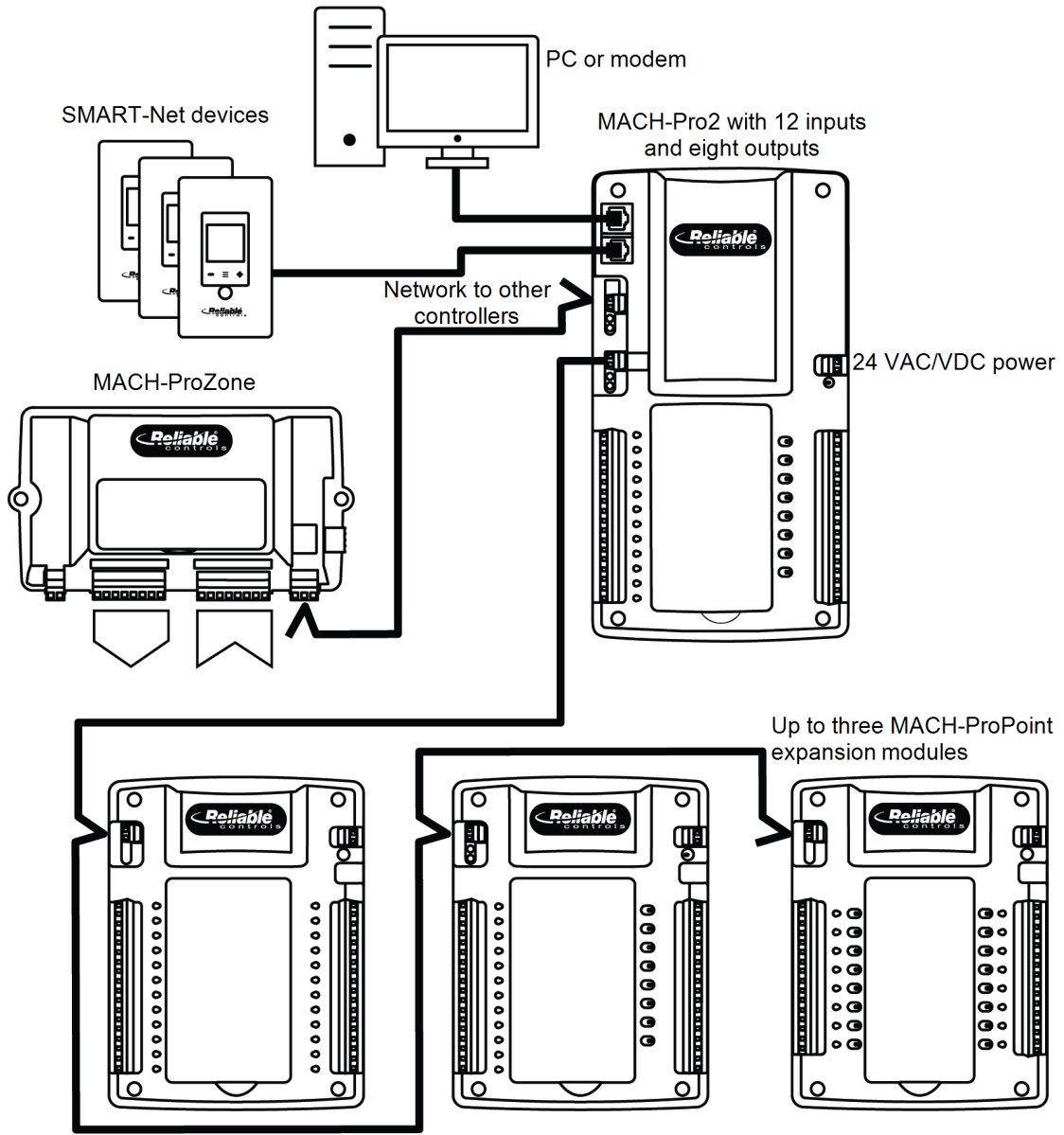


MACH-Pro2 bottom

**DIMENSIONS**

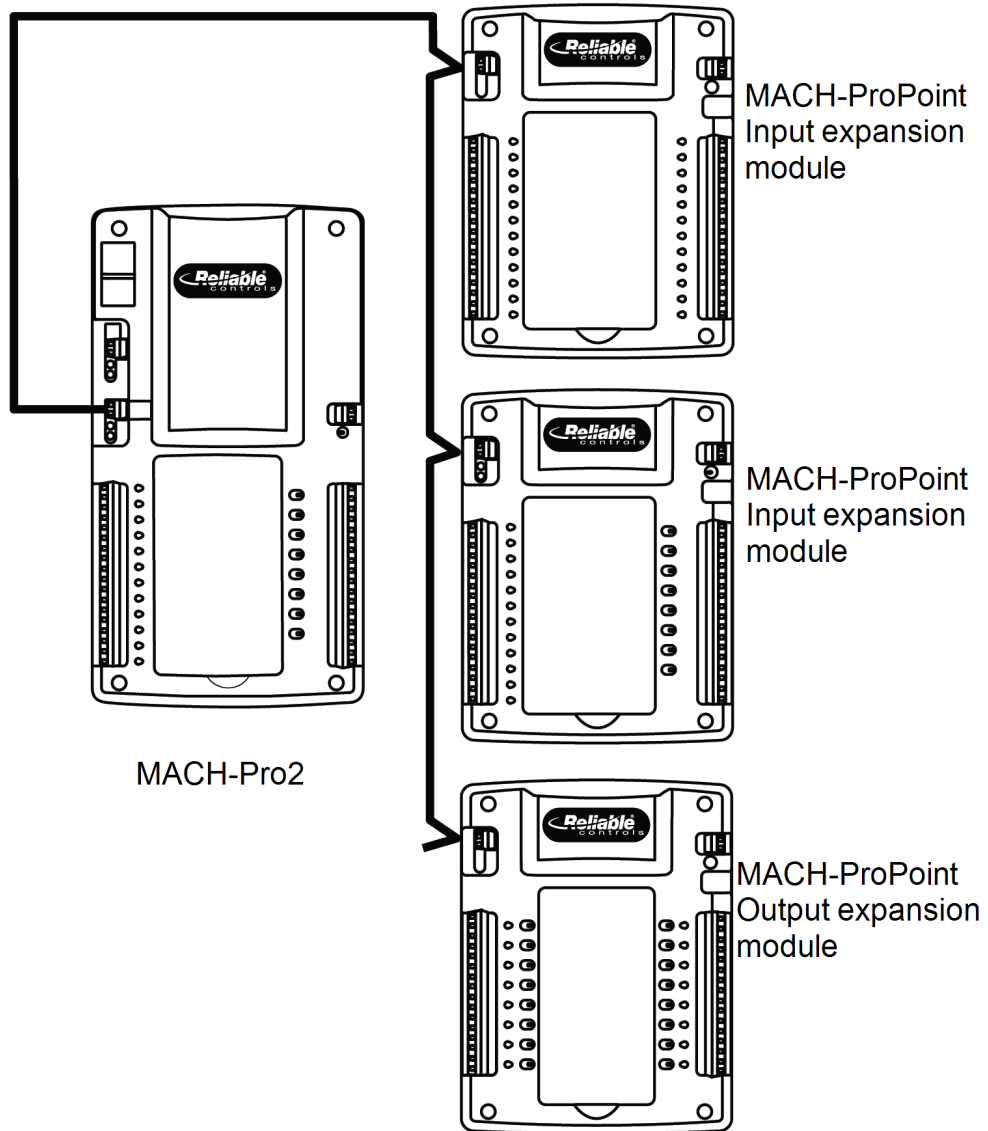


**DIAGRAMS**



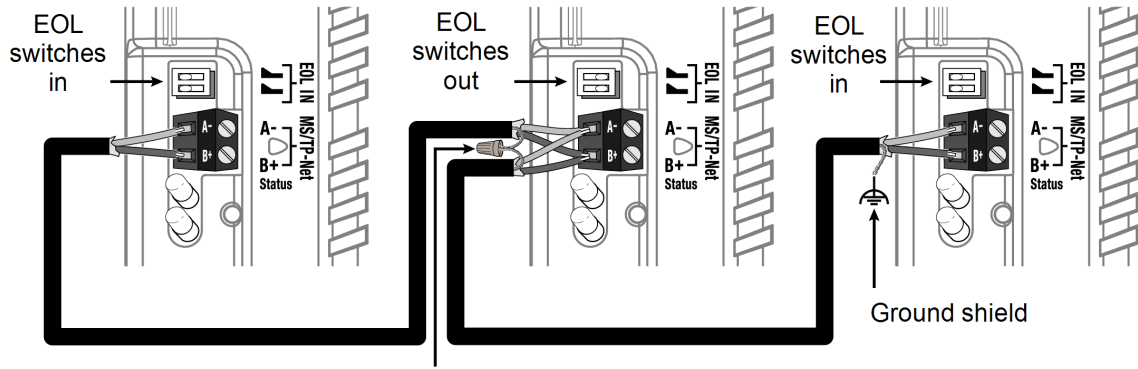
Network diagram

DIAGRAMS



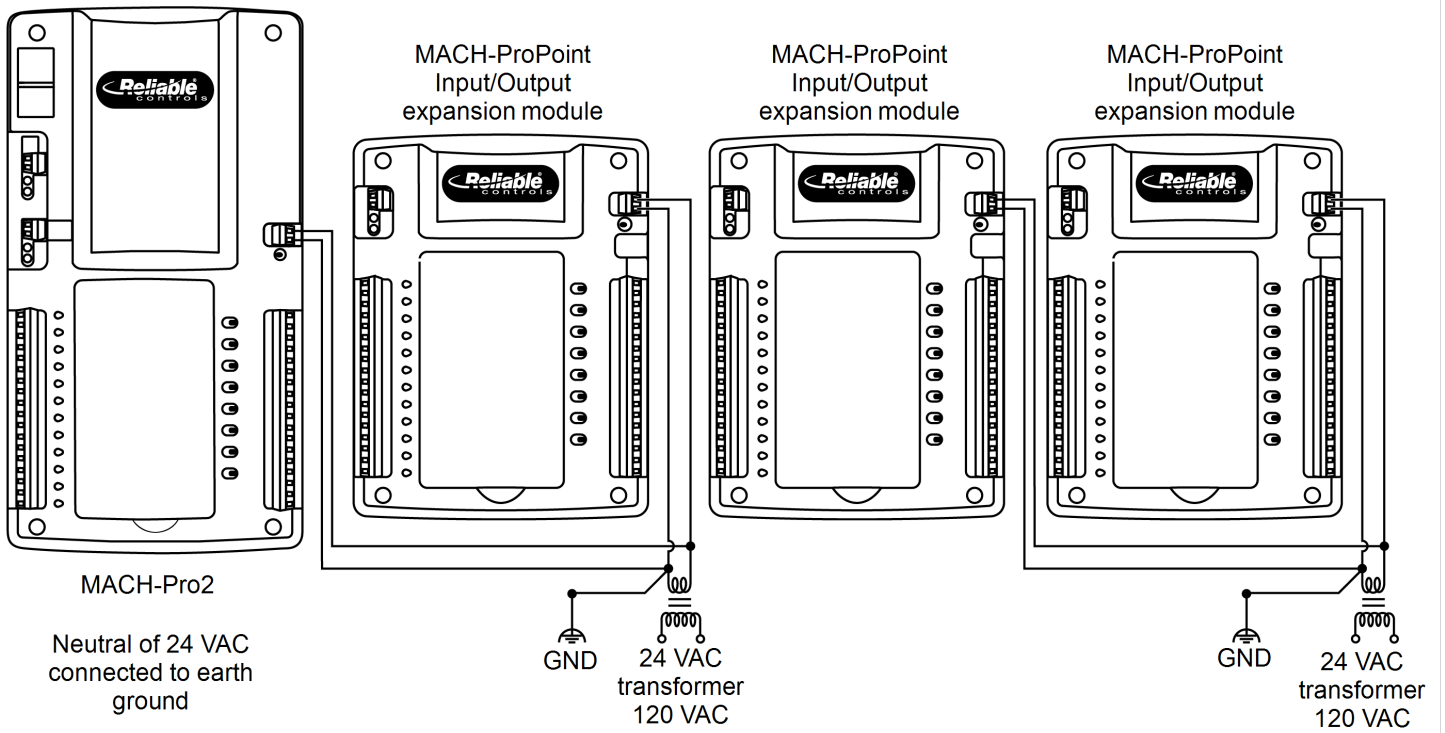
Expansion module wiring diagram

DIAGRAMS



Network shields connected with wire nut

Network wiring diagram



Power wiring