

## Perennial performance

Destined to be a workhorse of the industry, the Reliable Controls® MACH-Pro1 is a rugged, flexible and fully programmable BACnet Building Controller (B-BC) ideal for mid-sized rooftop equipment or small mechanical room applications.



## TECH SPECS

### Processor

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

### Memory

- 8 MB operating RAM
- 1 MB non-volatile RAM (trends and dynamic values)
- 4 MB Flash EEPROM operating system, database, and controller configuration

### Supply Voltages

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

### Communications

- 1 EIA-485 @ 76.8 kbps max. Auto-baud detection
- 1 EIA-232 @ 115.2 kbps max. PC or modem
- SMART-Net port @ 8 sensors max.

### Universal Inputs

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

### 8 Outputs

- 12-bit D/A converter
- Analog: 0–12 VDC
- Binary: 0/12 VDC
- Manual ON provides adjustable 0–12 VDC (HOA model only)
- LED indicator (glows proportionally)
- Output power: 75 mA @ 12 VDC
- 24 VAC over-voltage and short protection

### Peripheral Power

- Onboard variable 15–24 VDC power supply providing up to 200 mA of DC power to peripheral devices (if powered by 24 VDC, the maximum voltage output is 22 VDC)

### Real-Time Clock

- $\pm 1$  second per day

### Memory/RTC Backup

- 72 hour backup
- 10 years for database

### SETUP-Tool™

- SETUP-Tool optional for configuration

### Dimensions

- 25.4 cm L x 13.7 cm W x 3.9 cm H (10" L x 5 <sup>3</sup>/<sub>8</sub>" W x 1 <sup>1</sup>/<sub>2</sub>" H)

## FEATURES

### Protocol

- BACnet®
  - MS/TP and PTP

### 12 Inputs

- Universal ranges
- Jumper selectable 0–10 VDC, 4–20 mA, thermistor/dry contact

### 8 Outputs

- Universal ranges
- Optional HOA (Hand/Off/Auto) switches
- HOA position feedback to RC-Studio®

### 128 Variables

- Selectable standard and custom ranges, as well as fixed program-driven values

### 16 PID Loops

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

### 8 Schedules

- 14 On/Off times for each weekday or exception

### 4 Calendars

- Days of the year designated as holidays

### 10 Custom Tables

- For creating custom scaling functions

### 16 System Groups

- Allows related points to be grouped on to one display
- 80 points/group

### 16 Control-BASIC™ Programs

- User programmable control strategy in a readable, BASIC-like language
- 3200 bytes per program

### Mounting

- #8 clearance holes on 23.0 cm L x 11.0 cm W (9 <sup>1</sup>/<sub>16</sub>" L x 4 <sup>5</sup>/<sub>16</sub>" W)
- Screw depth 25 mm (1")

### Weight

- 0.6 kg (1.3 lb)

### 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% to 90% RH non-condensing

### Trend Logs

- Each Trend Log stores up to 8 points
- Values recorded at user-defined intervals
- Dynamically assigned

### Runtime Logs

- Totals the On time and records the On/Off times of every binary point
- Holds 200 events
- Dynamically assigned

### 128 Variable Arrays

- Up to 128 elements in a one-dimensional array

### 128 User Passwords

- Protects access to system
- Each user is assigned a user name and an access level

### 24 Custom Units

- 8 analog engineering units
- 8 binary engineering units
- 8 multistate units

### SMART-Net™ Port

- Networks up to 8 SMART-Sensors

### Real-Time Clock

### Warranty

- 5 years

### Certification

- BTL Listed (B-BC)
- UL916 Listed
- FCC CFR 47 Part15/B
- CE

## ORDERING

### MP1

- MACH-Pro1 controller

### MP1-H

- MACH-Pro1 controller with HOA (Hand/Off/Auto) switches and potentiometer overrides for each output

## ACCESSORIES

### MPP-IO-DL

- Door label sheet for MP-S, MP-S-H, MPW-S, MPW-S-H, MPP-IO, MPP-IO-H, MP1, MP1-H, MP2, and MP2-H

## APPLICATION DIAGRAM

