

Reliable Controls® MACH-System

Reliable® controls

...people and technology
you can rely on™

BACNET® LISTED DEVICE

MOUNTS DIRECTLY TO EQUIPMENT OR IN ENCLOSURE

FULLY PROGRAMMABLE, AND NETWORKABLE MID-SIZED SYSTEM CONTROLLER

8 UNIVERSAL INPUTS AND 8 UNIVERSAL OUTPUTS CONFIGURED BY USER

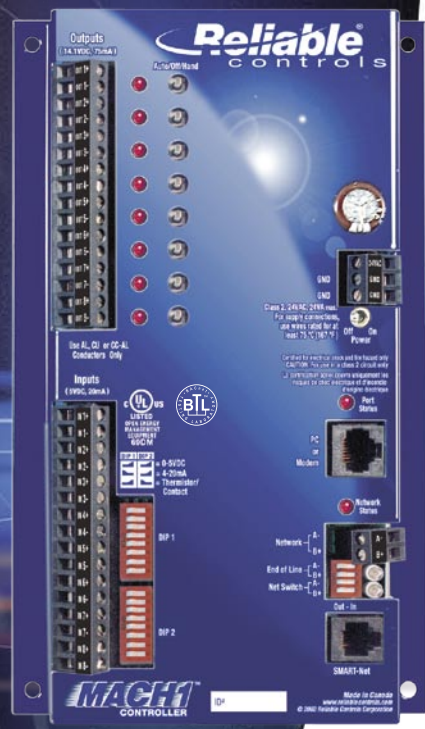
EASY TO WIRE 45 DEGREE REMOVABLE CONNECTORS

HAND/OFF/AUTO SWITCHES WITH FEEDBACK

ROBUST POWDER-COATED STEEL PACKAGE

5 YEAR WARRANTY

MACH1™ SYSTEM CONTROLLER



The Reliable Controls® MACH1™ controller is an excellent solution for mid-sized rooftop and small mechanical room applications, and ships with the Reliable Controls® *industry best* 5 year warranty.



The Reliable Controls[®] MACH1[™] is a high-performance, fully programmable BACnet[®] listed controller. The MACH1[™] controller features 8 universal inputs, 8 universal outputs, and optional HOA switches with position feedback. The controller is ideal for mid-sized rooftop equipment or small mechanical room applications. The MACH1[™] ships standard with removable connectors, proportional output status LED, and support for 8 SMART-Sensor[™] LCDs.

TECHNICAL SPECIFICATION

Processor

- 40 MHz, high-performance
- 16-bit embedded microcontroller

Memory

- 128k NV RAM user database
- 128k Flash EEPROM operating system firmware and controller configurations

Supply Voltages

- 24 VAC/VDC, 24 VA max.

Communications

- EIA-485 @ 76.8 kbps max.
- EIA-232 PC or Modem
- SMART-Net[™] (8 SMART-Sensors[™] max.)

Universal Inputs

- 8 universal inputs
- 10 bit A/D converter
- Analog: 0-5 VDC, 4-20 mA, thermistor
- Digital: dry contact
- Impedance: 15k Ω on 0-5 VDC range, 250 Ω on 4-20 mA range, 10k Ω on thermistor range
- 40 Hz pulse counting (supports flow meters)
- 24 VAC over voltage protection

Universal Outputs

- 8 universal outputs
- 8-bit D/A converter

- Analog: 0-12 VDC
- Digital: 0-12 VDC
- Manual ON provides 14.1 VDC
- LED indicator (glows proportionally)
- Output power: 75 mA @ 12 VDC
- 24 VAC over voltage and short protection

Real-Time Clock

- ± 1 second per day

Memory/RTC Backup

- 72 hour capacitor backup
- Optional battery backup for 1 year lithium (offline)

Dimensions

- 21.5 cm L x 14 cm W x 3.81 cm H (8.5" L x 5.5" W x 1.5" H)

Mounting

- #6 clearance holes on 20.3 cm L x 12.3 cm W (8" L x 4.8" W)

Weight

- 0.4 kg (1.0 lb.)

Ambient Limits

- Operating: 0 °C to 40 °C (32 °F to 104 °F)
- Shipping: -20 °C to 60 °C (-40 °F to 140 °F)
- Humidity: 10% to 90% RH non-condensing

FEATURES

Protocol

- BACnet[®]
 - MS/TP (EIA-485)
 - PTP (EIA-232)
- Reliable Controls[®]
 - Network (EIA-485/Token Bus)
 - PC & Modem (EIA-232)

8 Control-BASIC[™] Programs

- User programmable control strategy in a readable, BASIC-like language
- 2500 bytes per program

8 Inputs

- Universal ranges
- DIP switch selectable 0-5 VDC, 4-20 mA, thermistor, and dry contact

8 Outputs

- Universal ranges
- Optional switch control (Hand/Off/Auto)
- HOA position feedback to RC-Studio[®]

48 Variables

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

8 PID Controllers

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

8 Trend Logs

- Each trend log stores 255 samples of 6 points at programmable time intervals

16 Runtime Logs

- Totals the on time and records the on/off times of a digital point
- Holds 200 samples

8 System Groups

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

4 Weekly Schedules

- 4 on/off times for each weekday and 2 override days

2 Annual Schedules

- Days of the year designated as holidays

4 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

5 Custom Tables

- For creating custom input ranges

16 Custom Units

- 8 analog engineering units
- 8 digital engineering units

SMART-Net[™] Port

- Networks up to 8 SMART-Sensors[™]

127 Network In Points

127 Network Out Points

Real-Time Clock

Warranty

- 5 years

Certification

- BTL listed to ASHRAE Standard 135
- ISO 16484-5
- UL listed 916
- UUKL Pending

ORDERING

M1 (base model)

- MACH1[™] controller with 8 Universal Inputs and 8 Universal Outputs

M1-HC

- Base model with HOA switches

M1-B

- Base model with battery

M1-HC-B

- Base model with HOA switches and battery

APPLICATION DIAGRAM

