Reliable Controls® MACH-System

Reliable® controls

...people and technology you can rely on™

- BACnet® listed device
- Mounts directly to VAV equipment
- Fully programmable, and networkable VAV controller
- 3 universal inputs and 3 universal outputs configured by user
- Data acquisition and data storage onboard
- Precision flow pickup onboard
- Brushless DC motor onboard
- 5 year warranty

MACH-Air™ VAV CONTROLLER

The Reliable Controls® VAV controller is a excellent solution to any VAV application, and ships with the Reliable Controls® ***industry best*** 5 year warranty.

BMA MEMBER BACnet MANUFACTURERS ASSOCIATION

5 year Warranty

Reliable Control® Corporation, 120 Halowell Road, Victoria BC, V9A 7K2
Toll Free: 1(877) 475-9301 Tel: (250) 475-2036 Fax: (250) 475-2096

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MACH-Air™

The Reliable Controls® MACH-Air™ controller is a fully programmable, versatile BACnet® listed controller designed to meet the needs of variable air volume (VAV) control. The MACH-Air™ controller features onboard velocity measurement, a 35 in-lb brushless Belimo actuator, 3 universal inputs and 3 universal outputs with optional triac configuration. The MACH-Air™ ships standard with removable connectors and support for 4 SMART-Sensor™ LCDs.

TECHNICAL SPECIFICATION

Processor
- 25 MHz, high-performance 16-bit embedded microcontroller

Memory
- 32k RAM
- 128k Flash EEPROM operating system firmware and controller configurations

Supply Voltages
- 24 VAC/VDC, 25 VA max.

Communications
- EIA-485 @ 76.8 kbps max.
- SMART-Net™ (4 SMART-Sensors™ max.)

SETUP-Tool™
- SETUP-Tool™ used for configuration

Universal Inputs
- 3 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-bit D/A converter
- Analog: 0–12 VDC
- Digital: 0–12 VDC
- Output power: 75 mA @ 12 VDC
- 24 VAC over voltage and short protection

Triac Outputs
- 24 VAC @ 0.5 A
- Common return

Velocity Sensors
- Flow-through thermistor
- 0–1" W.C.

Actuator
- Torque: 35 in-lb.
- Brushless DC

Enclosure
- NEMA type 1
- UL94-5V

Dimensions
- 22.9 cm L x 13.4 cm W x 6.3 cm H (9" L x 4.8" W x 2.5" H)

Weight
- 0.7 kg (1.8 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

c UL us LISTED OPEN ENERGY MANAGEMENT EQUIPMENT 69DM

c UL us UUKL.864 SMOKE CONTROL SYSTEM EQUIPMENT Pending

BACnet® is a registered trademark of ASHRAE

BACnet TESTING LABORATORY BTL™

FEATURES

Protocols
- BACnet®
  - MS/TP (EIA-485)
- Reliable Controls®
  - Network (EIA-485/Token Bus)

4 Control-BASIC™ Programs
- User programmable control strategy in a readable, BASIC-like language
- 2000 bytes per program

6 Inputs
- 3 Inputs with universal ranges
- Jumper selectable 0–5 VDC, 4–20 mA, thermistor/dry contact
- Input #4 dedicated to the flow sensor
- Input #5 dedicated to the damper position feedback
- Input #6 dedicated to indicate damper at end of position

5 Outputs
- 3 Outputs with universal ranges (base model)
- Scalable 0–12 VDC
- Output #4 dedicated to damper motor
- Output #5 dedicated to control direction of rotion to close
- Single stage triac (T model only)
- Dual stage triac (T model only)
- Configurable for floating point or 2 stage

48 Variables
- Selectable standard and custom ranges, as well as fixed or program-driven values
- Variable #1 dedicated to flow calibration

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

2 Trend Logs
- Each trend log stores 72 samples of 6 points at programmable time intervals

4 Runtime Logs
- Totals the on time and records the on/off times of a digital point
- Holds 48 samples

2 System Groups
- Related points can be grouped in one display
- 50 points/group

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

5 Custom Tables
- For creating custom input ranges and Control-BASIC lookup tables

SMART-Net™ Port
- Networks up to 4 SMART-Sensors™
- SMART-Sensor™ #5 is dedicated to SETUP-Tool™

32 Network In Points

32 Network Out Points

Warranty
- 5 years

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

ORDERING

MAH (base model)
- MACH-Air™ controller with 3 universal inputs, 3 universal outputs, Onboard Flow sensor, Onboard Motor Actuator

MAH-WA
- Base model without Motor Actuator

MAH-WF
- Base model without Flow Sensor

MAH-T
- Base model with 1 Universal Output, 1 Single Stage Triac Output, 1 Dual Stage Triac Output, 500 mA current per Triac

MAH-TWA
- MAH-T without Motor Actuator

APPLICATION DIAGRAM