



M2V

Modular Direct Digital Universal VAV (Variable Air Volume) Controllers

M2V is a DDC universal peer-to-peer unitary VAV controller featuring complete on board intelligence. Each M2V controller contains a powerful 16 bit flash microprocessor including very accurate instrumentation level flow sensor to automate and monitor any types of mechanical VAV equipment while continually logging pertinent programmed system operating data.

M2V operates effectively in both stand alone and networked environments and has the programming flexibility to manage applications from simple time of day scheduling to sophisticated control strategies. The advanced flash microprocessor permits remote uploading of future enhancements to the M2V firmware.

Each M2V controller contains a zone temperature sensor, occupancy comfort set, discharge air temperature sensor, two (2) 0-10 VDC analog inputs, two (2) 0 -10 VDC Analog Outputs with status LEDs, and 8 virtual inputs for use as calculated variables. Each also contains three (3) output ports. Two (2) optically isolated ports are dedicated for floating type actuator drivers (with resistive or voltage position feedback). The third port is dedicated for 4-relay Form -C (with HOA switches) or 4 channel solid-state triac cards for multistage electric heat and series/parallel fan, other auxiliary load (lighting) control applications.

M2V has a discharge air temperature sensor, which can be used for precision zone temperature control in fraction of degrees. Unique control algorithms allow modulating the discharge air temperature, while maintaining minimum CFM targets.

All input, output, and network communication circuits are optically isolated. RJ-45 and RJ-11 ports are for programming and monitoring via Solidyne's hand held M2V-HH terminal.

- ▶ **Cooling only (with series and parallel fan control)**
- ▶ **Cooling and Hot Water reheat (with series and parallel fan control)**
- ▶ **Cooling and multi-stage electric heating for up to four stages**
- ▶ **Dual duct VAV systems**
- ▶ **Zone Lighting control with ambient light sensors**
- ▶ **Control of any other load with in a VAV zone**

Solidyne's enhanced Windows* based software (ICMS) on a desk top or laptop computer provides programming and monitoring an M2V network, on site or remotely. Solidyne's i3 web server permits system monitoring via the Internet. A scheduling feature in the software is ideal for systems requiring continuous operating hour modifications. Clearly defined software characteristics allow inexperienced users to easily program the controllers for specific applications. Security passwords protect unauthorized access levels.

M2V's industrial grade cast aluminum construction; removable multi-color and individually pad printed terminal blocks are designed for accurate and efficient installation and servicing as well as protection from external electrical interference. M2V's 24VAC power is protected with transorbs and self-resetting solid state fuses.

HARDWARE FEATURES/BENEFITS

- Networkable Distributed - fully peer-to-peer modular system architecture
 - scalable
- Instrumentation level air flow sensor with built in ambient temp sensor and other unique capabilities:
 - Auto no flow reset
 - Duct air temp compensation for true CFM
 - K factor compensation
 - Altitude compensation
- Fully isolated (optical and power supply) output circuitry
 - immune to electrical noise
- On board isolation transformer
 - for transient protection and noise immunity
- Stand alone capability - controller operates if network is down
- Remote programming and monitoring
- Flash based memory backup of critical system data
 - ensures retention of operating data after extended power failure
- Lithium back-up of control program and logged data via lithium battery:
 - 7 + years
- Flash based operating controller: Eliminates obsolescence and operating system can be uploaded remotely
- Extensive data logging and monitoring
 - past 35 days peak value recording for all points
 - past 48 hours of point value is recorded with 15 minute average values
 - point value totalization
 - override time totalization
- 48 hour logging of 0-10VDC and digital output status
- output status
- programmable input averaging period
- run time based operation if applicable
- All points are global
- Software pass code lock out - for system security
- Compact size - ideal for limited space applications
- Industrial cast aluminum packaging with color coded and pad printed removable terminal strips - for simple, accurate and fast installation and wiring

PROGRAMMING FEATURES

- Sophisticated temperature control, building automation and energy management strategies in stand-alone or networked applications.
- Time of day scheduling
 - Adaptive/non-adaptive optimum start/stop for heating/cooling
 - PID control of outputs
 - Demand management strategies = load shedding
 - Global overrides - enabling programs based on any global point value - primary/secondary output switchover based on run time
 - Event and holiday scheduling
 - Security - user defined security access codes
 - Alarm - multiple phone, pager, cell phone or email dial out - run time limit alarm
 - Global point value alarm

SPECIFICATIONS

- M2V Controllers
 - Many different types of Zone Temperature sensor options
 - Discharge Air temperature sensor input
 - Modular flow sensor for air volume control
 - Two (2) 0-10 VDC Analog outputs for modulating two actuators
 - Two (2) 0-10 VDC Analog Inputs for actuators position feedback
 - Three (2) output ports for controls
 - Option: Two (2) Floating type actuator control with position feedback (optically isolated from the processor
 - Option: 4 Channel Relay module, form C, 10 Amps with HOA switches and status LEDs
 - Option: 4 Channel solid state (Triac, with zero cross switching) N.O. output module
- Serial Sub-LAN port: wiring via CAT-5 cable for multiple zone sensors
- Future expansion Flash Memory ID Tag port
- Hand Held terminal interface port via CAT-5 cable
- Communications
 - Programmable from 1200 Bauds to 57K Bauds
 - RS485 -2 or 3 wire with network TXT and RCV status LEDs
 - Power supply and optical isolated
 - Flash based non-volatile configuration
- Electrical- input power: Transorb and self-resetting fuse protected
 - class 2, 22-26VAC, 50/60Hz 8VA max.
 - Lithium battery back up, 7 year
 - 24 VDC build in DC power supply can supply up to 50 mA @ regulated 24 VDC
 - Additional built in 8 VDC power supply
- Environmental
 - operating: -20°F to 140°F and 10%-90% RH, non condensing
- Mechanical: Cast aluminum housing construction
- Shipping weight 2 lb.
- User interface- remote or direct through a personal computer utilizing Solidyne's Windows® based front-end software. Optional equipment allows for web browser based control



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