

Universal controllers

WA-WV

500 Line



GENERAL INFORMATION

USE

Series WA-WV controllers are used in air-conditioning, thermoventilation and heating plants to measure and control all variables detected by transmitter in V – or mA.

MANUFACTURING SPECIFICATIONS

Modular electronic module, integrate and hybrid components type.

Controller consists of protective housing, electronic card and terminal board for wall or panel mounting and for Rack 19" or flush mounting.

Input signals

- From TP-TT-TW transmitters or active signals.
- From WM for winter or summer compensation.

Output signals

- To single, unison or sequence control of actuators, motorized valves, step-controllers, power units, etc.
- To remote analog and digital indicators, recorders.
- To auxiliary controllers, avoiding further sensors installation.



REMOTE SET-POINT ADJUSTMENT

- By remote potentiometer RM or by BMS.

CONTROLLER SPECIFICATIONS –C (°)

Series **WA-WV** - Proportional-Integrated-Derivative type - Direct/reverse action - Set-point precision $\pm 1\%$ - Supply 24 V max 2 (0.5) A . - Sensitive element: Transmitters T see relative data sheet.

model	scale %	proportional band % span	integral action		input signals	output signals	
			%	time sec		V –	relay
WV 511 WA 511 WV 539 WA 539	0 to 100	2 to 40	0 to 100	0 to 600	0 to 10 V – 4 to 20 mA 0 to 10 V – 4 to 20 mA	0 to 10 0 to 15	no 1 SPDT 2(0.5)A-24 V ~

Housing : ABS blue
Protection : IP 30 (DIN 40050)
Weight : 0.8 kg

Ambient limits : T50: (working)
-25 T65 (storage)

CE Conformity: Directive EMC 89/336
– EN 50081-1
– EN 50082-1

INDICATORS

Series **IW** - ANALOG type - Vertical profile - Input signal directly from controller - Width scale: 95 mm - Accuracy: 2% span

model	scale	installation
IW 51	0 to 100	Rack 19" or flush mounting

Accessory: **IW S1** housing for IW.

REMOTE SET-POINT ADJUSTMENT

Set-point precision $\pm 1\%$ R.H.

model	scale %	installation
RM 54	0 to 100	flush mounting

TERMINAL BOARD UNIT

For each controller order 1 terminal board separately.

model	installation
MW 1	wall or panel mounting
MW 2	Rack 19" or flush mounting

INSTALLATION

Series W- CONTROLLERS

Install the controller free from vibration, in ambient with temperature between 0 and 50 °C (32 and 122 °F), without condensation, explosive or aggressive atmosphere.

Mount controllers in electrical panel, separate by metal partition the control group from power group (relays, switches, power cables) and when it is possible install controllers in separate panel. See Installation Instructions supplied with MW terminal board.

WIRING CONNECTION

Make electrical connections to terminal board according to diagram.

Supply controller to terminal 1 or L1 - 2 or L2 with voltage 24 V ~ ± 10% by transformer with suitable power.

Auto-transformer must not be used.

When one transformer supplies two or more controllers, all terminals 1 or L1 must be connected to the same phase, all terminals 2 or L2 must be connected to the other phase.

Note: Terminal 2 or L2 is connected to the common of the system. For connection to sensor and to actuator use copper wires as following:

size mm ²	max wire length mt
1,0	50
1,5	90
2,5	150

Note:

Connection wires to actuator and sensor must run separately.

One W controller can drive max 3 actuators at unison (range 6 to 9 V ~) or in sequence (range 4 to 7 and 8 to 11 V ~).

Do not run wires near high voltage line, if it is not possible, use shielded connections.

When one transformer supplies two or more actuators, all terminals 1 must be connected to the same phase, all terminals 2 must be connected to the other phase.

START-UP

Check that supply is 24 V ~ ± 10%. A lighted green LED indicates that controller is powered. Check that connections are as per wiring diagram. Set internal switch SW1 in position:

- INT for setting set-point by knob
- RM for remote set-point by potentiometer RM 54
- Calibrate internal trim adj. "CAL" for particular requirements of system; adjustment is ± 5 °C.

All controllers have Proportional + Integral + Derivative action (P+I+D); to have Proportional action only set 1% at 0 value. Integral action is used to avoid offset in systems subject to remarkable variation of load.

Set integral action as follows:

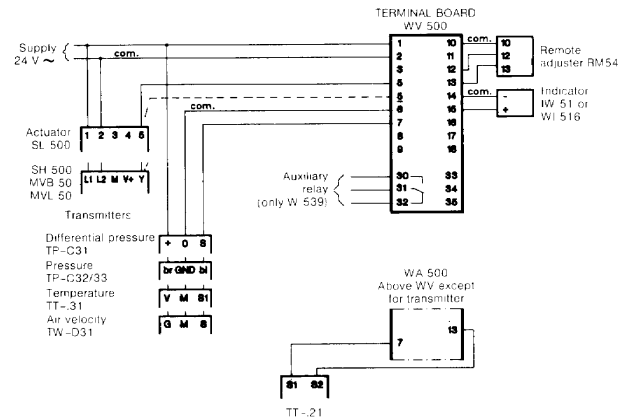
I% - trim adj. ⑥ = 0 to 100% of integration of delayed output signal to controlled device. The set value is the percentage of signal to controlled device in the integral time set by the trim adj. **t** ⑦, balance % is proportional signal.

t - trim adj. ⑦ = integral time (0 to 10 min), time in which integral action operates.

TRANSMITTER

Transmitter is mounted on a flange and can be installed in any position.

On insulated air channels a rubber tube must be connected to connection 2.



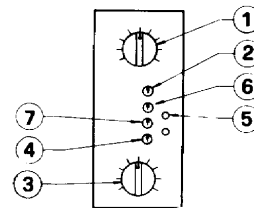
ACTION can be:

direct : wire terminal 5 of actuator to terminal 5 of controller (0 to 15 V d.c.)

reverse: wire terminal 5 of actuator to terminal 5 of controller (15 to 0 V d.c.).

CALIBRATION

- Adjust set-point by turning knob ① until the desired value.
 - Set proportional band by turning trim adj. ② until mid-point position, after removing front plate (see MW Install. Instruct.).
- When process is working set proportional band at minimum value to make the system stable.



- Set 1% integral action value by trim adj. ⑥.
- Set integral time value by trim adj. ⑦. Only for WA 539 - WV 539.
- Set the operating point of relay by knob ③.
- Set differential of relay by turning trim adj. ④ until mid-point position.

Relay switches when controller output signal corresponds to the value set by trim ④ ± ½ differential value. Lighted red light ⑤ indicates that contact 30-31 is closed (low temperature).

DIMENSIONS See MW terminal board unit data sheet

The performance stated in this sheet can be modified without any notice.