Terminal unit valve actuators

EMV212/144-145-146-147

Model	Control signal	Power supply	max. stroke
EMV212/147	3 Point - ON/OFF	230Vac	9 mm
EMV212/146		24Vac	
EMV212/145	proportional		5.5 mm
EMV212/144			

APPLICATION AND USE

Cim EMV212 actuator can be used with valves push/pull (using auto stroke calibration) or with valves with spring return using fixed stroke to con- trol hot /cool water flow rate in two/four pipes terminal units, zone and solar plants, small reheating and dehumidifcation coils.

OPERATION

Cim EMV212 is an electrical bidirectional actuator. The valve stem is activat- ed through a synchronous motor and a gear train optimised in order to have high performances and minimal noise ejections. The actuator is equipped with a movement of limit force which is able to stop the power supply when the force of 300N is reached. If configured as auto calibration stroke, the software of the proportional models en- ables the stroke calibration, so it can be used on any valve, as long as it respects the maximum stroke limit allowed (look at the above table).
Moreover proportional models are equipped with 3 LEDs whose operation is explained in the table at page 4.

N.B.: do not use the actuator if not coupled with the valve.

POSSIBLE CONNECTIONS AND MATCHES

Cim EMV212/145 EMV212/146 EMV212/147 are used with Cim 776 PICV ut to DN1"1/4. Cim EMV212/144 EMV212/146 EMV212/147 are used wiith Cim 717 PICV.
Cim EMV212/146 & EMV212/147 can be connected to any controller with 3 point control signal which has the same power supply characteristics of the actuator as indicated in the paragraph "Technical Characteristics".
Models Cim EMV212/144 and EMV212/145 are proportional and they can operate in the ranges 0-10Vdc, 2-10Vdc, 0-5Vdc, 6-10Vdc, 4-20mA.

MANUFACTURING CHARACTERISTICS

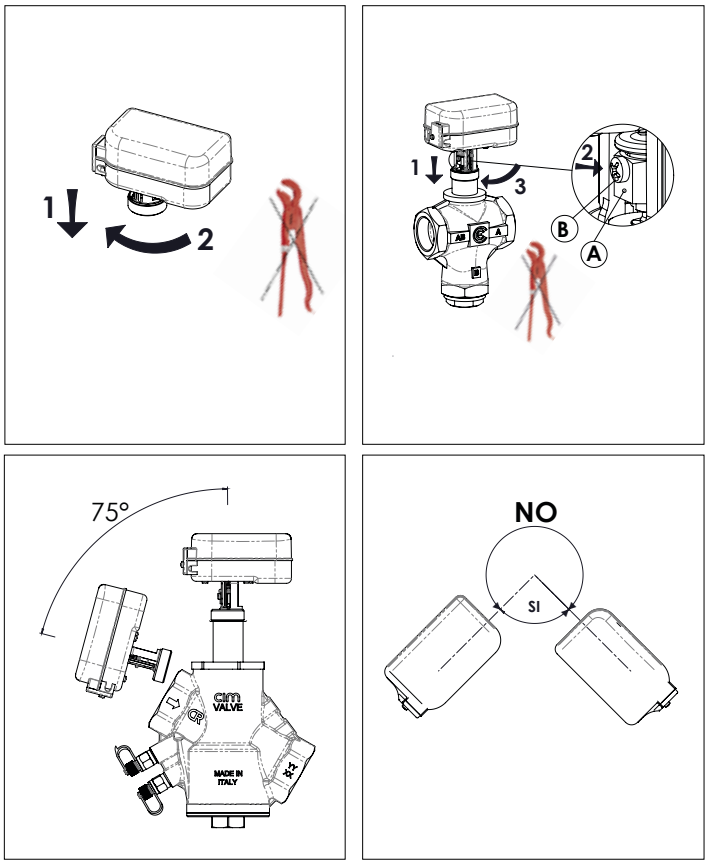
The actuator housing is made of a polymeric fireproof material; a metal ring M30x1,5 is dedicated to the assembling with the valve.
The actuator is equipped with a cable for electric connection.

SAFETY PRESCRIPTIONS

1. Install on the power supply line a protecting device to avoid short circuits (fuse or magneto-thermic) according to the spec- ifications in force;
2. In case of accidental removal of the cover and/or of the con- nector cover, make sure that power is disconnected before working on the actuator or near it;
3. The products are maintenance free.

INSTALLATION AND ASSEMBLING

Before assembling the valve and the actuator, check that the set- screw is up. If not, remember that, to mount the actuator on the valve in the right position, you have to overcome the spring strength of the valve itself.
Screw in the ring nut M30x1,5 firmly on the valve thread.



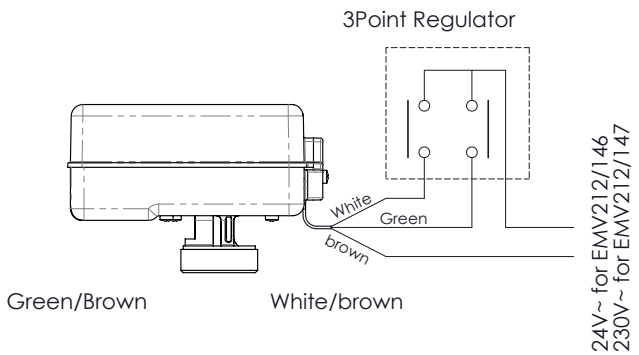
TECHNICAL CHARACTERISTICS

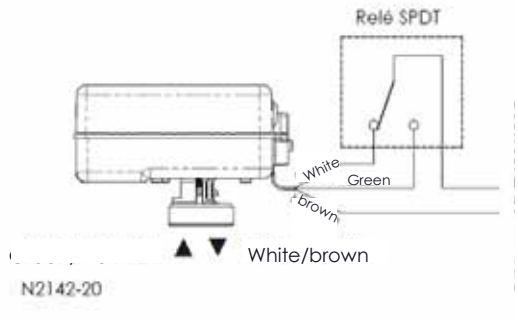
Power supply:	24Vac ± 10% (Cim EMV212/144 and 145, Cim EMV212/147)
	230Vac ± 10% (Cim EMV212/147)
Consumption:	2,2VA - 2,2W (Cim EMV212/146)
	3,6VA - 3W (Cim EMV212/144 and 145)
	16,2VA - 1,1W (Cim EMV212/147)
Frequency:	50/60Hz
Stroke timing (50 Hz):	30s : stroke 2,5 mm
	55s : stroke5 mm
	60s : stroke 5,5mm (DEFAULT)
Velocity	11,5s/mm at 50Hz - 9,4 s/mm at 60 Hz
Force:	300 N (UNI 9497: 1989)
Operation temp:	-5T55°C
Storage temp:	-25T65°C
Protection class:	II (IEC 60950-1: 2005)
Connection cable:	3 wires 1,5 m for Cim EMV212/146 and Cim EMV212/147
	5 wires 1,5 m for Cim EMV212/144 and 145 (CEI 20-22/II)
Protection degree:	IP43 (CEI EN 60529: 1997)
Weight:	0,25 Kg
Feedback signal (for Cim EMV212/144 and 145):	2-10V (2V fully retracted in direct action or 2V fully extended in reverse action)
Reference Directives and Standards:	EMC 2004/108/CE (Norm EN 61326-1: 2007).

ELECTRIC CONNECTIONS

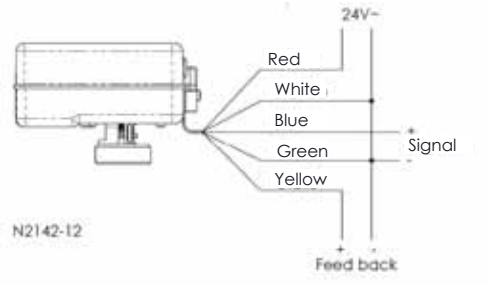
Connect the actuators respecting the local norms.Check the direction and the movement of the shutter.

Connection for CimEMV212/146 and EMV212/147 - 3 points and 2 points





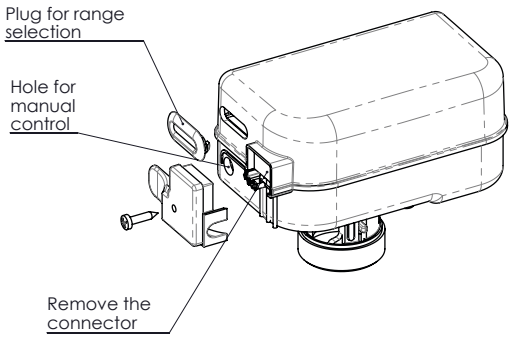
Connections for Cim EMV212/144 and EMV212/145- proportional



RANGE SELECTION (ONLY CIM EMV212/144 AND EMV212/145)

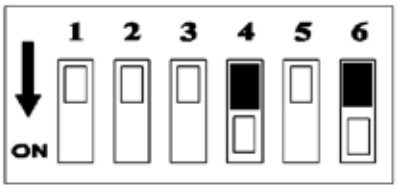
The actuator is supplied prearranged for 0-10V control signal and direct action; to modify this setting, follow these instructions:

• Remove the cap and the connector (look at the following picture)

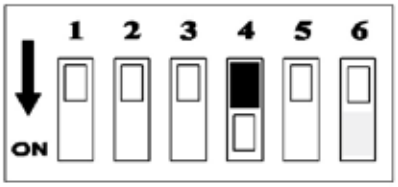


For manual override use allen key of 3 mm.

- Change the DIP switches as indicated in the following scheme (Default configuration for Cim 776):



- Change the DIP switches as indicated in the following scheme (Default configuration for Cim 717:



DIP 1	ON = INV action / stroke	OFF = DIR action / stroke
DIP 2	ON = 2-10/6-10	OFF = 0-10/0-5
DIP 3	ON = Range SEQ	OFF = range NORM
DIP 4	ON = fixed stroke	OFF = auto stroke
DIP 5	ON = 4-20mA	OFF = voltage range
DIP 6	ON = Learning / stroke	OFF = Running / stroke

The actuator can be coupled with valves with spring return as Cim 776 and Cim 717 or similar using fixed stroke. Actuators with fixed stroke (DIP 4 ON) have only Direct action.
Through DIP 4 you can choose (on the basis of the coupled valve) if the stroke must be fixed or automatically calibrated. In case of fixed stroke (DIP 4 ON) the learning function (DIP 6) and the setting of di- rect/reverse action (DIP 1) change their meaning: DIP 1 and 6 will be used to choose the fixed stroke value (look at the table)..

Automatic stroke range selection

DIP 1	DIP 6	VALVE STROKE
OFF	OFF	5mm
OFF	ON	5,5mm
ON	OFF	2,5mm
ON	ON	3,5mm

Direct Reverse action

Trough DIP1 is possible to set direct or reverse action. In direct action without control signal the actuator is fully retracted with feedback set to 2V. With reverse action the actuator is fully exteded and the feedback without control signal is 2 V in this position.

Through DIP 2,3 and 5 it is possible to set 5 different input ranges. If DIP 5 is ON, the input range is set at 4-20mA and DIP 2 and 3 have no meaning. If DIP 5 is OFF, the possible ranges are: 0-10/2-10 if DIP 3 is OFF and 0-5/6-10 if DIP 3 is ON.

Automatic stroke calibration (valid only for DIP n. 4 in OFF)

This function helps to calibrate the maximum valve time stroke, so that the actuator can place the valve correctly following the control signal. If the actuator is powered on, this action can be repeated any time DIP 6 goes from OFF to ON and DIP 4 is OFF. During normal operation, it is possible to choose the position of DIP 6: at each start up the stroke calibration will be carried out if DIP 6 is ON; it will be maintained the previous stroke if DIP 6 is OFF.

Initial positioning

It will be carried out every time the actuator will be powered on and the stroke calibration occurs. This procedure allows the actuator to start from a defined position and then follow the control signal. That position depends on the selection of DIP 1 (DIP 4 in OFF).
In case the DIP 4 is ON, the initial position means fully pushed

Retry function

If an unexpected stop during the stroke occurs, this function has the aim to make it disappear. The actuator will be driven in the opposite direction and then it will try again to reach the position.

Feedback output

The actuator is equipped with a proper output to transmit the feed- back signal relating to the supposed actuator position. This signal can vary from 2 to 10V. During the "automatic stroke calibration" and "Initial positioning" function it is fixed at 2V.

LEDS OPERATION

DESCRIPTION	CALIBRATION PHASE	INITIAL POSITIONING	UP POSITIONING	END STROKE UP	DOWN POSITIONING	END STROLE DOWN	ACTUATOR STOP	UNEXPECTED STALL	LOW SUPPLY VOLTAGE	ACTUATOR OFF OR UNDER RESET (SUPPLY VOLTAGE LOW)
YELLOW	ON	ON	ON	ON	ON	ON	ON	ON	BLINKING 1Hz	OFF
RED	ALTERNATING 5Hz	ALTERNATING 1Hz	OFF	OFF	BLINKING 1Hz	ON	OFF	SIMULTANEOUS 5Hz	OFF	OFF
GREEN			BLINKING 1Hz	ON	OFF	OFF	OFF		OFF	OFF

DIMENSIONS [MM]