



ARA 598



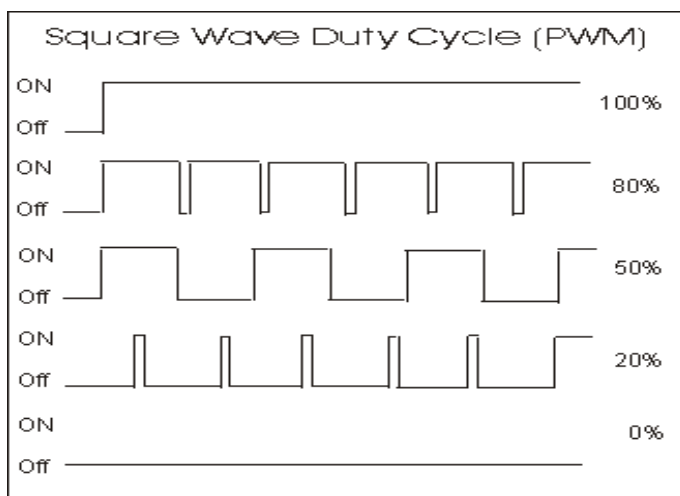
Technical description

ARA598



The ARA598 is based on the ARA500 platform with a PWM (Pulse Width Modulation) control signal or Proportional control signal (0-10V or 0-20mA). PWM is a control signal based on a digital waveform that is high or low, for example if 70% of the period is high it means that the actuator shall be 70% open. The PWM control signal is getting more and more popular and is widely used as control signal for circulation pumps. The actuator can also be used with proportional control signal.

The power supply to ARA598 is either 12-24VDC or 24 VAC.





GENERAL:

Platform:	ARA500 with female plug in connector (Molex)
Torque:	6Nm
Operation angle:	90° with mechanically end-switches
Ambient temperature:	max +55°C / min -5°C
Enclosure rating:	IP20
Protection class:	II
Power supply DC:	12-24V ±10%
Maximum power consumption 24V:	4W
Maximum power consumption 12V:	5W
Idle power consumption DC:	350mW
Power supply AC:	24V ±10%, 50/60Hz
Maximum apparent power consumption:	7VA
Idle apparent power consumption:	1.2VA
Auxiliary switch:*	Fixed 45°
Rating Auxiliary switch:*	6(3)A 250 VAC
Weight:	0,4 kg
Developed according to	LVD2006/95/EC EMC 2004/108/EC RoHS 2011/65/EC
Running time:	15 / 30 / 60 / 120 seconds (Set by DIP switch 1 and 2)
Working direction:	CW / CCW (Set by DIP switch 3)
Position memory option:	Available (Set by DIP switch 4)

**Auxiliary switch is an option and will be solved by ordinary Auxiliary switch kit 1620 0700*

SUITABLE MIXING VALVES

The controller is supplied complete with an adaptor kit for easy fitting onto the ESBE rotary mixing valves:

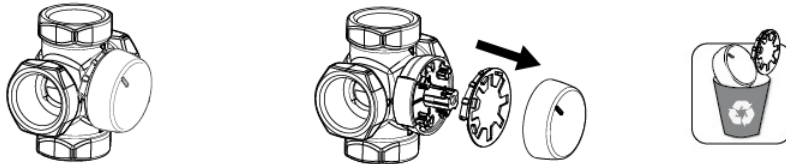
- Series VRG100
- Series VRG200
- Series VRG300
- Series VRB100
- Series HG

The actuator is delivered either mounted together with valve from ESBE factory or otherwise supplied complete with an adaptor kit for easily fitting onto an ESBE rotary mixing valve series VRG / VRB.

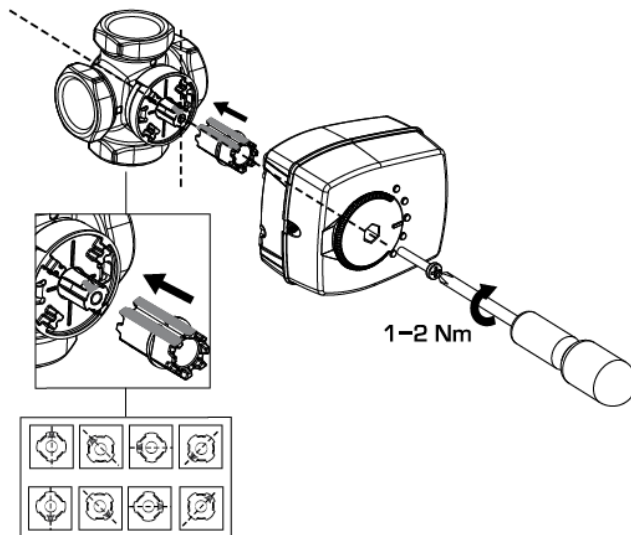
ASSEMBLY OF ACTUATOR ON VALVE:

At delivery the actuator is placed in mid-position (50% open). Before assembly the actuator on the valve make sure that the valve is turned into mid-position.

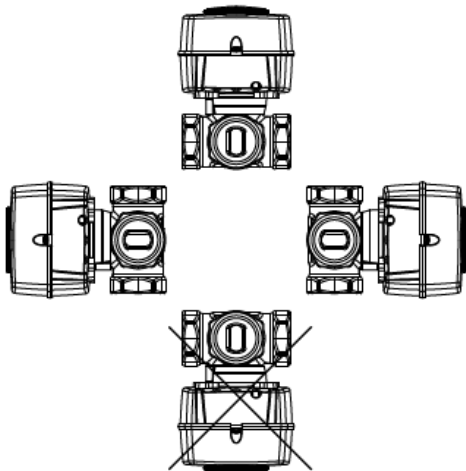
- 1) Remove the knob and scale from the valve.



- 2) Assembly the actuator on the valve and secure with the screw.



- 3) The actuator can be assembled in any direction except that the actuator is placed under the valve.





DIP SWITCHES:

The actuator has four DIP-switches, numbered 1 – 4, to program the functionality of the actuator. Each DIP-switch can be set ON or OFF. The DIP switches shall only be changed when the actuator is powerless.

DIP-switch	Function	DIP-switch OFF	DIP-switch ON
1	Running time	See running time table	
2			
3	Direction	CW	CCW
4	Position memory	OFF	ON

Running time

The running time is the time the actuator uses to move from one end position to the other. DIP-switches 1 – 2 set the running time:

DIP-switch 1	DIP-switch 2	Running time
OFF	OFF	120s
OFF	ON	60s
ON	OFF	30s
ON	ON	15s

Direction

DIP-switch 3 controls the actuator's rotation direction.

DIP-switch 3	Direction for increasing input signal
OFF	CW
ON	CCW

Position memory option

The actuator calibrate at power-up and then turn to the position controlled by the input control signal.

The MCU stores the actuator position in a non-volatile memory at power-down. At the next power-up, if the position memory is selected, the actuator will not calibrate. Instead it will use the stored position and immediately turn to the position controlled by the input control signal without any calibration.

At delivery the actuator will always calibrate at first power-up regardless of the position memory option.

DIP-switch 4 controls the position memory option:

DIP-switch 4	Position memory option
OFF	Not used
ON	Used



CONTROL SIGNAL SPECIFICATION:

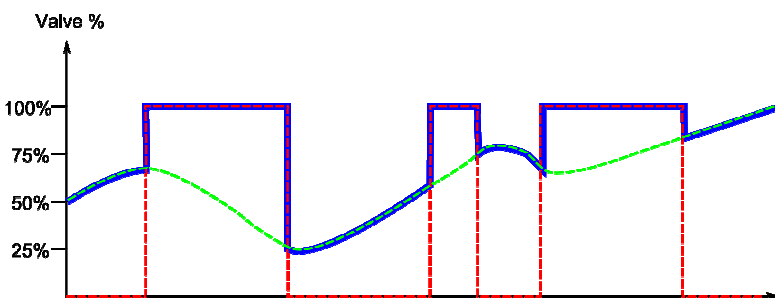
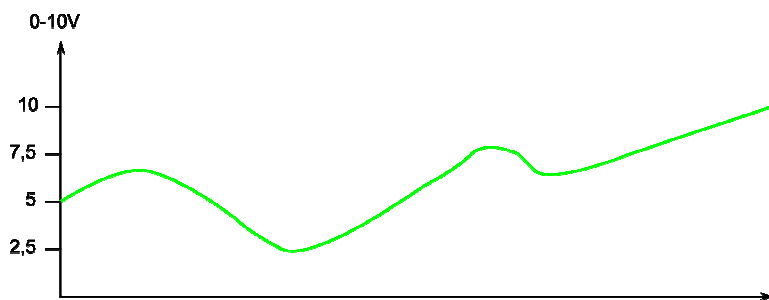
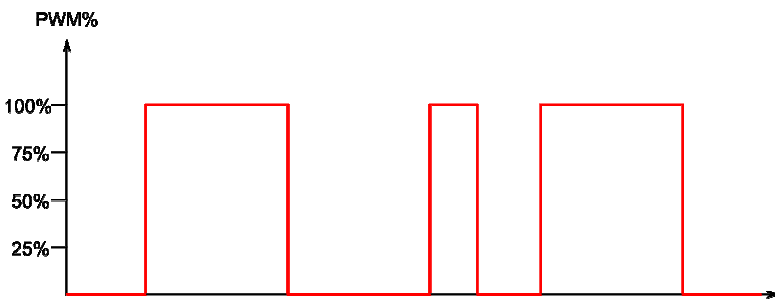
PWM Control signal specification:

Voltage:	4-15 V (max 10mA) (24V tolerant)
Frequency:	50-4000 Hz
PWM signal isolated:	Yes, as long as jumper is not connected (operational insulation only, not double insulated.)
PWM signal independent of polarity:	Yes, as long as jumper is not connected.

Proportional Control signal:

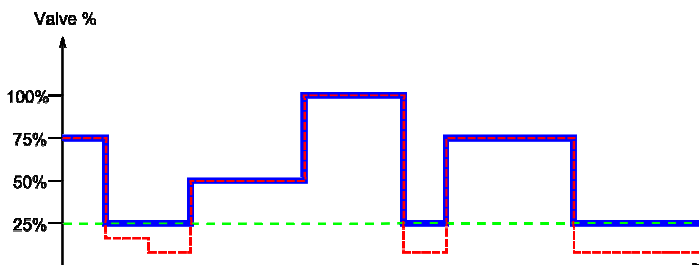
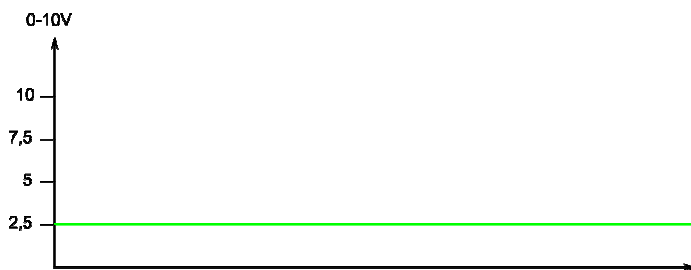
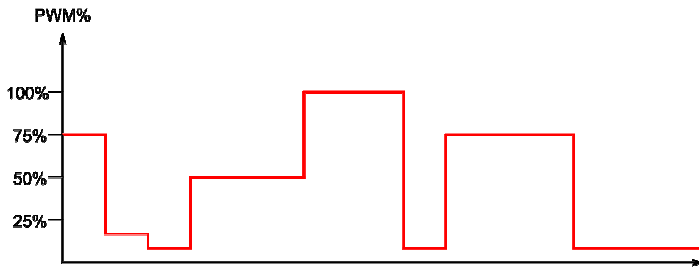
Voltage:	0-10V
Current:	0-20mA by interconnecting 500 ohm at pin 5
Proportional signal isolated.	No

The PWM Control signal and Proportional Control signal works in parallel. The actuator follows the highest input of the two signals. This feature can be used if the actuator is connected to two independent controllers and the one with the highest demand shall be followed. See below graph for further explanations:

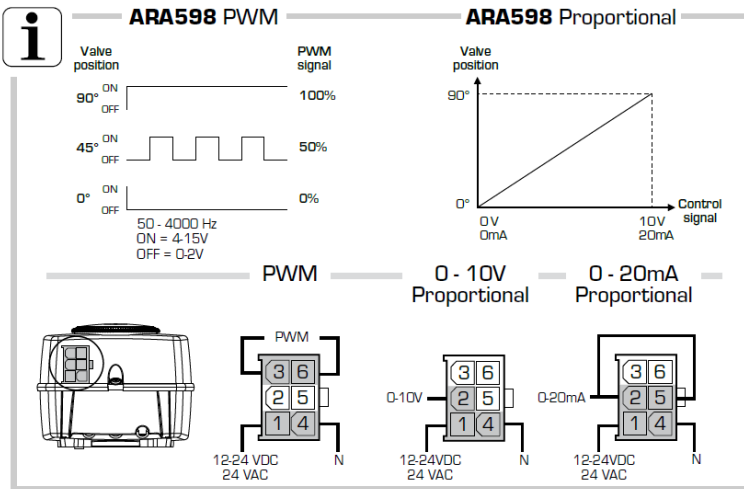




This feature can also be used as an electrical end switch for closed position. This is possible by using one of the signals as control signal and the other as the end limit. In the example below is the PWM signal control signal and the proportional input is continuously 2,5V. In this case will the actuator never close the valve down to more than 22,5° (25%) even if the PWM signal is 0% because in that case will the proportional signal have the highest input and therefore will be followed.



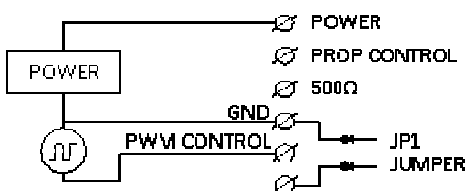
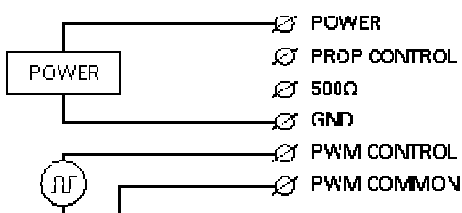
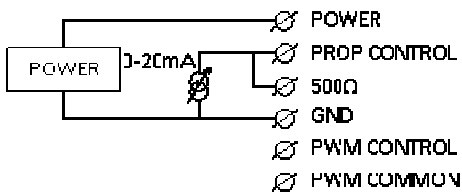
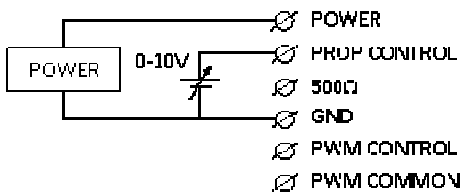
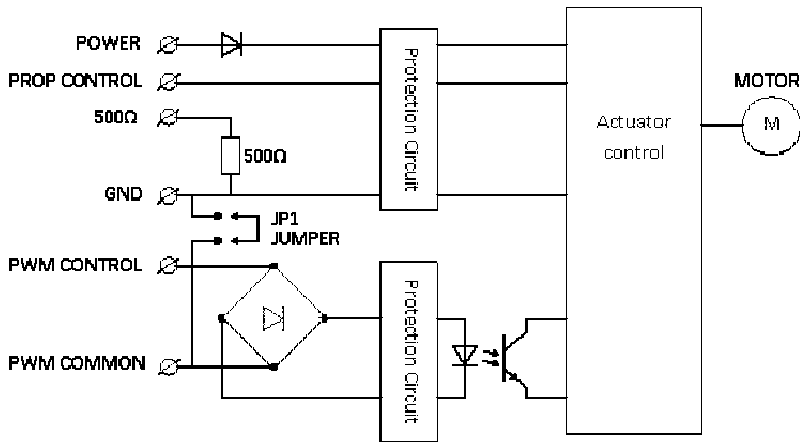
Electrical connection:



Note: On board jumper (JP1) header for connecting "Power N pos 4" and "Signal N pos 6"
(No jumper mounted from factory)

Molex pin	Signal	Direction	Comment
1	POWER	IN	24VAC or +12V – +24VDC
2	PROP CONTROL	IN	0 – +10V control input
3	PWM CONTROL	IN	0 – 100% PWM control input
4	GND	GND	Voltage common terminal
5	500 Ω	IN	Resistor load for 0 – 20mA current control
6	PWM COMMON	COM	PWM control reference

ELECTRICAL CONNECTION DIAGRAMS:

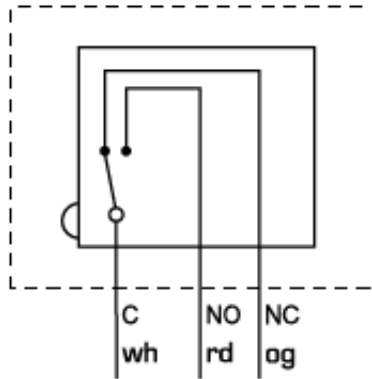




OPTIONS:

Auxiliary switch kit

Auxiliary switch kit is available with a fixed 45° activation angle. This is mainly for application with ESBE VRB100 valves. Auxiliary switch is delivered with a 1.6 meter cable.



Art nr: 1620 07 00

Denomination: ESBE ARA801, Auxiliary switch kit ARA600/ARA500