

VA-748x Series Electric Terminal Unit Actuators

Product Bulletin

LIT-12013756
2025-06-23

Overview

VA-748x Series electric terminal unit valve actuators provide floating, proportional, or proportional control with 0 V to 10 V position feedback signal and electric fail safe function in HVAC applications. The compact design of this actuator series makes it suitable for installation in confined locations such as fan coils, chilled ceilings, manifolds, and more. VA-748x Series actuators are designed for field-mounting onto Johnson Controls® and competitors' terminal unit valves. Due to the innovative concept of auto stroke detection, the VA-748x can be installed over most of the conventional terminal unit valves and pressure independent control valves (PICV) with variable strokes on the market.

Features

- **Low and line voltage** — Flexible applications
- **Floating and proportional control** — Flexible applications
- **Voltage and current analog input** — Suitable for any controller
- **Different analog input ranges** — Flexible applications
- **Different actuator speeds** — New market opportunities
- **Double and RGB colour LED** — Provide information about status and diagnostic
- **Removable cable** — No expert required for connection or replacement
- **Different cable length available as separate kit** — OEM's version easily available
- **Auto stroke detection** — Suitable for valve with variable stroke
- **Feedback control** — 0-10 VDC with max. 2mA output current
- **Electrical fail safe** — Protects the equipment and the system from damage, while enhancing overall efficiency
- **Valve stem detection** — Detects when the actuator is not mounted on the valve

Figure 1: VA-748x Series electric terminal unit actuator



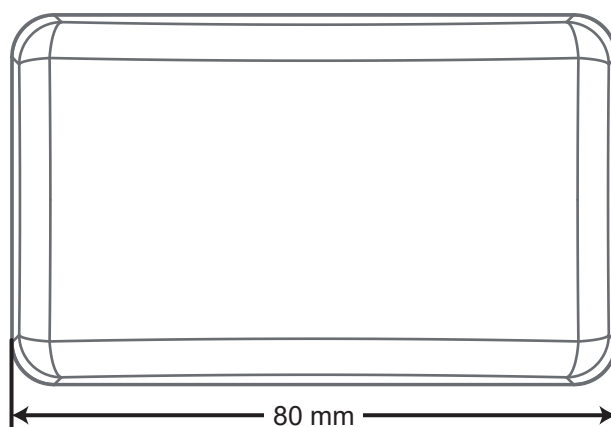
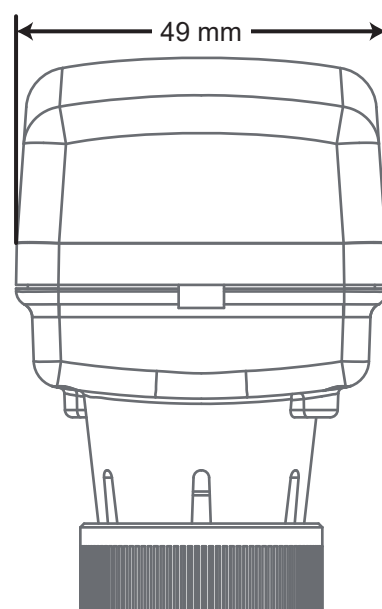
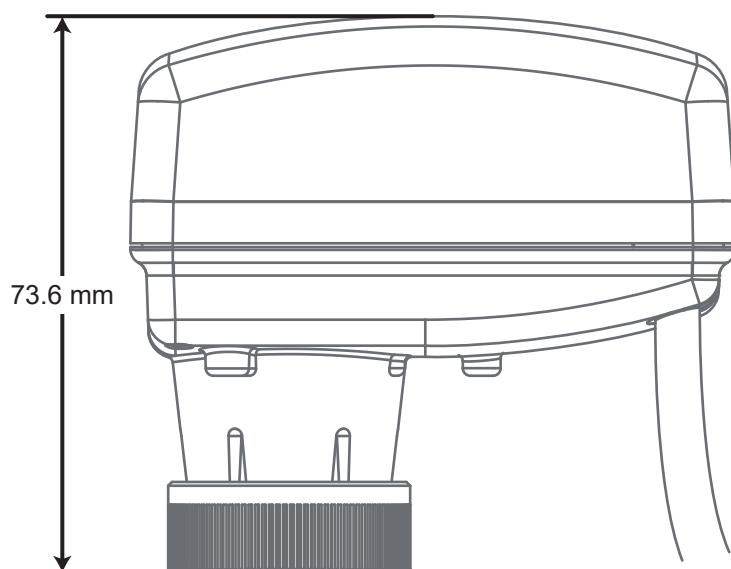
Ordering information

Product code	Control type	Power supply	Running time	Nominal force	Factory stroke config.	Cable length	Mounting thread nut	Special config.	Feedback	Electrical fail safe	Enclosure			
VA-7480-0011	Floating	24 VAC	13 sec/mm	120 N	—	1.5 m	M28x1.5	—	—	—	IP54			
VA-7480-0312						3m, CMP		UL Listed						
VA-7481-0011			8 sec/mm			1.5 m	M30x1.5	—						
VA-7480-0001			13 sec/mm											
VA-7481-0001			8 sec/mm											
VA-7480-0201-TA			13 sec/mm	140 N		2 m								
VA-7480-0501-TA				5 m										
VA-7480-4001		230 VAC		120 N		1.5 m	M28x1.5	IP43						
VA-7480-4003														
VA-7480-0013			8 sec/mm				M30x1.5							
VA-7481-0013			13 sec/mm											
VA-7480-0003			8 sec/mm											
VA-7481-0003														
VA-7481-4003														
VA-7482-1001	Proportional	24 VAC/ VDC	8 sec/mm	120 N	3.2 mm	1.5 m	M30x1.5	—	—	—	IP54			
VA-7482-2001					4.3 mm			Reverse action						
VA-7482-3001					6.0 mm									
VA-7482-1001-RA					3.2 mm	3 m								
VA-7482-1301-RA					4.3 mm	1.5 m	M28x1.5	—						
VA-7482-2001-RA					—	3 m		UL Listed						
VA-7482-0011						140 N	5 m	Reverse action						
VA-7482-0311					120 N		1.5 m	—						
VA-7482-0312						5 mm								
VA-7482-2201-TA					5.5 mm									
VA-7482-2501-TA				160 N	Auto stroke	2 m, halogen-free	M30x1.5					Reverse action		
VA-7482-5001												—		
VA-7482-6001													Reverse action and UL Listed	
VA-7482-7001														
VA-7482-8201								Reverse action						
VA-7482-9201								M30x1.5				Reverse action and UL Listed		
VA-7482-8201-RA							1.5 m, CMP					—		
VA-7482-9201-RA														
VA-7482-8002-RA							3 m, CMP					Reverse action		
VA-7482-9002-RA							2 m, halogen-free	—						
VA-7482-8302-RA														
VA-7483-8201				1.5 m, CMP	—									
VA-7483-9201						Reverse action								
VA-7483-8201-RA				1.5 m, halogen-free	—									
VA-7483-9201-RA														
VA-7484-8001				2 m, halogen-free	—									
VA-7484-9001														
VA-7484-8001-RA				2 m, halogen-free	Reverse action									
VA-7484-9001-RA														
VA-7493-8201-RA														
VA-7493-8201-RH														

Accessories

Product code	Description	Packing
VA-7480-CAB21	Floating 24 V, 2 m length	Plastic bag
VA-7480-CAB31	Floating 24 V, 3 m length	
VA-7480-CAB51	Floating 24 V, 5 m length	
VA-7480-CAB11	Floating 24 V, 10 m length	
VA-7480-CAB33	Floating 230 V, 3 m length	
VA-7480-CAB53	Floating 230 V, 5 m length	
VA-7480-CAB73	Floating 230 V, 7 m length	
VA-7480-CAB13	Floating 230 V, 10 m length	
VA-7482-CAB21	Proportional 24 V, 2 m length	
VA-7482-CAB31	Proportional 24 V, 3 m length	
VA-7482-CAB51	Proportional 24 V, 5 m length	
VA-7482-CAB71-HF	Proportional 24 V, 7 m length, halogen-free	
VA-7482CAB7452	Cable kit to replace VA-7452 with VA-7482	Single pack
VA-748X-CONF	Configuration tool	
VA-7482-AS-CABA	Cable adapter, Molex to JST connector	Plastic bag
VA-7482-AS-CAB3	Cable kit, proportional 24 V, 3 m length, halogen-free, Molex connector	
VA-7482-AS-CAB5	Cable kit, proportional 24 V, 5 m length, halogen-free, Molex connector	
VA-7482-AS-CAB7	Cable kit, proportional 24 V, 7 m length, halogen-free, Molex connector	

Dimensions



Valve compatibility

Product code	Johnson Controls	Danfoss	Frese	Industrie Technik	Oventrop	Sauter	Schneider Electric	Siemens	I.M.I.	Fratelli Petinaroli	Watts Industries	Isma Controlli
VA-7480-0011 VA-7480-0312 VA-7481-0011 VA-7480-0013 VA-7481-0013 VA-7482-0011 VA-7482-0311 VA-7482-0312	VG4000 Series (discontinued) VG5000 Series (discontinued)	—	—	—	—	—	—	—	—	—	—	—
VA-7480-0001 VA-7481-0001 VA-7480-0003 VA-7481-0003	VG3000 Series V5000 Series (discontinued) VG6000 Series (discontinued) VP1000 Series	AB-QM (DN15-DN32)	—	VFX Series (DN15-DN20)	COCON QTZ (DN10-DN32) COCON 2TZ (DN15-DN20) Tri-M Plus (DN15)	VUL Series BUL Series VUT Series BUT Series VXL Series BXL Series VCL Series (DN10-DN32)	VZx8 Series VZx8C (DN15-DN20)	VVP47 Series VXP47 Series VMP47 Series VVI46 Series VXI46 Series VVS46 Series VXS46 Series	TA Compact (DN10-DN32) TA Modulator (DN15-DN20)	91 Series 92 Series 93 Series	2131 Series 3131 Series 4131 Series	—
VA-7482-1001 VA-7482-1001-RA VA-7482-1301-RA	VP1000 Series (DN15-DN20) VG6000 Series (discontinued)	AB-QM (DN10-DN20)	—	VFX Series (DN15-DN20)	COCON QTZ (DN10-DN15)	VUT Series BUT Series VXL Series BXL Series VCL Series (DN10-DN15)	VZx8 Series VZx8C (DN15-DN20)	VVP47 Series VXP47 Series VMP47 Series VVI46 Series VXI46 Series VVS46 Series VXS46 Series	—	91 Series	2131 Series 3131 Series 4131 Series	—
VA-7482-2001 VA-7482-2001-RA	VG3000 Series V5000 Series (discontinued)	—	—	—	COCON QTZ (DN20-DN32) COCON 2TZ (DN15-DN20) Tri-M Plus (DN15)	VUL Series BUL Series VCL Series (DN20-DN32)	—	—	—	—	—	—
VA-7482-3001	VP1000 Series (DN25-DN32)	AB-QM (DN25-DN32)	—	—	—	—	—	—	—	93 Series	—	—
VA-7480-0201-TA VA-7480-0501-TA	—	—	—	—	—	—	—	—	TBV-C (DN15-DN25) TBV-CM (DN15-DN25) TBV-CMP (DN15-DN25) KTCM512 (DN15-DN25)	—	—	—
VA-7482-2201-TA VA-7482-2501-TA	—	—	—	—	—	—	—	—	TBV-C (DN15-DN20) TBV-CM (DN15-DN25) TBV-CMP (DN15-DN25) KTCM512 (DN15-DN25)	—	—	—
VA-7493-8201-RA	VP1000 Compact Series (DN40)	—	—	—	—	—	—	—	—	92 Series (DN40)	—	—
VA-7493-8201-RH	VP1000 Compact Series (DN40-DN50)	—	—	—	—	—	—	—	—	92 Series (DN40-DN50)	—	—
VA-7480-4001 VA-7480-4003 VA-7481-4003	—	—	Optima Compact 53-13xx (DN10-DN32)	—	—	—	—	—	—	—	—	VXS0xPB VSXT0xPB (DN10-DN32) VSX03PB
VA-7482-5001	—	—	Optima Compact 53-13xx 2.5 mm (DN10-DN20)	—	—	—	—	—	—	—	—	VXS04PB VSX05PB VSX06PB (DN10-DN20)

Valve compatibility, cont'd

Product code	Johnson Controls	Danfoss	Frese	Industrie Technik	Oventrop	Sauter	Schneider Electric	Siemens	I.M.I.	Fratelli Pettinaroli	Watts Industries	Isma Controlli
VA-7482-6001	—	—	Optima Compact 53-13xx 5 mm (DN10-DN20)	—	—	—	—	—	—	—	—	VSXT03PB VSXT04PB VSXT06PB (DN10-DN20)
VA-7482-7001	—	—	Optima Compact 53-13xx 5.5 mm (DN25-DN32)	—	—	—	—	—	—	—	—	VSXT07PB VSX08PB (DN25-DN32)
VA-7482-8201 VA-7482-8201-RA VA-7482-8002-RA VA-7482-8302-RA	VG3000 Series V5000 Series (discontinued) VG6000 Series (discontinued) VP1000 Series	AB-QM (DN10-DN32)	—	VFX Series (DN15-DN20)	COCON QTZ (DN10-DN32) COCON 2TZ (DN15-DN20) Tri-M Plus (DN15)	VUT Series BUT Series VXL Series BXL Series VCL Series (DN10-DN32) VUL Series BUL Series	VZx8 Series VZx8C Series (DN15-DN20)	VVP47 Series VXP47 Series VMP47 Series VVI46 Series VXI46 Series VVS46 Series VXS46 Series	TBV-C (DN15-DN20) TBV-CM (DN15-DN25) TBV-CMP (DN15-DN25) KTCM512 (DN15-DN25) TA Compact (DN10-DN32) TA Modulator (DN15-DN20)	91 Series 92 Series 93 Series	2131 Series 3131 Series 4131 Series	VLXxP (DN15-DN32)
VA-7482-9201 VA-7482-9201-RA VA-7482-9002-RA	—	—	Optima Compact 53-13xx 2.5 mm (DN10 5.5 mm (DN25-DN32)	—	—	—	—	—	—	—	—	VSX03PB VSX04PB VSX05PB VSX06PB (DN10-DN20) VSXT03PB VSXT04PB VSXT06PB (DN10-DN20) VSXT07PB VSX08PB (DN25-DN32)
VA-7483-8201 VA-7483-8201-RA VA-7484-8001 VA-7484-8001-RA	VG3000 Series V5000 Series (discontinued) VG6000 Series (discontinued) VP1000 Series	AB-QM (DN10-DN32)	—	VFX Series (DN15-DN20)	COCON QTZ (DN10-DN32) COCON 2TZ (DN15-DN20) Tri-M Plus (DN15)	VUT Series BUT Series VXL Series BXL Series VCL Series (DN10-DN32) VUL Series BUL Series	VZx8 Series VZx8C Series (DN15-DN20)	VVP47 Series VXP47 Series VMP47 Series VVI46 Series VXI46 Series VVS46 Series VXS46 Series	TBV-C (DN15-DN20) TBV-CM (DN15-DN25) TBV-CMP (DN15-DN25) KTCM512 (DN15-DN25) TA Compact (DN10-DN32) TA Modulator (DN15-DN20)	91 Series 92 Series 93 Series	2131 Series 3131 Series 4131 Series	—
VA-7483-9201 VA-7483-9201-RA VA-7484-9001 VA-7484-9001-RA	—	—	Optima Compact 53-13xx 2.5 mm (DN10-DN20) Optima Compact 53-13xx 5.0 mm (DN10-DN20) Optima Compact 53-13xx 5.5 mm (DN25-DN32)	—	—	—	—	—	—	—	—	VSX03PB VSX04PB VSX05PB VSX06PB (DN10-DN20) VSXT03PB VSXT04PB VSXT06PB (DN10-DN20) VSXT07PB VSX08PB (DN25-DN32)

Operation

24 VAC floating control model

When the signal is applied to the black and red wires, the actuator stem extends. When the signal is removed, the actuator remains in position. If the signal remains applied to the red wire, the actuator times out and shuts off the motor after approximately 90 seconds (13 sec/mm models) or approximately 60 seconds (8 sec/mm models).

When the signal is applied to the black and orange wires, the actuator stem retracts. When the signal is removed the actuator remains in position. If the signal remains applied to the orange wire, the actuator will time out and shut off the motor after approximately 90 seconds (13 sec/mm models) or approximately 60 seconds (8 sec/mm models).

End of stroke confirmation

When the signal is applied in the same direction, the actuator turns on every 2 hours and drives in the signal direction for approximately 90 seconds (13 sec/mm models) or approximately 60 seconds (8 sec/mm models) to confirm the end of stroke position.

Table 1: Actuator stem direction

Input	Direction	
Red wire energised	↓	Actuator stem extends
Orange wire energised	↑	Actuator stem retracts

230 VAC floating control model

When the signal is applied to the blue and brown wires, the actuator stem extends. When the signal is removed, the actuator remains in position. If the signal remains applied to the brown wire, the actuator will time out and shut off the motor after approximately 90 seconds (13 sec/mm models) or approximately 60 seconds (8 sec/mm models).

When the signal is applied to the blue and orange wires, the actuator stem retracts. When the signal is removed, the actuator remains in position. If the signal remains applied to the orange wire, the actuator will time out and shut off the motor after approximately 90 seconds (13 sec/mm models) or approximately 60 seconds (8 sec/mm models).

End of stroke confirmation

When the signal is applied continuously in the same direction, the actuator turns on every 2 hours and drives in the signal direction for approximately 90 seconds (13 sec/mm models) or approximately 60 seconds (8 sec/mm models) to confirm the end of stroke position.

Table 2: Actuator stem direction

Input	Direction	
Brown wire energised	↓	Actuator stem extends
Orange wire energised	↑	Actuator stem retracts

24 VAC/VDC proportional control model with fixed stroke

VA-7482-xx01 factory stroke configured series (jumper setting)

When the power is applied, the actuator self-calibrates, performing an auto-zero detection cycle. The actuator moves the stem down for a complete mechanical valve stroke until no changes are detected. Once the auto-zero is detected the actuator moves the stem accordingly with the input signal, within the value of the electrical stroke as per jumper setting.

When the input signal increases (for example, from 0 V to 10 V), the actuator stem extends if the actuator is configured as direct action (DA) or retracts if the actuator is configured as reverse action (RA).

When the input signal decreases (for example, from 10 V to 0 V), the actuator stem retracts if the actuator is configured as DA or extends if the actuator is configured as RA. See [Table 3](#).

End of stroke confirmation

For VA-7482-0011 model only:

When the input signal is at 0% or 100%, the actuator turns on every 2 hours and drives in the signal direction for approximately 90 seconds (13 sec/mm models) or approximately 60 seconds (8 sec/mm models) to confirm the end of stroke position.

For VA-7482-xx01 models:

When the input signal is at 100%, the actuator turns on every 2 hours and drives in the signal direction for approximately 60 seconds to confirm the end of stroke position.

Table 3: Actuator stem direction

Action	Input	Direction	
DA	0 VDC to 10 VDC	↓	Actuator stem extends
	10 VDC to 0 VDC	↑	Actuator stem retracts
RA	0 VDC to 10 VDC	↑	Actuator stem retracts
	10 VDC to 0 VDC	↓	Actuator stem extends

24 VAC/VDC proportional control model with auto stroke capability

VA-7482/3/4-8xx1, VA-7482/3/4-9xx1 and VA-749x-8xx1 auto stroke detection series

Important: Auto Stroke detection is suitable for valves with minimum 2 kg spring preloading.

When the power is applied, the actuator performs the auto stroke detection cycle to detect the real valve stroke. The actuator moves the stem down for a complete mechanical valve stroke until no stroke changes are detected. Once the lower valve stem position is detected, the actuator moves the spindle up until it is fully retracted while the microprocessor counts and stores the full stroke of the actuator. Then, the actuator drives the spindle down in order to detect the upper valve stem position, being able to calculate the real stroke subtracting the gap value. As soon as the spindle of the actuator touches the valve stem, the actuator stops the auto stroke detection cycle (red LED blinking) and starts the operational mode (green LED blinking).

When the input signal increases (for example, from 0 V to 10 V), the actuator stem extends if the actuator is configured as DA or retracts if the actuator is configured as RA.

When the input signal decreases (for example, from 10 V to 0 V), the actuator stem retracts if the actuator is configured as DA or extends if the actuator is configured as RA. See [Table 4](#).

Note: The actuator performs the auto stroke detection cycle every time it is powered on.

End of stroke confirmation

When the input signal drives the actuator to completely extend the spindle for 2 hours, the actuator turns on the motor and drives the spindle back for a short distance and then towards the end-stroke until stall is detected to confirm the end of the stroke position.

Table 4: Actuator stem direction

Action	Input	Direction
DA	0 VDC to 10 VDC	↓ Actuator stem extends
	10 VDC to 0 VDC	↑ Actuator stem retracts
RA	0 VDC to 10 VDC	↑ Actuator stem retracts
	10 VDC to 0 VDC	↓ Actuator stem extends

24 VAC/VDC proportional control model with 0 VDC to 10 VDC feedback output (VA-7483 and VA-7484)

Position feedback

The position feedback signal is for monitoring the actuator stroke position. It feeds information internally to the positioner and a 0 VDC to 10 VDC signal can supply an external supervisory system. See [Table 5](#) for correspondence between control signal and feedback output.

Table 5: Positive feedback signal

Input signal range	Feedback output range
0 V to 10 V	0 V to 10 V
2 V to 10 V	
0 mA to 20 mA	
4 mA to 20 mA	
Custom range	

24 VAC/VDC proportional control model with 0 VDC to 10 VDC feedback output and electric fail safe (VA-7484)

Electrical fail safe

The actuator is equipped with a super capacitor, which, in case of power failure, will drive the actuator and valve to the predefined safety position, either open or closed. When the power supply is restored, the actuator is available for normal operation after the super capacitor is fully charged, within 150 seconds. After the super capacitor is charged, the actuator performs a new auto stroke detection routine.

The electrical safety technology has been designed for a long life service with 5,000 full charges guaranteed.

Table 6: Electric fail safe direction

Input	Direction
EFSD (electric fail safe down)	↓ Actuator stem extends in case of power failure
EFSU (electric fail safe up)	↑ Actuator stem extends in case of power failure

Operating status indication

24 VAC/230 VAC floating control model

Floating control models are equipped with a green LED which provides information about the operating status.

Table 7: LED status

Status	Description
Off	 No power supply
Green blinking	 Moving to position
Green blinking	 End stroke confirmation
Green steady on	 End stroke reached

24 VAC/VDC proportional control fixed stroke model

Fixed stroke proportional control models are equipped with a bi-colour LED (green-red) which provides information about the operating status and diagnostics.

Table 8: LED status and diagnostics

Status	Description
Off	 No power supply
Green blinking	 Moving to position
Green blinking	 End stroke confirmation
Green steady on	 Position reached
Red blinking	 Auto-zero cycle
Red steady on	 4 mA to 20 mA or 2 VDC to 10 VDC signal lost
Green and red blinking	 Valve stem not detected. Check for correct mounting.

24 VAC/VDC proportional auto stroke control model with feedback

Auto stroke proportional control models are equipped with a bi-colour LED (green-red) which provides information about the operating status and diagnostics.

Table 9: LED status and diagnostics

Status	Description	
Off	 No power supply	
Green blinking	 Moving to position	
Green steady on	 Position reached	
Red blinking slow	 Initialization / auto stroke detection	
Red blinking quickly	 Sticking error	
Red steady on	 4 mA to 20 mA or 2 VDC to 10 VDC signal lost	
Green and red blinking	 Valve stem not detected. Check for correct mounting.	

24 VAC/VDC proportional control model with feedback and electric fail safe

Proportional control models are equipped with an RGB LED which provides information about the operating status and diagnostics.

Table 10: LED status and diagnostics

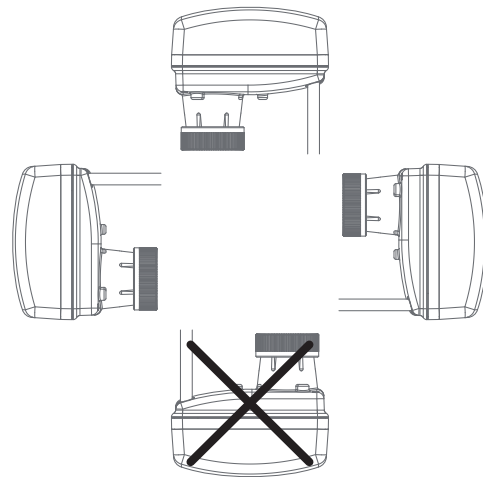
Status	Description	
Off	 No power supply	
RGB blinking	 Not configured	
Green blinking	 Moving to position	
Green steady on	 Position reached	
Red blinking slow	 Initialization / auto stroke detection	
Red blinking quickly	 Sticking error	
Red steady on	 4 mA to 20 mA or 2 VDC to 10 VDC signal lost	
Green and red blinking	 Valve stem not detected. Check for correct mounting.	
Blue blinking slow	 Super capacitor acting, Fail Safe on action	
Blue blinking quickly	 Super capacitor close to end of life. Recommended actuator replacement	
Blue steady on	 Super capacitor recharging	

Mounting instructions

When mounting the actuator on terminal unit valves, follow these instructions:

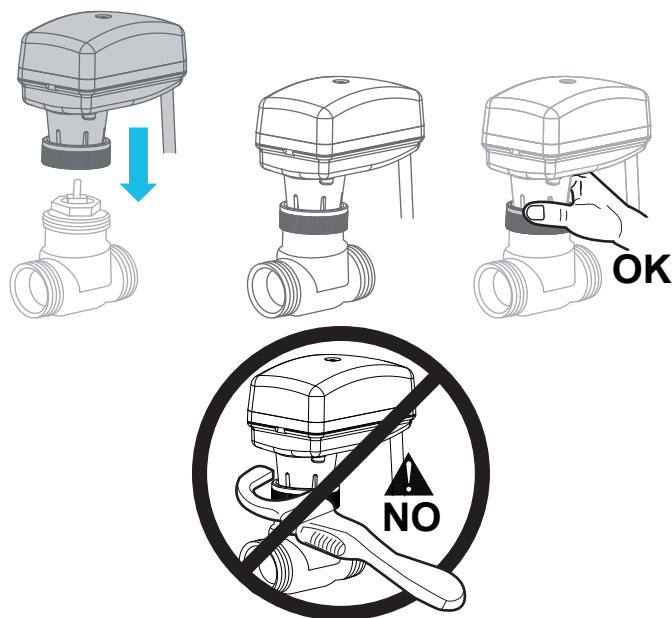
- Never use the actuator as a mounting lever.
- It is recommended that the valves be mounted upright or at angles not greater than 90° in an easily accessible location.

Figure 2: Mounting positions



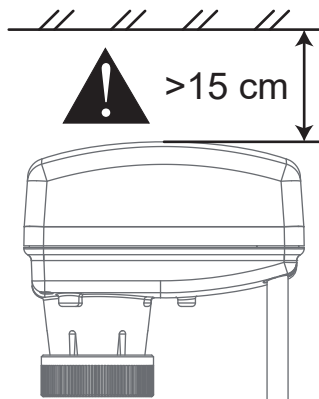
- Do not mount the actuator upside down to avoid dripping water, as this could enter the housing and damage the mechanism or motor.
- Do not cover with insulating material.
- Hand tighten only. Do not over tighten. When mounting the actuator on the valve, only hand tighten the brass threaded coupling. Using a wrench to tighten the coupling will damage the actuator, cause it to fail, and will void the warranty. Position the actuator on the valve before tightening by hand.

Figure 3: Hand tighten only



- Never grab the actuator and forcibly turn it. To reposition the actuator on the valve, loosen the coupling, reposition the actuator and then retighten the brass coupling by hand.
- Sufficient clearance must be allowed for actuator removal. See the following figure for details.

Figure 4: Required clearance



- Check to be sure the actuator spindle is in its full retracted position as received.

Figure 5: Spindle retracted



- Do not connect the power supply before mounting the actuator on the valve.

Removing the actuator from a valve

Important: Do not remove the actuator without switching off the power supply

In some situations, you may need to mount the actuator to a new valve with different closing dimensions. For example, if a pressure independent control valve (PICV) needs to be repositioned with a new stroke setting to suit new flow requirements, or a new valve with different closing dimensions replaces the old one. To safely mount the actuator to the new valve, complete the following steps:

Non electric fail safe models:

1. Set the control signal so that the spindle is fully retracted. Wait until the fully retracted position is reached.
2. Switch off the actuator power supply.
3. Remove the actuator from the valve.
4. Check that the actuator spindle is in the retracted position. See [Figure 5](#) and [Mounting instructions](#).
5. Set the new valve position (for PICVs) or replace the existing valve with the new valve.
6. Mount the actuator on the valve.
7. Switch on the actuator power supply.
8. The actuator performs the standard or auto stroke detection cycle again to reposition itself based on the new valve setting.

VA-7484-8x01 and VA-7484-9x01 auto stroke detection series:

If the actuator is set to EFSU:

1. Set the input signal to the actuator to move the valve stem to the maximum extended position so that the the actuator spindle moves to the retracted position.
2. Switch off the actuator power supply.
3. Remove the actuator from the valve.
4. Check that the actuator spindle is in the retracted position. See [Figure 5](#) and [Mounting instructions](#).
5. Set the new valve position (for PICVs).
6. Mount the actuator on the valve.
7. Switch on the actuator power supply.
8. The actuator performs the standard or auto stroke detection cycle again to reposition itself based on the new valve setting.

If the actuator is set to EFSD:

1. Set the input signal to the actuator to move the valve stem to the maximum extended position so that the the actuator spindle moves to the retracted position.
2. Switch off the actuator power supply.
3. Connect the configuration tool to the actuator and select the **Safe Unmounting** option.
4. Remove the actuator from the valve.
5. Check that the actuator spindle is in the retracted position. See [Figure 5](#) and [Mounting instructions](#).
6. Set the new valve position (for PICVs) or replace the existing valve with the new valve.
7. Mount the actuator on the valve.
8. Switch on the actuator power supply.
9. The actuator performs the standard or auto stroke detection cycle again to reposition itself based on the new valve setting.

Wiring

WARNING

Risk of electric shock.

Disconnect the power supply before making electrical connections. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

CAUTION

Risk of property damage.

Do not apply power to the system before checking all wiring connections. Short circuited or improperly connected wires may result in permanent damage to the equipment.

Important

When servicing a VA-748x Series electric terminal unit actuator, ensure:

- the electric supply to the actuator is switched off to avoid possible damage to the equipment, personal injury or shock.
- you do not touch or attempt to connect or disconnect wires when electric power is on.
- all wiring conform to local codes and must be carried out by authorized personnel only.
- you keep high and low voltage wiring separated.
- when using multi-stranded wire, apply a cable ferrule to the cable end.
- the line power supply is in accordance with the power supply specified on the device.
- you check all wiring connections before applying power to the system.

Figure 6: 24 VAC floating control model wiring

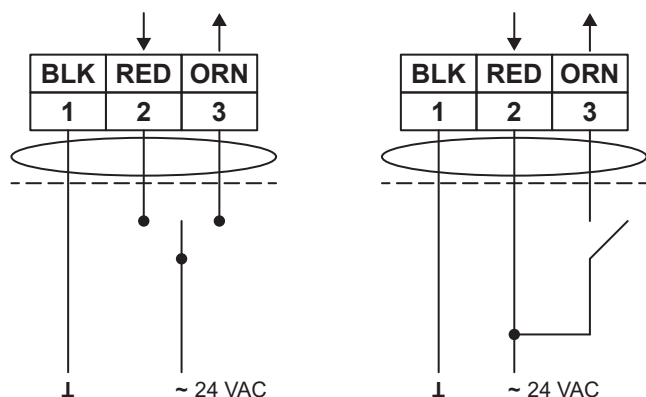


Figure 8: 24 VAC/VDC proportional control model wiring

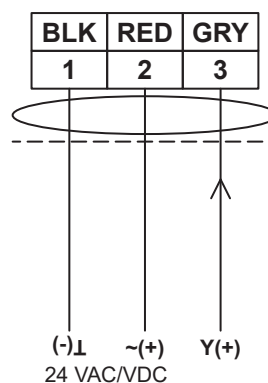


Figure 7: 230 VAC floating control model wiring

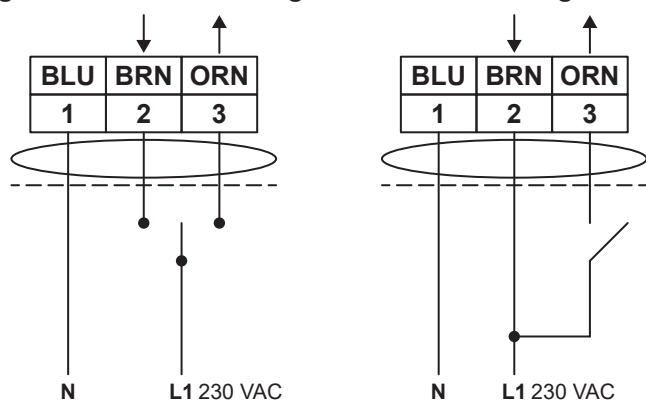
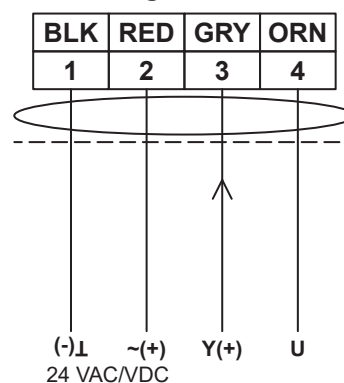


Figure 9: 24 VAC/VDC proportional control model with feedback and proportional control model with feedback and electric fail safe wiring

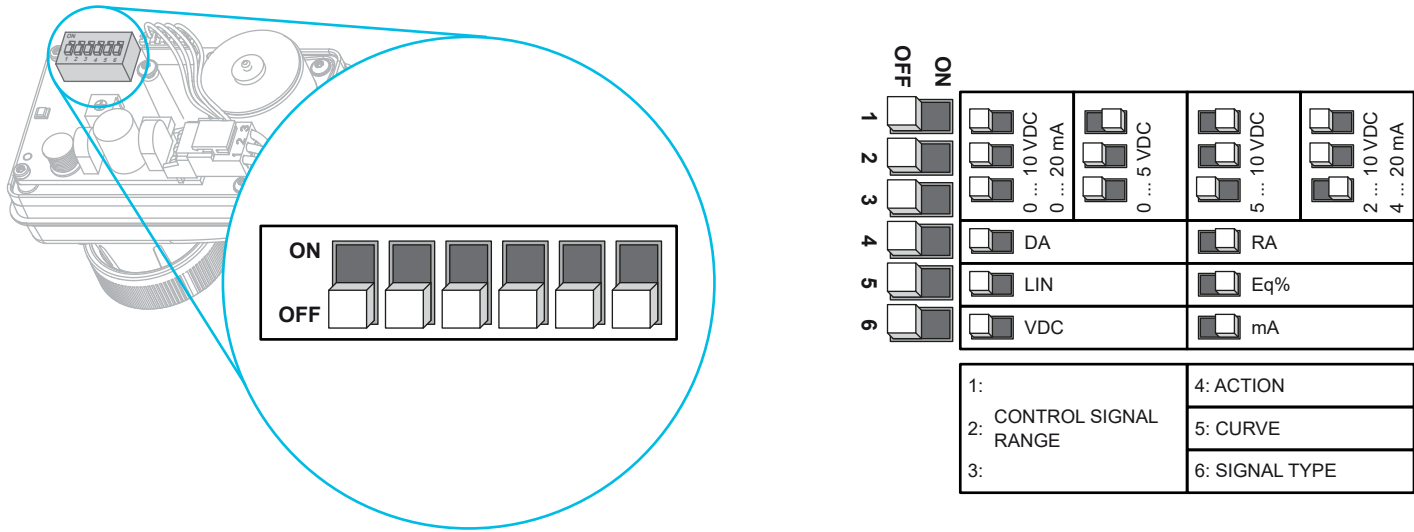


DIP switch settings (proportional control models only)

Fixed stroke models

These proportional models have six DIP switches which allow the user to field-configure the actuator. The actuator is factory released with all the DIP switches in OFF position.

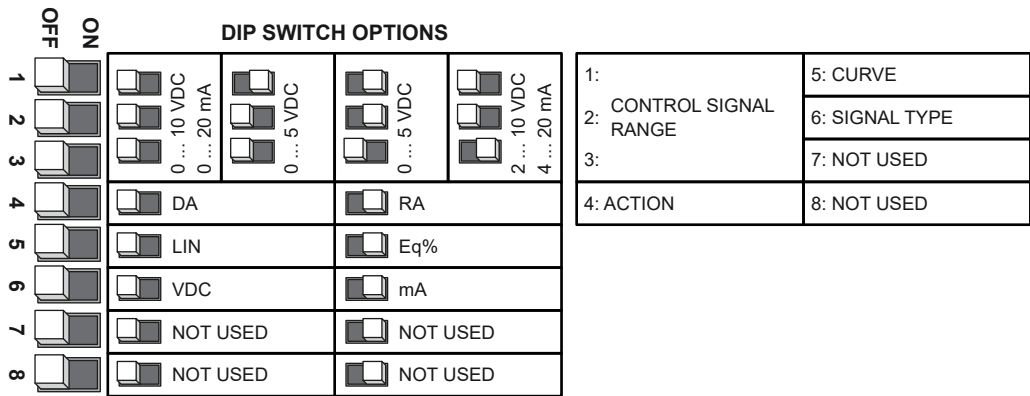
Figure 10: Fixed stroke models DIP switches



Non electric fail safe auto stroke models

These proportional models have eight DIP switches which allow the user to field-configure the actuator. The actuator is factory released with all the DIP switches in OFF position.

Figure 11: Non electric fail safe auto stroke models DIP switches

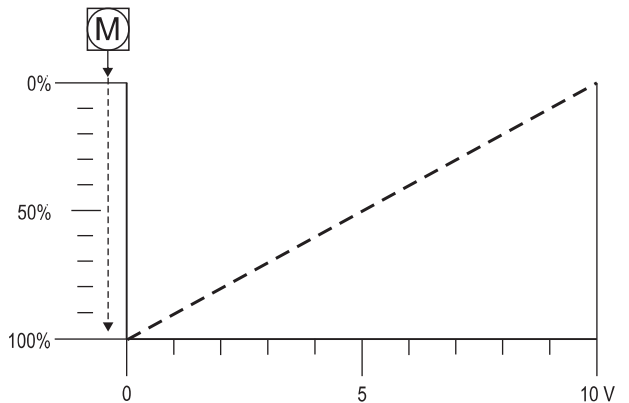
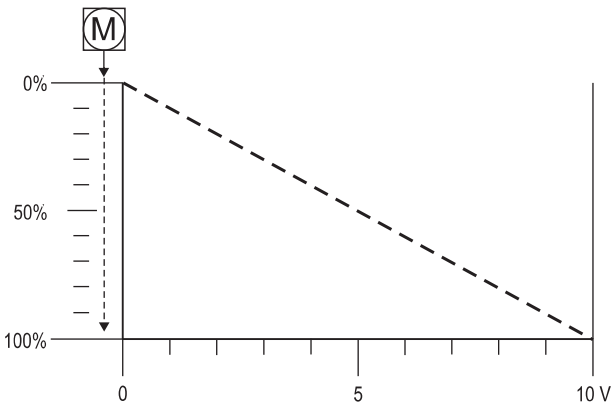


DIP switches 1, 2, 3, and 6

DIP switches 1, 2, and 3 allow the user to change the analog input ranges. Set DIP switch 6 to switch from voltage analog input to current analog input.

DIP switch 4

DIP switch 4 allows the user to change the action of the actuator in relation to the analog input.



DIP switch 5

DIP switch 5 allows the user to change the control characteristics of the actuator in order to obtain a combination of valve and actuator linear or almost equal percentage.

DIP switch 5 OFF (linear)

Use this option with linear or equal percentage control valves.

DIP switch 5 ON

On fixed stroke legacy models (VA-7482-xx1x), this option enables almost equal percentage mode. Use this option with quick opening or on-off control valves.

On all other models, this option enables equal percentage curve.

Configuration tool (VA-748X-CONF)

VA-7484 models

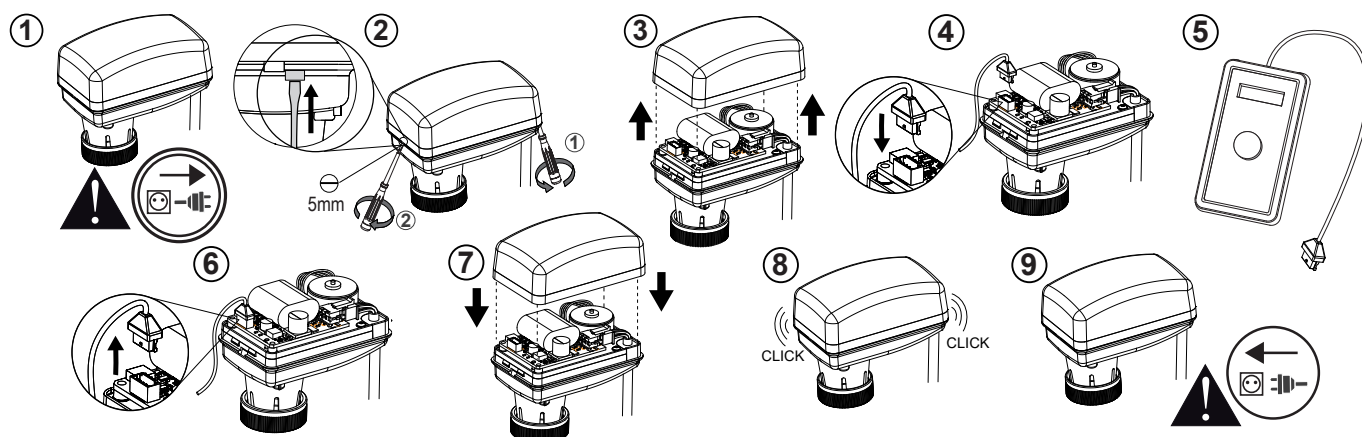
The user can field-configure these proportional model actuators through an external user-friendly configuration tool (VA-748X-CONF). The actuator is released with the following options. Factory settings are highlighted in bold.

Table 11: Factory settings

Specification	Setting	
Y(+) [***] Analog input	0 VDC to 10 VDC 2 VDC to 10 VDC 0 VDC to 5 VDC 5 VDC to 10 VDC	0 mA to 20 mA 4 ma to 20 mA
Action	DA	RA
Curve	LIN	Eq%
Fail safe action	EFS ↓	EFSU ↑

Follow these steps to connect the configurator tool to the actuator:

Figure 12: Configurator connection instructions



Powering on the configuration tool

To power on, connect the configuration tool to the actuator's dedicated port and press the encoder button for more than 2 seconds.

Note: The configuration tool will automatically power off after a few seconds if it does not detect any connected actuator.

Configuration process

Use the rotary encoder to navigate through the menu. Rotate clockwise to show the next item on the display, and counterclockwise to show the previous one.

To select an item, press the encoder button for more than 2 seconds. To return to the previous level menu, press the encoder button for more than 4 seconds.

The first-level menu contains the following options:

- **Load Configuration:** Shows the last saved configuration on the display and uploads it into the actuator
- **Set Configuration:** Shows all configurable parameters
- **Safe Unmounting:** Select this option to remove the actuator safely from the valve. The actuator fully retracts the spindle.

Set Configuration process

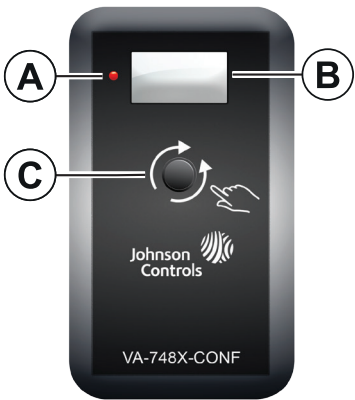
When the user selects the **Set Configuration** option, all configurable parameters are shown. Select a specific parameter to go through the different available parameter values.

After selecting a new parameter value, the configuration tool will automatically go back to the parameter list. In order to go back to the parameter list without changing the current value, press and hold the encoder button for more than 4 seconds.

The parameters and their values are as follows:

- **Control signal type**
 - Voltage
 - Current
- **Control signal span**
 - 0 V to 10V (if the **Voltage** setting is chosen)
 - 2 V to 10V (if the **Voltage** setting is chosen)
 - 0 V to 5V (if the **Voltage** setting is chosen)
 - 5 V to 10V (if the **Voltage** setting is chosen)
 - 0 mA to 20 mA (if the **Current** setting is chosen)
 - 4 mA to 20 mA (if the **Current** setting is chosen)
- **Action type**
 - DA
 - RA
- **Curve type**
 - Linear
 - EQ%
- **Fail Safe action**
 - EFSU
 - EFSD
- **Save Configuration**
 - Yes
 - No
- **Load Configuration**

Figure 13: Configuration tool



Callout	Description
A	LED status
B	Display
C	Rotary Encoder button

Safe unmounting procedure

To safely remove the actuator from the valve when it is set with EFSD configuration, complete the following step.

Note: The configuration tool must be connected to the actuator following the dedicated procedure.

In the first level menu, choose the **Safe Unmounting** option. This causes the actuator to fully retract the spindle, allowing the safe removal of the actuator from the valve. When performing this operation, the actuator settings do not change.

Warning: Do not remove an actuator with EFSD configuration from a valve without performing the safe unmounting procedure.

Electrical actuator stroke and closing dimensions

All proportional control models with the factory stroke configuration option have one jumper with which the user can change the electrical stroke.

Factory settings are detailed in the following table.

Note: Proportional control models with auto stroke detection do not require the jumper as they can detect the real valve stroke automatically.

All floating control models have fixed stroke and the jumper option is not available.

Note: UMES refers to upper mechanical end stroke. LMES refers to lower mechanical end stroke.

Figure 14: Stroke options

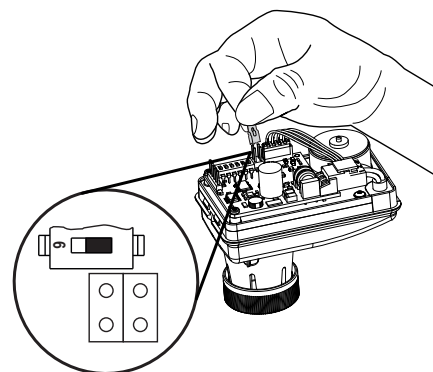


Table 12: Factory settings

Product code	UMES/LMES	Factory stroke settings		Notes
VA-7482-0011	UMES: 16.3 mm LMES: 10 mm		PDTC	Proportional control model VA-7482-0011 (suitable for VG5000 Series and VG4000 Series valves): For proportional actuators, suitable for the VG5000 Series or VG4000 Series valves, the jumper allows the user to set push down to close (PDTC) or push down to open (PDTO) function. The actuator is factory set for use with two-way PDTC VG4200 and VG5200 valves. For two-way PDTO VG4400 and VG5400 valve applications, set the valve port selection jumper to PDTO. For three-way VG4800 and VG5800 valve applications, set the jumper to the valve port type that corresponds to the service port of the valve.
			PDTO	
VA-7482-1x01			3.2 mm	Proportional control models VA-7482-x001, VA-7482-8x01, VA-7482-9x01, VA-7483-8201, VA-7483-9201, VA-7484-8001, and VA-7484-9001: The proportional control VA-7482-x001 Series is suitable for different terminal units in the market. See Valve compatibility for details.
VA-7482-2x01			4.3 mm	
VA-7482-3x01			6 mm	
VA-7482-8x01		Auto stroke detection		
VA-7482-8002-RA				
VA-7483-8201				
VA-7484-8001				
VA-7482-5x01	UMES: 14.5 mm LMES: 8.2 mm		2.5 mm	
VA-7482-6x01			5 mm	
VA-7482-7x01			5.5 mm	
VA-7482-9x01		Auto stroke detection		
VA-7482-9002-RA				
VA-7483-9201				
VA-7484-9001				
VA-7480-0xxx	UMES: 16.3 mm	—	Floating control models VA-7480-0xxx, VA-7481-0xxx, VA-7480-4xxx, and VA-7481-4003: All floating models have fixed stroke. The jumper option is not available.	
VA-7481-0xxx	LMES: 10 mm			
VA-7480-4xxx	UMES: 14.5 mm			
VA-7481-4003	LMES: 8.2 mm			
VA-7493-8201-RA	UMES: 15.1 mm		Proportional control model, only suitable for DN40 valve (RA) and DN40 to DN50 valves (RH) from VP1000 compact series.	
VA-7493-8201-RH	LMES: 6.4 mm			

Technical specifications

Table 13: VA-748x Series actuators technical specifications

Specification		Description
Control type	VA-7480-x0x1	Floating or PAT
	VA-7481-00x1	
	VA-7481-x0x3	
	VA-7481-x0x3	
	VA-7482-x002-RA	Proportional
	VA-7482-x0x1	
	VA-7483-x201	
	VA-7493-8201	
	VA-7484-x001	
Supply voltage (50/60Hz)	VA-7480-x0x1	24 VAC, ±15%
	VA-7481-00x1	
	VA-7481-x0x3	230 VAC, ±10%
	VA-7481-x0x3	
	VA-7482-x002-RA	• 24 VAC, ±15% • 24 VDC, ±15%
	VA-7482-x0x1	
	VA-7483-x201	
	VA-7493-8201	
	VA-7484-x001	
Feedback	VA-7480-x0x1	• Signal: — • Rating: —
	VA-7481-00x1	
	VA-7481-x0x3	
	VA-7481-x0x3	
	VA-7482-x002-RA	
	VA-7482-x0x1	• Signal: 0 VDC to 10 VDC, ±5% • Rating: maximum 2 mA at 0 VDC to 10 VDC
	VA-7483-x201	
	VA-7493-8201	
	VA-7484-x001	
Input impedance	VA-7480-x0x1	• Voltage: — • Current: —
	VA-7481-00x1	
	VA-7481-x0x3	
	VA-7481-x0x3	
	VA-7482-x002-RA	• Voltage: >100 kΩ • Current: 500 Ω
	VA-7482-x0x1	
	VA-7483-x201	
	VA-7493-8201	
	VA-7484-x001	
Power consumption	VA-7480-x0x1	• Apparent (running): 2.5 VA • Active (running): 1.5 W
	VA-7481-00x1	
	VA-7481-x0x3	• Apparent (running): 6.0 VA • Active (running): 2.2 W
	VA-7481-x0x3	
	VA-7482-x002-RA	• Apparent (running): 2.5 VA • Active (running): 1.5 W
	VA-7482-x0x1	
	VA-7483-x201	
	VA-7493-8201	• Apparent (charging): — • Active (charging): —
	VA-7484-x001	
Maximum stroke		VA-748x: 6 mm
		VA-749x: 7.8 mm

Table 13: VA-748x Series actuators technical specifications, continued

Specification		Description
Running time	VA-7480-x0x1	13 sec/mm
	VA-7481-00x1	8 sec/mm
	VA-7481-x0x3	13 sec/mm
	VA-7481-x0x3	8 sec/mm
	VA-7482-x002-RA	
	VA-7482-x0x1	
	VA-7483-x201	
	VA-7493-8201	
	VA-7484-x001	
Charging time	VA-7480-x0x1	—
	VA-7481-00x1	
	VA-7481-x0x3	
	VA-7481-x0x3	
	VA-7482-x002-RA	
	VA-7482-x0x1	
	VA-7483-x201	
	VA-7493-8201	
	VA-7484-x001	150 s
Protection	VA-7480-x0x1	IP54
	VA-7481-00x1	IP43
	VA-7481-x0x3	
	VA-7481-x0x3	
	VA-7482-x002-RA	IP54
	VA-7482-x0x1	
	VA-7483-x201	
	VA-7493-8201	
	VA-7484-x001	
Materials	Cover	ABS + PC
	Yoke	PA66 – Glass Mineral filled (30% total)
	Thread nut	Brass CuZn40Pb2
Housing colour		White, semi-transparent
Thread nut connection		See Ordering information
Ambient operating conditions		0°C to 50°C, 10% to 90% RH
Ambient storage conditions		-20°C to 65°C, 5% to 95% RH
Maximum fluid temperature		95 °C
Electrical connections	VA-7480-x0x1	1.5 m cable length, (3 x 0.35 mm ²)
	VA-7481-00x1	
	VA-7481-x0x3	
	VA-7481-x0x3	1.5 m cable length, (3 x 0.75 mm ²)
	VA-7482-x002-RA	1.5m CMP
	VA-7482-x0x1	1.5 m cable length, (3 x 0.35 mm ²)
	VA-7483-x201	2 m cable length, (4 x 0.35 mm ²)
	VA-7493-8201	
	VA-7484-x001	1.5 m cable length, (4 x 0.35 mm ²)
Operating status indications		LED
Audible noise rating		<30 dB(A)
Life		250,000 cycles (standard models) / 150,000 cycles (auto stroke models) / 100,000 cycles (VA-7493-8x01-RA) / 80,000 cycles (VA-7493-8x01-RH)
Shipping weight		0.2 kg
Compliance		Johnson Controls declares that these products are in compliance with the essential requirements and other relevant provisions of the EMC Directive and Low Voltage Directive, and equivalent UK regulations.



Note: VA-74xx-xxx2-xx is tested per UL2043. Suitable for Use in Other Environmental Air Space (Plenums) in Accordance with Section 300.22 (C) of the National Electrical Code. UL 60730-1 Listed Type 2 Enclosure, File E194024 XAPX XAPX7

Repair information

If the product fails to operate within its specifications, replace the unit. For a replacement, contact the nearest Johnson Controls representative.

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable end-user license, open-source software information, and other terms set forth at <https://www.johnsoncontrols.com/techterms>. Your use of this product constitutes an agreement to such terms.

Patents

Patents: <https://jciapat.com>

Single point of contact

APAC
JOHNSON CONTROLS
C/O CONTROLS PRODUCT MANAGEMENT
NO. 32 CHANGJIAG RD. NEW DISTRICT
WUXI JIANGSU PROVINCE 214028
CHINA

EU
JOHNSON CONTROLS
VOLTAWEG 20
6101 XK ECHT
THE NETHERLANDS

UK
JOHNSON CONTROLS
TYCO PARK
GRIMSHAW LANE
MANCHESTER
M40 2WL
UNITED KINGDOM

NA/SA
JOHNSON CONTROLS
5757 N GREEN BAY AVE.
GLENDALE WI 53209
USA

Contact information

Contact your local Johnson Controls representative: www.johnsoncontrols.com/locations

Contact Johnson Controls: www.johnsoncontrols.com/contact-us



Building Technologies & Solutions
Headquarters: Glendale, Wisconsin, USA
Branch offices: Principal cities worldwide

Johnson Controls® is a registered trademark of Johnson Controls.
All other marks herein are the marks of their respective owners.

© Copyright 2025 Johnson Controls. All rights reserved. Any unauthorized use or copying is strictly prohibited.
www.johnsoncontrols.com