# NSVA SERIES

**SMART VAV ACTUATOR** FLOATING CONTROL

## NSVA SERIES

NSVA smart VAV actuators provides high-performance DDC (direct digital control) of pressure-independent, VAV(variable-air-volume) function that are designed and produced for extended functionalities in HVAC systems, VAV and laboratory applications.

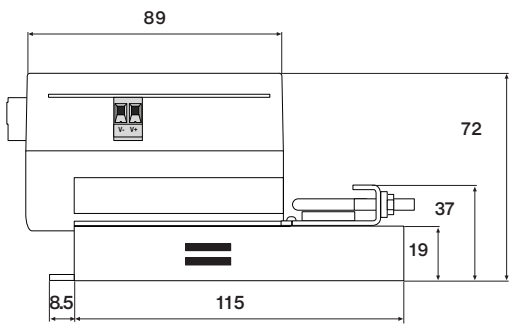
## PRODUCT FEATURE

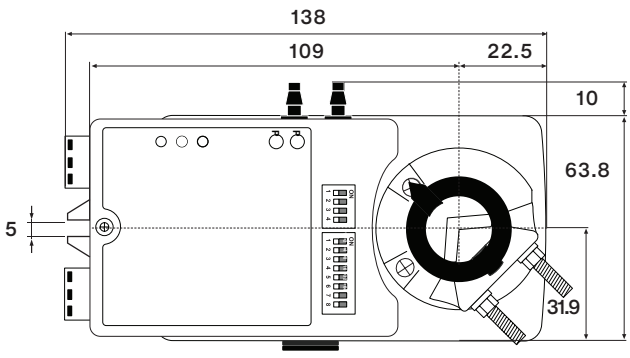
- Torque 5 Nm
- BACNET MS/TP for building automation system
- 128 binary value (BV), 128 analog value (AV)
- Compact with actuator +controller +communication + flow
- Actuator with pluggable terminal & RJ11 connection
- Adjustable angle of rotation (mechanical)
- Selectable direction of rotation of reversing actuator
- Selectable direction of rotation by switch
- Selectable baud rate

## MODEL SELECTION TABLE

| MODEL /TYPE | TORQUE | POWER SUPPLY | PRESSURE DIFF. | INPUT / OUTPUT | | | |
|---|---|---|---|---|---|---|---|
| | | | | Ai0, 1 | | Do0, 1 | Ao0, 1 |
| NSVA 0000BL | 5 Nm | AC 100-277 V ±10% | 0...500 Pa | 0 | | 0 | 0 |
| NSVA 0000B | 5 Nm | AC 24 V ±10% | 0...500 Pa | 0 | | 0 | 0 |
| NSVA 0200BL | 5 Nm | AC 100-277 V ±10% | 0...500 Pa | Ai0 10 KΩ | Ai1 0-10VDC | 0 | 0 |
| NSVA 0200B | 5 Nm | AC 24 V ±10% | 0...500 Pa | | | 0 | 0 |
| NSVA 0222B | 5 Nm | AC 24 V ±10% | 0...500 Pa | | | 2 (24VAC) | 2 (0-10 VDC) |

## DIMENSION (mm)



## TECHNICAL SPECIFICATION

| | |
|---|---|
| **MODEL NUMBER** | NSVA |
| **TORQUE** | 5 Nm |
| **SHAFT DIMENSION** | From Ø 6 to 16 mm round / ☐ 5 to 12 mm square* |
| **CONTROL SIGNAL** | Floating control |
| **RUNNING TIME** | 75...85 sec |
| **POWER SUPPLY** | |
| • **NSVA XXXXBL** | AC 100-277V ± 10% - 50/60Hz |
| • **NSVA XXXXB** | AC 24V ± 10% - 50/60Hz |
| **POWER CONSUMPTION** | |
| • **OPERATING** | 1.5 W |
| • **END POSITION** | 0.5 W |
| **CONNECTION** | |
| • **ACTUATOR** | Pluggable terminal 5.0 |
| • **HMI** | RJ11 |
| • **FLOW** | Outside diameter 3.175 mm(0.125”) |
| **PROTECTION CLASS** | |
| • **NSVA XXXXBL** | Class II ⧈ |
| • **NSVA XXXXB** | Class III ⧫ |
| **ANGLE OF ROTATION** | 90° (95° mechanical) |
| **ROTATION** | Selectable direction of rotation by DIP switch |
| **MANUAL OF ROTATION** | Manual of rotation by push button in the side |
| **MAX . 95° ANGLE OF LIMITING** | Can be limited at both ends with adjustable mechanical end stops |
| **DIP SWITCH** | |
| • **SW1** | Baud rate & Terminating Resistor & Rotation select |
| • **SW2** | MAC address setting |
| **SOUND LEVEL MOTOR AND EFS** | 42 dB (A) |
| **IP PROTECTION** | IP 20 |
| **MAINTENANCE** | Maintenance Free |

**Note that shaft dimension has a tolerance offset of ± 0.2mm.*

# NSVA SERIES

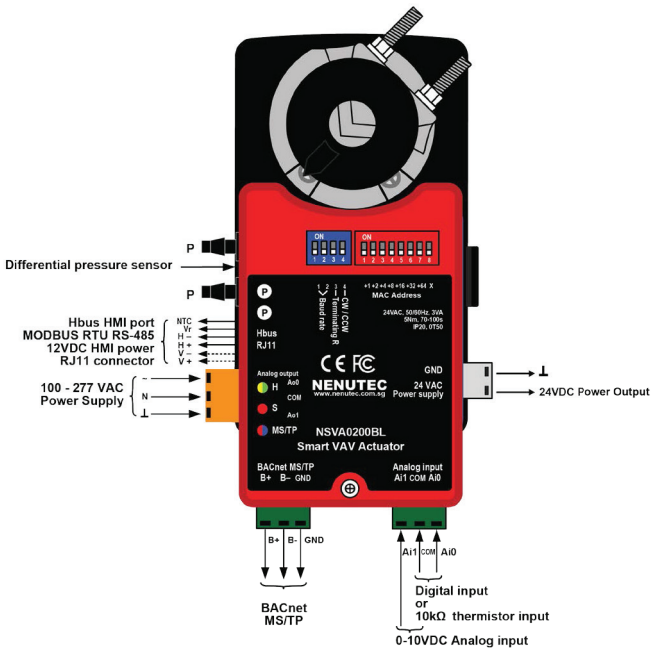
**SMART VAV ACTUATOR** FLOATING CONTROL

| | |
|---|---|
| **WEIGHT** | |
| • **NSVA 0000B, NSVA 0200B** | 600g |
| • **NSVA 0200BL, NSVA 0200BL** | 680g |
| • **NSVA 0222B** | 700g |
| **LIFE CYCLE ACTUATOR** | 60,000 full cycles |
| **FOR WIRE SIZING** | 4 VA |
| **MCU** | 32 bit MCU |
| **MEMORY** | 384K Flash, 8K FRAM & 1M Flash memory |
| **COMMUNICATION** | |
| • **ACTUATOR** | BACNET MS/TP RTU RS-485, 9600-76800 BPS, 1200M |
| • **HMI** | MODBUS RTU RS-485, 9600 BPS, 30M |
| **FLOW SENSOR** | |
| • **TYPE** | Differential sensor, I2C, 16BIT |
| • **SPAN** | 0...500 Pa |
| • **MEASUREMENT RANGE** | (0 to 23 m/s) |
| • **ACCURACY** | ± 5% reading |
| **INPUT** | |
| • **ANALOG INPUT(AI0)** | Dry contact for any kind input include occupy sensor for energy saving Thermistor 10k (type II) |
| • **ANALOG OUTPUT(AO0,1)** | 0-10 VDC , 4-20mA ,12 bits resolution |
| **POWER OUTPUT** | 24VDC 80mA for sensor, NSVA0200BL,NSVA0200BL only RJ11 to 5VDC 240mA ,for HMI thermostat connected. |
| **INDICATION** | |
| • **HMI** | Red & Green led – Type(upper) |
| • **POWER** | Green led(Middle) |
| • **BACNET MS/TP** | Red & Blue led – Type(lower) |
| **OPERATING** | 0...50°C, 20...90%RH, non condensing |
| **SHIPPING AND STORAGE** | -4°F to 158°F (-20°C to 70°C), 5% to 95% RH non-condensing |
| **BACNET** | BACnet Application Specific Controller (B-ASC) |
| **CERTIFICATION** | CE(EMC Directive : 2014/30/EU)<br>FCC(Part 15,Subpart B, Class A) |

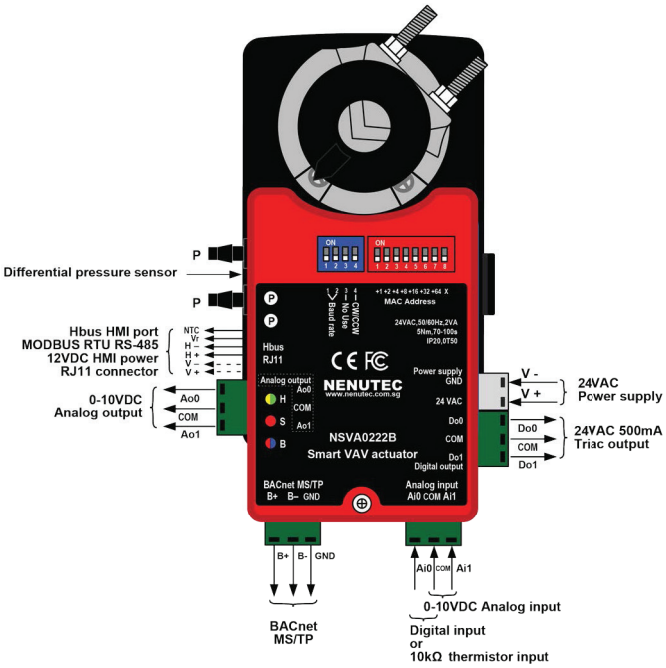
## TECHNICAL SPECIFICATION

### POWER INPUT

- NSVA 0000B/ NSVA 0200B/ NSVA 0222B is powered by VAC/DC 24 V. Power supply wiring connects to the two screw terminals on the controller L (live) and N (common)
- NSVA 0000BL/ NSVA 0200BL is powered by 100-277 VAC only. Power supply wiring connects to the two screw terminals on the controller L (live), N (common), and G (ground). Please take note that ground connection is required.



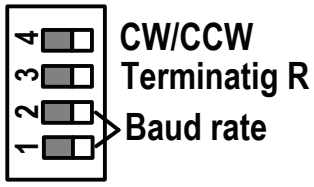

**NSVA 0000B/ NSVA 0200B/ NSVA 0222B**




**NSVA 0000BL/ NSVA 0200BL**

| | |
|---|---|
| **POWER INPUT (AI,AO,DO,MS/TP)** | Pluggable terminal block |
| **HBUS (HMI COMMUNICATION PORT)** | RJ11 connector |
| **PRESSURE SENSOR** | PE tube<br>No polarity<br>Outside diameter 3.175mm (0.125”) |
| **STATUS INDICATION** | HMI Room Unit<br>Upper (Yellow & Blue Led)<br>Middle (Red Led)<br>BACNET MS/TP<br>Lower (Yellow & Blue Led) |

## ADJUSTING CONTROL SIGNALS NSVA (S1)

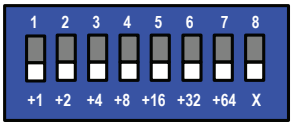



### SW4(S1,2) SET BAUD RATE OF COMMUNICATION

- Factory-set 38.4k. The baud rate of communication can be changed by the baud rate switch (switch on S1-S2) on the actuator's housing.

### SW4(S4) CHANGING DIRECTION OF ROTATION

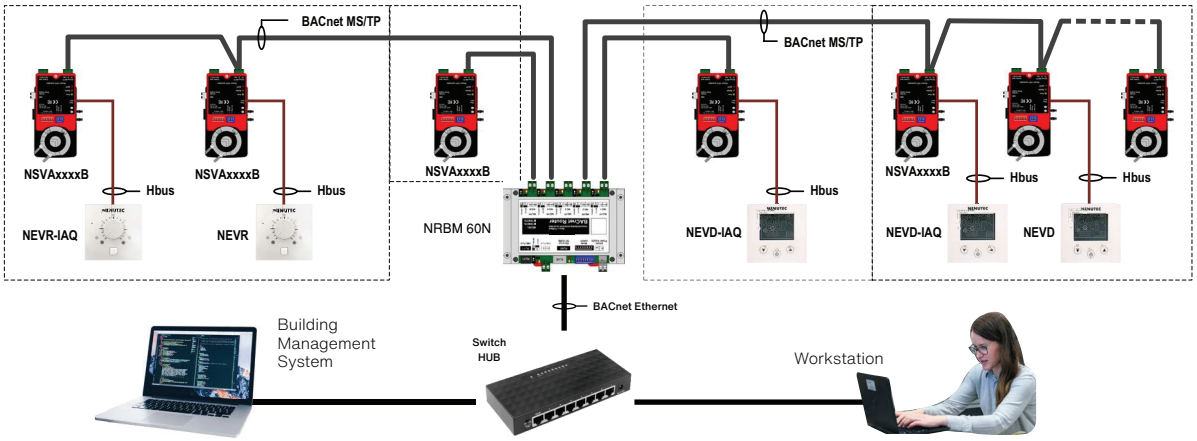
- Factory-set CW. The direction of rotationcan be changed by the CW/CCW switch (switch on S4) on the actuator's housing.




### SW8 SET MAC ADDDRESS OF ACTUATOR

- Factory-default NO.1. The MAC address of actuator can be changed via dip switch (switch on S1-S7) on the actuator's housing. Switch 8 should not be in use.

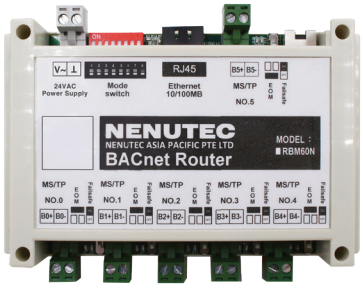
## VAV SYSTEM




## ACCESSORIES


### USB TOOL FOR VAV ACTUATOR

- VAV actuator firmware update by USB tool.




### GATEWAY FOR VAV ACTUATOR (MODEL RBM60N)

- GATEWAY for VAV actuator connect with Building Management System.

## MECHANICAL LIMITING ANGLE OF ROTATION

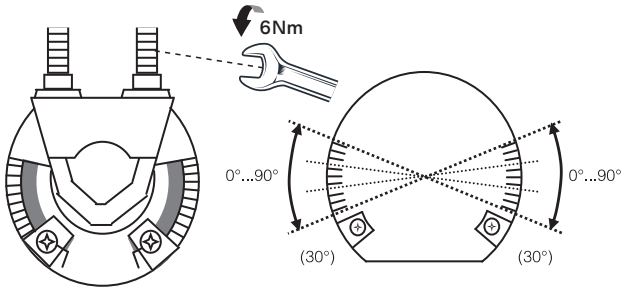
Adjustment of Mechanical Limiter

1. Loosen screw of mechanical limiter

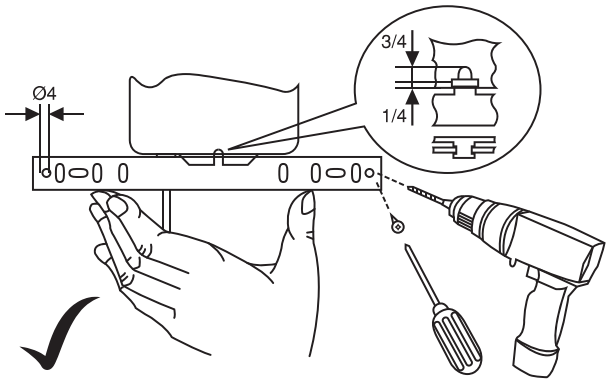
2. Move limiter to appropriate position*

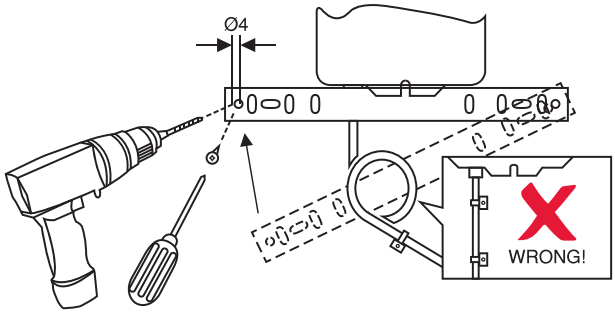
3. Tighten screw

*Working range of 90° can be reduced up to 30° from end position.




## INSTALLATION / MOUNTING INSTRUCTION




## IMPORTANT REMARK

For special requirement, consult your local Nenutec's representative.

This actuator includes electrical and electronic components and may not be disposed as household garbage. Please consider the local valid legislation.

AC / DC 24 V: Connect via safety isolating transformer.
AC 230 V: To isolate from the main power supply, the system must incorporate a device which disconnects the phase conductor (with at least a 3mm contact gap.)

The performance specifications are nominal and conform to acceptable industry standards. NENUTEC shall not be liable for damages resulting from misapplication or misuse of its products.