

Data sheet

Actuator ABNM A5 LOG for AB-QM, 0-10 V Proportional

Application



Actuator convincing features are:

- Stroke 5.0 mm
- Detection of AB-QM opening and closing point
- Available as normally closed (NC)
- Power consumption 1 W
- Plug-in cable
- Simple snap-on installation
- IP54 in any installation position
- First-Open function
- Compact size, small dimensions
- All round function indicator
- Noiseless and maintenance-free
- Certified by TÜV

Control is done by a 0-10 V signal, which is provided either by a room thermostat or, in most cases, by a central direct digital control (DDC) system. The actuator converts the 0-10 V signal into a proportional actuator travel, which logarithmic / equal percentage (ABNM A5 LOG). For fan coil unit or chilled ceiling application choice of logarithmic version is recommended (water to air heat exchanger). The result will be linear system response and thus optimal room temperature control.

The ABNM A5 0-10V thermal actuator has been specifically designed for use with AB-QM valves DN10-32/1/2-1 3/4 inch in heating and cooling applications.

Ordering

Type	Supply voltage	Stroke	Normally Open/ Normally Closed	LOG/LIN	Code no.
ABNM A5, with VA41 adapter, with 1m cable	24 V AC	5 mm	NC	LOG	082F1170

Accessories

Adapter VA41 for AB-QM is included with actuator. In case you wish to use ABNM A5 actuator with RA valves, order adapter VA78 separately.

Adapter	Code no.
VA78	082F1071

Technical data

Type	ABNM A5 5 mm version AC
Versions	NC, LOG
Voltage	24 V AC 50/60 Hz (-10% to +20%)
Max. inrush current	< 300 mA for max. 2 min.
Operating power	1 W ¹⁾
Control voltage	0-10 V DC
Input resistance	100 kΩ
Actuator travel	5 mm (- 0.5 mm overclosing)
Actuating force	100 N ± 5%
Closing (NC) or opening (NO) time when de-energized	3-5 min.
Speed	30 s/mm ²⁾
Calibration time (including First Open for NC)	30 ± 10 min. ²⁾
Delay when energized (heat up time)	2-3 min.
Fluid temperature	0 - 100° C ²⁾
Storage temperature	-25 to 65° C
Ambient temperature	0 to 60° C
Degree/class of protection	IP54 ³⁾ /III safety extra-low voltage
CE conformity according to	EN60730
UL certification	UL60730
Connecting cable (no included)	3 x 0.22 mm ² halogen free
Adapter (included)	VA 41
Overvoltage resistance EN60730-1	min. 1 kV
Weight	111 g
Housing material	Polyamid / white

¹⁾ Measured with precision power meter LMG95.

²⁾ Measured at ambient temperature 20°C. Due to thermal working principle of actuator some parameters vary with ambient temperature. At higher ambient temperatures actuator opening is faster and closing slower. At lower ambient temperatures actuator closing will be faster and opening slower.

³⁾ In all installation positions with cable plugged in.

Function

The actuator mechanism of the ABNM actuator uses a positive temperature coefficient (PTC) resistor heated wax element and a compression spring.

The wax element is heated by applying the operating voltage and moves the integrated piston. The force generated by this movement is transferred to valve spindle and thus opening or closing the valve. The actuator provides active regulation in a defined range (see characteristic curve between 0.5 V and 9.5 V).

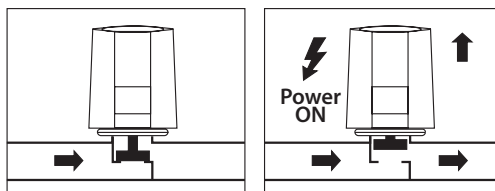
The function display (all-round display) of the ABNM shows at the first glance whether the valve is "open" or "closed".

First open function (for NC version)

In its delivery condition ABNM is partly open due to the first open function (filling). This enables heating/cooling operation during the carcass construction phase even when the electric wiring is not yet complete. During the later electrical start-up, the first open function is unlocked by applying the power supply for more than 6 minutes.

Version NC "normally closed"

In case of the normally closed version, valve is closed when de-energized. Valve is opened steadily upon switching on the power supply, setting control signal to 10 V and after expiry of the dead time.



Function display for NC versions extends proportionally with actuator opening from 0 mm to 5-6 mm.

Automatic initial calibration

Automatic initial calibration is done only at the first power on of the actuator (new actuator). Power supply needs to be applied for 30 min. (± 10 min.) in order to finalize calibration phase, which includes valve opening and closing point detection. This ensures an optimum match with the AB-QM valve used at any preset between 20% and 100%. Active control range is thus between 0.5 V and 9.5 V what ensures precise flow and temperature control. Automatic initial calibration stores calibration parameters directly in actuator non-volatile memory. Information remains in actuator memory also if actuator power supply is disconnected.

Manual re-calibration

In case you change valve type or valve preset after initial calibration is finished, apply 0 V control voltage for 15 min. for closing point detection and 10 V control voltage for 15 min. for new opening point detection.

Please note actuator stores this information in non-volatile memory 24 hours after re-calibration. If power is lost within 24 hours after re-calibration, then this information is lost, and you need to repeat the re-calibration procedure.

Automatic re-calibration

In case you change valve type or valve preset after initial calibration is finished and exact timing of re-calibration is not important, manual re-calibration procedure can be avoided. Controller will during normal course of operation sooner or later give control signal 0 V and 10 V. Actuator will automatically detect new closing point when control signal is 0 V for 15 min. and new opening point when control signal is 10 V for 15 min. We cannot guarantee duration of this procedure, as it depends from control signal from controller.

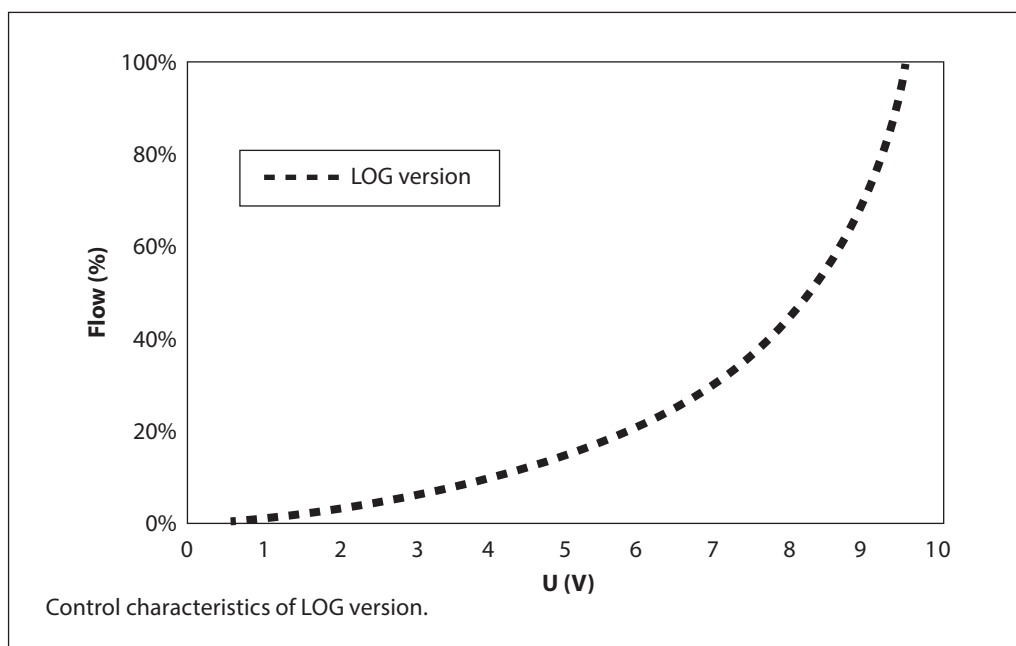
Operation after power-off

After power off (in case actuator was not removed from the valve) actuator will undergo normal operation within:

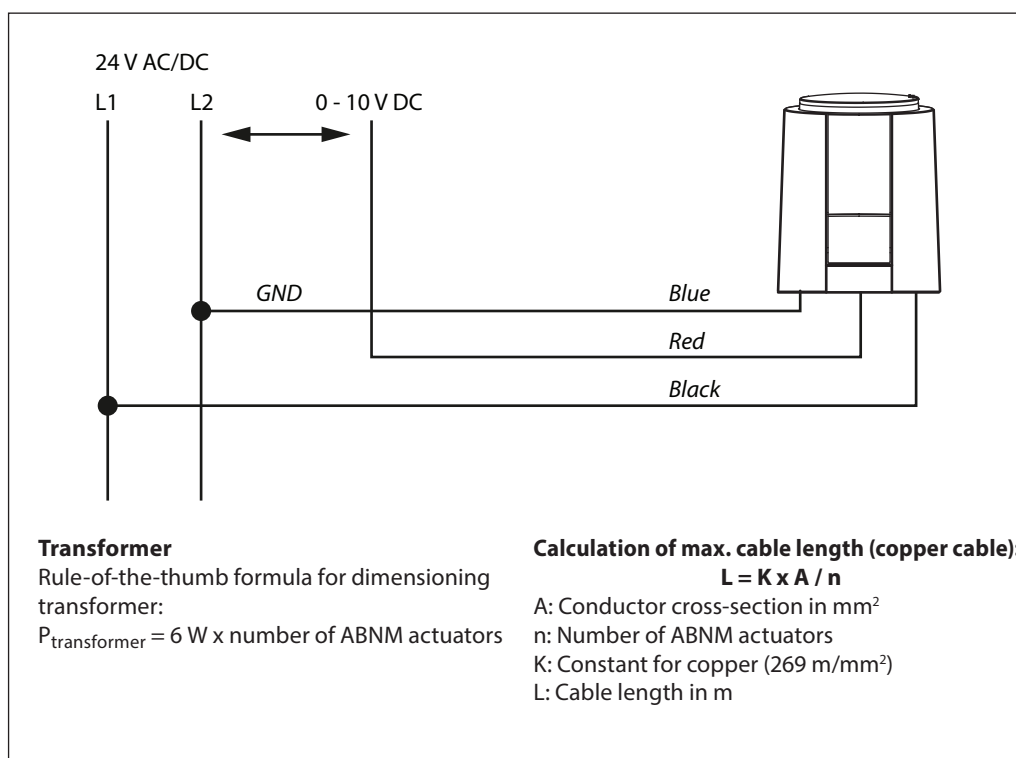
- 1 min. if power off was <10 s
- 15 min. if power off was >10 s

If power is lost within 24 hours after re-calibration, then you need to repeat re-calibration procedure.

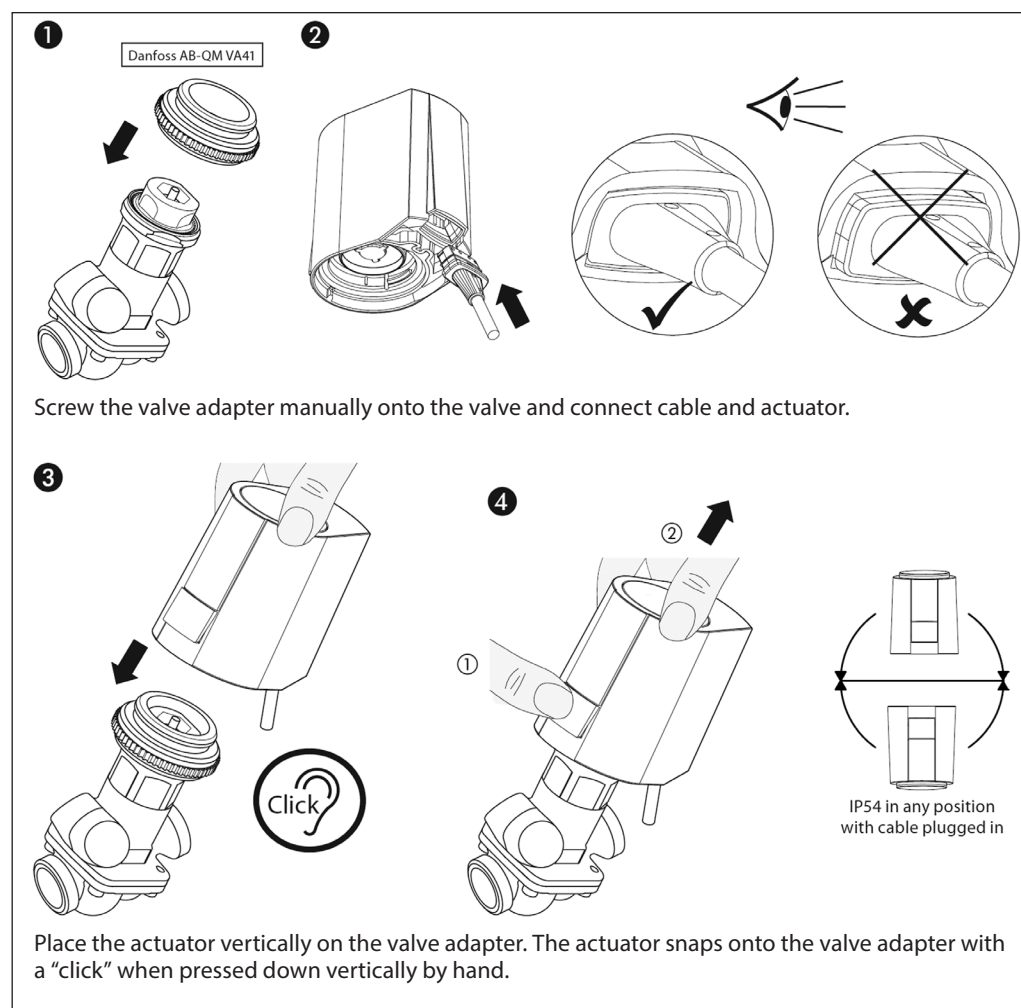
Characteristic Curves



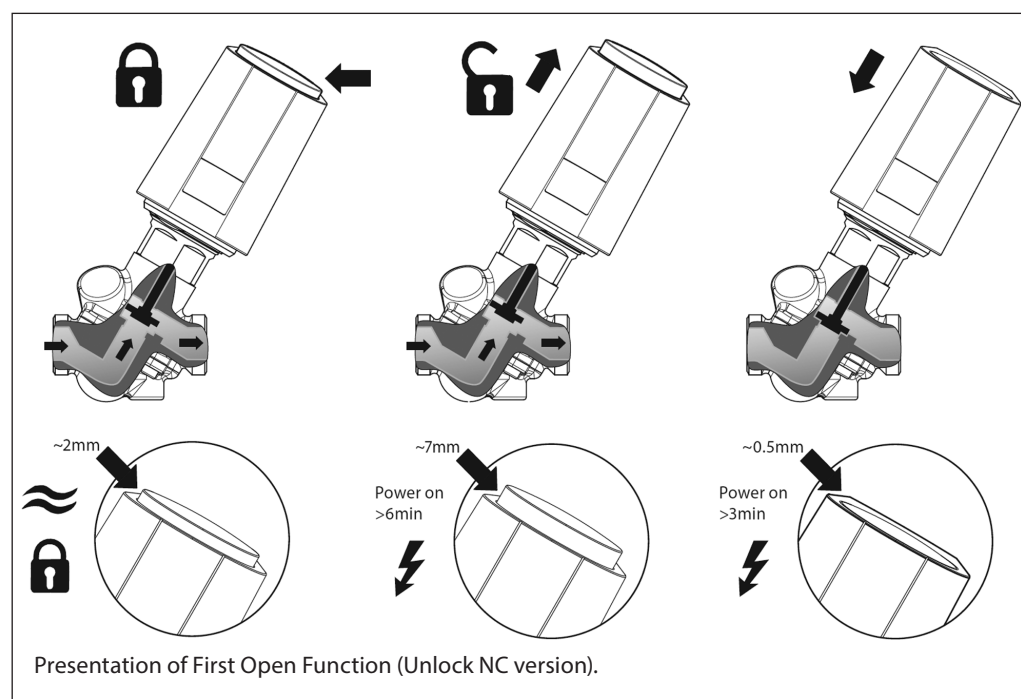
Electrical Connections



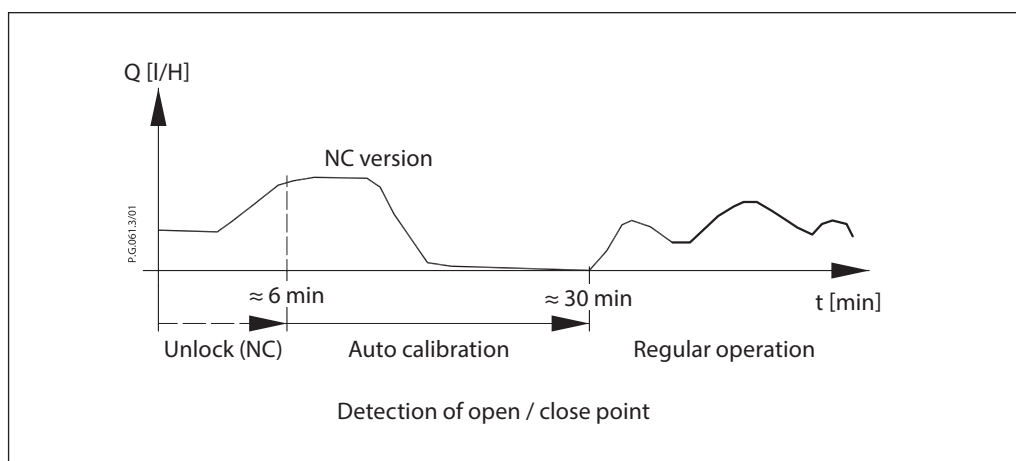
Installation



First Open Function



Calibration



Automatic initial calibration procedure to actual preset AB-QM stroke (detection of opening and closing point). ABNM A5 actuator needs ~30 min. for first calibration (including First Open Function and valve open and close point detection). In case of power loss the actuator will remember its position and will not need recalibration.

If valve preset is changed after first calibration is finished, actuator will automatically detect new

open and close point during normal operation. In order to accelerate this process cycle voltage to 0 V for 15 min. and 10 V for 15 min.

In case of power loss within 24 hours after re-calibration the actuator will lose its calibration parameters and need re-calibration.

In case of power loss after 24 hours after re-calibration the actuator will remember its position and will not need recalibration.

Dimensions

