



Residential Air damper actuators

GXD..31.1

Rotary version, two or three-position control

Electric motor-driven actuators for three-position control
1.5 Nm nominal torque
AC 24 V or AC 230 V rated voltage

Use

In ventilating and air conditioning plants to actuate air dampers

- with nominal torque of 1.5 Nm for damper areas of approx. up to 0.3 m² or barrel dampers up to 12".
- operate direct driven zone dampers used to control air flow in ducts
- specifically to address two position domestic and light commercial barrel damper applications

Type Summary

Non-spring return -
rotary air damper actuators

Type	Operating Voltage	Operating Frequency	Control signal	Torque	Cable length
GXD131.1A	24 VAC	50 Hz	3-Position	1.5 Nm	1 m
GXD331.1A	230 VAC	50 Hz	3-Position	1.5 Nm	1 m

Connecting cables

The actuator comes with 1 m long pre-wired connecting cables

Equipment Combinations These actuators can be connected to all control devices with a three-position output supplying a switching voltage of AC 24 V or AC 230 V or two position “light switch” style controls.

Functions

Basic Functions

Rotational movement The actuators rotational movement (clockwise or counter-clockwise) depends on the electrical control.
As soon as the operating voltage AC 24 V or AC 230 V is applied, the actuator starts to turn.

Three-position control The connected damper can be operated as follows via the respective actuator control. Example: clockwise direction

- Damper opens (0 °...90 °)
- Damper closes (90 °...0 °)

With no power applied, the damper remains in the respective position

Mechanical design

Basic Components

Housing Robust, light-weight plastic housing

Gear Train Maintenance-free and low-noise gear train with metal gear train plate to extend actuator life.

Engineering notes

STOP

The basic system data for the control systems in use contain all engineering information; refer to this data prior to mounting, wiring and commissioning the actuator and carefully read all safety information.


Intended use Use these actuators in a system only for applications as described in the basic system documentation of the applied control systems. Additionally, include all actuator-specific features and conditions as described in the brief description on the title page of this data sheet (bold print) and in the chapters “Use”, “Engineering Notes” and “Technical Data”



The sections flagged with a warning symbol as illustrated in the left margin contain safety-related requirements and restrictions. It is important that these are adhered in order to prevent physical injury and equipment damage.

AC 24 V supply

Operate the actuators only on safety extra-low voltage (SELV) or protection by extra low voltage (PELV) as per HD 384

 AC 230 V supply

The actuators are double - insulated and do not provide a connection for the protective ground.

CAUTION

Do not open the actuator!

- The units are maintenance-free.
- Any repair work must be conducted by the manufacturer only.
- Opening of the actuator will void warranty.

Parallel connection

Parallel connection of GXD actuators is not permitted.

Required actuator type

Selection of the actuator depends on several torque factors. After obtaining the damper torque rating (Nm/m²) from the manufacturer and determining the damper area, calculate the torque total required to move the damper as follows:

IF total torque (SF ¹)	Use type
≤ 2 Nm	GXD...1 (1.5 Nm)
≤ 5 Nm	GDB...1 (5 Nm)
≤ 10 Nm	GLB...1 (10 Nm)
≤ 15 Nm	GEB...1 (15 Nm)
≤ 20 Nm	GBB...1 (20 Nm)
≤ 35 Nm	GIB... 1 (35 Nm)

¹ Safety factor SF: When calculating the number of actuators, non-definable variables such as slight misalignment, damper age, etc. must be included as a safety factor. We recommend a safety factor of 0.80 (or 80% of the torque characteristic)

Sizing transformers for AC 24 V (SELV)

Use safety insulating transformers with double insulation as per EN 60 742; the transformers must be made for 100% runtime

Observe all local safety rules and regulations pertaining to sizing and protection of transformers.

Determine the transformer's power consumption by adding up the power consumption in VA for all actuators used.

Wiring and commissioning

Refer to "Commissioning notes" and "Diagrams" in this data sheet as well as to the HVAC job drawings.

Mounting notes

Mounting instructions

All information and steps to properly prepare and mount the actuator are listed in the Mounting instruction guide supplied with the actuator.

Mounting position

Choose the actuators mounting position so that it is easy to access the cables as well as the setting shaft on the actuator front. Refer to "Dimensions".

Damper shafts

Information on minimum length and diameter for the damper shaft is available in "Technical data".

Commissioning Notes

References

For commissioning, the following reference documentation must exist:

- This data sheet: HK3N4622en
- Mounting instructions: HK3M4622en
- Job diagram

Ambient conditions

Check to ensure that all permissible values as contained in the "Technical data" have been observed

Mechanical check: Check for proper mounting and ensure that all mechanical settings correspond to the plant-specific requirements. Additionally, ensure that the dampers are shut tight when in the closed position.

Check the direction of rotation.

Fasten the actuator securely to avoid twisting and blocking of the actuator.

Electrical check

Check to ensure that the cables are connected in accordance with the plant wiring diagram (see "Diagrams").

The operating voltage AC 24 V or AC 230 V (SELV/PELV) must be within the tolerance values.

Functional check:

Control signal AC 24 V

- Between wires red-violet : actuator turns clockwise.
- Between wires red-orange : actuator turns counter-clockwise.

Control signal AC 230 V

- Between wires light blue-black : actuator turns clockwise.
- Between wires light blue-white : actuator turns counter-clockwise

The actuator remains in the current position if no control signal is applied.

Technical DataPower supply AC 24 V
for GXD131.1AOperating voltage AC 24 V $\pm 15\%$

Supply line fuse Max. 10 A

Frequency 50 Hz

Power supply (with control signal) 180 mA

Power supply (with control signal) 4.3 VA / 5 W

⚠ Power supply
AC 230 V for GXD331.1AOperating voltage AC 230 V $\pm 15\%$

Safety extra-low (SELV) or HD 384

Protection by extra-low voltage (PELV) as per

Requirements of external safety insulating
transformer (100 % ED) EN 60 730-1

Supply line fuse Max. 10 A

Frequency 50 Hz

Power supply (with control signal) 20 mA

Power supply (with control signal) 5 VA / 5 W

Mechanical data

Torque GXD..3..1A

Nominal torque 1.5 Nm

Minimum holding torque (with/without
operating voltage) >2 NmMaximum torque < 2 Nm $\pm 10\%$

Nominal rotational angle 90 °

Maximum rotational angle (mechanic limitation) < 95 °

Run time for nominal rotational angle 90 °,
motor operation at 50 Hz 19 Seconds ± 2 Seconds

Duty cycle One cycle per minute

Rotational movement direction Clock wise / Counter clock wise

Mechanical life On / Off 25,000 cycles

Wire connections

Control signals AC 230 V

Wires light blue – black Clockwise

Wires light blue – white Counter clockwise

Control signals AC 24 V

Wires red-violet Clockwise

Wires red-orange Counter clockwise

Cable Lengths 1 m

Supply AC 24 V (red, violet, orange) 3 x 0.75 mm²AC 230 V (light blue, white black) 3 x 0.75 mm²



Housing Protection

Degree of protection as per EN 60 529 IP 40

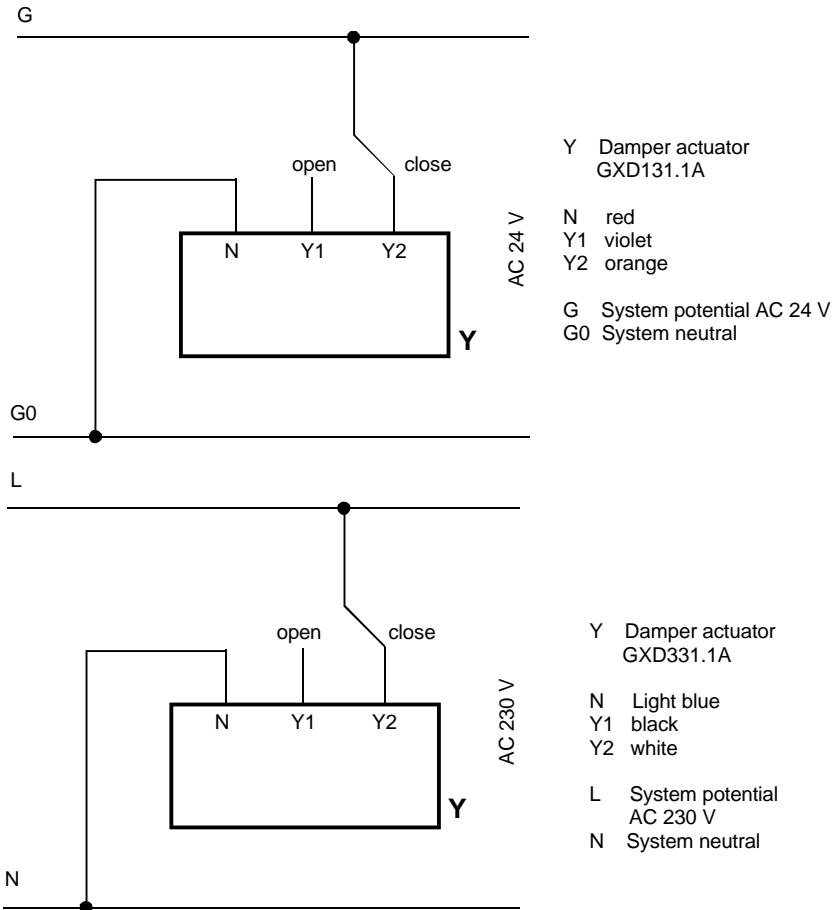
Insulation class

AC 230 V II

AC 24 V III

Environmental Conditions	Operation	IEC 721-3-3
	Climatic conditions	Class 3K5
	Mounting location	interior, weather-protected
	Temperature	0..+60 °C
	Humidity (non-condensing)	< RH 95 %
	Transport	IEC 721-3-2
	Climatic conditions	Class 2K2
	Temperature	-32...+70 °C
	Humidity (non-condensing)	< 95% r.h.
	Mechanical conditions	Class 2M3
Standards	Product Safety	
	Automatic electrical controls for household and similar use (type 1)	EN 60 730 1-14
	Electromagnetic compatibility	
	Immunity	EN 50 082-2
	Emissions	EN 50 081-1
	 ^{N474} C-Tick conformity to EMC emission standard	89/336/EEC
Dimensions	 conformity to EMC directive	
	Low voltage directive	73/23/EEC
	Actuator	
W × H × D	70 × 65 × 100	
Weight	Damper shaft	
	Round	8.2 mm ± 0.1 mm
	Inner round	6.3 mm ± 0.1 mm
	Min length	30 mm
	Max shaft hardness	260 HB
Without packaging	0.58 Kg	

Connection Diagram



Dimensions

