



Residential Air damper actuators

GXD..31.1..

Rotary version, 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 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 (PVC)	Coupling
GXD131.1A	24 VAC	50/60 Hz	3-Position	1.5 Nm	0.9 m	ø 8 Round
GXD131.1K	24 VAC	50/60 Hz	3-Position	1.5 Nm	Modular Jack RJ11	ø 8 Round
GXD331.1A	230 VAC	50 Hz	3-Position	1.5 Nm	0.9 m	ø 8 Round
GXD331.1C	230 VAC	50 Hz	3-Position	1.5 Nm	2.5 m	ø 8 Round

Connecting cables	See type summary
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.
Functions	
Basic Functions	
Rotational movement	<p>The actuators rotational movement (clockwise or counter-clockwise) depends on the electrical control.</p> <p>As soon as the operating voltage AC 24 V or AC 230 V is applied, the actuator starts to turn.</p>
Three-position control	<p>The connected damper can be operated as follows via the respective actuator control. Example: clockwise direction</p> <ul style="list-style-type: none"> • Damper opens (0 °...90 °) • Damper closes (90 °...0 °) <p>With no power applied, the damper remains in the respective position.</p>
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	<p>Do not open the actuator!</p> <ul style="list-style-type: none"> • The actuators 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)
≤ 25 Nm	GBB...1 (25 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 24 V (RJ11 type)


- Connection between Pin 3 / 4 - Pin 1 / 2: actuator turns clockwise.
- Connection between Pin 3 / 4 - Pin 5 / 6: 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 Data

 Power supply AC 230 V for GXD331.1A / GXD331.1C	Power supply AC 24 V for GXD131.1A / 131.1K	Operating voltage	AC 24 V $\pm 15\%$ (SELV/PELV)
		External supply line protection	<ul style="list-style-type: none"> • Fuse slow 6...10 A • Circuit breaker max. 13 A, Characteristic B, C, D according to EN 60898 • Power source with current limitation of max. 10 A
		Frequency	50/60 Hz
		Power supply (with control signal)	180 mA
		Power supply (with control signal)	4.3 VA / 5 W
		Operating voltage	AC 230 V $\pm 15\%$
		Requirements of external safety insulating transformer (100 % ED)	EN 60 730-1
		External supply line protection	<ul style="list-style-type: none"> • Fuse slow 6...10 A • Circuit breaker max. 13 A, Characteristic B, C, D according to EN 60898 • Power source with current limitation of max. 10 A
		Frequency	50 Hz
		Power supply (with control signal)	20 mA
		Power supply (with control signal)	5 VA / 5 W
	Mechanical data	Nominal torque	1.5 Nm
		Minimum holding torque (with/without operating voltage)	>2 Nm
		Maximum 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 50/60 Hz	15 Seconds ± 2 Seconds (@ 60 Hz) 19 Seconds ± 2 Seconds (@ 50 Hz)
		Duty cycle	One cycle per minute
		Rotational movement direction	Clockwise / Counter-clockwise
		Mechanical life	On / Off 25,000 cycles
		Control signals AC 230 V	
Wire connections		Wires light blue – black	Clockwise
		Wires light blue – white	Counter-clockwise

Housing Protection	Control signals AC 24 V	
	Wires red-violet	Clockwise
	Wires red-orange	Counter-clockwise
	Control signals AC 24 V (RJ11 type)	
	Wires green / red – black / white	Clockwise
	Wires green / red – blue / yellow	Counter-clockwise
	Cable Lengths	0.9 m
	Supply AC 24 V (red, violet, orange)	3 x 0.75 mm ²
	AC 230 V (light blue, white black)	3 x 0.75 mm ²
	Degree of protection as per EN 60 529	IP40
Insulation class	AC 230 V	II
	AC 24 V	III
Environmental Conditions	Operation	
	Climatic conditions	IEC 721-3-3
	Mounting location	Class 3K5
	Temperature	interior, weather-protected
	Humidity (non-condensing)	0..+60 °C
	Transport	< RH 95 %
	IEC 721-3-2	
	Climatic conditions	Class 2K2
	Temperature	-32...+70 °C
	Humidity (non-condensing)	< 95% r.h.
Standards	Mechanical conditions	
	Class 2M3	
	Product Safety	
	Automatic electrical controls for household and similar use	EN 60730-2-14 (Type 1)
	Electromagnetic compatibility (Application)	
	For residential, commercial and industrial environments	
	EU Conformity (CE)	A5W00004360 ¹⁾
	RCM Conformity	A5W00004361 ¹⁾
	Product environmental declaration ²⁾	CM2E4604E ¹⁾
Dimensions	Actuator	
	W × H × D	70 × 65 × 100
	Damper shaft	
	Round	8.0 mm ± 0.1 mm
	Inner round	6.3 mm ± 0.1 mm
	Min length	30 mm
	Max shaft hardness	260 HB
Weight	Without packaging	
	0.58 Kg	

¹⁾ The documents can be downloaded from <http://siemens.com/bt/download>

²⁾ The product environmental declaration contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

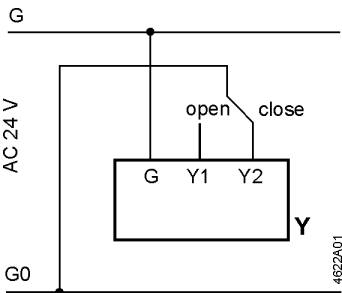
Disposal



The device is considered an electronics device for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

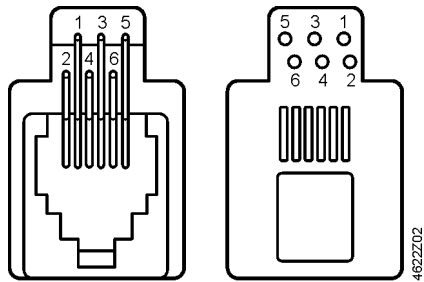
Connection Diagram



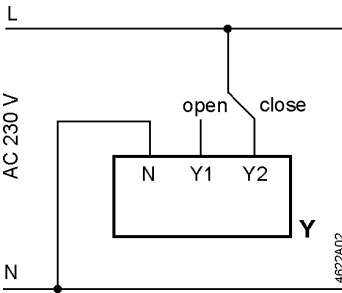
- Y Damper actuator
GXD131.1A
- G red
Y1 violet
Y2 orange
- G System potential AC 24 V
G0 System, neutral

Configuration of RJ11 Modular Jack of
GXD131.1K

- 1: Black 3: Green 5: Blue
2: White 4: Red 6: Yellow



- Damper actuator
GXD131.1K
- AC 24 V / 50 Hz
- Refer to configuration of RJ11
Modular Jack of GXD131.1K



- Y Damper actuator
GXD331.1A / GXD331.1C
- N Light blue
Y1 black
Y2 white
- L System potential
AC 230 V
N System, neutral

Dimensions

