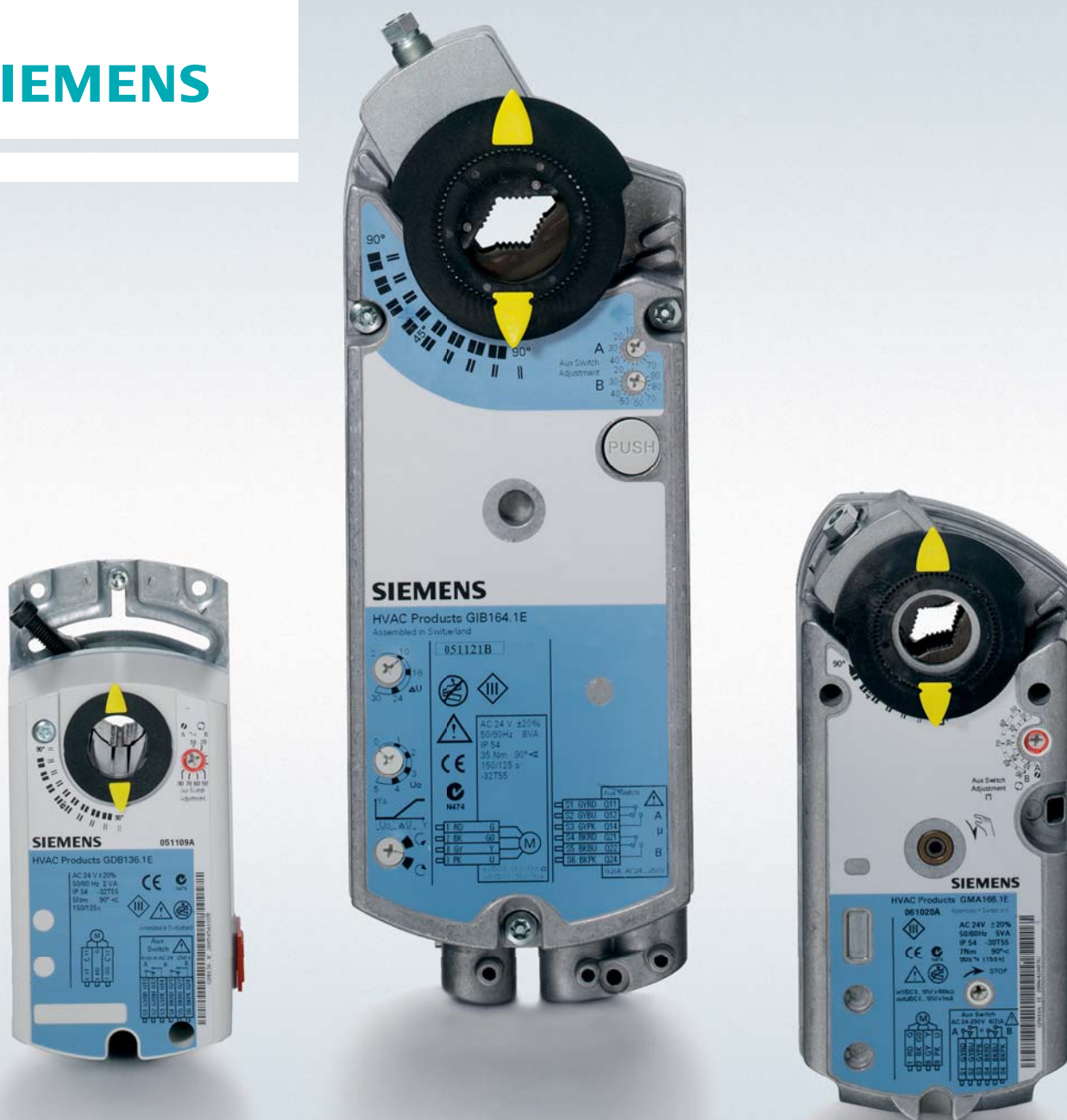


**SIEMENS**



# OpenAir – robust damper actuators for energy-efficient ventilation

Durable actuators for HVAC applications, air volume controllers as well as fire and smoke protection dampers

Answers for infrastructure.



## OpenAir – long-lasting performance that moves a lot using little energy

OpenAir™ damper actuators provide optimum ventilation in a particularly energy-efficient manner because their low-consumption motors deliver high positioning forces using little energy. The actuators for air volume controllers also save energy thanks to their highly precise measured value acquisition, which prevents energy losses.

In addition to energy savings, the damper actuators also pay off due to their long service life: Thanks to a very robust housing, they are resistant to the rough conditions encountered during transportation, storage, and on the construction site. Moreover, a functionally tested module concept ensures maximum quality and reliability.

# A wide selection based on solid experience

## A product range that covers every need

With four sizes of housing, OpenAir covers all HVAC applications, from recirculated air dampers, outside air dampers, and shutoff dampers, to variable air volume control and central air handling units. Also demanding applications with special requirements, such as fume hoods in laboratories, aren't a difficulty. The product range meets international standards and is thus approved for worldwide use.

For you, this means tested quality: Regular functional tests ensure the resilience of the products in continuous operation. In addition, each actuator undergoes strict functional testing before it is delivered.

## High comfort regarding room climate and operation

Thanks to their fast and precise implementation of instructions from the building automation system, the damper actuators help to provide a comfortable room climate. In addition, their brushless motors, gear trains that have already been run in, and precisely mounted technology ensure especially quiet operation. This is ideal for areas where intensive work is carried out, as well as for night-time operation, e.g., in hotels and hospitals.

OpenAir has also proven to be comfortable regarding installation and commissioning. For instance, self-centering shaft adapters reduce installation expense, while the VAV\* compact controllers adjust to VAV boxes and start up very quickly and easily. In addition, VAV compact controllers are also available with bus connection.

## Rely on extensive experience

The OpenAir damper actuators are based on solid application expertise and Siemens' decades of experience in manufacturing actuators. They are optimized on the basis of extensive field experience and tested intensively in the internal HVAC lab, thus ensuring stable control loops.

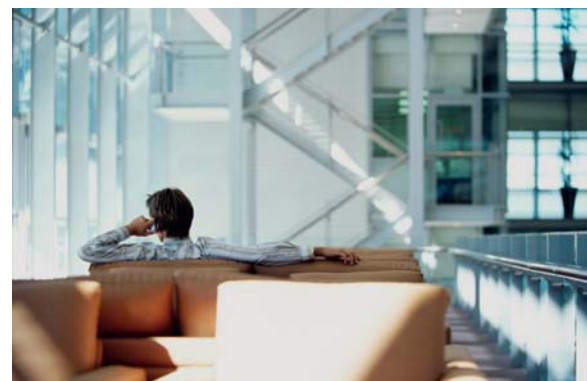
## Full support for practical application

Siemens stands by your side with its full expertise – and provides you with practice-oriented support, for example with training such as the basic course on "variable air volume". We also offer you special tools for carrying out your projects faster, more easily, and more conveniently. For instance, the OpenAir selection slider lets you quickly determine the right damper actuator for your requirements. Or use the HVAC Integrated Tool ([www.siemens.com/hit](http://www.siemens.com/hit)) for especially simple planning and design of HVAC plants – and your ventilation control.

## Highlights

- Energy and cost savings thanks to low-consumption motors and extremely high accuracy
- High level of investment protection through long service life and maximum reliability
- Damper actuators for all types of applications
- Optimum comfort for living and working environments resulting from low-noise motors and fast, accurate control
- Ease of installation and commissioning through self-centering shaft adapters
- Full support including documentation, basic training, and service tools

\* VAV = variable air volume





Actuators for HVAC applications: reliable and powerful – for recirculated air and outside air applications as well as central air handling units.

# Actuators for HVAC applications

## Powerful safety

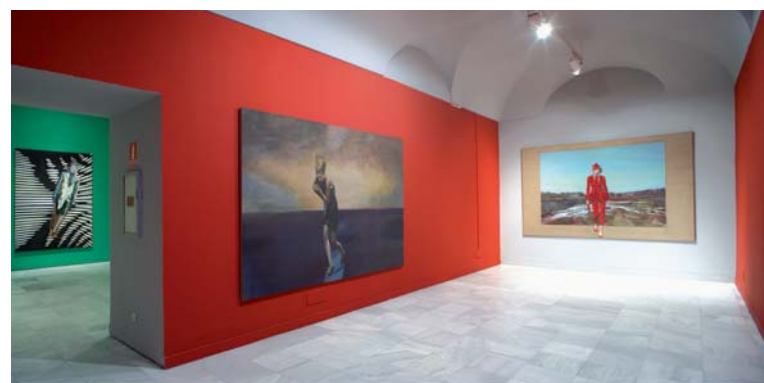
OpenAir damper actuators for HVAC applications are available for low and high torques ranging from 2 Nm to 35 Nm, so you can choose the right product for any type of application. The powerful actuators with 35 Nm offer maximum safety under demanding operating conditions. And with their compact design, the small actuators with 2 Nm are ideally suited for difficult installation conditions. They can also be easily mounted in tight places, e.g., in false floors. Fast runner actuators with a torque of 6 Nm and 2 s running time are perfectly suited for special applications like fume hoods.





















## Simple and safe installation

Self-centering shaft adapters simplify installation and reduce installation expenses – and make mounting foolproof. They also reduce the stress on the actuator, which increases its service life and reliability.




## Highlights

- High reliability thanks to high torque
- Compact actuators for difficult installation conditions
- The suitable actuator for every application – e.g. fast runner actuators for laboratories
- Simple installation thanks to self-centering shaft adapters



Actuators for HVAC applications		Control signal	Operating voltage	Standard model	Feedback potentiometer (1 kOhm)	Adjustable start/span	Adjustable start/span with 2 auxiliary switches	Feedback (1 kOhm) with 2 auxiliary switches	2 auxiliary switches	Dimensions, round damper shaft (mm)	Dimensions, square damper shaft (mm)
<b>Damper actuators with spring return (SR)</b>											
	<b>GQD series</b> 2 Nm for approx. 0.3 m <sup>2</sup> damper area 30 s running time 15 s SR time	2-position	AC/DC 24 V	GQD121.1A	–	–	–	–	GQD126.1A	8...15	6...11
			AC 230 V	GQD321.1A	–	–	–	–	GQD326.1A		
		3-position	AC/DC 24 V	GQD131.1A	–	–	–	–	GQD136.1A		
	<b>GNP series</b> 6 Nm for approx. 1 m <sup>2</sup> damper area 2 s running time el. fail-safe function	2-position	AC/DC 24 V	GNP191.1E	–	–	–	–	GNP196.1E	6.4...20.5	6.4...13
			AC/DC 24 V	GNP191.1E	–	–	–	–	GNP196.1E		
		Modulating DC 0/2...10 V	AC/DC 24 V	GNP191.1E	–	–	–	–	GNP196.1E		
	<b>GMA series</b> 7 Nm for approx. 1.5 m <sup>2</sup> damper area 90 s running time 15 s SR time	2-position	AC/DC 24 V	GMA121.1E	–	–	–	–	GMA126.1E	6.4...20.5	6.4...13
			AC 230 V	GMA321.1E	–	–	–	–	GMA326.1E		
		3-position	AC/DC 24 V	GMA131.1E	GMA132.1E	–	–	–	GMA136.1E		
	<b>GCA series</b> 18 Nm for approx. 3 m <sup>2</sup> damper area 90 s running time 15 s SR time	2-position	AC/DC 24 V	GCA121.1E	–	–	–	–	GCA126.1E	8...25.6	6...18
			AC 230 V	GCA321.1E	–	–	–	–	GCA326.1E		
		3-position	AC/DC 24 V	GCA131.1E	–	–	–	GCA135.1E	–		
		Modulating DC 0...10 V	AC/DC 24 V	GCA161.1E	–	GCA163.1E	GCA164.1E	–	GCA166.1E		
			AC/DC 24 V	GCA161.1E	–	GCA163.1E	GCA164.1E	–	GCA166.1E		
			AC/DC 24 V	GCA161.1E	–	GCA163.1E	GCA164.1E	–	GCA166.1E		
<b>Damper actuators without spring return (SR)</b>											
	<b>GSD series</b> 2 Nm for approx. 0.3 m <sup>2</sup> damper area 30 s running time	2-position On/Off (1-wire SPST)	AC/DC 24 V	GSD121.1A	–	–	–	–	GSD126.1A	8...15	6...11
			AC 230 V	GSD321.1A	–	–	–	–	GSD326.1A		
	<b>GDB series</b> 5 Nm for approx. 0.8 m <sup>2</sup> damper area 150 s running time	3-position	AC 24 V	GDB131.1E	GDB132.1E	–	–	–	GDB136.1E	8...16	6...12.8
			AC 230 V	GDB331.1E	GDB332.1E	–	–	–	GDB336.1E		
	<b>GLB series</b> 10 Nm for approx. 1.5 m <sup>2</sup> damper area 150 s running time	Modulating DC 0...10 V	AC 24 V	GDB161.1E	–	GDB163.1E	GDB164.1E	–	GDB166.1E		
			AC 24 V	GDB161.1E	–	GDB163.1E	GDB164.1E	–	GDB166.1E		
		3-position	AC 24 V	GLB131.1E	GLB132.1E	–	–	–	GLB136.1E	8...16	6...12.8
			AC 230 V	GLB331.1E	GLB332.1E	–	–	–	GLB336.1E		
		Modulating DC 0...10 V	AC 24 V	GLB161.1E	–	GLB163.1E	GLB164.1E	–	GLB166.1E		
			AC 24 V	GLB161.1E	–	GLB163.1E	GLB164.1E	–	GLB166.1E		
	<b>GAP series</b> 6 Nm for approx. 1 m <sup>2</sup> damper area 2 s running time	2-position	AC/DC 24 V	GAP191.1E	–	–	–	–	GAP196.1E	6.4...20.5	6.4...13
			AC/DC 24 V	GAP191.1E	–	–	–	–	GAP196.1E		
		3-position	AC/DC 24 V	GAP191.1E	–	–	–	–	GAP196.1E		
		Modulating DC 0/2...10 V	AC/DC 24 V	GAP191.1E	–	–	–	–	GAP196.1E		
	<b>GEB series</b> 15 Nm for approx. 3 m <sup>2</sup> damper area 150 s running time	3-position	AC 24 V	GEB131.1E	GEB132.1E	–	–	–	GEB136.1E	6.4...20.5	6.4...13
			AC 230 V	GEB331.1E	GEB332.1E	–	–	–	GEB336.1E		
		Modulating DC 0...10 V	AC 24 V	GEB161.1E	–	GEB163.1E	GEB164.1E	–	GEB166.1E		
			AC 24 V	GEB161.1E	–	GEB163.1E	GEB164.1E	–	GEB166.1E		
	<b>GBB series</b> 25 Nm for approx. 4 m <sup>2</sup> damper area 150 s running time	3-position	AC 24 V	GBB131.1E	–	–	–	GBB135.1E	GGB136.1E	8...25.6	6...18
			AC 230 V	GBB331.1E	–	–	–	GBB335.1E	GGB336.1E		
		Modulating DC 0...10 V	AC 24 V	GBB161.1E	–	GBB163.1E	GBB164.1E	–	GBB166.1E		
			AC 24 V	GBB161.1E	–	GBB163.1E	GBB164.1E	–	GBB166.1E		
	<b>GIB series</b> 35 Nm for approx. 6 m <sup>2</sup> damper area 150 s running time	3-position	AC 24 V	GIB131.1E	–	–	–	GIB135.1E	GIB136.1E	8...25.6	6...18
			AC 230 V	GIB331.1E	–	–	–	GIB335.1E	GIB336.1E		
		Modulating DC 0...10 V	AC 24 V	GIB161.1E	–	GIB163.1E	GIB164.1E	–	GIB166.1E		
			AC 24 V	GIB161.1E	–	GIB163.1E	GIB164.1E	–	GIB166.1E		
	<b>GDB series</b> 125 N for approx. 0.8 m <sup>2</sup> damper area 150 s running time	3-position	AC 24 V	GDB131.2E	GDB132.2E	–	–	–	GDB136.2E	–	–
			AC 230 V	GDB331.2E	GDB332.2E	–	–	–	GDB336.2E		
		Modulating DC 0...10 V	AC 24 V	GDB161.2E	–	GDB163.2E	GDB164.2E	–	GDB166.2E		
			AC 24 V	GDB161.2E	–	GDB163.2E	GDB164.2E	–	GDB166.2E		
	<b>GLB series</b> 250 N for approx. 1.5 m <sup>2</sup> damper area 150 s running time	3-position	AC 24 V	GLB131.2E	GLB132.2E	–	–	–	GLB136.2E	–	–
			AC 230 V	GLB331.2E	GLB332.2E	–	–	–	GLB336.2E		
		Modulating DC 0...10 V	AC 24 V	GLB161.2E	–	GLB163.2E	GLB164.2E	–	GLB166.2E		
			AC 24 V	GLB161.2E	–	GLB163.2E	GLB164.2E	–	GLB166.2E		
	<b>GEB series</b> 400 N for approx. 3 m <sup>2</sup> damper area 150 s running time	3-position	AC 24 V	GEB131.2E	GEB132.2E	–	–	–	GEB136.2E	–	–
			AC 230 V	GEB331.2E	GEB332.2E	–	–	–	GEB336.2E		
		Modulating DC 0...10 V	AC 24 V	GEB161.2E	–	GEB163.2E	GEB164.2E	–	GEB166.2E		
			AC 24 V	GEB161.2E	–	GEB163.2E	GEB164.2E	–	GEB166.2E		
	<b>GBB series</b> 550 N for approx. 4 m <sup>2</sup> damper area 150 s running time	3-position	AC 24 V	GBB131.2E	–	–	–	GBB135.2E	GGB136.2E	–	–
			AC 230 V	GBB331.2E	–	–	–	GBB335.2E	GGB336.2E		
		Modulating DC 0...10 V	AC 24 V	GBB161.2E	–	GBB163.2E	GBB164.2E	–	GBB166.2E		
			AC 24 V	GBB161.2E	–	GBB163.2E	GBB164.2E	–	GBB166.2E		



Actuators for air volume controllers 300 Pa application range		Control signal	Operating voltage	Standard model	Dimensions, round damper shaft (mm)	Dimensions, square damper shaft (mm)
 <b>GDB 300 Pa VAV compact controller<sup>1)</sup></b> 5 Nm for approx. 0.8 m <sup>2</sup> damper area 150 s running time	3-position	AC 24 V	GDB181.1E/3	8...16	6...12.8	
	Modulating DC 0/2...10 V	AC 24 V				
	KNX/PL-Link	AC 24 V	GDB181.1E/KN			
 <b>GLB 300 Pa VAV compact controller<sup>1)</sup></b> 10 Nm for approx. 1.5 m <sup>2</sup> damper area 150 s running time	3-position	AC 24 V	GLB181.1E/3	8...16	6...12.8	
	Modulating DC 0/2...10 V	AC 24 V				
	KNX/PL-Link	AC 24 V	GLB181.1E/KN			
 <b>ASV 300 Pa VAV modular controller<sup>1)</sup></b>	3-position	AC 24 V	ASV181.1E/3	–	–	
	Modulating DC 0/2...10 V	AC 24 V				

<sup>1)</sup> Available to OEMs only

# Actuators for air volume controllers

## Convenient to use

OpenAir air volume controllers work with the highest degree of accuracy and stability. This is ensured not only by the highly precise differential pressure measurement, but also by the intelligent software algorithms of the products. The air volume controllers provide the best conditions for highly comfortable usability.

## Practical to install



The OpenAir air volume controllers allow fast, simple parameterization, so they can be matched to VAV boxes and programmed quickly and easily, as usually only three OEM-specific device characteristics have to be entered. The newly available adaptive function for rotation angles provides an even higher level of flexibility in use.

## Supporting energy efficiency functions

In combination with room thermostats and controllers of the Desigo™ and Synco™ 700 product families, the new OpenAir air volume controllers with bus communication (KNX S-/LTE-mode and PL-Link) allow for an efficient optimization of energy consumption. Furthermore, short amortization times can be realized. The usage of controllers from third-party providers is also possible thanks to the KNX S-mode standardization.

## Highlights

- High level of accuracy thanks to fast and location-independent measured value acquisition
- Long-term stability without aging and temperature drift
- Fast commissioning through simple adjustment to VAV boxes
- Increased flexibility thanks to adaptive function for rotation angles
- Support of modern energy efficiency functions

Actuators for fire and smoke protection dampers	Control signal	Operating voltage	2 auxiliary switches	2 auxiliary switches and thermal cut-out	Dimensions, square damper shaft (mm)
 <p><b>GGA actuator</b><sup>1)</sup> 18 Nm for approx. 2.5 m<sup>2</sup> damper area 90 s running time 15 s spring return time</p>	2-position	AC/DC 24 V AC 230 V	GGA126.1E/.. <sup>2)</sup> GGA326.1E/.. <sup>2)</sup>	GGA126.1E/T.. <sup>2)</sup> GGA326.1E/T.. <sup>2)</sup>	8, 10, 12, 15
 <p><b>GNA actuator</b><sup>1)</sup> 7 Nm for approx. 1 m<sup>2</sup> damper area 90 s running time 15 s spring return time</p>	2-position	AC/DC 24 V AC 230 V	GNA126.1E/.. <sup>2)</sup> GNA326.1E/.. <sup>2)</sup>	GNA126.1E/T.. <sup>2)</sup> GNA326.1E/T.. <sup>2)</sup>	8, 10, 12, 15

<sup>1)</sup> Available to OEMs only    <sup>2)</sup> .. = insert dimension of damper shaft square (mm)



# Actuators for fire and smoke protection dampers

## Absolute safety in emergency situations

OpenAir actuators for fire and smoke protection dampers are used at the interface between highly integrated security systems and people. They work extremely reliably even in emergency situations.

Their spring return function returns them reliably to the zero position – if the thermal fuse melts, a power failure occurs or the operating power is switched off.

In these cases, the fire and smoke protection dampers are shut, thus preventing smoke and flames from spreading through the connected air ducts.

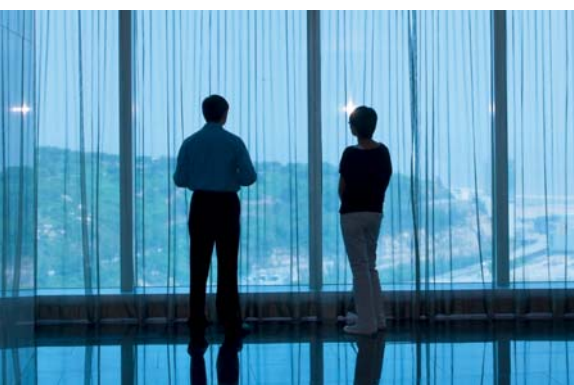
## Powerful for opening and closing

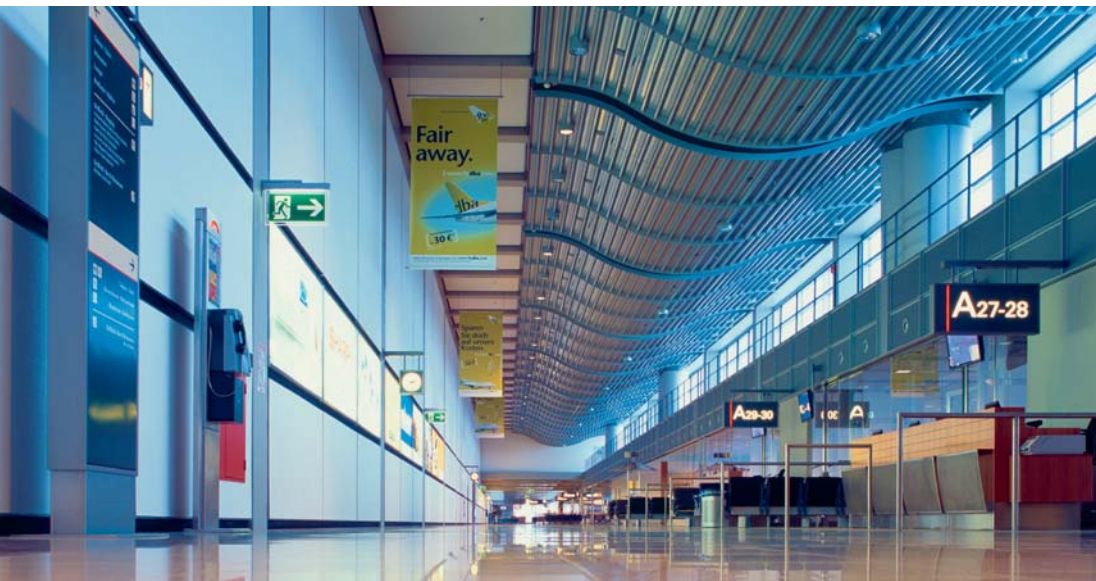
The OpenAir actuators come in two powerful torques: 7 Nm (GNA) and 18 Nm (GGA). In addition, the actuators open and close the dampers with the same torque. For instance, the GNA actuator opens the damper blade by motor from 0 to 90 degrees within 90 seconds at 7 Nm – and closes the damper mechanically in 15 seconds also at 7 Nm.

This level of performance ensures that fire and smoke protection dampers are closed especially quickly and reliably, thereby helping to keep escape routes free of smoke for as long as possible.

## Highlights

- Two powerful torques for additional safety – 7 Nm or 18 Nm
- High reliability thanks to equal values for opening and closing
- Fast, easy installation thanks to safe, easy-to-mount, form-fitted shaft coupling (square)





Thanks to robust housings, simple exchangeability, and high reliability, OpenAir damper actuators are optimally designed for mounting and operation.

# Simple and robust handling

## Mount everything quickly, easily, and cost-effectively

Standardized dimensions and a consistent wiring and mounting concept for all OpenAir damper actuators facilitate direct coupling and quick commissioning. That not only reduces time and effort for mounting but installation expenses as well.

The actuators are secured with a single screw. Optional factory-provided pre-wiring also speeds up mounting. The high torque actuators are also designed with a self-centering shaft adapter, which can be fitted from both sides. This is not only ideal for fitting on short shafts, but also prevents friction and cracking noises, since the actuator does not move in the longitudinal holder.

## Exchange devices easily

Thanks to standardized housing sizes, wiring and mounting as well as decades of backward compatibility, OpenAir damper actuators can be exchanged easily.

## Build in high quality

Siemens conforms with the stringent ISO 9001 and 14001 standards in the production of OpenAir damper actuators, thus satisfying the requirements of a closed quality and ecological cycle.

High quality is of prime concern from development all the way to delivery. Extensive final tests ensure operational readiness and together with the systematic fatigue tests ensure the high reliability of the actuators.

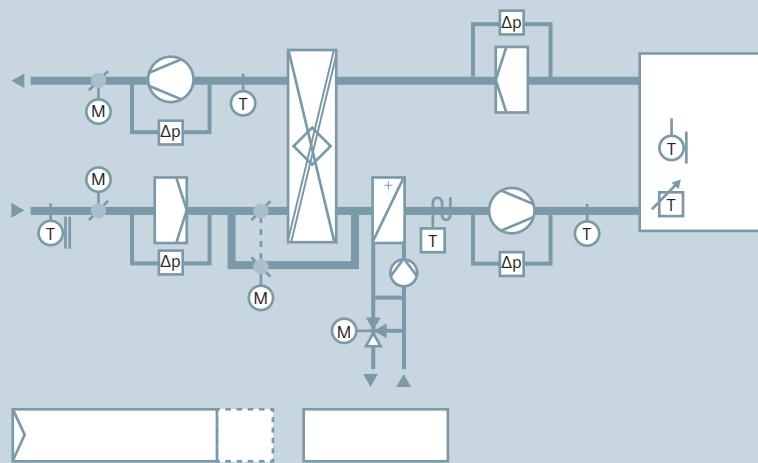
## Highlights

- Simple, time-saving mounting through high degree of standardization
- Easy device exchange due to many years of backward compatibility
- Reliable, fault-free operation thanks to high product quality



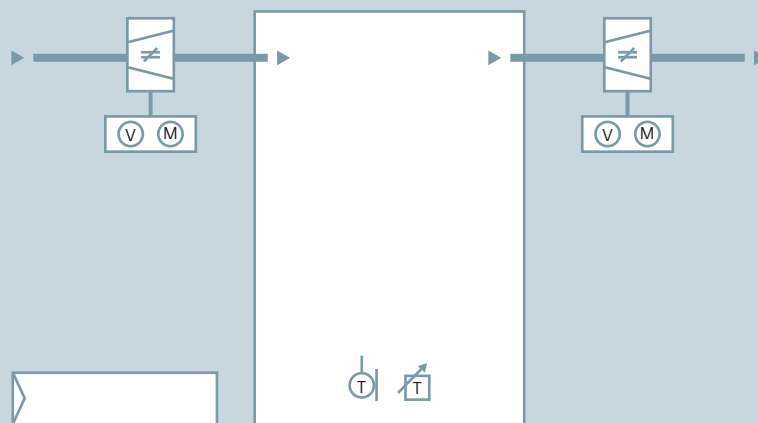
# Sample applications

## Room supply air temperature cascade control with plate heat recovery system and air heating



Demand-based operation of ventilation plants ensures energy-efficient ventilation. Depending on the requirements and type of plant, important plant elements that must be activated in an energy-optimized manner are outside air, exhaust air, recirculated air or bypass dampers. OpenAir damper actuators satisfy these requirements precisely and reliably.

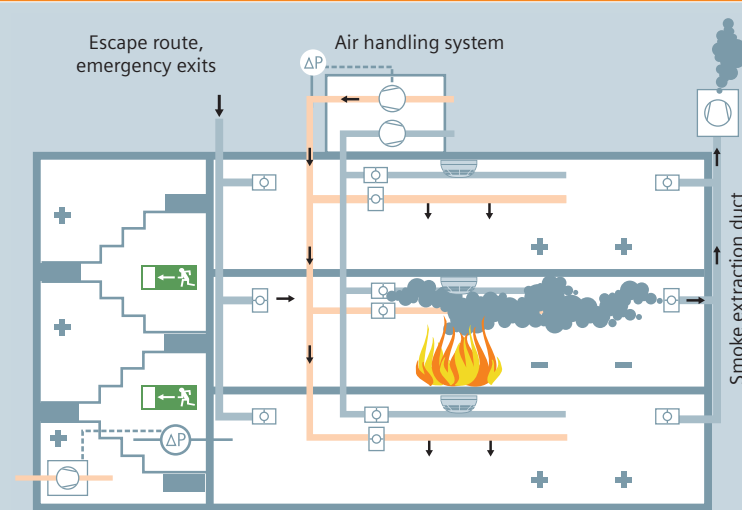
## Room temperature control with variable air volume



In modern buildings, individual rooms or zones are supplied with air. Outside air is preconditioned in air handling units (cleaning, heating, cooling, humidifying, dehumidifying) and delivered to the individual rooms and zones via an extensive duct system. Near the air outlets there are dampers that control the air supply to the zones or rooms. OpenAir air volume controllers not only measure the air volume accurately, but also coordinate the opening and closing of the dampers exactly with the air requirement.

This controlled air supply, called “variable air volume control”, ensures that rooms and zones receive exactly the amount of cooled or outside air they need. The result is enhanced comfort and greater efficiency.

## Optimum interaction of ventilation system and fire control panel



Ventilation systems must switch off independently when fire alarm or extinguishing systems are activated and when thermal cutout devices of the fire and smoke protection dampers are activated, or switch from normal to emergency operation. This operating mode ensures, for example, that the rooms are systematically regulated for overpressure so that escape routes remain free of smoke.

Motorized fire and smoke protection dampers prevent smoke and fire from spreading via the air ducts – OpenAir actuators close the dampers very quickly and reliably in the event of a fire. Therefore, they provide a high degree of protection for people and assets.

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The information in this document contains general descriptions of technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.

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#### **Answers for infrastructure.**

Our world is undergoing changes that force us to think in new ways: demographic change, urbanization, global warming and resource shortages. Maximum efficiency has top priority – and not only where energy is concerned. In addition, we need to increase comfort for the well-being of users. Also, our need for safety and security is constantly

growing. For our customers, success is defined by how well they manage these challenges. Siemens has the answers.

**“We are the preferred partner for energy-efficient, safe and secure buildings and infrastructure.”**