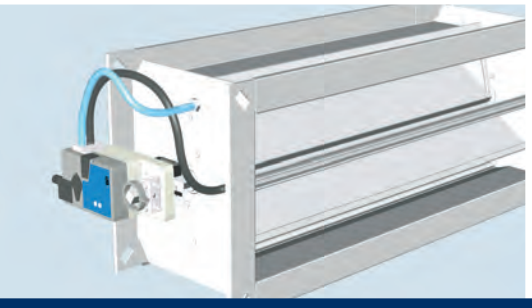
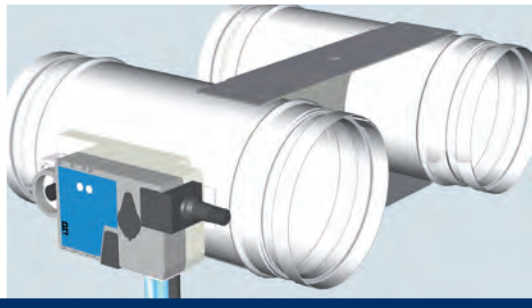
The Innovation Company

LTG Aktiengesellschaft

Product Overview

LTG Air Distribution

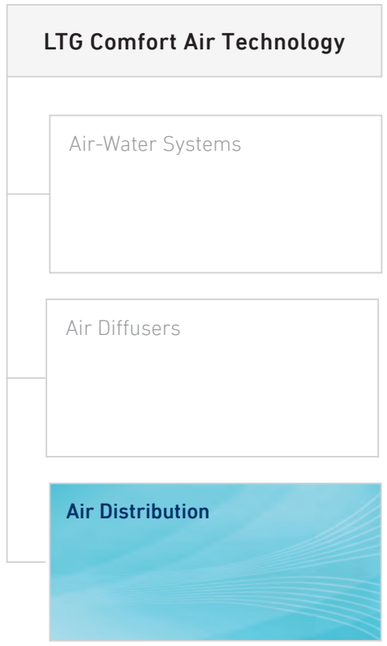




High-quality air flow control components with innovative technology.
Unsurpassed in control precision and energy efficiency.

LTG Aktiengesellschaft

Air Technology Solutions for People and Products.



LTG air distribution products meet the highest standards for quality and efficiency.

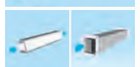
For almost 90 years, LTG has pioneered air and climate technology, always a step ahead with trailblazing innovations. When it is crucial to achieve ideal environmental conditions for people and processes, LTG creates inspiring, tailor-made comfort air technology solutions: These include products for air distribution (flow rate and pressure controllers as well as shut-off valves), air diffusers and air-water systems (such as induction units and fan coil units).

Air distribution products such as flow rate and pressure controllers and related components are essential for the economic and efficient operation of air conditioning and ventilation systems. They ensure optimum distribution of supply and return air while controlling and adjusting the air flow between the central AHU and space. LTG flow rate and pressure controllers function effectively, even at low air speeds, with minimum space requirement and with advanced control concepts such as ventilation on demand or hybrid ventilation.

Product Overview

		Flow rate controller		Application	Measuring principle		Actuator	
					dynamic	static	high-speed	spring return
variable	round		**VRE-W** page 8	Highest control precision, short installation length	■	■	—	—
			**VRD-W** page 8	Highest control precision, short installation length, twin controller	■	■	—	—
			**VRE** page 11	To combine with customized drives	■	■	■	■
			**VRD** page 11	To combine with customized drives, twin controller	■	■	■	■
	rectangular		**VRF-W** page 8	Highest control precision, short installation length	■	■	—	—
			**VRF** page 11	To combine with customized drives	■	■	■	■
constant	round		**VRW** page 12	Without external power supply, pollution-insensitive				
	rect.		**VRX** page 12					

		Pressure controller		Application
	round		**DRE** page 13	To balance extreme pressure level differences
	rect.		**DRF** page 13	

Special products and accessories		Application
	**ARE / ARF***	Airtight shut-off damper (airtight acc. to DIN EN 1751: Class 3)
	**KLB** page 14	Ultra-tight shut-off damper (airtight acc. to DIN EN 1751: Class 4)
	**VRC + NE** page 11	Variable flow rate controller with silencer and reheating register
	**SDE / SDF** page 9/11	Inline, cross-talk, and splitter silencers
	**VRW-A** page 12	Constant control and shut-off unit

* On request

Flow Rate Control Basics – Which Product for which Application?

LTG – your most reliable partner in comfort air technology. With innovative technology that is unique in the market, such as map control with enhanced differential pressure, we lay the foundation for an ideal indoor climate. From first inquiry to detailed design, LTG supports you with technical expertise.

Unit Types

Variable Flow Rate

Units with variable flow rates (VVS) use electronic flow rate controllers providing the room with exactly the required air volume – according to function and energy efficency.

Constant Flow Rate

Units with constant flow rates (KVS) use flow rate controllers maintaining a constant flow rate mechanically system-powered. Working with no wiring or external power supply, they provide convenient and cost-saving solutions.

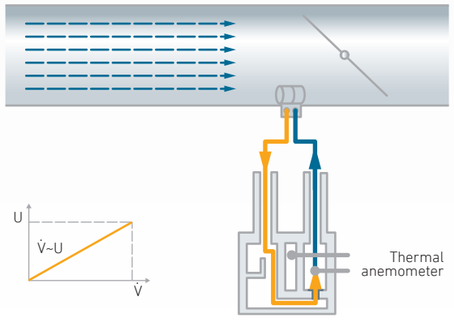
Measuring Methods

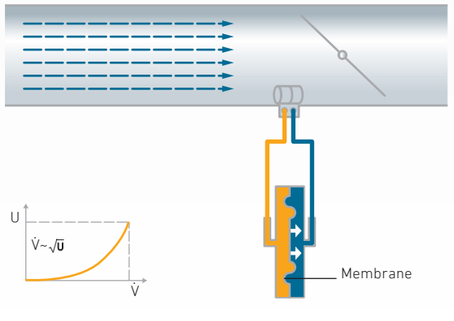
Dynamic differential pressure measurement

Dynamic methods measure part of the air that is guided through the differential pressure transducer. Dynamic differential pressure measuring makes economical sense in plants where no dust and/or chemical pollution of the air is expected, potentially leading to the contamination of sensors (e. g. administration and office buildings, museums, etc.)

Static differential pressure measurement

Static differential pressure measurement uses a diaphragm pressure transducer. With this method, no air is guided through the sensor, so no dust or chemical pollution by the air is possible and hence, may well be used in such environments.

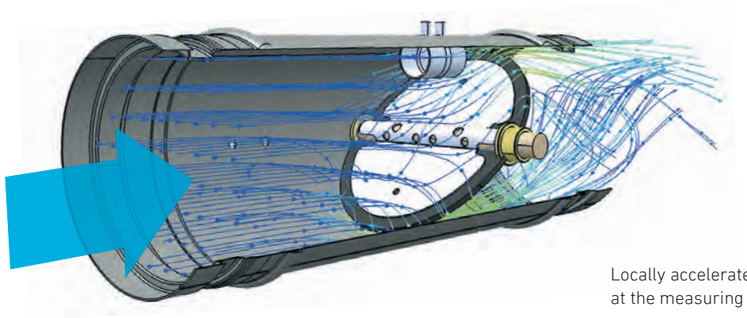




Unique and Brilliant – LTG Map Control

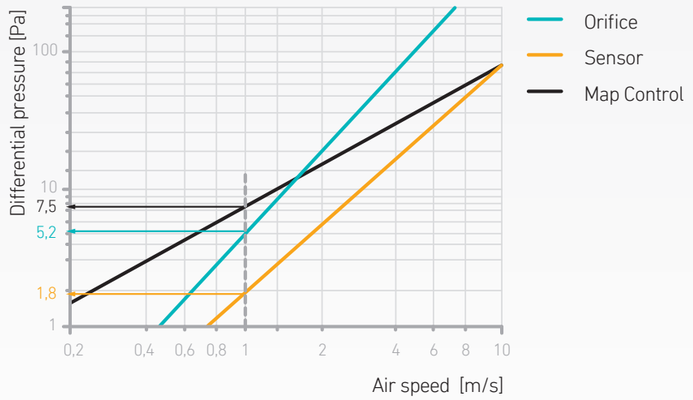
Differential pressure + Damper setting = Flow rate

Contrary to common measuring techniques, the differential pressure is not measured using an upstream element such as orifice plate or differential pressure sensor. Flow rate controllers VRE-W and VRF-W measure the differential pressure directly in the damper blade area (stronger signal due to locally accelerated air flow).



Locally accelerated air flow at the measuring point

Enhanced differential pressure in low air speed ranges



This measuring technique provides the most precise measurements among all known systems in low air speed ranges.

- Measuring element at damper blade: **Extremely short installation length** (refer to page 9)
- **Minimum pressure loss** due to small differential pressure element
- **Entryflow-insensitive** due to optimized air flow bias to the measuring element
- **Max. 5 % deviation** from $\dot{V}_{nenn}$ across the entire control range 1:10

Variable flow rate controllers with LTG map control

VRE-W VRF-W VRD-W

Flow rate controllers VRE-W, VRF-W, and VRD-W are designed for supply pressure-independent control of constant or variable air flows.

Advantages

Optimum use of your plant´s energy-saving potential

Highest precision of all known measuring systems due to LTG map control

Manages **even lowest air speeds** due to enhanced differential pressure

Entryflow-insensitive, easy integration, very short design

Optimized design with **almost airtight closure**

One system for **round and rectangular ducts**

Product data

		VRE-W	VRF-W	VRD-W
Feature / Use		**For confined installation conditions**	**For confined installation conditions**	**2 dampers for supply /re-turn air control in parallel air ducts** (e.g. hotel rooms)
Measuring method	**dynamic** (for non-polluted air)	■	■	■
	static (for polluted air)	□	□	□
Design		round	rectangular	round
Version	**Galvanized steel**	■	■	■
	Coated	□	□	—
	Stainless steel	□	□	—
Sizes [mm]		ø 100 to 400	200 x 100 to 1200 x 400	ø 100 to 200
Installation length* [mm]		195 to 355	135 to 420	195 to 215
Flow rate range [m^3/h]		27 to abt. 4500	72 to abt. 17 300	27 to abt. 1100
Control ratio $\dot{V}_{max} : \dot{V}_{min}$		10:1		
Differential pressure range [Pa]		up to 1000		
Airtight shut-off acc. to DIN EN 1751		■ Class 3	■ Class 3 □ Class 4	■ Class 3
Deviation		max. 5 % from $\dot{V}_{nenn}$		
Input / Control Signal	**analog**	■	■	■
	digital (Bus)	□ MP □ LON	□ MP □ LON	□ MP □ LON
Insulat case		□	□	□
Silencer		□ SDE	□ SDF	□ SDE
Manual terminal		□	□	□

■ Standard □ optional on request — not available

* Only one length per nominal width available

Our Selection Guide for VRE-W, VRF-W, and VRD-W

The right flow rate controller – quick and easy. Simply select the right model size from each table based on diameter, shape (rectangular or round) and required flow rate.

Rectangular

$\dot{V}$ [m³/h] at 5 m/s

Height [mm]	200	300	400	500	600	800	1000	1200	Length [mm]
400			2880	3600	4320	5760	7200	8640	420
300		1385	2160	2700	3240	4320	5400		320
250		1350	1800	2250	2700	3600			270
200	720	1080	1440	1800	2160	2880			220
150		810	1080	1350	1620				160
100	360	540	720	900	1080				135

Width [mm]

$\dot{V}_{min} = 0{,}2 \times \dot{V}$

$\dot{V}_{nenn} = \dot{V}_{max} = 2 \times \dot{V}$

Round

$\dot{V}$ [m³/h] at 5 m/s

Nominal width [mm]	125	100	Length [mm]
400	2240		355
315	1385		265
250	870		265
200	554		215
160	353		215
125	214		195
100	136		195

$\dot{V}_{min} = 0{,}2 \times \dot{V}$

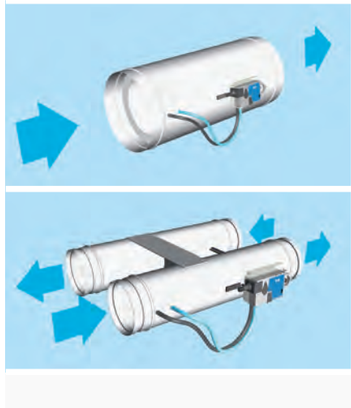
$\dot{V}_{nenn} = \dot{V}_{max} = 2 \times \dot{V}$

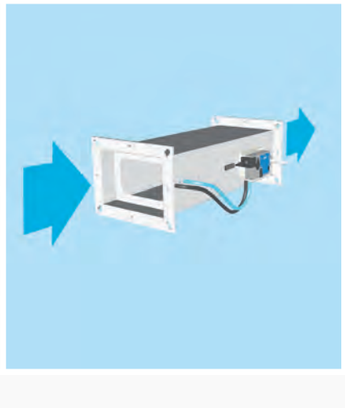
LTG planning tools –
we support you!

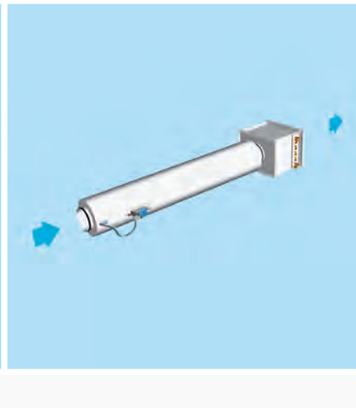
We are happy to assist you not only with choosing a product, but also with technical design. Please ask for your personal CD including useful tools such as selection diagrams, flow videos and product information!

Please visit us at **www.LTG-AG.com** and get detailed technical data in PDF format in the „Download" section.

VRE / VRD VRF VRC+NE







With VRE, VRD and VRF flow rate controllers, both constant and variable flow rate control are easy. Type VRC + NE additionally includes a reheating feature. All controllers are suitable for use in polluted or chemically laden environments.

Advantages

Pollution-insensitive orifice measurement

Corrosion resistant due to version of stainless steel, PPS or coated

Possible combination with spring return or high-speed drives

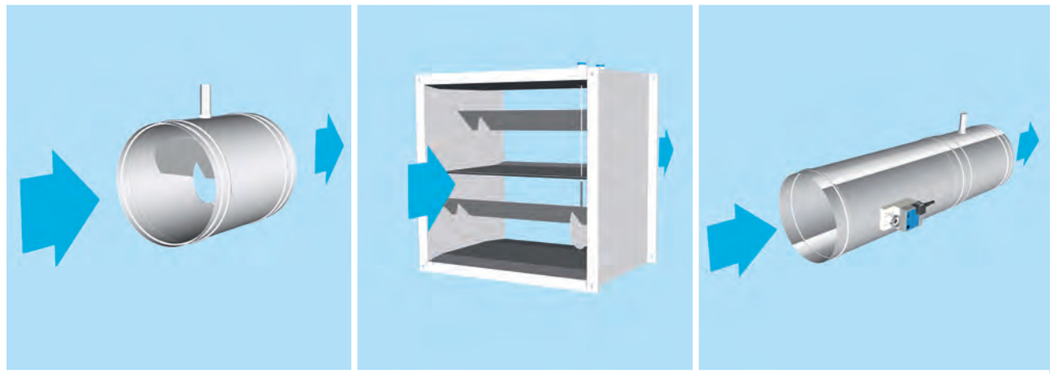
VRE also available as **twin controller** (Type VRD)

Product data

	VRE	VRF	VRC + NE
Sizes [mm]	ø 100 to 630 (200 for VRD)	200 x 140 to 800 x 400	VRC: ø 125 to 250 NE: ø 125 to 250
Version	Galvanized steel, coated, stainless steel, or PPS		Galvanized steel
Silencer	□ SDE	□ SDF	■
Reheating register	□	□	■
Flow rate range [m³/h]	19 to abt. 11 200 (abt. 1100 for VRD)	70 to abt. 11 500	30 to abt. 1750
Diff. pressure range [Pa]	up to 1000		
Airtight shut-off	Class 3 acc. to DIN EN 1751		

Constant flow rate controllers (mechanically self-operated)

VRW VRX VRW-A



The mechanically self-operated flow rate controllers VRW, VRX, and VRW-A (with shut-off feature) are designed for supply pressure-independent constant flow rate control without external power supply (except VRW-A shut-off damper option).

Advantages

Flow rate control without external power supply **– no wiring required**

Maximum flexibility – free setting of flow rates

Insensitive to dust or environmental influences **– maintenance-free with reliable precision control**

Cost-saving solution for rooms with no need to adjust temperatures

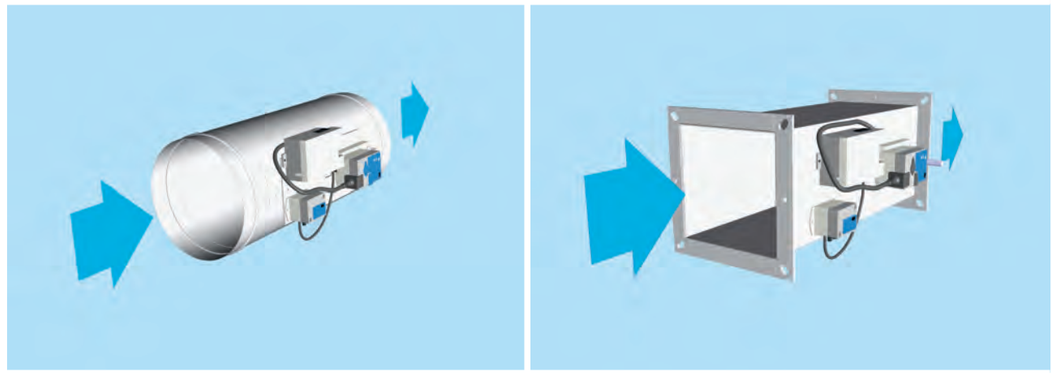
Product data

	VRW	VRX	VRW-A
Sizes [mm]	ø 80 to 400	200 x 100 to 600 x 600	ø 100 to 400
Version	Galvanized steel		
Silencer	☐ SDE	☐ SDF	☐ SDE
Flow rate range [m³/h]	40 to 4000	200 to 13 000	70 to 4000
Airtight shut-off acc. to DIN EN 1751	—	—	Class 3

Special versions on request.

Pressure controllers

DRE DRF



Pressure controllers DRE and DRF are designed to maintain a required constant pressure inside a room or supply air/return air duct. Both are suitable for use with polluted or chemically laden air.

Advantages

Optimum use of your plant´s energy-saving potential by reducing required pressures

Reduction of control expenditures

Possible combination of spring return / high-speed drives

Optional: **Flow rate measurement in combination with flow rate controller**

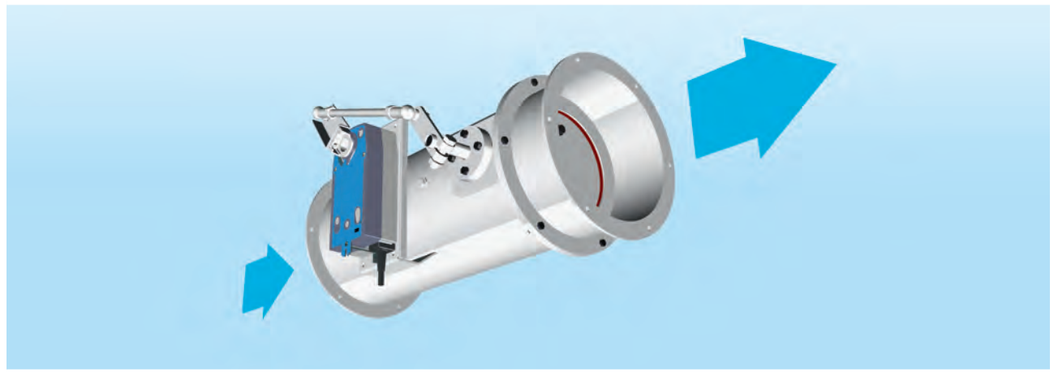
Product data

	DRE	DRF
Sizes [mm]	ø 100 to 630	200 x 140 to 800 x 400
Version	Galvanized steel, coated, stainless steel or PPS	
Silencer	☐ SDE	☐ SDF
Diff. pressure range [Pa]	up to 1000	
Airtight shut-off acc. to DIN EN 1751	Class 3	

Special versions on request.

Ultra-tight shut-off damper

KLB



The ultra-tight shut-off damper KLB ensures reliable and airtight shut-off of air flows.

Advantages

Meets highest sanitation standards such as the ones required in clean-rooms and hospitals

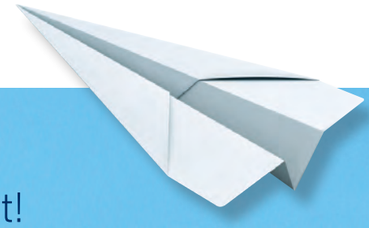
Performance: Blade Positive seal closure – seals more effectively as pressure increases

Corrosion resistant due to version of galvanized or stainless steel

Product data

	KLB
Sizes [mm]	ø 224 to 1000
Version	Galvanized steel or stainless steel
Airtight shut-off acc. to DIN EN 1751	Class 4
Available drive systems	■ Manually operated □ Electrically adjustable

Special versions on request.



LTG Engineering Services – more security for your investement!

LTG Engineering Services offer reliable and detailed reports with recommendations for optimizing function and cost for comfort air technology installations prior to final design. As early as the design proposal for a new building or a renovation, we determine the facts and data precisely for you to secure your investment.

Your advantages

- **Cost optimized from the very start:** Investment costs, energy consumption and operation costs can be minimized at the planning stage.
- **Implementation risks** can be significantly **reduced**
- **Comfortable and user-friendly:** The greatest possible thermal and olfactory comfort through simulation and testing
- **Security** when renovating indoor air technology systems
- No time-wasting adjustments when commissioning the devices in the room, because **presets are made at the factory.**
- **Choice of the best climate system** for each building type
- Benefit from our **modern development centre with various flow laboratories, an echo chamber, a calorimetric test stand and simulation tools** for optimizing your project.

Our services

- **Realistic room flow test** in various scales (model tests or full scale)
- **Comfort parameter measurements** and **room climate evaluation** in the lab and on site
- **Evaluation and optimization** of existing ventilation systems and devices
- Evaluation and **visualization of air flows, heat flows, ventilation efficiency** and much more, including Computational Fluid Dynamics (CFD) simulation
- Acoustic and aerodynamic investigations **for assessing noise, sound level, attenuation characteristics, flow rate and pressure loss of climate-control** products and devices
- **Comparative studies of various room climate systems** as to costs of investment, operation and life cycle

Echo chamber

Laboratory

The Innovation Company

LTG Aktiengesellschaft

Comfort Air Technology

Air-Water Systems
Air Diffusers
Air Distribution

Process Air Technology

Fans
Filtration Technology
Humidification Technology

Engineering Services

Air Flow Tests
Simulations
Acoustic / Comfort Measurements
Customized Solutions

LTG Aktiengesellschaft
Grenzstraße 7
70435 Stuttgart
Deutschland
Tel.: +49 (711) 8201-0
Fax: +49 (711) 8201-720
E-Mail: info@LTG-AG.com
www.LTG-AG.com

LTG Incorporated
105 Corporate Drive, Suite E
Spartanburg, SC 29303
USA
Tel.: +1 (864) 599-6340
Fax: +1 (864) 599-6344
E-Mail: info@LTG-INC.net
www.LTG-INC.net

LTG S.r.l. con socio unico
Via Matilde Serao, 5
20144 Milano (Mi)
Italia
Tel.: +39 (02) 955-0535
Fax: +39 (02) 955-0828
E-Mail: info@LTG-SRL.it
www.LTG-SRL.com

429-51 [04/12] Subject to technical changes.