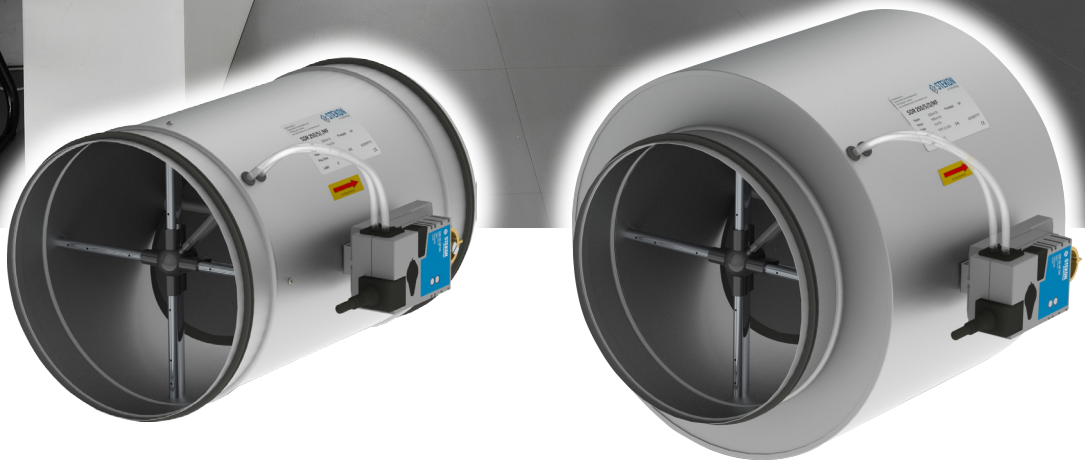




VAV Terminal Units
SDR

VAV Terminal Units

SDR

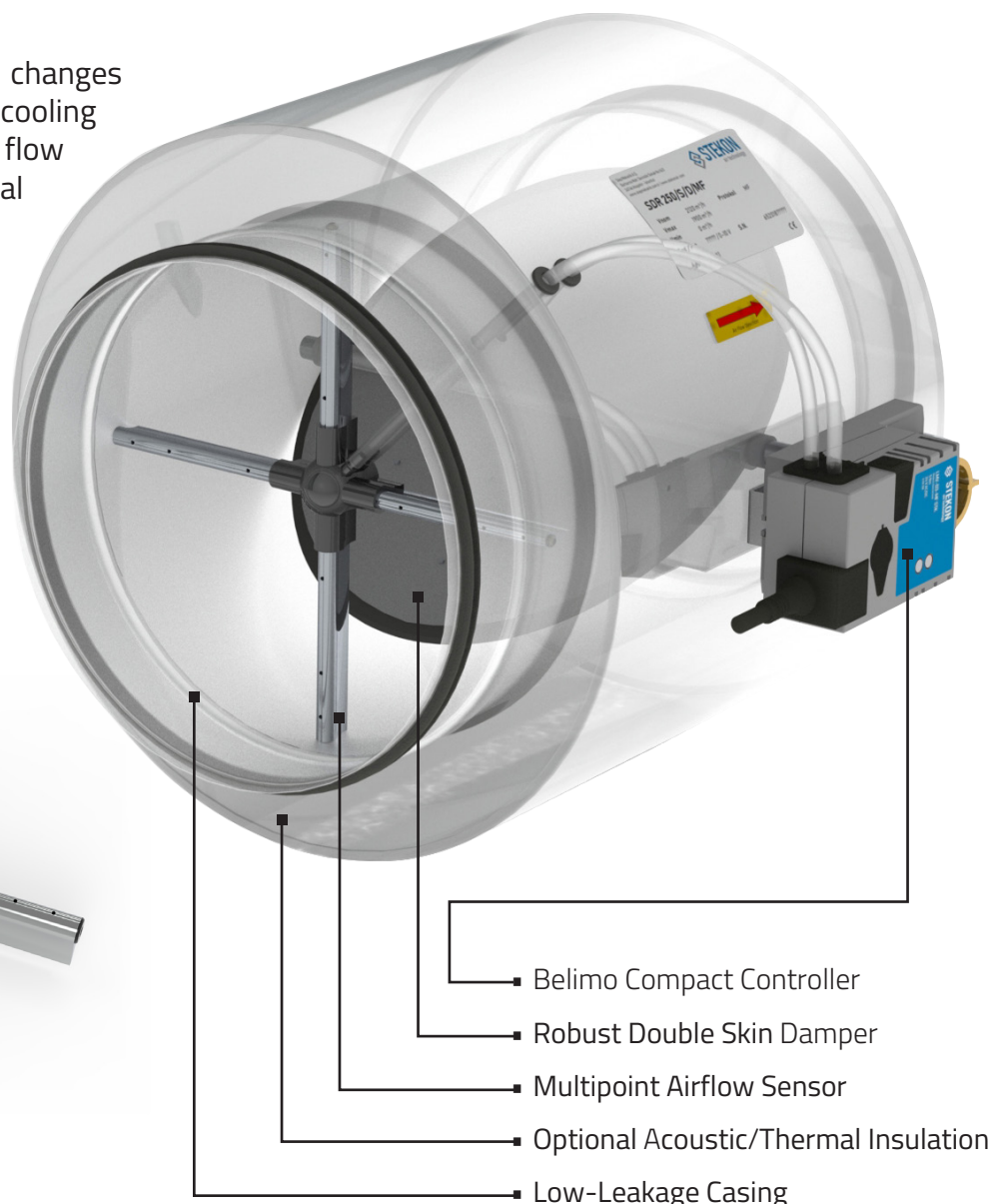
STEKON SDR controls the volume of conditioned air supplied to an occupied space in response to a thermostat or Building Management System control signal, while maintaining low pressure drop and low sound levels. Thanks to its specially designed multipoint airflow sensor, the terminal unit accurately detects changes in airflow and adjusts the damper position to maintain the required airflow, independent of duct pressure variations.

Depending on environmental changes such as increased occupancy or cooling demand, VAV Unit adjusts air flow according to signals from a local or central control system, providing good air quality whilst avoiding excessive ventilation.

The SDR round VAV terminal unit provides precise airflow control by measuring velocity pressure at multiple points across the duct cross-section and calculating an averaged airflow signal.



Log-linear rule for circular ducts





SDR | VAV Terminal Units

SDR (without insulation)



SDR/D (with insulation)



Application

STEKON SDR is a round VAV terminal unit designed to provide accurate, pressure-independent control of constant or variable airflow. The damper design allows complete shut-off when required.

The casing is provided with plug-in end pieces with lip-seal gasket to fit lock-seam spiral wound air ducts according to DIN EN 1506. For sound and thermal insulation, a 50 mm mineral wool insulating shell with sheet steel jacket is available.

Measuring Principle

The specially designed multipoint sensor provides accurate airflow measurement even at low air velocities by amplifying the differential pressure signal between total and static pressure. Compared with conventional velocity pressure sensors, it is less sensitive to non-uniform inlet conditions and helps maintain stable airflow measurement. Its aerodynamic profile helps reduce pressure drop and self-generated noise.

Advantages

- Airflow control accuracy up to $\pm 5\%$
- Low leakage and long service life thanks to complete shut-off capability at a 60° damper position
- Damper leakage Class 4 in accordance with EN 1751
- Reduced sensitivity to poor inlet conditions through pressure signal averaging and amplification
- Hygienic design with smooth internal surfaces in line with VDI 6022 principles

Construction and Materials

- Round casing
- Casing, damper blade, damper shaft and bearings: galvanized steel
- EPDM seals
- Measuring sensor, plastic and aluminium

SDR | VAV Terminal Units

Accessories, Special Versions

- 50mm insulating case for sound and thermal insulation
- Duct type sound attenuators
- Compact controller compatible with MP Bus - Modbus - BACnet
- Electrical or water reheater
- Powder coated casing
- Fast reacting actuator

Selection Recommendations

- Air speed up to 7 m/s
- Damper pressure loss up to 500 Pa
- If airborne noise is critical, terminal units must have sound attenuators
- If casing radiated noise is critical, terminal units must have casing insulation
- Because of only acoustical considerations, after elbows, transitions and duct takeoffs 1D straight duct should be considered before the unit inlet

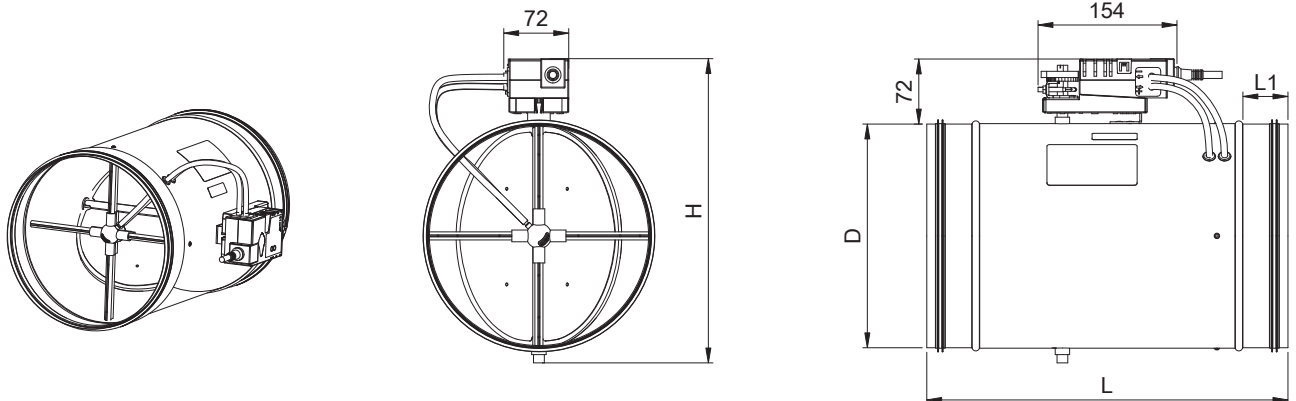
Application Ranges and Limits

- Minimum air velocity 1,2 m/s
- Maximum air velocity 12 m/s
- Static over-pressure in the air duct up to 1000 Pa
- Damper leakage with closed damper blade: Class 4 according to EN 1751
- Casing leakage: Class A according to EN 1751
- Operating temperature range 0 ...+50 °C at 5...95% RH, non-condensing
- Suitable for low-pollution air flows (e.g. ETA1, ETA2 acc. to DIN EN 13779)
- Not suitable for corrosive or aggressive airflows, or for air containing solvents that may affect EPDM seals.
- Suitable for horizontal or vertical installation
- The airflow direction label on the unit must be observed during installation.

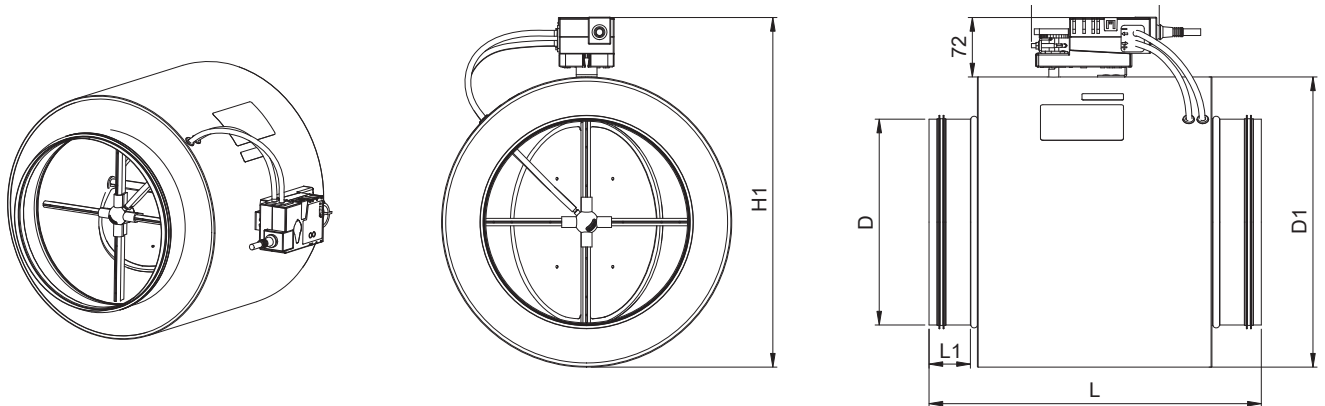
SIZE DN (mm)	1,2 m/s	7 m/s		12 m/s	
	V_{min} [m³/h]	V [m³/h]	ΔP_{min} [Pa]	V_{nom} [m³/h]	ΔP_{min} [Pa]
100	32	188	30	322	70
125	51	297	30	509	70
160	84	491	20	841	50
200	132	772	15	1323	40
250	208	1212	15	2077	25
315	331	1932	15	3312	25
400	536	3126	15	5358	25

Dimensions and Weights

SDR (without insulation)



SDR/D (with insulation)



SIZE DN (mm)	L (mm)	L1 (mm)	D (mm)	D1 (mm)	H (mm)	H1 (mm)	Damper Angle (°)	Weights (kg)	
								w/ insulation	w/o insulation
100	488	50	99	199	179	271	60	3,1	1,6
125	488	50	124	224	204	296	60	4,1	2,0
160	488	50	159	259	239	331	60	5,3	2,6
200	488	50	199	299	279	371	60	6,3	3,1
250	488	50	249	349	329	421	60	7,8	4,2
315	588	50	314	414	394	486	60	11,3	5,8
400	658	50	399	499	479	571	60	14,6	8,2

SDR | VAV Terminal Units

Sound Pressure Levels - Without Insulation (SDR)

System attenuation according to VDI 2081

Nominal Sizes	Air Velocity (m/s)	Flow Rate (m³/h)	Airborne Noise			Radiated Noise		
			ΔP:100 Pa	ΔP:150 Pa	ΔP:250 Pa	ΔP:100 Pa	ΔP:150 Pa	ΔP:250 Pa
			LpA (dBA)	LpA (dBA)	LpA (dBA)	LpA (dBA)	LpA (dBA)	LpA (dBA)
100	1,2	32	32	35	41	14	17	25
	4	107	37	40	45	19	23	30
	7	188	42	45	50	24	27	34
	12	322	48	52	61	31	33	38
125	1,2	51	32	35	42	17	21	29
	4	170	40	43	48	19	24	33
	7	297	45	48	53	23	28	36
	12	509	48	51	56	32	34	38
160	1,2	84	38	40	44	19	23	30
	4	280	43	45	49	22	26	33
	7	491	47	49	53	26	29	36
	12	841	51	54	59	32	35	41
200	1,2	132	35	38	44	18	22	29
	4	441	40	42	47	23	26	32
	7	772	44	46	50	27	30	35
	12	1323	50	52	55	33	35	39
250	1,2	208	36	40	46	22	25	30
	4	692	41	44	49	27	29	33
	7	1212	45	48	52	33	35	38
	12	2077	50	52	56	41	43	46
315	1,2	331	39	42	47	20	24	31
	4	1104	40	43	47	30	32	35
	7	1932	43	45	49	36	37	40
	12	3312	49	51	54	37	41	48
400	1,2	536	39	41	46	26	30	38
	4	1786	40	42	47	34	36	40
	7	3126	41	43	48	39	40	42
	12	5358	44	47	54	41	43	46

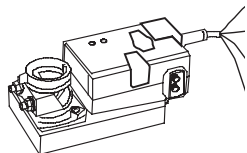
Sound Pressure Levels - With Insulation (SDR/D)

System attenuation according to VDI 2081

Nominal Sizes	Air Velocity (m/s)	Flow Rate (m³/h)	Airborne Noise			Radiated Noise		
			ΔP :100 Pa	ΔP :150 Pa	ΔP :250 Pa	ΔP :100 Pa	ΔP :150 Pa	ΔP :250 Pa
			LpA (dBA)	LpA (dBA)	LpA (dBA)	LpA (dBA)	LpA (dBA)	LpA (dBA)
100	1	32	32	35	41	8	10	15
	4	107	37	40	45	15	16	19
	7	188	42	45	50	20	22	25
	12	322	48	52	61	27	29	34
125	1	51	32	35	42	10	12	16
	4	170	40	43	48	13	16	20
	7	297	45	48	53	16	19	24
	12	509	48	51	56	20	23	29
160	1	84	38	40	44	12	14	19
	4	280	43	45	49	15	17	23
	7	491	47	49	53	18	21	27
	12	841	51	54	59	22	25	31
200	1	132	35	38	44	11	13	16
	4	441	40	42	47	13	15	18
	7	772	44	46	50	15	17	22
	12	1323	50	52	55	22	24	28
250	1	208	36	40	46	12	14	18
	4	692	41	44	49	15	17	20
	7	1212	45	48	52	18	20	25
	12	2077	50	52	56	26	28	34
315	1	331	39	42	47	12	14	20
	4	1104	40	43	47	15	18	22
	7	1932	43	45	49	20	22	26
	12	3312	49	51	54	30	31	34
400	1	536	39	41	46	16	18	21
	4	1786	40	42	47	19	20	23
	7	3126	41	43	48	22	23	26
	12	5358	44	47	54	29	30	33

SDR | VAV Terminal Units

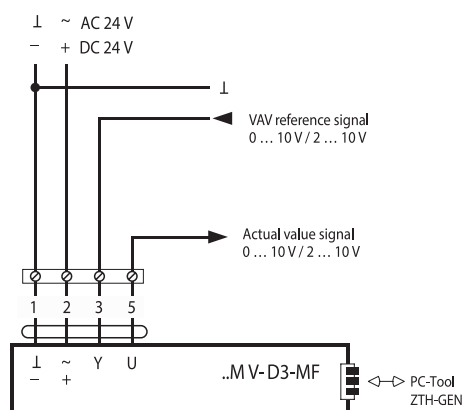
Compact Controller Wiring Diagram



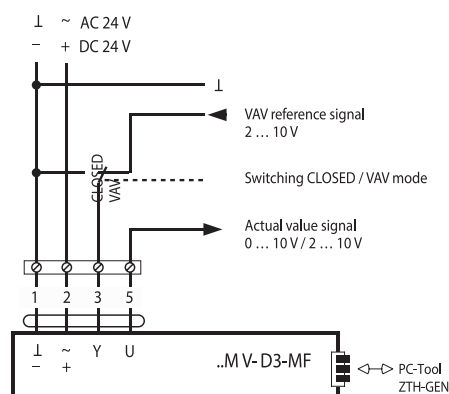
No.	Designation	Wire colour	Function
1	$\perp -$	black	$\perp -$ } AC/DC 24 V supply
2	$\sim +$	red	
3	$\leftarrow Y$	white	Reference signal VAV/CAV
5	$\rightarrow U$	orange	- Actual value signal - Tool communication

VAV - Variable Operation - V_{min} ... V_{max}

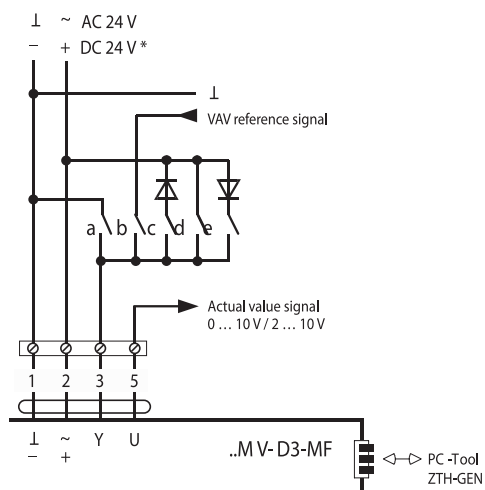
Example 1: VAV with analogue reference signal



Example 2: VAV with shut-off (CLOSE), 2 ... 10 V mode



CAV - Step Mode CLOSED / V_{min} / V_{mid} / V_{max} / OPEN



CAV function: Standard

Mode setting	$\perp -$ 2 ... 10 V	0 ... 10 V 2 ... 10 V	0 ... 10 V 2 ... 10 V	0 ... 10 V 2 ... 10 V	0 ... 10 V 2 ... 10 V
Signal	$\perp -$ 0 ... 10 V 2 ... 10 V	$\sim$	$\sim$	$\sim$	$\sim$
Function	3	3	3	3	3
Damper CLOSED	a) CLOSED		d) CLOSED *		
$\dot{M}_{min}$... $\dot{M}_{max}$		b) VAV			
CAV - $\dot{M}_{min}$	All open - $\dot{M}_{min}$ active **				
Damper OPEN					e) OPEN *
CAV - $\dot{M}_{max}$			d) $\dot{M}_{max}$		

Legend

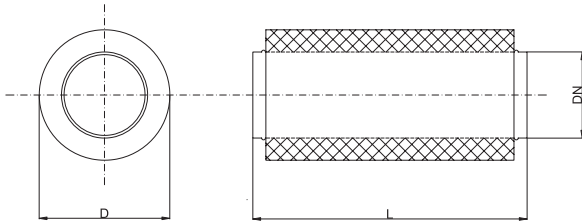
	Contact closed, function active
	Contact closed, function active, only in 2 ... 10 V mode
	Contact open

* Not available with DC 24 V supply

** the damper is closed when the 0.5 V shut-off level is used

Silencers

The outer casing of the LR round silencer is manufactured from galvanized sheet metal, while the inner surface exposed to the airflow is made of perforated galvanized sheet. The space between the two surfaces is filled with 50 mm thick, 50 kg/m³ rock wool insulation, classified as non-combustible A2 according to DIN 4102.



They are used to reduce airborne sound transmission in ventilation ducts. They are designed for installation downstream of SDR round VAV units and are suitable for round duct connections.

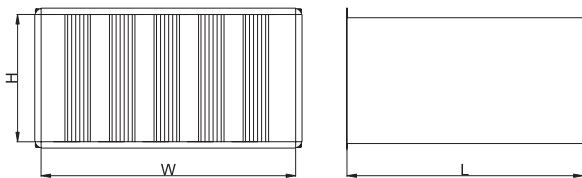
They can be manufactured in any RAL colour upon request.

L = 500mm – 1000mm

Attenuation values

SIZE DN (mm)	D (mm)	L Standard [mm]	Oktave Bands (Hz)							
			63	125	250	500	1000	2000	4000	8000
			Attenuation Values (dB)							
100	200	950	7	10	20	34	49	51	51	28
125	225	950	5	9	19	31	41	49	42	27
160	260	950	3	8	16	27	36	48	37	22
200	300	950	2	7	13	24	31	43	31	20
250	350	950	1	6	11	21	27	39	25	18
315	415	950	1	5	9	18	23	32	20	18
400	500	950	0	2	6	11	22	20	10	8

The casing of the LS rectangular silencer is manufactured from 0.8–1.5 mm thick galvanized sheet metal, depending on size. The splitters are manufactured from 0.7–1.0 mm thick galvanized sheet metal, depending on silencer size. Prefabricated flanges and flange corner pieces are then assembled to the casing.



The splitter infill is 100 mm thick, 50 kg/m³ glass wool, with one side faced with glass cloth. The glass wool is classified as non-combustible A2 according to DIN 4102 and is resistant to decay and moisture. It is designed for installation downstream of the SDS rectangular VAV unit and is suitable for rectangular duct connections.

Attenuation Values

Oktav Bands (Hz)	63	125	250	500	1000	2000	4000	8000
Attenuation Values (dB)	2	4	8	17	33	32	18	14

Values are given for a 1000 mm length and are valid for all sizes.

SDR | VAV Terminal Units

STEKON SDR - Technical Specification

Round airflow control unit designed for pressure-independent control of constant or variable airflow.

Control range 1.2-12 m/s

Airflow range: 32–5358 m³/h; control ratio: 10:1

Minimum - maximum differential pressure range 5 - 1000 Pa

Plug-in installation system with end connections suitable for lock-seam air ducts in accordance with DIN EN 1506 and EN 13180.

All measuring elements and the compact controller are factory-installed.

Damper position and angle scale are visible from the outside of the casing.

Casing leakage acc. to DIN EN 1751 Class A

Damper leakage: Class 4 according to EN 1751

Operating temperature range is 0- + 50 ° C.

Control and feedback signal range: 0...10 V DC

The unit consists of:

Galvanized sheet steel casing with plug-in duct connections and lip seals on both sides.

Oval galvanized sheet steel damper blade with EPDM seal.

Galvanized steel damper axle

Differential pressure measurement probe manufactured from plastic and aluminum parts

Mounted and calibrated Belimo VAV compact D3 electronic flow control unit

Actuator, control

Belimo LMV-D3-MF-STK (dynamic measuring principle)

- Working range 0...10 V

- Working range 2...10 V

Sizes Ø : 100, 125, 160, 200, 250, 315, 400 mm

Accessories

S – Galvanized Sheet Steel T – Powder Coated Body

D – Optionally, 50 mm rockwool insulation, covered with 1 mm galvanized sheet metal, for sound and heat insulation.

ATT – Optionally, with suitable silencer

RHT – Optionally, with suitable electrical or water reheat

Belimo LMV-D3-MF-STK (dynamic measuring principle)

Motor/Control –

Optionally MP – Modbus /BACnet protocol

Ordering Code

SDR 100 / S / D / MF

(1) (2) (3) (4) (5)

(1)	Model	SDR	= Round VAV Unit
(2)	Size	100	= Ø100mm
		125	= Ø125mm
		160	= Ø160mm
		200	= Ø200mm
		250	= Ø250mm
		315	= Ø315mm
		400	= Ø400mm
(3)	Casing	S	= Galvanized Steel
		T	= Powder Coated
(4)	Insulation	D	= With
		-	= Without
(5)	Control Type	MF	= Standard
		MP	= MP-Bus
		MOD	= Modbus/BACnet

Additional ordering specifications

Vmin [m³/h] : Minimum air flow

Vmax [m³/h] : Maximum air flow

Mode : 0... 10V or 2... 10V

Ordering Example

SDR 250 / S / D / MF, Vmin : 500m³/h, Vmax: 1800m³/h, Mode 2... 10V

