

VPEX

ATEX volumetric flow controller PPs-EL

PERFORMANCE DATA

- Operating temperature: 10 - 50° C
- Ambient temperature: 0-50°C
- Measuring range: 0 - 300 Pa
- Housing leakage according to DIN EN 1751, class C
- Damper leaf leakage according to DIN EN 1751, class 3
- with command signal 0-10V DC or 2-10V DC
- For regulating the air velocity in duct in the range of 2-13 m/s

Special features

- suitable for use with aggressive air
- position-independent installation possible
- low pressure loss
- for volumetric flow and linear pressure control of rooms or ducts
- with spring return actuator (if required)
- simple installation and commissioning, because it has already been wired and programmed by the manufacturer

TESTS AND STANDARDS

- **VDI 6022, Sheet 1:** Hygienic requirements of ventilation and air-conditioning systems
- **DIN EN 13779 (2007):** Ventilation of non-residential buildings
- **Leakage air: EN 1751 (2014-06)** Ventilation for buildings - Aerodynamic testing of damper and valves

APPROVALS AND CERTIFICATES

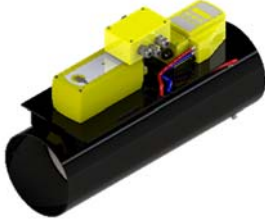
- RoHS 2002/95/EC
- Leakage air: EN 1751 (2014-06)
- 2014/34/EU ATEX (product directive)
- REACH 1907/2006
- EMC 2004/108/EC

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OVERVIEW OF PRODUCT VERSIONS

VPEX-...



Round volumetric flow controller

- for regulating the air velocity in the duct in the range of 2-13 m/s
- with ATEX unit

VPEX-...-FF4



Round volumetric flow controller

- for regulating the air velocity in the duct in the range of 2-13 m/s
- with ATEX unit,
- with flat flange made of plastic material PPs-EL

FUNCTION

The volumetric flow controller allows the volumetric flow in ducts to be kept constant or to be regulated using positive control V_{\min} , V_{\max} or "CLOSED". The volumetric flow controller can also be used as a room or duct pressure regulator. In VAV systems the volumetric flow controller can regulate variable volumetric flows between V_{\min} and V_{\max} as a function of the supply air (room temperature controller).

The volumetric flow setpoints V_{\min} and V_{\max} can also be altered at the controller at a later stage, even after installation. If the changes in air volume are so large that the calibration curve must be changed, the controllers must either be recalibrated in-factory or the calibration curve must be changed on-site by the customer service of Schako.

Setpoints are initially set in-factory according to the customer's requirements. During this in-factory setting, the functions of all volumetric flow controllers are also checked. The maximum deviation of the volumetric flows is +/- 5%, relative to the nominal volumetric flow V_{enn} , based on a calibration curve of 13 m/sec. At lower flow rates, the deviation in percent may increase.

For the calibration of the controllers, a curve with a flow rate of 13 m/sec. is available.

Volumetric flow controllers are in general insensitive to the in-flow. Measuring points are distributed on the measuring cross according to the median line method.

When using the controllers in systems with heavy dust contamination, suitable filters must be connected upstream. For polluted air or air containing aggressive components, the volumetric flow controllers must be used with an integrated controller with a static membrane pressure sensor. In this case, it is imperative to observe the notice sign regarding the mounting position. A zero adjustment has to be performed after installation.

AREAS OF APPLICATION

- for supply and return air systems
- for hazardous areas of zones 1, 2, 21 and 22
- also for explosion group IIC in zones 1 and 2 (gases)
- with air contaminated with aggressive media
- Control components with protection index IP 66
- for constant CAV or variable VAV installations
- for positive control V_{min} , V_{mid} , V_{max} , "OPEN" or "CLOSED"
- For volumetric flow and linear pressure control
- Measuring range: 0...300 Pa
- at ambient temperatures 0 °C to 20 °C...+50 °C, requirement: measuring air 0...+50°C/5...95% rH, non-condensing
- with command signal 0...10V DC, 2...10V DC,
- with supply voltage 24V AC / DC +/- 15%, 50/60Hz
- for regulating the air velocity in the duct in the range of 2...13 m/s
- can also be used with vertical axis

The round volumetric flow controller type VPEX made of plastic material PPs-EL is suitable for use with aggressive components of polluted air and in areas subject to explosion hazards. The SCHAKO VPEX has been approved for all gases in zone 1, zone 2, as well as for dusts in zones 21 and 22. The SCHAKO VPEX can also be used in zones 1 and 2 of the explosion group IIC.

Before connecting SCHAKO components to customer installations, any compatibility problems must be solved on-site.

Additional information for defining explosion protection

(Hazardous zone 1 = Gases / Hazardous zone 2 = Dusts)

- Device group II: Use in the remaining hazardous areas, subdivided into categories:
 - Category 2 - occasional hazard for Zone 1 and Zone 21
 - Category 3 - rare / brief hazard for Zone 2 and 22

TESTS AND STANDARDS

The volumetric flow controller VPEX has been tested in accordance with the following guidelines:

Completed tests

- VDI 6022, Sheet 1: Hygienic requirements of ventilation and air-conditioning systems
- DIN EN 13779 (2007): Ventilation of non-residential buildings

Applied standards

- Leakage air: EN 1751 (2014-06)
- 2014/34/EU ATEX (product directive)
- RoHS 2002/95/EC
- REACH 1907/2006
- EMC 2004/108/EC

PROCESSING

Housing

- Plastic PPs-EL

Damper blade

- Plastic PPs-EL

Damper blade seal

- made of PUR, silicone-free
- airtight sealing design to DIN-EN 1751, class 3

Damper bearing

- Plastic PP

Measuring cross

- Plastic PP

Model

- Round model, for duct connection according to DIN 24145, with damper blade seal for air-tight sealing (size \varnothing 125...400, to DIN EN 1751, class 3)

Controllers and actuators

The description of the fields of application and the technical data for the controller SCHISCHEK ExReg and for the actuator SCHISCHEK ExMax-...-CY / -CYF can be found in the SCHISCHEK documentation at www.schischek.de

A098 = ATEX-NM-K2

Controller ExReg V300-A with actuator ExMax-5.10-CY Nm

A100 = ATEX-NM-F-K2

Controller ExReg V300-A with actuator ExMax-5.10-CYF Nm and spring return

AVAILABLE SIZES

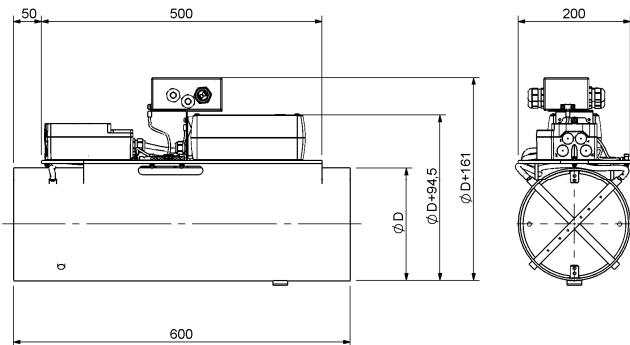
NW	$\varnothing D$	$\varnothing D_{\text{innen}}$	Ground
110	110	104	7.0 kg
125	125	119	7.1 kg
160	160	154	7.4 kg
200	200	194	7.8 kg
250	250	243	8.3 kg
315	315	305	8.9 kg
400	400	388	9.9 kg

NW 100 - sealing airtight to DIN-EN 1751, class 2

NW 125 - NW 400 sealing airtight to DIN-EN 1751, class 3.

DIMENSIONS

VPEX



USEABLE VOLUMETRIC FLOW RANGES

NW (mm)	V	V_{min}	V_{max}
		(2 m/s)	(13 m/s)
110	m ³ /h	61	398
	l/s	17	111
125	m ³ /h	80	521
	l/s	22	145
160	m ³ /h	134	872
	l/s	37	242
200	m ³ /h	213	1383
	l/s	59	384
250	m ³ /h	334	2170
	l/s	93	603
315	m ³ /h	526	3419
	l/s	146	950
400	m ³ /h	851	5534
	l/s	236	1537

ATTENTION: important for parameterisation of the VPEX

- The table of “useable volumetric flow ranges” corresponds to the complete measuring range.
- When the air volume drops below V_{min} , the correct functioning of the volumetric flow controller is no longer guaranteed.
- If only V_{max} is specified in the order, a variable volumetric flow controller will be delivered. The V_{min} value will be set to the value specified in the catalogue.
- If only one air volume is specified in the order (as V_{min} or V_{kon}), then the volumetric flow controller will be delivered as a constant volumetric flow controller. The volume specified in the order is set to the V_{min} value, and the V_{max} value is set to 100%.
- The air volumes V_{min} and V_{max} and the operating mode 0/2-10 V can be changed directly at the controller within the nominal volumetric flow.
- For the parameter setting of the control components, an air density of 1.2 kg/m³ has been taken into account.
- If no values are specified in the order, the controller will be programmed with the values in accordance with the useable volumetric flow range.

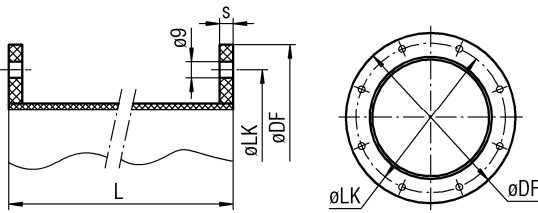
ACCESSORIES

Flat flange (-FF4)

- on both sides, made of plastic material PPs-EL

ACCESSORIES - DIMENSIONS

Flat flange (-FF4), on both sides



NW	øD	øDF	øLK	s	LOA
110	110	170	150	10	4
125	125	185	165	10	8
160	160	230	200	10	8
200	200	270	240	10	8
250	250	320	290	10	12
315	315	395	350	10	12
400	400	480	445	10	16

NW 110 sealing airtight to DIN EN 1751 class 2

NW 125 – 400 sealing airtight to DIN EN 1751 class 3

STATIC MINIMUM PRESSURE DIFFERENCE

NW	V_k	V	V	$\Delta p_{t \min}$
	(m/s)	(m ³ /h)	[l/s]	(Pa)
110	2	61	17	20
	6	182	51	25
	9	273	76	50
	12	364	101	70
125	2	80	22	20
	6	240	67	20
	9	360	100	40
	12	480	133	60
160	2	134	37	20
	6	402	112	20
	9	603	168	35
	12	804	223	55
200	2	213	59	15
	6	640	178	20
	9	960	267	25
	12	128	356	50
250	2	334	93	15
	6	100	278	15
	9	1503	418	20
	12	2004	557	30
315	2	526	146	15
	6	1578	438	15
	9	2367	658	20
	12	3156	877	25
400	2	851	236	15
	6	2554	709	15
	9	3831	1064	20
	12	5108	1419	25

FLOW GENERATED NOISE - PRESSURE LOSS 150 PA / 200 PA

NW	v _k (m/s)	V (m ³ /h) [l/s]			Δp _t = 150 Pa								L _{WA} [dB(A)]	Δp _t = 200 Pa								L _{WA} [dB(A)]
					L _w [dB/oct]									L _w [dB/oct]								
					f _m (Hz)									f _m (Hz)								
					63	125	250	500	1000	2000	4000	8000		63	125	250	500	1000	2000	4000	8000	
110	3	91	25	50	56	54	50	49	46	39	37	53	49	55	56	53	50	48	42	41	56	
	6	182	51	51	57	55	51	50	47	40	38	54	50	55	57	56	52	50	46	46	58	
	9	273	76	52	58	56	52	51	48	41	39	55	51	56	58	57	53	51	45	45	59	
	12	364	101	53	59	57	53	52	49	42	40	56	52	57	59	58	54	52	46	46	60	
125	3	120	33	50	56	54	50	49	46	39	37	54	49	55	56	53	50	48	42	41	56	
	6	240	67	53	59	57	53	52	49	42	40	56	55	61	59	55	54	51	44	42	58	
	9	360	100	53	59	57	53	52	49	42	40	57	52	57	59	58	54	52	46	46	60	
	12	480	133	51	57	58	55	52	50	44	43	58	54	59	61	60	56	54	48	48	62	
160	3	201	56	51	61	55	49	46	44	40	39	53	50	57	58	53	49	47	43	42	56	
	6	402	112	64	64	57	50	48	46	41	40	55	63	70	61	55	51	49	46	44	59	
	9	603	168	63	63	57	52	52	45	40	38	56	66	68	61	55	54	49	44	43	59	
	12	804	223	60	59	55	54	56	48	43	39	59	66	66	61	58	59	51	47	45	62	
200	3	320	89	49	54	52	48	46	45	41	40	52	49	61	56	53	49	49	46	45	56	
	6	640	178	61	59	55	50	48	46	41	39	54	60	63	59	54	51	50	47	45	58	
	9	960	267	63	60	57	53	53	47	42	37	57	66	64	61	56	54	51	46	43	59	
	12	128	356	59	56	55	55	58	49	44	40	60	67	65	62	59	60	53	49	45	63	
250	3	501	139	51	53	52	48	46	48	43	36	53	51	55	56	51	48	50	48	42	56	
	6	1000	278	62	60	55	53	50	49	41	36	56	63	62	57	54	52	52	47	41	58	
	9	1503	418	65	61	58	57	50	48	41	37	58	66	65	61	59	53	51	45	41	60	
	12	2004	557	62	61	59	59	55	51	45	42	60	68	67	63	62	57	54	48	45	63	
315	3	789	219	61	58	56	56	49	46	39	35	56	63	62	57	54	52	52	47	41	58	
	6	1578	438	62	60	55	53	50	49	41	36	56	64	63	58	55	53	53	48	42	59	
	9	2367	658	63	61	56	54	51	50	42	38	57	65	63	58	56	53	52	44	40	59	
	12	3156	877	64	64	60	57	55	55	50	44	61	67	66	61	58	56	56	51	45	62	
400	3	1277	355	63	62	59	54	52	52	47	41	59	62	64	64	60	51	51	50	44	61	
	6	2554	709	60	64	60	55	52	52	47	41	59	60	65	63	61	51	51	50	46	61	
	9	3831	1064	60	63	59	54	51	51	45	41	58	65	64	60	58	56	56	52	46	62	
	12	5108	1419	60	62	60	55	51	51	45	41	58	65	65	59	60	55	56	52	46	62	

FLOW GENERATED NOISE - PRESSURE LOSS 250 PA/500 PA

NW	v _K (m/s)	V (m ³ /h) [l/s]		Δp _t = 250 Pa									Δp _t = 500 Pa								
				L _w [dB/oct]								L _{WA} [dB(A)]	L _w [dB/oct]								L _{WA} [dB(A)]
				f _m (Hz)									f _m (Hz)								
63	125	250	500	1000	2000	4000	8000	63	125	250	500	1000	2000	4000	8000						
110	3	91	25	50	55	57	56	52	50	44	44	58	50	55	55	59	58	52	44	44	61
	6	182	51	52	57	59	58	54	52	46	46	60	55	60	61	63	56	52	48	46	63
	9	273	76	54	59	60	59	55	53	47	47	62	55	62	66	64	56	56	50	46	65
	12	364	101	53	58	59	58	54	52	46	46	61	53	66	64	67	56	56	50	46	66
125	3	120	33	50	55	57	56	52	50	44	44	58	52	57	59	58	54	52	46	46	60
	6	240	67	55	60	60	59	55	53	47	47	62	55	62	66	64	56	56	50	46	65
	9	360	100	54	59	60	59	55	53	47	47	62	54	61	65	65	56	56	50	46	65
	12	480	133	51	59	61	60	56	54	48	48	62	55	62	66	66	57	57	51	47	66
160	3	201	56	49	58	62	58	52	51	46	46	60	50	58	61	62	56	56	49	49	63
	6	402	112	62	69	64	58	54	51	50	48	61	52	60	63	65	56	56	49	49	65
	9	603	168	66	72	64	58	55	52	47	46	62	56	67	66	67	58	58	45	46	67
	12	804	223	68	69	65	60	59	53	49	48	64	60	70	71	69	62	60	54	46	70
200	3	320	89	50	60	59	56	52	51	49	48	59	67	67	62	59	60	52	48	46	63
	6	640	178	62	68	63	59	55	52	50	49	62	65	68	65	62	61	52	48	46	65
	9	960	267	66	68	63	58	55	53	49	47	62	66	69	66	63	62	53	49	47	66
	12	1280	356	66	64	64	60	59	55	51	48	64	69	72	69	66	65	56	50	49	69
250	3	501	139	50	57	60	56	51	51	51	46	59	65	64	63	60	56	52	48	44	62
	6	1002	278	61	64	60	56	53	54	51	46	61	68	69	65	61	57	55	51	47	64
	9	1503	418	67	68	64	60	56	55	50	46	63	68	69	69	65	59	57	54	47	67
	12	2004	557	69	69	65	62	57	55	50	47	64	68	71	72	69	65	57	54	49	70
315	3	789	219	66	65	60	57	55	55	50	44	61	58	68	64	59	56	57	54	49	64
	6	1578	438	65	62	60	62	56	57	48	45	63	58	69	67	63	57	58	55	49	66
	9	2367	658	63	67	62	58	55	56	53	48	63	67	71	70	65	64	59	54	48	69
	12	3156	877	69	68	63	60	58	58	53	47	64	67	74	73	68	67	63	57	51	72
400	3	1277	355	66	65	62	59	57	55	51	45	63	69	68	65	62	60	58	54	48	66
	6	2554	709	67	66	63	60	58	56	52	46	64	68	70	67	64	62	60	56	49	68
	9	3831	1064	68	67	64	61	59	57	53	47	65	67	72	69	68	64	62	58	52	70
	12	5108	1419	66	68	65	61	59	59	50	47	65	67	72	73	72	68	62	56	50	73

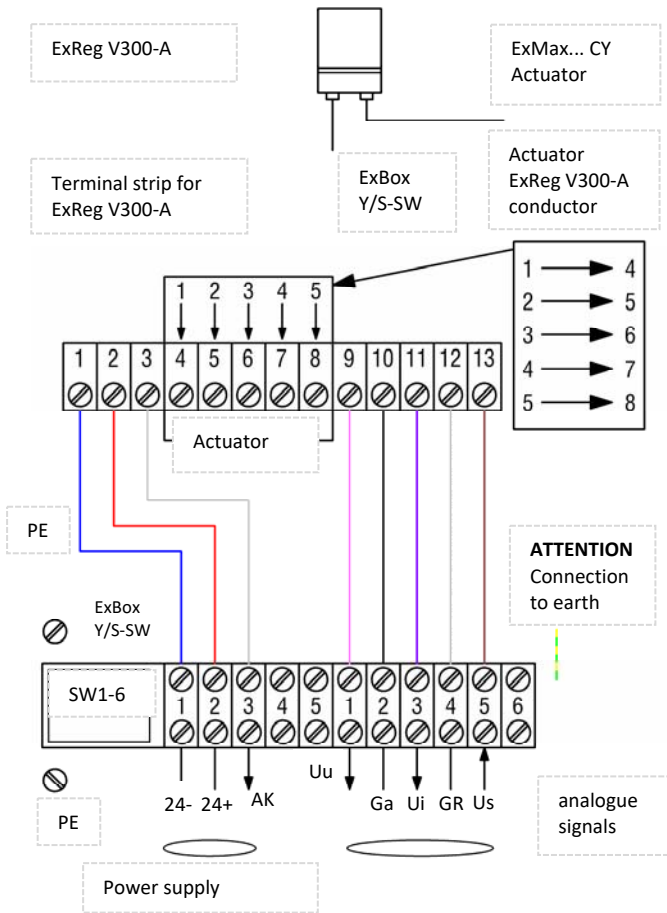
RADIATED NOISE - PRESSURE LOSS 150 PA/200 PA

NW	v _K (m/s)	V (m ³ /h) [l/s]		Δp _t = 150 Pa									Δp _t = 200 Pa								
				L _w [dB/oct]								L _{WA} [dB(A)]	L _w [dB/oct]								L _{WA} [dB(A)]
				f _m (Hz)									f _m (Hz)								
				63	125	250	500	1000	2000	4000	8000	L _{WA} [dB(A)]	63	125	250	500	1000	2000	4000	8000	L _{WA} [dB(A)]
110	3	91	25	26	19	18	23	28	23	18	21	31	24	25	21	19	23	30	27	23	34
	6	182	51	26	22	22	25	29	25	18	21	32	30	26	26	29	33	29	22	25	36
	9	273	76	31	28	27	30	34	30	23	26	37	32	30	33	32	35	32	25	30	39
	12	364	101	34	32	35	34	37	34	27	32	41	36	36	39	38	41	38	34	32	45
125	3	120	33	27	20	19	24	29	24	19	22	32	25	26	22	20	24	30	27	23	34
	6	240	67	40	30	27	23	26	30	27	21	34	42	33	28	24	27	32	30	25	36
	9	360	100	45	35	34	31	32	34	30	23	39	47	37	36	31	33	36	33	27	40
	12	480	133	37	29	37	39	37	38	28	24	43	50	37	42	40	41	42	35	30	47
160	3	201	56	27	23	22	25	21	27	22	25	31	30	23	25	28	24	30	25	28	34
	6	402	112	29	22	24	27	26	29	24	27	33	33	26	28	31	30	33	27	31	37
	9	603	168	36	30	29	34	28	33	28	31	38	37	31	30	35	29	34	29	32	39
	12	804	223	46	35	39	45	38	35	28	20	44	47	36	40	46	39	36	29	21	46
200	3	320	89	30	26	18	24	23	24	21	24	30	34	30	32	28	27	28	25	28	34
	6	640	178	33	29	21	27	26	25	22	25	32	37	33	25	31	30	29	26	28	36
	9	960	267	39	38	29	32	33	32	30	32	39	39	39	31	32	33	32	30	32	39
	12	128	356	43	45	38	38	41	38	35	38	45	46	48	41	41	44	41	38	41	48
250	3	501	139	30	30	21	23	22	26	23	23	31	33	33	24	26	25	29	26	26	34
	6	100	278	32	30	25	24	25	28	28	28	34	36	34	24	29	30	29	27	30	36
	9	1503	418	38	36	30	34	33	32	33	32	40	39	35	30	36	33	32	33	32	40
	12	2004	557	40	41	40	39	41	38	32	32	45	43	44	43	42	44	41	35	35	48
315	3	789	219	34	28	27	32	26	31	26	29	36	36	30	29	34	28	33	28	31	38
	6	1578	438	31	28	25	29	24	28	23	26	33	36	33	31	35	32	33	29	31	39
	9	2367	658	33	30	30	34	30	33	30	32	39	35	32	32	36	32	35	32	34	41
	12	3156	877	47	40	38	43	39	41	38	38	47	48	41	39	44	40	42	39	38	48
400	3	1277	355	35	35	34	32	31	34	30	31	39	37	38	36	34	34	35	32	32	41
	6	2554	709	36	35	34	33	32	32	30	31	39	39	38	37	36	36	35	27	29	41
	9	3831	1064	39	37	35	36	33	33	29	31	40	32	32	33	34	32	32	41	34	44
	12	5108	1419	32	32	33	34	32	32	41	34	44	36	36	37	38	36	36	45	38	48

RADIATED NOISE - PRESSURE LOSS 250 PA / 500 PA

NW	v _K (m/s)	V (m ³ /h) [l/s]		Δp _t = 250 Pa									Δp _t = 500 Pa												
				L _w [dB/oct]											L _w [dB/oct]										
				f _m (Hz)											f _m (Hz)										
				63	125	250	500	1000	2000	4000	8000	L _{WA} [dB(A)]	63	125	250	500	1000	2000	4000	8000	L _{WA} [dB(A)]				
110	3	91	25	26	27	26	26	28	32	32	29	36	35	36	35	35	36	40	40	28	45				
	6	182	51	35	28	28	31	35	31	24	27	38	37	38	37	37	38	42	42	30	47				
	9	273	76	35	33	36	35	38	35	28	33	42	41	42	43	42	42	46	44	34	51				
	12	364	101	37	37	40	39	42	39	35	33	46	47	47	50	49	52	49	45	40	56				
125	3	120	33	35	25	24	24	26	30	30	27	36	35	36	32	30	34	40	37	33	44				
	6	240	67	47	35	31	28	30	36	34	30	40	56	46	42	39	41	47	45	41	51				
	9	360	100	49	38	36	31	33	37	35	30	42	58	47	45	40	42	46	44	39	51				
	12	480	133	51	40	43	40	42	41	36	31	47	60	49	52	49	51	50	45	40	56				
160	3	201	56	34	37	29	32	28	34	29	32	38	45	40	40	42	40	41	38	35	47				
	6	402	112	35	38	30	33	29	35	30	33	39	48	42	45	42	43	44	38	35	49				
	9	603	168	40	34	33	38	32	37	32	35	42	50	47	45	48	42	49	43	38	53				
	12	804	223	51	40	44	50	43	40	33	25	49	58	52	53	59	56	49	42	33	60				
200	3	320	89	35	30	30	32	31	31	28	31	37	46	39	41	43	42	39	38	34	47				
	6	640	178	40	38	31	38	32	32	32	30	40	49	47	40	47	41	41	40	38	49				
	9	960	267	40	42	35	35	38	35	33	35	42	52	51	44	45	48	45	43	45	52				
	12	128	356	47	49	42	42	45	42	39	42	49	56	54	52	52	55	52	48	48	59				
250	3	501	139	37	34	27	29	28	32	29	29	37	45	42	39	38	39	40	40	39	46				
	6	100	278	39	37	27	32	33	31	29	32	39	47	47	42	41	44	39	40	39	48				
	9	1503	418	39	39	38	36	39	38	32	32	44	50	52	47	46	49	44	44	45	53				
	12	2004	557	44	45	44	43	45	42	36	36	49	50	45	53	55	53	55	49	49	60				
315	3	789	219	41	35	34	39	33	38	33	36	43	44	44	42	41	42	45	42	37	50				
	6	1578	438	44	37	36	42	36	40	35	36	45	46	46	44	43	44	47	44	40	52				
	9	2367	658	46	39	38	44	38	42	37	38	47	49	49	47	46	47	50	47	43	55				
	12	3156	877	50	53	42	46	42	44	41	40	50	52	49	55	58	59	54	56	51	63				
400	3	1277	355	43	38	38	42	37	40	34	35	45	49	45	43	48	45	47	42	43	52				
	6	2554	709	44	44	43	44	42	38	30	32	46	52	55	50	49	48	46	46	42	54				
	9	3831	1064	46	42	40	45	42	44	39	40	49	54	57	52	51	50	48	48	44	56				
	12	5108	1419	39	39	40	41	39	39	48	42	51	60	52	55	59	59	55	56	51	64				

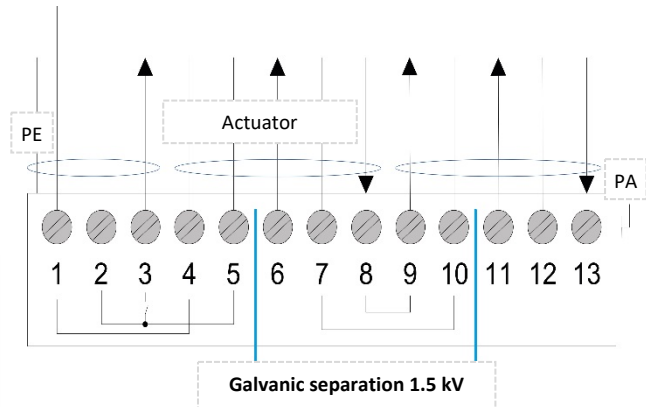
CONNECTION DIAGRAM OF ATEX UNIT



Connection diagram of terminal box

left: 1 to 5	right: 1 to 6
1 to 1 = blue	9 to 1 = pink
2 to 2 = red	10 to 2 = black
3 to 3 = white	11 to 3 = purple
	12 to 4 = grey
	13 to 5 = brown

CONNECTION DIAGRAM OF ATEX CONTROLLER



Connection assignment of ATEX controller V300-A

1 = 24 V AC / DC (-)
2 = 24 V AC / DC (+)
3 = AK - alarm contact
4 = 24 V AC / DC (-) power supply actuator
5 = 24 V AC / DC (+) power supply actuator
6 = Y_i - Setpoint value of the actuator 4... 20mA
7 = G_a - Ground Y, Gd
8 = U_u = actual value of actuator 0...10 V
9 = U_u - damper position 0...10 V
10 = G_a : ground drive, GND
11 = U_i = actual value of controller 0/2...10 V
12 = G_r - Ground of the controller, GND
13 = U_s - Setpoint value of the controller 0/2...10 V

Connection of Schischek ExReg-V300-A

ExReg-V300-A is the standard version for controlling variable volumetric flows (VAV). The alarm contact (terminal 3) serves to provide feedback for normal operation. Moreover, the device has an analogue output (terminal 11) which emits the current setpoint value as a continuous signal and an analogue feedback of the damper position (terminal 9). This function is mainly used for saving energy.

A setpoint value is specified via terminal 13. The voltage for the minimal and maximal volumetric flow is defined either in the range of 0 to 10 V or in the range of 2 to 10 V. Depending on the settings applied in menu 6 (setpoint value), the function of positive control may be used additionally. If the voltage value exceeds approximately 12 V, the damper leaf opens. In case the voltage value falls below 0.2 V, the damper leaf will be completely closed. During this positive control function (damper OPEN / CLOSED), the control remains inoperable. If the input is not connected, the value set in menu 7.2 (default) will be used as constant volumetric flow.

Controllers of type V300 and V300-B can be provided upon request as well.

PRIOR TO MOUNTING AND COMMISSIONING



An instruction leaflet containing information on safety, transport disposal, installation, commissioning and maintenance is enclosed with each SCHAKO product. For safety reasons, this instruction leaflet must be read under all circumstances and completely adhered to.

Marking

The product has the following test number and ATEX marking:



II 2G Ex h IIC T6 Gb

II 2D Ex h IIIC T80°C Db

EPS 11 ATEX 2 307 X

The devices have been designed for use in areas subject to explosion hazards according to ATEX of device group II, device category 2 for Zones 1 and 21, as well as device category 3 for Zones 2 and 22.

These devices are ONLY suitable for use in approved Ex zones. The operating safety of the devices is only guaranteed when used in accordance with their designated use. According to the ATEX marking, the volumetric flow controller may only be used for media with a maximum temperature of up to 80 °C.

Special operation

It must be ensured that all metallic parts and conductive plastics are properly and permanently connected to earth potential.

The attached and installed electrical devices must have a suitable explosion-proof design. The combination of electrical and non-electrical devices must be examined again from a safety point of view.

To avoid propagating brush discharges in housings with RAL coating, it must be ensured that the air in the ventilation system is not heavily contaminated with non-conductive particles.

Type of ignition protection

The type of ignition protection of the volumetric flow controller is guaranteed by its safe design.

Quality

The SCHAKO production facilities are certified according to the QM procedure EN ISO 9001.

Zero point adjustment of the static pressure sensor

For Schischek ExReg-V300-A controller, a zero adjustment must be performed for commissioning in order to correct mounting position-dependent measurement deviations. For this purpose, the pressure connections P+ and P- are to be short-circuited mechanically and the adjustment should be carried out according to menu 3.2. [0-point]. In order to achieve a constant operating temperature, the controller should be connected to the supply voltage about 15 minutes before the zero adjustment begins.

Disposal

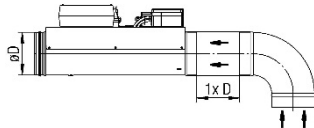
The devices have been prepared in accordance with the RoHS directive restricting the use of certain hazardous substances in electrical and electronic equipment (2002/95/EC).

After its final decommissioning, the volumetric flow controller must be properly disposed of.

INSTALLATION INFORMATION

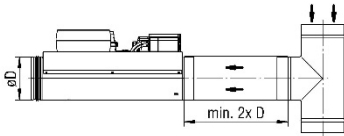
To avoid unnecessary controller errors, the min. distances according to the following table / drawings must be observed. For combinations of several connection pieces or pieces with fire dampers or silencers, the larger minimum distances must be observed. All volumetric flow controllers can be assembled with horizontal or vertical damper axis.

Distance to a bend

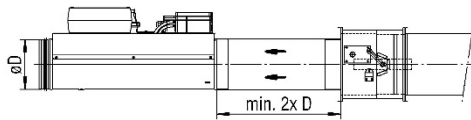


Distance downstream of other connecting pieces

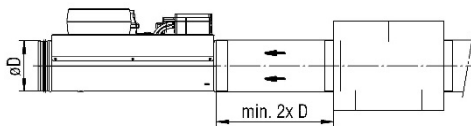
(e.g. branching piece, reducing piece, T-junction, etc.)



Distance to a fire damper



Distance to a silencer with intermediate baffle



Distances

Distance to	VPEX
Bend	1 x D
other connection pieces (e.g. T-junction, branching piece, reducing piece, etc.)	2 x D
Fire damper	2 x D
Silencer	2 x D

MAINTENANCE AND SERVICE

Assembly and maintenance instructions

1. The controllers must be assembled in a way to allow inspection at any time.
2. For volumetric flow controllers with integrated controller with static membrane pressure sensor, it is imperative to observe the notice sign regarding its mounting position. The volumetric flow controllers are not suitable for air containing sticky and greasy components.
3. The volumetric flow controller must not be carried on the regulation components, measuring cross or the damper blade, but only on the housing.
4. The controllers must be carefully stored on-site. They must be protected from dust, dirt and from direct weather effects.
5. Assembly must be carried out by expert personnel, observing recognised technical rules and regulations.
6. The controller and all electric components have to be connected to equipotential bonding at any time.

LEGEND

D_e	[dB/Okt]	=	Insertion loss
E_K	(m/s)	=	Calibration curve
F	[m ²]	=	Surface
f_m	(Hz)	=	Octave band centre frequency
V_{min}	(m ³ /h) [l/s]	=	Minimum volumetric flow
V_{kon}	(m ³ /h) [l/s]	=	Constant volumetric flow
V_{max}	(m ³ /h) [l/s]	=	Maximum volumetric flow
V_{nenn}	(m ³ /h) [l/s]	=	Nominal volumetric flow
Hz	(f_m)	=	Herz
K_{Lw}	(-)	=	Relative sound spectrum
LOA	(-)	=	Number of holes in flat flange
P	(mm)	=	Packing thickness duct silencer
NW	(mm)	=	Nominal width
U_5	(V) DC	=	Measurement output (electric voltage)
V	(m ³ /h) [l/s]	=	Air volume
ΔV	[%]	=	Tolerance for the volumetric flow setpoint value
v_K	(m/s)	=	Duct velocity
$\varnothing D$	(-)	=	Hydraulic diameter
Δp	(Pa)	=	Pressure difference
$\Delta p_{t, min}$	(Pa)	=	Minimum static pressure difference
Δp_t	(Pa)	=	Pressure loss

CALCULATION FORMULAE

Calculation of the nominal volumetric flow

$$V_{nenn} = E_K \times F \times 3600$$

Setting values for V_{min}

The required volumetric flow that is to flow at the 0 V DC command signal (operating mode 0-10 V DC) or at the 2 V DC command signal (operating mode 2 - 10 V DC) at terminal 13 (U_5 or in terminal box terminal 5) or with positive control V_{min} is set in m³/h at the controller.

This value refers to the set V_{nenn} volumetric flow.

Formula

$$EW_{V_{min}} = V_{min} / V_{nenn} \times 100 \text{ percent}$$

Setting values for V_{max}

The required volumetric flow that is to flow at the 10 V DC command signal at terminal 13 (U_5 or terminal box terminal 5) or with positive control V_{max} is set in m³/h at the controller. This value refers to the set V_{nenn} nominal volumetric flow.

Formula

$$EW_{V_{max}} = V_{max} / V_{nenn} \times 100 \text{ percent}$$

ORDER CODE

01	02	03	04	05	06	07	08
Type	Nominal width	Attachment assembly	Mode	Volumetric flow V_{min}	Volumetric flow V_{max}	Damper position	Duct connection
Example							
VPEX	-110	-A098	-2	-0100	-0350	-NA	-KA0
VPEX	-400	-A100	-0	-1000	-4500	-NO	-FF4

SAMPLE

VPEX-110-A098-2-0100-0350-NA-KA0

Volumetric flow controller in round design, made of PPs-EL I
 Nominal width 110 mm I with attachment assembly ATEX-NM-K2 I Mode 2-10 V I $V_{min}=100 \text{ m}^3/\text{h}$ I $V_{max}=350 \text{ m}^3/\text{h}$ I without spring return actuator I without flange

VPEX-400-A100-0-1000-4500-NO-FF4

Volumetric flow controller in round design, made of PPs-EL I
 Nominal width 400 mm I with attachment assembly ATEX-NM-F-K2 I Mode 0-10 V I $V_{min}=1000 \text{ m}^3/\text{h}$ I $V_{max}=4500 \text{ m}^3/\text{h}$ I with damper position, NO=currentless OPEN I with flat flange made of PPs-EL

ORDER DETAILS

01 - Type

VPEX = Volumetric flow controller, round design, made of PPS-EL, model ATEX

02 – Nominal size

110 = NW 100 mm
 125 = NW 125 mm
 160 = NW 160 mm
 200 = NW 200 mm
 250 = NW 250 mm
 315 = NW 315 mm
 400 = NW 400 mm

03 - Attachment assembly

A098 = ATEX-NM-K2 (standard)
 A100 = ATEX-NM-F-K2 (with spring return)

04 - Mode

0 = 0-10 V
 2 = 2-10 V (standard)

05 - Volumetric flow set value V_{min}/V_{kon}

0000 = ex works, see table p.5
 Xxxx = 4-digit value in m^3/h according to customer specification

06 - Volumetric flow set value V_{max}

0000 = ex works, see table p.5
 Xxxx = 4-digit value in m^3/h according to customer specification

07 - Damper position

NA = no spring return actuator (standard)
 NO = currentless OPEN - normally open (only for actuators with spring return)
 NC = currentless CLOSED - normally closed (only for actuators with spring return)

08 - Duct connection: butted or with flange

KA0 = butted, without flange (standard)
 FF4 = Flat flange, PPs-EL

SPECIFICATION TEXT

VPEX

Volumetric flow controller made of hardly inflammable and conductive plastic PPs-EL in round design, for use in supply and return air systems for constant or variable volumetric flow regulation and laboratory ventilation systems. Suitable for room or duct pressure control. Suitable for aggressively contaminated exhaust air, since all parts coming in contact with media are made from plastic material.

Allowed differential pressure range: 50-1000 Pa.

Allowed ambient temperature 0...50°C.

For use with duct velocities of 2-13 m/s.

It is possible to subsequently adjust the manufacturer set operation volume flow.

The output signals 0/2...10 V DC can be used for actual value display and for display of the damper position.

Housing and damper made of plastic material PPs-EL, with damper blade seal free of silicone made of PUR for airtight sealing to DIN EN 1751 (Class 2 NW 100 only, Class 3 NW 125...400 only), **housing leakage class C** according to DIN EN 1751.

Measuring rods made of plastic material (PP), to which measuring points have been attached on the pressure and suction sides respectively, in order to determine average values using the median line method.

Damper bearing made of PP

With electric controller, ATEX-NM-K2

Supply voltage: 24 V AC / DC, +/- 15 %, 50/60 Hz

wiring and adjusting by manufacturer.

Product: SCHAKO type VPEX-...-A098-...

- with spring return actuator ATEX-NM-F-K2 (at an extra charge)
 - currentless CLOSED
 - currentless OPEN

Product: SCHAKO type VPEX-...-A100-...



TYPE PLATE

CERTIFICATE OF CONFORMITY




Konformitätsbescheinigung

- (1)
- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen –
Richtlinie 2014/34/EU
- (3) Bescheinigungsnummer

EPS 11 ATEX 2 307 X **Revision 3**
- (4) Gerät: Volumenstromregler Typ: VRA, VREX, VQEX und VPEX
- (5) Hersteller: Schako KG
- (6) Anschrift: Steigstraße 25-27
 78600 Kolbingen
 Deutschland
- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Konformitätsbescheinigung festgelegt.
- (8) Bureau Veritas Consumer Products Services Germany GmbH bescheinigt aufgrund einer freiwilligen Prüfung auf Basis der Richtlinie 2014/34/EU des Europäischen Parlaments und des Rates vom 26. Februar 2014 die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie. Die Ergebnisse der Prüfung sind in der vertraulichen Dokumentation unter der Referenznummer 10TH0561 festgelegt.
- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

EN ISO 80079-36:2016 **EN ISO 80079-37:2016**
- (10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
- (11) Diese Konformitätsbescheinigung bezieht sich nur auf Konzeption und Prüfung des festgelegten Gerätes gemäß Richtlinie 2014/34/EU. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes. Diese Anforderungen werden nicht durch diese Bescheinigung abgedeckt.
- (12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

 II 2G Ex h IIC T6 Gb

 II 2D Ex h IIIC T80°C Db



Hamburg, 15.05.2020

Seite 1 von 2

Bescheinigungen ohne Unterschrift und Siegel haben keine Gültigkeit. Diese Bescheinigung darf nur unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung von Bureau Veritas Consumer Products Services Germany GmbH. EPS 11 ATEX 2 307 X, Revision 3.



(13)

Anlage

(14) **Konformitätsbescheinigung EPS 11 ATEX 2 307 X****Revision 3**(15) Beschreibung des Gerätes:

Die Volumenstromregler werden zur druckunabhängigen Regelung von Volumenströmen in Lüftungs- und Klimaanlage eingesetzt. Der Antrieb erfolgt durch zugelassene elektrische oder pneumatische Stellantriebe (Systeme). Die Messung des Volumenstroms erfolgt mittels eines Doppelmesskreuzes und kann extern durch ein zugelassenes System ausgewertet werden.

(16) Referenznummer: 10TH0561(17) Besondere Bedingungen:

Es muss sichergestellt werden, dass alle metallischen Teile sowie die leitfähigen Kunststoffe ordnungsgemäß und dauerhaft mit dem Erdpotential verbunden sind.

Die an- und eingebauten elektrischen Geräte müssen in geeigneter Weise explosionsgeschützt ausgeführt sein. Die Zusammenführung von elektrischen und nichtelektrischen Geräten muss erneut sicherheitstechnisch betrachtet werden.

Zur Vermeidung von Gleitstielbüschelentladungen muss bei den Gehäusen mit RAL Lack sichergestellt werden, dass die Luft im Lüftungssystem keine starke Belastung an nichtleitfähigen Partikeln aufweist.

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen:

Durch Übereinstimmung mit Normen abgedeckt.

Zertifizierungsstelle Explosionsschutz



Hamburg, 15.05.2020

Seite 2 von 2

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