

OPTIMA-S-FM

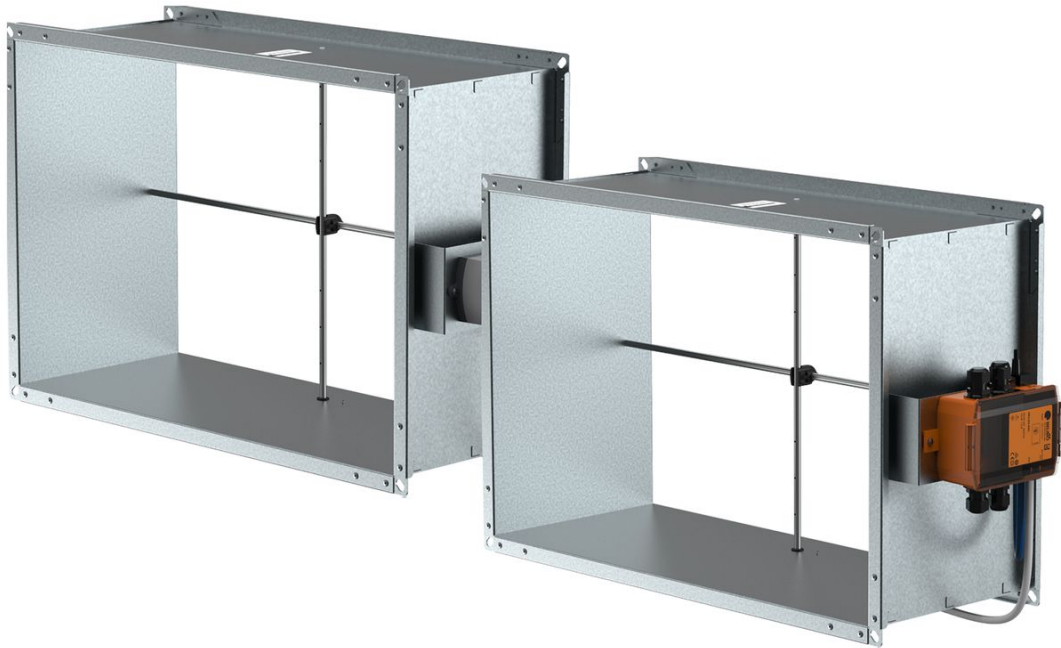
Air Flow Measurement Device

Handbook



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Description

The air flow measurement device OPTIMA-S...FM is intended for continuous reading of the air flow volume in the rectangular-shaped ventilation ducts. The air flow volume is interpreted and transmitted by the analog signal or by the bus communication.

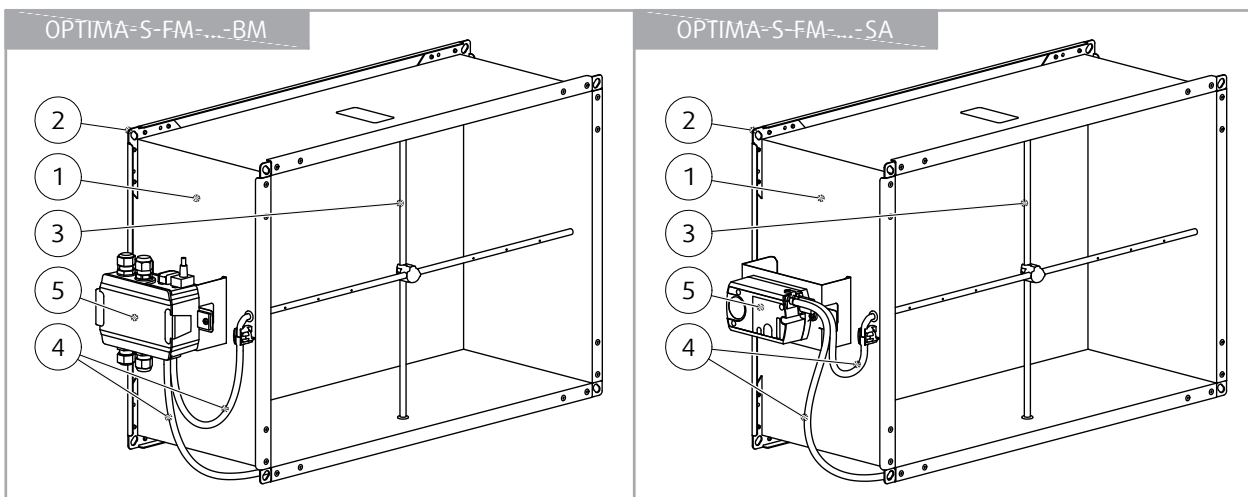
Highlights

- Precise continuous air flow volume reading
- Measurement data transfer via analog signal, or Bus line: Modbus or BACnet
- Compact dimensions
- No maintenance

Design

OPTIMA-S...FM consists of the rectangular-shaped casing from galvanized steel with flanges for connection with the rectangular duct. Inside it is equipped by the air flow measurement probe of dynamic ΔP type. Outside the air flow transmitter is attached and connected to the measurement probe by flexible impulse tubes.

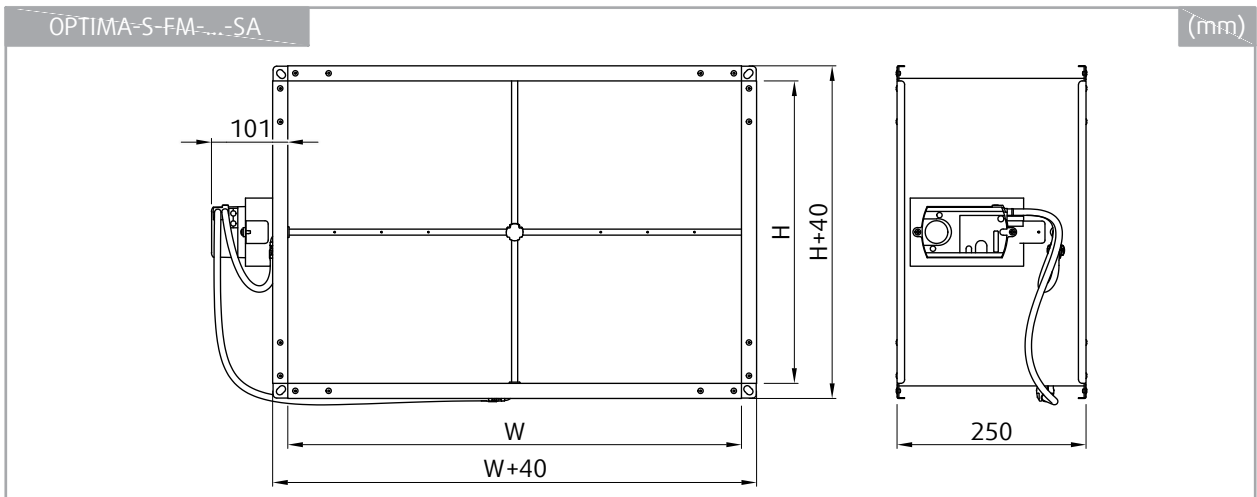
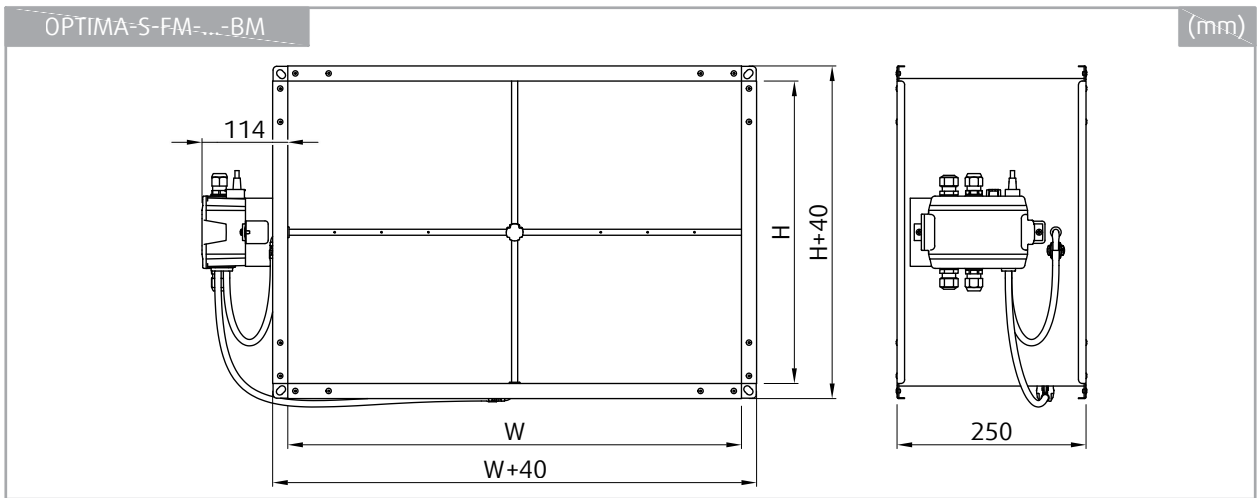
Product Parts



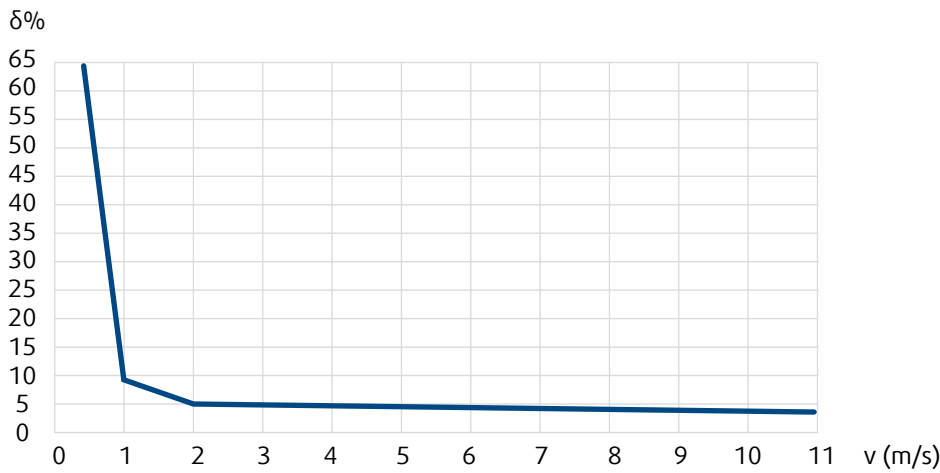
Legend

- 1 Casing
- 2 Duct connection flanges
- 3 Air flow measurement probe
- 4 Impulse tubes
- 5 Air flow transmitter

Dimensions & Weights



		OPTIMA-S-FM-...																				
		W (mm)																				
m (kg)	H (mm)	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
		100	100	2,2	2,4	2,7	2,9	3,1	3,4	3,6	3,9	4,1	-	-	-	-	-	-	-	-	-	-
150	150	2,4	2,6	2,9	3,1	3,3	3,6	3,8	4,0	4,2	4,4	-	-	-	-	-	-	-	-	-	-	
200	200	2,7	2,9	3,1	3,3	3,6	3,7	4,0	4,2	4,6	4,6	5,0	5,3	5,5	5,8	6,3	-	-	-	-	-	
250	250	-	3,1	3,4	3,6	3,9	4,0	4,2	4,5	4,8	4,9	5,2	5,5	5,6	5,9	6,5	6,5	-	-	-	-	
300	300	-	-	3,6	3,8	4,2	4,2	4,6	4,8	5,1	5,3	5,5	5,7	5,9	6,1	6,7	6,6	7,0	7,3	7,5	-	
350	350	-	-	3,9	4,1	4,4	4,5	4,9	5,1	5,4	5,5	5,7	6,0	6,1	6,4	7,0	6,8	7,1	7,5	7,7	8,0	
400	400	-	-	-	-	4,6	4,8	5,1	5,4	5,6	5,7	6,0	6,3	6,4	6,6	7,2	7,1	7,3	7,7	7,8	8,2	
450	450	-	-	-	-	-	5,1	5,3	5,6	5,9	6,1	6,3	6,5	6,6	7,0	7,4	7,4	7,5	8,0	8,0	8,5	
500	500	-	-	-	-	-	-	5,6	5,8	6,1	6,3	6,5	6,8	7,0	7,2	7,5	7,7	7,8	8,2	8,3	8,7	
550	550	-	-	-	-	-	-	-	6,2	6,3	6,5	6,6	7,1	7,3	7,5	7,7	7,9	8,1	8,5	8,6	9,0	
600	600	-	-	-	-	-	-	-	-	6,5	6,8	6,8	7,3	7,5	7,7	7,9	8,1	8,4	8,7	8,9	9,3	
650	650	-	-	-	-	-	-	-	-	-	7,1	7,1	7,6	7,7	7,9	8,1	8,4	8,6	8,9	9,1	9,4	
700	700	-	-	-	-	-	-	-	-	-	-	7,5	7,8	8,0	8,2	8,2	8,7	8,9	9,2	9,4	9,6	
750	750	-	-	-	-	-	-	-	-	-	-	-	8,0	8,3	8,5	8,4	8,9	9,2	9,4	9,7	9,8	
800	800	-	-	-	-	-	-	-	-	-	-	-	-	8,5	8,7	8,7	9,1	9,4	9,7	9,9	10,0	
850	850	-	-	-	-	-	-	-	-	-	-	-	-	-	8,9	9,1	9,3	9,6	9,9	10,1	10,1	
900	900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,4	9,6	9,9	10,1	10,3	10,4	
950	950	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,9	10,1	10,3	10,6	10,8	
1000	1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10,3	10,6	10,9	11,1	



Typical max. absolute control deviation δ from actual air flow dependent on the air flow velocity v in the duct

Ordering Codes

Nominal dimension WxH

W: 200 mm ... 1200 mm (50 mm step)

H: 100 mm ... 1000 mm (50 mm step)

OEM, Communication type

SA Siemens, Analog

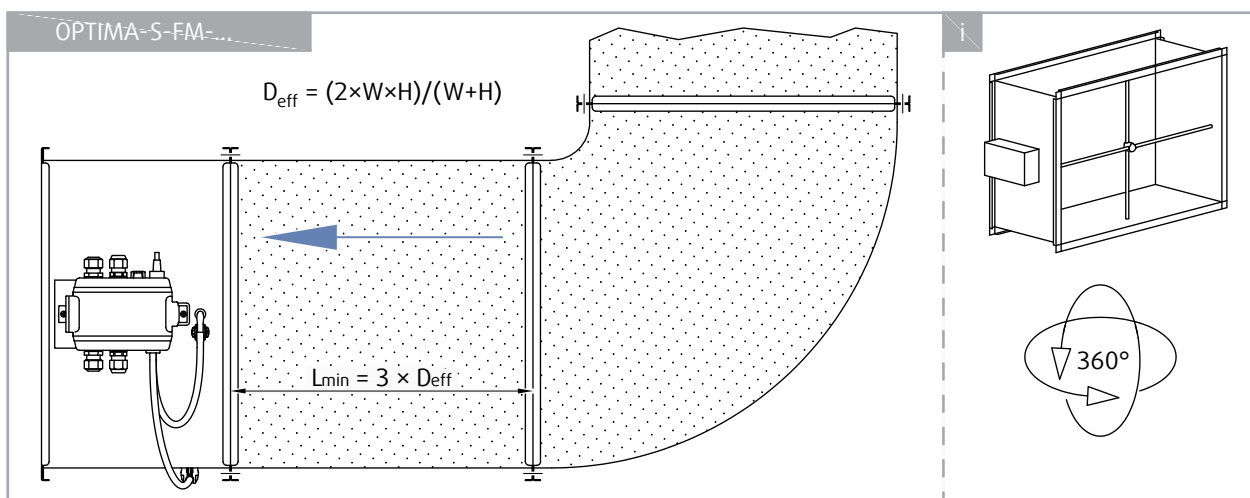
BM Belimo, Analog, Modbus, BACnet

Example of the Ordering Code

OPTIMA-S-FM-400x200-BM

Air flow measurement device with rectangular shape of nominal dimension 400x200, analog, modbus or BACnet communication, OEM Belimo.

Installation



Measurement

The air flow transmitter measures the flow velocity dependent dynamic pressure on the measurement probe. For both OEM/Communication types, BM and SA the air flow volume is interpreted by the transmitter in the form of analog signal U in the 0 V ... 10 V or the 2 V ... 10 V mode from the analog output. The air flow volume q can be calculated using this analog voltage value and the nominal air flow volume V_{nom} of the measurement device. The V_{nom} values are in the table of dimensions. The V_{nom} is the upper limit of the measurement range.

Mode 0 V ... 10 V

$$q = \frac{U}{10} \cdot V_{\text{nom}}$$

Mode 2 V ... 10 V

$$q = \frac{U - 2}{8} \cdot V_{\text{nom}}$$

On the type BM the actual air flow volume can be also read via Modbus RTU or BACnet MS/TP communication line when connected to the transmitter.

Detailed description and addressing of these variables is described in the Modbus Registers or BACnet Interface Description in Systemair DESIGN Documents section.

W	H	V _{nom} @ 11 m/s
mm		m ³ /h
200	100	792
	150	1188
	200	1584
250	100	990
	150	1485
	200	1980
	250	2475
300	100	1188
	150	1782
	200	2376
	250	2970
	300	3564
	350	4158
350	100	1386
	150	2079
	200	2772
	250	3465
	300	4158
	350	4851
400	100	1584
	150	2376
	200	3168
	250	3960
	300	4752
	350	5544
	400	6336
450	100	1782
	150	2673
	200	3564
	250	4455
	300	5346
	350	6237
	400	7128
	450	8019

W	H	V _{nom} @ 11 m/s
mm		m ³ /h
500	100	1980
	150	2970
	200	3960
	250	4950
	300	5940
	350	6930
	400	7920
	450	8910
	500	9900
550	100	2178
	150	3267
	200	4356
	250	5445
	300	6534
	350	7623
	400	8712
	450	9801
	500	10890
550	11979	
600	100	2376
	150	3564
	200	4752
	250	5940
	300	7128
	350	8316
	400	9504
	450	10692
	500	11880
	550	13068
	600	14256

W	H	V _{nom} @ 11 m/s
(mm)		(m ³ /h)
650	150	3861
	200	5148
	250	6435
	300	7722
	350	9009
	400	10296
	450	11583
	500	12870
	550	14157
	600	15444
	650	16731
700	200	5544
	250	6930
	300	8316
	350	9702
	400	11088
	450	12474
	500	13860
	550	15246
	600	16632
	650	18018
	700	19404
750	200	5940
	250	7425
	300	8910
	350	10395
	400	11880
	450	13365
	500	14850
	550	16335
	600	17820
	650	19305
	700	20790
750	22275	

W	H	V _{nom} @ 11 m/s
(mm)		(m ³ /h)
800	200	6336
	250	7920
	300	9504
	350	11088
	400	12672
	450	14256
	500	15840
	550	17424
	600	19008
	650	20592
	700	22176
850	750	23760
	800	25344
	200	6732
	250	8415
	300	10098
	350	11781
	400	13464
	450	15147
	500	16830
	550	18513
	600	20196
650	21879	
700	23562	
750	25245	
800	26928	
850	28611	

W	H	V _{nom} @ 11 m/s
(mm)		(m ³ /h)
900	200	7128
	250	8910
	300	10692
	350	12474
	400	14256
	450	16038
	500	17820
	550	19602
	600	21384
	650	23166
	700	24948
	750	26730
	800	28512
	850	30294
900	32076	
950	250	9405
	300	11286
	350	13167
	400	15048
	450	16929
	500	18810
	550	20691
	600	22572
	650	24453
	700	26334
	750	28215
	800	30096
	850	31977
	900	33858
950	35739	

W	H	V _{nom} @ 11 m/s
(mm)		(m ³ /h)
1000	300	11880
	350	13860
	400	15840
	450	17820
	500	19800
	550	21780
	600	23760
	650	25740
	700	27720
	750	29700
	800	31680
	850	33660
	900	35640
	950	37620
1000	39600	
1050	300	12474
	350	14553
	400	16632
	450	18711
	500	20790
	550	22869
	600	24948
	650	27027
	700	29106
	750	31185
	800	33264
	850	35343
	900	37422
	950	39501
1000	41580	

W	H	V _{nom} @ 11 m/s
(mm)		(m ³ /h)
1100	300	13068
	350	15246
	400	17424
	450	19602
	500	21780
	550	23958
	600	26136
	650	28314
	700	30492
	750	32670
	800	34848
	850	37026
	900	39204
	950	41382
1000	43560	
1150	350	15939
	400	18216
	450	20493
	500	22770
	550	25047
	600	27324
	650	29601
	700	31878
	750	34155
	800	36432
	850	38709
	900	40986
	950	43263
	1000	45540

W	H	V _{nom} @ 11 m/s
(mm)		(m ³ /h)
1200	400	19008
	450	21384
	500	23760
	550	26136
	600	28512
	650	30888
	700	33264
	750	35640
	800	38016
	850	40392
	900	42768
	950	45144
	1000	47520

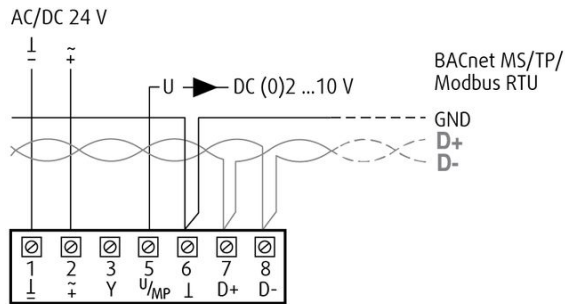
Electrical Connections

Type of Measurement Transmitter BM

Supply voltage: DC/AC 24V

Terminals: 2,5 mm²

Power rating: 2 VA

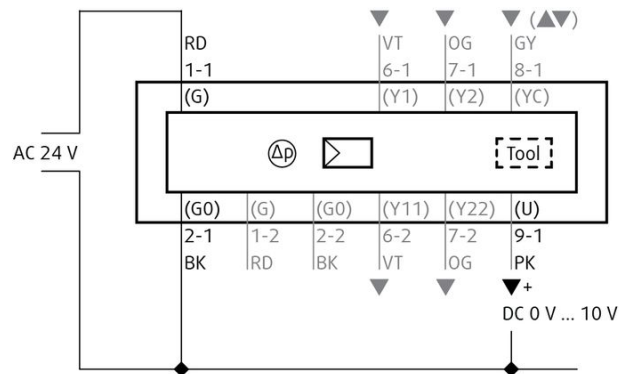


Type of Measurement Transmitter SA

Supply voltage: AC 24V

Cable (6 wires): 0,75 mm²

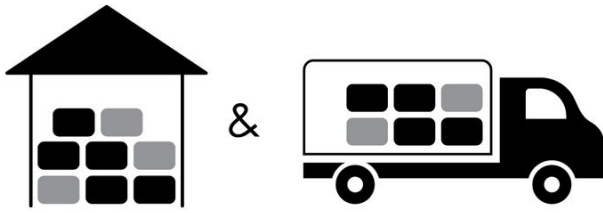
Power rating: 1 VA




Legend

- G** wire 1-1 red phase AC 24 V
- G0** wire 2-1 black common conductor
- U** wire 9-1 pink flow measurement signal DC 0 V ... 10 V

Transport, Storage and Operation



 °C -40°C ... +50°C

 % ≤ 95%



 °C -20°C ... +50°C

 % ≤ 95%

Supplement

Any deviations from the technical specifications contained herein and the terms should be discussed with the manufacturer. We reserve the right to make any changes to the product without prior notice, provided that these changes do not affect the quality of the product and the required parameters.

Current information on all products is available on design.systemair.com.

