

OPTIMA-S

Single or double skin rectangular VAV units



Ordering codes:

		OPTIMA-S -	
Double skin isolated version		I	
Size (mm)	200 - 1200 × 100 - 1000 (W × H)		
	BELIMO L(N) MV-D3, MPBUS	BLC1	
	BELIMO L(N) MV-D3	BLC4	
	BELIMO L(N) MV-D3, MODBUS	BLC1MOD	
	BELIMO L(N) MV-D3, LON	BLC1LON	
	OPTIMA-GO	GO	
Drive / controller type	OPTIMA-GO, MODBUS	GOMOD	
V_{min} (m ³ /h)			
V_{max} (m ³ /h)			
Control voltage	(DC 0 - 10 V)	0	
	(DC 2 - 10 V)	2	

Ordering code example:

OPTIMA-S - 600×200 - BLC1 - 200 - 950 - 0

OPTIMA-S „not isolated, with 600 mm width and 200 mm height drive/controller

Belimo LMV-D3 MP (with MP bus communication), V_{min} = 200 m³/h, V_{max} = 950 m³/h, control signal DC 0-10 V.

NOTES:

- If the air volumes are not given during the ordering process, then standard Factory setting will be applied according to table
- V_{min} can also be set to 0 m³/h if required by demand upon ordering
- The setup values of V_{min} and V_{max} must be inside the range of min / max factory settings (see Selection tables)
- The standard input signal on the controller is set to 2-10 V, upon request 0-10 V can also be selected

Description

Single or double skin rectangular or square Variable air flow control terminal unit is commonly used for supply air applications or for return air applications at low to medium system pressures. Optima-S VAV terminal units are ideal for multi-zone control with supply and return in Master and Slave setup such as offices, hotel rooms or meeting rooms where the required cooling and heating load will vary on demand.

Highlights:

- Damper tightness class 3 or 4 (depending on size) according to EN 1751
- Casing tightness class C according to EN 1751
- High measuring accuracy of 5%
- Air volume range of 144 to 56160 m³/h
- Operating range of up to 1000 Pa
- Double skin version OPTIMA-S-I with external 50mm noise & thermal isolation under steel sheet cover

Accessories for OPTIMA-S:

- Attenuators Optima-ASB

Silencers are available to reduce the discharge sound power levels when required.

Design

Optima-S units are constructed from sheet steel frame and Aluminium profile blades. The frame construction contains a robust flanged mounting frame to assure the sturdiness of the unit and to facilitate the mounting to upstream and downstream ducts.

The aerofoil blades are opposed action and are constructed from extruded aluminium and enforce corrosionfree throughout the blade to add rigidity and reduce the pressure loss and sound levels which may be contributed to airflow stream passing over the blades. The blades are equipped by rubber gaskets eliminating leakage in closed position. The blade axe are sitting in self lubricating bearings which are connected together by a gear wheel - rod combination to assure a smooth ratio and transition from blade to blade. The pressure difference averaging measuring cross is applied for a precise flow measurement and control.

Available sizes:

200 × 100 mm to 1200 × 1000 mm with steps of 50 mm in height and length

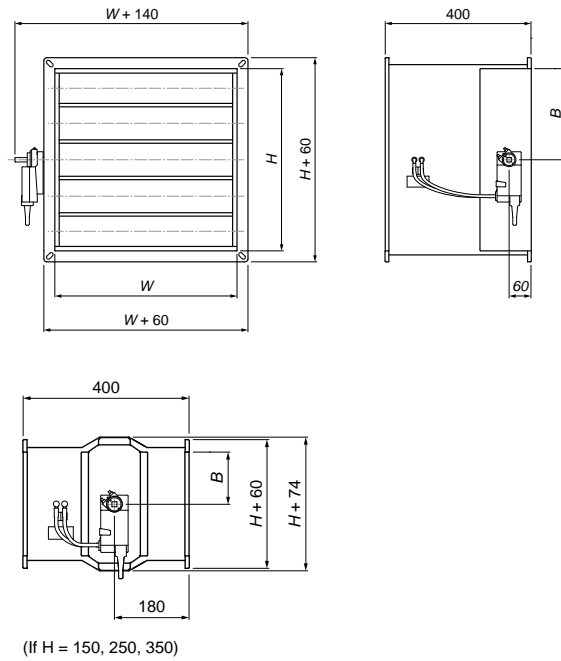


Fig. 1: OPTIMA-S dimensions

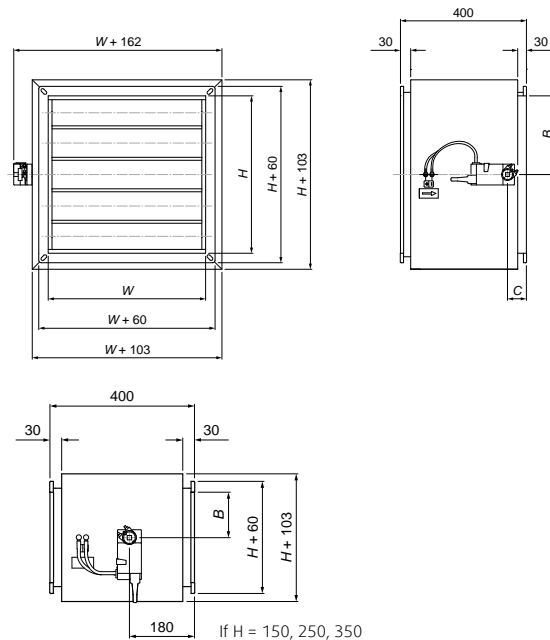


Fig. 2: OPTIMA-S-I dimensions

Controls

The VAV terminal units are as standard equipped with BLC (Belimo compact) controllers (LMV-D3 or NMV-D3) without any bus- communication capability to be used as stand alone or in master and slave setting.

The compact controllers are equally available with MP-Bus, ModBus and LON communication capability. On demand as alternative, gateway communication units can be provided and can be connected later in time to building management systems to create a zone control by creating bus-rings solutions (only possible if MP-Bus or Modbus communication is installed).

VAV and Compact controllers are factory calibrated as standard to the air volume indicated in the table or upon request can be adjusted to site required settings prior to dispatch on Vmin and Vmax range. The air volumes can also be readjusted on site with ZTH-Gen hand held service tool or, for the type OPTIMA-S-...GO... by dials on the controller. If specific air volumes for Vmin and Vmax would be required, this must be indicated prior to order of the units for adequate calibration in the factory.

- BLC1 = Belimo LMV-D3 compact controller WITH MP-Bus communication
- BLC4 = Belimo LMV-D3 compact controller WITHOUT MPBus communication
- BLC1-MOD = Belimo LMV-D3 compact controller WITH MODBUS communication
- GO = Compact controller with parametrizing dials and display for immediate adjustment at site.
- GO-MOD = Compact controller with parametrizing dials and display for immediate adjustment at site, communicative via MODBUS-RTU.

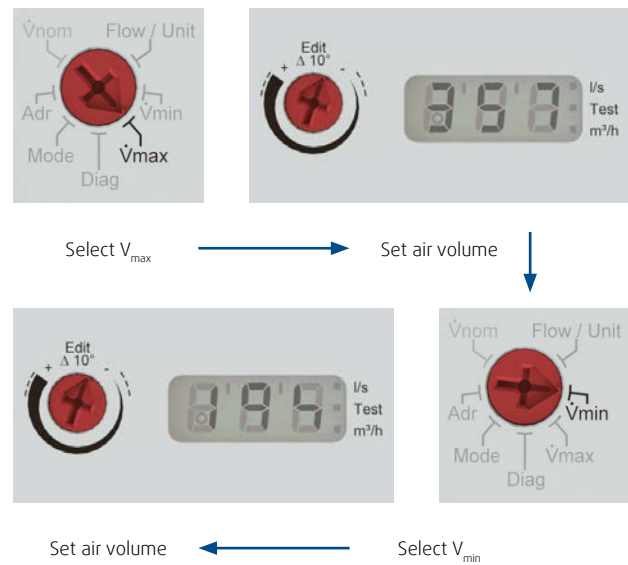


Fig. 3: OPTIMA-S-...GO... easy parameter settings

Dimensions

H \ W	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
100	2	2	3	4	4	5	5	6	6												
150	4	5	5	6	6	6	7	7	8	9											
200	6	7	7	8	8	8	9	9	10	10	10	11	11	12	12						
250		7	7	9	9	9	9	9	10	10	11	12	12	13	14	14					
300		3C	8	9	10	9	9	10	10	11	12	13	14	15	17	19	20	21	21	22	
350		3C	9	10	11	10	10	10	11	12	13	14	15	17	19	20	22	22	24	25	
400		4C			12	12	11	11	12	13	14	15	17	19	20	23	25	26	27	28	29
450		4C				12	13	13	13	14	16	17	19	21	21	24	26	27	28	29	30
500							15	14	15	16	18	19	21	22	23	25	28	29	30	31	32
550								16	17	18	20	21	22	24	24	26	29	30	31	32	34
600								19	20	21	22	24	25	25	27	30	32	33	34	36	
650										22	23	24	25	27	27	29	32	33	35	36	38
700											25	26	27	29	29	31	34	35	37	38	40
750												27	29	30	31	33	36	37	38	40	42
800													30	31	32	34	37	38	40	42	43
850														32	34	35	38	39	41	43	45
900															35	37	40	41	43	45	47
950																39	41	43	45	47	49
1000																	43	45	47	49	50

Tab. 1: OPTIMA-S table of weight

H \ W	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
100	3	3	5	6	6	8	8	9	9												
150	6	8	8	9	9	9	11	11	12	14											
200	9	11	11	12	12	12	14	14	15	15	15	17	17	18	18						
250		11	11	14	14	14	14	14	15	15	17	18	18	20	21	21					
300		3C	12	14	15	14	14	15	15	17	18	20	21	23	29	29	32	32	33		
350		3C	14	15	17	15	15	15	17	18	20	21	23	26	29	30	33	33	36	38	
400		4C			18	18	17	17	18	20	21	23	26	29	30	35	38	39	41	42	44
450		4C				18	20	20	20	21	24	26	29	32	32	36	39	41	42	44	45
500							23	21	23	24	27	29	32	33	35	38	42	44	45	47	48
550								24	26	27	30	32	33	36	36	39	44	45	47	48	51
600									29	30	32	33	36	38	38	41	45	48	50	51	54
650										33	35	36	38	41	41	44	48	50	53	54	57
700											38	39	41	44	44	47	51	53	56	57	60
750												41	44	45	47	50	54	56	57	60	63
800													45	47	48	51	56	57	60	63	65
850														48	51	53	57	59	62	65	68
900															53	56	60	62	65	68	71
950																59	62	65	68	71	74
1000																	65	68	71	74	75

Tab. 2: OPTIMA-S-I table of weight

m (kg)	5 Nm drive	✓	OPTIMA-S	✓	OPTIMA-S-GO	m (kg)	5 Nm drive	✓	OPTIMA-S-I	✓	OPTIMA-S-I-GO
m (kg)	10 Nm drive	✓	OPTIMA-S	✓	OPTIMA-S-GO	m (kg)	10 Nm drive	✓	OPTIMA-S-I	✓	OPTIMA-S-I-GO
m (kg)	20 Nm drive	✓	OPTIMA-S	✗	OPTIMA-S-GO	m (kg)	20 Nm drive	✓	OPTIMA-S-I	✗	OPTIMA-S-I-GO

Selection tables

W	H	OPTIMA-S		OPTIMA-S-GO	
		V _{min} (@ 2 m·s ⁻¹)	V _{max} (@ 13 m·s ⁻¹)	V _{min} (@ 1 m·s ⁻¹)	V _{max} (@ 9 m·s ⁻¹)
(mm)		(m ³ /h)			
200	100	144	936	72	648
	150	216	1404	108	972
	200	288	1872	144	1296
250	100	180	1170	90	810
	150	270	1755	135	1215
	200	360	2340	180	1620
	250	450	2925	225	2025
300	100	216	1404	108	972
	150	324	2106	162	1458
	200	432	2808	216	1944
	250	540	3510	270	2430
	300	648	4212	324	2916
	350	756	4914	378	3402
350	100	252	1638	126	1134
	150	378	2457	189	1701
	200	504	3276	252	2268
	250	630	4095	315	2835
	300	756	4914	378	3402
	350	882	5733	441	3969
400	100	288	1872	144	1296
	150	432	2808	216	1944
	200	576	3744	288	2592
	250	720	4680	360	3240
	300	864	5616	432	3888
	350	1008	6552	504	4536
450	100	324	2106	162	1458
	150	486	3159	243	2187
	200	648	4212	324	2916
	250	810	5265	405	3645
	300	972	6318	486	4374
	350	1134	7371	567	5103
	400	1296	8424	648	5832
	450	1458	9477	729	6561

W	H	OPTIMA-S		OPTIMA-S-GO	
		V _{min} (@ 2 m·s ⁻¹)	V _{max} (@ 13 m·s ⁻¹)	V _{min} (@ 1 m·s ⁻¹)	V _{max} (@ 9 m·s ⁻¹)
(mm)		(m ³ /h)			
500	100	360	2340	180	1620
	150	540	3510	270	2430
	200	720	4680	360	3240
	250	900	5850	450	4050
	300	1080	7020	540	4860
	350	1260	8190	630	5670
	400	1440	9360	720	6480
	450	1620	10530	810	7290
	500	1800	11700	900	8100
	550	100	396	2574	198
150		594	3861	297	2673
200		792	5148	396	3564
250		990	6435	495	4455
300		1188	7722	594	5346
350		1386	9009	693	6237
400		1584	10296	792	7128
450		1782	11583	891	8019
500		1980	12870	990	8910
550		2178	14157	1089	9801
600	100	432	2808	216	1944
	150	648	4212	324	2916
	200	864	5616	432	3888
	250	1080	7020	540	4860
	300	1296	8424	648	5832
	350	1512	9828	756	6804
	400	1728	11232	864	7776
	450	1944	12636	972	8748
	500	2160	14040	1080	9720
	550	2376	15444	1188	10692
650	150	702	4563	351	3159
	200	936	6084	468	4212
	250	1170	7605	585	5265
	300	1404	9126	702	6318
	350	1638	10647	819	7371
	400	1872	12168	936	8424
	450	2106	13689	1053	9477
	500	2340	15210	1170	10530
	550	2574	16731	1287	11583
	600	2808	18252	1404	12636
650	3042	19773	1521	13689	

W	H	OPTIMA-S		OPTIMA-S-GO	
		V _{min} (@ 2 m·s ⁻¹)	V _{max} (@ 13 m·s ⁻¹)	V _{min} (@ 1 m·s ⁻¹)	V _{max} (@ 9 m·s ⁻¹)
(mm)		(m ³ /h)			
700	200	1008	6552	504	4536
	250	1260	8190	630	5670
	300	1512	9828	756	6804
	350	1764	11466	882	7938
	400	2016	13104	1008	9072
	450	2268	14742	1134	10206
	500	2520	16380	1260	11340
	550	2772	18018	1386	12474
	600	3024	19656	1512	13608
	650	3276	21294	1638	14742
750	200	1080	7020	540	4860
	250	1350	8775	675	6075
	300	1620	10530	810	7290
	350	1890	12285	945	8505
	400	2160	14040	1080	9720
	450	2430	15795	1215	10935
	500	2700	17550	1350	12150
	550	2970	19305	1485	13365
	600	3240	21060	1620	14580
	650	3510	22815	1755	15795
800	200	1152	7488	576	5184
	250	1440	9360	720	6480
	300	1728	11232	864	7776
	350	2016	13104	1008	9072
	400	2304	14976	1152	10368
	450	2592	16848	1296	11664
	500	2880	18720	1440	12960
	550	3168	20592	1584	14256
	600	3456	22464	1728	15552
	650	3744	24336	1872	16848
700	4032	26208	2016	18144	
750	4320	28080	2160	19440	
800	4608	29952	2304	20736	

10 - 20% of V_{max} air flow rate has an accuracy error rate of: ±25%

20 - 40% of V_{max} air flow rate has an accuracy error rate of: <±10%

40 - 100% of V_{max} air flow rate has an accuracy error rate of: <±4%

Tab. 3: OPTIMA-S and OPTIMA-S-GO quick selection table

W	H	OPTIMA-S		OPTIMA-S-GO	
		V _{min} (@ 2 m·s ⁻¹)	V _{max} (@ 13 m·s ⁻¹)	V _{min} (@ 1 m·s ⁻¹)	V _{max} (@ 9 m·s ⁻¹)
(mm)		(m ³ /h)			
850	200	1224	7956	612	5508
	250	1530	9945	765	6885
	300	1836	11934	918	8262
	350	2142	13923	1071	9639
	400	2448	15912	1224	11016
	450	2754	17901	1377	12393
	500	3060	19890	1530	13770
	550	3366	21879	1683	15147
	600	3672	23868	1836	16524
	650	3978	25857	1989	17901
	700	4284	27846	2142	19278
	750	4590	29835	2295	20655
	800	4896	31824	-	-
	850	5202	33813	-	-
900	200	1296	8424	648	5832
	250	1620	10530	810	7290
	300	1944	12636	972	8748
	350	2268	14742	1134	10206
	400	2592	16848	1296	11664
	450	2916	18954	1458	13122
	500	3240	21060	1620	14580
	550	3564	23166	1782	16038
	600	3888	25272	1944	17496
	650	4212	27378	2106	18954
	700	4536	29484	2268	20412
	750	4860	31590	2430	21870
	800	5184	33696	-	-
	850	5508	35802	-	-
900	5832	37908	-	-	
950	250	1710	11115	855	7695
	300	2052	13338	1026	9234
	350	2394	15561	1197	10773
	400	2736	17784	1368	12312
	450	3078	20007	1539	13851
	500	3420	22230	1710	15390
	550	3762	24453	1881	16929
	600	4104	26676	2052	18468
	650	4446	28899	2223	20007
	700	4788	31122	2394	21546
	750	5130	33345	2565	23085
	800	5472	35568	-	-
	850	5814	37791	-	-
	900	6156	40014	-	-
950	6498	42237	-	-	

W	H	OPTIMA-S		OPTIMA-S-GO	
		V _{min} (@ 2 m·s ⁻¹)	V _{max} (@ 13 m·s ⁻¹)	V _{min} (@ 1 m·s ⁻¹)	V _{max} (@ 9 m·s ⁻¹)
(mm)		(m ³ /h)			
1000	300	2160	14040	1080	9720
	350	2520	16380	1260	11340
	400	2880	18720	1440	12960
	450	3240	21060	1620	14580
	500	3600	23400	1800	16200
	550	3960	25740	1980	17820
	600	4320	28080	2160	19440
	650	4680	30420	2340	21060
	700	5040	32760	2520	22680
	750	5400	35100	2700	24300
	800	5760	37440	-	-
	850	6120	39780	-	-
	900	6480	42120	-	-
	950	6840	44460	-	-
1000	7200	46800	-	-	
1050	300	2268	14742	1134	10206
	350	2646	17199	1323	11907
	400	3024	19656	1512	13608
	450	3402	22113	1701	15309
	500	3780	24570	1890	17010
	550	4158	27027	2079	18711
	600	4536	29484	2268	20412
	650	4914	31941	2457	22113
	700	5292	34398	-	-
	750	5670	36855	-	-
	800	6048	39312	-	-
	850	6426	41769	-	-
	900	6804	44226	-	-
	950	7182	46683	-	-
1000	7560	49140	-	-	
1100	300	2376	15444	1188	10692
	350	2772	18018	1386	12474
	400	3168	20592	1584	14256
	450	3564	23166	1782	16038
	500	3960	25740	1980	17820
	550	4356	28314	2178	19602
	600	4752	30888	2376	21384
	650	5148	33462	2574	23166
	700	5544	36036	-	-
	750	5940	38610	-	-
	800	6336	41184	-	-
	850	6732	43758	-	-
	900	7128	46332	-	-
	950	7524	48906	-	-
1000	7920	51480	-	-	

W	H	OPTIMA-S		OPTIMA-S-GO	
		V _{min} (@ 2 m·s ⁻¹)	V _{max} (@ 13 m·s ⁻¹)	V _{min} (@ 1 m·s ⁻¹)	V _{max} (@ 9 m·s ⁻¹)
(mm)		(m ³ /h)			
1150	350	2898	18837	1449	13041
	400	3312	21528	1656	14904
	450	3726	24219	1863	16767
	500	4140	26910	2070	18630
	550	4554	29601	2277	20493
	600	4968	32292	2484	22356
	650	5382	34983	2691	24219
	700	5796	37674	-	-
	750	6210	40365	-	-
	800	6624	43056	-	-
	850	7038	45747	-	-
	900	7452	48438	-	-
	950	7866	51129	-	-
	1000	8280	53820	-	-
1200	400	3456	22464	1728	15552
	450	3888	25272	1944	17496
	500	4320	28080	2160	19440
	550	4752	30888	2376	21384
	600	5184	33696	2592	23328
	650	5616	36504	2808	25272
	700	6048	39312	-	-
	750	6480	42120	-	-
	800	6912	44928	-	-
	850	7344	47736	-	-
	900	7776	50544	-	-
	950	8208	53352	-	-
	1000	8640	56160	-	-

value V_{min} = 0 can be always adjusted; value V_{max} can be adjusted also beside the standard range upon an agreement with the producer

Tab. 4: OPTIMA-S and OPTIMA-S-GO quick selection table

Mounting

On duct installations after elbow, reduction, T-branch etc. L to be min. 3 times duct equivalent effective diameter (D_{eff}).

If L can not be respected, then minimum of $2 \times D_{eff}$ with perforated equalizing grid should be installed

$$D_{eff} = \frac{2 \times W \times H}{W + H}$$

$$L_{min} = 3 \times D_{eff}$$

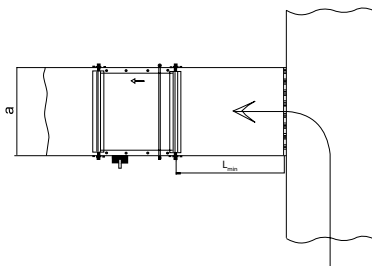


Fig. 4: Measuring track length after T-branch

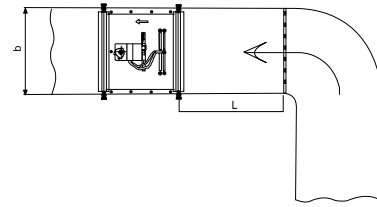


Fig. 5: Measuring track length after Elbow

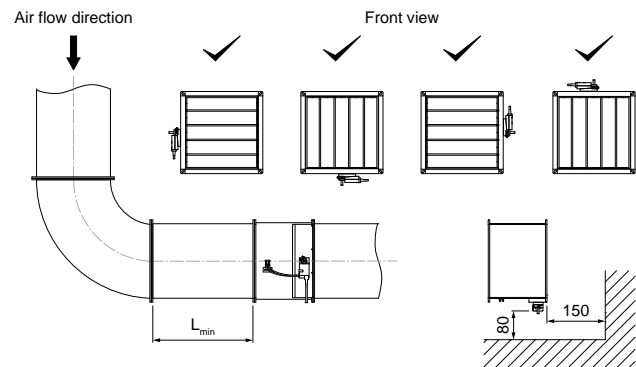


Fig. 6: Optima-S positioning and definition of measuring track length

NOTE:

A proper flange fixing method (e.g. flange clamps) and gasket shall be used by installer to maintain the corresponding tightness class.