Variable air volume control damper ERP-5

Circular variable air volume control dampers enable the regulation of supply or exhaust air volume in ventilation systems. They consist of an adapted air-tigth damper a measuring device and an electric actuator. The actuator turns the damper blade which has a rubber seal on it. Depending on the project requirements the damper can be controlled with temperature sensors, air quality sensors or pressure sensors placed in a room or ventilation ducts. Differential measurement values are sent from a measuring device to the motor actuator where they are compared with the reference signal. Depending on a signal difference, the actuator closes or opens therefore ensuring the optimal air volume in the room.

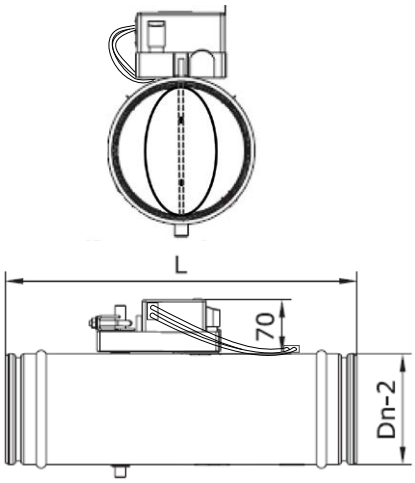
Due to their well developed air flow measuring principle they are able to maintain the required air flow rate very accurately at the very high static pressure oscillations in a duct system, even if they are installed in a unfavourable loccation - in ducts near elbows, branches and duct reducations, heat exchangers, silencers etc.

Each unit is exactly parameterised according to customer's specifications.

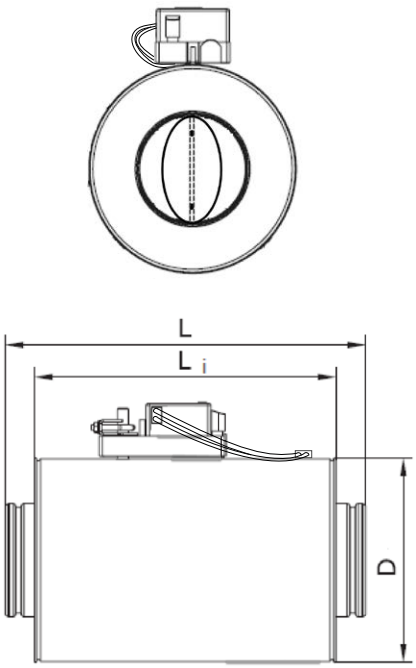
SYMBOL	DESCRIPTION
Dp	Preassure drop [PA]
Q	Airflow rate [m³/h]
L_W	Sound power level [dB(A)]

Dimensions

ERP-5



ERP-5-I

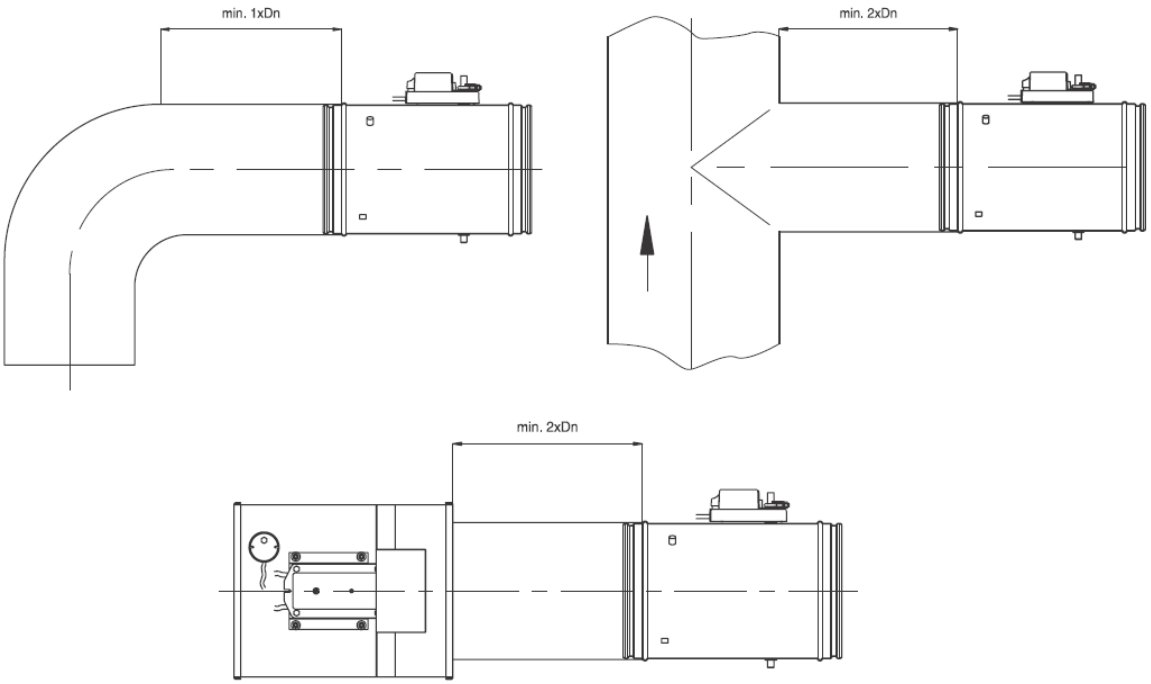


IMP KLIMA

Specifications

D_n [mm]	L [mm]	D [mm]	L_i [mm]	V_{min} [m³/h]	V_{max} [m³/h]
100	400	198	330	57	283
125	400	223	330	88	442
160	400	258	330	145	723
200	400	298	330	226	1.130
250	500	348	430	353	1.766
315	600	413	530	561	2.804
400	600	498	530	904	4.522
500	750	598	680	1413	7.065
630	850	728	780	2243	11.216

Installation Rules:



ERP-5

Generated noise: D_p = 125, 250 Pa

Model		D_p = 125 Pa									D_p = 250 Pa								
		Sound power L_w [dB]									Sound power L_w [dB]								
Ø [mm]	Q [m3/h]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]
100	57	57	47	45	42	35	27	22	17	43	57	51	50	48	44	39	31	26	49
	113	63	58	53	47	41	34	30	25	50	63	60	58	53	49	43	37	33	55
	226	68	68	63	54	48	44	39	35	58	71	72	70	60	54	49	46	43	64
	283	68	68	65	56	51	48	42	37	60	73	75	73	62	56	52	48	45	67
125	88	50	46	45	43	37	29	24	19	43	56	49	50	49	46	41	33	28	51
	177	58	57	53	48	42	36	31	25	50	62	61	58	54	49	45	40	35	56
	353	65	66	60	53	50	45	41	34	57	71	73	67	59	55	49	48	44	63
	442	66	66	61	54	53	47	44	37	58	72	74	69	61	57	51	51	46	65
160	145	51	49	48	48	43	39	29	25	49	54	53	51	52	49	47	38	32	54
	289	60	59	55	50	47	44	35	32	53	64	63	60	57	54	52	45	39	60
	579	68	67	61	54	53	50	43	39	59	74	73	68	61	58	57	52	47	66
	723	69	68	63	57	55	51	46	42	61	76	76	71	63	60	58	54	49	68
200	226	55	52	48	47	44	41	40	28	50	53	55	51	52	51	50	49	37	57
	452	62	60	53	49	47	46	44	37	54	64	64	58	55	52	52	53	44	60
	904	69	71	60	55	53	51	48	41	60	75	76	65	60	56	56	57	50	66
	1130	71	73	62	58	56	53	50	42	63	78	79	67	62	58	58	58	52	68
250	353	52	51	46	46	41	37	30	31	47	53	56	52	53	50	48	43	40	55
	707	59	59	51	50	46	46	43	42	53	62	64	57	56	51	50	50	47	59
	1413	67	70	59	56	52	51	49	48	60	72	74	64	61	55	55	57	53	65
	1766	70	72	62	60	55	53	50	48	63	75	76	67	63	58	57	58	53	67
315	561	53	52	48	47	46	47	37	31	52	57	56	52	54	55	56	49	41	60
	1122	61	59	53	51	48	52	47	40	57	65	64	58	56	54	58	55	47	63
	2243	71	69	62	58	54	56	54	50	63	75	74	67	62	57	61	60	55	68
	2804	74	73	66	61	56	57	55	52	65	78	77	70	66	59	62	61	58	70
400	904	52	51	49	48	49	47	34	31	53	58	56	53	54	57	58	48	41	62
	1809	61	58	54	51	52	50	41	39	56	67	63	58	57	59	61	54	49	65
	3617	70	68	62	60	56	54	48	47	62	75	73	66	63	61	63	57	53	68
	4522	73	71	66	64	57	56	49	49	65	77	75	69	65	62	63	57	54	69
500	1413	59	54	50	48	46	45	44	41	52	64	58	57	53	51	50	49	48	58
	2826	65	67	59	55	50	47	45	42	58	69	71	67	62	57	55	54	53	65
	5652	71	68	64	57	52	49	47	43	60	75	47	73	69	63	60	58	57	70
	7065	76	70	67	64	59	53	49	43	65	85	81	77	71	65	61	59	59	74
630	2243	61	56	53	50	49	47	46	44	55	66	59	58	55	53	52	51	50	60
	4487	68	70	64	60	55	50	48	43	62	71	72	64	64	59	57	56	54	66
	8973	72	69	64	59	52	49	46	43	61	76	78	74	70	64	60	59	58	72
	11216	78	71	68	64	58	54	50	44	66	86	82	78	72	68	62	60	64	75

Generated noise: D_p = 500, 1000 Pa

Model		D_p = 500 Pa									D_p = 1000 Pa								
		Sound power L_w [dB]									Sound power L_w [dB]								
Ø [mm]	Q [m3/h]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]
100	57	57	52	54	52	48	46	45	38	54	65	57	59	57	52	52	53	51	60
	113	65	62	62	57	53	51	47	43	60	69	64	66	62	58	58	56	54	65
	226	72	73	74	65	60	57	52	50	69	75	75	77	71	66	65	60	57	74
	283	74	76	77	68	62	58	54	52	71	77	77	80	74	68	67	62	59	76
125	88	60	52	52	52	49	49	47	40	56	60	56	58	58	54	55	55	56	62
	177	65	63	62	60	55	54	50	46	62	67	64	68	64	61	62	59	57	68
	353	71	74	73	66	61	57	54	52	69	74	74	78	72	68	67	63	60	75
	442	73	77	76	67	62	58	56	54	71	76	78	81	74	70	67	65	62	77
160	145	58	59	56	56	56	55	51	45	61	62	64	62	61	60	63	58	57	68
	289	66	67	65	62	60	61	55	50	66	69	71	70	68	66	70	63	61	74
	579	76	77	74	68	64	64	59	56	72	78	80	80	76	71	75	68	65	80
	723	79	80	77	70	65	65	60	58	74	80	84	83	78	73	75	70	67	82
200	226	58	55	55	56	57	56	56	47	63	66	68	67	65	64	67	61	60	71
	452	68	65	63	61	59	59	61	52	67	74	77	76	73	70	74	67	64	78
	904	77	79	71	66	62	63	65	58	72	78	81	77	73	69	72	75	66	80
	1130	80	82	74	67	63	64	66	60	73	81	86	79	75	70	73	75	68	81
250	353	53	57	56	58	58	57	54	49	63	55	58	61	63	65	66	61	59	71
	707	64	66	62	60	58	57	55	55	64	67	68	67	67	66	67	62	62	72
	1413	76	77	70	65	61	60	59	60	69	79	80	76	72	69	69	65	66	76
	1766	79	80	73	68	62	62	61	61	72	81	84	78	74	70	70	67	68	78
315	561	58	57	56	57	61	64	57	51	67	61	59	62	61	68	73	66	62	76
	1122	68	67	63	61	61	66	59	57	69	71	70	69	67	69	74	68	66	77
	2243	79	78	72	67	63	68	63	64	73	82	81	77	73	71	76	71	70	80
	2804	82	81	75	69	65	69	64	65	75	86	85	80	75	72	76	72	70	81
400	904	59	56	56	58	64	68	59	56	71	60	61	62	64	71	77	68	66	80
	1809	68	65	62	61	64	69	61	62	72	70	70	68	67	72	78	69	68	81
	3617	79	77	70	67	66	71	65	64	75	82	81	76	72	74	80	73	72	83
	4522	82	80	73	69	68	72	66	64	76	85	83	79	75	75	80	74	73	84
500	1413	70	62	61	59	57	56	54	53	63	82	67	64	64	65	64	62	62	71
	2826	73	74	71	58	54	52	58	57	66	75	74	73	71	71	49	47	47	73
	5652	82	83	80	74	69	66	63	62	77	83	82	80	77	76	75	72	72	82
	7065	85	85	81	76	71	68	66	64	79	87	86	84	82	80	79	76	75	86
630	2243	72	64	62	60	59	58	56	55	65	74	71	68	67	67	66	64	63	73
	4487	75	76	72	70	66	65	60	59	73	77	76	75	73	72	71	70	49	78
	8973	83	84	80	75	70	67	64	63	78	84	84	82	48	77	77	72	71	82
	11216	86	86	81	76	72	69	67	65	79	88	87	86	84	81	80	76	75	87

Radiated noise: D_p = 125, 250 Pa

Model		D_p = 125 Pa									D_p = 250 Pa								
		Sound power L_w [dB]									Sound power L_w [dB]								
Ø [mm]	Q [m³/h]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]
100	57	26	17	18	21	16	16	<15	<15	24	26	21	23	27	25	28	20	17	32
	113	32	28	26	26	22	23	19	16	29	32	30	31	32	30	32	26	24	37
	226	37	38	36	33	29	33	28	26	38	40	42	43	39	35	38	35	34	44
	283	37	38	38	35	32	37	31	28	41	42	45	46	41	37	41	37	36	46
125	88	20	17	19	22	19	17	<15	<15	25	26	20	24	28	28	29	21	18	33
	177	28	28	27	27	24	24	19	15	30	32	32	32	33	31	33	28	25	38
	353	35	37	34	32	32	33	29	24	38	41	44	41	38	37	37	36	34	44
	442	36	37	35	33	35	35	32	27	41	42	45	43	40	39	39	39	36	46
160	145	21	20	24	27	24	23	15	<15	29	24	24	27	31	30	31	24	20	36
	289	30	30	31	29	28	28	21	20	34	34	34	36	36	35	36	31	27	41
	579	38	38	37	33	34	34	29	27	40	44	44	44	40	39	41	38	35	46
	723	39	39	39	36	36	35	32	30	42	46	47	47	42	41	42	40	37	48
200	226	26	24	25	25	23	23	24	15	30	24	27	28	30	30	32	33	24	38
	452	33	32	30	27	26	28	28	24	34	35	36	35	33	31	34	37	31	41
	904	40	43	37	33	32	33	32	28	39	46	48	42	38	35	38	41	37	46
	1130	42	45	39	36	35	35	34	29	42	49	51	44	40	37	40	42	39	47
250	353	27	26	26	28	25	23	18	20	30	28	31	32	35	34	34	31	29	40
	707	34	34	31	32	30	32	31	31	38	37	39	37	38	35	36	38	36	44
	1413	42	45	39	38	36	37	37	37	44	47	49	44	43	39	41	45	42	50
	1766	45	47	42	42	39	39	38	37	46	50	51	47	45	42	43	46	42	51
315	561	31	30	29	30	31	34	26	21	38	35	34	33	37	40	43	38	31	47
	1122	39	37	34	34	33	39	36	30	43	43	42	39	39	39	45	44	37	50
	2243	49	47	43	41	39	43	43	40	49	53	52	48	45	42	48	49	45	54
	2804	52	51	47	44	41	44	44	42	50	56	55	51	49	44	49	50	48	56
400	904	32	32	31	31	34	35	24	21	39	38	37	35	37	42	46	38	31	49
	1809	32	32	31	31	34	35	24	21	39	47	44	40	40	44	49	44	39	52
	3617	50	49	44	43	41	42	38	37	48	55	54	48	46	46	51	47	43	55
	4522	53	52	48	47	42	44	39	39	50	57	56	51	48	47	51	47	44	56
500	1413	44	41	38	36	35	34	33	31	41	48	44	43	40	38	38	37	36	45
	2826	49	50	44	41	38	35	34	32	44	52	53	50	47	43	41	41	40	50
	5652	53	51	48	43	39	37	35	32	46	56	35	55	52	47	45	44	43	54
	7065	57	53	50	48	44	40	37	32	50	64	61	58	53	49	46	44	44	56
630	2243	45	42	39	37	36	35	34	33	42	49	44	43	41	39	39	38	37	46
	4487	51	52	48	45	41	37	36	32	47	53	53	48	48	44	42	42	40	51
	8973	53	51	48	44	39	36	34	32	46	56	58	55	52	48	45	44	43	55
	11216	58	53	51	48	43	40	37	33	50	64	61	58	53	51	46	45	48	57

Radiated noise: D_p = 500, 1000 Pa

Model		D_p = 500 Pa									D_p = 1000 Pa								
		Sound power L_w [dB]									Sound power L_w [dB]								
Ø [mm]	Q [m3/h]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]
100	57	26	22	27	31	29	35	34	29	40	34	27	32	36	33	41	42	42	47
	113	34	32	35	36	34	40	36	34	44	38	34	39	41	39	47	45	45	52
	226	41	43	47	44	41	46	41	41	50	44	45	50	50	47	54	49	48	58
	283	43	46	50	47	43	47	43	43	52	46	47	53	53	49	56	51	50	60
125	88	30	23	26	31	31	37	35	30	41	30	27	32	37	36	43	43	46	49
	177	35	34	36	39	37	42	38	36	46	37	35	42	43	43	50	47	47	54
	353	41	45	47	45	43	45	42	42	51	44	45	52	51	50	55	51	50	59
	442	43	48	50	46	44	46	44	44	52	46	49	55	53	52	55	53	52	60
160	145	28	30	32	35	37	39	37	33	44	32	35	38	40	41	47	44	45	51
	289	36	38	41	41	41	45	41	38	49	39	42	46	47	47	54	49	49	58
	579	46	48	50	47	45	48	45	44	53	48	51	56	55	52	59	54	53	63
	723	49	51	53	49	46	49	46	46	55	50	55	59	57	54	59	56	55	64
200	226	29	27	32	34	36	38	40	34	45	34	32	40	39	43	47	51	46	54
	452	39	37	40	39	38	41	45	39	49	41	40	46	45	46	51	55	50	58
	904	68	51	48	44	41	45	49	45	53	49	53	54	51	48	54	59	53	62
	1130	51	54	51	45	42	46	50	47	54	52	58	56	53	49	55	59	55	63
250	353	28	32	36	40	42	43	42	37	49	30	33	41	45	49	52	49	48	57
	707	39	41	42	42	42	43	43	44	50	42	43	47	49	50	53	50	51	58
	1413	51	52	50	47	45	46	47	49	54	54	55	56	54	53	55	53	55	61
	1766	54	55	53	50	46	48	49	50	56	56	59	58	56	54	56	55	57	63
315	561	36	35	37	40	46	51	46	41	54	39	37	43	44	53	60	55	52	63
	1122	46	45	44	44	46	53	48	47	56	49	48	50	50	54	61	57	56	65
	2243	57	56	53	50	48	55	52	54	60	60	59	58	56	56	63	60	60	67
	2804	60	59	56	52	50	56	53	55	61	64	63	61	58	57	63	61	60	68
400	904	39	37	38	41	49	56	49	46	59	40	42	44	47	56	65	58	56	68
	1809	48	46	44	44	49	57	51	52	60	50	51	50	50	57	66	59	58	69
	3617	59	58	52	50	51	59	55	54	63	62	62	58	55	59	68	63	62	71
	4522	62	61	55	52	53	60	56	54	64	65	64	61	58	60	68	64	63	72
500	1413	53	47	46	44	43	42	41	40	49	62	50	48	48	49	48	47	47	55
	2826	55	56	53	44	41	39	44	43	51	56	56	55	53	53	37	35	35	56
	5652	62	62	60	56	52	50	47	47	59	62	62	60	58	57	56	54	54	63
	7065	64	64	61	57	53	51	50	48	60	65	65	63	62	60	59	57	56	66
630	2243	53	48	46	45	44	43	42	41	50	55	53	51	50	50	49	48	47	56
	4487	56	56	53	52	49	48	45	44	55	57	56	56	54	53	53	52	36	59
	8973	62	62	59	56	52	50	48	47	59	62	62	61	36	57	57	53	53	63
	11216	64	64	60	56	53	51	50	48	60	65	65	64	62	60	59	56	56	66

ERP-5-I

Generated noise: D_p = 125, 250 Pa

Model		D_p = 125 Pa									D_p = 250 Pa								
		Sound power L_w [dB]									Sound power L_w [dB]								
Ø [mm]	Q [m³/h]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A [dBA]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A [dBA]
100	57	26	17	18	21	16	16	<15	<15	24	26	21	23	27	25	28	20	17	32
	113	32	28	26	26	22	23	19	16	29	32	30	31	32	30	32	26	24	37
	226	37	38	36	33	29	33	28	26	38	40	42	43	39	35	38	35	34	44
	283	37	38	38	35	32	37	31	28	41	42	45	46	41	37	41	37	36	46
125	88	20	17	19	22	19	17	<15	<15	25	26	20	24	28	28	29	21	18	33
	177	28	28	27	27	24	24	19	15	30	32	32	32	33	31	33	28	25	38
	353	35	37	34	32	32	33	29	24	38	41	44	41	38	37	37	36	34	44
	442	36	37	35	33	35	35	32	27	41	42	45	43	40	39	39	39	36	46
160	145	21	20	24	27	24	23	15	<15	29	24	24	27	31	30	31	24	20	36
	289	30	30	31	29	28	28	21	20	34	34	34	36	36	35	36	31	27	41
	579	38	38	37	33	34	34	29	27	40	44	44	44	40	39	41	38	35	46
	723	39	39	39	36	36	35	32	30	42	46	47	47	42	41	42	40	37	48
200	226	26	24	25	25	23	23	24	15	30	24	27	28	30	30	32	33	24	38
	452	33	32	30	27	26	28	28	24	34	35	36	35	33	31	34	37	31	41
	904	40	43	37	33	32	33	32	28	39	46	48	42	38	35	38	41	37	46
	1130	42	45	39	36	35	35	34	29	42	49	51	44	40	37	40	42	39	47
250	353	27	26	26	28	25	23	18	20	30	28	31	32	35	34	34	31	29	40
	707	34	34	31	32	30	32	31	31	38	37	39	37	38	35	36	38	36	44
	1413	42	45	39	38	36	37	37	37	44	47	49	44	43	39	41	45	42	50
	1766	45	47	42	42	39	39	38	37	46	50	51	47	45	42	43	46	42	51
315	561	31	30	29	30	31	34	26	21	38	35	34	33	37	40	43	38	31	47
	1122	39	37	34	34	33	39	36	30	43	43	42	39	39	39	45	44	37	50
	2243	49	47	43	41	39	43	43	40	49	53	52	48	45	42	48	49	45	54
	2804	52	51	47	44	41	44	44	42	50	56	55	51	49	44	49	50	48	56
400	904	32	32	31	31	34	35	24	21	39	38	37	35	37	42	46	38	31	49
	1809	32	32	31	31	34	35	24	21	39	47	44	40	40	44	49	44	39	52
	3617	50	49	44	43	41	42	38	37	48	55	54	48	46	46	51	47	43	55
	4522	53	52	48	47	42	44	39	39	50	57	56	51	48	47	51	47	44	56
500	1413	44	41	38	36	35	34	33	31	41	48	44	43	40	38	38	37	36	45
	2826	49	50	44	41	38	35	34	32	44	52	53	50	47	43	41	41	40	50
	5652	53	51	48	43	39	37	35	32	46	56	35	55	52	47	45	44	43	54
	7065	57	53	50	48	44	40	37	32	50	64	61	58	53	49	46	44	44	56
630	2243	45	42	39	37	36	35	34	33	42	49	44	43	41	39	39	38	37	46
	4487	51	52	48	45	41	37	36	32	47	53	53	48	48	44	42	42	40	51
	8973	53	51	48	44	39	36	34	32	46	56	58	55	52	48	45	44	43	55
	11216	58	53	51	48	43	40	37	33	49	64	61	58	53	51	46	45	48	57

Generated noise: D_p = 500, 1000 Pa

Model		D_p = 500 Pa									D_p = 1000 Pa								
		Sound power L_w [dB]									Sound power L_w [dB]								
Ø [mm]	Q [m³/h]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]
100	57	26	22	27	31	29	35	34	29	40	34	27	32	36	33	41	42	42	47
	113	34	32	35	36	34	40	36	34	44	38	34	39	41	39	47	45	45	52
	226	41	43	47	44	41	46	41	41	50	44	45	50	50	47	54	49	48	58
	283	43	46	50	47	43	47	43	43	52	46	47	53	53	49	56	51	50	60
125	88	30	23	26	31	31	37	35	30	41	30	27	32	37	36	43	43	46	49
	177	35	34	36	39	37	42	38	36	46	37	35	42	43	43	50	47	47	54
	353	41	45	47	45	43	45	42	42	51	44	45	52	51	50	55	51	50	59
	442	43	48	50	46	44	46	44	44	52	46	49	55	53	52	55	53	52	60
160	145	28	30	32	35	37	39	37	33	44	32	35	38	40	41	47	44	45	51
	289	36	38	41	41	41	45	41	38	49	39	42	46	47	47	54	49	49	58
	579	46	48	50	47	45	48	45	44	53	48	51	56	55	52	59	54	53	63
	723	49	51	53	49	46	49	46	46	55	50	55	59	57	54	59	56	55	64
200	226	29	27	32	34	36	38	40	34	45	34	32	40	39	43	47	51	46	54
	452	39	37	40	39	38	41	45	39	49	41	40	46	45	46	51	55	50	58
	904	68	51	48	44	41	45	49	45	53	49	53	54	51	48	54	59	53	62
	1130	51	54	51	45	42	46	50	47	54	52	58	56	53	49	55	59	55	63
250	353	28	32	36	40	42	43	42	37	49	30	33	41	45	49	52	49	48	57
	707	39	41	42	42	42	43	43	44	50	42	43	47	49	50	53	50	51	58
	1413	51	52	50	47	45	46	47	49	54	54	55	56	54	53	55	53	55	61
	1766	54	55	53	50	46	48	49	50	56	56	59	58	56	54	56	55	57	63
315	561	36	35	37	40	46	51	46	41	54	39	37	43	44	53	60	55	52	63
	1122	46	45	44	44	46	53	48	47	56	49	48	50	50	54	61	57	56	65
	2243	57	56	53	50	48	55	52	54	60	60	59	58	56	56	63	60	60	67
	2804	60	59	56	52	50	56	53	55	61	64	63	61	58	57	63	61	60	68
400	904	39	37	38	41	49	56	49	46	59	40	42	44	47	56	65	58	56	68
	1809	48	46	44	44	49	57	51	52	60	50	51	50	50	57	66	59	58	69
	3617	59	58	52	50	51	59	55	54	63	62	62	58	55	59	68	63	62	71
	4522	62	61	55	52	53	60	56	54	64	65	64	61	58	60	68	64	63	72
500	1413	53	47	46	44	43	42	41	40	49	62	50	48	48	49	48	47	47	55
	2826	55	56	53	44	41	39	44	43	51	56	56	55	53	53	37	35	35	56
	5652	62	62	60	56	52	50	47	47	59	62	62	60	58	57	56	54	54	63
	7065	64	64	61	57	53	51	50	48	60	65	65	63	62	60	59	57	56	66
630	2243	53	48	46	45	44	43	42	41	50	55	53	51	50	50	49	48	47	56
	4487	56	56	53	52	49	48	45	44	55	57	56	56	54	53	53	52	36	59
	8973	62	62	59	56	52	50	48	47	59	62	62	61	36	57	57	53	53	63
	11216	64	64	60	56	53	51	50	48	60	65	65	64	62	60	59	56	56	66

Radiated noise: D_p = 125, 250 Pa

Model		D_p = 125 Pa									D_p = 250 Pa								
		Sound power L_w [dB]									Sound power L_w [dB]								
Ø [mm]	Q [m³/h]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A[dBA]
100	57	24	19	19	16	<15	<15	<15	<15	22	24	23	24	22	<15	<15	<15	<15	24
	113	30	30	27	21	<15	<15	<15	<15	25	30	32	32	27	15	<15	<15	<15	28
	226	35	40	37	28	<15	<15	<15	<15	31	38	44	44	34	20	16	<15	<15	37
	283	35	40	39	30	17	15	<15	<15	33	40	47	47	36	22	19	<15	<15	40
125	88	18	17	20	16	<15	<15	<15	<15	22	24	20	25	22	<15	<15	<15	<15	24
	177	26	28	28	21	<15	<15	<15	<15	25	30	32	33	27	16	<15	<15	<15	28
	353	33	37	35	26	17	<15	<15	<15	30	39	44	42	32	22	16	<15	<15	36
	442	34	37	36	27	20	<15	<15	<15	31	40	45	44	34	24	18	<15	<15	38
160	145	19	17	24	20	<15	<15	<15	<15	23	22	21	27	24	15	<15	<15	<15	25
	289	28	27	31	22	<15	<15	<15	<15	26	32	31	36	29	20	<15	<15	<15	31
	579	36	35	37	26	19	<15	<15	<15	31	42	41	44	33	24	19	<15	<15	37
	723	37	36	39	29	21	<15	<15	<15	33	44	44	47	35	26	20	<15	15	40
200	226	24	21	22	<15	<15	<15	<15	<15	23	22	24	25	19	<15	<15	<15	<15	24
	452	31	29	27	16	<15	<15	<15	<15	24	33	33	32	22	<15	<15	<15	<15	27
	904	38	40	34	22	<15	<15	<15	<15	29	44	45	39	27	17	<15	<15	15	34
	1130	40	42	36	25	17	<15	<15	<15	31	47	48	41	29	19	<15	15	17	36
250	353	25	23	23	17	<15	<15	<15	<15	23	26	28	29	24	15	<15	<15	<15	26
	707	32	31	28	21	<15	<15	<15	<15	25	35	36	34	27	16	<15	<15	16	29
	1413	40	42	36	27	17	<15	<15	17	31	45	46	41	32	20	<15	21	22	36
	1766	43	44	39	31	20	<15	<15	17	34	48	48	44	34	23	15	22	22	38
315	561	29	27	25	18	<15	<15	<15	<15	24	33	31	29	25	21	15	<15	<15	27
	1122	37	34	30	22	<15	<15	<15	<15	26	41	39	35	27	20	17	20	18	31
	2243	47	44	39	29	20	15	19	21	34	51	49	44	33	23	20	25	26	39
	2804	50	48	43	32	22	16	20	23	38	54	52	47	37	25	21	26	29	42
400	904	30	28	27	19	<15	<15	<15	<15	24	36	33	31	25	22	19	15	<15	29
	1809	39	35	32	22	17	<15	<15	<15	27	45	40	36	28	24	22	21	20	33
	3617	48	45	40	31	21	15	15	18	35	53	50	44	34	26	24	24	24	39
	4522	51	48	44	35	22	17	16	20	39	55	52	47	36	27	24	24	25	42
500	1413	33	31	28	27	26	26	25	23	33	36	33	32	30	29	28	28	27	36
	2826	37	38	33	31	28	27	26	24	35	39	40	38	35	32	31	31	30	39
	5652	40	39	36	32	30	28	27	24	36	43	27	41	39	36	34	33	32	42
	7065	43	40	38	36	33	30	28	24	39	48	46	44	40	37	35	33	33	44
630	2243	36	33	31	29	29	27	27	26	35	39	34	34	32	31	30	30	29	38
	4487	40	41	37	35	32	29	28	25	38	41	42	37	37	34	33	33	32	41
	8973	42	40	37	34	30	29	27	25	37	44	46	43	41	37	35	34	34	44
	11216	46	41	40	37	34	32	29	26	40	50	48	46	42	40	36	35	37	46

Radiated noise: D_p = 500, 1000 Pa

Model		D_p = 500 Pa									D_p = 1000 Pa								
		Sound power L_w [dB]									Sound power L_w [dB]								
Ø [mm]	Q [m3/h]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A [dBA]	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L_w A [dBA]
100	57	24	24	28	26	<15	<15	<15	<15	26	32	29	33	31	18	19	16	20	31
	113	32	34	36	31	19	18	<15	<15	32	36	36	40	36	24	25	19	23	36
	226	39	45	48	39	26	24	15	19	42	42	47	51	45	32	32	23	26	46
	283	41	48	51	42	28	25	17	21	44	44	49	54	48	34	34	25	28	49
125	88	28	23	27	25	16	16	<15	<15	26	28	27	33	31	21	22	18	24	32
	177	33	34	37	33	22	21	<15	<15	33	35	35	43	37	28	29	22	25	39
	353	39	45	48	39	28	24	17	20	42	52	45	53	45	35	34	26	28	47
	442	41	48	51	40	29	25	19	22	44	44	49	56	47	37	34	28	30	50
160	145	26	27	32	28	22	17	<15	<15	29	30	32	38	33	26	25	18	23	35
	289	34	35	41	34	26	23	15	16	36	37	39	46	40	32	32	23	27	42
	579	44	45	50	40	30	26	19	22	43	46	48	56	48	37	37	28	31	50
	723	47	48	53	42	31	27	20	24	46	48	52	59	50	39	37	30	33	53
200	226	27	24	29	23	18	<15	<15	<15	26	34	36	43	37	30	29	21	26	39
	452	37	34	37	28	20	15	18	17	31	42	45	52	45	36	36	27	30	47
	904	46	48	45	33	23	19	22	23	39	47	50	51	40	30	28	32	31	45
	1130	49	51	48	34	24	20	23	25	41	50	55	53	42	31	29	32	33	47
250	353	26	29	33	29	23	15	18	17	30	28	30	38	34	30	24	25	28	36
	707	37	38	39	31	23	15	19	24	34	40	40	44	38	31	25	26	31	40
	1413	49	49	47	36	26	18	23	29	41	52	52	53	43	34	27	29	35	47
	1766	52	52	50	39	27	20	25	30	44	54	56	54	45	35	28	31	37	48
315	561	34	32	33	28	27	23	22	22	32	37	34	39	32	34	32	31	33	40
	1122	44	42	40	32	27	25	24	28	36	47	45	46	38	35	33	33	37	43
	2243	55	53	49	38	29	27	28	35	44	58	56	54	44	37	35	36	41	49
	2804	58	56	52	40	31	28	29	36	46	62	60	57	46	38	35	37	41	52
400	904	37	33	34	29	29	29	26	27	35	38	38	40	35	36	38	35	37	44
	1809	46	42	40	32	29	30	28	33	38	48	47	46	38	37	39	36	39	46
	3617	57	54	48	38	31	32	32	35	44	60	58	54	43	39	41	40	43	51
	4522	60	57	51	40	33	33	33	35	47	63	60	57	46	40	41	41	44	53
500	1413	40	35	35	33	32	32	31	30	39	47	38	36	36	37	36	35	35	43
	2826	41	42	40	33	31	30	33	32	40	43	42	41	40	40	28	27	27	43
	5652	47	47	45	42	39	37	36	35	45	47	47	45	44	43	43	41	41	50
	7065	48	48	46	43	40	39	37	36	47	49	49	48	47	45	45	43	43	52
630	2243	42	37	36	35	34	34	33	32	41	43	41	40	39	39	39	37	37	45
	4487	44	44	42	41	39	38	35	34	45	45	44	44	43	42	41	41	29	48
	8973	48	49	47	44	41	39	37	37	47	49	49	48	28	45	45	42	41	51
	11216	50	50	47	44	42	40	39	38	48	51	51	50	49	47	47	44	44	53

Variable air volume flow controllers

LMV-D3-MP

NMV-D3-MP

VAV-Compact controller with integrated pressure sensor, VAV controller and damper actuator for pressure-independent VAV and CAV applications in the comfort zone

- Control: DC 0/2 … 10V / MP-Bus
- Integration in bus systems
  – DDC controller with MP interface
  – LONWORKS® systems
  – Fan optimiser systems
- With additional switch-on option for sensors and switches
- Diagnostic socket for Service and PC-Tool

Typee overview

Typee	Torque	Power consumption	Dimensioning	Weight
LMV-D3-MP	5 Nm	2 W	4 VA (max. 8 A @ 5 ms)	Approx. 500 g
NMV-D3-MP	10 Nm	3 W	5 VA (max. 8 A @ 5 ms)	Approx. 700 g

Brief description

Application

The digital VAV-Compact has PI control characteristics and is used for pressure-independent control of VAV units in the comfort zone.

Pressure measurement

The integrated maintenance-free Belimo D3 differential pressure sensor is also suitable for very small volumetric flows. It is for this reason that it covers versatile applications in the comfort zone, e.g. in residential construction, offices, hospitals, hotels, cruise ships, etc.

Actuator

Three versions available, depending on the size of the VAV unit: 5 / 10 / 20 Nm.
– Rotary actuator, depending on the size
– Linear actuator 150 N with 100, 200 or 300 mm linear movement.

Control function

VAV-CAV or Open-Loop operation for integration in an external VAV control loop.

Feedback

Damper position for fan optimiser systems, current volumetric flow or pressure value.

VAV – variable volumetric flow

For variable volumetric flow applications with a modulating reference variable, e.g. room temperature controller, direct digital control or bus system, it enables demand-related, energy-saving ventilation of individual rooms or zones. The operating range V_{min} …V_{max} can be connected via selectable mode.
The following are available: DC 2 … 10V / 0 … 10V / adjustable range / bus operation.

CAV – constant volumetric flow

For constant volumetric flow applications, e.g. in step mode, controlled by means of a switch. The following operating modes can be selected from: CLOSED / V_{min} / (V_{mid}) / V_{max} / OPEN

Bus function

Up to eight Belimo MP devices (VAV / damper actuator / valve actuator) can be connected together over the MP-Bus and integrated into the following systems:
– LONWORKS® applications with Belimo UK24LON interface
– EIB Konnex applications with Belimo UK24EIB interface
– MODBUS RTU applications with Belimo UK24MOD interface
– BACnet applications with Belimo UK24BAC interface
– DDC controller with integrated MP-Bus protocol
– Fan optimiser applications with optimiser COU24-A-MP
A sensor (0...10V or passive), e.g. a temperature sensor or a switch, can optionally be integrated into the higher-level DDC or bus system via the MP-Bus.

Operating and service devices

Belimo PC-Tool or service tool ZTH-GEN, can be plugged into the VAV-Compact (PP connection) or via MP-Bus.

Assembly and connection

The VAV-Compact, which is assembled on the unit by the OEM, is connected usings the prefabricated connecting cable.

Test function / test display

The VAV-Compact features two LEDs with a functional readiness display for commissioning and functional checking. Extended information with ZTH-GEN.

OEM factory settings

The VAV-Compact is mounted on the VAV unit by the unit manufacturer, who adjusts and tests it according to the application. The VAV-Compact is sold exclusively via the OEM channel for this reason.

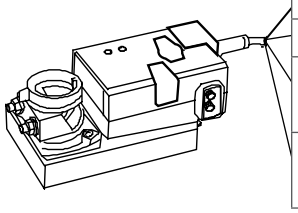
Variable air volume flow controllers

Technical data

Safety	
Principle of operation	Type 1 (in acc. with EN 60730-1)
Rated current voltage	0.5 kV (in accordance with EN 60730-1)
Control pollution degree	2 (in accordance with EN 60730-1)
Ambient temperature	0 … +50 °C
Non-operating temperature	–20 … +80 °C
Ambient humidity	5 ... 95% r.h., non-condensing (in accordance with EN 60730-1)
Maintenance	Maintenance-free

Connection

Notes
– Supply via safety isolating transformer! ⚠
– In conventionally controlled systems it is recommended that the connections 1 to 5 (PP) are led to accessible terminals (e.g. floor distributor) in order to allow remote access for diagnostics and service work.



Nr.	Designation	Wire	Function
1	–	Black	Supply AC/DC 24 V
2	~ +	Red	
3	Y	White	Reference signal / override / sensor
5	U	Orange	– Actual value signal – MP bus connection

VAV – variable operation V_{min}…V_{max}

Wiring diagrams

Description:
Damper CLOSED via 0 ... 10 V reference signal (Mode 2 ... 10 V)

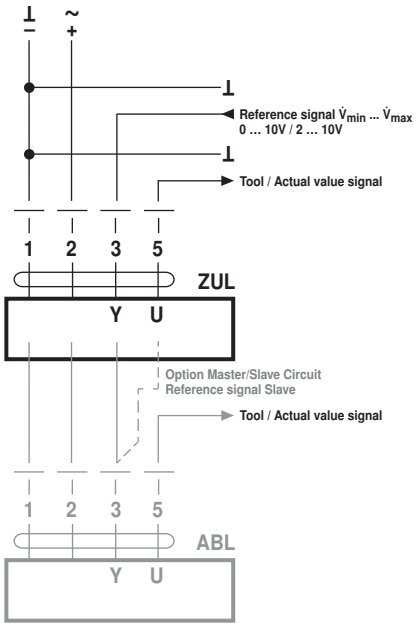
Setting parameters:
Mode 2 … 10 V, Shut off level 0.1 V or 0.5 V

If the required switching threshold of 0.1 V cannot be attained, the value can be switched to 0.5 V with PC-Tool.

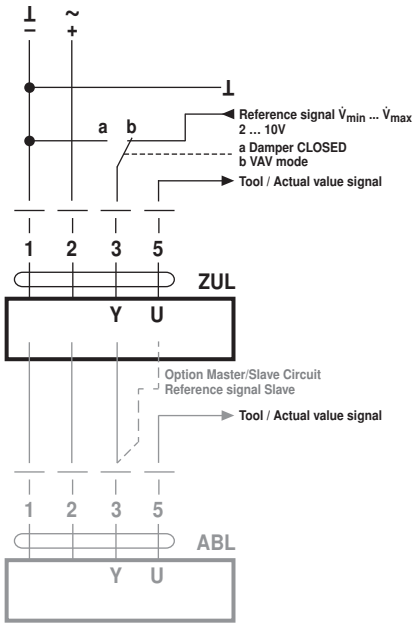
Function:	*Standard 0.1 V:*	*Shut-off level 0.5 V:*
Damper CLOSED	<0.1 V	<0.5 V
$\dot{V}_{min}$	>0.1 ... 2 V	>0.5 V ... 2 V
$\dot{V}_{min}$ ... $\dot{V}_{max}$	2 ... 10 V	2 ... 10 V

In CAV applications shut-off level must not be set to 0.5 V, otherwise the open connection 3 is interpreted as damper CLOSED.

Example 1:
VAV, analogue reference signal



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



CAV – step mode CLOSED / V_{min} / V_{mid} / V_{max} / OPEN

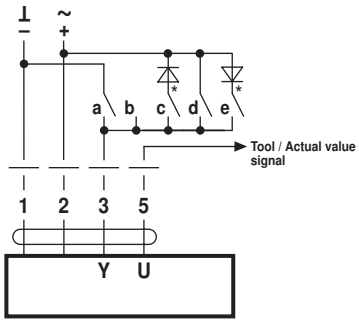
CAV control

VAV-Compact can be adapted to the desired CAV function pattern for constant volumetric flow applications with PC-Tool by using the "CAV function":
– Damper CLOSED – $\dot{V}_{min}$ – $\dot{V}_{max}$ – damper OPEN (standard)
– Damper CLOSED – $\dot{V}_{min}$ – $\dot{V}_{mid}$ – $\dot{V}_{max}$ – damper OPEN (NMV-D2M compatible)

Wiring diagrams

Notes

- Note that the contacts are mutually interlocking.
- DC supply: * c and e are not available with DC 24 V.
- Setting parameters in CAV applications: Mode 2 … 10 V, Shut-off level 0.1 V
  In CAV applications shut-off level must not be set to 0.5 V, otherwise the open connection 3 is interpreted as damper CLOSED.



PC-Tool "CAV Function" setting:
2 ... 10 V, Shut-off level 0.1 V

CAV Function CLOSED – $\dot{V}_{min}$ – $\dot{V}_{max}$ – OPEN (standard)

	a	b	c	d	e
Signal	⊥ –		~	~ +	~
Switching terminal 3	3	3	3	3	3
Mode 2 ... 10 V	CLOSED	$\dot{V}_{min}$	CLOSED *	$\dot{V}_{max}$	OPEN *
Mode 0 ... 10 V	$\dot{V}_{min}$	$\dot{V}_{min}$	CLOSED *	$\dot{V}_{max}$	OPEN *

PC-Tool "CAV Function" setting:
CLOSED – $\dot{V}_{min}$ – $\dot{V}_{max}$. Shut-off level CLOSED: 0.1 V

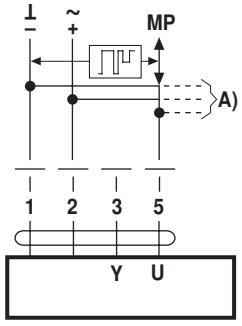
CAV function CLOSED – $\dot{V}_{min}$ – $\dot{V}_{mid}$ – $\dot{V}_{max}$ – OPEN

	a	b	c	d	e
Signal	⊥ –		~	~ +	~
Switching terminal 3	3	3	3	3	3
Mode 2 ... 10 V	CLOSED	$\dot{V}_{min}$	$\dot{V}_{mid}$ *	$\dot{V}_{max}$	OPEN *
Mode 0 ... 10 V	$\dot{V}_{min}$	$\dot{V}_{min}$	$\dot{V}_{mid}$ *	$\dot{V}_{max}$	OPEN *

PC-Tool "CAV Function" setting:
CLOSED – $\dot{V}_{min}$ – $\dot{V}_{mid}$ – $\dot{V}_{max}$ (NMV-D2M compatible)

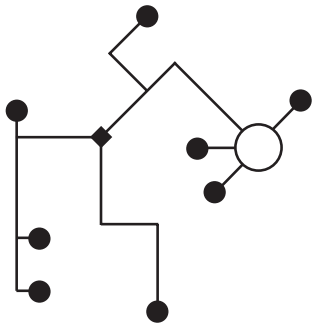
MP-Bus operation – VAV / CAV function

Connection on the MP-Bus



A) dditional actuators and sensors (max. 8)

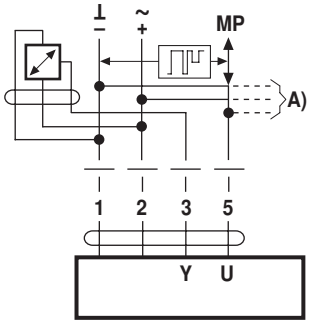
Power topology



There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).
Supply and communication in one and the same 3-wire cable

- no shielding or twisting necessary
- no terminating resistors required

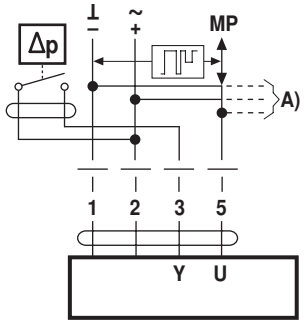
Connection of active sensors



A) dditional actuators and sensors (max. 8)

- Supply AC/DC 24 V
- Output signal DC 0...10 V (max. DC 0...32 V)
- Resolution 30 mV

Connection of external switching contact

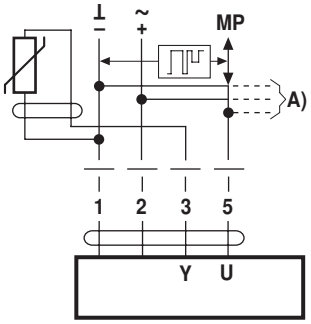


A) dditional actuators and sensors (max. 8)

- Switching current 16 mA @ 24 V
- Start point of the operating range must be parameterised on the MP actuator as ≥ 0.5 V

MP-Bus operation – VAV / CAV function

Connection of passive sensors



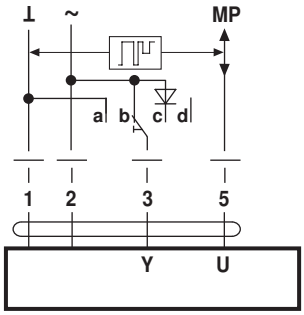
Ni1000	–28...+98 °C	850...1600 Ω 2)
PT1000	–35...+155 °C	850...1600 Ω 2)
NTC	–10...+160 °C 1)	200 Ω...60 kΩ 2)

A) dditional actuators and sensors (max. 8)
1) Depending on he type
2) esolution 1 Ohm

Local override control

If no sensor is integrated, then connection 3 (Y) is available for the protective circuit of a local override control.
Options: CLOSED – $\dot{V}_{max}$ – OPEN

Note: Functions only with AC 24V supply!



a Damper CLOSED
b $\dot{V}_{Max}$
c Damper OPEN
d Bus mode

Dimensioning of supply and connecting cable

General

In addition to the actual wire sizing, attention must also be paid to the surrounding environment and the cable routing. If at all possible, signal cables must not be laid in the vicinity of load cables, objects liable to cause EMC interference, etc. Paired or layer-stranded cables enhance interference resistance.

24 V supply, dimensioning and cabling

The wire sizing and installation of the 24V AC supply, the fuse protection and the cables are dependent on the total operated load and local regulations. Account must be taken of the following performance data, including the starting currents of the actuators:
– Dimensioning values VAV-Compact controller, see Technical data
– Dimensioning values of other final controlling elements, etc. can be found in the current data sheets and product information
– Additional intended devices which are connected to the same 24V supply
– Reserve capacity for subsequent expansion, if planned.

MP-Bus integration – supply, dimensioning and cabling

See S4-VAV-Compact D3, MP-Bus integration, page 33 … 42