

VENTILATION REGULATING SYSTEM

HRSM, HRSM-K HRSM-V, HRSM-VK



HRSM, HRSM-K, HRSM-V, HRSM-VK

Description

Mandik VAV regulating systems HRSM and HRSM-K are designed for simple and optimal regulation of air quality in family houses, apartments (including kitchen exhaust), office buildings with conference rooms or industrial premises with centralized ventilation systems.

The air regulating systems HRSM/ HRSM-K are designed as "demand-based control systems".

The VAV dampers are not depending on air pressure in the duct.

They can be used also as constant flow regulating dampers, when needed.

The actual air volume inside the damper is visible on the display of the VAV damper's actuator.

The HRSM/ HRSM-K systems are operated by electrical boxes DC1/respectively DC2 and controlled by 3 positions wall switch.

The HRSM-K, HRSM-VK is connectable to kitchen hood exhaust, which is equipped with micro switch.

The HRSM-K, HRSM-VK ("kitchen") allows to increase air volume in the supply ducts and consequently to decrease air volume in the exhaust ducts, when kitchen hood is in operation.

It means that the kitchen hood is extracting the air with its own fan.

Functions

Regulation of variable air flow.

Regulation of constant air flow.

Real time air flow controlling, visible on the actuator's display.

Wall switch position:

- 1.) Damper's blade in closed position
- 2.) Minimal air flow volume position
- 3.) Maximal air flow volume position

HRSM-K

If the switch of kitchen hood is turned on, the outlet air flow volume is minimal and inlet air flow volume is maximal. This mode is independent on the wall switch position.

HRSM-V, HRSM-VK

This control box is recommended to be used in the cases, where following control volumes should be regulated:

- 1.) Minimum air flow
- 2.) Middle air flow (air flow is adjustable on wheel scale)
- 3.) Maximum air flow
- 4.) If the kitchen hood is turned on, the outlet air flow volume is minimal and inlet air flow volume is maximal (to avoid underpressure in the room).

Available only for HRSM-VK

Content

Regulating VAV (CAV) damper RPM-V SL/G	2 pieces
Connection box with power supply	
DC1 for HRSM	1 piece
DC2 for HRSM-K	1 piece
DCV for HRSM-V	1 piece
DCVK for HRSM-VK	1 piece
Manual, 3 position control switch/panel Obzor	1 piece

VAV controller



Electrical box DC1, DC2



Electrical box DC V



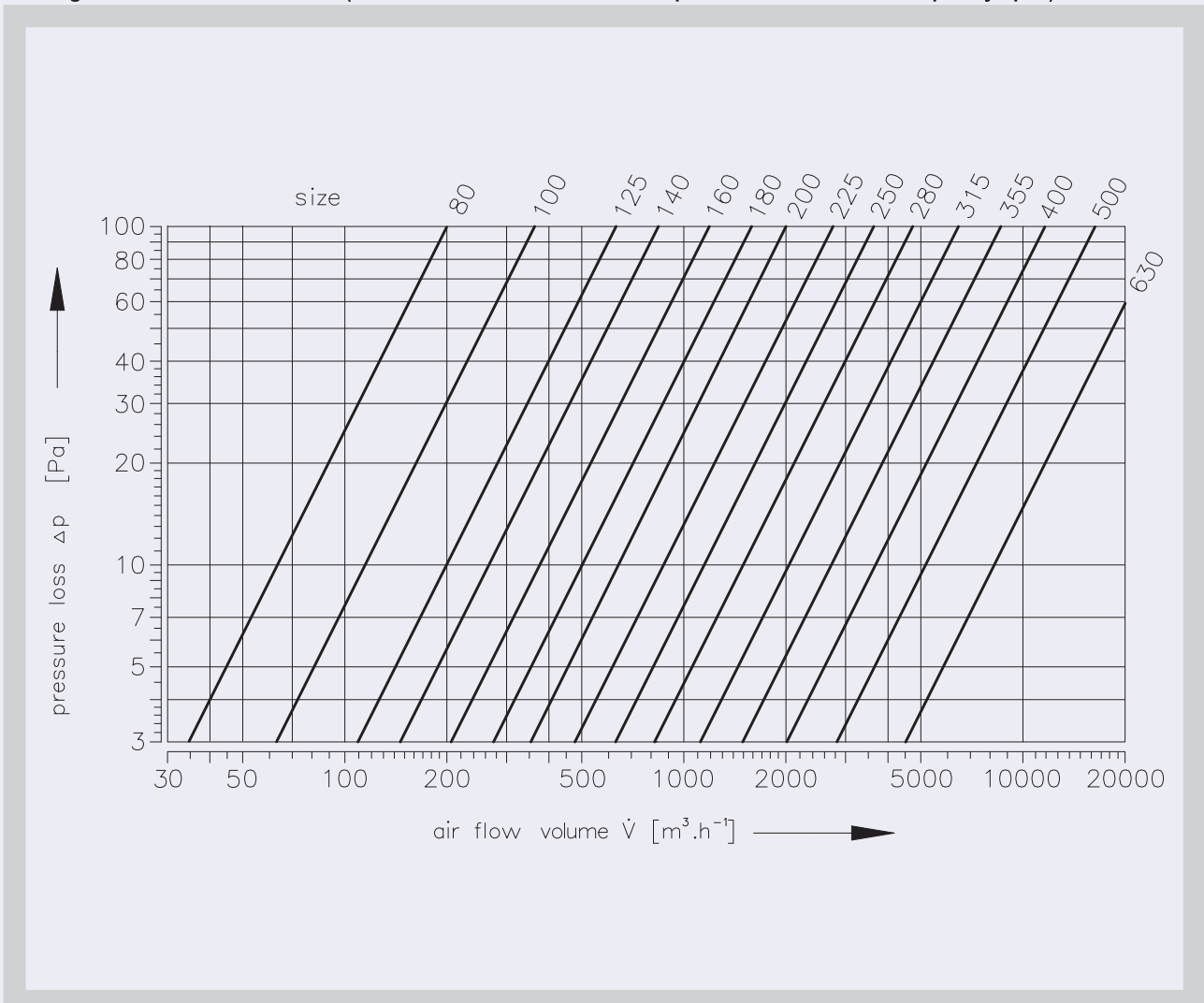
3-position wall switch



Air flow volume

Size	Air volume [m ³ .h ⁻¹]		V _{nom} [m ³ .h ⁻¹] GRUNER
	Minimum (w ≈ 1,2 m.s ⁻¹)	Maximum (w ≈ 12 m.s ⁻¹)	
80	22	220	210
100	35	350	390
125	55	550	695
140	70	700	850
160	90	900	1150
180	120	1200	1500
200	140	1400	1900
225	180	1800	2450
250	220	2200	2950
280	280	2800	4000
315	350	3500	5000
355	450	4500	5900
400	580	5800	8700
500	850	8500	12000
630	1350	13500	19500

Diagram 8.1.1. Pressure losses (the values are valid when the damper of the controller is completely open)



Acoustic values

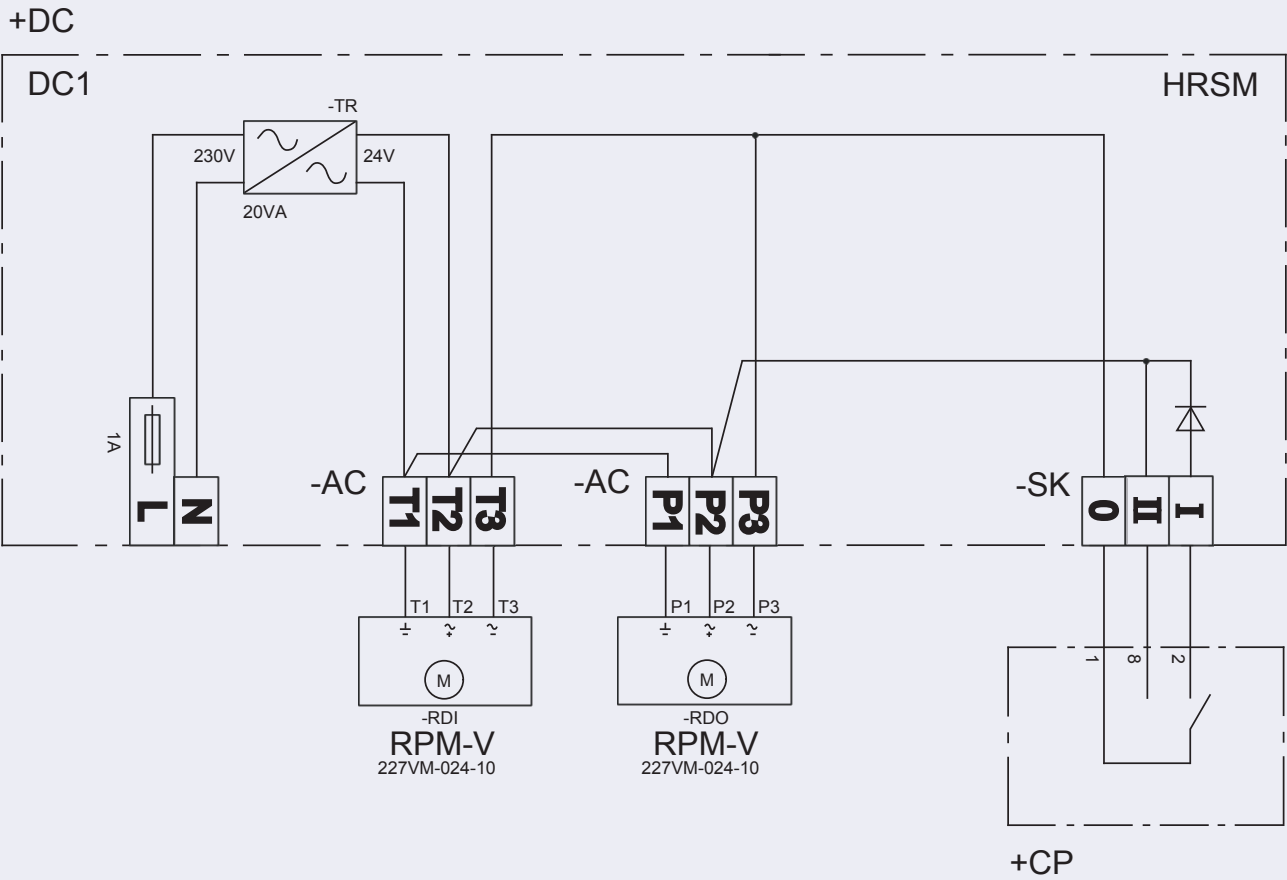
Size	V [m ³ .h ⁻¹]	$\Delta p_{st} = 100 \text{ Pa}$								
		L _w [dB/Okt]								L _{WA} [dB(A)]
		f _m [Hz]								
		63	125	250	500	1000	2000	4000	8000	
80	22	47	37	31	31	34	30	22	10	37
	88	59	49	43	43	46	42	34	22	49
	154	64	54	48	48	51	47	39	27	54
	220	68	58	52	52	55	51	43	31	58
100	35	49	39	33	33	36	32	24	12	39
	140	63	54	50	47	48	44	37	26	52
	245	70	62	58	54	53	49	45	33	58
	350	73	65	61	56	53	49	46	35	59
125	55	50	40	34	34	37	33	25	13	40
	220	65	56	52	49	50	46	39	28	54
	385	69	61	57	53	52	48	44	32	57
	550	76	68	64	59	56	52	49	38	62
140	70	52	42	36	36	39	35	27	15	42
	280	65	56	52	49	50	46	39	28	54
	490	70	62	58	54	53	49	45	33	58
	700	77	69	65	60	57	53	50	39	63
160	90	55	45	39	39	42	38	30	18	45
	360	65	56	52	49	50	46	39	28	54
	630	71	63	59	55	54	50	46	34	59
	900	78	70	66	61	58	54	51	40	64
180	120	55	45	39	39	42	38	30	18	45
	480	66	57	53	50	51	47	40	29	55
	840	72	64	60	56	55	51	47	35	60
	1200	79	71	67	62	59	55	52	41	65
200	140	55	45	39	39	42	38	30	18	45
	560	66	57	53	50	51	47	40	29	55
	980	73	65	61	57	56	52	48	36	61
	1400	80	72	68	63	60	56	53	42	66
225	180	55	45	39	39	42	38	30	18	45
	720	66	57	53	50	51	47	40	29	55
	1260	73	65	61	57	56	52	48	36	61
	1800	80	72	68	63	60	56	53	42	66
250	220	54	44	38	38	41	37	29	17	44
	880	67	58	54	51	52	48	41	30	56
	1540	73	65	61	57	56	52	48	36	61
	2200	79	71	67	62	59	55	52	41	65
280	280	56	46	40	40	43	39	31	19	46
	1120	70	61	57	54	55	51	44	33	59
	1960	74	66	62	58	57	53	49	37	62
	2800	81	73	69	64	61	57	54	43	67
315	350	58	48	42	42	45	41	33	21	48
	1400	69	60	56	53	54	50	43	32	58
	2450	75	67	63	59	58	54	50	38	63
	3500	82	74	70	65	62	58	55	44	68
355	450	59	49	43	43	46	42	34	22	49
	1800	69	60	56	53	54	50	43	32	58
	3150	76	68	64	60	59	55	51	39	64
	4500	82	74	70	65	62	58	55	44	68
400	580	60	50	44	44	47	43	35	23	50
	2320	69	60	56	53	54	50	43	32	58
	4060	76	68	64	60	59	55	51	39	64
	5800	82	74	70	65	62	58	55	44	68
500	2100	61	51	45	45	48	44	36	24	51
	4200	70	61	57	54	55	51	44	33	59
	6300	77	69	65	61	60	56	52	40	65
	8400	83	75	71	66	63	59	56	45	69
630	3300	63	53	47	47	50	46	38	26	53
	6700	72	63	59	56	57	53	46	35	61
	10000	79	71	67	63	62	58	54	42	67
	13300	85	77	73	68	65	61	58	47	71

Size	V [m ³ .h ⁻¹]	$\Delta p_{st} = 250 \text{ Pa}$								
		L _w [dB/Okt]								L _{WA} [dB(A)]
		f _m [Hz]								
		63	125	250	500	1000	2000	4000	8000	
80	22	55	45	39	39	42	38	30	18	45
	88	67	57	51	51	54	50	42	30	57
	154	72	62	56	56	59	55	47	35	62
	220	76	66	60	60	63	59	51	39	66
100	35	57	47	41	41	44	40	32	20	47
	140	70	61	57	54	55	51	44	33	59
	245	77	69	65	61	60	56	52	40	65
	350	83	75	71	66	63	59	56	45	69
125	55	59	49	43	43	46	42	34	22	49
	220	70	61	57	54	55	51	44	33	59
	385	76	68	64	60	59	55	51	39	64
	550	82	74	70	65	62	58	55	44	68
140	70	61	51	45	45	48	44	36	24	51
	280	72	63	59	56	57	53	46	35	61
	490	77	69	65	61	60	56	52	40	65
	700	83	75	71	66	63	59	56	45	69
160	90	62	52	46	46	49	45	37	25	52
	360	73	64	60	57	58	54	47	36	62
	630	78	70	66	62	61	57	53	41	66
	900	84	76	72	67	64	60	57	46	70
180	120	63	53	47	47	50	46	38	26	53
	480	73	64	60	57	58	54	47	36	62
	840	78	70	66	62	61	57	53	41	66
	1200	84	76	72	67	64	60	57	46	70
200	140	64	54	48	48	51	47	39	27	54
	560	74	65	61	58	59	55	48	37	63
	980	79	71	67	63	62	58	54	42	67
	1400	85	77	73	68	65	61	58	47	71
225	180	66	56	50	50	53	49	41	29	56
	720	74	65	61	58	59	55	48	37	63
	1260	80	72	68	64	63	59	55	43	68
	1800	86	78	74	69	66	62	59	48	72
250	220	68	58	52	52	55	51	43	31	58
	880	74	65	61	58	59	55	48	37	63
	1540	80	72	68	64	63	59	55	43	68
	2200	86	78	74	69	66	62	59	48	72
280	280	68	58	52	52	55	51	43	31	58
	1120	75	66	62	59	60	56	49	38	64
	1960	81	73	69	65	64	60	56	44	69
	2800	87	79	75	70	67	63	60	49	73
315	350	69	59	53	53	56	52	44	32	59
	1400	76	67	63	60	61	57	50	39	65
	2450	82	74	70	66	65	61	57	45	70
	3500	88	80	76	71	68	64	61	50	74
355	450	69	59	53	53	56	52	44	32	59
	1800	77	68	64	61	62	58	51	40	66
	3150	82	74	70	66	65	61	57	45	70
	4500	88	80	76	71	68	64	61	50	74
400	580	68	58	52	52	55	51	43	31	58
	2320	77	68	64	61	62	58	51	40	66
	4060	82	74	70	66	65	61	57	45	70
	5800	88	80	76	71	68	64	61	50	74
500	2100	70	60	54	54	57	53	45	33	60
	4200	79	70	66	63	64	60	53	42	68
	6300	84	76	72	68	67	63	59	47	72
	8400	90	82	78	73	70	66	63	52	76
630	3300	72	62	56	56	59	55	47	35	62
	6700	81	72	68	65	66	62	55	44	70
	10000	86	78	74	70	69	65	61	49	74
	13300	92	84	80	75	72	68	65	54	78

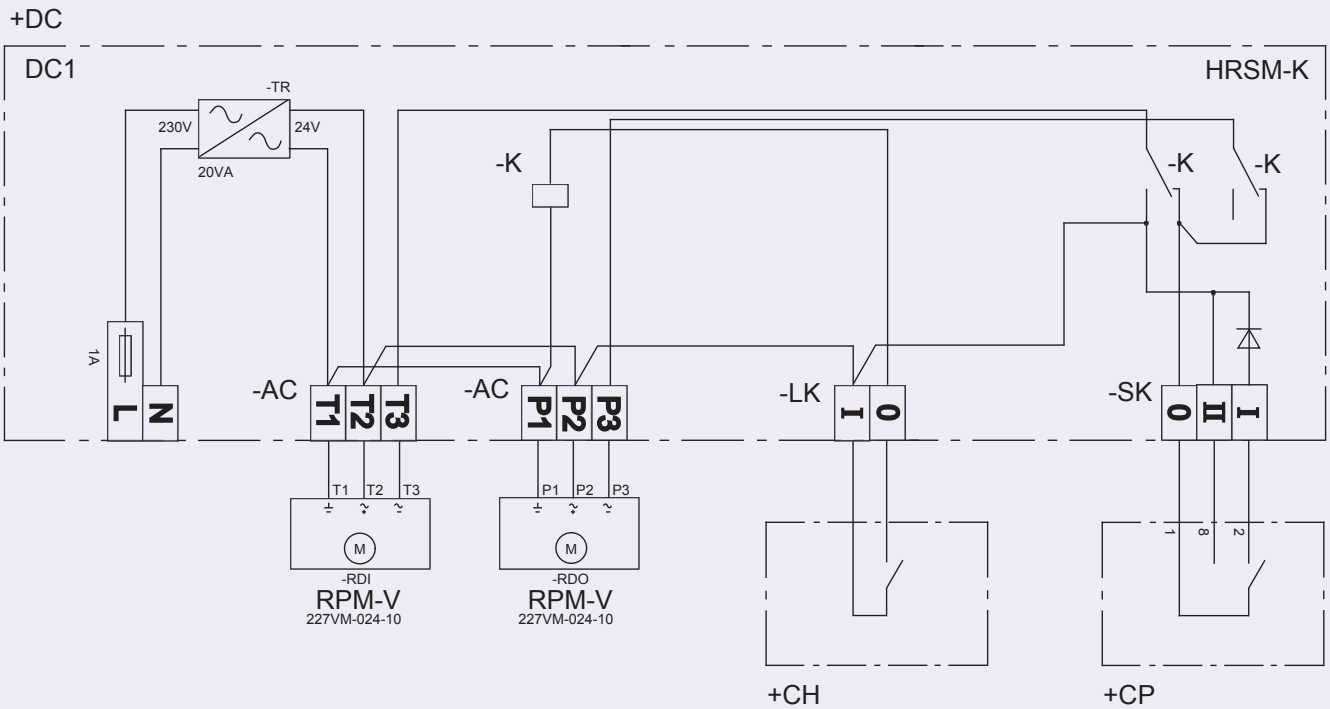
HRSM, HRSM-K, HRSM-V, HRSM-VK

Size	V [m ³ .h ⁻¹]	$\Delta p_{st} = 500 \text{ Pa}$								L _{WA} [dB(A)]
		L _w [dB/Okt]								
		f _m [Hz]								
		63	125	250	500	1000	2000	4000	8000	
80	22	63	53	47	47	50	46	38	26	53
	88	75	65	59	59	62	58	50	38	65
	154	80	70	64	64	67	63	55	43	70
	220	84	74	68	68	71	67	59	47	74
100	35	65	55	49	49	52	48	40	28	55
	140	77	68	64	61	62	58	51	40	66
	245	84	76	72	68	67	63	59	47	72
	350	90	82	78	73	70	66	63	52	76
125	55	67	57	51	51	54	50	42	30	57
	220	79	70	66	63	64	60	53	42	68
	385	84	76	72	68	67	63	59	47	72
	550	90	82	78	73	70	66	63	52	76
140	70	68	58	52	52	55	51	43	31	58
	280	80	71	67	64	65	61	54	43	69
	490	85	77	73	69	68	64	60	48	73
	700	91	83	79	74	71	67	64	53	77
160	90	70	60	54	54	57	53	45	33	60
	360	81	72	68	65	66	62	55	44	70
	630	86	78	74	70	69	65	61	49	74
	900	91	83	79	74	71	67	64	53	77
180	120	71	61	55	55	58	54	46	34	61
	480	81	72	68	65	66	62	55	44	70
	840	86	78	74	70	69	65	61	49	74
	1200	92	84	80	75	72	68	65	54	78
200	140	72	62	56	56	59	55	47	35	62
	560	81	72	68	65	66	62	55	44	70
	980	86	78	74	70	69	65	61	49	74
	1400	92	84	80	75	72	68	65	54	78
225	180	73	63	57	57	60	56	48	36	63
	720	81	72	68	65	66	62	55	44	70
	1260	86	78	74	70	69	65	61	49	74
	1800	91	83	79	74	71	67	64	53	77
250	220	74	64	58	58	61	57	49	37	64
	880	80	71	67	64	65	61	54	43	69
	1540	85	77	73	69	68	64	60	48	73
	2200	91	83	79	74	71	67	64	53	77
280	280	75	65	59	59	62	58	50	38	65
	1120	81	72	68	65	66	62	55	44	70
	1960	86	78	74	70	69	65	61	49	74
	2800	92	84	80	75	72	68	65	54	78
315	350	76	66	60	60	63	59	51	39	66
	1400	84	75	71	68	69	65	58	47	73
	2450	87	79	75	71	70	66	62	50	75
	3500	93	85	81	76	73	69	66	55	79
355	450	78	68	62	62	65	61	53	41	68
	1800	85	76	72	69	70	66	59	48	74
	3150	90	82	78	74	73	69	65	53	78
	4500	94	86	82	77	74	70	67	56	80
400	580	80	70	64	64	67	63	55	43	70
	2320	86	77	73	70	71	67	60	49	75
	4060	90	82	78	74	73	69	65	53	78
	5800	94	86	82	77	74	70	67	56	80
500	2100	82	72	66	66	69	65	57	45	72
	4200	88	79	75	72	73	69	62	51	77
	6300	92	84	80	76	75	71	67	55	80
	8400	96	88	84	79	76	72	69	58	82
630	3300	84	74	68	68	71	67	59	47	74
	6700	90	81	77	74	75	71	64	53	79
	10000	94	86	82	78	77	73	69	57	82
	13300	98	90	86	81	78	74	71	60	84

HRSM

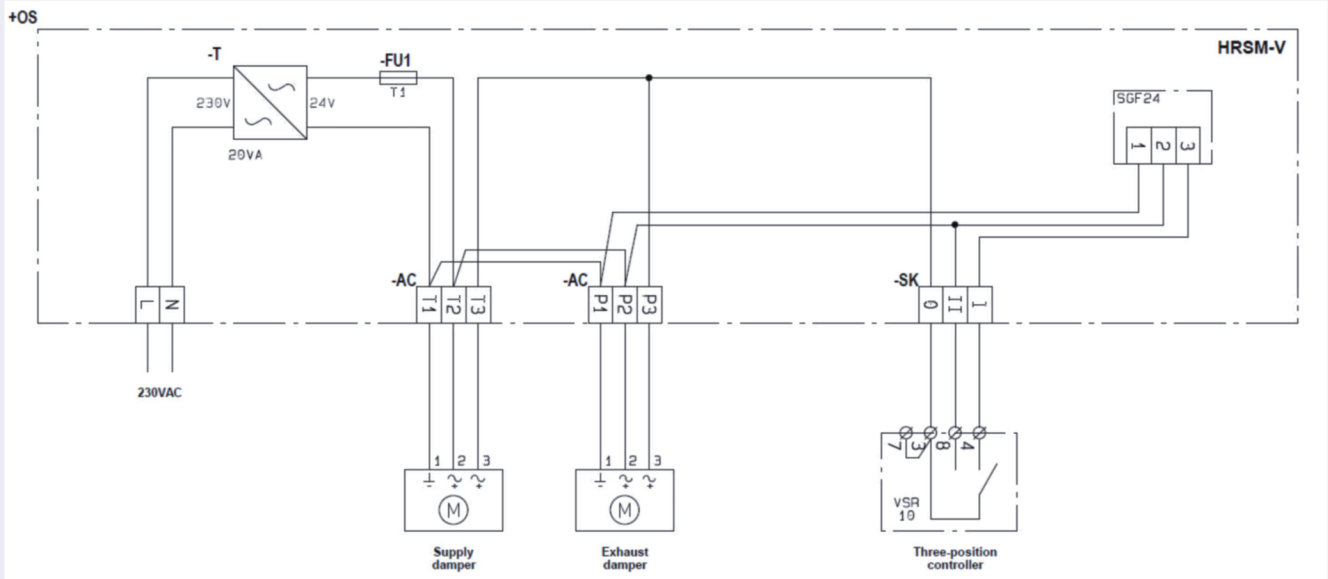


HRSM-K

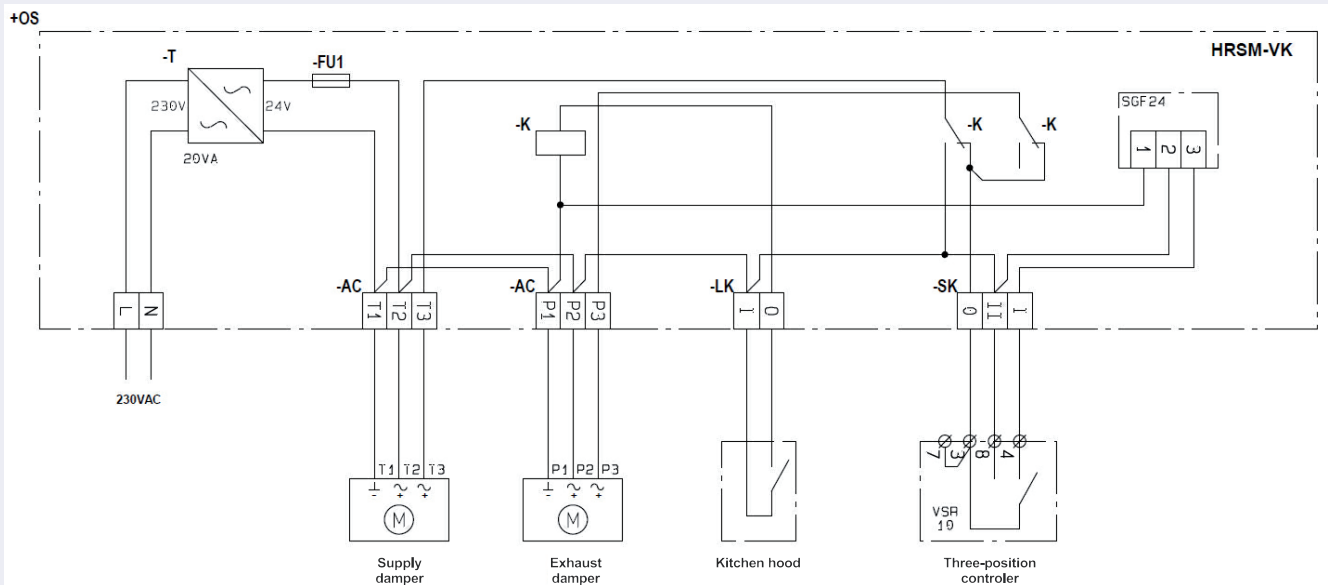


- +CH - Kitchen hood
- +CP - 3-position control panel
- +DC - Connecting box with power supply
- RDI - Supply air damper with drive
- RDO - Exhaust air damper with drive

HRSM-V



HRSM-VK



Material and finishing

The body of the controller and the controller blade are made of galvanized sheet. The blade is furnished with a silicon seal along its periphery.

Controllers are with rubber tightness and glued all the way around.

The controller is delivered without further surface treatment.

Transportation and storage

Controllers are transported by box freight vehicles without direct weather impact, there must not occur any sharp shocks and ambient temperature must not exceed + 40 °C. Controllers must be protected against mechanic damages when transported and manipulated. During transportation, the controller blade must be in the "CLOSED" position.

Dampers are stored indoor in environment without any aggressive vapours, gases or dust. Indoor temperature must be in the range from -5 °C to +40 °C and maximum relative humidity 80 %. Dampers must be protected against mechanic damages when transported and manipulated.

Transportation and storage

