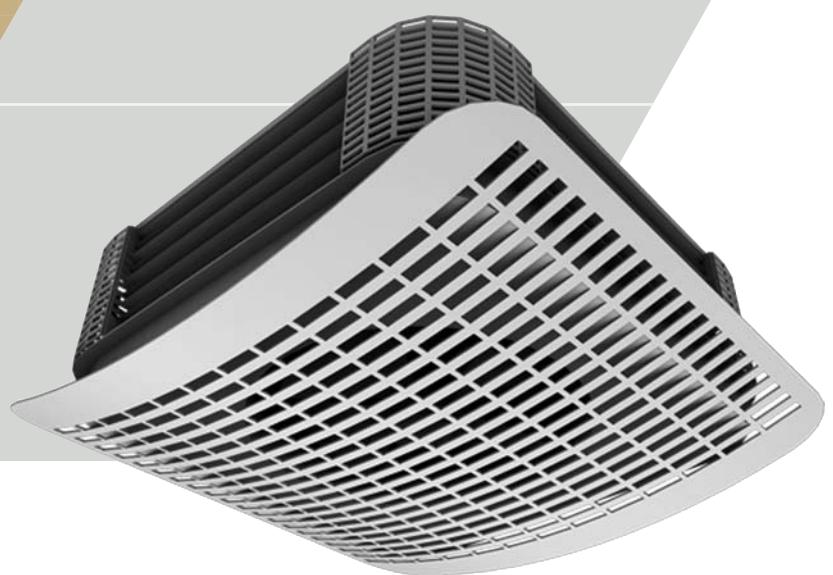


FläktGroup

MULTI FLAIR

TECHNICAL DATA



Unit Overview	3
Performance overview of ceiling mounting	4
Unit parts	5
Components	6
Unit selection	9
Multi Flair 1~ 230 V heating	10
with switch cabinet for the MATRIX control system	10
with terminal box	11
control equipment Multi Flair 1~ 230 V heating	12
Multi Flair 1~ 230 V cooling	14
switch cabinet for MATRIX-control	14
with terminal box	15
control equipment Multi Flair 1~ 230 V cooling	16
Multi Flair 1~ 230 V heating or cooling	18
with switch cabinet for MATRIX control	18
with terminal box	19
control equipment Multi Flair 1~ 230 V heating or cooling	20
Multi Flair 3~ 400 V heating	22
with switch cabinet for MATRIX control	22
with terminal box	23
control equipment Multi Flair 3~ 400 V Heating	24
Multi Flair 3~ 400 V cooling	26
with switch cabinet for MATRIX-control	26
with terminal box	27
control equipment Multi Flair 3~ 400 V cooling	28
Multi Flair 3~ 400 V heating or cooling	30
with switch cabinet for MATRIX control	30
with terminal box	31
control equipment Multi Flair 3~ 400 V heating or cooling	32
Multi Flair 1~ 230 V heating, cooling / heating or cooling	34
with switch cabinet for MATRIX control/with terminal box	34
control equipment Multi Flair 1~ 230 V	36
Pressure drop in heat exchanger	38
Noise and electromotor data	39
Technical data and performance of the condensate pump	40
Dimensions of the basic unit/hydraulic connection	41
Accessories assembly (optional)	42
Accessories valves (optional)	43
MATRIX Control System	44
System description Overview of performance features	44
Facts worth knowing about control panels	46
Global modules	48
Service tools	53
Switch gear	54
Regulation/control system accessories, switchgear	55
Unit type code	57

Copyright note

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Proper use The air-handling units Multi Flair are employed in commercial rooms and serve the heating, cooling, ventilation and filtering of the room/primary air. Filters, mounting brackets, switchgear and controls can be delivered as accessories. Proper use also stipulates the observance of the operation manual as well as adherence to all inspection and maintenance intervals specified by FläktGroup.

Improper use Any use other than that described above is considered improper. The manufacturer/supplier is not liable for any damages arising from improper use. The user alone is liable.

**Notice!**

Should you require further information, please contact our knowledgeable staff, who can assist you with designing units for all application types using our layout software.

Medium types The unit is not designed for medium types that can damage or destroy the surface coating due to corrosive, chemical or abrasive effects. Non-corrosive, non-inflammable liquid media may be exclusively employed as medium.

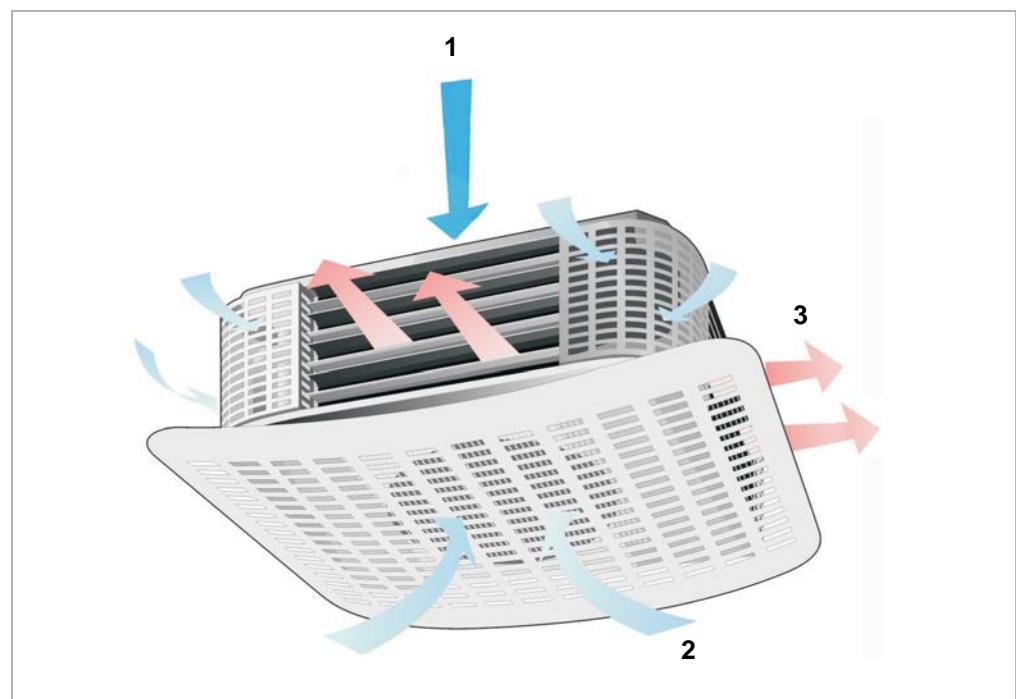


Fig. 1: Exemplary air routing

- 1: Primary air flow
- 2: Secondary air flow
- 3: Supply air flow

Unit description

Performance overview of ceiling mounting

Multi Flair

Model size (max. installation height)	Width	Air flow rate	Primary air flow rate max.	Sound pressure level ¹⁾	Heating capacity Q _H
					Cooling capacity Q _K
	[mm]	[m ³ /h]	[m ³ /h]	[dB(A)]	[kW]
1 (3,0 m)	729	310-1650	610	21-52	1.9-10,9 0.9-4,4
2 (3,5 m)	830	470-2810	900	19-55	3.2-17,7 1.3-8,3
3 (4,0 m)	930	750-4270	1165	20-61	4.7-25,4 2.1-12,1

1) Ambient conditions

2) The performance data apply to the input parameters PWW 70/50 °C, t_{L1} = +20 °C; PKW 6/12 °C, t_{L1} = 27 °C, 46 % r.h (without primary air). With other input parameters, the following correction factors for the estimated determination of the performance data should be applied.

Correction factors ³⁾

Corrective factors fK for cooling capacity QC

Chilled water temp. [°C]	2-pipe system Air intake: t _{L1} [°C]	
	+27 _{Qsen}	+27 _{Qges}
6/10	1,11	1,32
6/12	1,00	1,00

Corrective factors fH for the thermal output QH (circulating air tL1 = 20 °C)

Warm water temperature [°C]	2-pipe system Air intake: t _{L1} [°C]		
	+10	+15	+20
80/60	1,63	1,49	1,34
70/50	1,30	1,15	1,00
55/45	1,09	0,95	0,80

Corrective factors fH for thermal output QH (with primary air 7 °C)

Warm water temperature [°C]	2-pipe system air intake: tL1 [°C]		
	+10	+15	+20
80/60	1,45	1,37	1,29
70/50	1,17	1,08	1,00
55/45	0,98	0,90	0,82

3) All indicated correction factors are arithmetically calculated for different unit configurations and are provided for approximate calculations of performance data using other parameters. Exact data and other parameters can be obtained from our staff.

Selected unit type:

M123.UWCAG.PP5

See page 14

Example speed 3 = 1320 m³/h

Sample for capacity definition

The tables on pages 8 to 31 specify the heating capacity for PWW 70/50 and air intake temperature t_{L1} = +20°C at circulating air or t_{L1}=+10°C at mixed air, as well as the cooling capacities for PCW 6/12°C and air intake condition t_{L1}=+27°C/46% r.h.

Capacity at other operating states can be determined with the corrective factors stated above.

Sample calculation for a Multi Flair for heating or cooling with 2-line system for a thermal output of min. 8.5 CW for PWW 70/50/+15 °C and cooling capacity with PCW 6/10 °C (+27 °C/46%)

Thermal output at PWW 70/50 and t_{L1} = + 15 °C

$$\begin{aligned} Q_H(70/50/+15) &= \text{new heating capacity} \\ f_H(70/50/+15) &= 1.15 \\ Q_H(70/50/+20) &= 8.5 \text{ (s. page 18)} \end{aligned}$$

$$> Q_H(70/50/+15) = f_H(70/50/+15) \cdot Q_H(70/50/+20)$$

$$Q_H(70/50/+15) = 1.15 \cdot 8.5 \text{ kW} = \underline{\underline{9.8 \text{ kW}}}$$

Cooling capacity with PCW 6/10 and t_{L1}= +27°C/46% r.h.

$$\begin{aligned} Q_K(6/10/+27/46%) &= \text{new cooling capacity} \\ f_K(6/10/+27/46%) &= 1.33 \\ Q_K(6/12/+27/46%) &= 3.4 \text{ (s. page 18)} \end{aligned}$$

$$> Q_K(6/10/+27/46%) = f_K(6/10/+27/46%) \cdot Q_K(6/12/+27/46%)$$

$$Q_K(6/10/+27/46%) = 1.33 \cdot 3.4 \text{ kW} = \underline{\underline{4.5 \text{ kW}}}$$

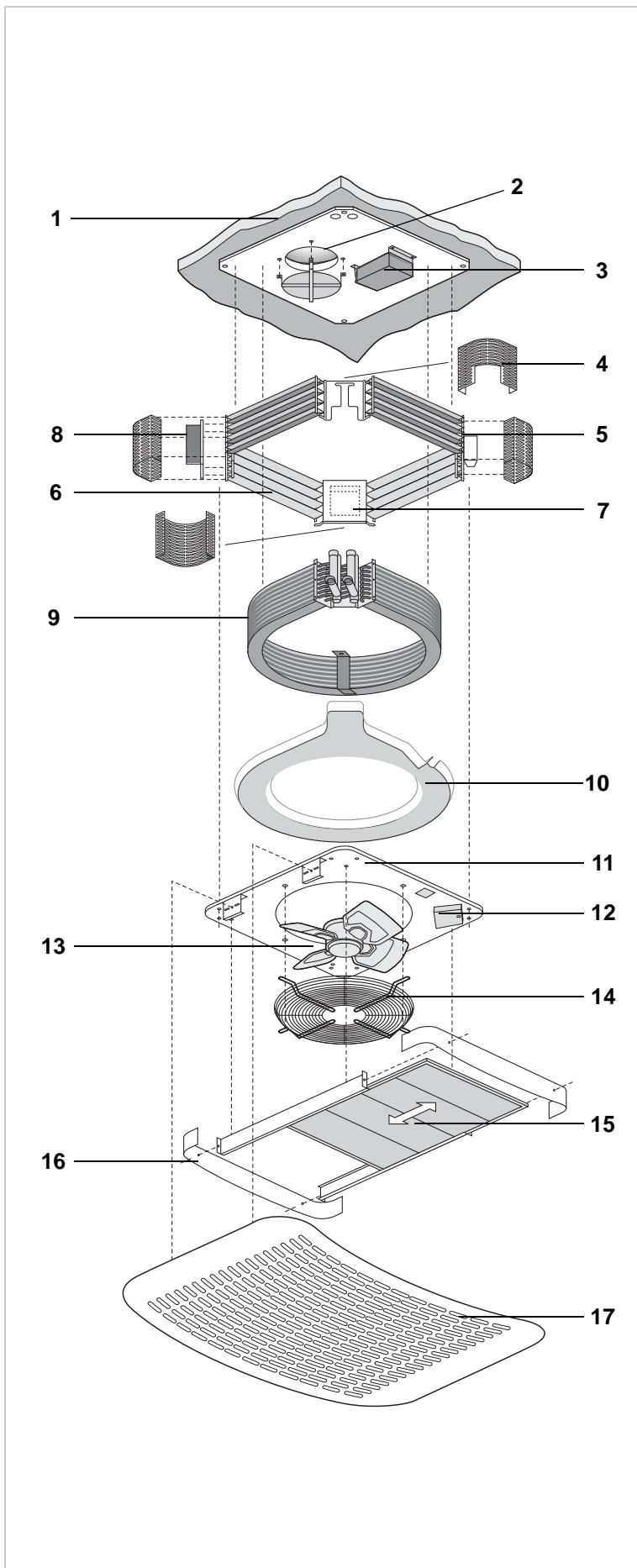


Fig. 2: Unit components (depending on model)

- Pos. 1: *Cover plate*
Cover plate with primary air connection and air impact deflector (optional)
- Pos. 2: *Primary-air connection*
- Pos. 3: *Control*
 - for 230 V with series resistor
 - for 400 V with MATRIX PCB
- Pos. 4: *Corner cover, 4-sided*
The corner covers are mounted on the unit
- Pos. 5: *Condensate pump cooling (accessories)*
The condensate pump drains the condensate that has accumulated in the condensate pan into higher-place upstream drainage pipework.
- Pos. 6: *Secondary-air louvre, 4-sided*
- Pos. 7: *MATRIX PCB*
The unit model 230 V has the controller circuit board built in.
- Pos. 8: *Unit circuit board*
External supply of the 230 V/400 V of the unit takes place here.
- Pos. 9: *Ring-shaped heat exchanger*
The heat exchanger for chilled and warm water has a connection with a R 3/4" internal screw thread and air-vent valves
- Pos. 10: *Condensate pan with drain*
The condensate pan is designed for collecting and routing condensate to the sump pit cover.
- Pos. 11: *Base plate*
Base plate with name plate
- Pos. 12: *Sump pit cover*
Condensate is collected in the sump pit cover in the condensate pan (only with cooling units)
- Pos. 13: *Fan unit with external-rotor motor*
The fan consists of an external-rotor motor with metal blades or blades made of composite material (for the EC fan). The motor has a motor contactor with an integrated thermal contact or a fault output on the EC fan.
- Pos. 14: *Contact protection grille*
- Pos. 15: *Filter cassette with two mounting tracks (only with unit model M1)*
The guide rail is divided within the sump pit
- Pos. 16: *Cover for filter (only with unit version M1)*
- Pos. 17: *Design panel (only with unit model M1)*

Unit description

Components

Multi Flair

Comfort units with design panel



Recirculating-air units
Heating/cooling/Filters
2-pipe system
Ceiling mounting
with design panel
(Electric equipment according to function and requirement)

Fig. 3

Industrial appliances without design panel



Recirculating-air units
Heating/cooling
2-pipe system
Ceiling mounting
Without design cover panel
(Electric equipment according to function and requirement)

Fig. 4

Valves

Valves loose



Valve equipment
2-/3-path valves with drives for
2-point, 230/24 V~ 50/60 Hz
3-point, 230/24 V~ 50/60 Hz
Continuously 24 V~, control
signal. 0-10 V

Fig. 5

Electric equipment



Electric equipment
Sheet steel electrical control box
(As required, execution and
function of the device)

Fig. 6



Fig. 7



Fig. 8

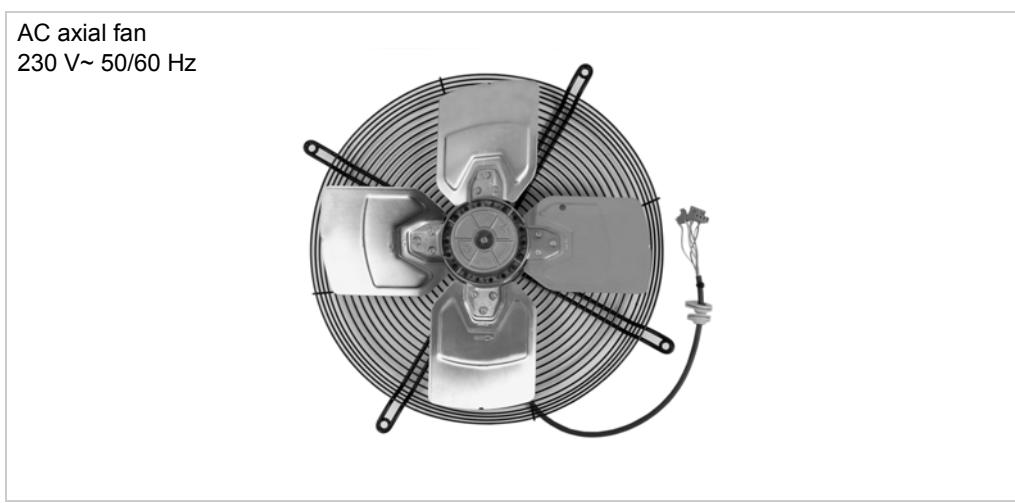


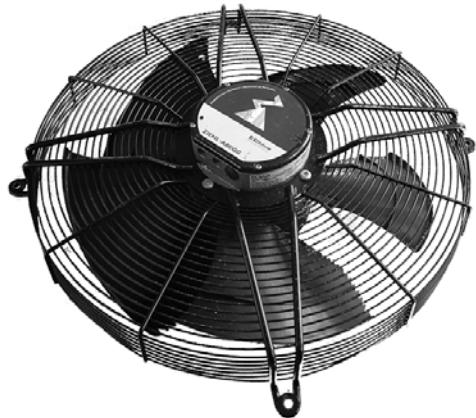
Fig. 9

Unit description

Components

Multi Flair

EC axial fan
230 V~ 50/60 Hz



EC axial fan

With external rotor motor, sickle-blade made of compound material, balanced at the factory, maintenance-free with moisture-proof motor, Continuous Protection class IP 54 Thermal class F

Fig. 10

Condensate pump unit with pan



For collecting the entire condensate from the heat exchanger for a non-pressurized condensate discharge

(Technical data, see Page 40)

Fig. 11

230 V-AC unit	Heating		2-pipe warm water (PWW)	Page 10 - Page 13
	Cooling		2-pipe chilled water (PKW)	Page 14 - Page 17
	Heating or cooling		2-pipe chilled or warm water (PCW/PWW)	Page 18 - Page 21
400 V-AC unit	Heating		2-pipe warm water (PWW)	Page 22 - Page 25
	Cooling		2-pipe chilled water (PKW)	Page 26 - Page 29
	Heating or cooling		2-pipe chilled or warm water (PCW/PWW)	Page 30 - Page 33
230 V-EC unit	Heating		2-pipe warm water (PWW)	Page 34 - Page 37
	Cooling		2-pipe chilled water (PKW)	Page 35 - Page 37
	Heating or cooling		2-pipe chilled or warm water (PCW/PWW)	Page 35 - Page 37

At fan standstill, cooling units with the WT medium must be shut off by a valve.

		Technical data, dimensions and accessory descriptions	Page 38 - Page 41
		Valves	Page 43
		Control system MATRIX/control unit	Page 44 - Page 56

Multi Flair 1~ 230 V heating

with switch box for MATRIX control system
2-pipe warm water, model sizes 1 to 3, AC fan motor

PWW 70/50 °C
 $t_{L1} = +20^\circ\text{C}$

Multi Flair

Speeds	without filter						with filter						Sound power	Sound pressure	Model size	Capacity stage
	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2}^\circ\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2}^\circ\text{C}$	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2}^\circ\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2}^\circ\text{C}$	dB(A)	dB(A)				
I	870	—	—	3.2	31	670	—	—	2.9	33	50	36				
II	1230	—	—	3.8	29	930	—	—	3.3	31	59	45			1	1
III	1520	—	—	4.2	28	1210	—	—	3.8	29	64	50				
I	870	—	—	5.0	37	670	—	—	4.3	39	50	36				
II	1230	—	—	5.9	34	930	—	—	5.2	36	59	45			1	2
III	1520	—	—	6.5	33	1210	—	—	5.8	34	64	50				
I	820	—	—	5.2	39	650	—	—	4.4	40	50	36				
II	1160	—	—	6.4	36	900	—	—	5.5	38	59	45			1	3
III	1450	—	—	7.3	35	1180	—	—	6.5	36	64	50				
I	820	—	—	7.2	46	650	—	—	6.0	47	50	36				
II	1160	—	—	9.1	43	900	—	—	7.6	45	59	45			1	4
III	1450	—	—	10.4	41	1180	—	—	9.2	43	64	50				
I	940	—	—	4.3	34	710	—	—	3.8	36	45	31				
II	1220	—	—	4.8	32	930	—	—	4.3	34	50	36			2	1
III	1850	—	—	5.8	29	1360	—	—	5.1	31	59	45				
I	940	—	—	6.4	40	710	—	—	5.5	43	45	31				
II	1220	—	—	7.3	38	930	—	—	6.3	40	50	36			2	2
III	1850	—	—	8.8	34	1360	—	—	7.7	37	59	45				
I	890	—	—	6.7	43	690	—	—	5.7	45	45	31				
II	1160	—	—	7.9	40	910	—	—	6.8	42	50	36			2	3
III	1740	—	—	9.8	37	1320	—	—	8.5	39	59	45				
I	890	—	—	8.7	49	690	—	—	7.2	51	45	31				
II	1160	—	—	10.5	45	910	—	—	8.8	49	50	36			2	4
III	1740	—	—	13.7	43	1320	—	—	11.4	46	59	45				
I	1790	—	—	6.8	31	1490	—	—	6.2	32	66	51				
II	2230	—	—	7.4	30	1880	—	—	6.9	31	68	54			3	1
III	3070	—	—	8.6	28	2560	—	—	7.9	29	70	56				
I	1790	—	—	10.1	37	1490	—	—	9.3	38	66	51				
II	2230	—	—	11.3	35	1880	—	—	10.4	36	68	54			3	2
III	3070	—	—	13.0	32	2560	—	—	12.0	34	70	56				
I	1700	—	—	11.1	39	1440	—	—	10.2	41	66	51				
II	2130	—	—	12.5	37	1820	—	—	11.6	39	68	54			3	3
III	2920	—	—	14.9	35	2480	—	—	13.6	36	70	56				
I	1700	—	—	15.0	46	1440	—	—	13.4	48	66	51				
II	2130	—	—	17.5	44	1820	—	—	15.6	45	68	54			3	4
III	2920	—	—	21.1	41	2480	—	—	19.1	43	70	56				

without filter
with filter

Pipe connection on top

E

G

Pipe connection on the side

F

H

with design panel

1

without design panel (only without filter)

2

Casing is galvanized steel
(not for units with design panel)

4

Casing white RAL 9010

5

Casing RAL your choice

9

Fan switched off
Order code

M . **U** 0 W A . **P** 0

Speeds	without filter						with filter						Model size	Capacity stage	Fan wired for 1-speed capacity see fan level V 5-speed with control unit 985.450											
	Air volume current	Cooling capacity Q _K kW	Discharge temperature t _{L2} °C	Heating capacity Q _H kW	Discharge temperature t _{L2} °C	Air volume current	Cooling capacity Q _K kW	Discharge temperature t _{L2} °C	Heating capacity Q _H kW	Discharge temperature t _{L2} °C	Sound power dB(A)	Sound pressure dB(A)			Control accessories, see from page 54											
I	390	-	-	2.1	36	320	-	-	1.9	38	34	21			1											
II	870	-	-	3.2	31	670	-	-	2.9	33	50	36			1											
III	1230	-	-	3.8	29	930	-	-	3.3	31	59	45			1											
IV	1520	-	-	4.2	28	1210	-	-	3.8	29	64	50			1											
V	1650	-	-	4.4	28	1330	-	-	4.0	29	66	52			1											
I	390	-	-	3.1	44	320	-	-	2.8	46	34	21			1											
II	870	-	-	5.0	37	670	-	-	4.3	39	50	36			1											
III	1230	-	-	5.9	34	930	-	-	5.2	36	59	45			1											
IV	1520	-	-	6.5	33	1210	-	-	5.8	34	64	50			1											
V	1650	-	-	6.7	32	1330	-	-	6.1	34	66	52			1											
I	370	-	-	3.2	46	310	-	-	2.9	48	34	21			1											
II	820	-	-	5.2	39	650	-	-	4.4	40	50	36			1											
III	1160	-	-	6.4	36	900	-	-	5.5	38	59	45			1											
IV	1450	-	-	7.3	35	1180	-	-	6.5	36	64	50			1											
V	1570	-	-	7.6	35	1290	-	-	6.8	36	66	52			1											
I	370	-	-	3.8	50	310	-	-	3.3	52	34	21			1											
II	820	-	-	7.2	46	650	-	-	6.0	47	50	36			1											
III	1160	-	-	9.1	43	900	-	-	7.6	45	59	45			1											
IV	1450	-	-	10.4	41	1180	-	-	9.2	43	64	50			1											
V	1570	-	-	10.9	41	1290	-	-	9.7	43	66	52			1											
I	620	-	-	3.6	37	490	-	-	3.2	39	32	19			2											
II	940	-	-	4.3	34	710	-	-	3.8	36	45	31			2											
III	1220	-	-	4.8	32	930	-	-	4.3	34	50	36			2											
IV	1850	-	-	5.8	29	1360	-	-	5.1	31	59	45			2											
V	2660	-	-	6.1	29	2090	-	-	6.1	29	68	54			2											
I	620	-	-	5.1	45	490	-	-	4.4	47	32	19			2											
II	940	-	-	6.4	40	710	-	-	5.5	43	45	31			2											
III	1220	-	-	7.3	38	930	-	-	6.3	40	50	36			2											
IV	1850	-	-	8.8	34	1360	-	-	7.7	37	59	45			2											
V	2660	-	-	9.4	34	2090	-	-	9.4	34	68	54			2											
I	590	-	-	5.1	46	470	-	-	4.3	47	32	19			2											
II	890	-	-	6.7	43	690	-	-	5.7	45	45	31			2											
III	1160	-	-	7.9	40	910	-	-	6.8	42	50	36			2											
IV	1740	-	-	9.8	37	1320	-	-	8.5	39	59	45			2											
V	2540	-	-	10.7	36	2030	-	-	10.7	36	68	54			2											
I	590	-	-	6.4	52	470	-	-	5.3	54	32	19			2											
II	890	-	-	8.7	49	690	-	-	7.2	51	45	31			2											
III	1160	-	-	10.5	45	910	-	-	8.8	49	50	36			2											
IV	1740	-	-	13.7	43	1320	-	-	11.4	46	59	45			2											
V	2540	-	-	17.2	41	2030	-	-	15.1	43	68	54			2											
I	920	-	-	5.0	36	770	-	-	4.7	38	43	31			3											
II	1790	-	-	6.8	31	1490	-	-	6.2	32	66	51			3											
III	2230	-	-	7.4	30	1880	-	-	6.9	31	68	54			3											
IV	3070	-	-	8.6	28	2560	-	-	7.9	29	70	56			3											
V	4270	-	-	9.9	27	3560	-	-	9.1	28	76	62			3											
I	920	-	-	7.2	43	770	-	-	6.5	50	43	31			3											
II	1790	-	-	10.1	37	1490	-	-	9.3	38	66	51			3											
III	2230	-	-	11.3	35	1880	-	-	10.4	36	68	54			3											
IV	3070	-	-	13.0	32	2560	-	-	12.0	34	70	56			3											
V	4270	-	-	15.1	31	3560	-	-	14.0	32	76	62			3											
I	880	-	-	7.5	46	750	-	-	6.7	47	43	31			3											
II	1700	-	-	11.1	39	1440	-	-	10.2	41	66	51			3											
III	2130	-	-	12.5	37	1820	-	-	11.6	39	68	54			3											
IV	2920	-	-	14.9	35	2480	-	-	13.6	36	70	56			3											
V	4060	-	-	17.7	33	3450	-	-	16.2	34	76	62			3											
I	880	-	-	9.6	53	750	-	-	8.4	53	43	31			3											
II	1700	-	-	15.0	46	1440	-	-	13.4	48	66	51			3											
III	2130	-	-	17.5	44	1820	-	-	15.6	45	68	54			3											
IV	2920	-	-	21.1	41	2480	-	-	19.1	43	70	56			3											
V	4060	-	-	25.4	39	3450	-	-	23.1	40	76	62			3											
<table border="1"> <tr><td>with design panel</td><td>1</td></tr> <tr><td>without design panel (only without filter)</td><td>2</td></tr> </table> <table border="1"> <tr><td>Casing is galvanized steel (not for units with design panel)</td><td>4</td></tr> <tr><td>Casing white RAL 9010</td><td>5</td></tr> <tr><td>Casing RAL your choice</td><td>9</td></tr> </table>																	with design panel	1	without design panel (only without filter)	2	Casing is galvanized steel (not for units with design panel)	4	Casing white RAL 9010	5	Casing RAL your choice	9
with design panel	1																									
without design panel (only without filter)	2																									
Casing is galvanized steel (not for units with design panel)	4																									
Casing white RAL 9010	5																									
Casing RAL your choice	9																									
<p>Fan switched off</p> <p>Order code</p>																										

Control equipment

Multi Flair 1~ 230 V heating

2-pipe warm water, model sizes 1 to 3

Multi Flair

MATRIX 2000

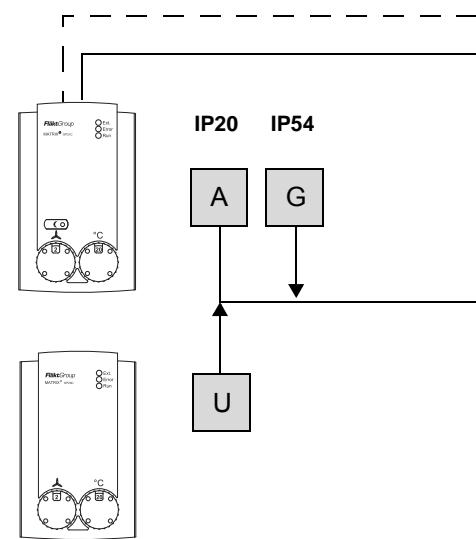
System features:

- Temperature assignment.: 7...40 °C (default 10..30 °C)
- Assignment of fan speed
- Adjustable regulating range
- Switchover between normal/economy mode on control panel
- Room temperature measurement using control panel
- External room sensor can be connected
- Valve control (2 or 3 point)
- Temperature control via fan and/or valve
- Room frost protection
- Status messages using LED
- Group control
- Group switch-off switch-off in case of fault
- Temperature monitoring of the motors (thermal contact required)
- Network-enabled

MATRIX OP21#

Control panel for MATRIX 2000

- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Setpoint temperature setting
- Speed-stage selection switch 0 - auto - 1-2-3
- Economy mode button
- LEDs for operation/fault/ext.control
- Integrated room sensor (only OP21C)



MATRIX 3000

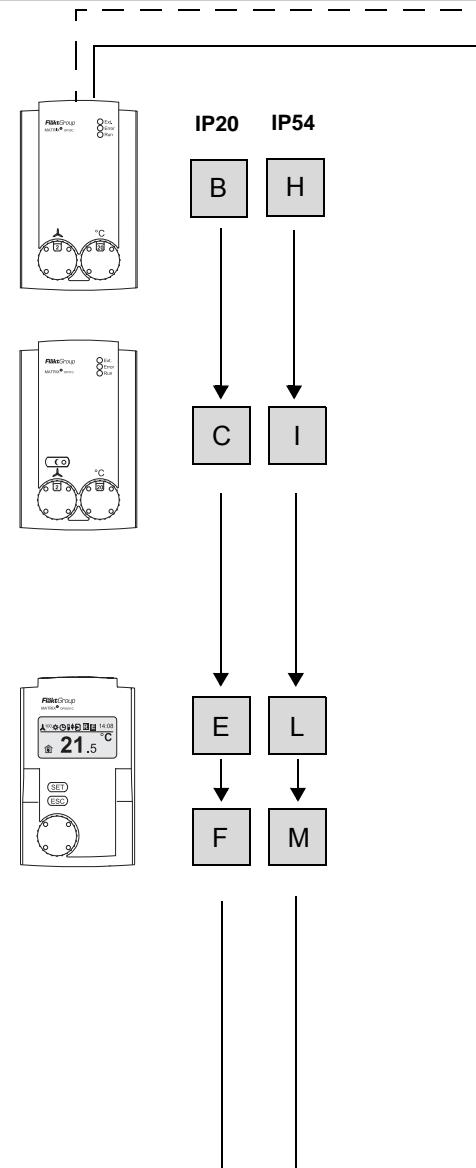
System features:

- Temperature assignment.: 7...40 °C (default 10..30 °C)
- Assignment of fan speed
- Adjustable regulating range
- Switchover between normal/economy mode on control panel
- Input for switchover between normal/economy mode or unit OFF with frost protection
- Room temperature measurement using control panel
- External room sensor can be connected
- Valve control (2 or 3 point)
- Temperature control via fan and/or valve
- Room frost protection
- Status messages using LED
- Status and alarm signal via volt free change-over contacts
- Stand-alone unit and group control
- Isolation of individual units in case of fault
- Temperature monitoring of the motors (thermal contact required)
- Network-enabled

MATRIX OP30#

Control panel for MATRIX 3000

- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Setpoint temperature setting
- Speed-stage selection switch 0 - auto - 1-2-3
- LEDs for operation/fault/ext.control
- integrated room sensor (only OP30C)



MATRIX OP51#

like control panel OP30#, however in addition:
- Normal/economy mode buttons

MATRIX OP50#

Control panel for MATRIX 3000

- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Menu-guided controls using rotation navigator
- LCD display with plain-text display
- Status messages using pictograms
- Integrated room sensor (only OP50C)

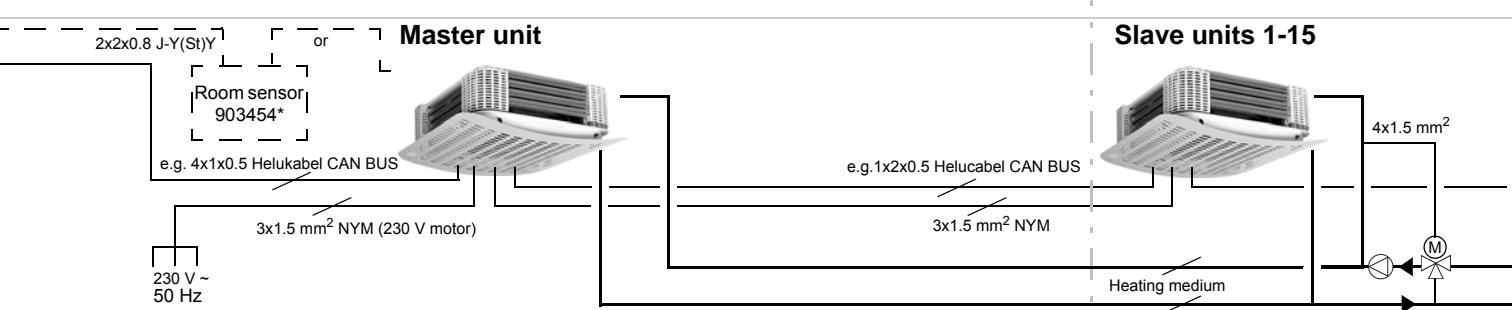
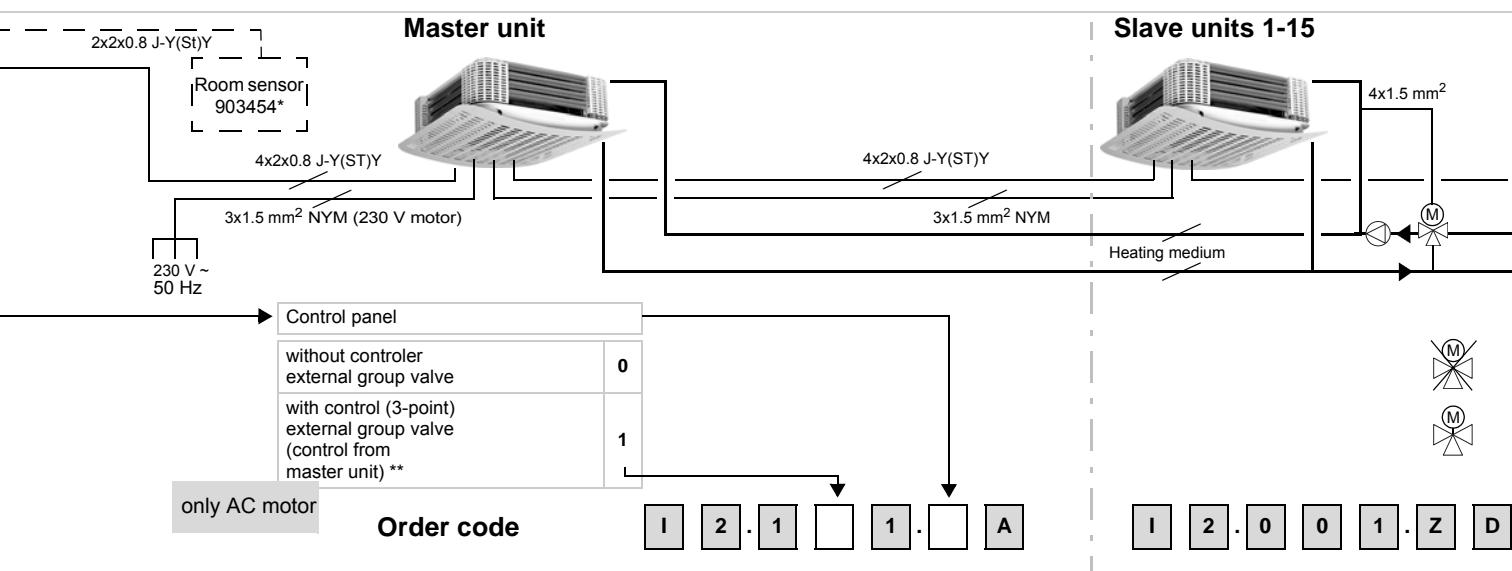
MATRIX OP51#

like control panel OP50#, however in addition:
- Integrated weekly clock timer with holiday and special days program

The place holder "#" stands for the available protection class IP20 und IP54.

IP20 -> # = C

IP54 -> # = I



Stand-alone unit control With operating and fault signal	Group regulation with status and alarm signal	Control system (3-point) external group valve (control from master unit) **	Input unit OFF with room frost protection	Input	economy contact		
•			•		0 7		
•				•	0 2		
•			•		0 7		
•				•	0 2		

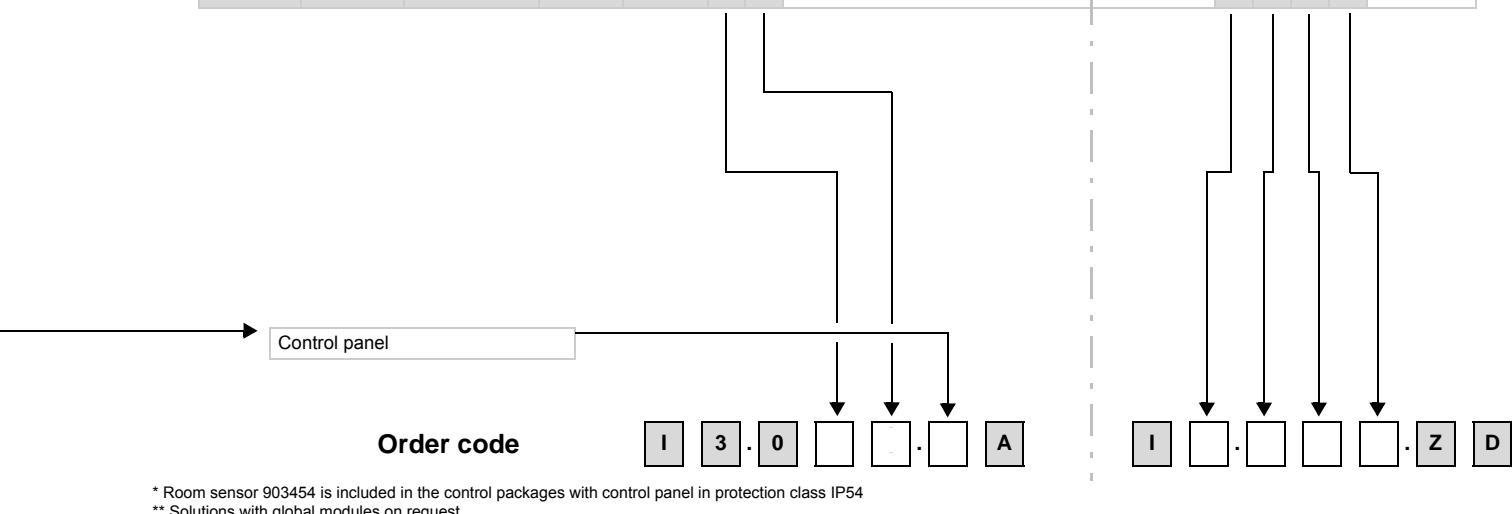
only AC motor

2	0	0	1				
2	0	0	1				
3	0	0	7				
3	0	0	2				

	•	•	•	1	1		
	•	•	•		1	2	
•		•	•		1	1	
•		•	•	•	1	2	

only AC motor

2	0	0	1				
2	0	0	1				
3	0	0	7				
3	0	0	2				



* Room sensor 903454 is included in the control packages with control panel in protection class IP54

** Solutions with global modules on request

**Multi Flair 1~ 230 V cooling
with switch cabinet for MATRIX control system**
2-pipe chilled water, model size 1 to 3, AC-fan motor

PCW 6/12 °C
 $t_{L1} = +27^\circ\text{C}$
 $\varphi_1 = 46\% \text{ r.H}$

Multi Flair

Speeds	without filter						with filter						Model size	Capacity stage
	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2}^\circ\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2}^\circ\text{C}$	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2}^\circ\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2}^\circ\text{C}$	Sound power dB(A)	Sound pressure dB(A)		
I	870	1.2	23	—	—	670	1.1	22	—	—	50	36		
II	1230	1.4	24	—	—	930	1.3	23	—	—	59	45	1	1
III	1520	1.5	24	—	—	1210	1.4	24	—	—	64	50		
I	870	1.8	21	—	—	670	1.5	20	—	—	50	36		
II	1230	2.3	22	—	—	930	1.9	21	—	—	59	45	1	2
III	1520	2.6	22	—	—	1210	2.2	20	—	—	64	50		
I	820	2.2	20	—	—	650	2.0	18	—	—	50	36		
II	1160	2.5	21	—	—	900	2.3	20	—	—	59	45	1	3
III	1450	2.7	22	—	—	1180	2.5	21	—	—	64	50		
I	820	2.8	18	—	—	650	2.5	16	—	—	50	36		
II	1160	3.1	19	—	—	900	2.9	18	—	—	59	45	1	4
III	1450	4.1	19	—	—	1180	3.1	19	—	—	64	50		
I	940	1.5	22	—	—	710	1.4	21	—	—	46	32		
II	1220	2.0	22	—	—	930	1.5	22	—	—	50	36	2	1
III	1850	2.5	23	—	—	1360	2.1	23	—	—	60	46		
I	940	2.9	19	—	—	710	2.5	18	—	—	46	32		
II	1220	3.3	20	—	—	930	2.9	19	—	—	50	36	2	2
III	1850	4.0	21	—	—	1360	3.5	20	—	—	60	46		
I	890	2.7	19	—	—	690	2.5	17	—	—	46	32		
II	1160	3.0	20	—	—	910	2.7	19	—	—	50	36	2	3
III	1740	4.2	20	—	—	1320	3.4	20	—	—	60	46		
I	890	4.1	15	—	—	690	3.0	15	—	—	46	32		
II	1160	5.1	16	—	—	910	4.3	15	—	—	50	36	2	4
III	1740	6.5	17	—	—	1320	5.5	16	—	—	60	46		
I	1790	3.1	22	—	—	1490	2.9	22	—	—	56	42		
II	2230	3.4	23	—	—	1880	3.2	23	—	—	61	47	3	1
III	3070	3.9	24	—	—	2560	3.6	23	—	—	66	52		
I	1790	4.9	20	—	—	1490	4.5	19	—	—	56	42		
II	2230	5.3	21	—	—	1880	4.9	20	—	—	61	47	3	2
III	3070	6.0	22	—	—	2560	5.6	21	—	—	66	52		
I	1700	5.3	19	—	—	1440	4.8	19	—	—	56	42		
II	2130	6.0	20	—	—	1820	5.5	19	—	—	61	47	3	3
III	2920	7.0	21	—	—	2480	6.5	20	—	—	66	52		
I	1700	7.7	16	—	—	1440	7.0	15	—	—	56	42		
II	2130	8.7	17	—	—	1820	8.0	16	—	—	61	47	3	4
III	2920	10.3	18	—	—	2480	9.4	17	—	—	66	52		

without filter
with filter

Pipe connection above

E

G

Pipe connection to the side

F

H

with design panel

1

without design panel (only without filter)

2

with condensate drain

A

with condensate pump

P

Casing is galvanized steel
(not for units with design panel)

4

Casing white RAL 9010

5

Casing RAL your choice

9

* Fan switched off
Order code
M
□
□
□
.
U
W
0
A
□
P
□
□

Speeds	without filter						with filter						Model size	Capacity stage	Fan wired for 1-speed capacity see fan level V 5-levels are achieved with control unit 985.450	
	Air volume flow m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2} \text{ }^{\circ}\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2} \text{ }^{\circ}\text{C}$	Air volume flow m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2} \text{ }^{\circ}\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2} \text{ }^{\circ}\text{C}$	Sound power dB(A)	Sound pressure dB(A)				
I	390	1.0	20	—	—	320	0.9	19	—	—	34	21				
II	870	1.2	23	—	—	670	1.1	22	—	—	50	36				
III	1230	1.4	24	—	—	930	1.3	23	—	—	59	45	1	1		
IV	1520	1.5	24	—	—	1210	1.4	24	—	—	64	50				
V	1650	1.5	24	—	—	1330	1.4	24	—	—	66	52				
I	390	1.2	18	—	—	320	1.2	17	—	—	34	21				
II	870	1.8	21	—	—	670	1.5	20	—	—	50	36	1	2		
III	1230	2.3	22	—	—	930	1.9	21	—	—	59	45				
IV	1520	2.6	22	—	—	1210	2.2	21	—	—	64	50				
V	1650	2.7	22	—	—	1330	2.4	22	—	—	66	52				
I	370	1.6	16	—	—	310	1.5	15	—	—	34	21				
II	820	2.2	19	—	—	650	2.0	18	—	—	50	36	1	3		
III	1160	2.5	21	—	—	900	2.3	20	—	—	59	45				
IV	1450	2.7	22	—	—	1180	2.5	21	—	—	64	50				
V	1570	2.8	22	—	—	1290	2.6	21	—	—	66	52				
I	370	2.0	14	—	—	310	1.8	13	—	—	34	21				
II	820	2.8	17	—	—	650	2.5	16	—	—	50	36	1	4		
III	1160	3.1	19	—	—	900	2.9	18	—	—	59	45				
IV	1450	4.1	19	—	—	1180	3.1	19	—	—	64	50				
V	1570	4.4	19	—	—	1290	3.7	19	—	—	66	52				
I	620	1.4	21	—	—	490	1.3	20	—	—	32	19				
II	940	1.5	22	—	—	710	1.4	21	—	—	45	31	2	1		
III	1220	2.0	22	—	—	930	1.5	22	—	—	50	36				
IV	1850	2.5	23	—	—	1360	2.1	23	—	—	59	45				
V	2660	2.9	24	—	—	2090	2.6	23	—	—	68	54				
I	620	2.3	17	—	—	490	2.0	17	—	—	32	19				
II	940	2.9	19	—	—	710	2.5	18	—	—	45	31	2	2		
III	1220	3.3	20	—	—	930	2.9	19	—	—	50	36				
IV	1850	4.0	21	—	—	1360	3.5	20	—	—	59	45				
V	2660	4.6	22	—	—	2090	4.2	21	—	—	68	54				
I	590	2.4	17	—	—	470	2.2	16	—	—	32	19				
II	890	2.7	19	—	—	690	2.5	17	—	—	45	31	2	3		
III	1160	3.0	20	—	—	910	2.7	19	—	—	50	36				
IV	1740	4.2	20	—	—	1320	3.4	20	—	—	59	45				
V	2540	5.3	21	—	—	2030	4.6	21	—	—	68	54				
I	590	2.8	15	—	—	470	2.5	14	—	—	32	19				
II	890	4.1	15	—	—	690	3.0	15	—	—	45	31	2	4		
III	1160	5.1	16	—	—	910	4.3	15	—	—	50	36				
IV	1740	6.5	17	—	—	1320	5.5	16	—	—	59	45				
V	2540	8.0	19	—	—	2030	7.1	18	—	—	68	54				
I	920	2.3	21	—	—	770	2.1	20	—	—	43	31				
II	1790	3.1	22	—	—	1490	2.9	22	—	—	66	51	3	1		
III	2230	3.4	23	—	—	1880	3.2	23	—	—	68	54				
IV	3070	3.9	24	—	—	2560	3.6	23	—	—	70	56				
V	4270	4.5	24	—	—	3560	4.2	24	—	—	76	62				
I	920	3.6	17	—	—	770	3.3	27	—	—	43	31				
II	1790	4.9	20	—	—	1490	4.5	19	—	—	66	51	3	2		
III	2230	5.3	21	—	—	1880	4.9	20	—	—	68	54				
IV	3070	6.0	22	—	—	2560	5.6	21	—	—	70	56				
V	4270	6.9	23	—	—	3560	6.4	22	—	—	76	62				
I	880	3.5	17	—	—	750	2.9	17	—	—	43	31				
II	1700	5.3	19	—	—	1440	4.8	19	—	—	66	51	3	3		
III	2130	6.0	20	—	—	1820	5.5	19	—	—	68	54				
IV	2920	7.0	21	—	—	2480	6.5	20	—	—	70	56				
V	4060	8.2	22	—	—	3450	7.6	21	—	—	76	62				
I	880	5.0	14	—	—	750	4.5	13	—	—	43	31				
II	1700	7.7	16	—	—	1440	7.0	15	—	—	66	51	3	4		
III	2130	8.7	17	—	—	1820	8.0	16	—	—	68	54				
IV	2920	10.3	18	—	—	2480	9.4	17	—	—	70	56				
V	4060	12.1	19	—	—	3450	11.2	19	—	—	76	62				

without filter
with filter

Pipe connection above
E G
F H
with condensate drain
A

Pipe connection to the side

with condensate pump
P

with design panel
1
2

Casing is galvanized steel
(not for units with design panel)
4

Casing white RAL 9010
5

Casing RAL your choice
9

* Fan switched off

Order code

M
□
□
□
.
U
W
0
A
□
.
F
□
□

Control equipment

Multi Flair 1~ 230 V cooling

2-pipe system chilled water, model sizes 1 to 3

Multi Flair

DencoHappel MATRIX 2000

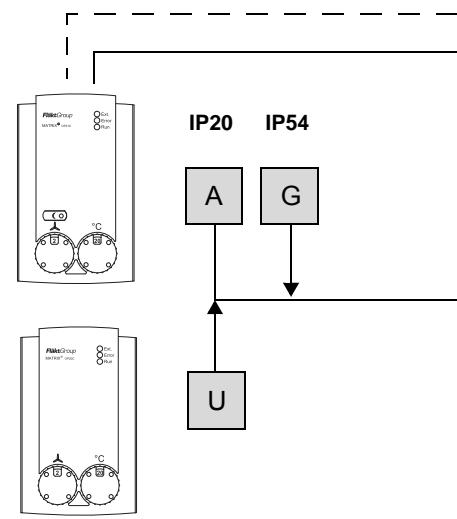
System features:

- Temperature assignment.: 7...40 °C (default 10..30 °C)
- Assignment of fan speed
- Adjustable regulating range
- Switchover between normal/economy mode on control panel
- Room temperature measurement using control panel
- External room sensor can be connected
- Valve control (2 or 3 point)
- Temperature control via fan and/or valve
- Room frost protection
- Status messages using LED
- Group control
- Group switch-off in case of fault
- Temperature monitoring of the motors (thermal contact required)
- Network-enabled

MATRIX OP21#

Control panel for MATRIX 2000

- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Setpoint temperature setting
- Speed-stage selection switch 0 - auto - 1-2-3
- Economy mode button
- LEDs for operation/fault/ext.control
- Integrated room sensor (only OP21C)



MATRIX OP20C

Control panel for MATRIX 2000

- like OP21# however without key economy mode
- Control panel MATRIX OP20I in protection type IP54 can be used with limitations.
Please enquire.

DencoHappel MATRIX 3000

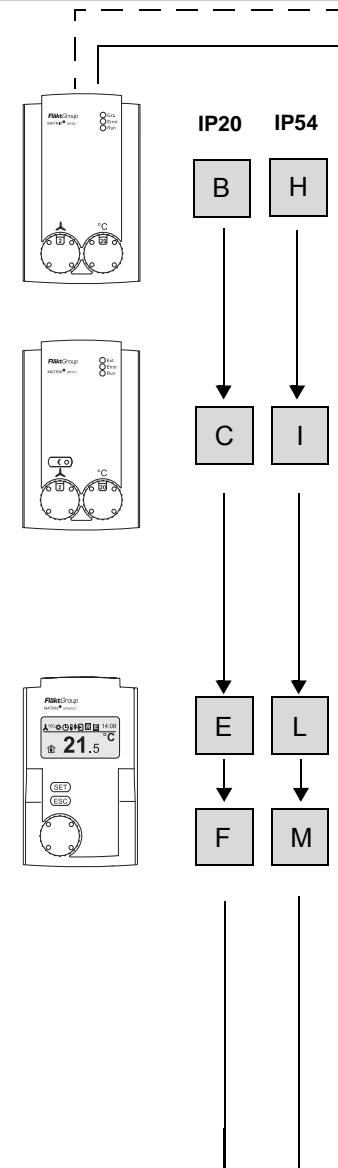
System features:

- Temperature assignment.: 7...40 °C (default 10..30 °C)
- Assignment of fan speed
- Adjustable regulating range
- Switchover between normal/economy mode on control panel
- Input for switchover between normal/economy mode or unit OFF with frost protection
- Room temperature measurement using control panel
- External room sensor can be connected
- Valve control (2 or 3 point)
- Temperature control via fan and/or valve
- Room frost protection
- Status messages using LED
- Status and alarm signal via volt free change-over contacts
- Unit individual and group control
- Isolation of individual units in case of fault
- Temperature monitoring of the motors (thermal contact required)
- Network-enabled

MATRIX OP30#

Control panel for MATRIX 3000

- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Setpoint temperature setting
- Speed-stage selection switch 0 - auto - 1-2-3
- LEDs for operation/fault/ext.control
- integrated room sensor (only OP30C)



MATRIX OP31#

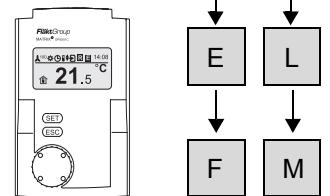
like control panel OP30#, however in addition:

- Normal/economy mode buttons

MATRIX OP50#

Control panel for MATRIX 3000

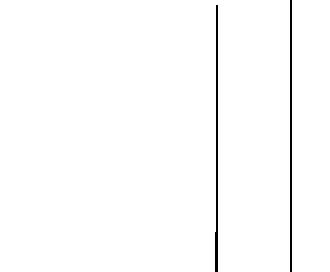
- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Menu-guided controls using rotation navigator
- LCD display with plain-text display
- Status messages using pictograms
- Integrated room sensor (only OP50C)



MATRIX OP51#

like control panel OP50#, however in addition:

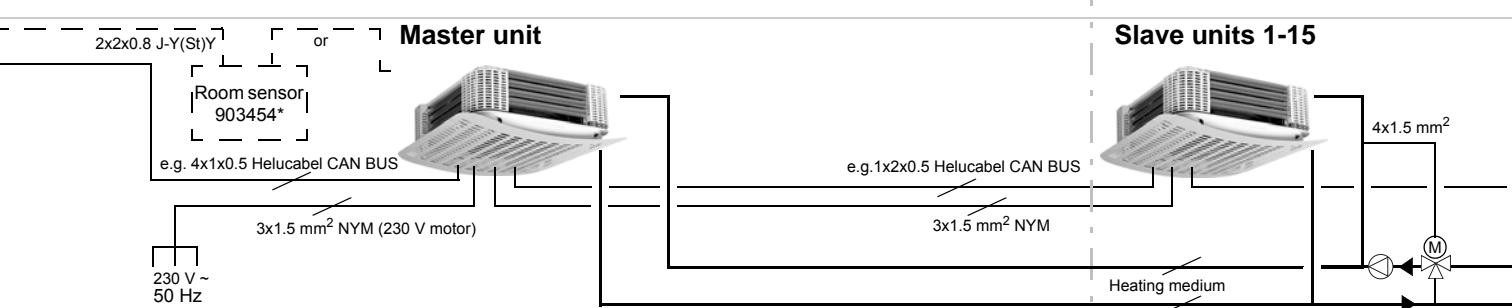
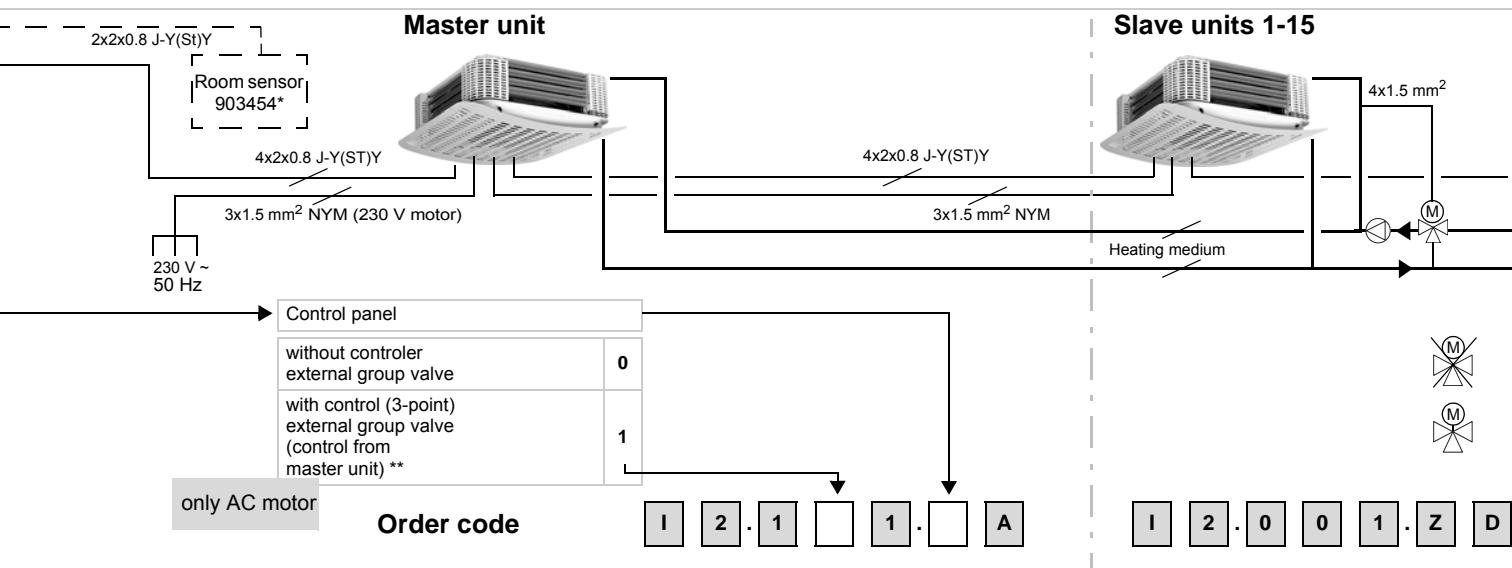
- Integrated weekly clock timer with holiday and special days programme



The place holder "#" stands for the available protection class IP20 und IP54.

IP20 -> # = C

IP54 -> # = I

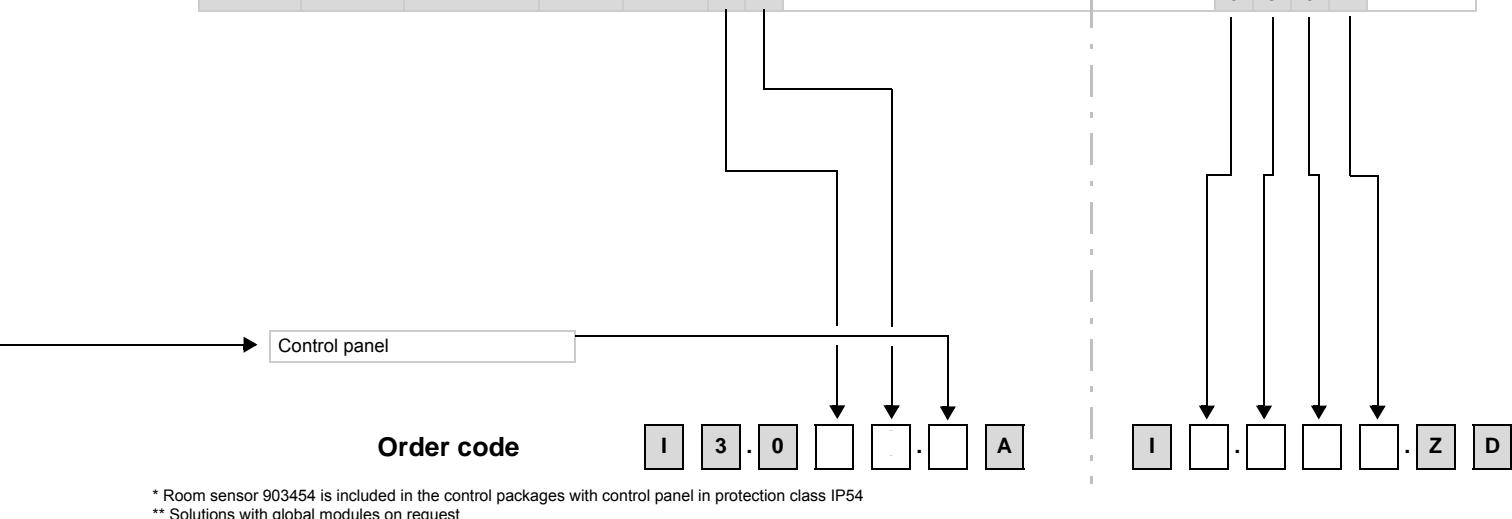


Stand alone unit control with operating and fault signal	Group regulation with status and alarm signal	Control system (3-point) external group valve (control from master unit) **	Input unit OFF with room frost protection	Input economy contact				
.	.	.	0 7					
.	.	.	0 2					
.	.	.	0 7					
.	.	.	0 2					

only AC motor

2 0 0 1		
2 0 0 1		
3 0 0 7		
3 0 0 2		

.	.	.	.	1 1				
.	.	.	.	1 2				
.	.	.	.	1 1				
.	.	.	.	1 2				



* Room sensor 903454 is included in the control packages with control panel in protection class IP54
 ** Solutions with global modules on request

**Multi Flair 1~ 230 V heating or cooling
with switch cabinet for MATRIX control system**
2-pipe chilled or warm water, model sizes 1 to 3, AC fan motor

PWW 70/50 °C
 $t_{L1} = +20$ °C
PCW 6/12 °C
 $t_{L1} = +27$ °C
 $\varphi_1 = 46$ % r.H

Multi Flair

Speeds	without filter						with filter						Model size	Capacity stage
	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature t_{L2} °C	Heating capacity Q_H kW	Discharge temperature t_{L2} °C	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature t_{L2} °C	Heating capacity Q_H kW	Discharge temperature t_{L2} °C	Sound power dB(A)	Sound pressure dB(A)		
I	870	1.2	23	3.2	31	670	1.1	22	2.9	33	50	36		
II	1230	1.4	24	3.8	29	930	1.3	23	3.3	31	59	45	1	1
III	1520	1.5	24	4.2	28	1210	1.4	24	3.8	29	64	50		
I	870	1.8	21	5.0	37	670	1.5	20	4.3	39	50	36		
II	1230	2.3	22	5.9	34	930	1.9	21	5.2	36	59	45	1	2
III	1520	2.6	22	6.5	33	1210	2.2	21	5.8	34	64	50		
I	820	2.2	19	5.2	39	650	2.0	18	4.4	40	50	36		
II	1160	2.5	21	6.4	36	900	2.3	20	5.5	38	59	45	1	3
III	1450	2.7	22	7.3	35	1180	2.5	21	6.5	36	64	50		
I	820	2.8	17	7.2	46	650	2.5	16	6.0	47	50	36		
II	1160	3.1	19	9.1	43	900	2.9	18	7.6	45	59	45	1	4
III	1450	4.1	19	10.4	41	1180	3.1	19	9.2	43	64	50		
I	940	1.5	22	4.3	34	710	1.4	21	3.8	36	45	31		
II	1220	2.0	22	4.8	32	930	1.5	22	4.3	34	50	36	2	1
III	1850	2.5	23	5.8	29	1360	2.1	23	5.1	31	59	45		
I	940	2.9	19	6.4	40	710	2.5	18	5.5	43	45	31		
II	1220	3.3	20	7.3	38	930	2.9	19	6.3	40	50	36	2	2
III	1850	4.0	21	8.8	34	1360	3.5	20	7.7	37	59	45		
I	890	2.7	19	6.7	43	690	2.5	17	5.7	45	45	31		
II	1160	3.0	20	7.9	40	910	2.7	19	6.8	42	50	36	2	3
III	1740	4.2	20	9.8	37	1320	3.4	20	8.5	39	59	45		
I	890	4.1	15	8.7	49	690	3.0	15	7.2	51	45	31		
II	1160	5.1	16	10.5	45	910	4.3	15	8.8	49	50	36	2	4
III	1740	6.5	17	13.7	43	1320	5.5	16	11.4	46	59	45		
I	1790	3.1	22	6.8	31	1490	2.9	22	6.2	32	66	51		
II	2230	3.4	23	7.4	30	1880	3.2	23	6.9	31	68	54	3	1
III	3070	3.9	24	8.6	28	2560	3.6	23	7.9	29	70	56		
I	1790	4.9	20	10.1	37	1490	4.5	19	9.3	38	66	51		
II	2230	5.3	21	11.3	35	1880	4.9	20	10.4	36	68	54	3	2
III	3070	6.0	22	13.0	32	2560	5.6	21	12.0	34	70	56		
I	1700	5.3	19	11.1	39	1440	4.8	19	10.2	41	66	51		
II	2130	6.0	20	12.5	37	1820	5.5	19	11.6	39	68	54	3	3
III	2920	7.0	21	14.9	35	2480	6.5	20	13.6	36	70	56		
I	1700	7.7	16	15.0	46	1440	7.0	15	13.4	48	66	51		
II	2130	8.7	17	17.5	44	1820	8.0	16	15.6	45	68	54	3	4
III	2920	10.3	18	21.1	41	2480	9.4	17	19.1	43	70	56		

The diagram illustrates the piping connections for the Multi Flair unit. It shows two main paths: one labeled 'without filter' and one labeled 'with filter'. The 'without filter' path connects to ports E and G. The 'with filter' path connects to ports F and H. From port H, a branch goes to a condensate drain (A) or a condensate pump (P). The main vertical pipe continues from port G. There are also horizontal branches for various options like design panels (1, 2), galvanized steel casings (4), white RAL 9010 casings (5), and custom RAL casings (9). The bottom part of the diagram shows the 'Order code' structure: M [] . U [] W [] C [] A [] . P [] . [] [] [].

* Fan switched off

Order code

M [] . U [] W [] C [] A [] . P [] . [] [] []

FläktGroup DC-2009-0005-GB 2018-08/R5 • Subject to change

18

Multi Flair

PKW 6/12 °C PWW 70/50 °C
 $t_{L1} = +27^\circ\text{C}$ $t_{L1} = +20^\circ\text{C}$
 $\varphi_1 = 46\% \text{ r.H.}$

Multi Flair 1~ 230 V heating or cooling
with terminal box
2-pipe chilled or warm water, model sizes 1 to 3, AC fan motor

Speeds	without filter						with filter						Model size	Capacity stage	Fan wired for 1-speed capacity see fan level V 5-levels are achieved with control unit 985.450
	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2}^\circ\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2}^\circ\text{C}$	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2}^\circ\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2}^\circ\text{C}$	Sound power dB(A)	Sound pressure dB(A)			
I	390	1.0	20	2.1	36	320	0.9	19	1.9	38,0	34	21			
II	870	1.2	23	3.2	31	670	1.1	22	2.9	33	50	36			
III	1230	1.4	24	3.8	29	930	1.3	23	3.3	31	59	45			
IV	1520	1.5	24	4.2	28	1210	1.4	24	3.8	29	64	50			
V	1650	1.5	24	4.4	28	1330	1.4	24	4.0	29	66	52			
I	390	1.2	18	3.1	44	320	1.2	17	2.8	46	34	21			
II	870	1.8	21	5.0	37	670	1.5	20	4.3	39	50	36			
III	1230	2.3	22	5.9	34	930	1.9	21	5.2	36	59	45			
IV	1520	2.6	22	6.5	33	1210	2.2	21	5.8	34	64	50			
V	1650	2.7	22	6.7	32	1330	2.4	22	6.1	34	66	52			
I	370	1.6	16	3.2	46	310	1.5	15	2.9	48	34	21			
II	820	2.2	19	5.2	39	650	2.0	18	4.4	40	50	36			
III	1160	2.5	21	6.4	36	900	2.3	20	5.5	38	59	45			
IV	1450	2.7	22	7.3	35	1180	2.5	21	6.5	36	64	50			
V	1570	2.8	22	7.6	35	1290	2.6	21	6.8	36	66	52			
I	370	2.0	14	3.8	50	310	1.8	13	3.3	52	34	21			
II	820	2.8	17	7.2	46	650	2.5	16	6.0	47	50	36			
III	1160	3.1	19	9.1	43	900	2.9	18	7.6	45	59	45			
IV	1450	4.1	19	10.4	41	1180	3.1	19	9.2	43	64	50			
V	1570	4.4	19	10.9	41	1290	3.7	19	9.7	43	66	52			
I	620	1.4	21	3.6	37	490	1.3	20	3.2	39	32	19			
II	940	1.5	22	4.3	34	710	1.4	21	3.8	36	45	31			
III	1220	2.0	22	4.8	32	930	1.5	22	4.3	34	50	36			
IV	1850	2.5	23	5.8	29	1360	2.1	23	5.1	31	59	45			
V	2090	2.9	24	6.1	29	2090	2.6	23	6.1	29	68	54			
I	620	2.3	17	5.1	45	490	2.0	17	4.4	47	32	19			
II	940	2.9	19	6.4	40	710	2.5	18	5.5	43	45	31			
III	1220	3.3	20	7.3	38	930	2.9	19	6.3	40	50	36			
IV	1850	4.0	21	8.8	34	1360	3.5	20	7.7	37	59	45			
V	2090	4.6	22	9.4	34	2090	4.2	21	9.4	34	68	54			
I	590	2.4	17	5.1	46	470	2.2	16	4.3	47	32	19			
II	890	2.7	19	6.7	43	690	2.5	17	5.7	45	45	31			
III	1160	3.0	20	7.9	40	910	2.7	19	6.8	42	50	36			
IV	1740	4.2	20	9.8	37	1320	3.4	20	8.5	39	59	45			
V	2030	5.3	21	10.7	36	2030	4.6	21	10.7	36	68	54			
I	590	2.8	15	6.4	52	470	2.5	14	5.3	54	32	19			
II	890	4.1	15	8.7	49	690	3.0	15	7.2	51	45	31			
III	1160	5.1	16	10.5	45	910	4.3	15	8.8	49	50	36			
IV	1740	6.5	17	13.7	43	1320	5.5	16	11.4	46	59	45			
V	2540	8.0	19	17.2	41	2030	7.1	18	15.1	43	68	54			
I	920	2.3	21	5.0	36	770	2.1	20	4.7	38	43	31			
II	1790	3.1	22	6.8	31	1490	2.9	22	6.2	32	66	51			
III	2230	3.4	23	7.4	30	1880	3.2	23	6.9	31	68	54			
IV	3070	3.9	24	8.6	28	2560	3.6	23	7.9	29	70	56			
V	4270	4.5	24	9.4	27	3560	4.2	24	8.7	28	76	62			
I	920	3.6	17	7.2	43	770	3.3	27	6.5	50	43	31			
II	1790	4.9	20	10.1	37	1490	4.5	19	9.3	38	66	51			
III	2230	5.3	21	11.3	35	1880	4.9	20	10.4	36	68	54			
IV	3070	6.0	22	13.0	32	2560	5.6	21	12.0	34	70	56			
V	4270	6.9	23	14.4	31	3560	6.4	22	13.2	32	76	62			
I	880	3.5	17	7.5	46	750	2.9	17	6.7	47	43	31			
II	1700	5.3	19	11.1	39	1440	4.8	19	10.2	41	66	51			
III	2130	6.0	20	12.5	37	1820	5.5	19	11.6	39	68	54			
IV	2920	7.0	21	14.9	35	2480	6.5	20	13.6	36	70	56			
V	4060	8.2	22	16.5	33	3450	7.6	21	15.3	34	76	62			
I	880	5.0	14	9.6	53	750	4.5	13	8.4	53	43	31			
II	1700	7.7	16	15.0	46	1440	7.0	15	13.4	48	66	51			
III	2130	8.7	17	17.5	44	1820	8.0	16	15.6	45	68	54			
IV	2920	10.3	18	21.1	41	2480	9.4	17	19.1	43	70	56			
V	4060	12.1	19	23.7	39	3450	11.2	19	21.7	40	76	62			

ohne Filter
mit Filter

Pipe connection above
E G
F H

with design panel
1
without design panel (only without filter)
2

Casing is galvanized steel
(not for units with design panel)
4
Casing white RAL 9010
5
Casing RAL your choice
9

with condensate drain
A
with condensate pump
P

Switch units (see Page 54)
M
□
□
□
.
U
W C
A
.
F
□
□

*

Fan switched off

Fan accessories, see from Page 54

Multi Flair 1~ 230 V heating or cooling

with terminal box

2-pipe chilled or warm water, model sizes 1 to 3

Multi Flair

DencoHappel MATRIX 2000

System features:

- Temperature assignment.: 7...40 °C (default 10..30 °C)
- Assignment of fan speed
- Adjustable regulating range
- Switchover between normal/economy mode on control panel
- Room temperature measurement using control panel
- External room sensor can be connected
- Valve control (2 or 3 point)
- Temperature control via fan and/or valve
- Room frost protection
- Status messages using LED
- Group control
- Group switch-off in case of fault
- Temperature monitoring of the motors (thermal contact required)
- Network-enabled

MATRIX OP21#

Control panel for MATRIX 2000

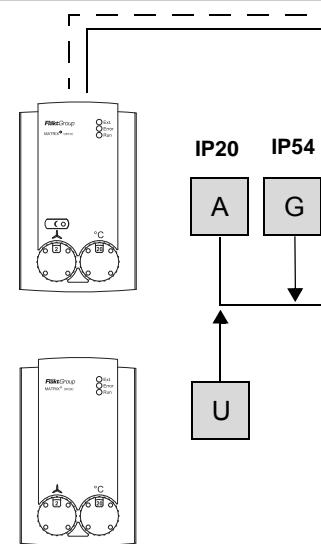
- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Setpoint temperature setting
- Speed-stage selection switch 0 - auto - 1-2-3
- Economy mode button
- LEDs for operation/fault/ext.control
- Integrated room sensor (only OP21C)

MATRIX OP20C

Control panel for MATRIX 2000

- like OP21# however without key economy mode

Control panel MATRIX OP21 in protection type IP54 can be used with limitations. Please enquire.



DencoHappel MATRIX 3000

System features:

- Temperature assignment.: 7...40 °C (default 10..30 °C)
- Assignment of fan speed
- Adjustable regulating range
- Switchover between normal/economy mode on control panel
- Input for switchover between normal/economy mode or unit OFF with frost protection
- Room temperature measurement using control panel
- External room sensor can be connected
- Valve control (2 or 3 point)
- Temperature control via fan and/or valve
- Room frost protection
- Status messages using LED
- Status and alarm signal via volt free change-over contacts
- Unit individual and group control
- Isolation of individual units in case of fault
- Temperature monitoring of the motors (thermal contact required)
- Network-enabled

MATRIX OP30#

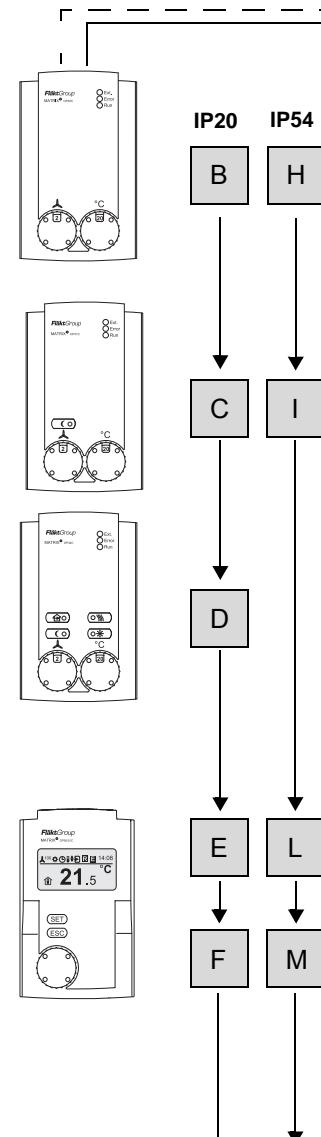
Casing in light gray, protection class IP54, casing in pure white, protection class IP20

- Setpoint temperature setting
- Speed-stage selection switch 0 - auto - 1-2-3
- LEDs for operation/fault/ext.control
- integrated room sensor (only OP30C)

MATRIX OP31#

like control panel OP30#, however in addition:

- Normal/economy mode buttons



MATRIX OP44C

like control panel OP31#, however in addition

Buttons:

- Switch recirculating/mixed air air mode
- Switch heating/cooling/automatic mode (without function)

MATRIX OP50#

Control panel for MATRIX 3000

- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Menu-guided controls using rotation navigator
- LCD display with plain-text display
- Status messages using pictograms
- Integrated room sensor (only OP50C)

MATRIX OP51#

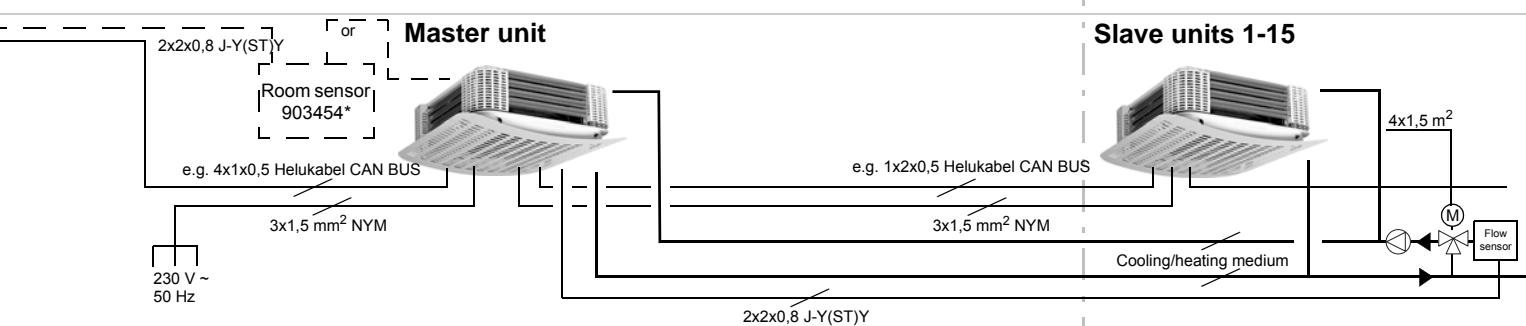
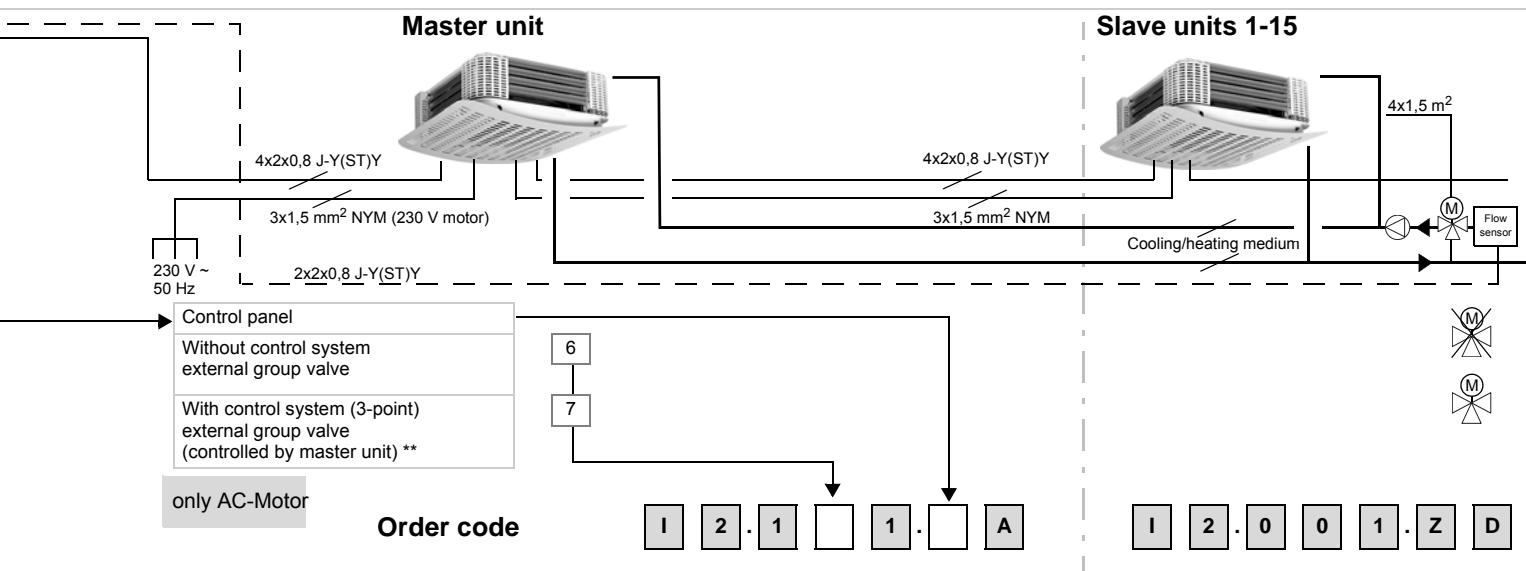
like control panel OP50#, however in addition:

- Integrated weekly clock timer with holiday and special days programme

The place holder "#" stands for the available protection class IP20 und IP54.

IP20 -> # = C

IP54 -> # = I

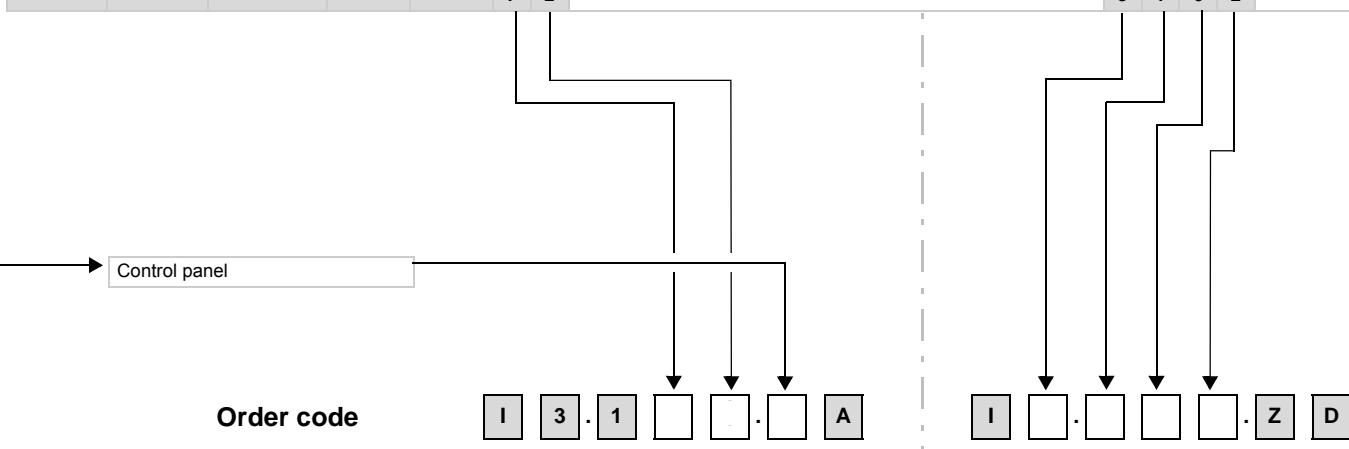


Stand-alone unit control With operating and fault signal	Group regulation with status and alarm signal	Control system (3-point) external group valve (control from master unit) **	Input OFF with room frost protection	Input economy contact	6	7
•		•			6	7
•			•		6	2
•			•		6	7
•				•	6	2

only AC motor	2 0 0 1	M
	2 0 0 1	
	3 1 6 7	
	3 1 6 2	

•	•	•	•	•	7	1
•	•	•		•	7	2
•		•	•		7	1
•		•		•	7	2

only AC Motor	2 0 0 1	M
	2 0 0 1	
	3 1 6 7	
	3 1 6 2	



* Room sensor 903454 is included in the control packages with control panel in protection class IP54

** Solutions with global modules on request

Multi Flair 3~ 400 V heating

with switch cabinet for MATRIX controls

2-pipe warm water, model sizes 1 to 3, AC fan motor

PWW 70/50 °C

$t_{L1} = +20$ °C

Multi Flair

Speeds	without filter					with filter					Sound power	Sound pressure	Model size	Capacity stage
	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature t_{L2} °C	Heating capacity Q_H kW	Discharge temperature t_{L2} °C	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature t_{L2} °C	Heating capacity Q_H kW	Discharge temperature t_{L2} °C				
I	1370	—	—	4.0	29	1090	—	—	3.6	30	61	47	1	1
II	1650	—	—	4.4	28	1340	—	—	4.0	29	66	52		
I	1370	—	—	6.2	33	1090	—	—	5.6	35	61	47	1	2
II	1650	—	—	6.7	32	1340	—	—	6.2	34	66	52		
I	1310	—	—	6.9	36	1070	—	—	6.1	37	61	47	1	3
II	1580	—	—	7.7	34	1300	—	—	6.8	36	66	52		
I	1310	—	—	9.8	42	1070	—	—	8.6	44	61	47	1	4
II	1580	—	—	10.9	41	1300	—	—	9.8	42	66	52		
I	2200	—	—	6.3	28	1670	—	—	5.6	30	63	49	2	1
II	2810	—	—	7.0	27	2230	—	—	6.3	28	69	55		
I	2200	—	—	9.6	33	1670	—	—	8.5	35	63	49	2	2
II	2810	—	—	10.7	31	2230	—	—	9.7	33	69	55		
I	2090	—	—	10.9	35	1630	—	—	9.5	37	63	49	2	3
II	2690	—	—	12.4	34	2170	—	—	11.1	35	69	55		
I	2090	—	—	15.4	42	1630	—	—	13.3	44	63	49	2	4
II	2690	—	—	17.7	40	2170	—	—	15.8	42	69	55		
I	2880	—	—	8.3	29	2390	—	—	7.7	29	60	46	3	1
II	3800	—	—	9.4	27	3190	—	—	8.8	28	67	53		
I	2880	—	—	12.7	33	2390	—	—	11.7	35	60	46	3	2
II	3800	—	—	14.4	31	3190	—	—	13.3	32	67	53		
I	2730	—	—	14.4	36	2310	—	—	13.1	37	60	46	3	3
II	3620	—	—	16.6	34	3090	—	—	15.4	35	67	53		
I	2730	—	—	20.3	42	2310	—	—	18.4	44	60	46	3	4
II	3620	—	—	23.8	40	3090	—	—	21.9	41	67	53		

without filter

with filter

Pipe connection above	E	G
Pipe connection to the side	F	H
with design panel	1	
without design panel (only without filter)	2	
Casing is galvanized steel (not for units with design panel)	4	
Casing white RAL 9010	5	
Casing RAL your choice	9	

Order code

M . U O W A . L 0

* Fan switched off

Multi Flair 3~ 400 V heating

with terminal box

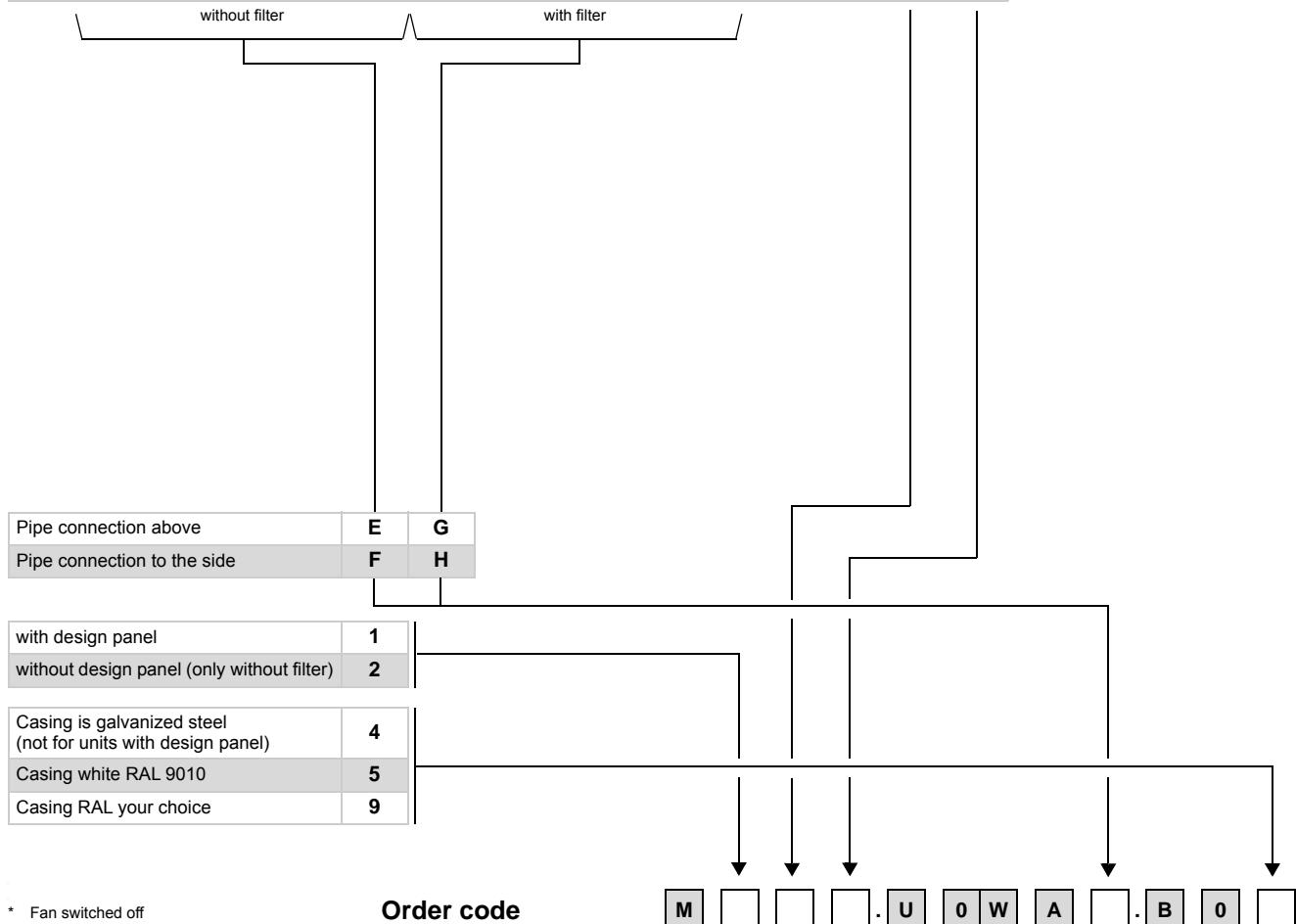
2-pipe warm water, model sizes 1 to 3, AC fan motor

Multi Flair

PWW 70/50 °C
 $t_{l,1} \equiv +20$ °C

Speeds	without filter						with filter						Model size	Capacity stage	
	Air volume current	Cooling capacity	Discharge temperature	Heating capacity	Air volume current	Cooling capacity	Discharge temperature	Heating capacity	Air volume current	Cooling capacity	Discharge temperature	Sound power	Sound pressure		
	m ³ /h	Q _K kW	t _{L2} °C	Q _H kW	m ³ /h	Q _K kW	t _{L2} °C	Q _H kW	m ³ /h	Q _K kW	t _{L2} °C	dB(A)	dB(A)		
I	1370	—	—	4.0	29	1090	—	—	3.6	30	61	47		1	1
II	1650	—	—	4.4	28	1340	—	—	4.0	29	66	52		1	2
I	1370	—	—	6.2	33	1090	—	—	5.6	35	61	47		1	3
II	1650	—	—	6.7	32	1340	—	—	6.2	34	66	52		1	4
I	1310	—	—	6.9	36	1070	—	—	6.1	37	61	47		1	5
II	1580	—	—	7.7	34	1300	—	—	6.8	36	66	52		1	6
I	1310	—	—	9.8	42	1070	—	—	8.6	44	61	47		1	7
II	1580	—	—	10.9	41	1300	—	—	9.8	42	66	52		1	8
I	2200	—	—	6.3	28	1670	—	—	5.6	30	63	49		2	1
II	2810	—	—	7.0	27	2230	—	—	6.3	28	69	55		2	2
I	2200	—	—	9.6	33	1670	—	—	8.5	35	63	49		2	3
II	2810	—	—	10.7	31	2230	—	—	9.7	33	69	55		2	4
I	2090	—	—	10.9	35	1630	—	—	9.5	37	63	49		2	5
II	2690	—	—	12.4	34	2170	—	—	11.1	35	69	55		2	6
I	2090	—	—	15.4	42	1630	—	—	13.3	44	63	49		2	7
II	2690	—	—	17.7	40	2170	—	—	15.8	42	69	55		2	8
I	2880	—	—	8.3	29	2390	—	—	7.7	29	60	46		3	1
II	3800	—	—	9.4	27	3190	—	—	8.8	28	67	53		3	2
I	2880	—	—	12.7	33	2390	—	—	11.7	35	60	46		3	3
II	3800	—	—	14.4	31	3190	—	—	13.3	32	67	53		3	4
I	2730	—	—	14.4	36	2310	—	—	13.1	37	60	46		3	5
II	3620	—	—	16.6	34	3090	—	—	15.4	35	67	53		3	6
I	2730	—	—	20.3	42	2310	—	—	18.4	44	60	46		3	7
II	3620	—	—	23.8	40	3090	—	—	21.9	41	67	53		3	8

Control accessories
see from page 54.



* Fan switched off

Order code

M . **U** **O** **W** **A** . **B** **O**

Control equipment

Multi Flair 3~ 400 V heating

2-pipe warm water, model sizes 1 to 3, AC fan motor

Multi Flair

DencoHappel MATRIX 2000

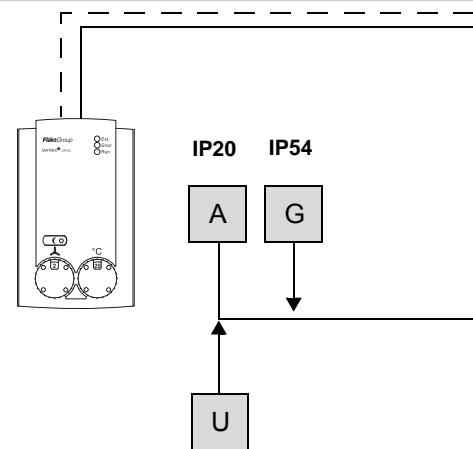
System features:

- Temperature assignment.: 7...40 °C (default 10..30 °C)
- Assignment of fan speed
- Adjustable regulating range
- Switchover between normal/economy mode on control panel
- Room temperature measurement using control panel
- External room sensor can be connected
- Valve control (2 or 3 point)
- Temperature control via fan and/or valve
- Room frost protection
- Status messages using LED
- Group control
- Group switch-off in case of fault
- Temperature monitoring of the motors (thermal contact required)
- Network-enabled

MATRIX OP21#

Control panel for MATRIX 2000

- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Setpoint temperature setting
- Speed-stage selection switch 0 - auto - 1-2
- Economy mode button
- LEDs for operation/fault/ext.control
- integrated room sensor (only OP21C)



MATRIX OP20C

Control panel for MATRIX 2000

- like OP21# however without key economy mode

Control panel MATRIX OP20I in protection type IP54 can be used with limitations.

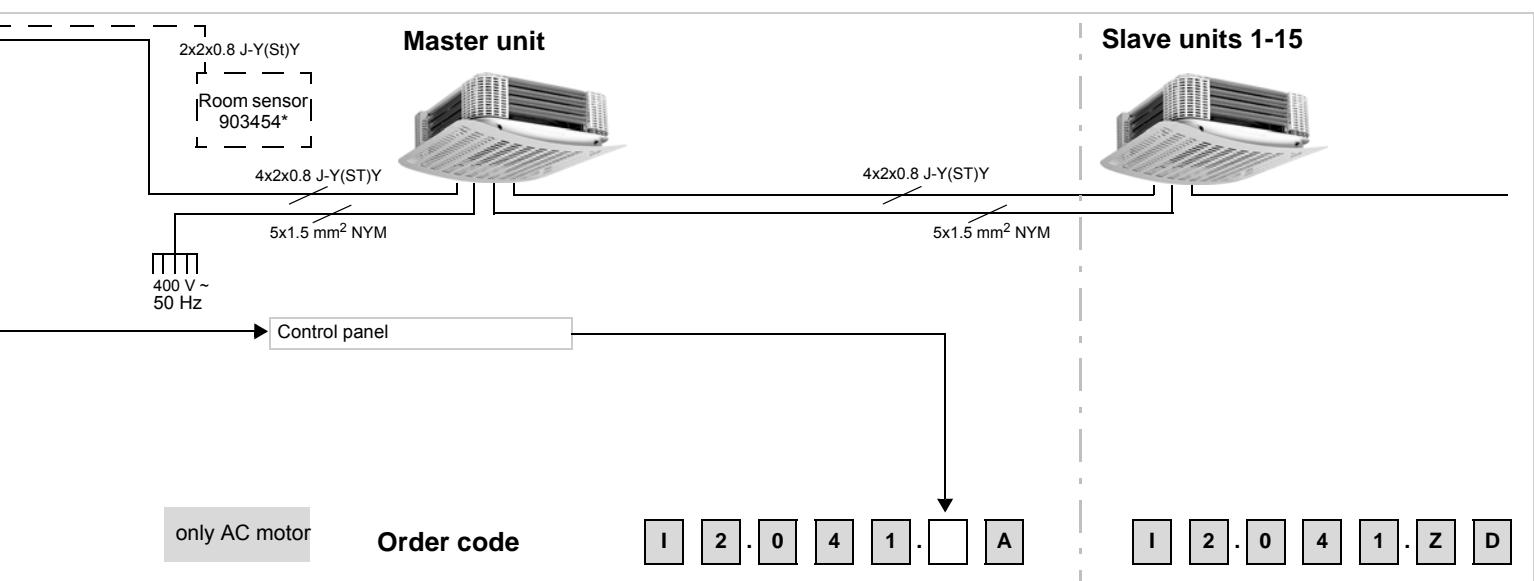
Please enquire. The place holder "#" stands for the available

protection class IP20 and IP54. IP20 -> # = C IP54 -> # = I

DencoHappel MATRIX 3000

Not available for 400 V units

Control equipment
Multi Flair 3~ 400 V heating
 2-pipe warm water, model sizes 1 to 3, AC fan motor



* Room sensor 903454 is included in the control packages with control panel in protection class IP54

Multi Flair 3~ 400 V cooling
with switch cabinet for MATRIX controls
 2-pipe chilled water, model size 1 to 3, AC-fan motor

PCW 6/12 °C
 $t_{L1} = +27 \text{ }^{\circ}\text{C}$
 $\varphi_1 = 46 \text{ % r.H}$

Multi Flair

Speeds	without filter						with filter						Model size	Capacity stage
	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature t_{L2} °C	Heating capacity Q_H kW	Discharge temperature t_{L2} °C	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature t_{L2} °C	Heating capacity Q_H kW	Discharge temperature t_{L2} °C	Sound power dB(A)	Sound pressure dB(A)		
I	1370	1.4	24	—	—	1090	1.3	24	—	—	61	47	1	1
II	1650	1.5	24	—	—	1340	1.4	24	—	—	66	52		
I	1370	2.4	22	—	—	1090	2.1	21	—	—	61	47	1	2
II	1650	2.7	22	—	—	1340	2.4	22	—	—	66	52		
I	1310	2.6	21	—	—	1070	2.4	21	—	—	61	47	1	3
II	1580	2.8	22	—	—	1300	2.6	21	—	—	66	52		
I	1310	3.8	19	—	—	1070	3.0	19	—	—	61	47	1	4
II	1580	4.4	19	—	—	1300	3.7	19	—	—	66	52		
I	2200	2.7	24	—	—	1670	2.3	23	—	—	63	49	2	1
II	2810	3.0	24	—	—	2230	2.7	24	—	—	69	55		
I	2200	4.3	22	—	—	1670	3.8	21	—	—	63	49	2	2
II	2810	4.7	22	—	—	2230	4.3	22	—	—	69	55		
I	2090	4.7	21	—	—	1630	4.0	20	—	—	63	49	2	3
II	2690	5.5	21	—	—	2170	4.8	21	—	—	69	55		
I	2090	7.2	18	—	—	1630	6.2	17	—	—	63	49	2	4
II	2690	8.3	19	—	—	2170	7.4	18	—	—	69	55		
I	2880	3.8	24	—	—	2390	3.5	23	—	—	60	46	3	1
II	3800	4.3	24	—	—	3190	4.0	24	—	—	67	53		
I	2880	5.9	22	—	—	2390	5.5	21	—	—	60	46	3	2
II	3800	6.6	22	—	—	3190	6.1	22	—	—	67	53		
I	2730	6.8	21	—	—	2310	6.2	20	—	—	60	46	3	3
II	3620	7.7	21	—	—	3090	7.2	21	—	—	67	53		
I	2730	10.0	18	—	—	2310	9.1	17	—	—	60	46	3	4
II	3620	11.4	19	—	—	3090	10.6	18	—	—	67	53		

without filter

with filter

Pipe connection above	E	G
Pipe connection to the side	F	H
with design panel	1	
without design panel (only without filter)	2	
Casing is galvanized steel (not for units with design panel)	4	
Casing white RAL 9010	5	
Casing RAL your choice	9	

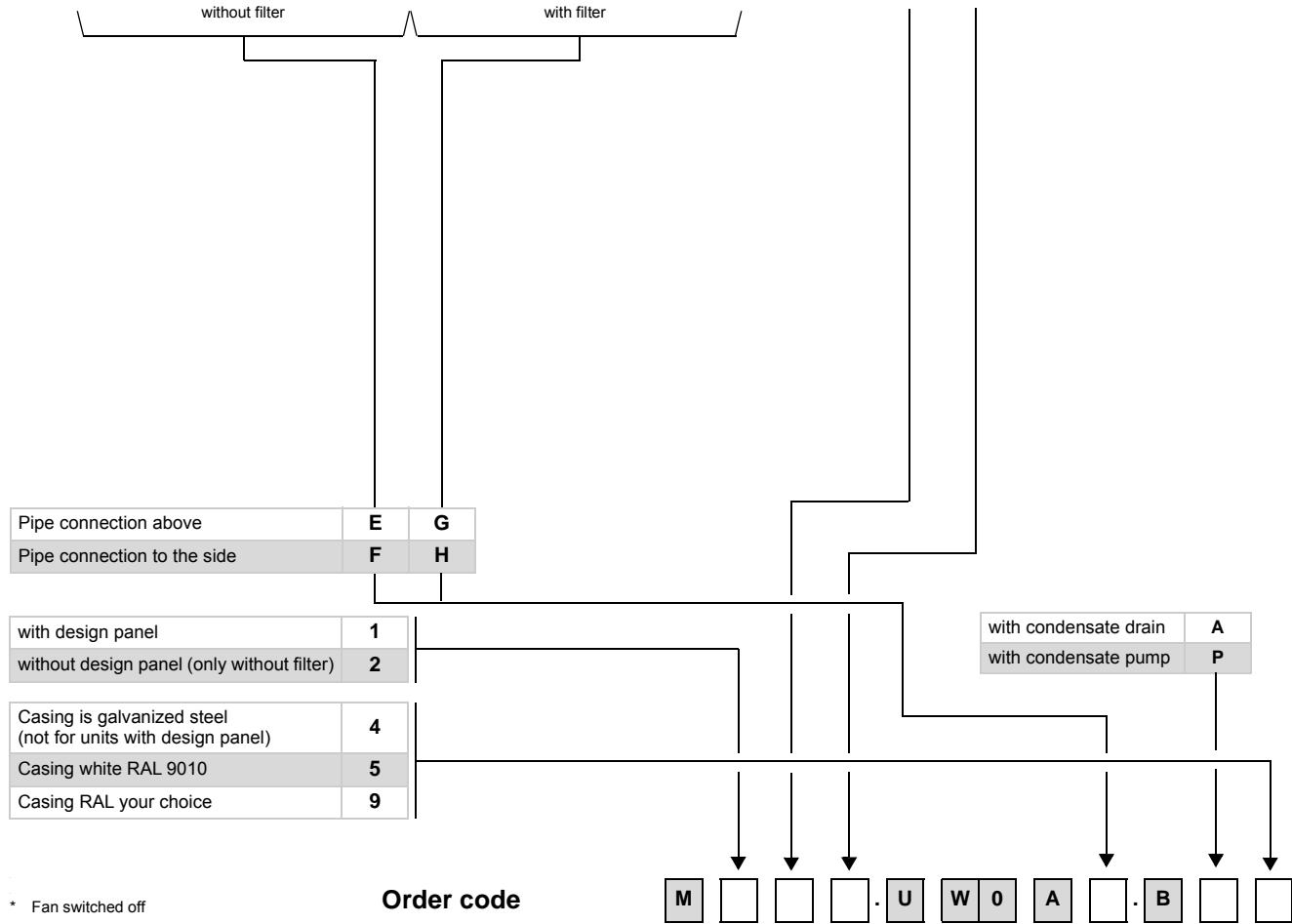
* Fan switched off

Order code

M . U W 0 A L

with condensate drain A
 with condensate pump P

Speeds	without filter						with filter						Model size	Capacity stage
	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2}^\circ\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2}^\circ\text{C}$	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2}^\circ\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2}^\circ\text{C}$	Sound power dB(A)	Sound pressure dB(A)		
I	1370	1.4	24	—	—	1090	1.3	23	—	—	61	47	1	1
II	1650	1.5	24	—	—	1340	1.4	24	—	—	66	52		
I	1370	2.4	22	—	—	1090	2.1	21	—	—	61	47	1	2
II	1650	2.7	22	—	—	1340	2.4	22	—	—	66	52		
I	1310	2.6	21	—	—	1070	2.4	20	—	—	61	47	1	3
II	1580	2.8	22	—	—	1300	2.6	21	—	—	66	52		
I	1310	3.8	19	—	—	1070	3.0	19	—	—	61	47	1	4
II	1580	4.4	19	—	—	1300	3.7	19	—	—	66	52		
I	2200	2.7	24	—	—	1670	2.3	23	—	—	63	49	2	1
II	2810	3.0	24	—	—	2230	2.7	24	—	—	69	55		
I	2200	4.3	22	—	—	1670	3.8	21	—	—	63	49	2	2
II	2810	4.7	22	—	—	2230	4.3	22	—	—	69	55		
I	2090	4.7	21	—	—	1630	4.0	20	—	—	63	49	2	3
II	2690	5.5	21	—	—	2170	4.8	21	—	—	69	55		
I	2090	7.2	18	—	—	1630	6.2	17	—	—	63	49	2	4
II	2690	8.3	19	—	—	2170	7.4	18	—	—	69	55		
I	2880	3.8	23	—	—	2390	3.5	23	—	—	60	46	3	1
II	3800	4.3	24	—	—	3190	4.0	24	—	—	67	53		
I	2880	5.9	22	—	—	2390	5.5	21	—	—	60	46	3	2
II	3800	6.6	22	—	—	3190	6.1	22	—	—	67	53		
I	2730	6.8	21	—	—	2310	6.2	20	—	—	60	46	3	3
II	3620	7.7	21	—	—	3090	7.2	21	—	—	67	53		
I	2730	10.0	18	—	—	2310	9.1	17	—	—	60	46	3	4
II	3620	11.4	19	—	—	3090	10.6	18	—	—	67	53		

Control accessories
see from page 54.

Control equipment

Multi Flair 3~ 400 V cooling

2-pipe chilled water, model size 1 to 3, AC-fan motor

Multi Flair

DencoHappel MATRIX 2000

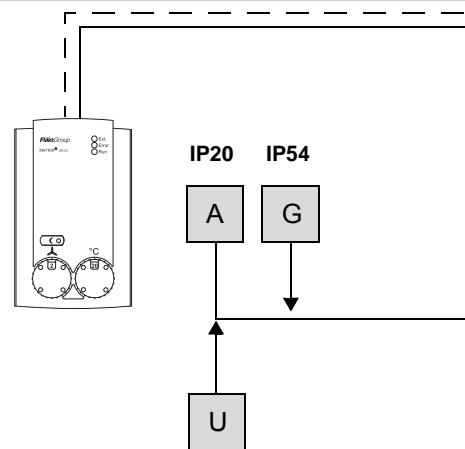
System features:

- Temperature assignment.: 7...40 °C (default 10..30 °C)
- Assignment of fan speed
- Adjustable regulating range
- Switchover between normal/economy mode on control panel
- Room temperature measurement using control panel
- External room sensor can be connected
- Valve control (2 or 3 point)
- Temperature control via fan and/or valve
- Room frost protection
- Status messages using LED
- Group control
- Group switch-off in case of fault
- Temperature monitoring of the motors (thermal contact required)
- Network-enabled

MATRIX OP21#

Control panel for MATRIX 2000

- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Setpoint temperature setting
- Speed-stage selection switch
0 - auto - 1-2
- Economy mode button
- LEDs for operation/fault/ext.control
- integrated room sensor (only OP21C)



MATRIX OP20C

Control panel for MATRIX 2000

- like OP21# however
without key economy mode

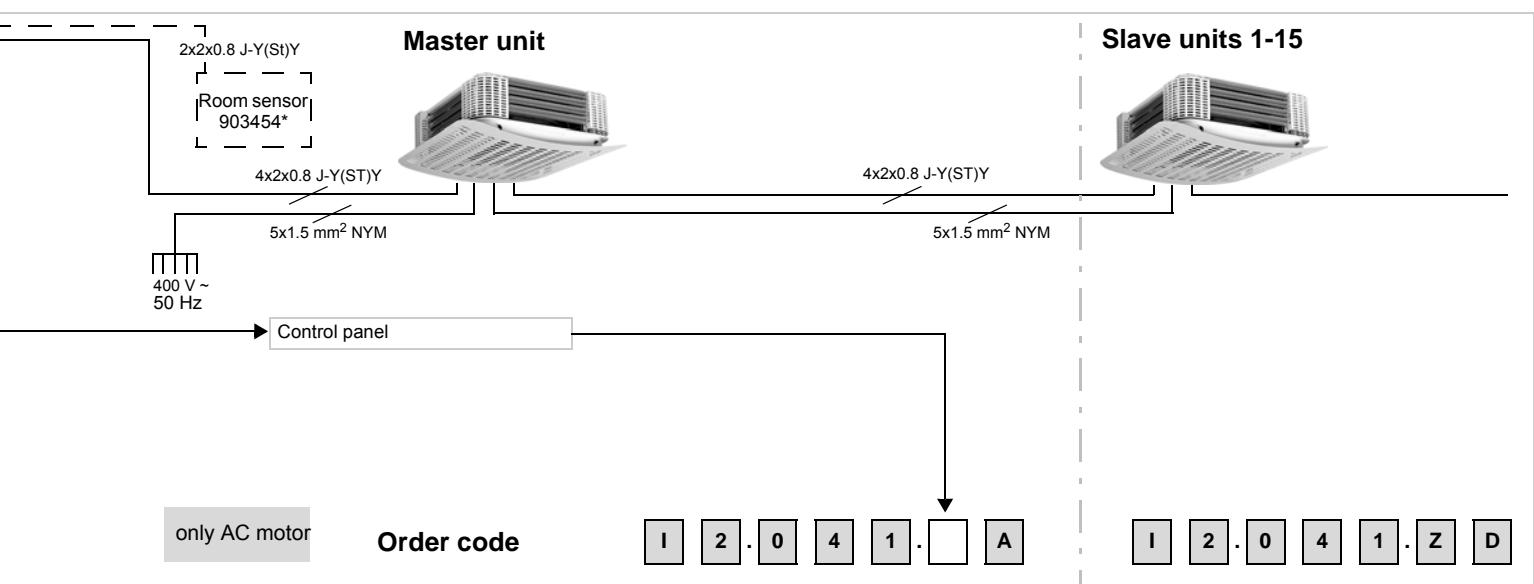
Control panel MATRIX OP20I in protection type IP54 can be used with limitations.

Please enquire. The place holder "#" stands for the available protection class IP20 and IP54. IP20 -> # = C IP54 -> # = I

DencoHappel MATRIX 3000

Not available for 400 V units

Control equipment
Multi Flair 3~ 400 V cooling
 2-line chilled water, model size 1 to 3, AC-fan motor



* Room sensor 903454 is included in the control packages with control panel in protection class IP54

Multi Flair 3~ 400 V heating and cooling

with switch cabinet for MATRIX controls

2-pipe chilled or warm water, model sizes 1 to 3, AC fan motor

PCW 6/12 °C PWW 70/50 °C
 $t_{L1} = +27^\circ\text{C}$ $t_{L1} = +20^\circ\text{C}$
 $\varphi_1 = 46\% \text{ r.H}$

Multi Flair

Speeds	without filter					with filter					Sound power	Sound pressure	Model size	Capacity stage
	Air volume current m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2}^\circ\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2}^\circ\text{C}$	Air flow rate m³/h	Cooling capacity Q_K kW	Discharge temperature $t_{L2}^\circ\text{C}$	Heating capacity Q_H kW	Discharge temperature $t_{L2}^\circ\text{C}$				
I	1370	1.4	24	4.0	29	1090	1.3	23	3.6	30	61	47	1	1
II	1650	1.5	24	4.4	28	1340	1.4	24	4.0	29	66	52		
I	1370	2.4	22	6.2	33	1090	2.1	21	5.6	35	61	47	1	2
II	1650	2.7	22	6.7	32	1340	2.4	22	6.2	34	66	52		
I	1310	2.6	21	6.9	36	1070	2.4	20	6.1	37	61	47	1	3
II	1580	2.8	22	7.7	34	1300	2.6	21	6.8	36	66	52		
I	1310	3.8	19	9.8	42	1070	3.0	19	8.6	44	61	47	1	4
II	1580	4.4	19	10.9	41	1300	3.7	19	9.8	42	66	52		
I	2200	2.7	24	6.3	28	1670	2.3	23	5.6	30	63	49	2	1
II	2810	3.0	24	7.0	27	2230	2.7	24	6.3	28	69	55		
I	2200	4.3	22	9.6	33	1670	3.8	21	8.5	35	63	49	2	2
II	2810	4.7	22	10.7	31	2230	4.3	22	9.7	33	69	55		
I	2090	4.7	21	10.9	35	1630	4.0	20	9.5	37	63	49	2	3
II	2690	5.5	21	12.4	34	2170	4.8	21	11.1	35	69	55		
I	2090	7.2	18	15.4	42	1630	6.2	17	13.3	44	63	49	2	4
II	2690	8.3	19	17.7	40	2170	7.4	18	15.8	42	69	55		
I	2880	3.8	23	8.3	29	2390	3.5	23	7.7	29	60	46	3	1
II	3800	4.3	24	9.4	27	3190	4.0	24	8.8	28	67	53		
I	2880	5.9	22	12.7	33	2390	5.5	21	11.7	35	60	46	3	2
II	3800	6.6	22	14.4	31	3190	6.1	22	13.3	32	67	53		
I	2730	6.8	21	14.4	36	2310	6.2	20	13.1	37	60	46	3	3
II	3620	7.7	21	16.6	34	3090	7.2	21	15.4	35	67	53		
I	2730	10.0	18	20.3	42	2310	9.1	17	18.4	44	60	46	3	4
II	3620	11.4	19	23.8	40	3090	10.6	18	21.9	41	67	53		

without filter

with filter

Pipe connection above	E	G
Pipe connection to the side	F	H
with design panel	1	
without design panel (only without filter)	2	
Casing is galvanized steel (not for units with design panel)	4	
Casing white RAL 9010	5	
Casing RAL your choice	9	

with condensate drain A
 with condensate pump P

Order code

M . U W C A . L

* Fan switched off

Multi Flair

PCW 6/12 °C
 $t_{L1} = +27^\circ\text{C}$
 $\varphi_1 = 46\% \text{ r.H.}$

Multi Flair 3~ 400 V heating and cooling

with terminal box

2-pipe chilled or warm water, model sizes 1 to 3, AC fan motor

Speeds	without filter						with filter						Model size	Capacity stage
	Air flow rate m³/h	Cooling capacity Q_K kW	Discharge temperature t_{L2} °C	Heating capacity Q_H kW	Discharge temperature t_{L2} °C	Air flow rate m³/h	Cooling capacity Q_K kW	Discharge temperature t_{L2} °C	Heating capacity Q_H kW	Discharge temperature t_{L2} °C	Sound power dB(A)	Sound pressure dB(A)		
I	1370	1.4	24	4.0	29	1090	1.3	23	3.6	30	61	47	1	1
II	1650	1.5	24	4.4	28	1340	1.4	24	4.0	29	66	52		
I	1370	2.4	22	6.2	33	1090	2.1	21	5.6	35	61	47	1	2
II	1650	2.7	22	6.7	32	1340	2.4	22	6.2	34	66	52		
I	1310	2.6	21	6.9	36	1070	2.4	20	6.1	37	61	47	1	3
II	1580	2.8	22	7.7	34	1300	2.6	21	6.8	36	66	52		
I	1310	3.8	19	9.8	42	1070	3.0	19	8.6	44	61	47	1	4
II	1580	4.4	19	10.9	41	1300	3.7	19	9.8	42	66	52		
I	2200	2.7	24	6.3	28	1670	2.3	23	5.6	30	63	49	2	1
II	2810	3.0	24	7.0	27	2230	2.7	24	6.3	28	69	55		
I	2200	4.3	22	9.6	33	1670	3.8	21	8.5	35	63	49	2	2
II	2810	4.7	22	10.7	31	2230	4.3	22	9.7	33	69	55		
I	2090	4.7	21	10.9	35	1630	4.0	20	9.5	37	63	49	2	3
II	2690	5.5	21	12.4	34	2170	4.8	21	11.1	35	69	55		
I	2090	7.2	18	15.4	42	1630	6.2	17	13.3	44	63	49	2	4
II	2690	8.3	19	17.7	40	2170	7.4	18	15.8	42	69	55		
I	2880	3.8	23	8.3	29	2390	3.5	23	7.7	29	60	46	3	1
II	3800	4.3	24	9.4	27	3190	4.0	24	8.8	28	67	53		
I	2880	5.9	22	12.7	33	2390	5.5	21	11.7	35	60	46	3	2
II	3800	6.6	22	14.4	31	3190	6.1	22	13.3	32	67	53		
I	2730	6.8	21	14.4	36	2310	6.2	20	13.1	37	60	46	3	3
II	3620	7.7	21	16.6	34	3090	7.2	21	15.4	35	67	53		
I	2730	10.0	18	20.3	42	2310	9.1	17	18.4	44	60	46	3	4
II	3620	11.4	19	23.8	40	3090	10.6	18	21.9	41	67	53		

without filter

with filter

Pipe connection above	E	G
Pipe connection to the side	F	H
with design panel	1	
without design panel (only without filter)	2	
Casing is galvanized steel (not for units with design panel)	4	
Casing white RAL 9010	5	
Casing RAL your choice	9	

with condensate drain A
 with condensate pump P

Control units (see page 54)
 * Fan switched off

Order code

M . U W C A . B

Control accessories
see from page 54.

Control equipment

Multi Flair 3~ 400 V heating or cooling

2-pipe chilled or warm water, model sizes 1 to 3, AC fan motor

Multi Flair

DencoHappel MATRIX 2000

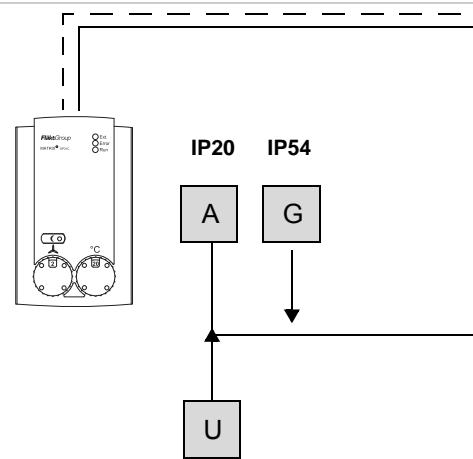
System features:

- Temperature assignment.: 7...40 °C (default 10..30 °C)
- Assignment of fan speed
- Adjustable regulating range
- Switchover between normal/economy mode on control panel
- Room temperature measurement using control panel
- External room sensor can be connected
- Valve control (2 or 3 point)
- Temperature control via fan and/or valve
- Room frost protection
- Status messages using LED
- Group control
- Group switch-off in case of fault
- Temperature monitoring of the motors (thermal contact required)
- Network-enabled

MATRIX OP21#

Control panel for MATRIX 2000

- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Setpoint temperature setting
- Speed-stage selection switch
0 - auto - 1-2
- Economy mode button
- LEDs for operation/fault/ext.control
- integrated room sensor (only OP21C)



MATRIX OP20C

Control panel for MATRIX 2000

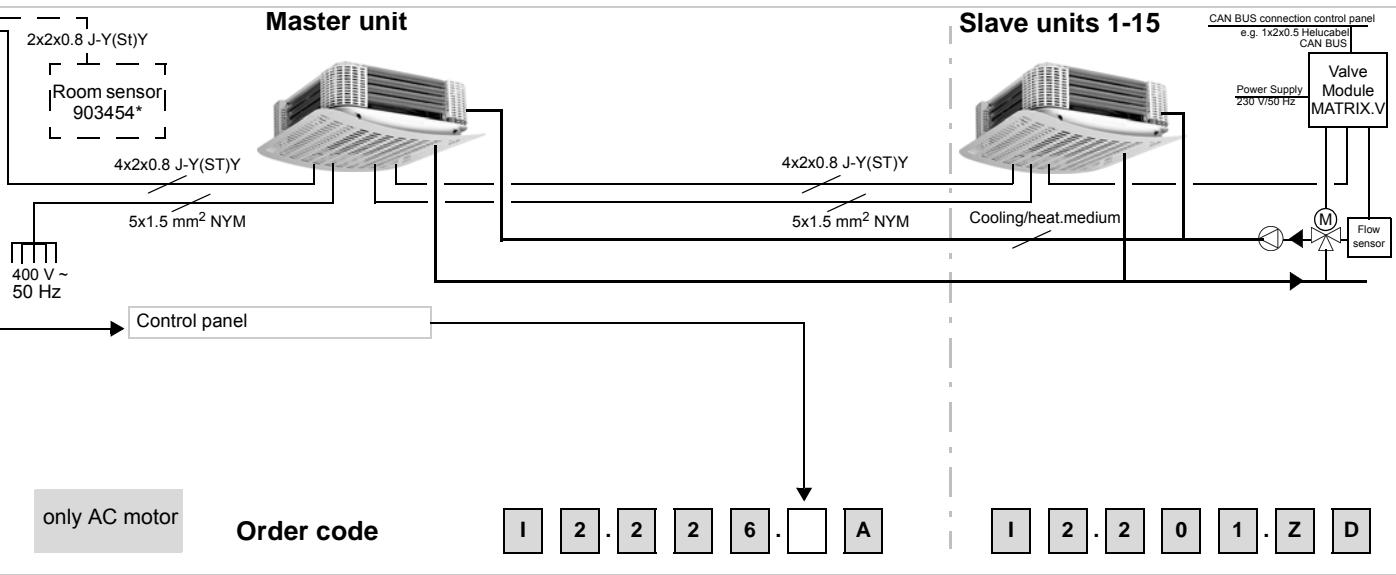
- like OP21# however without key "Economy mode"
- Control panel MATRIX OP20I in protection type IP54 can be used with limitations.
Please enquire. The place holder "#" stands for the available protection class IP20 and IP54. IP20 -> # = C IP54 -> # = I

DencoHappel MATRIX 3000

Not available for 400 V units

Control equipment
Multi Flair 3~ 400 V heating or cooling

Multi Flair



*Room sensor 903454 is included in the controller packages with control panel of protection class IP54.

Multi Flair 1~ 230 V heating

with switch cabinet for MATRIX control system/with terminal box

2-pipe warm water, model size 3, EC-fan motor

PWW 70/50 °C
 $t_{L1} = +20$ °C

Multi Flair

Speeds	without filter					with filter					Model size	Capacity stage		
	Air volume current m ³ /h	Cooling capacity Q _K kW	Discharge temperature t _{L2} °C	Heating capacity Q _H kW	Discharge temperature t _{L2} °C	Air flow rate m ³ /h	Cooling capacity Q _K kW	Discharge temperature t _{L2} °C	Heating capacity Q _H kW	Discharge temperature t _{L2} °C	Sound power dB(A)	Sound pressure dB(A)		
MIN	1060	—	—	5.4	35	910	—	—	5.0	36	43	29	3	1
MAX	3780	—	—	9.4	27	3150	—	—	8.7	28	66	52		
MIN	1060	—	—	7.8	42	910	—	—	7.3	44	43	29	3	2
MAX	3780	—	—	14.4	31	3150	—	—	13.2	33	66	52		
MIN	970	—	—	8.0	45	900	—	—	7.7	45	43	29	3	3
MAX	3590	—	—	16.5	34	3050	—	—	15.3	35	66	52		
MIN	970	—	—	10.3	52	900	—	—	9.8	52	43	29	3	4
MAX	3590	—	—	23.7	40	3050	—	—	21.7	41	66	52		

Multi Flair 1~ 230 V heating

without filter with filter

Pipe connection above E G

Pipe connection to the side F H

with design panel 1

without design panel (only without filter) 2

with switch cabinet for MATRIX controls Y

with terminal box G

Casing is galvanized steel (not for units with design panel) 4

Casing white RAL 9010 5

Casing RAL your choice 9

Order code Multi-Flair heating

M □ 3 □ . U 0 W A □ . □ 0 □

* Fan switched off

Control accessories terminal box, see from page 54.

* Fan switched off

Multi Flair

$$\text{PCW } 6/12 \text{ } ^\circ\text{C} \quad \text{PWW } 70/50 \text{ } ^\circ\text{C}$$

$$t_{L1} = +27 \text{ } ^\circ\text{C} \quad t_{L1} = +20 \text{ } ^\circ\text{C}$$

$$\varrho_1 = 46 \text{ \% r H}$$

**Multi Flair 1~ 230 V cooling / heating or cooling
with switch cabinet for MATRIX control system/with terminal box**

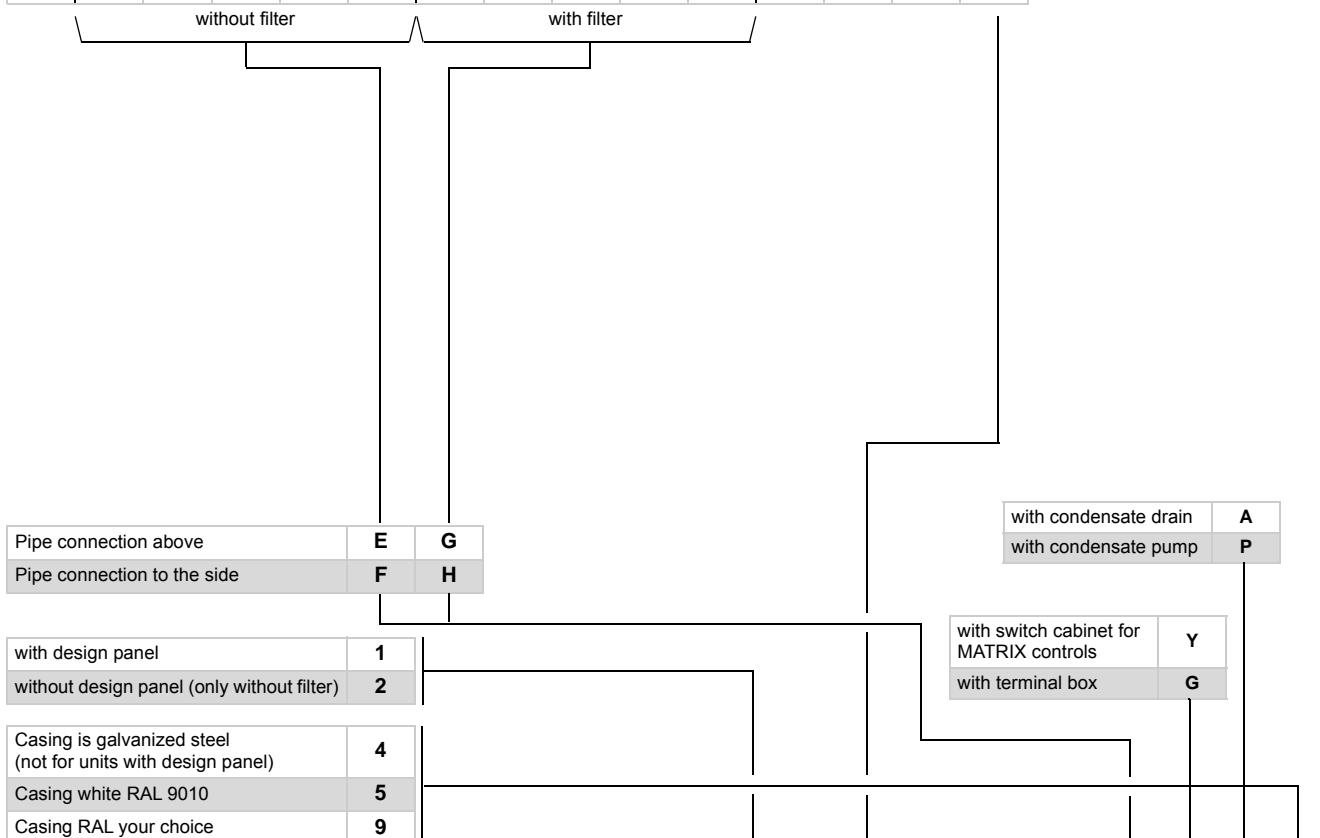
Control accessories
terminal box,
see from page 54.

Multi Flair 1~ 230 V cooling

MIN	1060	2.5	21	–	–	910	2.3	21	–	–	43	29	3	1
MAX	3780	4.3	24	–	–	3150	4.0	24	–	–	66	52		
MIN	1060	3.8	18	–	–	910	3.6	17	–	–	43	29	3	2
MAX	3780	6.6	22	–	–	3150	6.1	22	–	–	66	52		
MIN	970	3.7	17	–	–	900	3.5	17	–	–	43	29	3	3
MAX	3590	7.7	21	–	–	3050	7.2	21	–	–	66	52		
MIN	970	5.4	14	–	–	900	5.1	14	–	–	43	29	3	4
MAX	3590	11.4	19	–	–	3050	10.6	18	–	–	66	52		

Multi Flair 1~ 230 V heating or cooling

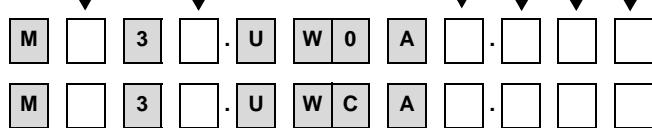
MIN	1060	2.5	21	5.4	35	910	2.3	21	5.0	36	43	29	3	1
MAX	3780	4.3	24	9.4	27	3150	4.0	24	8.7	28	66	52		
MIN	1060	3.8	18	7.8	42	910	3.6	17	7.3	44	43	29	3	2
MAX	3780	6.6	22	14.4	31	3150	6.1	22	13.2	33	66	52		
MIN	970	3.7	17	8.0	45	900	3.5	17	7.7	45	43	29	3	3
MAX	3590	7.7	21	16.5	34	3050	7.2	21	15.3	35	66	52		
MIN	970	5.4	14	10.3	52	900	5.1	14	9.8	52	43	29	3	4
MAX	3590	11.4	19	23.7	40	3050	10.6	18	21.7	41	66	52		



* Fan switched off

Order code Multi-Flair cooling

Order code Multi-Flair heating or cooling



Control equipment

Multi Flair 1~ 230 V heating, cooling, heating or cooling

2-pipe chilled or warm water, model size 3, EC fan motor

Multi Flair

DencoHappel MATRIX 3000

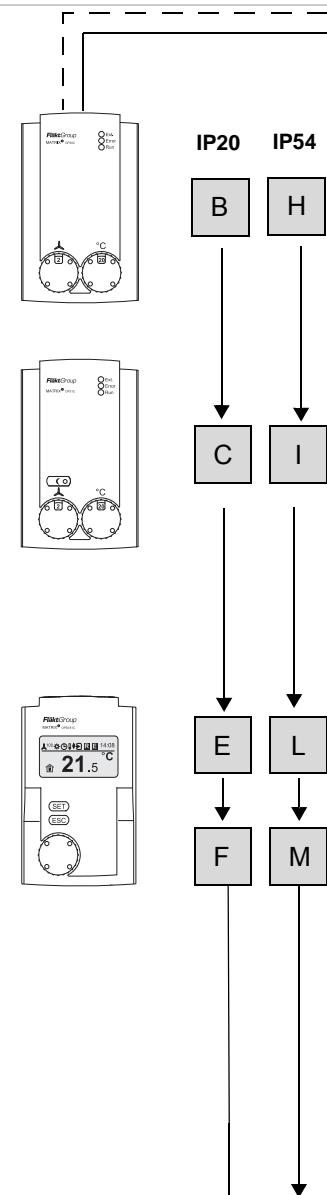
System features:

- Temperature assignment.: 7...40 °C (default 10..30 °C)
- Assignment of fan speed
- Adjustable regulating range
- Switchover between normal/economy mode on control panel
- Input for switchover between normal/economy mode or unit OFF with frost protection
- Room temperature measurement using control panel
- External room sensor can be connected
- Valve control (2 or 3 point)
- Temperature control via fan and/or valve
- Room frost protection
- Status messages using LED
- Status and alarm signal via volt free change-over contacts
- Unit individual and group control
- Isolation of individual units in case of fault
- Temperature monitoring of the motors (thermal contact required)
- Network-enabled

MATRIX OP30#

Control panel for MATRIX 3000

- Casing in light gray, protection class IP20, casing in pure white, protection class IP54
- Setpoint temperature setting
- Speed-stage selection switch 0 - auto - 1-2-3
- LEDs for operation/fault/ext.control
- integrated room sensor (only OP30C)



MATRIX OP31#

like control panel OP30#, however in addition:

- Normal/economy mode buttons

MATRIX OP50#

Control panel for MATRIX 3000

- Casing in light gray, protection class IP54, casing in pure white, protection class IP20
- Menu-guided controls using rotation navigator
- LCD display with plain-text display
- Status messages using pictograms
- Integrated room sensor (only OP50C)

MATRIX OP51#

like control panel OP50#, however in addition:

- Integrated weekly clock timer with holiday and special days programme

The place holder "#" stands for the available protection class IP20 und IP54.

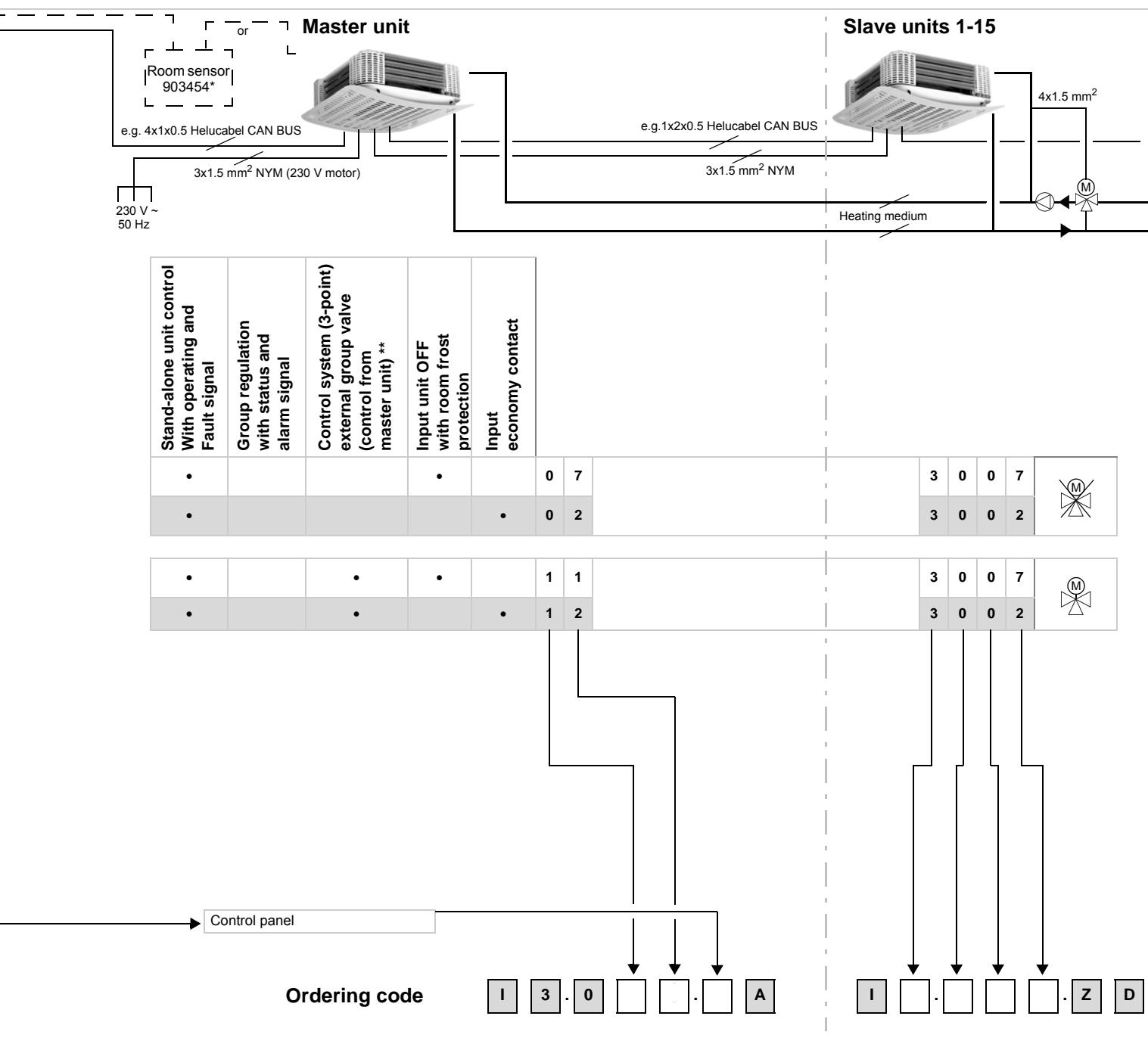
IP20 -> # = C

IP54 -> # = I

Control equipment

Multi Flair

Multi Flair 1~ 230 V heating, cooling, heating or cooling
2-pipe chilled or warm water, model size 3, EC fan motor



Pressure drop in heat exchanger

Multi Flair

FläktGroup DC-2009-0005-GB 2018-08/R5 • Subject to change

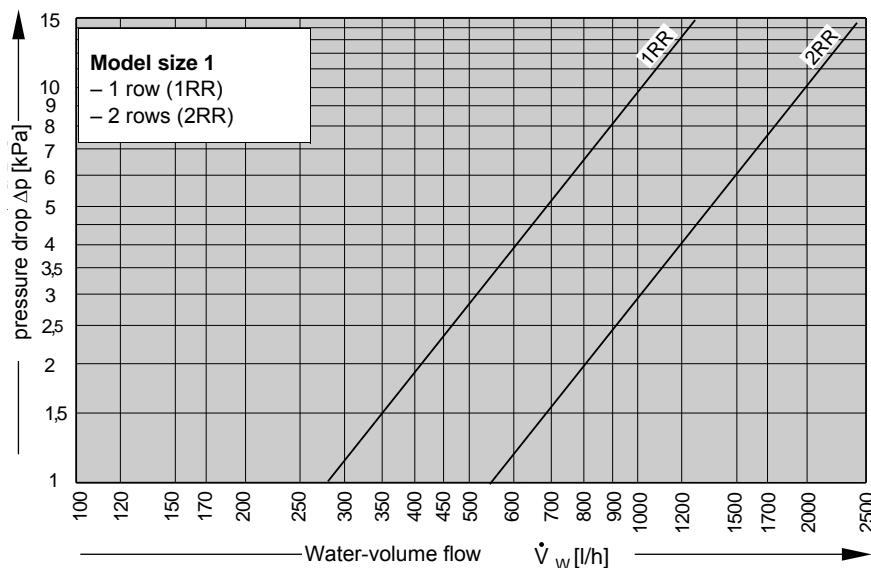


Fig. 12

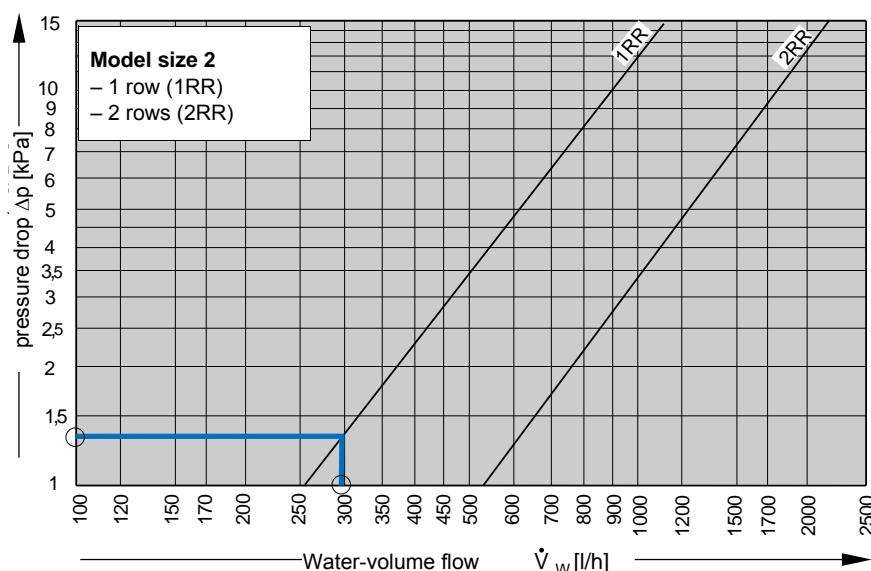


Fig. 13

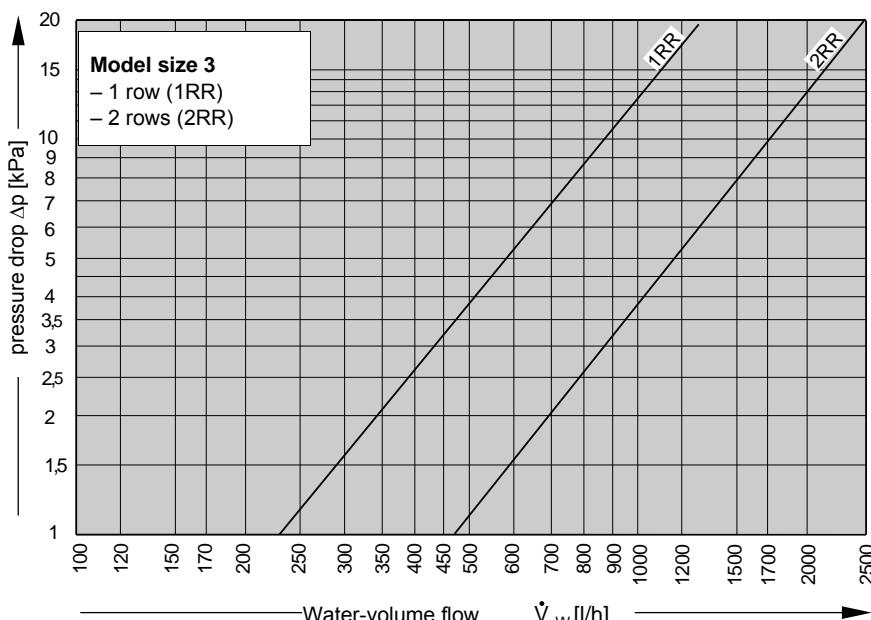


Fig. 14

The configuration is based on values of the example calculation for the power input determination of Multi Flair units

Model size	Speed	Sound power level (dB)									A-rated sum level		Max. power take up kW	Max. current take up A	
		Octave medium frequency (Hz)									Sound power	Sound pressure*			
		Speed	RPM	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)		
1 ~ 230 V 1-speed															
1	1	920		59	68	66	63	61	56	51	40	66	52	0,09	0,48
2	1	865		65	70	68	66	62	59	54	45	68	54	0,14	0,68
3	1	910		82	76	76	73	69	66	59	52	75	61	0,29	1,25
1 ~ 230 V EC continuous **															
3	min.	290		62	55	50	47	43	38	26	22	43	30	0,02	0,29
	max.	680		61	65	66	65	62	58	52	42	66	53	0,15	0,72
1 ~ 230 V 3-speed															
1	1	480		55	53	54	48	44	36	24	<20	50	36	0,09	0,48
	2	680		55	60	60	57	54	49	41	27	59	45		
	3	850		68	71	64	61	59	54	48	37	64	50		
2	1	325		43	56	50	42	38	26	<20	<20	45	31	0,14	0,68
	2	415		52	54	54	48	45	37	25	<20	50	36		
	3	610		58	62	59	58	55	50	43	29	59	45		
3	1	410		68	60	60	54	51	43	34	27	57	43	0,29	1,25
	2	490		66	64	64	60	55	49	40	32	62	47		
	3	620		70	67	67	63	60	55	47	40	65	51		
3 ~ 400 V 2-speed															
1	1	770		58	65	61	58	56	51	44	30	61	47	0,08	0,19
	2	920		59	68	66	63	61	56	51	40	66	53		
2	1	705		61	66	64	61	57	53	47	34	63	49	0,13	0,31
	2	900		66	71	69	67	63	60	55	45	69	55		
3	1	490		52	57	59	59	55	50	42	29	60	46	0,17	0,45
	2	650		61	65	66	65	62	58	52	43	67	53		

* Sound pressure: standard values at 3 m distance to the unit side, at maximum air volume flow and low-reflection room.
Room volume 1500m³/h, Absorption surface 200 m² Sabin, hemispherical radiation = direction coefficient 2.

** Values apply for the maximum allowed control voltage of fan 6.2 V for all types.

Mechanical data of the condensate pump

Operating voltage	230 V AC/50 Hz
FULL LOAD CURRENT	maximum 0.2 A
FULL LOAD INPUT	55 W
Maximum pump head	1.3 m
Maximum water-volume flow	60 l/h

Condensate pump capacity

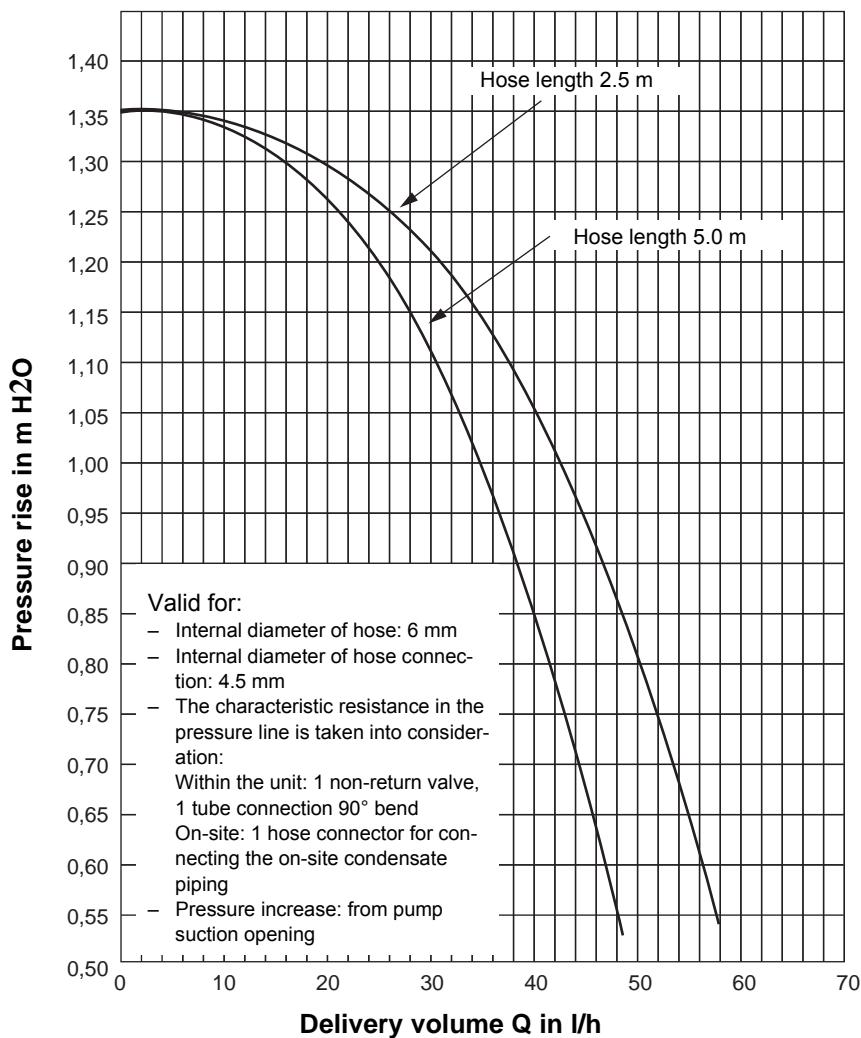


Fig. 15

Sound power of condensate pump with cooling units

The sound power level of the built-in condensate pump is:

not evaluated: 54 dB

evaluated: 52 dB(A)

Indication for increased operating noise of the condensate pump during the start-up phase:

The condensate pump can cause short-term increased operating noise during the start-up phase caused by air locks in air-intake ductwork and deviations from normal operating temperature.

Multi Flair

Model size-dependent width measurements of the basic unit

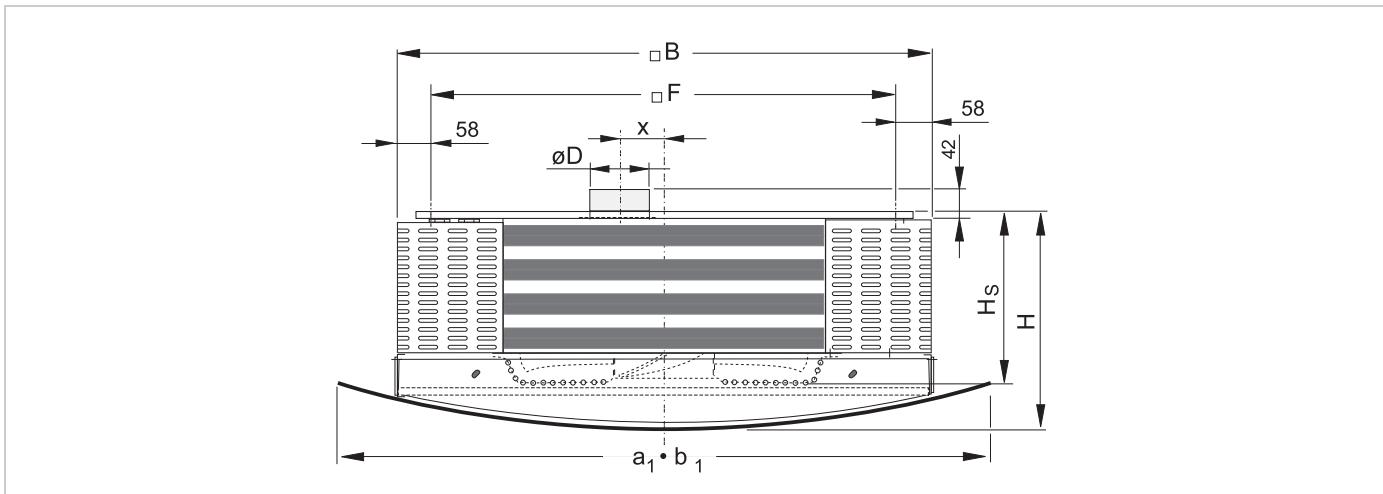


Fig. 16

Model size	Design panel							Weight ³⁾ (kg)	Weight (kg)
	B	H	H _s ¹⁾	a ₁ • b ₁	x	Ø D	F ²⁾		
1	729	328	296	900 • 800	120	150	613	38	3,5
2	830	340	301	1000 • 900	120	180	713	44	4,2
3	930	365/415 ⁴⁾	310/360 ⁴⁾	1100 • 985	120	200	813	57	5,2

1) Standard Unit

2) Bolt circle for fixation

3) Average weight. Depending on capacity stage of the device +/- 1.5 kg difference

4) EC fan

Hydraulic connection

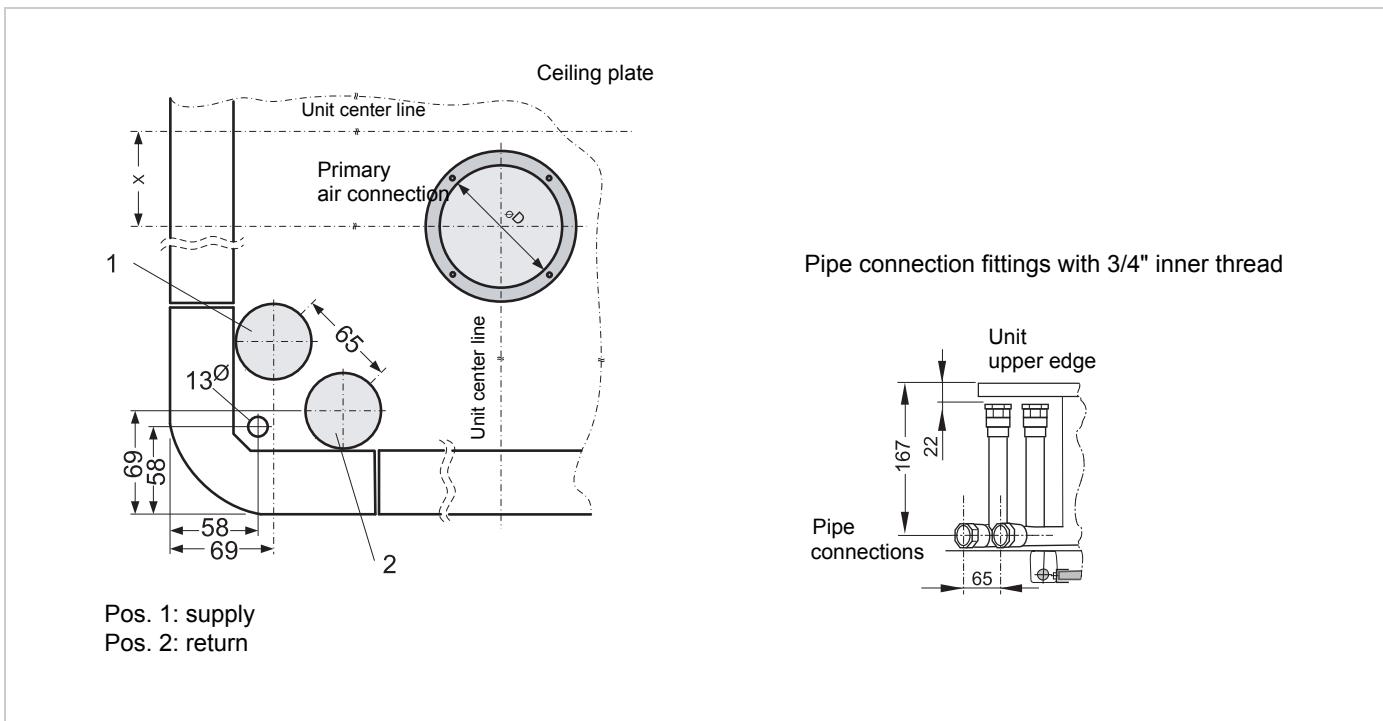


Fig. 17

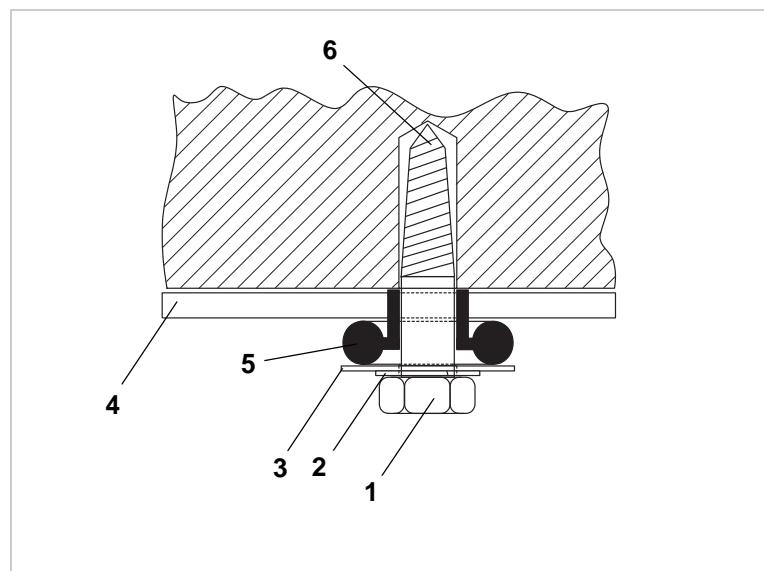


Fig. 18

Mounting set 46D (Fig. 18)

For the fixation of the device under a ceiling.

Mounting set 46Z consisting of:

- 4 hexagon screws M8
- 4 spring washers 8 mm
- 4 flat washers 8 mm
- 4 elastomer insulated washers
- 4 dowel plugs 10 mm

Pos. 1: Hexagon screw M8 x 60 mm

Pos. 2: 8 mm spring washer

Pos. 3: 8 mm flat washer

Pos. 4: Unit base plate

Pos. 5: Elastomer insulated washer

Pos. 6: 10 mm dowel plug

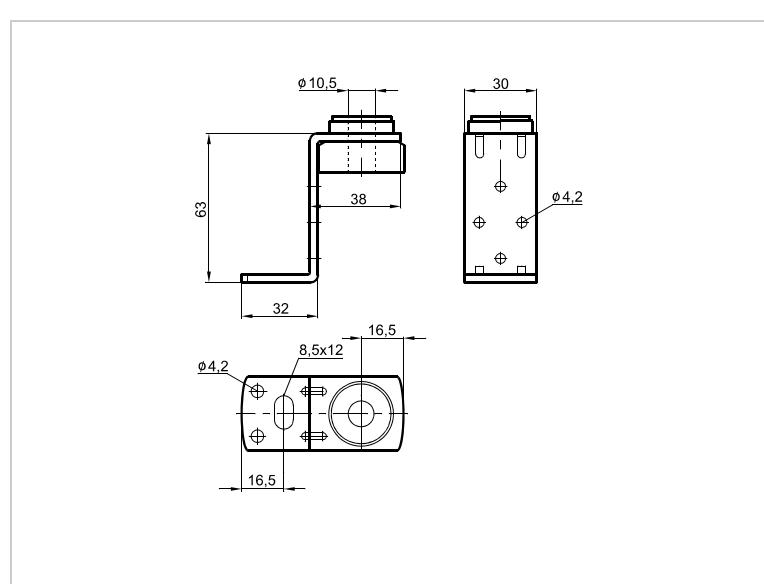


Fig. 19

Mounting set 46Z (Fig. 19)

For the fixation of the device under a suspended ceiling.

Mounting set 46Z consists of:

- 4 angles
- 4 threaded rods M8 x 500 mm
- 8 hexagonal nuts self-locking M8
- 8 hexagon nuts M8
- 4 dowel plugs 10 mm
- 4 hexagon screws M8

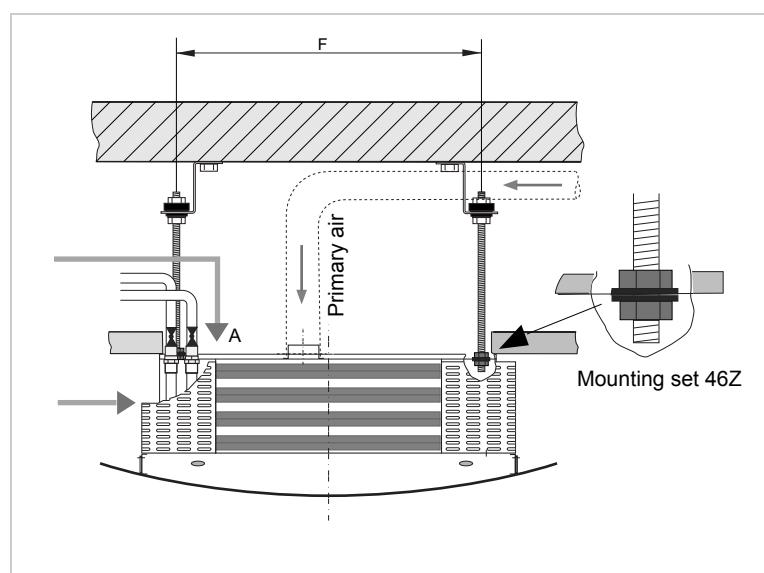


Fig. 20

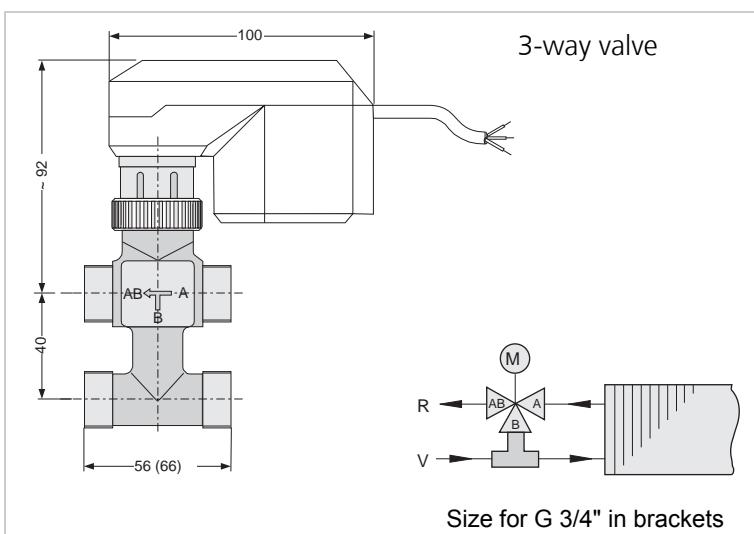


Fig. 21

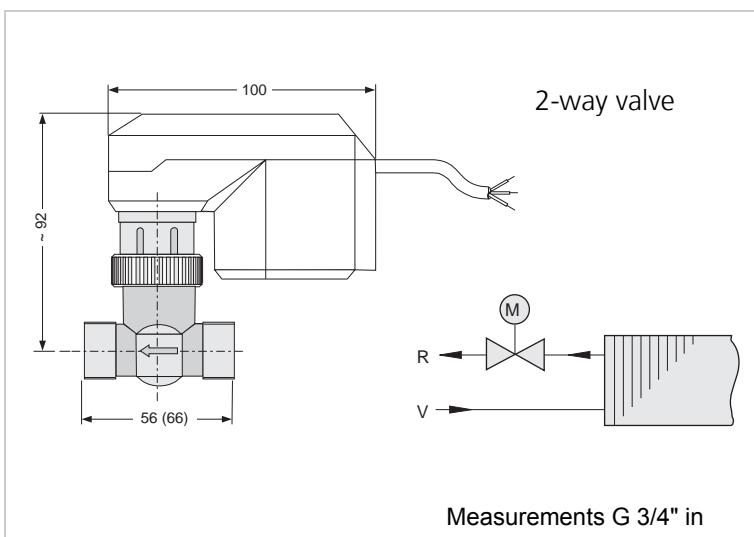


Fig. 22

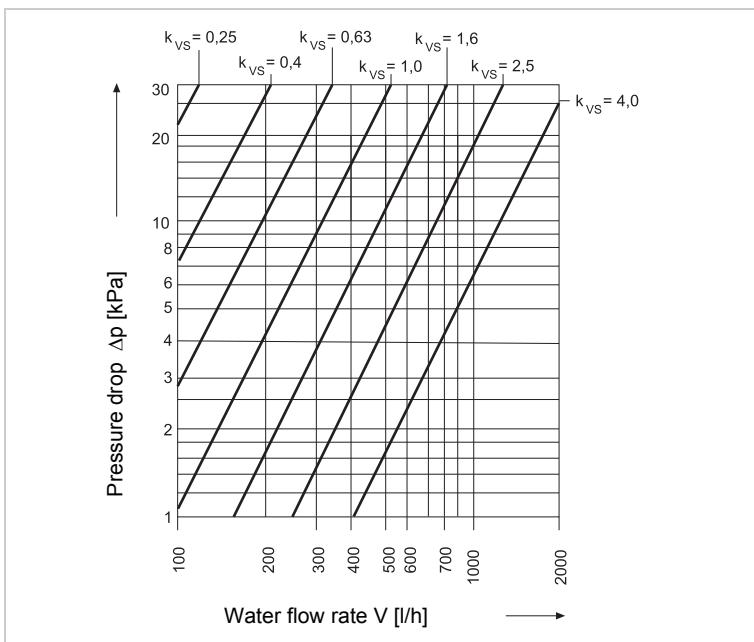


Fig. 23

Additional valves (e.g. 24 V or continuous 0-10 V) on request.

Two and three-way valves with a modulating motor drive for water-side regulation (3-point modulating operation). Connecting cable, plastic motor casing, valve body made of brass (G 1/2"A) or red brass (G 3/4"A), stainless steel spindle and cone.

Specifications:

Nominal pressure:	1.6 MPa
maximum allowable ambient temperature:	60 °C
Maximum water inlet temperature:	110 °C
Operating voltage	230 V~/50/60 Hz
Power consumption:	7 VA
Protection class:	IP 43
Running time:	120 sec. at 50 Hz (100 s at 60 Hz)
Water with a max. 50% glycol rate is allowed.	
Do not mount the actuator upside down!	

Valve values		
k_{vs} -value [m ³ /h]	Δp_{max} [kPa] ¹⁾	Valve Exter. thread
0,25	1600/800 ²⁾	G 1/2" A
0,40	1600/800 ²⁾	G 1/2" A
0,63	1600/800 ²⁾	G 1/2" A
1,0	1200/250 ²⁾	G 1/2" A
1,6	1200/250 ²⁾	G 1/2" A
2,5	400/100 ²⁾	G 3/4" A
4,0	400/100 ²⁾	G 3/4" A

1) maximum allowable pressure drop, where the valve still closes against the pressure (for two valves)

2) for 3-way valves

Order No.

k_{vs} -value	Separately supplied valves	
	Two-way	3-way
0,25	935421	935411
0,40	935422	935412
0,63	935423	935413
1,00	935424	935414
1,60	935425	935415
2,50	935426	935416
4,00	935427	935417

Note: The max. pressure drop in heat exchanger with fully open valve should not exceed 25 kPa in cooling mode and 20 kPa in heating mode.

MATRIX control system

System description

Multi Flair

Overview



MATRIX 2000

The MATRIX 2000 control system supports all basic functions (heating/cooling) of the Multi Flair. The controller can be used in the following unit types:

- 2-pipe units "only heating"
 - 2-pipe units "only cooling"
 - 2-pipe plants
- "Heating or cooling" (change over)

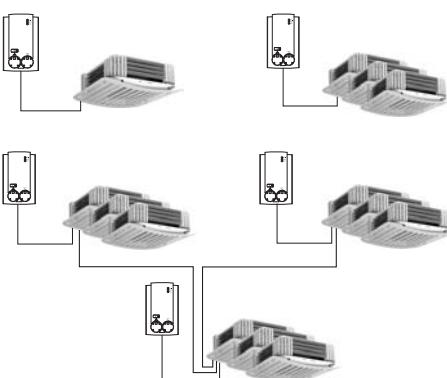
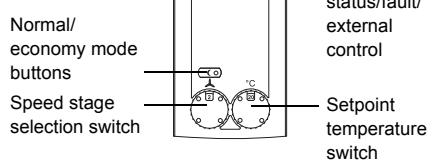
The 2 or 3-level fan control is performed automatically depending on the set-point/actual temperature deviation. The speed can be set manually and the unit (with frost protection) switched off via the control panel. Valves with 2-point or 3-point modulating control behavior and a supply voltage of 24 V AC or 230 V AC can be activated to control the heating and/or cooling capacity. Additionally, the MATRIX 2000 allows you to monitor the fan motor via thermal contacts with external leads as well as the condensate water level for cooling units with a condensate pump.

The control panel OP21 enables the quick and easy adjustment of the set-point values without extensive prior knowledge. Mechanical limiters can be used to limit the setting range for the setpoint temperature and fan speed. Room temperature is measured by a sensor integrated in the control panel. If the control unit is positioned in an unfavorable location (such as by the door), an external temperature sensor or return-air sensor can be connected (not possible for change-over plants). System faults are signaled centrally via the red "malfunction" LED. If economy mode is activated, it is displayed via the yellow LED integrated into the button.

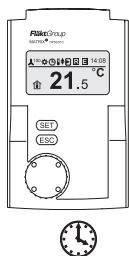
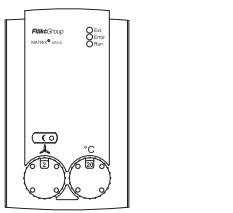
In addition to the protection class IP20 (OP20 C, OP21 C), a IP54 control panel variant (OP21 I) is provided, e.g. for moist areas or industrial zones. The connection in the unit is made via plug-in cage clamps. Electronics, fans and valves (230V) are fused separately via two microfuses on the power supply. A pre-fuse B 10A must be supplied to provide the necessary circuit protection.

MATRIX 2000 can also be used for controlling circulating-air stand-alone units such as circulating-air unit groups. The integrated MATRIX.Net bus system enables integration of up to 16 several groups to one network. The combination with the controllers MATRIX 3000/4000 as well as the connection of global modules and communication interfaces is also possible.

	Valve actuator	
	2 point	3 point
• / ☃	•	•
•	•	•
cox	•	•



	Valve actuator	
	2 point	3 point
*	*	*
*	*	*
SS	*	*



MATRIX 3000

The MATRIX 3000 control system is based on the MATRIX 2000 system and provides the following additional functions. These features are described as follows:

Status and alarm signals are relayed via two change-over contacts on the unit. The maximum load on the contacts at 230 V AC is 4 A ohmic / 2 A inductive.

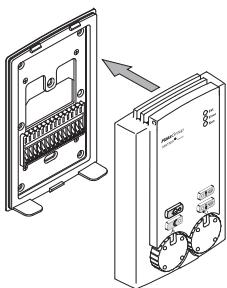
The connection of an external temperature sensor is possible for all unit types. An additional control input enables the following operating modes that can be set externally:

- Normal/economy mode or
- Unit OFF with frost protection

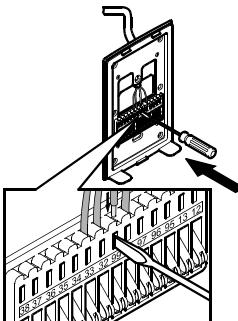
Various types of control panels are available. The range varies from a simple variant with setpoint temperature and fan operating mode selection using infrared remote control to a control panel with display. The display unit can also be supplied with an integrated weekly timer.

Performance characteristics		MATRIX 2000	MATRIX 3000
Unit type	2-pipe systems "only heating"	✓	✓
	2-pipe systems "only cooling"	✓	✓
	2-pipe systems "heating or cooling"	✓	✓
Fan	up to 3 speeds (1 x 230 V/3 x 400 V)	✓	✓
	Temperature-dependent fan control	✓	✓
	Motor monitoring with external thermal contact	✓	✓
Valve control	1 x 2-point; 1 x 3-point; 2 x 2-point	✓	✓
	1 x 2-point; 1 x 3-point; 2 x 2-point; 2 x 3-point		✓
Frost protection	Indoor anti-freeze protection	✓	✓
Summer / winter compensation		✓	✓
Control inputs	Economy mode or gate/window contact	✓*	✓
	Economy mode, gate/window contact, unit OFF, autonomous operating mode	✓*	✓*
Measuring the outside temperature	using MATRIX.AI	✓	✓
Measuring the inlet temperature	via local sensor connection	✓	✓
Messages	Alarm condensate level with unit disconnection	✓	✓
	Status signal via change-over contact		✓
	Fault signal via change-over contact		✓
Control modes	Room temperature control	✓	✓
MATRIX.Net bus system		✓	✓
can be extended by:	MATRIX.DI	✓	✓
	MATRIX.AI	✓	✓
	MATRIX.DO	✓	✓
	MATRIX.V	✓	✓
	MATRIX.LON	✓	✓
Service tools	MATRIX.PC	✓	✓
Control panels	MATRIX OP20C	✓	
	MATRIX OP21x		✓
	MATRIX OP30x		✓
	MATRIX OP31x		✓
	MATRIX OP44x		✓
	MATRIX OP50x/51x		✓

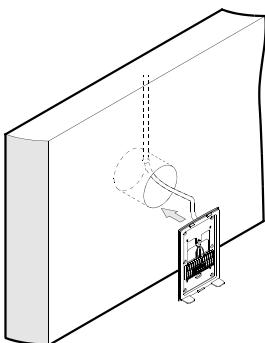
* only with add-on module



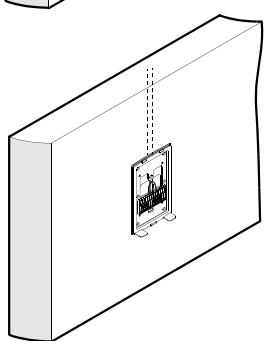
As the control panel is divided into two parts, snap the upper shell on the mounting plate for commissioning. This provides optimum protection against dirt and damage for the control panels during the construction phase.



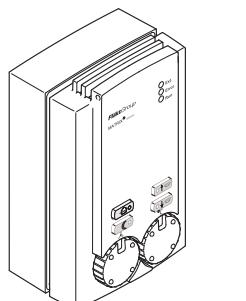
The cable connection is established via cage clamps. This enables quick and easy use of solid and flexible cores.



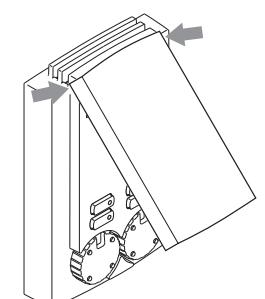
To mount the control panel in a standard flush-mounted socket, corresponding drill holes need to be provided in the mounting plate.



The control panel can also be fitted directly on the wall (cable laid under plaster or in cavity wall).



IP54 control panels for moisture-proof applications are likewise available.



To prevent dirt accumulation or accidental operation, control panel covers are available as accessory items (see „Fig. 27” on page 47).



Fig. 24



Fig. 25



Fig. 26



Fig. 27

Room sensor Order No. 903414

Thermistor sensor for on-wall mounting

- NTC sensor element
- Plastic casing: white, similar to RAL 9010
- Resistance coefficient at 25 °C = 10 kΩ
- Protection type IP20
- Dimensions in mm (W x H x D): 84 x 84 x 22

The 903.414 indoor sensor replaces indoor sensor in the MATRIX OP XXC control panels. The additional sensor must be fitted if the control panel is mounted in a location that is unsuitable for accurate temperature measurement.

Room/external sensor Order No. 903454

Thermistor sensors for the recording of the room temperature or the outdoor temperature. e.g. the summer/winter compensation (according to DIN 1946 part 2/3)

- NTC sensor element
- Impact resistant white plastic casing
- for outdoor wall mounting
- PG bolts
- Resistance coefficient at 25 °C = 10 kΩ
- Protection type IP54
- Dimensions in mm (W x H x D): 65 x 50 x 37.5

Flow sensor order-nr.903434

Thermistor sensor for mounting at inlet line

- NTC sensor element
- Sensor on basic plate; white plastic casing; RAL 9010
- Mounted with tightening strap at inlet line
- maximum ambient temperature 100 °C
- Dimensions in mm (W x H x D): 85 x 53 x 65
- Resistance coefficient at 25 °C = 10 kΩ
- Protection class IP 43

Unit cap

White order nr.OPD.C

(for OP20C/OP21C/OP30C/OP31C/OP44C)

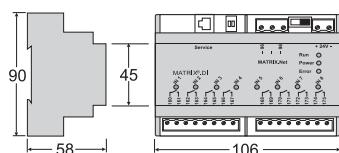
Light grey order-nr.OPD.I

(for OP21I/OP30I/OP31I/OP44I)

For covering operating elements of control panel

The unit cover is hanged in the guide bore of the control unit and protects the control panel from soiling and inadvertent operation
(not available for control panels OP50/51).

Global modules



Digitales input module MATRIX.DI

The MATRIX.DI digital input module is one of the global modules of the MATRIX control system and is used as input for digital control signals. Therefore the control system can be regulated by external systems. The module can be integrated at any point within the MATRIX network. A maximum of 2 MATRIX.DI modules may be operated in one network at the same time.

The module has more than eight independent digital inputs that are activated by means of volt free contacts. LEDs show the respective input state. Settings made via the DI module have priority over the settings of the local control panel. The following functions and operating modes can be set using the module :

- HVAC mode (heating/cooling/automatic)
- Normal / economy mode
- Fan speed (1/2/3/4/5/Auto/Mute)
- Activate mixed-air operation
- Unit OFF with frost protection
- Activate controller parameters

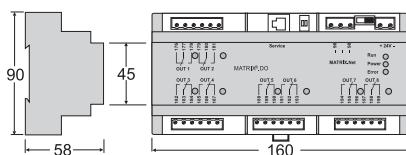
The module is supplied with the default factory configuration. Configurations with other settings can be made using the MATRIX.PC software. The function allocation of the inputs and the respective assignments to the groups can thereby be freely selected..

Technical data:

Power supply	24 V DC ± 15 %
PROTECTION RATING	IP 20
Maximum current consumption	0.1 A
Dimensions	106 mm x 90 mm x 58 mm
Operating temperature	0 to +45 °C
Fusing	10 A T
Fixation	Mounting rail

Factory-made configuration:

Input	Valid for	Closed contact results in
1	All groups	HVAC Mode Heating
2	All groups	HVAC Mode Cooling
3	All groups	Normal operation
4	All groups	Economy mode
5	Group 0	Fan in speed 3
6	—	—
7	—	—
8	Group 0	Active mixed-air operation



Digital output module MATRIX.DO

The digital output module MATRIX.DO is one of the global modules of the MATRIX control system and is used for signal output from the MATRIX system. Thus the module enables the forwarding of messages and operating states to external systems. The module can be integrated anywhere within the MATRIX network. A maximum of 2 MATRIX.DO modules may be operated in one network simultaneously.

The module is fitted with 8 separate digital outputs with volt-free changeover contacts. LEDs indicate the current output status. System component messages and operating states from one or more groups can be sent directly or in conjunction with other operating states. Comparison functions, including arithmetic and timing functions are enabled.

Output of the following messages/operating states comprise:

- Error messages (e.g. motor overheat, frost hazard, sensor error, condensate level too high)
- Current fan speed
- Normal operation/economy operation
- Bypass mode
- Current HVAC mode (heating/cooling/automatic)
- Mixed-air/recirculating-air mode
- Active electric heating
- An x number of units are operating in heating or cooling mode

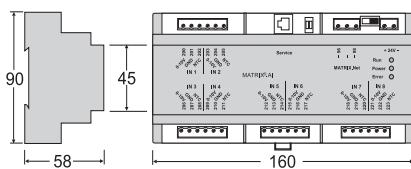
The module is supplied with the default factory configuration. Configurations with other settings can be made using the MATRIX.PC software. The allocation of the outputs and the respective assignment to the groups can thereby be freely selected.

Technical data:

Power supply	24 V DC ± 15 %
PROTECTION RATING	IP 20
maximum rated current consumption	0.14 A
Dimensions	160 mm x 90 mm x 58 mm
Operating temperature	0 to +45 °C
Fusing	10 A T
Fixation	Mounting rail
Contact load	250 V/5 A (ohmic); 2 A (inductive)

Factory-made configuration:

Input	Valid for	Relay on signals
1	All groups	Operating principle
2	All groups	Fault signal
3	All groups	Frost alarm
4	Group 0	Fault signal
5	Group 1	Fault signal
6	Group 2	Fault signal
7	Group 3	Fault signal
8	Group 4	Fault signal



Analog input module MATRIX.AI

The MATRIX.AI analog input module is one of the global modules of the MATRIX control system and is used as input for analog actual readings and setpoints. Thus it enables the MATRIX control system to be connected to external systems. The module can be integrated at any point within the MATRIX network. A maximum of 2 MATRIX.AI modules may be operated in one network simultaneously.

The module is equipped with 8 independent analog inputs that are controlled using 0...10 V/2...10 V signals or can be fitted with NTC sensors (10 k Ohm/25 °C). Settings made via the AI module have priority over the settings of the local control panel. The following setpoints and actual readings can be set / received using the module.

- Actual readings:
 - Room, outdoor and inlet temperature
 - Outdoor-air humidity
 - Indoor CO₂ concentration
 - Supply duct pressure and volume flow
 - Extract duct pressure and volume flow
- Setpoints:
 - Room temperature, supply air temperature
 - Outside air rate

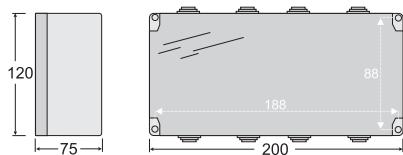
The module is supplied with the default factory configuration. Configurations with other settings can be made using the MATRIX.PC software. The allocation of the inputs and the respective assignment to the groups can thereby be freely selected. Input voltage range can be selected as well as measuring range of the sensor and a filter value for signal stabilisation specified.

Technical data:

Power supply	24 V DC ± 15 %
Protection class	IP 20
Nominal current consumption	0.03 A
Dimensions	160 mm x 90 mm x 58 mm
Operating temperature	0 to +45 °C
Fusing	10 A T
Fixation	Mounting rail

Factory-made configuration:

Input	valid for	Parameter	Type	Filter value	Measuring range
1	All groups	Outdoor temperature	NTC	20	–
2	All groups	Inlet temperature	NTC	20	–
3	Group 0	Room air setpoint	0 ... 10 V	20	10 – 35 °C
4	Group 1	Room air setpoint	0 ... 10 V	20	10 – 35 °C
5	Group 2	Room air setpoint	0 ... 10 V	20	10 – 35 °C
6	Group 0	Outside air rate	0 ... 10 V	20	0 ... 100 %
7	Group 1	Outside air rate	0 ... 10 V	20	0 ... 100 %



MATRIX.V valve module

The MATRIX.V valve module is one of the global modules of the MATRIX control system and is used to actuate group valves e.g. in unit heater plants. The module can be integrated at any point within the MATRIX network. A maximum of 1 module MATRIX.LON can be used for each group. Different valve drive types (2-point/3-point/continuous) are supported as well as the use in 2- and 4-line units, change-over systems included.

The module is fitted with the following inputs and outputs:

- analog input to measure supply temperature (NTC sensor 10 k Ohm/25 °C)
- 2 analog outputs (0/2...10 V) for controlling continuous valves
- 4 relay outputs for regulating open/close and modulating (2/3-point) valves
- 2 relay outputs for chilled/warm water demand

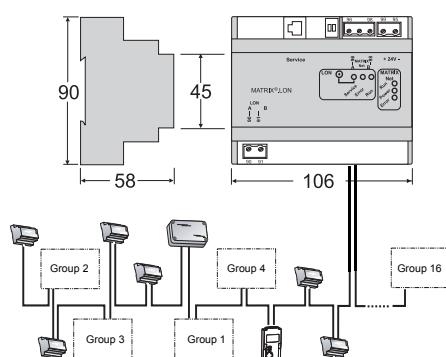
The module is supplied with the default factory configuration. Configurations with other settings can be performed using the MATRIX.PC software.

Technical data:

Power supply	230 V AC ± 15 %
Protection class	IP 54
Nominal current consumption	0.02 A
Dimensions	200 mm x 120 mm x 75 mm
Operating temperature	0 to +45 °C
Fusing	B 10 A
Fixation	4 drill holes 4 mm
Contact load	250 V/5 A (ohmic); 2 A (inductive)

Factory-made configuration:

Unit type	2-pipe heating or cooling
Control type	Room temperature control
Valve type	Modulating (3-point) valve
Pump run-on time, pumped chilled water	1 min
Pump run-on time, pumped warm water	1 min
Maximum valve runtime	150 sec



MATRIX.LON module

The MATRIX.LON communication module is part of the global modules of the MATRIX control system and is used for connecting the MATRIX control system to a network structure in accordance with the LON WORKS standard. It enables the connection of HVAC equipment to a building management system or other building service systems. In addition, it enables the control of foreign systems such as louvres or lighting systems with the control panel MATRIX OP50/51. The module can be integrated at any point within the MATRIX network. A maximum of 16 MATRIX.LON modules can be used within one MATRIX network.

Technical data:

Power supply	24 V DC ± 15 %
Protection class	IP 20
Nominal current consumption	0.03 A
Dimensions	106 mm x 90 mm x 58 mm
Operating temperature	0 to +45 °C
Fusing	10 A T
Fixation	Mounting rail



MATRIX.OP71 control panel for all groups

The MATRIX.OP71 control panel for all groups is designed for operation from one central point. This control panel can be integrated at any location within the MATRIX network and can be simultaneously operated in 16 groups.

Up to 16 unit groups can be assigned to one cluster:

- One unit group per each cluster
- Each cluster to include up to 16 unit groups.

Clear text menus and a "push&turn" function enable easy handling during operation or configuration. A maximum of 16 unit groups can be individually grouped into clusters. Using a control panel, the desired setpoints for temperature, fan speed, etc. can be assigned for each cluster. Thanks to comprehensive features of the control panel, the necessary room or return air sensors are located in the respective groups (group locations).

Local control panels (OP2xx, OP3xx, OP4xx, OP5x) can be additionally integrated in individual groups. Their functional scope can be defined and adjusted using the control panel for all groups. Thus, a relative daily setpoint can be entered via a local control panel, whereas the standard setpoint is assigned via the OP71C.

The integrated clock timer enables the assignment of 8 weekly programs to clusters in any sequence. Each weekly programme enables to enter four switching times per day (2 x On/2 x Off), that can also be set to be valid for the whole day. In addition, it is possible to set 8 special switching days with up to four switching times (2 x On/2 x Off) per designated switching day.

Holiday periods can be taken into consideration by programming for the entire year. On holidays the unit can be set to operate in "unit off" or economy mode.

The summer / winter time changeover is performed automatically.

The control unit is currently supplied with 7 selectable languages:

- German
- English
- French
- Polish
- Czech
- Hungarian.

Two different variants are available:

- MATRIX.OP71C with IP20 protection type; color – white (similar to RAL 9016)
- MATRIX.OP71I in IP54 protection type; color – light gray (similar to RAL 7035).

Service tools



Service software MATRIX.PC

The service software MATRIX.PC provides comprehensive functions in parameterization, commissioning and data recording of the MATRIX control system.

The service software can be connected via the service interface, which is integrated in all control panels, controllers, global modules, clock timers and communication modules. Your PC must have a USB port; the enclosed adapter establishes the connection between the PC and the service interface.

The following essential functions are provided:

- Online display of module, status and network data
- Recording and saving of temperature curves and switch states of driven components with adjustable sample rate
- Offline parameterization
- Programming of required inputs and outputs (controllers, global modules)
- Activation of messaging and network data
- Configuration of controller and control panel functions
- Input of sensor correction factors

PC system requirements:

- PC with 233 MHz processor frequency or higher
- 20 MB available disk space
- Minimum monitor resolution of 800 x 600 pixels
- USB interface for CAN adaptor

The software is compatible with the following operating systems:

Windows 98 Second Edition; Windows 2000; Windows XP; Windows 7; Windows 8

Apart from a program USB stick, the packaged content includes an installation guide and the interface module to the connection to the USB port of the PC.



Fig. 28

5-speed switch unit 985450 for Multi Flair 230 V~

For the operation of 1 to 4 air treatment Multi Flair units (for building size 3, a maximum of two units are possible):

- Speed switch
- Transformer
- Maximum current consumption 3.5A
- Standby indicator light
- Thermo-contact switching with blocking switch-off
- Fault lockout release by "0"-position of the rotational speed controller
- Synthetic on-wall mounted casing, light grey RAL 7035
- IP54 protection class
- Cable entry point below
- Dimensions in mm (W x H x D): 115 x 230 x 118
- Weight in kg: 3.6

For the connection of several units, an intermediary terminal box is required. The fan motors are thereby connected in parallel.

Intermediate terminal box 981840

For the connection of maximum four unit heaters with 230 V alternating current motor at a 5-speed switch units consisting of:

- Plastic on-wall-mounted casing
- Protection class IP 54
- Row terminal strip to 2.5 mm²
- enough space for loop-in wiring
- Dimensions in mm (W x H x D): 270 x 220 x 105

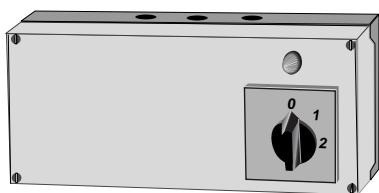


Fig. 29

Two-speed switch unit 985420 for Multi Flair 3x400 V~ (Y/Δ)

For the operation of one to four air treatment units Multi Flair:

- Speed selection switch 0-1-2
- Maximum current consumption 6.0A
- Standby indicator light
- CONTROL FUSE
- Connection for room thermostat (fan ON/OFF)
- Thermo-contact switching with locked switch-off
- Fault lockout release by "0" position of the speed switch (after correction of the fault cause)
- Plastic on-wall-mounted casing
- IP54 protection class
- Cable entry point above
- Dimensions in mm (W x H x D): 190 x 255 x 110
- Weight in kg: 1.0

For the connection of several units, an intermediary terminal box is required.

THE fan motors should be connected in parallel, the thermo contacts in series.

Intermediate terminal box 981860

For the connection of maximum four unit heaters with three-phase motors to a two-speed switch unit, consisting of:

- Plastic on-wall-mounted casing
- IP54 protection class
- Row terminal strip to 2.5 mm²
- enough space for loop-in wiring
- Dimensions in mm (W x H x D): 270 x 220 x 105

Multi Flair



Fig. 30

Compact controller CET.ACEC for Multi-Flair 230 V-

For the operation of one to four air treatment units Multi Flair:

- Level selector switch Standby-Auto-1-2-3
(Auto - continuously variable fan operation min. to 100%)
- Setpoint setting room temperature 10 to 30 °C
(Configurable adjustment of range range)
- Thermostat with settable neutral zone
- Enable input via volt free dry contact by others
- Room frost protection
- Connection possibilities for external room or return air sensor and flow sensor
- Integrated room temperature sensor
- Plastic casing: white, similar to RAL 9016
- Protection type IP30
- Control of EC fans
- Control of valves
- Actuation of external underfloor heating or cooling ceiling
- MODbus RS485 RTU integrated
- Pre-configured at the factory



Fig. 31

Room thermostat Order No. 902105

Room thermostat for surface mounting

- Setpoint setting 10 °C to 30 °C
- Bimetal system with thermal feedback
- Change-over contact: 10 A ohm./3 A ind. 250 V~ AC
- Switching difference ± 0.5 K
- Plastic casing for on-wall mounting white
- Protection class IP30
- Dimensions in mm (W x H x D): 84 x 84 x 40



Fig. 32

Industry room thermostat Order No. 902113

Room thermostat with closed-loop capillary system

- Setpoint setting 0 °C to 60 °C
- Capillary tubes of nickel-plated copper
- Change-over contact NC 16 (6) A 250 V~ AC
NO 6 (4) A 250 V ~ AC
- Switching difference 1.5 +/- 1.0 K
- Plastic casing for on-wall mounting
- Adjusting button
- IP54 protection class
- Dimensions in mm (W x H x D): 96 x 135 x 87



Fig. 33

Thermostat with quartz clock Order No. 902110

- LCD display
- Setpoint setting 5 °C to 35 °C adjustable in 0.5 K steps
- Change-over contact 5 A ohm. 2 A ind. 230 V~ AC
- Switching difference ± 0.5 K
- Clock timer 12/24 h Format
- 4 switching programs
- IP30 protection class
- Electrical power supply 2 x 1.5 V batteries LR6 (AA)
- Integrated NTC sensor
- Dimensions in mm (W x H x D): 133 x 89 x 26



Fig. 34

Contact temperature thermostat Order No. 902135

Thermostat with capillary system

- Setpoint range 10 ... 40°C
- Switching difference 10 K
- Change-over contact 4 A ohm. 2 A ind. 250 V~ AC
- Plastic casing
- IP54 protection class
- Dimensions in mm (W x H x D): 50 x 79 x 55



Fig. 35

Potentiometer 950EC1 for Multi Flair 1x230 V~ (EC Motor)

For the operation of one to four air treatment units Multi Flair:

- Setpoint range 0 ... 10 kΩ
- Plastic on-wall-mounted casing
- IP54 protection class
- Cable entry point above
- Dimensions in mm (W x H x D): 82 x 82 x 65

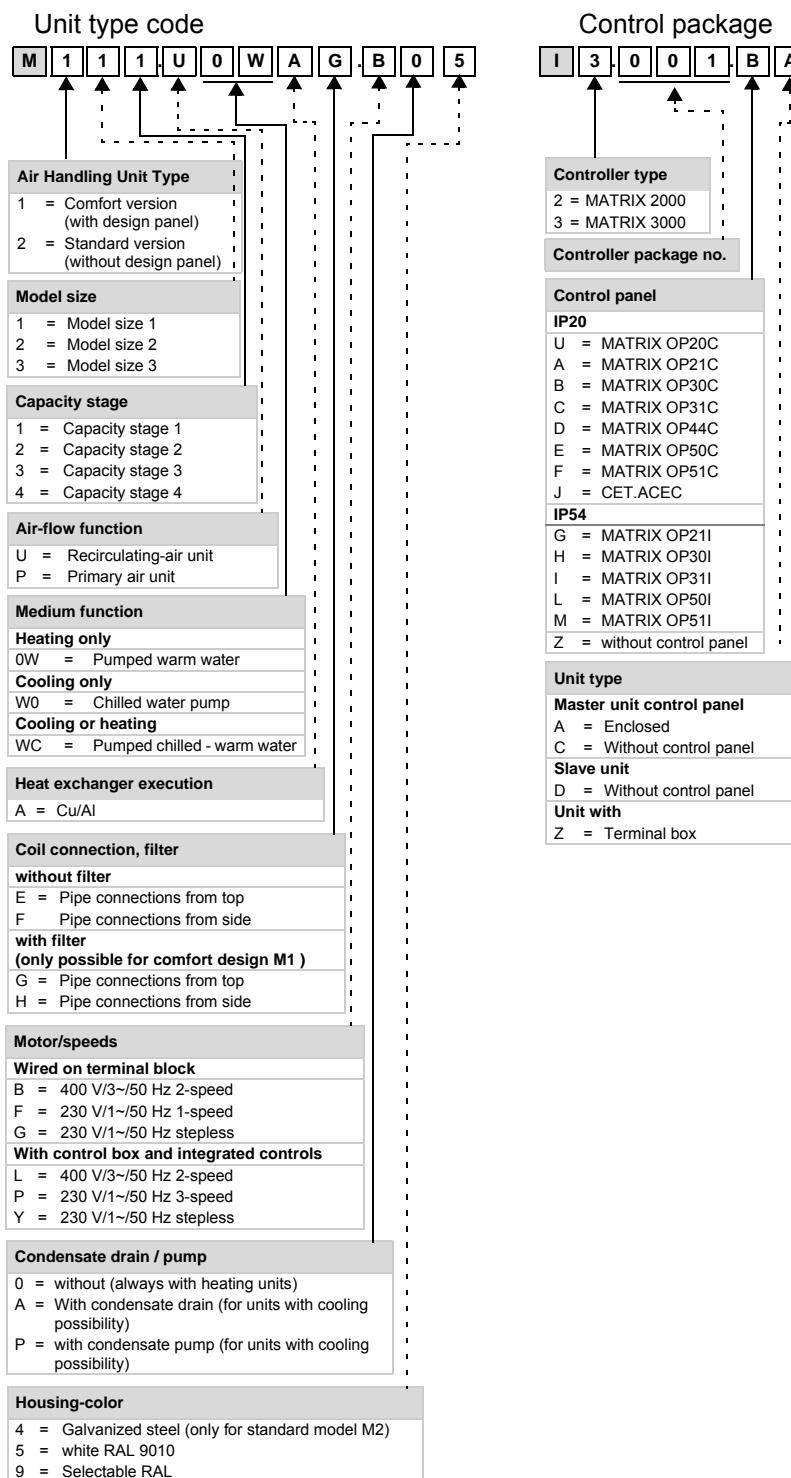
For the connection of several units, an intermediary terminal box is required.

Intermediate terminal box 981881

For the connection of maximum four unit heaters with EC motors to a potentiometer consisting of:

- Plastic on-wall-mounted casing
- IP54 protection class
- Row terminal strip to 2.5 mm²
- enough space for loop-in wiring
- Dimensions in mm (W x H x D): 270 x 220 x 105

Multi Flair



Multi Flair

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