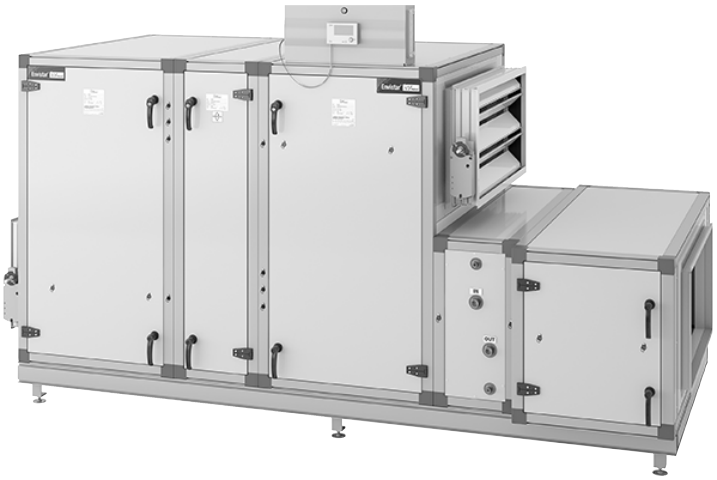
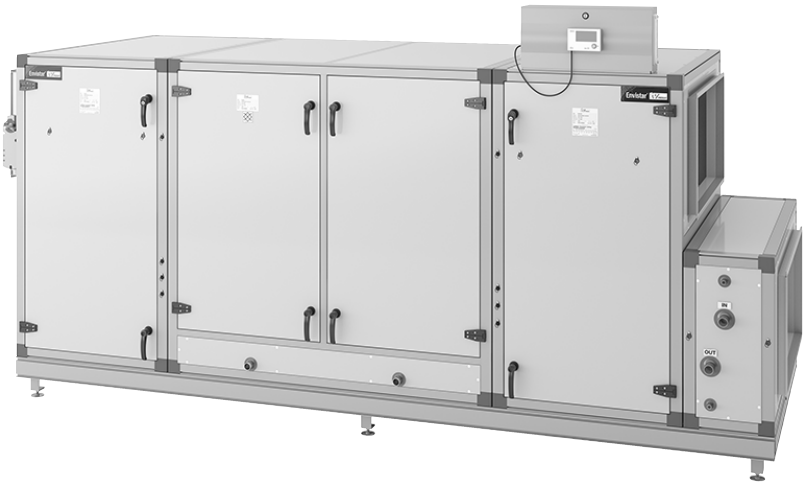
Air handling unit

Envistar®

Home Concept

Operation and Maintenance Instructions for the Envistar Flex





Order no. : .....

Project : .....

Original instructions

IV PRODUKT

Air handling with focus on LCC

Table of Contents

PRODUKT

Air handling with focus on LCC

Table of Contents, cntd

Unit specifications

Size 060 ☐ 100 ☐ 150 ☐
190 ☐ 240 ☐ 300 ☐
360 ☐ 480 ☐ 600 ☐

With control CX ☐ MX ☐

Without control UC ☐ MK ☐ HS ☐

Supply air G4☐ M5 ☐ M6 ☐
F7 ☐ F8/F9 ☐ P4 ☐ C7 ☐
Excl. filter ☐

Extract air G4 ☐ M5 ☐ M6 ☐
F7 ☐ F8/F9 ☐ C7 ☐ AL ☐
Excl. filter ☐

Carbon filter ☐ Excl. filter ☐

☐

☐

ESET-VV, MIE-CL/ELEV ☐
ESET-TV, MIE-CL/ELTV ☐
ESET-EV, MIE-CL/ELEE ☐
Cap.var 1 ☐ 2 ☐ 3 ☐ 4 ☐

ESET-VK, MIE-CL/ELBC ☐
MIE-CL/ELBD ☐

☐

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IV PRODUKT
Air handling with focus on LCC

1 General

1.1 Intended use

Envistar Flex air handling unit, version Home Concept, is intended to be used for comfort ventilation in energy-efficient multiple occupation residential buildings.

1.2 Safety precautions

Observe warning labels on the unit as well as the following safety precautions:

Lockable safety switch

WARNING!
High voltage and rotating fan impeller, risk of personal injury. Before working on/servicing the unit – shut down the unit via the control terminal, then turn the safety switch to the 0 position and lock it.

NB:
The safety switch is not designed for starting/stopping the unit. Always use the control equipment to start and shut down the unit.

Inspection doors

WARNING!
Positive pressure inside the unit, risk of personal injury. Allow the pressure to drop before you open the inspection doors.

WARNING!
Rotating fan impeller, risk of personal injury. Shut down the air handling unit and wait at least 3 minutes before you open the inspection doors.

NB:
The doors in front of moving parts should normally be locked; there are no safety guards. Before carrying out work, unlock the doors with the key provided.

Electrical connection

WARNING!
Rotating fan impeller, risk of personal injury. The unit must not be energised until all ducts have been connected.

NB:
Wiring of connections and other electrical work may only be carried out by a qualified electrician or by service personnel recommended by IV Produkt.

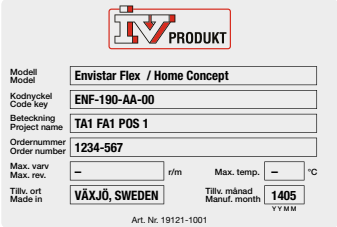
1.3 Manufacturer

The Envistar air handling units (AHUs) are manufactured by:

IV Produkt AB
Sjöuddevägen 7
SE-350 43 VÄXJÖ

1.4 Designations

Envistar Flex air handling units consist of a number of different block sections. Each block section is supplied with a model identification label located at the front. All the necessary designations needed for identifying the block section appear on the label.



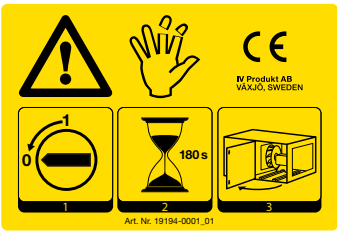
Typical model identification label

1.5 CE marking and EU Declaration of Conformity

The air handling units are CE marked, which means that upon delivery, they conform to applicable provisions in EU Machinery Directive 2006/42/EC as well as to the EU Directives applicable to the type of unit.

As certification confirming that the requirements have been met, we provide an EU Declaration of Conformity, which is available at www.ivprodukt.se.

The CE marking applies to units that IV Produkt AB manufactures and supplies with control equipment mounted on the unit casing.



Typical CE label for air handling units

1.6 Maintenance

Continuous maintenance of this unit can be carried out either by the person normally in charge of maintaining the building or through a contract with a well-reputed service company.

1.7 Extended warranty

In cases in which the equipment delivered falls under a 5-year warranty, in accordance with ABM 07 with supplement ABM-V 07 or in accordance with NL 01 with supplement VU03, the IV Produkt Service and Warranty Manual is supplied with the product.

In order to lay claim to an extended warranty, a complete, documented and signed IV Produkt Service and Warranty Manual must be presented.

1.8 Spare parts

Spare parts and accessories for this unit are ordered from your nearest IV Produkt sales representative. When ordering, state the order number and designation. These are stated on a data label, affixed to each component. A separate spare parts list is supplied with the unit.

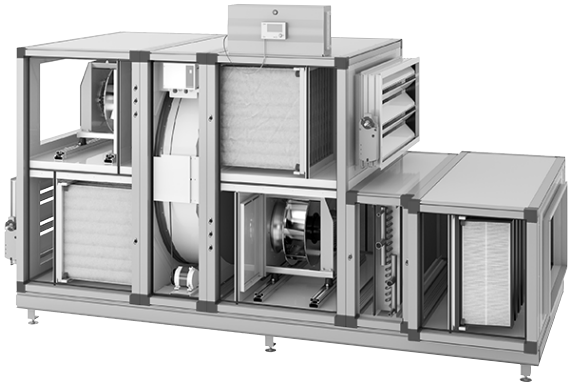
1.9 Dismantling and decommissioning

When an air handling unit is to be dismantled, separate instructions must be followed, see separate information *Dismantling and decommissioning the air handling unit*.

2 Technical description

2.1 Air handling unit Envistar Flex / Home Concept

Unit with counter-flow heat exchanger



Unit with rotary heat exchanger (rotor)

The air handling units in the Envistar Flex series are intended for comfort ventilation in buildings. In the Home Concept version the units have been adapted for multiple occupation residential buildings and are equipped with either a counter-flow heat exchanger or a rotary heat exchanger (rotor).

The Envistar Flex is fabricated as a modular unit comprising block sections in various sizes as a right- or left-handed version. The units are usually supplied with integrated control equipment (with control), but can also be obtained without control equipment (without control).

3 Wiring instructions and fuse protection

3.1 CX/MX – Complete control equipment

The following wiring instructions apply to units supplied complete with control equipment (code CX or MX).

Safety switch

A safety switch is mounted on the air handling unit.

Wiring diagrams

For wiring diagrams for units with control equipment, see the order-unique wiring diagram supplied with the unit.

Unit functions, power supply and fuse protection

The unit functions are supplied with power separately. For recommended fuse protection, see our product selection program, IV Produkt Designer (Technical data and External wiring diagram).

Recommended fuse protection refers to fuses with type C characteristics.

Size	Ventilation (3×400V+N)		Electric heater
060	10A		
100	10A		
150	10A/16A	The size of the fuse protection depends on the fan variants; see the product selection program for a recommendation.	For electric heaters, see recommended fuse protection on the following pages.
190	10A/16A		
240	10A/16A/25A		
300	10A/16A/25A		
360	16A/25A		
480	25A/32A/40A		
600	25A/32A/40A		

3.2 UC - Complete electrical connection to terminal (without DUC)

The following wiring instructions apply to units supplied without process unit (DUC) but with sensor and damper actuator connected electrically to the terminal. Fans and heat exchangers are fused and connected electrically to the terminal.

The terminal connections are positioned at a shared place in the unit. For further connection to an external process unit (DUC), we recommend the use of a multi-conductor cable.

Wiring diagrams

For wiring diagrams for units with control equipment to the terminal, see the order-unique wiring diagram supplied with the unit.

Unit functions, power supply and fuse protection

The unit functions are supplied with power separately. For recommended fuse protection, see our product selection program, IV Produkt Designer (Technical data and External wiring diagram).

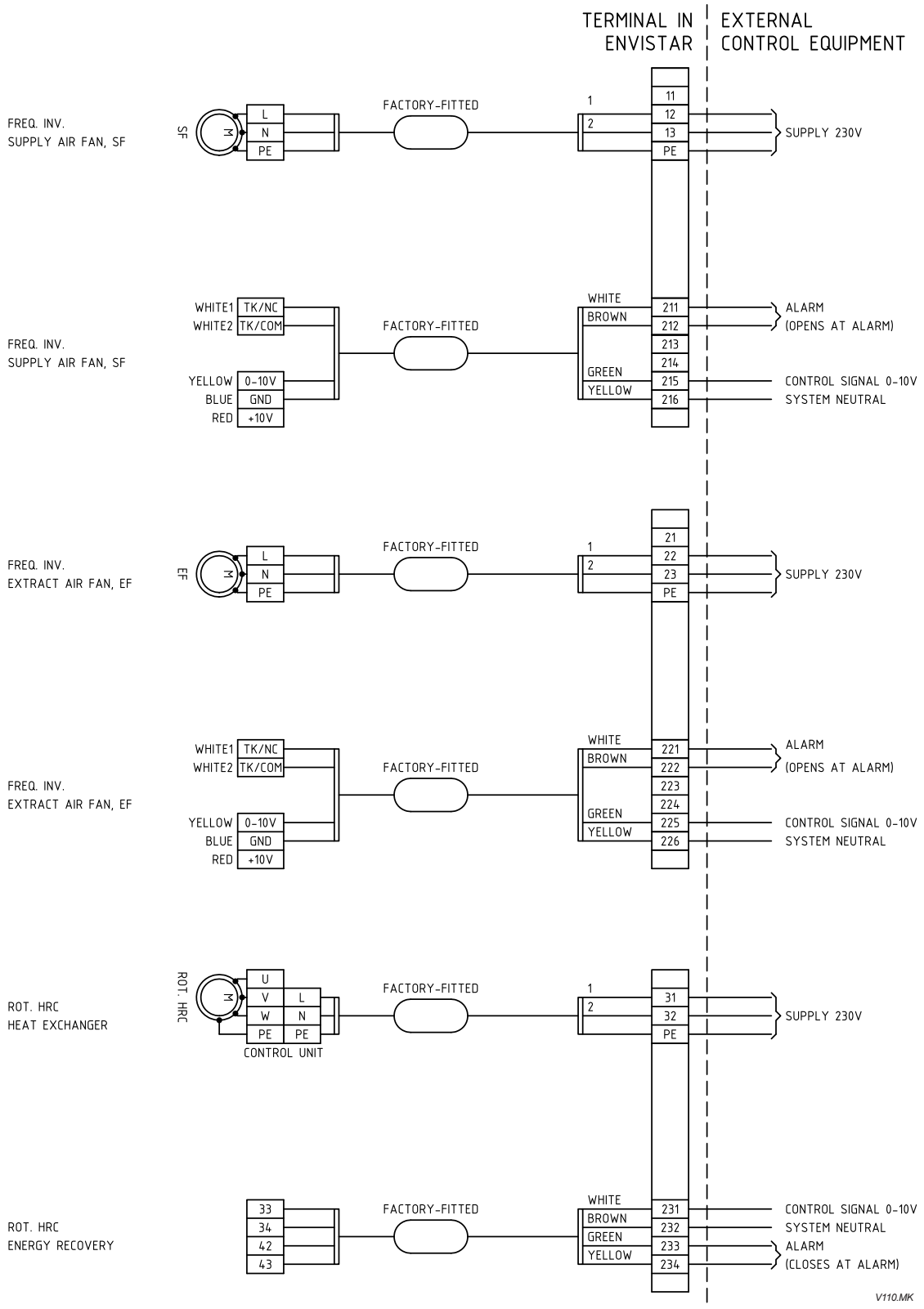
Recommended fuse protection refers to fuses with type C characteristics.

<table>
<tr><th>Size</th><th colspan="2">Ventilation (3×400V+N)</th><th>Electric heater</th></tr>
<tr><td>060</td><td colspan="2">10A</td><td rowspan="10">For electric heaters, see recommended fuse protection on the following pages.</td></tr>
<tr><td>100</td><td colspan="2">10A</td></tr>
<tr><td>150</td><td>10A/16A</td><td rowspan="8">The size of the fuse protection depends on the fan variants; see the product selection program for a recommendation.</td></tr>
<tr><td>190</td><td>10A/16A</td></tr>
<tr><td>240</td><td>10A/16A/25A</td></tr>
<tr><td>300</td><td>10A/16A/25A</td></tr>
<tr><td>360</td><td>16A/25A</td></tr>
<tr><td>480</td><td>25A/32A/40A</td></tr>
<tr><td>600</td><td>25A/32A/40A</td></tr>
</table>

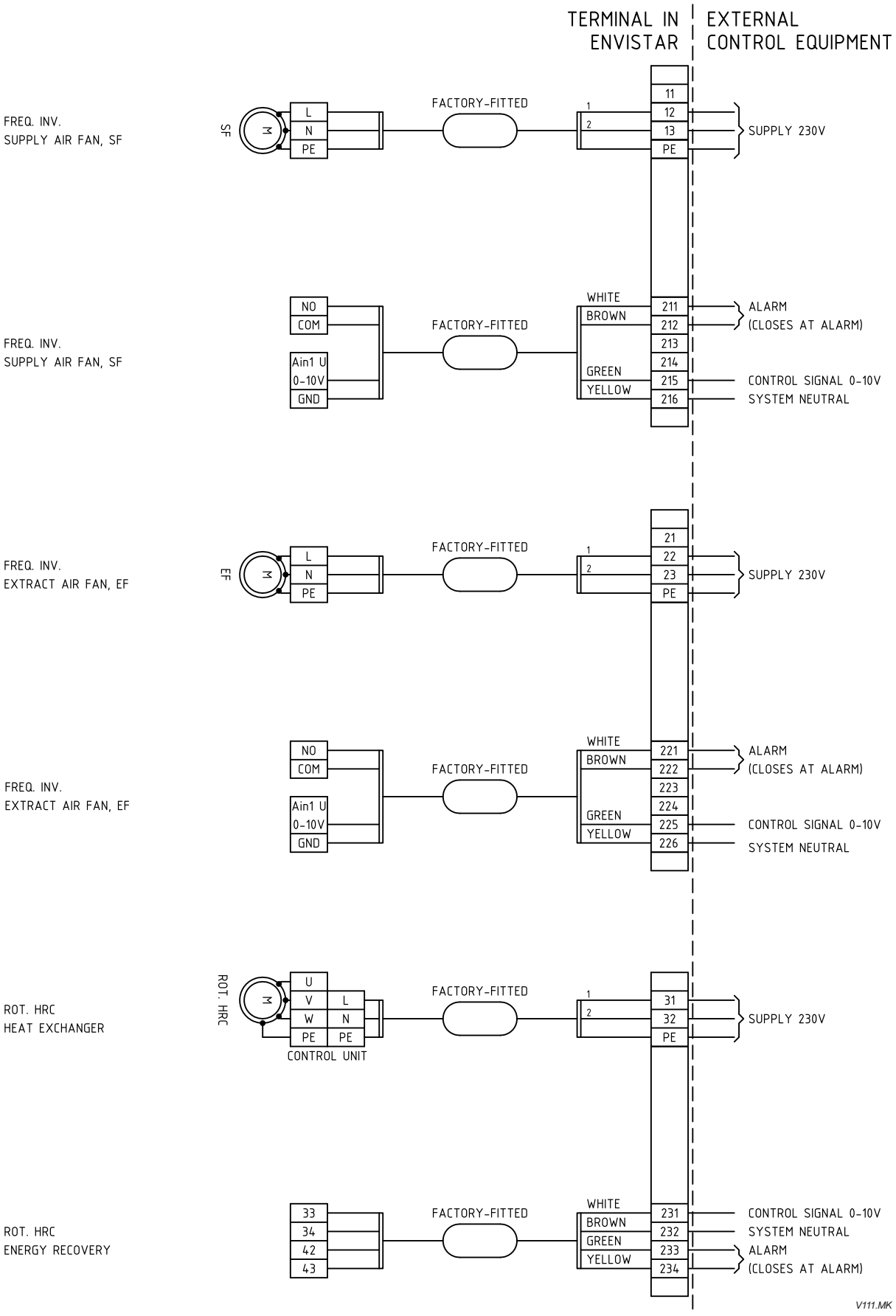
3.3 MK - Fans and hrc electrically connected to terminal

The following wiring instructions apply to units supplied without control equipment but with fans and heat exchangers connected electrically to the terminal. Connections to terminal blocks are located on each unit section. For recommended fuse protection, see 3.4 on page 14.

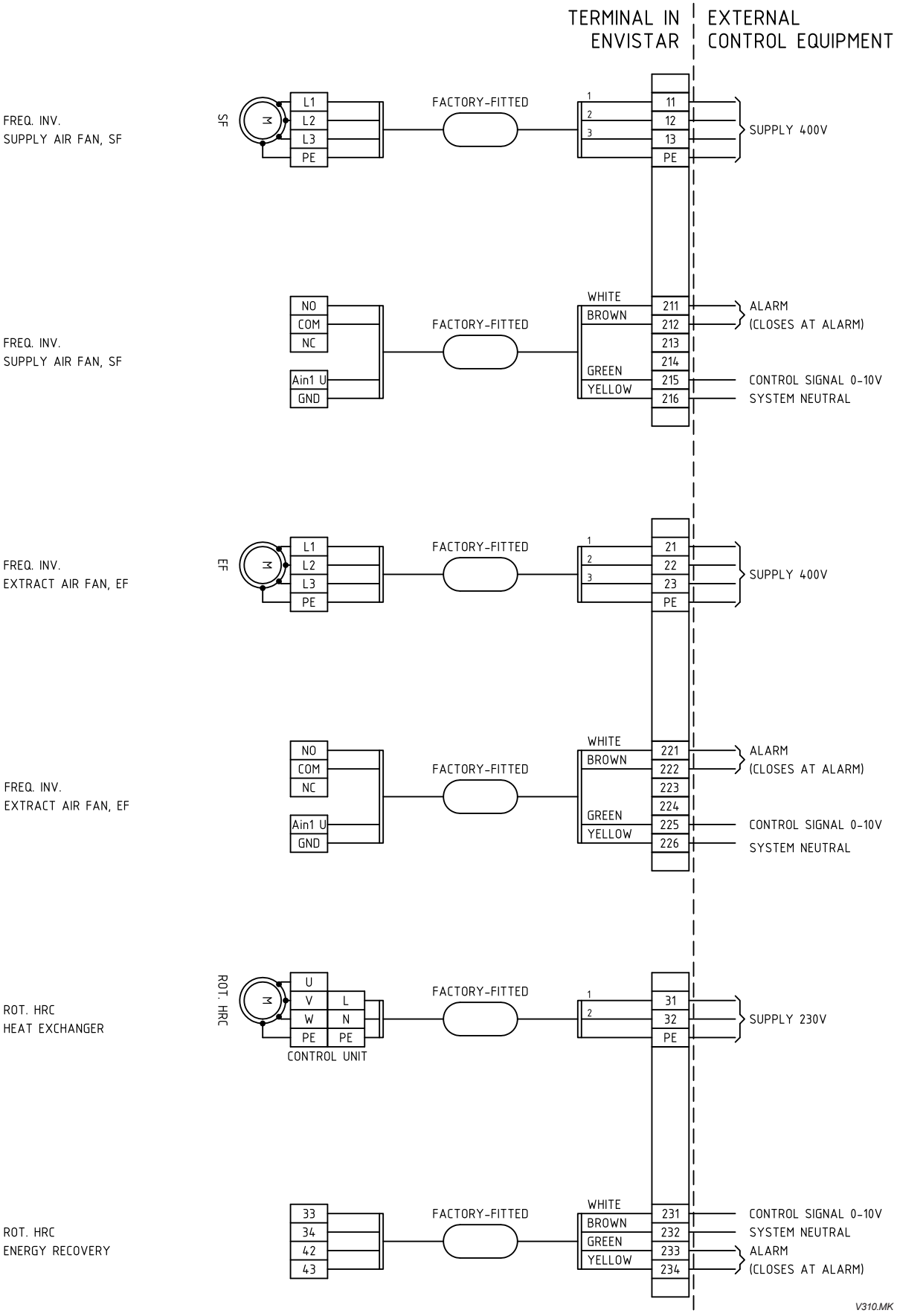
CSF/CSU-V110 Speed-controlled 1-phase fans EBM EC 0.4-0.5 kW (size 060, fan impeller 025)



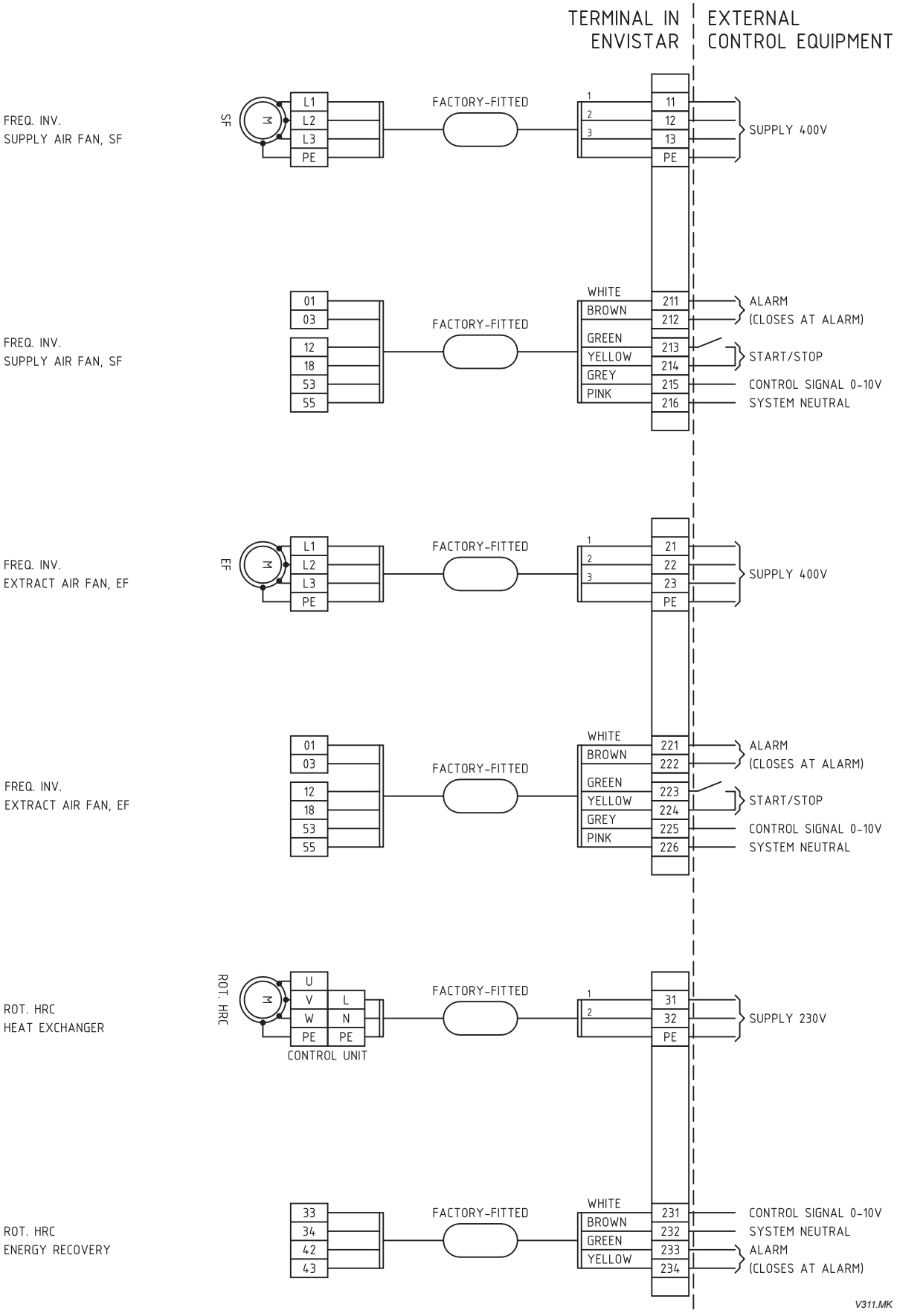
CSF/CSU-V111 Speed-controlled 1-phase fans EBM EC 0.7-1.3 kW (size 060-100, fan impeller 025-031)



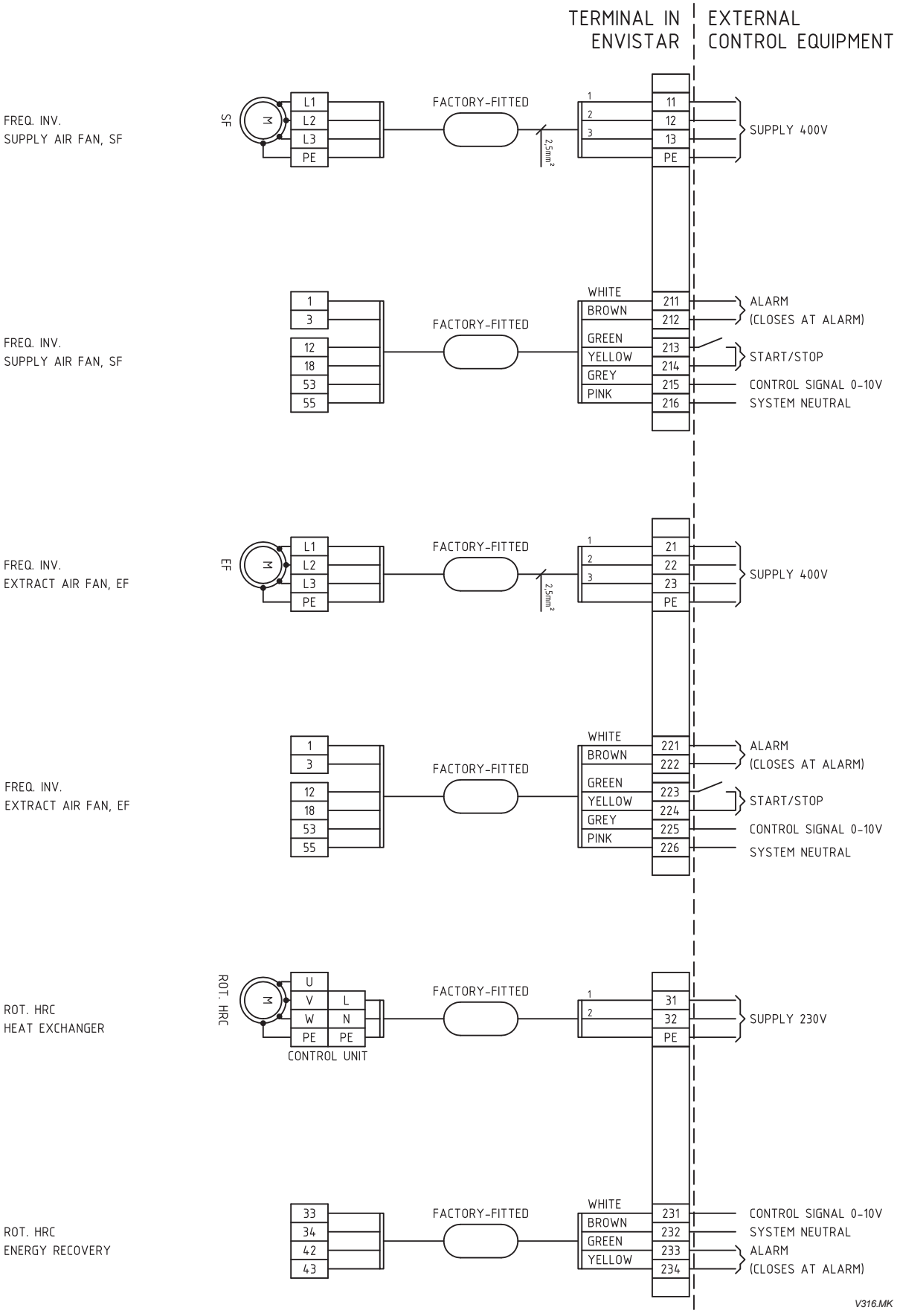
CSF/CSU-V310 Speed-controlled 3-phase fans EBM EC 1.0-5.5 kW (size 100-360, fan impeller 028-056)



CSF/CSU-V311 Speed-controlled 3-phase fans Danfoss 3.0-4.0 kW (size 480-600, fan impeller 056G-063G)



CSF/CSU-V316 Speed-controlled 3-phase fans Danfoss 5.5-7.5 kW (size 480-600, fan impeller 063G-071G)



3.4 HS - Without control and without electrical connection

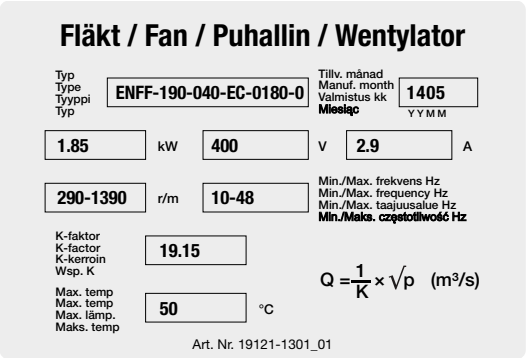
The following wiring instructions apply to units supplied without control equipment and without electrically connected fans, heat exchangers, etc. Recommended fuse protection refers to fuses with type C characteristics.

A safety switch should be fitted and wired on each power supply.

Fan, power supply and fuse protection

When each fan has a separate power supply:

- Read and make a note of the "Type" shown on the fan data label.



Typical fan data label

- Read the actual power supply and recommended fuse protection in the following table.

  NB: The fans may be different sizes/variants. Read both the supply air and extract air fan labels.

Fan data label			Power supply/ Rec. fuse protection
Type	Output kW *	Rated current	
ENFF-060-025-EC-0042-0	0.50	2.2A	1×230V / 10A
ENFF-060-025-EC-0070-0	0.70	3.0A	1×230V / 10A
ENFF-100-028-EC-0072-0	0.72	3.1A	1×230V / 10A
ENFF-100-028-EC-0094-0	1.00	1.6A	3×400V / 10A
ENFF-100-031-EC-0127-0	1.27	5.6A	1×230V / 10A
ENFF-150-035-EC-0100-0	1.00	1.7A	3×400V / 10A
ENFF-150-040-EC-0180-0	1.85	2.9A	3×400V / 10A
ENFF-150-040-EC-0300-0	3.00	4.6A	3×400V / 10A
ENFF-190-035-EC-0100-0	1.00	1.7A	3×400V / 10A
ENFF-190-040-EC-0180-0	1.85	2.9A	3×400V / 10A
ENFF-190-040-EC-0300-0	3.00	4.6A	3×400V / 10A
ENFF-240-045-EC-0160-0	1.62	2.5A	3×400V / 10A
ENFF-240-050-EC-0280-0	2.82	4.3A	3×400V / 10A
ENFF-240-050-EC-0550-0	5.50	8.4A	3×400V / 10A
ENFF-300-045-EC-0160-0	1.62	2.5A	3×400V / 10A
ENFF-300-050-EC-0280-0	2.82	4.3A	3×400V / 10A
ENFF-300-050-EC-0550-0	5.50	8.4A	3×400V / 10A
ENFF-360-050-EC-0280-0	2.82	4.3A	3×400V / 10A
ENFF-360-050-EC-0550-0	5.5	8.4A	3×400V / 10A
ENFF-360-056-EC-0470-0	4.7	7.3A	3×400V / 10A
ENFF-480-056G-I2F10300-0	3.0	6.8A	3×400V / 10A
ENFF-480-063G-I2F10400-0	4.0	8.4A	3×400V / 10A
ENFF-480-063G-I2F10550-0	5.5	11.4A	3×400V / 16A
ENFF-480-063G-I2F10750-0	7.5	14.7A	3×400V / 16A
ENFF-480-056G-I2F20300-0	3.0	6.3A	3×400V / 10A
ENFF-480-063G-I2F20400-0	4.0	8.3A	3×400V / 10A
ENFF-480-063G-I2F20550-0	5.5	11A	3×400V / 16A
ENFF-480-063G-I2F20750-0	7.5	15A	3×400V / 16A
ENFF-480-056G-PFD10300-0	3.0	6.3A	3×400V / 10A
ENFF-480-063G-PFD10400-0	4.0	8.3A	3×400V / 10A
ENFF-480-063G-PFD10550-0	5.5	11A	3×400V / 16A
ENFF-480-063G-PFD10750-0	7.5	15A	3×400V / 16A

Fan, power supply and fuse protection – continued

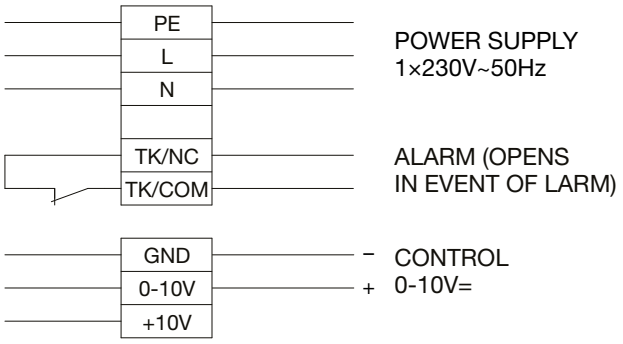
Fan data label			Power supply/ Rec. fuse protection
Type	Output kW *	Rated current	
ENFF-600-063G-I2F10400-0	4.0	8.4	3×400V / 10A
ENFF-600-063G-I2F10550-0	5.5	11.4	3×400V / 16A
ENFF-600-063G-I2F10750-0	7.5	14.7	3×400V / 16A
ENFF-600-071G-I2F10750-0	7.5	14.7	3×400V / 16A
ENFF-600-063G-I2F20400-0	4.0	8.3	3×400V / 10A
ENFF-600-063G-I2F20550-0	5.5	11	3×400V / 16A
ENFF-600-063G-I2F20750-0	7.5	15	3×400V / 16A
ENFF-600-071G-I2F20750-0	7.5	15	3×400V / 16A
ENFF-600-063G-PFD10400-0	4.0	8.3	3×400V / 10A
ENFF-600-063G-PFD10550-0	5.5	11	3×400V / 16A
ENFF-600-063G-PFD10750-0	7.5	15	3×400V / 16A
ENFF-600-071G-PFD10550-0	5.5	11	3×400V / 16A
ENFF-600-071G-PFD10750-0	7.5	15	3×400V / 16A

* For sizes 060–360 the value indicates the power consumption, for sizes 480–600 the value indicates the shaft power.

Fan, wiring instructions

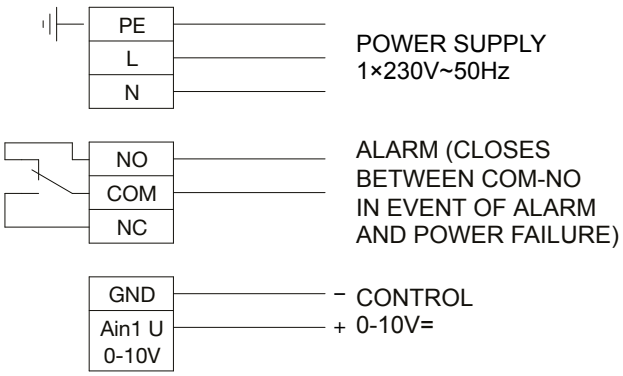
Read and make a note of the size and power shown on the fan data label; see example on previous page. The relevant wiring diagram is indicated below.

ENFF-060
EBM EC 0.4-0.5 kW (fan impeller 025)



The motor starts/stops on a 0.5 V control signal.
Rated current 2.2A.

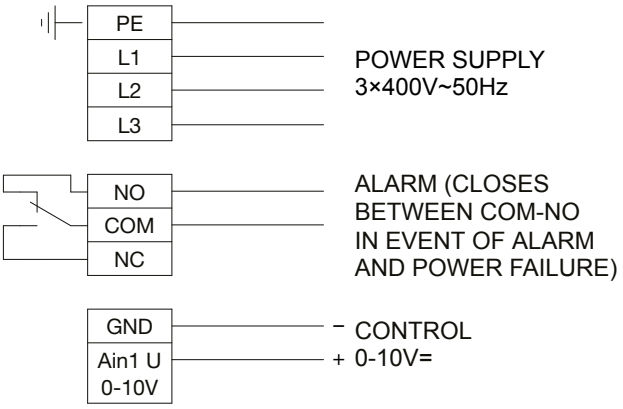
ENFF-060--100
EBM EC 0.7-1.3 kW (fan impeller 025-031)



The motor starts/stops on a 0.5 V control signal.
Fan impeller, output and rated current:

025	0.70 kW	3.0A
028	0.72 kW	3.1A
031	1.27 kW	5.6A

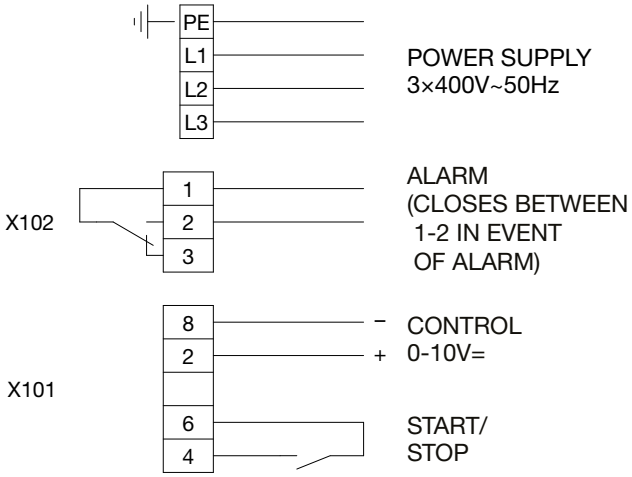
ENFF-100--360
EBM EC 1.0-5.5 kW (fan impeller 028-056)



The motor starts/stops on a 0.5 V control signal.
Fan impeller, output and rated current:

028	1.0 kW	1.6A
035	1.0 kW	1.75A
040	1.85 kW	2.9A
040	3.0 kW	4.6A
045	1.62 kW	2.5A
050	2.82 kW	4.3A
050	5.5 kW	8.4A
056	4.7 kW	7.3A
056	5.5 kW	8.4A

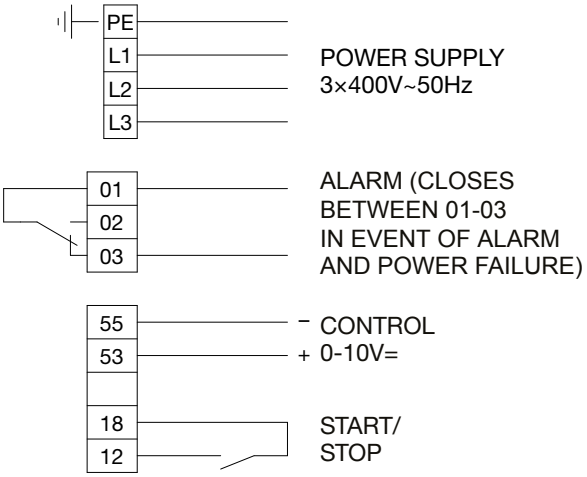
ENFF-480--600
Danfoss I2F1 (IE2)
3.0-7.5 kW (fan impeller 056G-071G)



With integrated frequency converter FCM-300.
Fan impeller, output and rated current:

056G	3.0 kW	6.8A
063G	4.0 kW	8.4A
063G	5.5 kW	11.4A
063G	7.5 kW	14.7A
071G	7.5 kW	14.7A

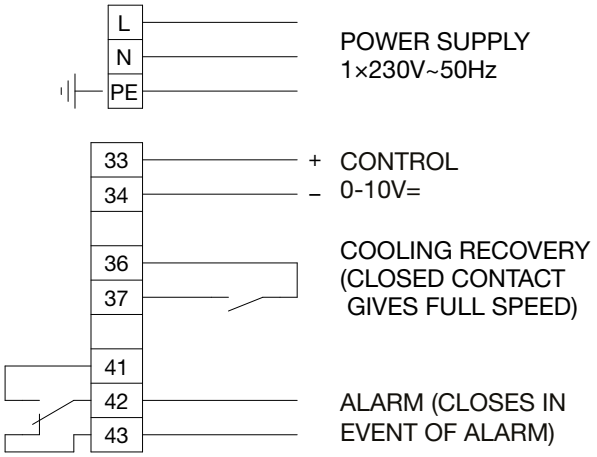
ENFF-480--600
Danfoss PFD1 (PM/IE4) and I2F2 (IE2)
3.0-7.5 kW (fan impeller 056G-071G)



With integrated frequency inverter FCM-106.
Fan impeller, output and rated current:

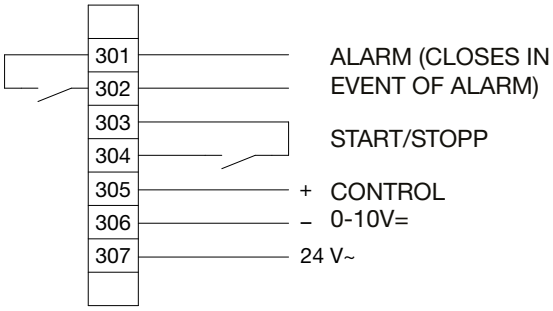
056G	3.0 kW	6.3A
063G	4.0 kW	8.3A
063G	5.5 kW	11.0A
063G	7.5 kW	15.0A
071G	5.5 kW	11.0A
071G	7.5 kW	15.0A

Rotary heat exchanger (code EXR)

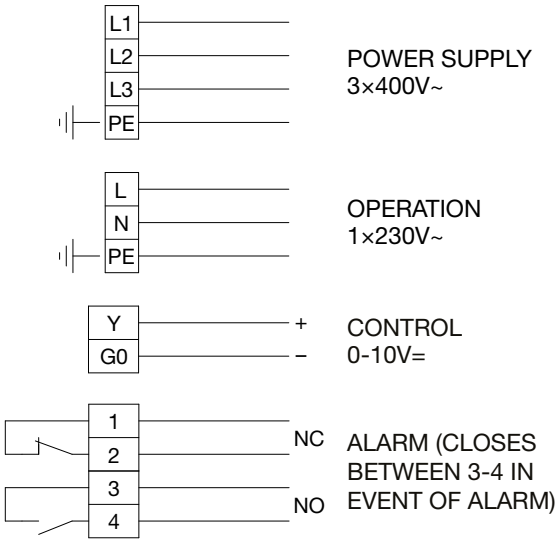


Rated current	Rec. fuse protection
0.7A	10A

Counter-flow exchanger (code EXH)

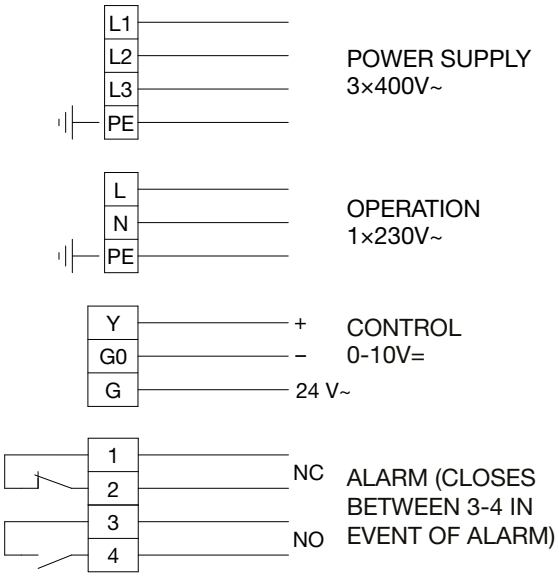


Air heater electric ≤ 27 kW (code ESET-EV)



Size	ESET-EV ≤ 27kW – rec. fuse protection (3×400V+N) / output variant		
	1	2	3
060	10A	16A	-
100	10A	20A	40A
150	10A	25A	40A
190	16A	40A	-
240	20A	40A	-
300	25A	-	-
360	32A	-	-

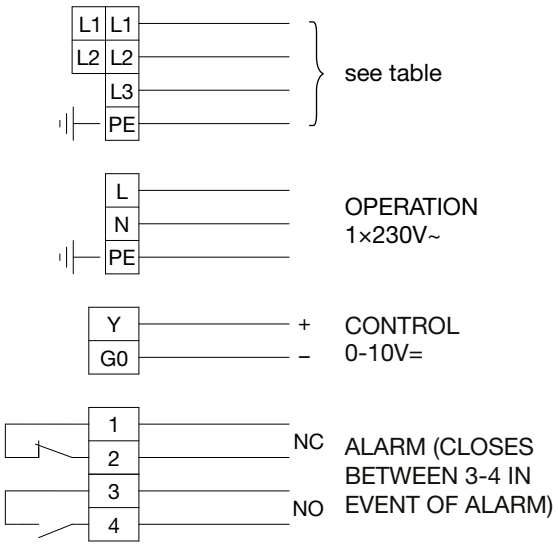
Air heater electric ≥ 30 kW (code ESET-EV)



Size	ESET-EV ≥ 30kW – rec. fuse protection (3×400V+N) / output variant			
	1	2	3	4
060	-	-	-	-
100	-	-	-	-
150	-	-	-	63A
190	-	-	50A	80A
240	-	-	80A	125A
300	-	50A	80A	125A
360	-	63A	100A	160A

Air heater electric (code MIE-EL/ELEE)

With integrated control equipment (HS configuration)



Size	MIE-EL/ELEE – rec. fuse protection (3×400V+N) / output variant				
	01	02	03	04	05
060	*	10A	32A	50A	50A
100	*	16A	32A	50A	80A
150	16A	25A	40A	80A	100A
190	16A	25A	63A	100A	160A
240	20A	40A	80A	125A	200A
300	25A	40A	80A	160A	-
360	25A	50A	100A	200A	-
480	35A	80A	160A	-	-
600	40A	80A	200A	-	-

** 2×400V 10A*

4 Operation

4.1 Commissioning the unit

The Envistar Flex / Home Concept is a modular unit consisting of block sections, components for duct mounting and functional fittings. It does not require special commissioning by a certified technician.

Prior to commissioning, the contractor must:

1. Connect the unit to the power supply via a lockable safety switch.

   NB:
   Wiring of connections and other electrical work may only be carried out by a qualified electrician or by service personnel recommended by IV Produkt.

2. Connect the heating/cooling coil.

3. Connect all ducts.

   WARNING!
   Rotating fan impeller. The unit must not be energised until all ducts have been connected.

5 Maintenance instructions

5.1 Service schedule

The service schedule comprises actions and service intervals for functional sections that can be part of the air handling unit. The unit consists of one or more of these functional sections. The sections that pertain to your unit are marked on the list in the table of contents. See page 1.

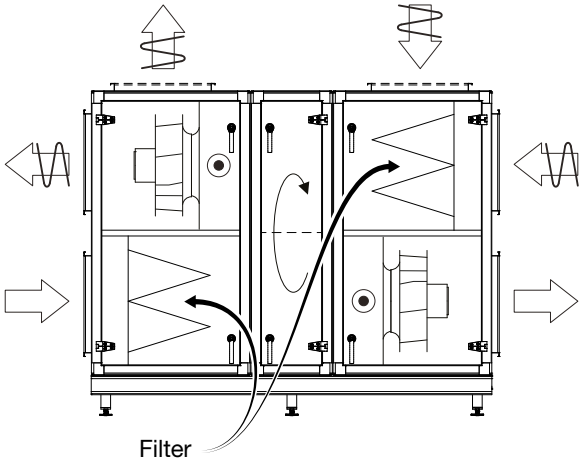
Make copies of the service schedule for future use before you fill in servicing data for the first time.

Service year 20.....-..... or unit no.					**Service performed * (date and signature)**			
Functional section		**Code**	**Recommended action (insp.)**	**Page ref.**	**3 000 h / 6 mths**	**6000 h / 12 mths**	**9 000 h / 18 mths**	**12 000 h / 24 mths**
					date	date	date	date
	**Filter supply air, extract air**	ELEF	Check pressure drop Change filter if necessary	21	signature	signature	signature	signature
	**Carbon filter in filter cabinet**	ELCF	Inspection indication Replace if necessary	25	signature	signature	signature	signature
	**Rotary heat exchanger**	EXR	Visual inspection Check press. balance Check diff. pressure Clean if necessary	27	signature	signature	signature	signature
	**Counter-flow exchanger**	EXH	Visual inspection Clean if necessary Check function	29	signature	signature	signature	signature
	**Air heater water**	ESET-VV, MIE-CL/ELEV, ESET-TV, MIE-CL/ELTV	Visual inspection Clean if necessary Check function	31	signature	signature	signature	signature
	**Air heater electric**	ESET-EV, MIE-CL/ELEE	Visual inspection Clean if necessary Check function	32	signature	signature	signature	signature
	**Air cooler water/DX**	ESET-VK, MIE-CL/ELBC, MIE-CL/ELBD	Visual inspection Check drainage Clean if necessary Check function	33	signature	signature	signature	signature
	**Fan unit**	ENF	Visual inspection Clean if necessary Check the air flow	34	signature	signature	signature	signature
	**Damper**	EMT-01, ESET-TR	Visual inspection Clean if necessary Check tightness	36	signature	signature	signature	signature
	**Sound attenuator**	EMT-02, MIE-KL	Visual inspection Clean if necessary	37	signature	signature	signature	signature

** Every 3000 hours of operation or every 6 months, whichever occurs first. More frequent servicing may be required in certain environments.*

5.2 Filters (code ELEF)

The air filters in an air handling unit are designed to prevent dust and other impurities from entering the building. They should also protect sensitive components inside the unit, e.g. water coils and heat exchangers, from exposure to impurities.



The dust separation efficiency varies considerably between various filter types. The dust collecting efficiency also varies substantially.

It is therefore important to use filters of the same quality and capacity when you change them.
Dust separation class is specified with standard designations:

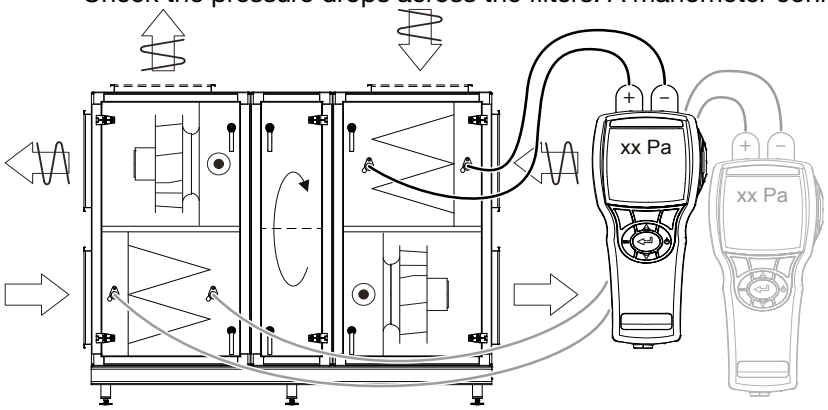
- G4 for pre filters
- M5 and M6 for medium filters
- F7, F8 and F9 for fine filters

Higher digits denote a higher separation efficiency.

The filters are designed for one-time use. If they become fouled, the unit will lose capacity. The filters should therefore be changed if the pressure drop across them exceeds the specified final pressure drop. It is important to stop the unit before changing filters to prevent dust from coming loose and being drawn into the unit. The inside surfaces of the filter sections should therefore also be cleaned when the filters are changed.

Inspection

Check the pressure drops across the filters. A manometer connected to probes



is used for these measurements. The probes are connected to each side of the filters.

If the filter has reached its specified final pressure drop, it should be changed. The final pressure drop is specified on the filter section decal (filled in when the air handling unit is put into operation).

FILTERDATA

Filterklass / Filter Class.....
Begynnelsetryckfall
Initial Pressure Drop.....Pa
Sluttryckfall
Final Pressure Drop.....Pa

Art. Nr: 19121-1101_01

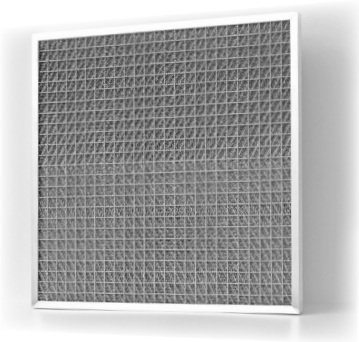
Filter data ELEF

Unit size	Filter type	No of filters	Dimensions (mm)		No of bags/ filters	Total filter surface (m^2)
			W × H	Length		
060	Bag filter G4	1	736 × 287	380	7	1.8
	Bag filter M5	1	736 × 287	380	8	2.1
	Bag filter M6, F7	1	736 × 287	380	10	2.5
	Bag filter F8, F9	1	736 × 287	380	11	2.7
	Panel filter P4	1	736 × 287	48	-	0.2
	Aluminium filter	1	736 × 287	25	-	0.2
	Carbon filter C7	-	-	-	-	-
100	Bag filter G4	1	892 × 409	380	8	2.8
	Bag filter M5	1	892 × 409	370	9	3.2
	Bag filter M6, F7	1	892 × 409	370	12	4.0
	Bag filter F8, F9	1	892 × 409	380	14	4.6
	Panel filter P4	1	736 × 393	48	-	0.4
	Aluminium filter	1	892 × 409	25	-	0.4
	Carbon filter C7	-	-	-	-	-
150	Bag filter G4	1 1	287 × 592 592 × 592	360 360	3 6	3.6
	Bag filter M5	1 1	287 × 592 592 × 592	534 534	3 6	6.3
	Bag filter M6	1 1	287 × 592 592 × 592	534 534	4 8	8.1
	Bag filter F7–F9	1 1	287 × 592 592 × 592	534 534	5 10	9.9
	Panel filter P4	1 1	287 × 592 592 × 592	48 48	- -	0.5
	Aluminium filter	1 1	287 × 592 592 × 592	25 25	- -	0.5
	Carbon filter C7	1 1	287 × 592 592 × 592	292 292	- -	8.0
190	Bag filter G4	2	592 × 592	360	6	4.8
	Bag filter M5	2	592 × 592	534	6	8.4
	Bag filter M6	2	592 × 592	534	8	10.8
	Bag filter F7–F9	2	592 × 592	534	10	13.2
	Panel filter P4	2	592 × 592	48	-	0.7
	Aluminium filter	2	592 × 592	25	-	0.7
	Carbon filter C7	2	592 × 592	292	-	16.0
240	Bag filter G4	2	592 × 592	360	6	4.8
	Bag filter M5	2	592 × 592	534	6	8.4
	Bag filter M6	2	592 × 592	534	8	10.8
	Bag filter F7–F9	2	592 × 592	534	10	13.2
	Panel filter P4	2	592 × 592	48	-	0.7
	Aluminium filter	2	592 × 592	25	-	0.7
	Carbon filter C7	2	592 × 592	292	-	16.0

Filter data ELEF cntd

Unit size	Filter type	No of filters	Dimensions (mm)		No of bags/ filters	Total filter surface (m^2)
			W × H	Length		
300	Bag filter G4	1 2	287 × 592 592 × 592	360 360	3 6	6.0
	Bag filter M5	1 2	287 × 592 592 × 592	534 534	3 6	10.5
	Bag filter M6	1 2	287 × 592 592 × 592	534 534	4 8	13.5
	Bag filter F7–F9	1 2	287 × 592 592 × 592	534 534	5 10	16.5
	Panel filter P4	1 2	287 × 592 592 × 592	48 48	-	0.9
	Aluminium filter	1 2	287 × 592 592 × 592	25 25	-	0.9
	Carbon filter C7	1 2	287 × 592 592 × 592	292 292	-	19.5
360	Bag filter G4	1 2 2	287 × 592 592 × 287 592 × 592	360 360 360	3 6 6	8.4
	Bag filter M5	1 2 2	287 × 592 592 × 287 592 × 592	534 534 534	3 6 6	14.7
	Bag filter M6	1 2 2	287 × 592 592 × 287 592 × 592	534 534 534	4 8 8	18.9
	Bag filter F7–F9	1 2 2	287 × 592 592 × 287 592 × 592	534 534 534	5 10 10	23.1
	Panel filter P4	3 2	287 × 592 592 × 592	48 48	-	1.2
	Aluminium filter	3 2	287 × 592 592 × 592	25 25	-	1.2
	Carbon filter C7	3 2	287 × 592 592 × 592	292 292	-	26.5
480	Bag filter G4	3 3	592 × 287 592 × 592	360 360	6 6	10.8
	Bag filter M5	3 3	592 × 287 592 × 592	534 534	6 6	18.9
	Bag filter M6	3 3	592 × 287 592 × 592	534 534	8 8	24.3
	Bag filter F7–F9	3 3	592 × 287 592 × 592	534 534	10 10	29.7
	Panel filter P4	3 3	592 × 287 592 × 592	48 48	-	1.6
	Aluminium filter	3 3	592 × 287 592 × 592	25 25	-	1.5
	Carbon filter C7	3 3	287 × 592 592 × 592	292 292	-	34.5
600	Bag filter G4	1 3 3	287 × 592 592 × 287 592 × 592	360 360 360	3 6 6	12.0
	Bag filter M5	1 3 3	287 × 592 592 × 287 592 × 592	534 534 534	3 6 6	21.0
	Bag filter M6	1 3 3	287 × 592 592 × 287 592 × 592	534 534 534	4 8 8	27.0
	Bag filter F7–F9	1 3 3	287 × 592 592 × 287 592 × 592	534 534 534	5 10 10	33.0
	Panel filter P4	4 3	287 × 592 592 × 592	48 48	-	1.8
	Aluminium filter	4 3	287 × 592 592 × 592	25 25	-	1.7
	Carbon filter C7	4 3	287 × 592 592 × 592	292 292	-	38.0

Cleaning



Aluminium filter

The aluminium filter is intended for use where the extract air contains grease particles to avoid grease being sucked into the unit.
The filter is a knitted flat-type filter.

The aluminium filter can be cleaned using hot water and a mild detergent.

Bag filters and carbon filters are disposable.

Filter replacement (ELEF)

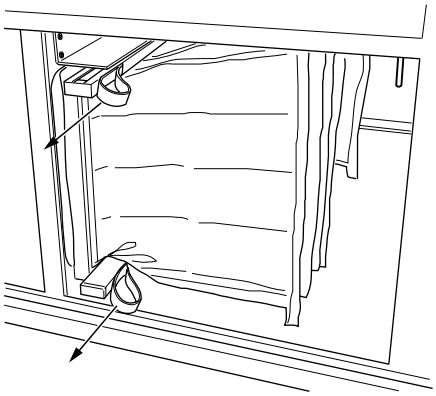
1. Shut down the unit via the control terminal and lock the safety switch in the 0 position.

NB:
The safety switch is not designed for starting/stopping the unit.
Always use the control equipment to start and shut down the unit.

2. Wait until the fans have stopped, then open the inspection door.

WARNING!
Positive pressure inside the unit, risk of personal injury.
Allow the pressure to drop before you open the inspection doors.

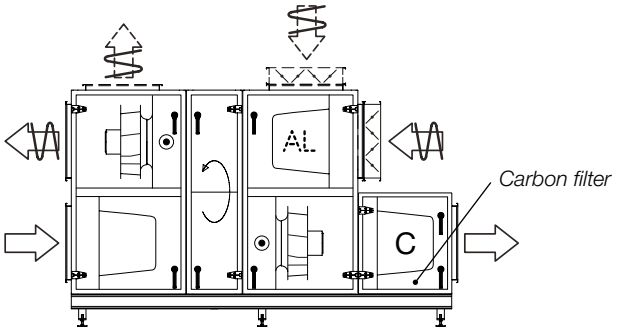
3. Release the eccentric rails.



Eccentric rails

4. Remove the old filter by pulling it towards you. Discarded filters should be disposed of correctly. The filters are combustible in their entirety.
5. Clean the filter cabinets.
6. Install the new filter, press in the eccentric rails to engage them and close the inspection door.
7. If there is a non-removable filter monitor: attach the probes on each side of the filter.
8. Start the unit.

5.3 Carbon filter section (code ECF)



The carbon filter (code ELCF) can be used in rotary units (rotary heat exchanger) to remove odours in the form of organic and odorous gases/vapours.
The carbon filters are fitted to the supply air side.

The carbon filters are Black Ridge filters, constructed as compact and highly efficient, molecular filters. The filters are designed for one-time use and the filter is combustible in its entirety.

Lifespan and filter control

The function and lifespan of the carbon filters depends on the volume of air that passes through and on the molecular density of odorous substances.
This means that the time intervals for filter replacement can vary from unit to unit depending on operation mode and the volume of odorous substances in the air.

Units delivered with IV Produkt integrated control equipment are equipped with the control function filter control – FLC (Filter Lifetime Control). FLC indicates when it is time to replace the carbon filter. Indication is through an alarm on the hand-held terminal display.

FLC calculates the volume of air passing through the carbon filters and triggers the alarm for filter replacement when the preset value has been reached.
The volume of air passing through is measured in mega cubic metres (Mm^3).
The function does not take into account the odour content of the air, which means that the indication should be regarded as a recommendation for checking the filter function. If no odours pass through, there is no need to replace the filter.

Preset FLC values, as per the table below, are based on max. air flow over 12 months of full-time operation. If required, the value can be lowered in order to: - change to more frequent filter replacement intervals for max. air flow - retain the filter replacement interval of 12 months for lower air flows. To change the value, see separate Climatix control documentation.

Filter data

Size	Carbon filter type	No of filters	Dimensions (mm)		Weight (kg)	FLC preset value (Mm^3)
			Frame	Length		
060	Black Ridge	1	287×592	292	6	10
100	Black Ridge	2	287×592	292	6+6	19
150	Black Ridge	2	592×592	292	12+12	38
190	Black Ridge	2 1	592×592 287×592	292 292	12+12+6	47
240	Black Ridge	2 1	592×592 287×592	292 292	12+12+6	47
300	Black Ridge	3	592×592	292	12+12+12	57

Filter replacement

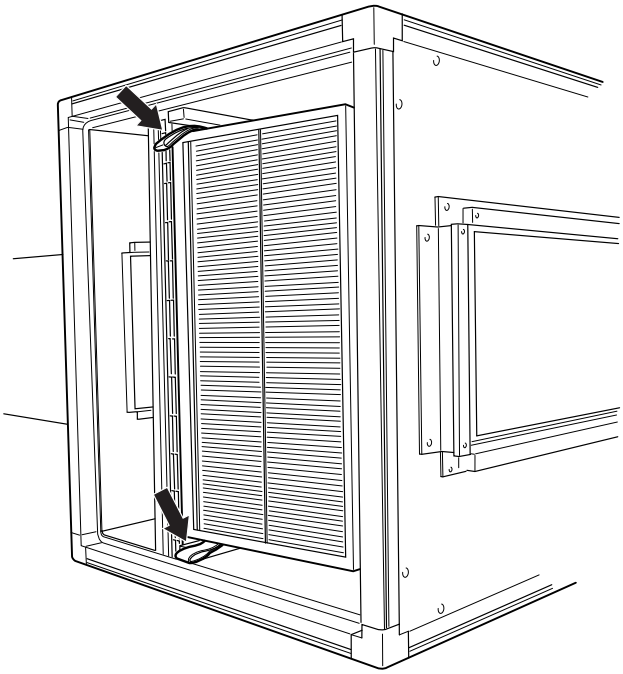
1. Shut down the unit via the control terminal and lock the safety switch in the 0 position.

NB:
The safety switch is not designed for starting/stopping the unit. Always use the control equipment to start and shut down the unit.

2. Wait until the fans have stopped, then open the inspection door.

WARNING!
Positive pressure inside the unit, risk of personal injury. Allow the pressure to drop before you open the inspection doors.

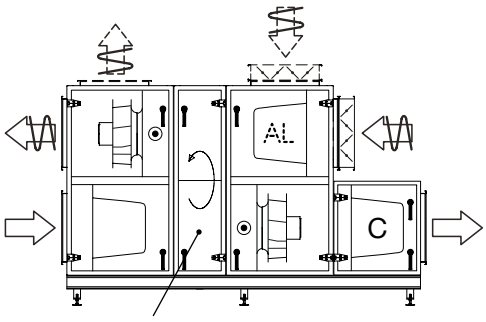
3. Release the eccentric rails.



Eccentric rails inside the filter cabinet

4. Remove the old filter by pulling it towards you. Discarded filters should be disposed of correctly. The carbon filters are combustible in their entirety.
5. Clean the filter cabinets.
6. Install the new filter, press in the eccentric rails to engage them and close the inspection door.
7. Reset the filter control function FLC to zero via the control unit (only applies to units fitted with IV Produkt integrated control equipment).
8. Start the unit.

5.4 Rotary heat exchanger (code EXR), size 060-300



Rotary heat exchanger (code EXR)

The purpose of the heat exchanger is to recover heat from the extract air and transfer this heat to the supply air. This reduces the output required and the energy use.

A faulty heat recovery function through reduced recovery efficiency entails increased energy use. This also means that the planned supply air temperature will not be reached when outdoor temperatures are low.

A conceivable reason for reduced recovery efficiency may be that the rotor rotates too slowly because the drive belt is slipping. Rotation should be around 8 RPM during full energy recovery.

It is not usual for the rotor passages to become fouled with dust, since the rotor is normally self-cleaning. However, this might occur if the dust is of a sticky nature. A reduction of the extract air flow, e.g. due to fouling of the extract air filter, entails reduced heat recovery efficiency.

The units are equipped with a control function for the pressure balance over the purge sector, which means that the pressure balance does not have to be inspected or adjusted. For units supplied with IV Produkt integrated control equipment, the function is activated at the factory. For units not supplied with control equipment this function has to be connected to the unit.

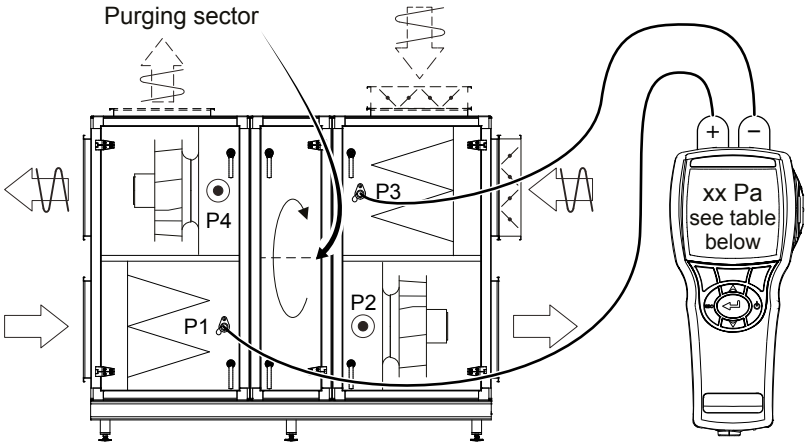
Inspection

1. Shut down the unit via the control terminal and lock the safety switch in the 0 position.
2. Wait until the fans have stopped, then open the inspection door.

WARNING!
Positive pressure inside the unit, risk of personal injury. Allow the pressure to drop before you open the inspection doors.

3. Check that the rotor rotates easily. If it is sluggish, you might have to adjust the bristled sealing strip.
4. Check that the rotor's bristled sealing strip seals against the side plates and that it is not worn. The bristled sealing strip is subject to wear and can be adjusted or replaced if the need arises.
5. Check that the drive belt is properly tensioned and does not slip. If it slips, it will have to be shortened. The rotor speed should be around 8 RPM during full energy recovery.
6. Check that the drive belt is intact and clean.
7. Check that the rotor's inlet surfaces are not covered with dust or other impurities. NB: Avoid touching the rotor inlet and outlet surfaces with your hands or tools.
8. Check the differential pressure across the rotor. The purging sector is factory-installed, set to the maximum open position. Depending on the unit's pressure ratios, the purging sector may need adjustment. An incorrect setting may impair the efficiency. Inspection and adjustment should be carried out as follows:

- Measure and write down the differential pressure between the outdoor air (P1) and the extract air (P3).

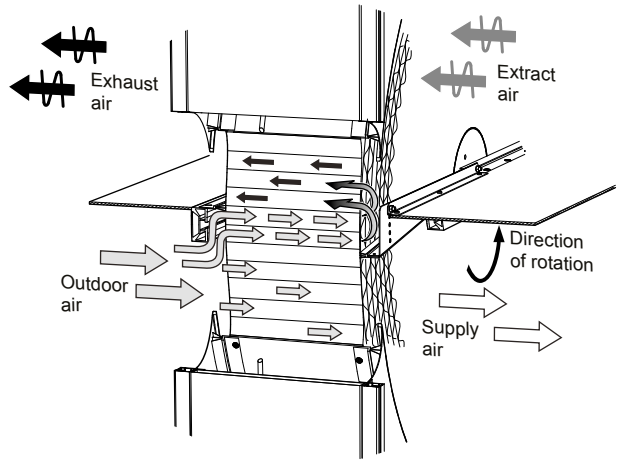


- Read the recommended setting (adjustment hole in the purge sector) from the table below.

	Rotor variant	Rec. adjustment hole in the purge sector				
		5 open*	**4**	**3**	**2**	**1 closed**
Diff. pressure between P1 and P3 (Pa)	Normal	< 200	200 – 400	400–600	> 600	-
	Plus	< 300	300–500	500–700	> 700	-

***maximum open purge sector, preset position from the factory*

- Adjust the purging sector if the need arises. The illustration shows the purging sector set to the maximum open position.



Cleaning

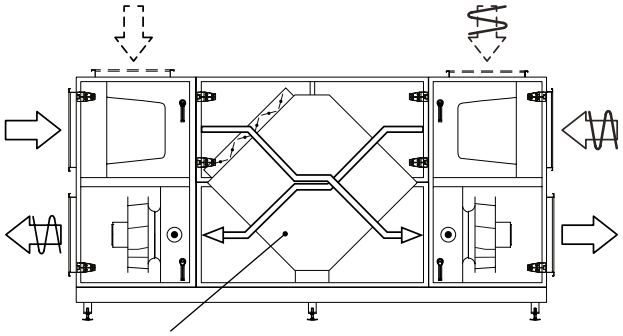
Remove dust by carefully vacuum cleaning using a soft brush. If the rotor surfaces are severely fouled by greasy dust, spray the rotor with water mixed with dishwashing detergent (of a type that will not corrode aluminium). Compressed air at low pressure (max. 6 bar) can be used for blowing the rotor surfaces clean. The spray nozzle must not be held closer than 5–10 mm from the rotor.

Lubrication

The bearings and drive motor are permanently lubricated and do not require additional lubrication.

5.5 Counter-flow exchanger (code EXH)

The purpose of the counter-flow exchanger is to recover heat from the extract air and transfer this heat to the supply air in order to minimise energy use.



Counter-flow exchanger (code EXH)

Faulty counter-flow exchanger operation results in reduced heat recovery efficiency and increased energy use and means that the design supply air temperature cannot be obtained when the outdoor temperature is low.

Possible reasons for reduced recovery efficiency could be the fouling of the heat-exchanging surfaces (fins) or that the bypass damper is not closing completely. A reduction of the extract air flow, e.g. due to fouling of the extract air filter, entails reduced heat recovery efficiency.

Inspection

1. Shut down the unit via the control terminal and lock the safety switch in the 0 position.
2. Wait until the fans have stopped, then open the inspection door.

WARNING!
Positive pressure inside the unit, risk of personal injury. Allow the pressure to drop before you open the inspection doors.

3. Inspect the fins for fouling.
4. Perform a visual inspection of the automatic defrosting dampers and damper motors.
5. Check that the bypass damper is tightly shut when defrosting is not taking place.
6. Check the waste oulet and water trap function. A water trap without a non-return value should be filled with water.

Cleaning

The counter-flow exchangers are designed to prevent dirt and deposits from coming into contact with the heat transfer surfaces. Most of the particles in the air simply pass through the counter-flow exchanger. The main risk for fouling of the counter-flow exchanger comes from slow-moving substances that condense on the surfaces, and also from fibres from tumble dryers, for instance.

The recommended way to clean the counter-flow exchanger is by flushing with hot water, if necessary adding some mild detergent that is not corrosive to aluminium. The counter-flow exchanger is equipped with double drip trays that are used for collecting the water used for flushing. Inspect the waste outlet and water trap before flushing.

NB:
High pressure flushing must not be directed at the fins. Be careful in order to ensure that the fins do not become deformed or break.

At operating temperatures below 0°C, the counter-flow exchanger must be dry before commissioning.

Functional description, defrost and bypass function

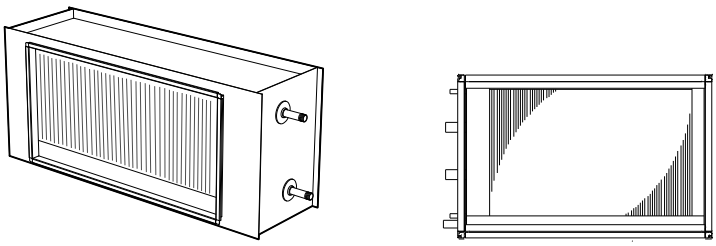
Under certain operating conditions, frost and ice may form on the extract air side of the counter-flow exchanger. In order to optimise heat recovery, there is a built-in defrost function. This is based on the principle that the defrost function is engaged when the pressure over the extract air side of the counter-flow exchange exceeds a certain value.

Defrosting takes place through the regulation of dampers on the outdoor air side of the counter-flow exchanger. The dampers have separate damper motors that are controlled by a defrost program. Damper control means that there are a number of different combinations of damper positions, for instance that one of the dampers can be partly open while another is closed and the third damper is fully open.

During full heat recovery and when the unit is switched off, the dampers should be fully open (bypass damper closed). When there is a risk of frost, the dampers can be in different positions.

The defrost and bypass function is preset at the factory and any adjustments must be performed by IV Produkt.

5.6 Air heater water



Air heater water (code ESET-EV) and air heater water (code MIE-CL/ELEV)

The heating coil consists of a number of copper tubes with aluminium fins pressed on them. The coil will have impaired capacity if dust forms a coating on the coil surfaces. Not only does this impair the heat transfer capacity of the coil, it also increases the pressure drop on the air side. Even if the ventilation system is fitted with high quality filters, as time passes dust deposits will form on the front edges of the coil fins (at the inlet side). To utilise its full capacity, the coil must be well vented. The pipework should be vented by opening the bleeder screws in pipe connections and/or an air vessel.

Inspection

Check:

1. The coil fins to detect possible mechanical deformity
2. That the water coil is not leaking.

Cleaning

If the fins on the coils are dirty, vacuum them from the inlet side. Alternatively, you can blow them clean with compressed air from the outlet side. If they are particularly dirty, clean them with hot water mixed with dishwashing detergent (that will not corrode aluminium).

Bleeding

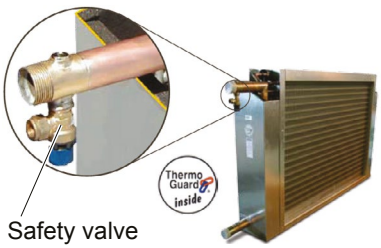
Bleed the heating coil and the pipework if needed. Bleeder screws are on top of the coil or on the tube connections.

Function

Check that the coil is radiating heat. This can be done by temporarily increasing the temperature setting (setpoint).

Additional maintenance for Thermoguard (code ESET-TV, MIE-CL/ELTV)

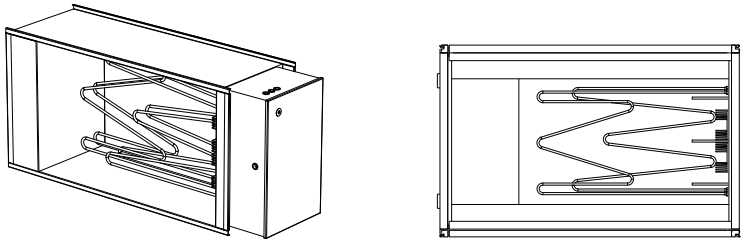
1. Regularly check safety valve function (at least once a year). If you see that the valve is leaking, this is normally due to impurities from the pipe system that have accumulated on the valve seat. In normal cases, it is sufficient to carefully turn the valve knob and in this way “flush” the valve seat clean. If the safety valve continues to leak, you will have to replace it with a new one of the same type and with the same opening pressure.



2. Any shut-off valves on the supply or return lines may not be closed if freezing temperatures are likely.
3. If a Thermoguard coil has frozen, let it thaw completely before restarting operation. If the heat recovery unit is installed upstream of the coil, it is often sufficient to run heat recovery to thaw the coil. If this does not work, some other external heating source will have to be used for thawing the water coil.

   Important! To ensure correct Thermoguard coil function, the entire coil must be allowed to thaw before returning it to full operation. Make sure that water is circulating in the entire coil when you start it up.

5.7 Air heater electric



Air heater electric (code ESET-EV) and air heater electric (code MIE-EL/ELEE)

The heating coil consists of “unsheathed” electric heating rods. A substantial accumulation of dust or other impurities on the heating rods will cause them to overheat. This could shorten their service life. This might also entail an odour of burnt dust and, in the worse case, the risk of fire. Overheated electric heating rods may become deformed or loosen from their suspension fasteners and heat the air unevenly.

Inspection

Check that the electric heating rods are correctly positioned and that they are not deformed in any way.

Cleaning

Vacuum or wipe surfaces with a moist cloth to remove any dust or impurities.

Function

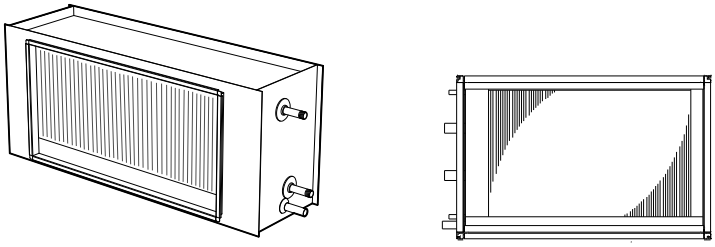
1. Simulate reduced required output by temporarily lowering the temperature setting (setpoint), so that all the electric output steps (contactors) switch out.
2. Then sharply increase the setpoint setting and check that the electric output steps switch in.
3. Restore the temperature setting.
4. Stop the air handling unit (NB: Do not break the circuit with the safety switch). All the electric output steps should switch out (i.e. the contactors in the OFF position). Stopping the unit may be delayed approx. 2–5 minutes to allow the fans to cool the heat energy stored in the air heater.

The electric heater is equipped with dual temperature limiters. The one that resets itself automatically should be set to 70°C.

The overheat protection with manual reset interrupts operation when the heater reaches approx. 120°C and is located on the cover panel on the side of the heater. **Determine the cause of overheating and take corrective action before you reset the protection device.**

Please note that the risk of overheating increases as the air flow through the unit decreases. The air speed should not be lower than 1.5 m/s.

5.8 Air cooler water



Air cooler (code ESET-VK) and air cooler (code MIE-CL/ELBC, MIE-CL/ELBD)

The cooling coil consists of a number of copper tubes with aluminium fins pressed onto them. The coil will have impaired capacity if dust forms a coating on the coil surfaces. Not only does this impair the heat transfer capacity of the coil, it also increases the pressure drop on the air side.

Even if the ventilation system is fitted with high quality filters, as time passes dust deposits will form on the front edges of the coil fins (at the inlet side). A drip tray with drain is located under the cooling coil for collecting and removing evaporation water, and in some cases there is a droplet eliminator downstream of the cooling coil which prevents drops of water accompanying the air stream.

Inspection

Check:

1. The coil fins to detect possible mechanical deformity
2. That the water coil is not leaking
3. That cooling energy is uniformly distributed across the coil surfaces (in operation)
4. The drip tray and drain with water trap (clean if necessary)
5. That the water trap (without non-return valve) is filled with water.

Cleaning

If the fins on the coil are dirty, vacuum clean from the inlet side. Alternatively, you can blow them clean with compressed air from the outlet side. If they are severely fouled, you can clean them with warm water mixed with dishwashing detergent that will not corrode aluminium.

Bleeding (NB: ESET-VK and MIE-CL/ELBC only)

Bleed the water coil and the pipework if needed. Bleeder screws are on top of the coil or on the tube connections.

Function

Check that the coil is emitting cooling energy. This can be done by temporarily lowering the temperature setting (setpoint).

5.9 Fan unit (code ENF)

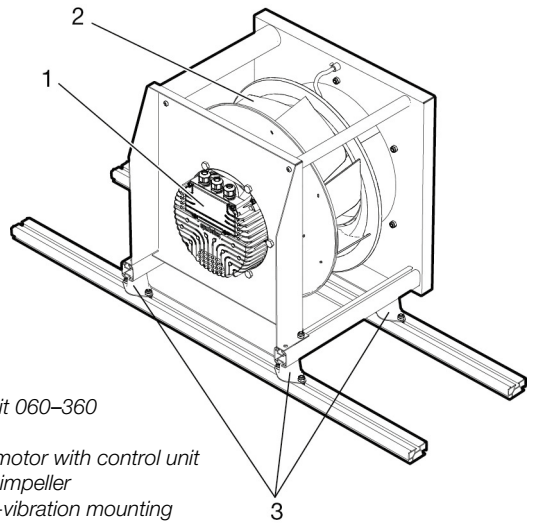
The purpose of the fans is to transport air through the system, i.e. the fan must overcome the flow resistance in air terminals, air ducts and the unit.

The fan speed is regulated to provide correct air flow. If the fans generate a lower air flow, this will impair the function of the ventilation system.

- If the supply air flow is too low, the system will be out of balance, causing poor room climate.
- If the extract air flow is too low, the ventilation capacity will be unsatisfactory. Imbalance may also force moist air out into the building structure.
  One reason why the fans are generating too little air flow may be that impurities have collected on the fan impeller blades.
- If a centrifugal fan is rotating in the wrong direction, the air flow will still go the right way, but with a considerable reduction in capacity. Therefore check the direction of rotation.

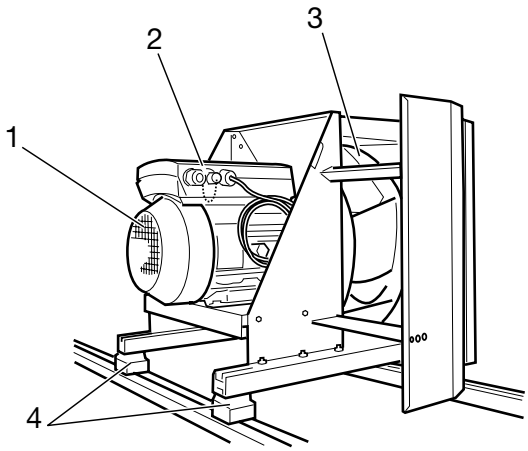
WARNING!
High voltage and rotating fan impeller, risk of personal injury. Before working on/servicing the unit – shut down the unit via the control terminal, then turn the safety switch to the 0 position and lock it.

WARNING!
Rotating fan impeller, risk of personal injury. Shut down the air handling unit and wait at least 3 minutes before you open the inspection doors.



Fan unit 060–360

1. EC motor with control unit
2. Fan impeller
3. Anti-vibration mounting



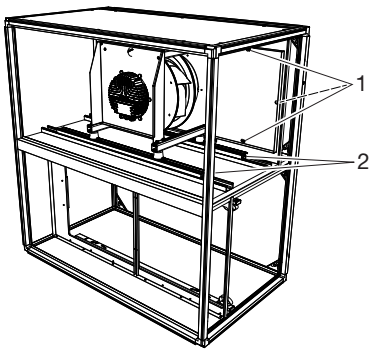
Fan unit, sizes 480–600

1. Motor
2. Control unit
3. Fan impeller
4. Anti-vibration mounting

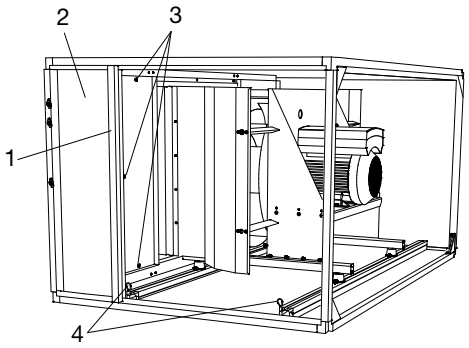
Fan

Inspection

1. Sizes **060–360**: Remove one end of the fan assembly's earth braid. Loosen the screws (position 1) and the pins/screws (position 2) and pull out the fan units (fan and motor are mounted on rails).

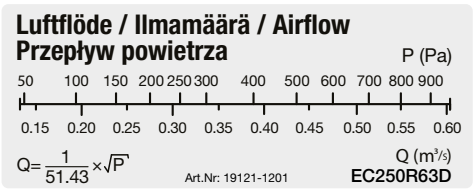


Fan unit 060–360



Fan unit 480–600

   Sizes **480–600**: Access to the fan takes place normally via the inspection door. Where necessary remove the centre bar (position 1) and fixed door (position 2). Remove one end of the fan assembly's earth braid. Loosen the screws (position 3) and the pins (position 4), and pull out the fan units (fan and motor are mounted on rails).
2. Check that the fan impeller rotates easily, is in balance and does not vibrate. Also check that the fan impeller is clean from any accumulation of particles. Imbalance may be due to a coating or damage to the fan impeller blades.
3. Listen to the sound from the motor bearings. If the bearings are in good condition, you will hear a slight purring sound. A scraping or pounding sound may mean that the bearings are damaged and service is then required.
4. Check that the fan impellers are firmly mounted and that they have not shifted sideways towards the inlet cones.
5. The fan impeller and motor are mounted on a support fitted with rubber anti-vibration mountings. Check that the anti-vibration mountings are securely mounted and are intact.
6. Check the mounting screws as well as the suspension devices and support.
7. Check that the gaskets on the connection plates around the connection openings are intact and firmly fitted.
8. Check that the measurement tubes are securely fitted on each measurement outlet.
9. Remount the fan units.
10. Check the air flows by measuring Δp in the connections for flow measurement. Use the unit's air flow label and see which flow corresponds to the measured Δp, see example below.



Air flow label


Connections for flow measurement (measurement outlets)

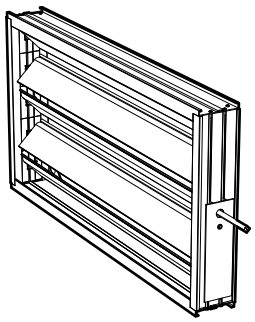
Cleaning

1. Follow item 1 under *Inspection*.
2. Wipe the fan impeller blades to remove any coatings. Use an environmentally friendly degreasing agent.
3. The external surfaces of the motor must be kept clean. Remove any dust, dirt and oil. Clean with a dry cloth. If they are severely fouled, use an environmentally friendly degreasing agent. The motor is likely to overheat inside if thick layers of dirt prevent air from entering the motor to cool the stator structure.
4. Vacuum clean the air handling unit so that particles will not be blown out into the duct system.
5. Clean the other parts in the same way as the fan impellers. Check that the inlet cones are securely mounted.
6. Follow item 9 under *Inspection*.

Resetting the overheat protection (sizes 100–360)

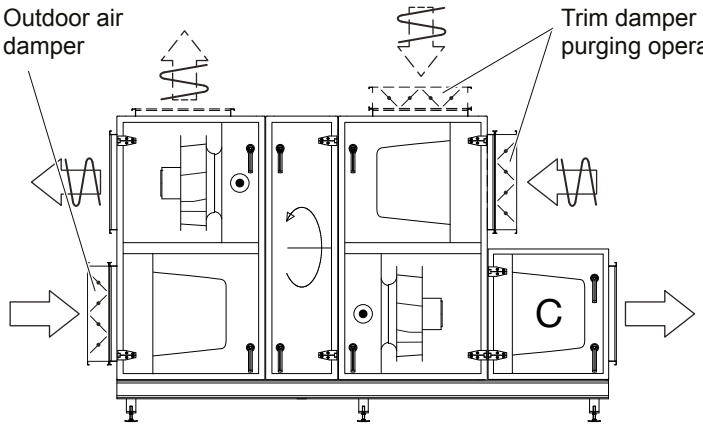
1. Cut the power supply to the fan motor.
2. Wait at least 20 seconds after the fan impeller has stopped rotating.
3. Close the power supply to the fan motor.

5.10 Dampers (code ESET-TR, EMT-01)



Dampers (code ESET-TR, EMT-01)

The purpose of the dampers is to regulate the air flow. Faulty function gives rise to disturbances that may result in serious problems.



- If the outdoor air damper does not:
  – Open completely this reduces the air flow
  – Close completely when the unit stops, the heating coil is likely to freeze
  – Seal properly (leaks) this will result in increased energy use.
- If the trim damper for the rotor purging function is not working, or is not correctly adjusted, any odours in the extract air may be transferred to the supply air via the rotor. Units that are supplied with IV Produkt integrated control equipment are equipped with the control function*pressure-controlled rotor purging function* in order to optimise the trim damper function and minimise the risk of transferring odour.

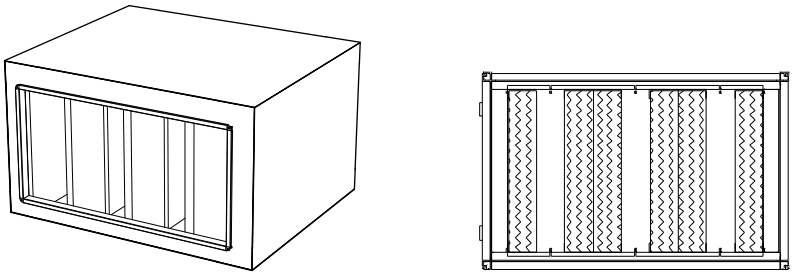
Inspection

1. Check the function of the damper actuator.
2. Check the dampers for tightness when they are closed. If they are not sealed, adjust the damper actuator to make the dampers tight (does not apply to trim dampers).
3. Check the sealing strips.
4. If the damper is not working, check that there are no screws penetrating the drive mechanism/damper blades to interfere with damper function.

Cleaning

Clean the damper blades with a cloth. If they are severely fouled, an environmentally friendly degreasing agent can be used.

5.11 Sound attenuators (code EMT-02, MIE-KL)



Sound attenuator (code EMT-02) and sound attenuator (code MIE-KL)

The purpose of the sound attenuator is to reduce the sound power level in the system.

Inspection

Check that the baffle elements are intact and have clean surfaces. Take action if necessary.

Cleaning

Vacuum and/or wipe all surfaces with a damp cloth. If more intense cleaning is needed, do so with rotating nylon brushes.

6 Ordering keys

6.1 Block sections

Fan section (code ENF)

ENF -a-b-c	**Fan section**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
c - Length	0 = Standard 1 = Extended

ENFF -a-b-c-0	**Fan system**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Fan impeller	025, 028, 031, 035, 040, 045, 050, 056, 056G, 063G, 071G
c - Motor	Example EC-0550 = EC motor 5.5 kW

Accessories:

ENFT-01 -a-b-c	Connection kit
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
c - Connection number	01, 02, 03, 04, 04, 05
ENFT-02	Pivot arm kit (sizes 060–190)
ESET-04 -a-b	Flow meter, manometer type
a - Fan impeller	025, 028, 031, 035, 040, 045, 050
b - Fan type	EC = EC motor DD = Direct driven
ESET-06 -a-b	Stainless bottom plate into the outdoor inlet
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b – Supply air	U = Up N = Down
ESET-07 -a	Pre-filter (supply air only)
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
ELEF -a-b	Filter
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Filter class	G4, M5, M6, F7, F8, F9, P4, AL
MIET-FB -b	Filter monitor
b - Type	01 = U-tube manometer 02 = Kytölä manometer 03 = Magnehelic manometer

Cross-flow section (code EKX)

EKX -a-b-c

a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
c - Configuration	*By rotor:* 01 = connected to supply air fan section (SA) provides supply air from bottom right *alt.* connected to extract air fan section (EA) provides extract air from upper left 02 = connected to supply air fan section (SA) provides supply air from upper right *alt.* connected to extract air fan section (EA) provides extract air from bottom left *By counter-flow exchanger:* 01 = connected to extract air fan section (EA) provides extract air from upper left 02 = connected to supply air fan section (SA) provides supply air from upper right

Cross-flow section with smoke-bypass (code ERX)

ERX -a-b-c

a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
c - Configuration	01 = roof connection, extract air upper left 02 = roof connection, extract air upper right

Smoke-bypass (code EKR)

EKR -a-b-c

a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
c - Configuration	01 = roof connection 02 = connection upper rear 03 = connection lower rear

Electrical connection (code ESEK)

ESEK -a-b-c-d-e-f-g

a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Configuration	11 = Compact unit 12 = Block 13 = Block module (sizes 240 and 300) with module connection of supply air fan in fan section ENF) 14 = Outdoor 22 = Split counter-flow exchanger (sizes 100, 150, 190)
c - Rotary heat exchanger (code EXR)	R = With U = Without
d - Energy recovery hrc	P = Plate heat exchanger B = Coil recovery M = Counter-flow heat exchanger (Home) U = Without
e, f, g	Not used

Rotary heat exc. (code EXR) (rotary heat exchanger)

EXR -a-b-c	**Rotor section**
a - Size	060, 100, 150, 190, 240, 300
b - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
c - Rotor diameter	D1 = Standard diameter D2 = Not used

EXRR -a-b-c	**Rotor**
a - Size	060, 100, 150, 190, 240, 300
b - Rotor variant	NO = Normal HY = Hygroscopic NP = Normal Plus HP = Hygroscopic Plus EX = Epoxy
c - Rotor diameter	D1 = Standard diameter D2 = Not used

Accessories:

EXAT-01-a	Reinforced rotor (For rotor variant NO/NP only)

Counter-flow exchanger (code EXH)

EXH -a-b-c-d-0

a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
c - Type of exchanger	0 = Whole unit (sizes 060, 100, 150, 190, 240, 300, 360, 480, 600) 1 = Split version (sizes 100, 150, 190)
d - Configuration	V = Left H = Right

Media section (cod EMR)

EMR -a-b-c-1

a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
c - Recirculated air damper	0 = Without 1 = With

Carbon filter section (code ECF)

ECF -a-b-c

a - Size	060, 100, 150, 190, 240, 300
b - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
c - Filter slide rails	ST = Standard

ELCF -a-BR	**Set of filters**
a - Size	060, 100, 150, 190, 240, 300

6.2 Components for duct installation

Damper (code EMT-01, ESET-TR)

EMT-01 -a	**Damper excl. motor**
ESET-TR -a	**Damper with manual control**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600

Air heater water (code ESET-VV, -TV)

ESET-VV -a-b	**Air heater water**
ESET-TV -a-b	**Air heater water, Thermoguard**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Output variant	1, 2

Air heater electric (code ESET-EV)

ESET-EV -a-b

a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Output variant	1.2 (size 060) 1, 2, 3 (size 100) 1, 2, 3, 4 (sizes 150, 190, 240, 300, 360)

Air cooler water (code ESET-VK)

ESET-VK -a-3

a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600

Sound attenuator (code EMT-02)

EMT-02 -a

a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600

6.3 Functional fittings

Unit casing (code EMM)

EMM -a-b-c

a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Module	10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80
c - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30

Filter fitting (code MIE-FB)

MIE-FB -a-b-c-d	**Bag filter fitting**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Module	10 = for panel filter FC 15 = for filter classes AL, G4, M5-M6, F7-F9 size 060, 100 20 = for other filter types and sizes
c - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
d - Filter slide rails	ST = Standard SF = Acid-proof stainless steel
ELEF -a-b	**Set of filters**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Filter class	AL, G4, M5, M6, F7-F9

Filter section accessories:

MIET-FB-01	**Filter monitor, U-tube manometer**
MIET-FB-02	**Filter monitor, Kytölä manometer**
MIET-FB-03	**Filter monitor, Magnehelic manometer**

Air cooler/heater (code MIE-CL/ELEV/ELTV/ELBC/ELBD)

MIE-CL -a-b-c	**Fitting**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Module	10, 15, 20
c - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
Accessories:	
MIET-CL 01	Air valve
MIET-CL 02	Drain valve
MIET-CL 03	T-pipe for frost protection and bleeding/draining
ELEV -a-b	**Air heater water**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Output variant	00, 01, 02, 03, 04
ELTV -a-b-c	**Air heater water, Thermoguard**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Output variant	00, 01, 02, 03, 04
c - Connection side	H = Right V = Left
ELBC -a-b-c-d-e-f	**Air cooler water**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Output variant	02, 03, 04, 06, 08
c - Loop length	1 = Short loop length 2 = Long loop length
d = Fin pitch	20 = 2.0 mm 30 = 3.0 mm
e - Droplet eliminator	0 = Without 1 = With
f - Connection side	H = Right V = Left
ELBD -a-b-c-d-e-f	**Air cooler DX**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Output variant	02, 03, 04
c - Loop length	Generated from design program
d = Fin pitch	20 = 2.0 mm 30 = 3.0 mm
e - Droplet eliminator	0 = Without 1 = With
f - Connection side	H = Right V = Left
Accessories:	
ELBDT-01 -a	Number of power steps, air cooler DX
a - Number of power steps	1, 2, 3

Air heater electric (code MIE-EL/ELEE)

MIE-EL -a-b-c	**Fitting**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Module	15, 20, 25, 35
c - Front	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
ELEE -a-b-HS	**Electric heater**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Output variant	01, 02, 03, 04, 05

Inspection (code MIE-KM)

MIE-KM -a-b-c	**Fitting**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Module	10, 15, 20
c - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
Accessories	
MIET-KM-01-a	**Air distributor**

Empty section (code MIE-TD)

MIE-TD -a-b-c	**Fitting**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Module	10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80
c - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
Accessories	
MIET-TD-01-a	**Drip tray**

Sound attenuator (code MIE-KL)

MIE-KL -a-b-c-d	**Fitting**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Module	20, 30, 40, 50, 60
c - Casing	AA = Standard (class T3) PA = ThermoLine low energy (class T2) BA = Insulation to fire resistance rating EI 30
d - Type of baffle	EB = Non-retractable baffle UB = Retractable baffle

6.4 Accessories

Sleeve (code EMMT-03)

Flexible woven fabric, l = 110–150 mm.

EMMT-03 -a	
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600

Outdoor version (code EMMT-04)

EMMT-04 -a-b-c	**Outdoor version**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Number of levels	2
c - Length range	01, 02, 03, 04, 05, 06, 07
Accessories:	
EMMT-04T -a-b	**Exhaust hood**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Fan type	FD
EMMT-04G-a-0	**Intake louvre**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
EMMT-04H-a-0	**Weather hood**
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600

Support (code EMMT-05)

EMMT-05 -a-b	
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
b - Length range	0, 1, 2, 3, 4, 5 0 = 0–1000, 1 = 1000–2000 and so on

Inspection window (code EMMT-06)

Plexiglass. Not for counter-flow heat exchanger (code EXH), not for casing BA (Insulation to fire resistance rating EI 30).

Inside light fitting (code EMMT-07)

IP 44, with protective grille. Not for counter-flow exchanger (code EXH).

Lifting bracket (code EMMT-08)

For aluminium section.

One-piece configuration (code EMMT-10)

EMMT-10 -a-b	
a - Size	060, 100, 150, 190, 240, 300, 360, 480, 600
f - Number of delivery units	01, 02, 03, 04, 05, 06, 07, 08, 09, 10

Thermometer (code EMMT-16)

Dial thermometer, insertion type, -40 to +40°C.

Water trap (code MIET-CL 04)

Plastic, built-in non-return valve.

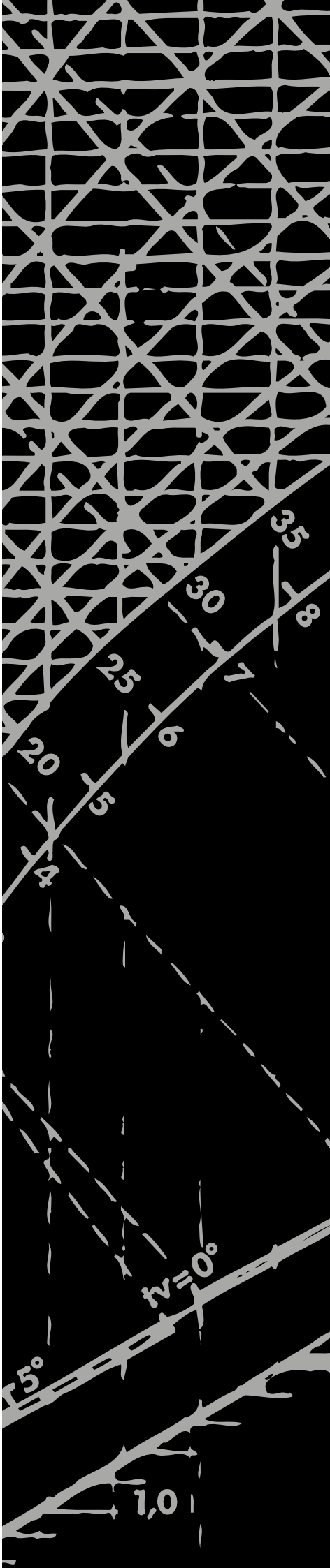
6.5 Control equipment

-a-b-c-d

a - Air handling unit	MST = Top with Modbus MSC = Compact with Modbus MSF = Flex 100-600 indoor Modbus MSU = Flex 100-600 outdoor Modbus MSM = Flex 740-980 Modbus
b - Motor control	V110 = Speed controlled 1-phase 10A-230V V111 = Speed controlled 1-phase 10A-230V V310 = Speed controlled 3-phase 10A-400V V311 = Speed controlled 3-phase 10A-400V V316 = Speed controlled 3-phase 16A-400V V320 = Speed controlled 3-phase 20A-400V V616 = Speed controlled 2×3-phase 16A-400V
c - Energy recovery	R = Rotary heat exchangers P = Plate heat exchanger M = Counter-flow exchanger B = Coil recovery
d - Control system	CX = Complete control equipment Siemens Climatix MX = Complete control equipment Siemens Climatix Modbus UC = Complete electrical connection to terminal (without controller unit DUC) MK = Fans and heat exchangers electrically connected to terminal US = Without control equipment, without cabling HS = With heat exchanger control (HRC), without controller unit (DUC), without cabling

Change history

110927.01	Issue 1
120217.02	Addition of rated current, fan motors, updated service schedule.
130318.03	Updating of rated current and filter data. Addition of size 060. Addition of earth braid fan installation.
140610.04	New casing.
141020.05	Addition of counter-flow heat exchanger sizes 360, 480 and 600.
151116.06	More wiring instructions, PFD motors added.



Air handling with focus on LCC

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