

ProtecTor

Door air curtain 400 V AC version and 230 V EC version

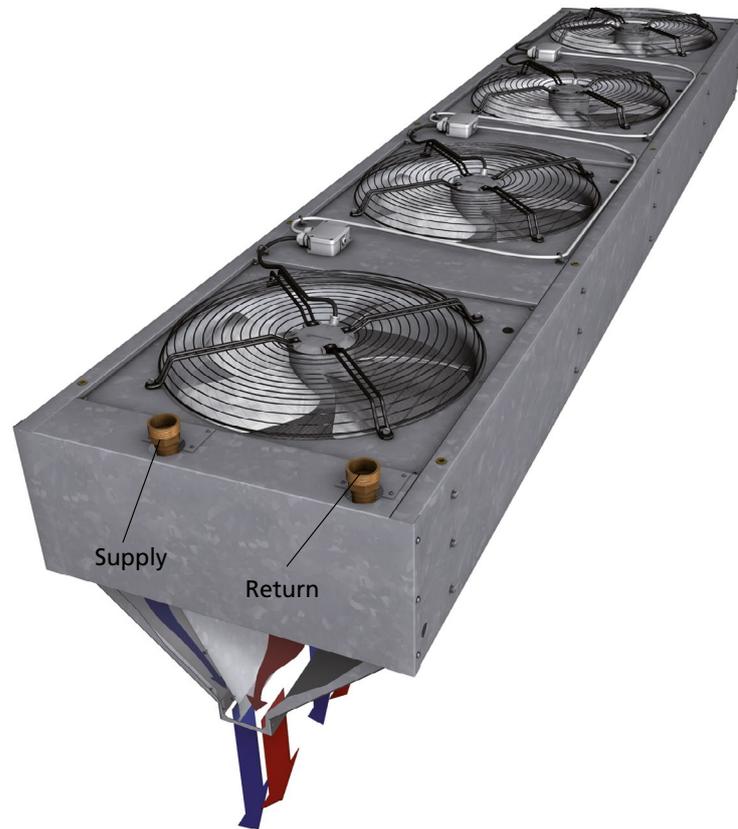
► Installation and operating manual

Keep these instructions in a safe place for future use!
Read them carefully prior to commissioning!

2.55 ProtecTor

A new dimension in door screening

Installation and operating manual



We reserve the right to make content or design-related changes without prior notice!



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About these instructions

Carefully read these instructions in full prior to any assembly and installation work!

Anyone involved with the installation, commissioning and use of this product is obliged to pass these instructions on to tradespeople who are involved at the same time or subsequently, as well as to end users or operators. Retain these instructions until final decommissioning!

We reserve the right to make content or design-related changes without prior notice!

Key to symbols

Safety instructions



IMPORTANT! DANGER!

Non-compliance with this information can lead to serious personal injuries or damage to property.



Danger from electric shock!

Non-compliance with this information can lead to serious personal injuries or damage to property by electric current.



Important note

Important note! We cannot guarantee the trouble-free operation of the unit(s) in the event of non-compliance.

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Read the operating manual carefully prior to installing the ProtecTor!

1. Correct use

Kampmann ProtecTor air curtains are produced in compliance with the state of the art and recognised safety regulations. Nevertheless, their use can result in danger to people or restrictions to the units or other materials assets if the Kampmann ProtecTor units are not appropriately mounted, installed and operated or incorrectly used.

The ProtecTor system is solely intended to screen incoming cold air with permanently or temporarily open doorways in industrial and commercial buildings. Any use other than the use specified above is deemed not to be correct and proper. The user / operator of the unit alone shall be liable for any damage resulting from this. Correct and proper use is also deemed to include compliance with the safety, operating and maintenance / service information described in this manual. Only use the unit fitted and operated as a complete unit. Operation without a discharge nozzle is not permitted and can result in severe damage to personnel. The unit needs to be connected to supply lines on site.

Application areas

Only use the Kampmann ProtecTor in

- frost-free interiors (e.g. showrooms, industrial and commercial buildings)

Do not use the Kampmann ProtecTor

- outdoors
- in humid rooms and wet areas, such as swimming pools
- in areas where there is a risk of explosion
- in areas with a high dust content
- in areas with an aggressive atmosphere

Check the use with the manufacturer in case of any doubt. Protect the products from weathering, such as humidity, during storage and installation.

Expertise

The mounting and electrical installation of the Kampmann ProtecTor requires expertise in heating, cooling, ventilation and electrical engineering. This knowledge, generally learned in professional training in one of the fields mentioned above, is not described separately. Damage caused by improper installation is the responsibility of the operator.

The installer of these units should have adequate knowledge of the following gained from specialist professional training

- Safety and accident prevention regulations
- Guidelines and recognised technical regulations, i.e. Association of German Electricians VDE regulations, DIN and EN standards.

The installation, operation and maintenance of this equipment must comply with the applicable laws, standards and regulations in the respective country and the current state of the art.

Regulations

The accident prevention regulations (BGV A1 (formerly: VBG1), BGV A3 (formerly: VBG4), VBG7w, VBG9a and the generally recognised technical regulations, in particular DIN VDE 0100 and DIN VDE 0105) apply to the transport, assembly, installation and operation of the unit.

The installation, operation and maintenance of this equipment must comply with the applicable laws, standards and regulations in the respective country and the state of the art.

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Operating and application limits

Operating limits			
Min./max. water temperature		°C	40 - 90
Min. / max. air intake temperature		°C	6 - 40
Min. / max. air humidity		%	15 - 75
Max. operating pressure of the heat exchanger	copper/aluminium	bar	10
	galvanised steel (cross-counterflow)	bar	16
Min./max. glycol content		%	25 - 50

We would refer to VDI-2035 Sheets 1 & 2, DIN EN 14336 and DIN EN 14868 with regard to the properties of the medium used to protect the equipment. The following values provide further guidance. The water used should be free of contamination, such as suspended particles and reactive substances.

Water quality		
pH value* ¹		8 - 9
Conductivity* ¹	µS/cm	< 700
Oxygen content (O ₂)	mg/l	< 0.1
Hardness	°dH	4 – 8.5
Sulfur ions (S)		not measurable
Sodium ions (Na ⁺)	mg/l	< 100
Iron ions (Fe ²⁺ , Fe ³⁺)	mg/l	< 0.1
Manganese ions (Mn ²⁺)	mg/l	< 0.05
Ammonia ions (NH ⁴⁺)	mg/l	< 0.1
Chlorine ions (Cl)	mg/l	< 100
CO ₂	ppm	< 50
Sulfate ions (SO ₄ ²⁻)	mg/l	< 50
Nitrite ions (NO ₂ ⁻)	mg/l	< 50
Nitrate ions (NO ₃ ⁻)	mg/l	< 50

2. Safety instructions



Connection errors can result in damage to the unit! We are not liable for any damage caused by incorrect connection and/or improper handling!

Only allow a qualified electrician to perform installation, assembly and maintenance work on electrical units in compliance with Association of German Electricians VDE guidelines. The connection should comply with the applicable VDE regulations and provisions laid down by the regional electricity providers.

Non-compliance with the regulations and operating manual can result in the units malfunctioning with consequential damage and danger to people. There is a danger to life caused by wires being crossed due to incorrect wiring!

Disconnect all parts of the system voltage-free from the mains power supply and prevent them from being reconnected before starting any connection and maintenance work!

KAMPMANN

EC fan

Electrical loading (>50 C) between the mains conductor and protective conductor after switching off the mains power supply when switching several fans in parallel.

- Ensure that an adequate contact safety device is fitted. The mains connections and PE need to be shorted before working on the electrics.

The terminals and connectors are still energised even when the unit is switched off. Check whether the terminals and connectors are de-energised with a two-pin voltage tester.

- Only open the unit 5 minutes after all poles of the voltage have been switched off.

The PE conductor carries high leakage currents (depending on the frequency, intermediate voltage and motor capacity). Therefore check EN-compliant earthing under test conditions (EN 50 178, art. 5.2.11). Hazardous voltage can occur at the motor housing without earthing.

In the event of a fault, electrical voltage will be present at the rotor and impeller. The rotor and impeller are base-insulated.

- Do not touch when fitted!

The fan restarts automatically when control voltage or the saved speed set-point is applied, for instance after a mains power failure.

- Do not go near the danger zone of the unit.

High temperatures are produced at the fan's electronic housing.

- Combustion hazard.

The fan is protected from blockage. Protective functions that trigger an automatic shut-down in the event of a fault are integrated, depending on the fan type.

- Please refer to the operating manual for the respective fan for further information!

Please read this manual in full to ensure correct and proper installation and the correct operation of the ProtecTor.

Anyone involved with the installation, commissioning and use of this product is obliged to pass these instructions on to tradespeople who are involved at the same time or subsequently, as well as to end users or operators.

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Please note the following safety-relevant information!

- Disconnect all parts of the system that are being worked on (voltage-free). Ensure that the system cannot be accidentally re-connected!
- Before commencing installation/maintenance work, wait until all moving components, such as fans, have come to a final standstill after the unit has been switched off. After working on the unit, remove any tools, the short circuit detector or any other objects from the unit.
- **Caution!** Pipes, casings and fittings can become very hot depending on the operating mode!
- **Caution!** Wear gloves, safety shoes and suitable protective clothing when transporting the unit! Sharp edges cannot be ruled out despite the utmost care during manufacture.
- The operator of the unit is responsible for ensuring EMC compliance of the entire system in accordance with the locally applicable standards.

Protect the products from humidity and temperature fluctuations during installation and any possible interim storage. Check the use with the manufacturer in case of any doubt.

Fire protection

Please note the statutory requirements in terms of fire protection. The applicable guidelines and standards must be taken into consideration.

Modifications to the unit

Do not undertake any modifications, renovations or additions to the ProtecTor without discussing them with the manufacturer as they could impair the safety and operation of the unit. Modifications / alterations may only be carried out with written approval.

Do not carry out any measures on the unit not described in this manual. Ensure that all on-site systems and cabling are suitable for connection to the intended system!

Liability and warranty

- Only use the ProtecTor for the applications indicated in "Intended use".
- Warranty claims for material and manufacturing defects are only valid if they have arisen within the warranty period.
- Modifications / alterations may only be carried out with written approval.
- Any warranty becomes void if modifications are made to the unit.



3. Transport and storage

Please note all applicable safety and accident prevention regulations! A minimum of two people are needed to transport the unit.

- Improper use of parts of the ProtecTor to carry the equipment can lead to personal injury and material damage! Only lift the Kampmann ProtecTor by the underside of the basic unit with a suitable lifting tool. Do not use any accessories fitted as transport aids!
- Caution! Risk of sharp edges! Wear gloves, safety shoes and suitable protective clothing during to transport the unit.
- Use suitable transport equipment to transport the unit to prevent damage to health and the equipment.
- Only attach lifting tools to the basic unit and/or the discharge nozzle. Do not use the side uprights to lift the unit! Protect the edges when lifting with a harness! Make sure that weight is distributed evenly.

Purpose and scope of these instructions

This manual contains information on the ready-to-operate installation of the ProtecTor. Ongoing tests and further developments may result in small variations between the unit supplied and the instructions.

4. Scope of delivery

Provide materials for fixing the units to the ceiling, such as mounting brackets, screws, plugs etc., on site, depending on the type of mounting and support structure.

Remove all packing immediately after the delivery and inspect the unit, discharge nozzle and accessories:

- Is the delivery damaged?
- Have the items ordered been delivered? Check type numbers
- Is the scope of delivery and number of items delivered correct?

Note: Reports of missing items or transport damage can only be handled if the carrier company manager has confirmed the damage. The manufacturer is not liable for any items reported missing that have arisen due to transport or other negligent behaviour.



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5. Installation

5.1 Installation site



Before stating installation work, shut off the water line to the (site) lines to prevent injuries or material damage!

ProtecTor air curtains are available as horizontal and standing versions. The horizontal version is mounted on the ceiling, while the standing version is mounted on the wall at the same time as being installed on the floor. The type, condition and ambient temperature of the installation site for the Kampmann ProtecTor must be appropriate to the corresponding size. The installation site must be suitable for permanently supporting the unit securely and vibration-free.

- **Preparatory measures for installation:**

- Check the installation site for adequate load-bearing strength and stability
- Check the required general conditions in the permitted application area
- Have the necessary auxiliary equipment ready for installation (e.g. lifting tools)
- Make sure that a minimum of two people are available for installation work
- Wear personal protective gear
- Pay attention to the smallest possible installation distance between the unit and door to achieve an optimum shielding effect



Important! Danger from electric current / existing pipework!

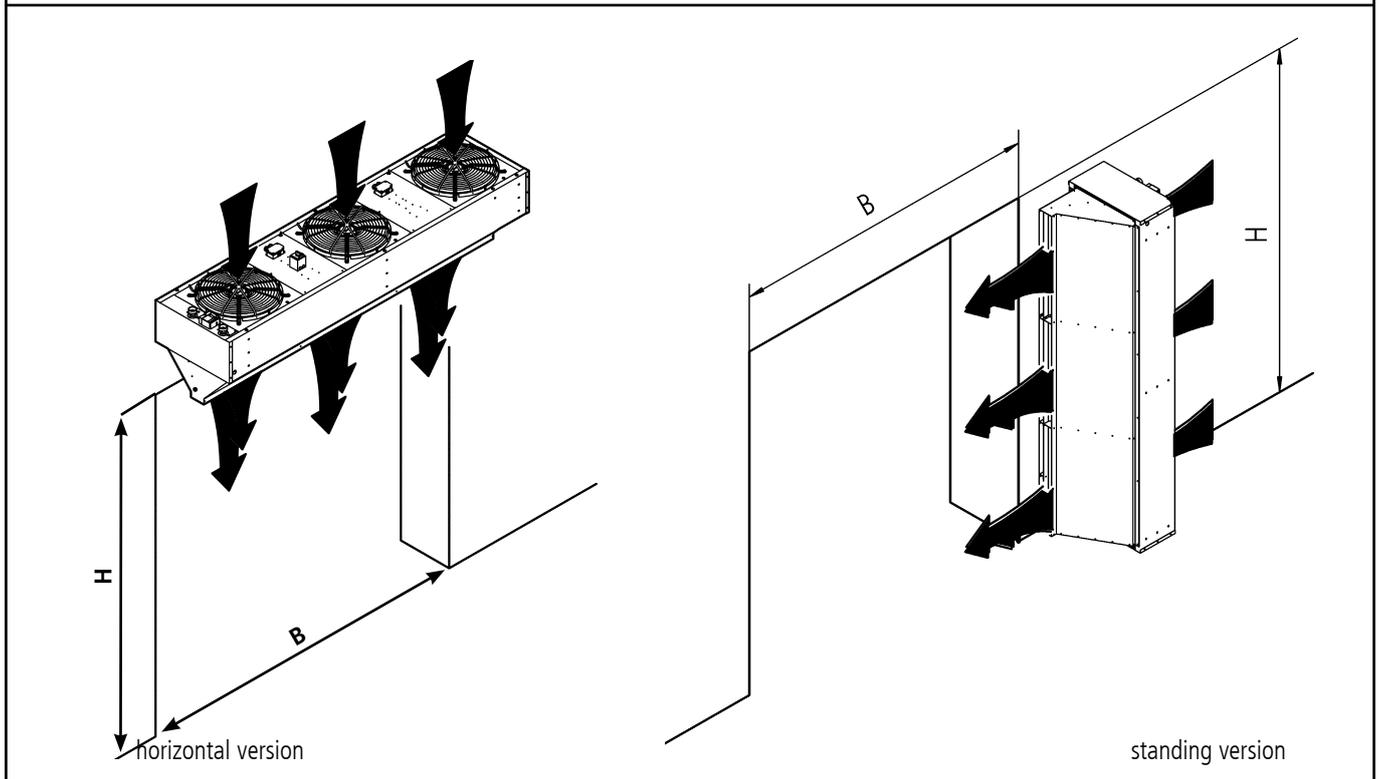
- Check that there are no electric cables or pipework laid in the area prior to drilling and creating possible wall and ceiling openings!
- All versions of the unit should be fixed in all installation positions in such a way that no mechanical distortion or warping arises.

5.2 Installation distances

When mounting the unit, ensure that there is a minimum free intake distance of 320 mm on all sides above the motor guard. If the minimum distance is not adhered to, the output of the ProtecTor will be reduced, and the sound level will rise.

In the event of any restricted free air intake due to constricted installation sites (e.g. adjacent walls, corridor-like installation spaces), pay attention to the resulting lower installation height to obtain the required output.

Maximum mounting height • Maximum door width



Maximum door dimensions, horizontal version

Type ProtecTor	max. discharge height ¹⁾ H [m]	max. door width B ¹⁾ [m]
20**68	3.50	2.25
20**66	3.50	2.25
30**68	3.50	3.25
30**66	3.50	3.25
40**68	3.50	4.25
40**66	3.50	4.25
50**68	3.50	5.25
50**66	3.50	5.25
20**78	4.50	2.25
20**76	4.50	2.25
30**78	4.50	3.25
30**76	4.50	3.25
40**78	4.50	4.25
40**76	4.50	4.25
50**78	4.50	5.25
50**76	4.50	5.25

Maximum door dimensions, standing version

Type ProtecTor ²⁾	max. discharge height ¹⁾ H [m]	max. door width B ¹⁾ [m]
220**68	2.25	3.50
220**66	2.25	3.50
230**68	3.25	3.50
230**66	3.25	3.50
240**68	4.25	3.50
240**66	4.25	3.50
250**68	5.25	3.50
250**66	5.25	3.50
220**78	2.25	4.50
220**76	2.25	4.50
230**78	3.25	4.50
230**76	3.25	4.50
240**78	4.25	4.50
240**76	4.25	4.50
250**78	5.25	4.50
250**76	5.25	4.50

** Heat exchanger code 00, 20 or 31

¹⁾ the figures are lower by min. 1 m when using the central short air discharge (c)

²⁾ also applies to standing, on the left of the doorway (type 320++68 etc.)

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5.3 Installation

Delivery of the ProtecTor unit consists of two elements: basic unit and nozzle. Depending on the conditions on site, they either need to be connected before or after installation of the basic unit.

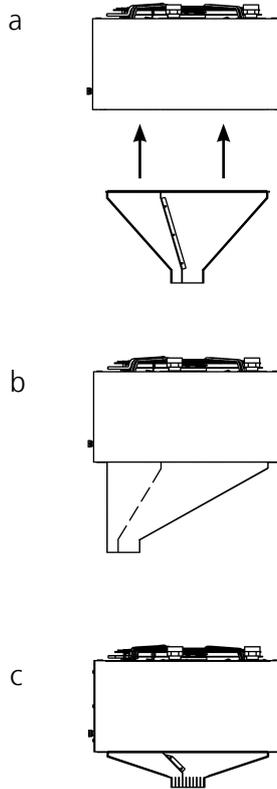


Fig.: Examples of nozzle versions
a: central air discharge
b: one-sided air discharge
c: short air discharge, centre¹⁾

¹⁾ The figures are lower by min. 1 m when using the centre short air discharge (c)

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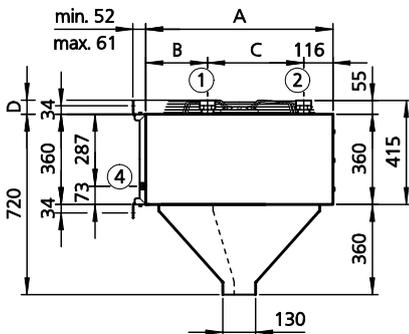
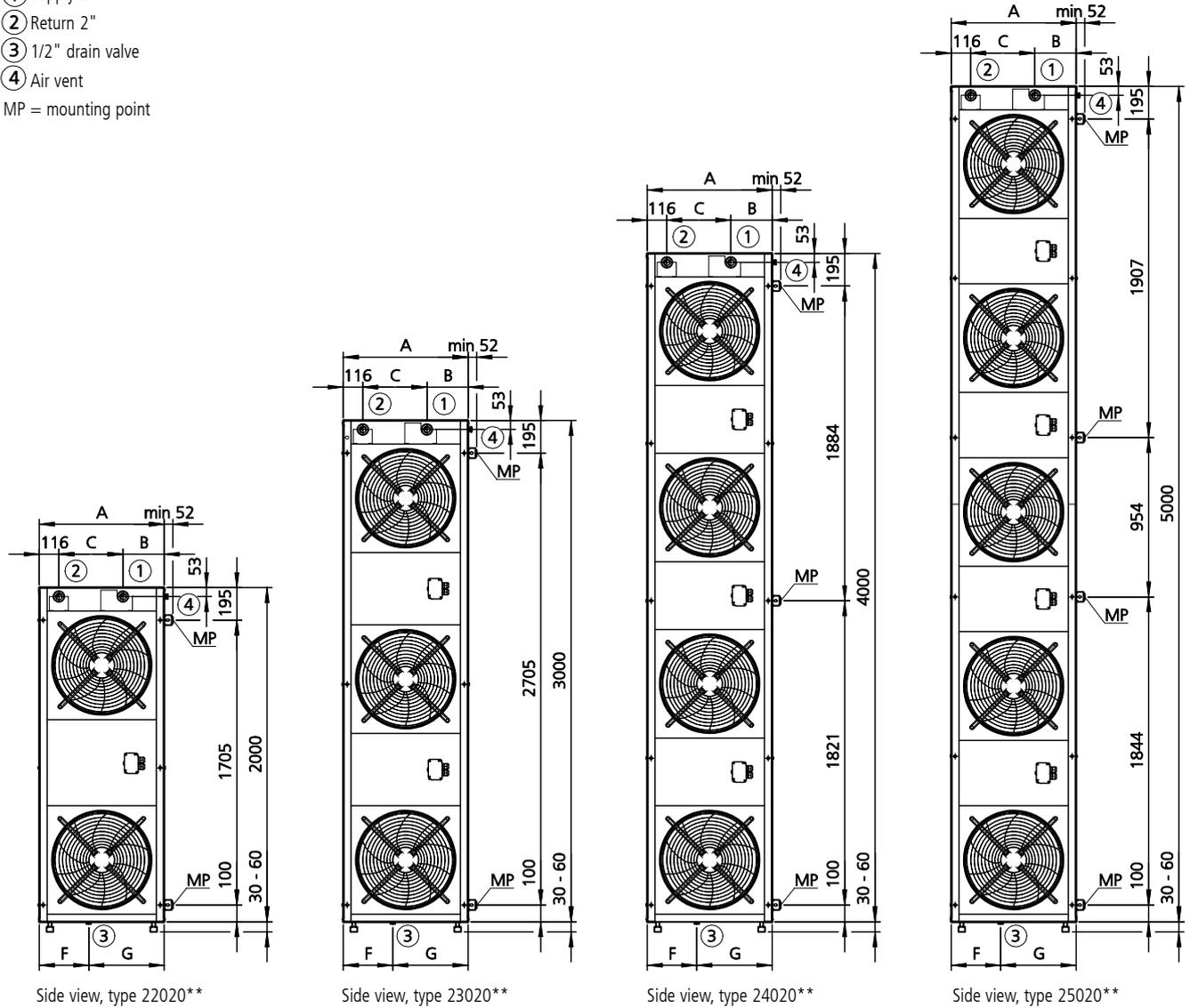
Installation and operating manual

Version with AC motor						
Heat exchanger	Size	A	B	C	D	E
copper/aluminium	76	842	245	481	51	794
	66	742	245	381	56	694
galvanised steel	76	842	320	406	51	794
	66	742	320	306	56	694
galvanised steel, cross-counterflow	76	842	320	406	51	794
	66	742	320	306	56	694

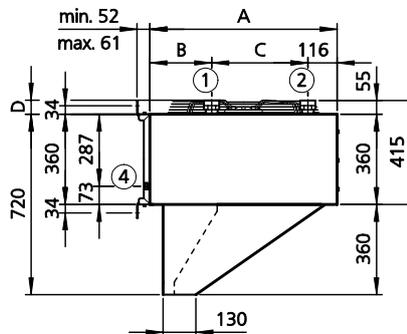
Version with EC motor						
Heat exchanger	Size	A	B	C	D	E
copper/aluminium	78	842	245	481	61	794
	68	742	245	381	75	694
galvanised steel	78	842	320	406	61	794
	68	742	320	306	75	694
galvanised steel, cross-counterflow	78	842	320	406	61	794
	68	742	320	306	75	694

Dimensions of standing version

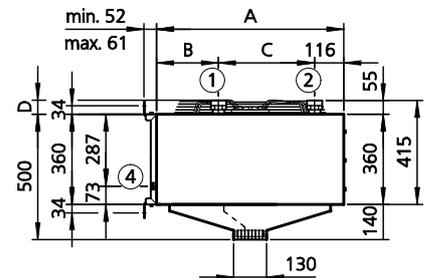
- ① Supply 2"
 - ② Return 2"
 - ③ 1/2" drain valve
 - ④ Air vent
- MP = mounting point



Top view
Basic unit with long air discharge nozzle,
type *00060, type *00070



Top view
Basic unit with one-sided air discharge
nozzle, type *01060, type *01070



Top view
Basic unit with short air discharge nozzle,
type *00160, type *00170

* insert nozzle length: 2 = 2 m, 3 = 3 m, 4 = 4 m, 5 = 5 m
** add motor code
(all dimensions in mm)

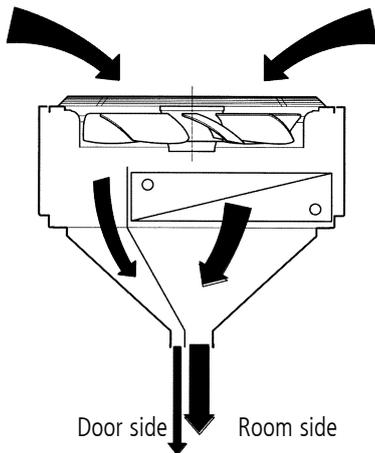
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Version with AC motor							
Heat exchanger	Size	A	B	C	D	F	G
copper/aluminium	76	842	245	481	51	344	498
	66	742	245	381	56	294	448
galvanised steel	76	842	320	406	51	294	498
	66	742	320	306	56	244	448

Version with EC motor							
Heat exchanger	Size	A	B	C	D	F	G
copper/aluminium	78	842	245	481	61	344	498
	68	742	245	381	75	294	448
galvanised steel	78	842	320	406	61	294	498
	68	742	320	306	75	244	448

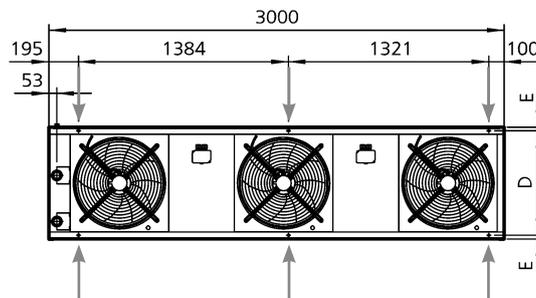


- Install the ProtecTor unit as per the label (label on the room side) with the warm air stream directed towards the room.
- Only use the suspension points provided for installation.

Installation of ProtecTor, horizontal version

Number of suspension points (M10 connection dimensions):

- 6 no. with 3 m length,
- 10 no. with 4 m length,
- 12 no. with 5 m length.
- Mount the unit on an appropriate support structure on site.
- When using accessories, ensure that you maintain the minimum distance (see under 5.2) and leave sufficient space around elements that need to be accessed for maintenance.
- Always level the ProtecTor unit precisely horizontally!



Mounting points of horizontal version, length 3 m, see page 14 onwards for further lengths.

Installation of ProtecTor, standing version

Number of fixing points:

- 2 no. with 3 m height,
- 3 no. with 4 m height
- 4 no. with 5 m height.
- Fit the mounting brackets supplied to the fixing points of the ProtecTor basic unit (2 to 4 fixing points depending on the size of the unit, see Fig. on page 16 onwards).
- Level the height of the unit horizontally.
- Pay attention to a maximum wall distance of 66 mm.
- Drill holes in the wall.
- Use dowels and screws (by others) to fix the brackets to the wall. Depending on the installation situation, the brackets can point inwards (see image of wall brackets) or outwards.
- Tighten the screws between the mounting brackets and the basic unit.



Wall bracket (with standing version)



Support foot with standing version

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5.4 Weights

ProtecTor basic unit, horizontal, copper / aluminium heat exchanger										Art. no. 25500_ _ _ _ _ *
AC	Type		0202066	0302066	0402066	0502066	0202076	0302076	0402076	0502076
	Weight	kg	95	138	184	229	109	159	212	263
EC	Type		0202068	0302068	0402068	0502068	0202078	0302078	0402078	0502078
	Weight	kg	98	141	189	235	114	165	220	274
ProtecTor basic unit, standing, copper / aluminium heat exchanger										Art. no. 25500_ _ _ _ _ *
AC	Type		2202066	2302066	2402066	2502066	2202076	2302076	2402076	2502076
	Weight	kg	104	146	195	241	119	168	223	276
EC	Type		2202068	2302068	2402068	2502068	2202078	2302078	2402078	2502078
	Weight	kg	106	150	199	245	123	175	232	287
ProtecTor basic unit, horizontal, galvanised steel heat exchanger										Art. no. 25500_ _ _ _ _ *
AC	Type		0203166	0303166	0403166	0503166	0203176	0303176	0403176	0503176
	Weight	kg	190	280	374	466	227	335	448	558
EC	Type		0203168	0303168	0403168	0503168	0203178	0303178	0403178	0503178
	Weight	kg	192	284	378	472	231	342	456	569
ProtecTor basic unit, standing, galvanised steel heat exchanger										Art. no. 25500_ _ _ _ _ *
AC	Type		2203166	2303166	2403166	2503166	2203176	2303176	2403176	2503176
	Weight	kg	195	285	383	476	235	343	458	572
EC	Type		2203168	2303168	2403168	2503168	2203178	2303178	2403178	2503178
	Weight	kg	198	289	385	480	240	351	467	582
ProtecTor basic unit, horizontal, galvanised steel, cross-counterflow heat exchanger										Art. no. 25500_ _ _ _ _ *
AC	Type		0203366	0303366	0403366	0503366	0203376	0303376	0403376	0503376
	Weight	kg	192	281	376	468	228	356	450	560
EC	Type		0203368	0303368	0403368	0503368	0203378	0303378	0403378	0503378
	Weight	kg	194	285	380	473	233	363	459	571
ProtecTor basic unit, horizontal, no heat exchanger										Art. no. 25500_ _ _ _ _ *
AC	Type		0200066	0300066	0400066	0500066	0200076	0300076	0400076	0500076
	Weight	kg	72	101	136	168	81	115	154	190
EC	Type		0200068	0300068	0400068	0500068	0200078	0300078	0400078	0500078
	Weight	kg	75	105	141	174	86	121	162	201
ProtecTor basic unit, standing, no heat exchanger										Art. no. 25500_ _ _ _ _ *
AC	Type		2200066	2300066	2400066	2500066	2200076	2300076	2400076	2500076
	Weight	kg	81	111	147	180	91	125	165	202
EC	Type		2200068	2300068	2400068	2500068	2200078	2300078	2400078	2500078
	Weight	kg	84	114	151	186	96	131	173	213

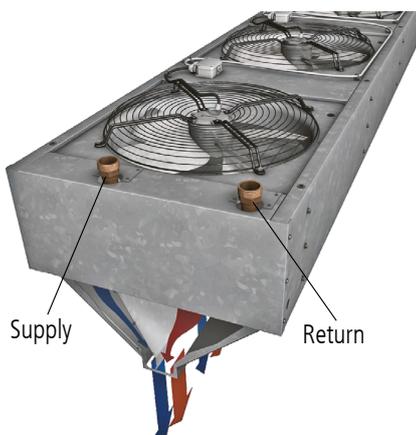
6. Hydraulic connection

6.1 Data for connection of the system to the hydraulic network (LPHW)

Only use water as the heating medium! Pay attention to the suitability of the components on site, such as valves, boilers etc. Use non-corrosive and non-flammable liquid media as the heating medium.

Only use water as the medium. The limit values below for the medium apply to operation.

Media limits		
Parameter	Unit	Value
pH value (at 20 °C)		7.5 – 9
Conductivity (at 20 °C)	µS/cm	< 700
Oxygen content	mg/l	< 0.1
Total hardness	°dH	1 – 15
Dissolved sulfur		undetectable
Sodium	mg/l	< 100
Iron	mg/l	< 0.1
Manganese	mg/l	< 0.05
Ammonium content	mg/l	< 0.1
Chloride	mg/l	< 100
Sulfate	mg/l	< 50
Nitrite	mg/l	< 50
Nitrate	mg/l	< 50



6.2 Hydraulic connection

Safety instructions

Connection of the hydraulics requires expertise in heating engineering. Note the following guidelines for integrating the system before starting work on the unit or on the control:

- maximum temperature of heating medium 120 °C
- maximum temperature of heating medium 40 °C
- maximum operating pressure of copper/aluminium 10 bar
- maximum operating pressure of galvanised steel 16 bar

Only low pressure hot water LPHW is permitted for use as the heating medium!

The supply and return connections are located as standard on the unit side in the air flow direction.

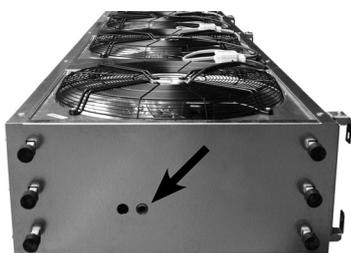
2.55 ProtecTor

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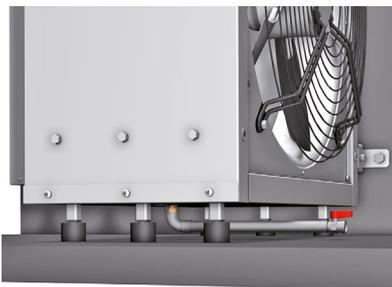
Installation and operating manual



Vent plug



Drain (standing unit)



Possible installation showing pipe-work on site



Note: Note the relevant standards and directives relating to the hydraulic installation (e.g. on-site hydraulic balancing/shut-off devices).

- Route the pipes so that no mechanical stresses are transferred to the heat exchanger, and accessibility to the unit is not impaired for maintenance and repair work.
- Provide venting for the pipes on site.
- Properly seal pipe connections not in use.
- **Important note:** The heat exchanger is suitable for use with hot water heating systems in compliance with DIN 18380. Ensure that operating conditions and water quality conform to VDI 2035 and comply with industry-standard installation regulations.
- Before fitting, fit the different connections with appropriate on-site closures, e.g. filling, drainage and venting devices.
- The drain connection is underneath the basic unit with the “standing” version (see image on left).

Depending on the situation on site, before installing the unit, put in place appropriate measures to ensure that any necessary drainage of the unit can be done with ease.

One option might be to route pipework on site with a drainage valve at the end. The pipework needs to be properly installed. Pay particular attention to damage/irreparable damage from external influences, such as being driven over, walked on etc.

Important! Hold the connections on the heat exchanger with a pipe wrench or other suitable tool when connecting the pipework.

7. Factory-fitted accessories

Description of accessories	Suffix to the ProtecTor type
Frost protection thermostat F
Repair switch R

Components can be combined.

8. Electrical connection

8.1 Safety instructions

The electrical connection of this product requires expertise in electrical engineering. This knowledge, generally learned in professional training in one of the fields stated, is not described separately here. Connection errors can result in damage to the unit! The manufacturer is not liable for any damage to people and materials caused by incorrect connection and / or improper handling! Note the following safety instructions before starting work on the controller and the ProtecTor:

- Regularly check the ProtecTor's electrical equipment. Immediately replace loose connections and faulty cables.
- Disconnect the system and ensure that it cannot be accidentally reconnected.
- Wire the electrical connection in accordance with the enclosed wiring diagrams.
- Only connect the unit in accordance with currently applicable VDE and EN guidelines, as well as Technical Wiring Regulations stipulated by the regional energy supply companies.
- Only connect the unit to permanently installed lines.
- The operator of the unit is responsible for ensuring EMC compliance of the entire system in accordance with the locally applicable standards.

EC fan

Electrical loading (>50 °C) between the mains conductor and protective conductor after switching off the mains power supply when switching several fans in parallel.

- Ensure that an adequate contact safety device is fitted. The mains connections and PE need to be shorted before working on the electrics.

The terminals and connectors are still energised even when the unit is switched off. Check whether the terminals and connectors are de-energised with a two-pin voltage tester.

- Only open the unit 5 minutes after all poles of the voltage have been switched off.

The PE conductor carries high leakage currents (depending on the frequency, intermediate voltage and motor capacity). Therefore check EN-compliant earthing under test conditions (EN 50 178, art. 5.2.11). Hazardous voltage can occur at the motor housing without earthing.

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In the event of a fault, electrical voltage will be present at the rotor and impeller. The rotor and impeller are base-insulated.

- Do not touch when fitted!

The fan restarts automatically when control voltage or the saved speed set-point is applied, for instance after a mains power failure.

- Do not go near the danger zone of the unit.

High temperatures are produced at the fan's electronic housing.

- Combustion hazard.

The fan is protected from blockage. Protective functions that trigger an automatic shut-down in the event of a fault are integrated, depending on the fan type.

- Please refer to the operating manual for the respective fan for further information!

Please read these instructions in full to ensure correct and proper installation and the correct operation of the ProtecTor.

8.2 Motor protection

8.2.1 AC fan

Thermal contacts (temperature monitors) are embedded in the motor windings, which open when the maximum winding temperature of 155 °C is exceeded. The motor is switched off whenever it impermissibly heats up combined with an appropriate protective switch. The motor is thus protected against overload, over- and undervoltage, unacceptably high ambient temperature and the fan jamming.

Thermal contacts meet the conditions for protection against the overloading of equipment with electric motor drive (VDE 0730). Commercial motor protection switch or bi-metal trips are not suitable as motor protection with multi-stage operated motors. Only appropriately wired controllers or modules or a similar type of switch may be used.

8.2.2 EC fan

All EC fans have integral overload protection; no upstream motor protection device is therefore needed.

The motor junction box includes a potential-free normally closing contact 250 V/2 A wired to terminals that acts as an alarm contact. This signals an error message from the fan or a power failure.

8.3 Electrical connection



Damage can be caused by the use of incompatible switching devices and inadequate safety devices. The manufacturer does not accept any warranty in these cases.

Only connect up units with a circuit breaker that switches off all poles from the mains power supply with a contact gap of at least 3 mm!

8.3.1 AC three-phase motor

The three-phase external rotor motor can be switched between 2 stages using a 2-stage three-phase switch (Y/Δ configuration). The motor in each of the two switching configurations (Y or Δ) can be switched between 5 stages by voltage reduction using a 5-stage three-phase controller or KaControl AC recirculating air control electronics, type 3231200.

Switching stage 1	Y-connection
Switching stage 2	Delta connection

The fans are operated with a clockwise rotating field!



Important! Operation of this unit on frequency converters is only permitted if the frequency converter has a sine filter effective on all poles. Missing sine filters can lead to severe thermal damage to the fan motor. In this case, the manufacturer accepts no warranty.

Three-phase parallel connection

- Several ProtecTor units, even of different sizes, can be connected in parallel to a stage switch providing the switching power of the stage switch is not exceeded.
- The thermal contacts of all ProtecTor units must be switched in series.
- We recommend the use of intermediate terminal boxes if several ProtecTor units are connected to a stage switch.

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Max. number of connectible ProtecTor air curtain basic units per switch								
Switch type	Type of ProtecTor air curtain							
	*20**66	*30**66	*40**66	*50**66	*20**76	*30**76	*40**76	*50**76
30049	5	3	2	2	3	2	1	1
30752	2	1	1	-	1	1	-	-
30754	4	3	2	1	3	2	1	1

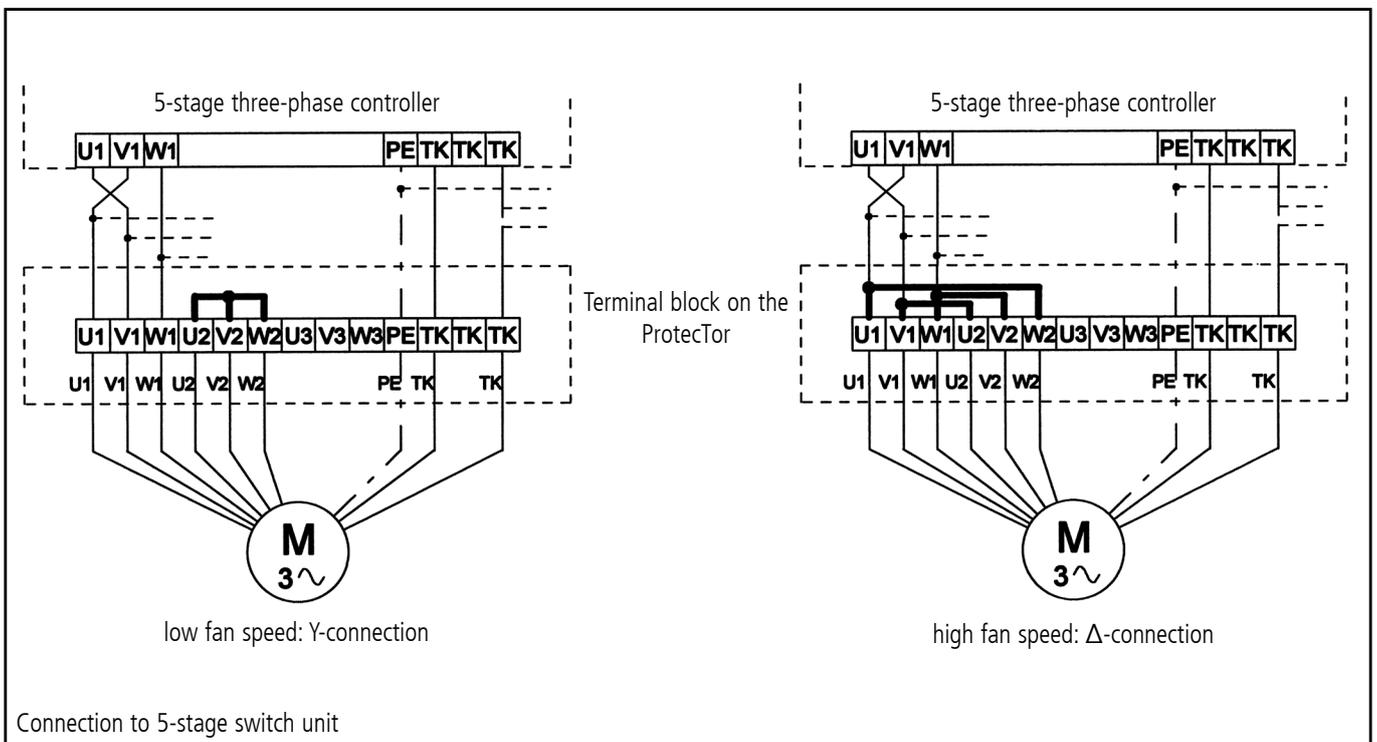
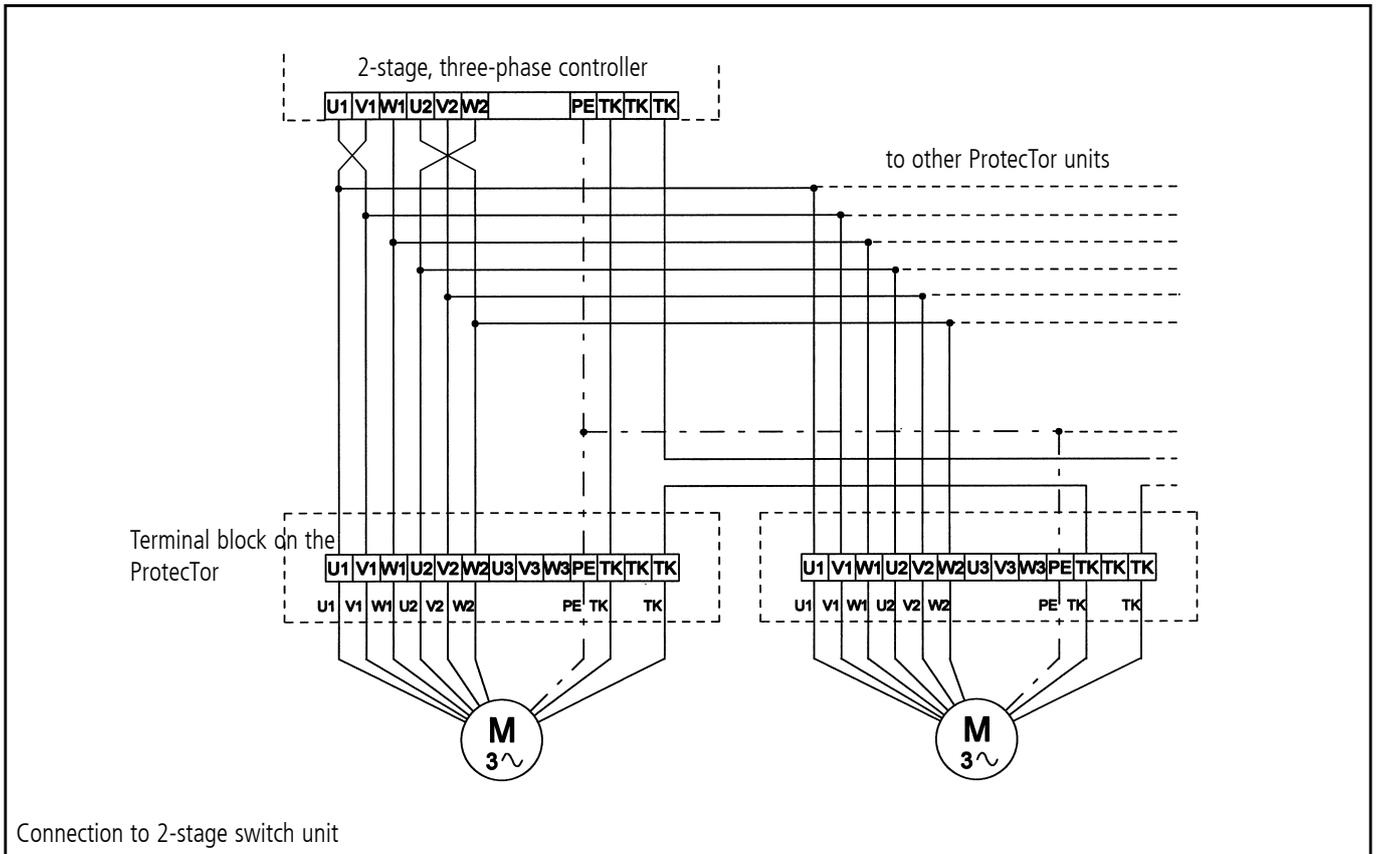
Suitable three-phase switching units

Different switches from our range are available to switch and control the speed of the motors. The above table provides an overview of the switches used and the resulting max. number of ProtecTor units, which can be connected to a switch unit. AC recirculating air control electronics are available via the KaControl system to control the motors. See the following table for the max. number of ProtecTor.

Maximum connectible number of ProtecTor air curtains per KaControl AC recirculating air control electronics for

air curtains with 2-stage three-phase motors	KaControl recirculating air control electronics Type 3231200
[Series]	[Number]
*20**66	2
*30**66	2
*40**66	2
*50**66	1
*20**76	2
*30**76	2
*40**76	1
*50**76	1

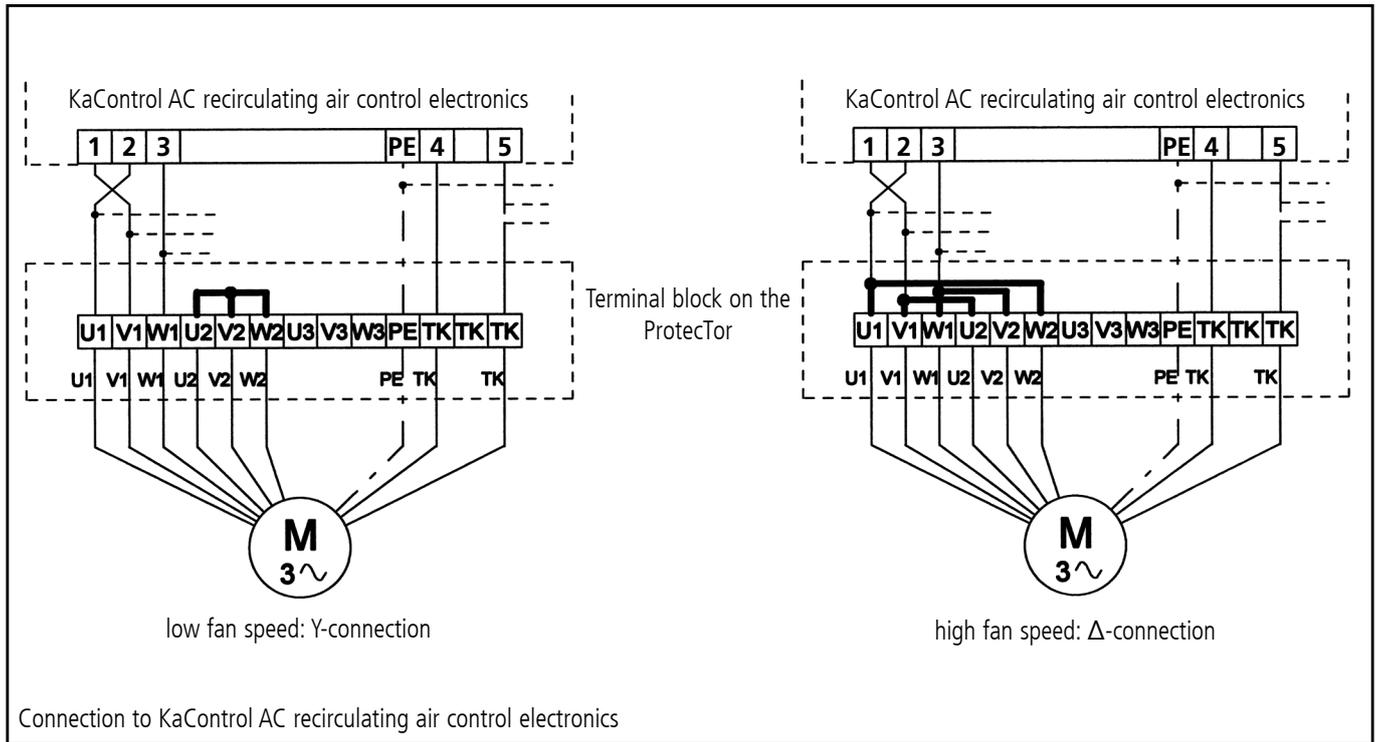
Three-phase wiring diagrams



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Information on cable laying

The following points need to be taken into account with the cable laying and wiring diagrams provided for the electrical installation:

- Comply with the details on the type of cable and cable laying taking into consideration VDE 0100.
- Cable type NYM-J. The requisite number of wires, including PE conductor, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- If you are using different cable types they must be at least equivalent to these.
- The terminals on the unit are suitable for a maximum wire cross-section of 2.5 mm².
- The electrical data listed in the following table needs to be considered when configuring the mains supply and fuses on site.

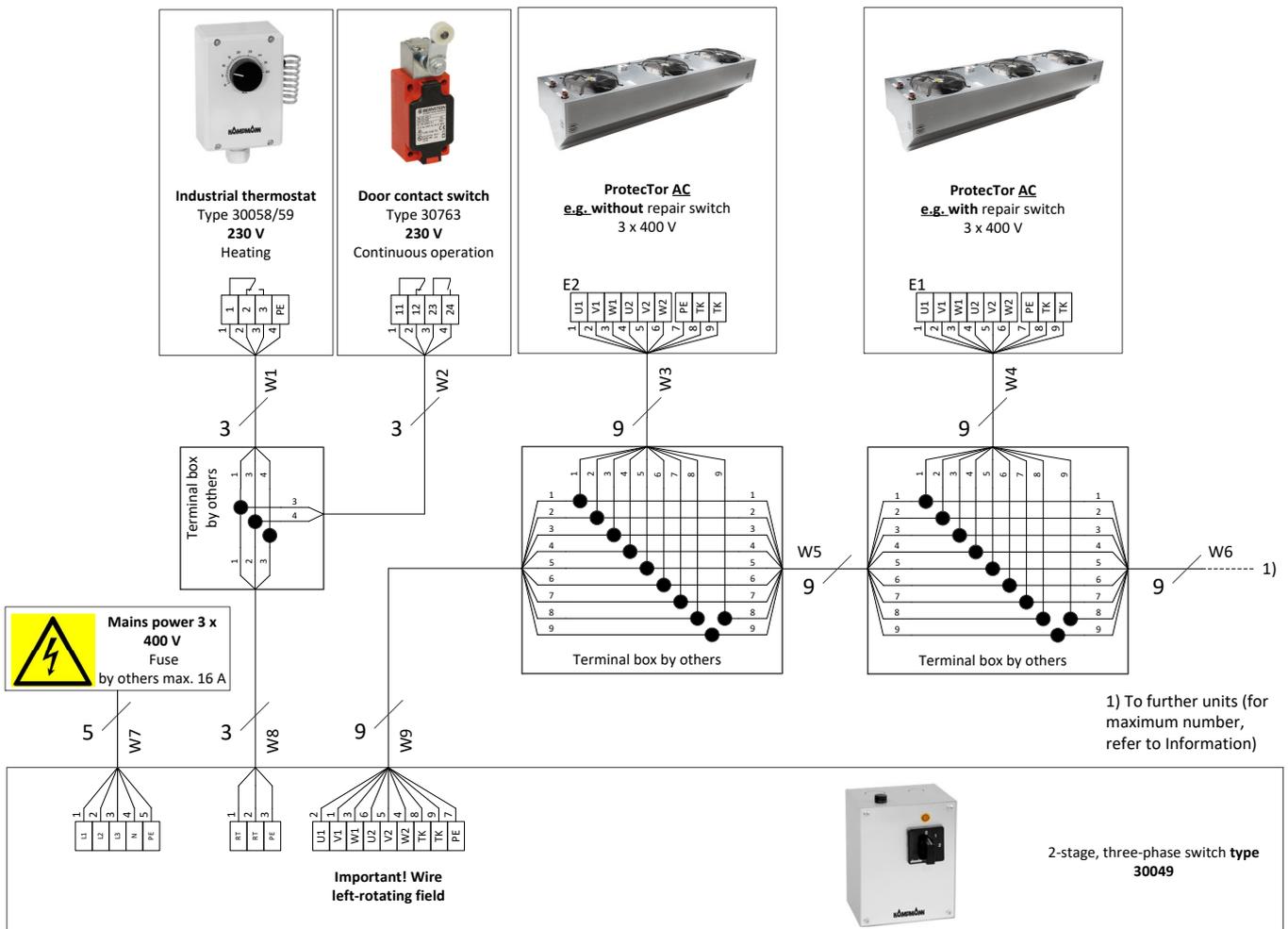
Electrical data for ProtecTor with AC motor

ProtecTor Type	Nominal voltage [V]	Mains frequency [Hz]	Active power [kW]	Nominal current [A]	Leakage current [mA]	Max. fuse [A]	IP class	Protection class
*20**66	400	50	0.72 / 0.44	1.7 / 0.9	./.	C16	54	I
*30**66	400	50	1.08 / 0.66	2.5 / 1.4	./.	C16	54	I
*40**66	400	50	1.44 / 0.88	3.3 / 1.8	./.	C16	54	I
*50**66	400	50	1.80 / 1.10	4.2 / 2.3	./.	C16	54	I
*20**76	400	50	1.06 / 0.72	2.0 / 1.2	./.	C16	54	I
*30**76	400	50	1.59 / 1.08	3.0 / 1.9	./.	C16	54	I
*40**76	400	50	2.12 / 1.44	4.0 / 2.5	./.	C16	54	I
*50**76	400	50	2.65 / 1.80	5.0 / 3.1	./.	C16	54	I

* Code for mounting version

** Heat exchanger version

Cable laying with ProtecTor, control by 2-stage switch, type 30049

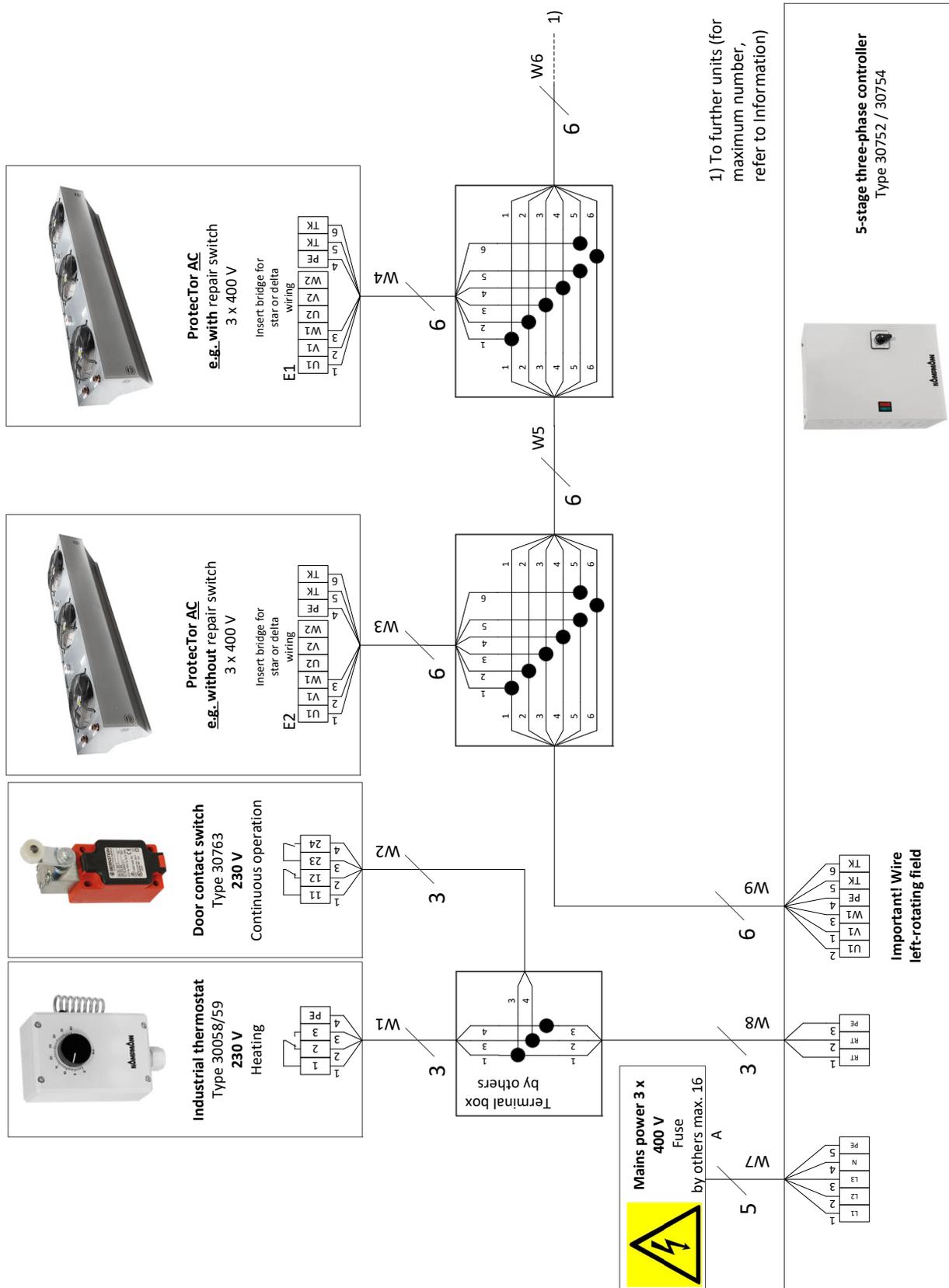


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Cable laying with ProtecTor, control by 5-stage controller, type 30752 (4 A) / 30754 (8 A)



8.3.2 EC single-phase motor



Take into account special conditions for use in IT systems.
Please refer to the operating manual for the respective EC fan!

All EC fans have integral overload protection; no upstream motor protection device is therefore needed.



Once mains voltage has been applied, allow an initialisation period of approx. 10 seconds until the EC fan's electronics are ready for operation. A reliable status message is then possible. If no fault is detected, the relay fitted in the fan is energised after the initialisation period.



To ensure that the switch-on current limit is active, wait a minimum of 90 seconds before switching on again after the mains voltage has been switched off!

Cable protection

Make sure that the fuse for the mains power connection takes into consideration the cable used, type of cabling, operating conditions and applicable standards. Maximum on-site fuse 16 A.

Power supply and control

All sizes require a power supply 3 x 400 V/50 Hz and can be controlled via a 0-10 V DC control input. Alternatively, the units can be operated via an integral modbus RTU interface. The shield of the Bus line can be wired through to terminal SH, if required.

Switch the unit on and off via the control input.
Do not switch the unit on and off via the mains power supply.



control signal is interpreted with respect to the (total) air volume flow as per the table (refer to adjacent table). Please refer to the relevant type in the technical catalogue for the (total) air volume flow for the 2 V control signal.

Control signal	(Total) air volume flow
0 V	Off
2.0 – 10 V	$V_{\text{tot (2 V)}} - 100 \%$

The fan speed controller, type 30510, is available to control the motors, and the EC recirculating air control electronics, type 3231160, are available to operate the motors via the KaControl system. Max. 2 ProtecTor units can be connected to both control versions.

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Information on cable laying

The following points need to be taken into account with the cable laying and wiring diagrams provided for the electrical installation:

- Comply with the details on the type of cable and cable laying taking into consideration VDE 0100.
- Without *: NYM-J. The requisite number of wires, including PE conductor, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- With *: J-Y(ST)Y 0.8 mm, max. 100 m between the fan speed controller and the last ProtecTor; provide a shield on one side when longer than 20 m. Lay separately from high voltage lines.
- If you are using different cable types they must be at least equivalent to these.
- The terminals on the unit are suitable for a maximum wire cross-section of 2.5 mm².
- All RCCBs used must be all current-sensitive (type B). When the power supply to the unit is switched on, pulsating charging currents from the capacitors in the integral EMC filter can cause residual current safety devices to trip.
- The electrical data listed in the following table needs to be considered when configuring the mains supply and fuses on site.

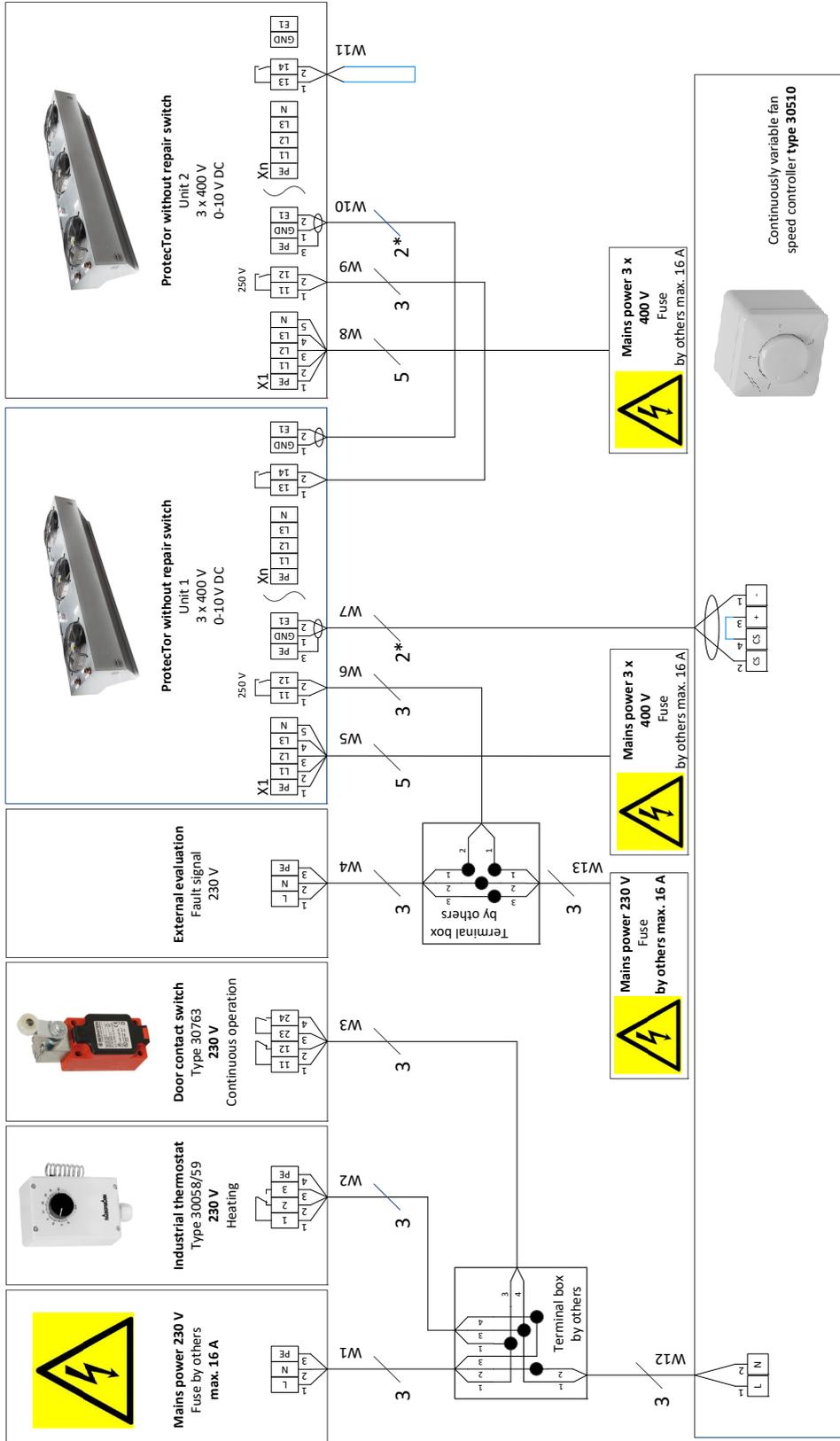
Electrical data for ProtecTor with EC fan

ProtecTor Type	Nominal voltage [V]	Mains frequency [Hz]	Active power [kW]	Nominal current [A]	Leakage current [mA]	Max. fuse [A]	IP class	Protection class
*20**68	400	50/60	0.92	2.0	<3.5	C16	54	I
*30**68	400	50/60	1.38	2.0	<3.5	C16	54	I
*40**68	400	50/60	1.84	4.0	<3.5	C16	54	I
*50**68	400	50/60	2.30	4.0	<3.5	C16	54	I
*20**78	400	50/60	1.70	3.8	<3.5	C16	54	I
*30**78	400	50/60	2.55	3.8	<3.5	C16	54	I
*40**78	400	50/60	3.40	7.7	<3.5	C16	54	I
*50**78	400	50/60	4.25	7.7	<3.5	C16	54	I

* Code for mounting version

** Heat exchanger version

8.3.3 Cable laying with ProtecTor EC (*00), control by fan speed controller, type 30510

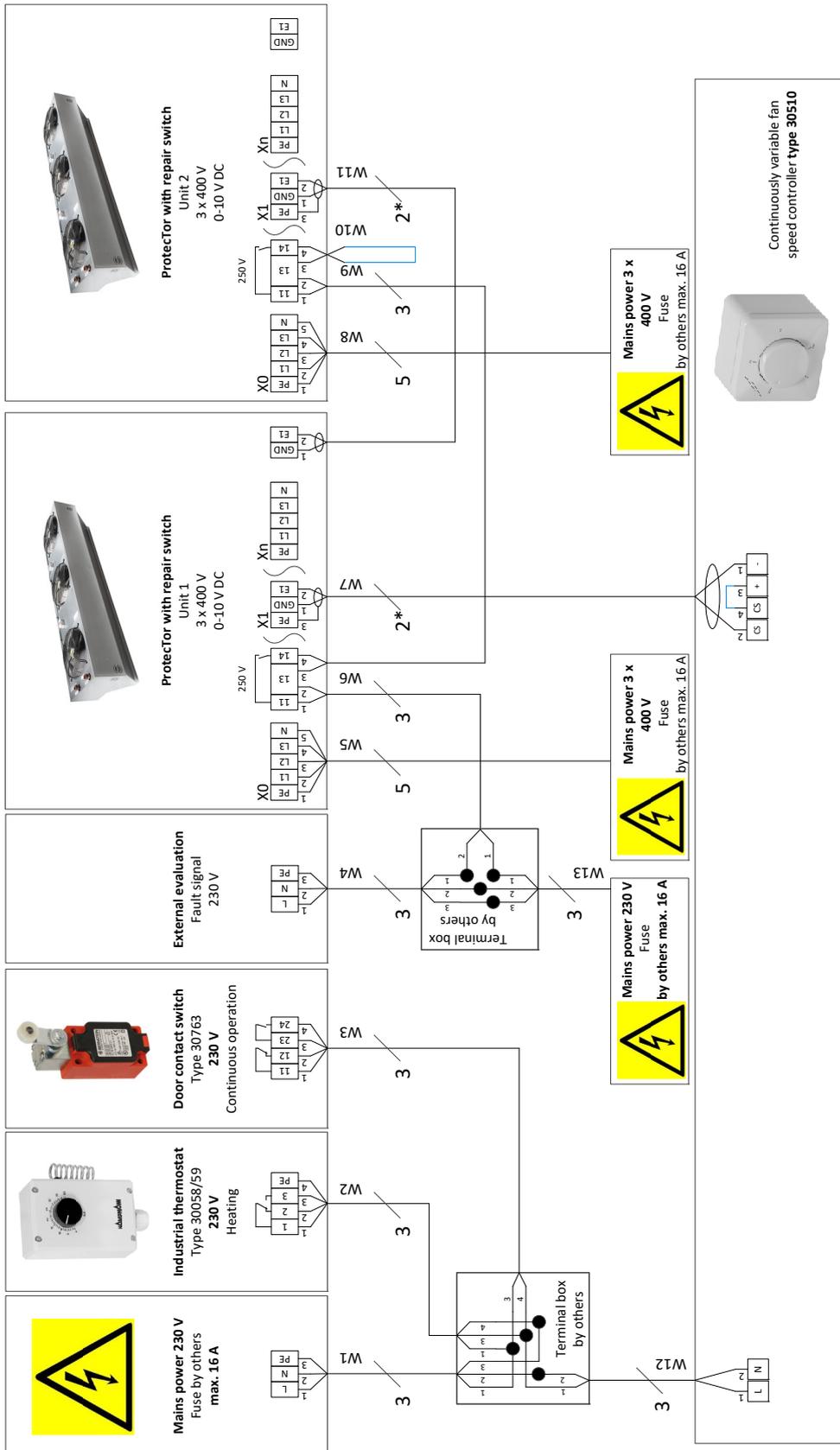


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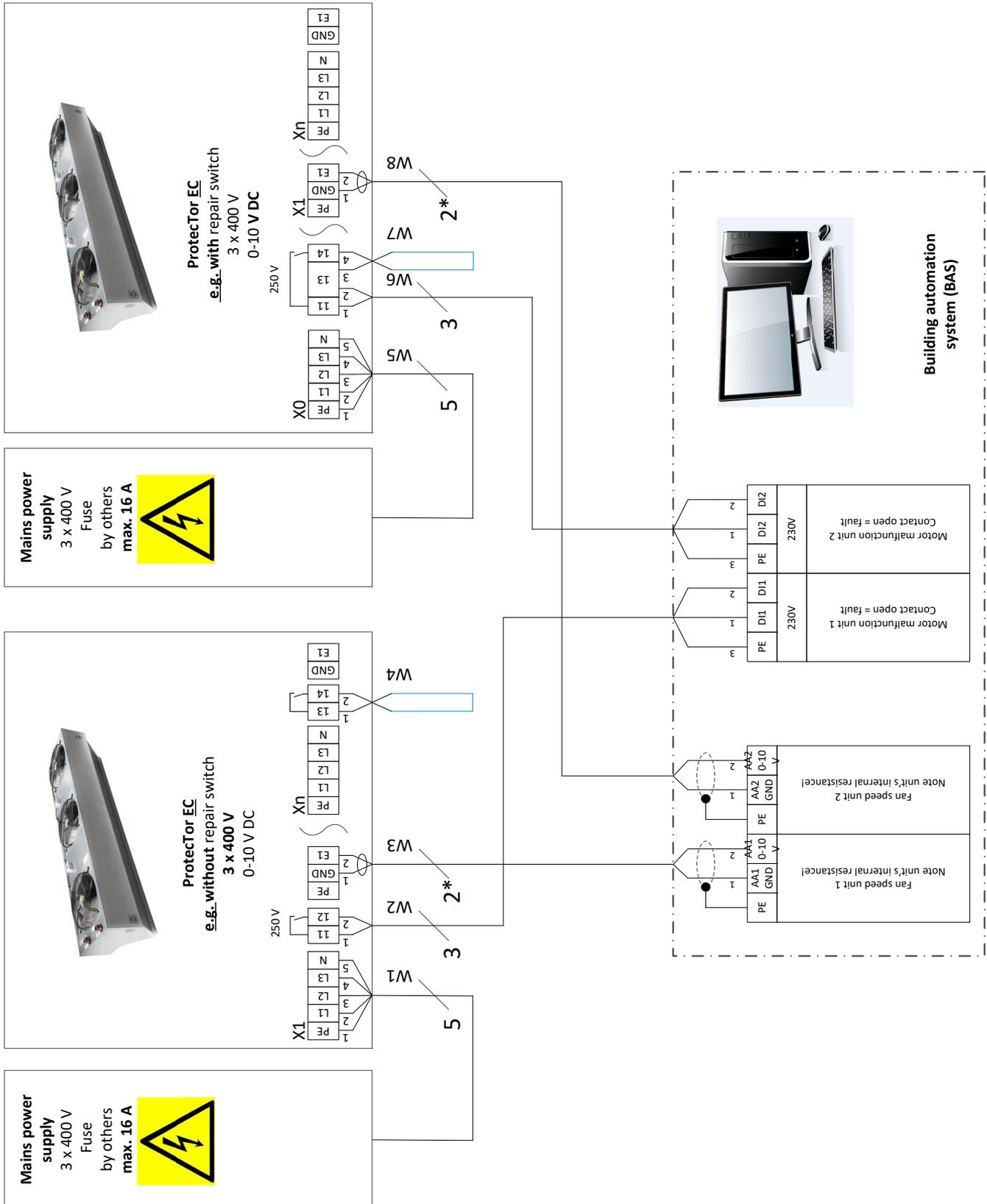
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8.3.4 Cable laying with ProtecTor EC (*0R), control by fan speed controller, type 30510



8.3.5 Cable laying with ProtecTor EC (*00, *0R), control by building automation system (BAS)



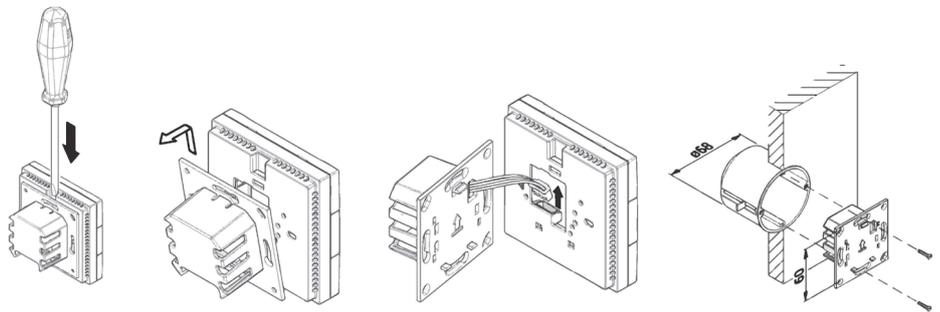
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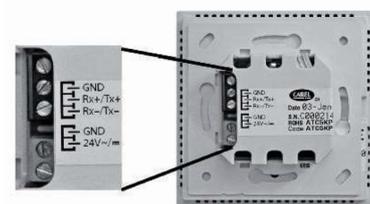
Installation and operating manual

8.3.6 KaControl

8.3.6.1 KaController installation



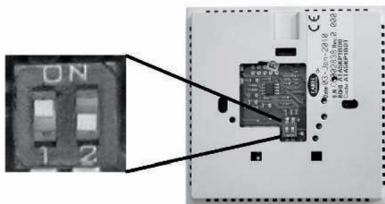
Installation of flush box



KaController terminals

Electrical connection

- Connect the KaController to the nearest KaControl unit in line with the layout plan. The maximum bus length between the KaController and the KaControl master unit is 30 m.
- The respective KaControl unit automatically becomes the master unit in the control circuit when a KaController is connected to it.



Dip switch setting on the KaController

DIP switch setting

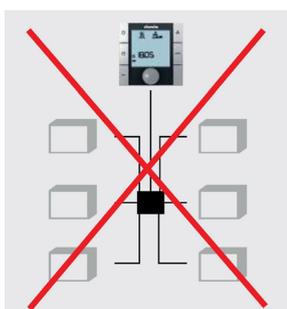
The dip switches on the rear of the KaController should be set as per the figure:

- Dip switch 1: ON
- Dip switch 2: OFF

8.3.6.2 Connection of KaControl electronics

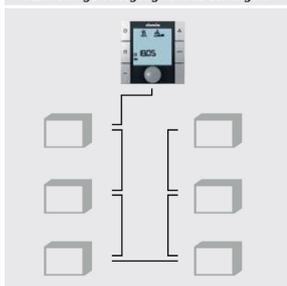
General information

- Route all low voltage lines along the shortest route.
- Ensure that low voltage and high voltage lines are separated, using metal crossbars on cable harnesses.
- Use only shielded cables as low voltage and bus lines.
- Lay all bus lines in a linear pattern. Star-shaped wiring is not permitted!
- The KaController is connected via a bus connection to the respective control board of the unit.



Falsch!

Sternförmige Verlegung der Bus-Leitungen.



Richtig!

Linienförmige Verlegung der Bus-Leitungen.

Laying of bus cables



IMPORTANT NOTE!

Use shielded, paired cables as bus cables, UNITRONIC® BUS LD 2x2x0.22, but at least of the same value or higher.



IMPORTANT NOTE!

When laying bus cables, avoid the formation of star points, for instance in junction boxes.

Loop the cables through to the units!

Circuit description



KaControl AC recirculating air control electronics Type 3231200



KaControl EC recirculating air control electronics Type 3231160

Two KaControl electronics units are available to control the ProtecTor with AC and / or EC motors via the KaControl system. A maximum of 2 ProtecTor with EC motor can be connected to the KaControl EC recirculating air electronics. Refer to the table on page 25 for the maximum number of ProtecTor with AC motor on the AC recirculating air KaControl electronics.

KaControl electronics offer the option of controlling the fan motor either via a 0 -10 V DC signal or via the KaController.

The type of control is set by 6 dip switches on the smart board in accordance with the wiring diagram and system configuration.



Smart board DIP switch and potentiometer

Control via 0 - 10 V DC

The 0-10 V DC control signal is wired to input terminals AI2 and GND ($R_i = 20 \text{ k}\Omega$) on the smart board.

A maximum limit can be set via the potentiometer on the smart board.

A non-floating fault alarm 24 V DC / max. 0.5 A is available at terminals V2 and GND. This is signalled to the KaControl system in the event of an EC fan fault.

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Information on cable laying

The following points need to be taken into account with the cable laying and wiring diagrams provided for the electrical installation:

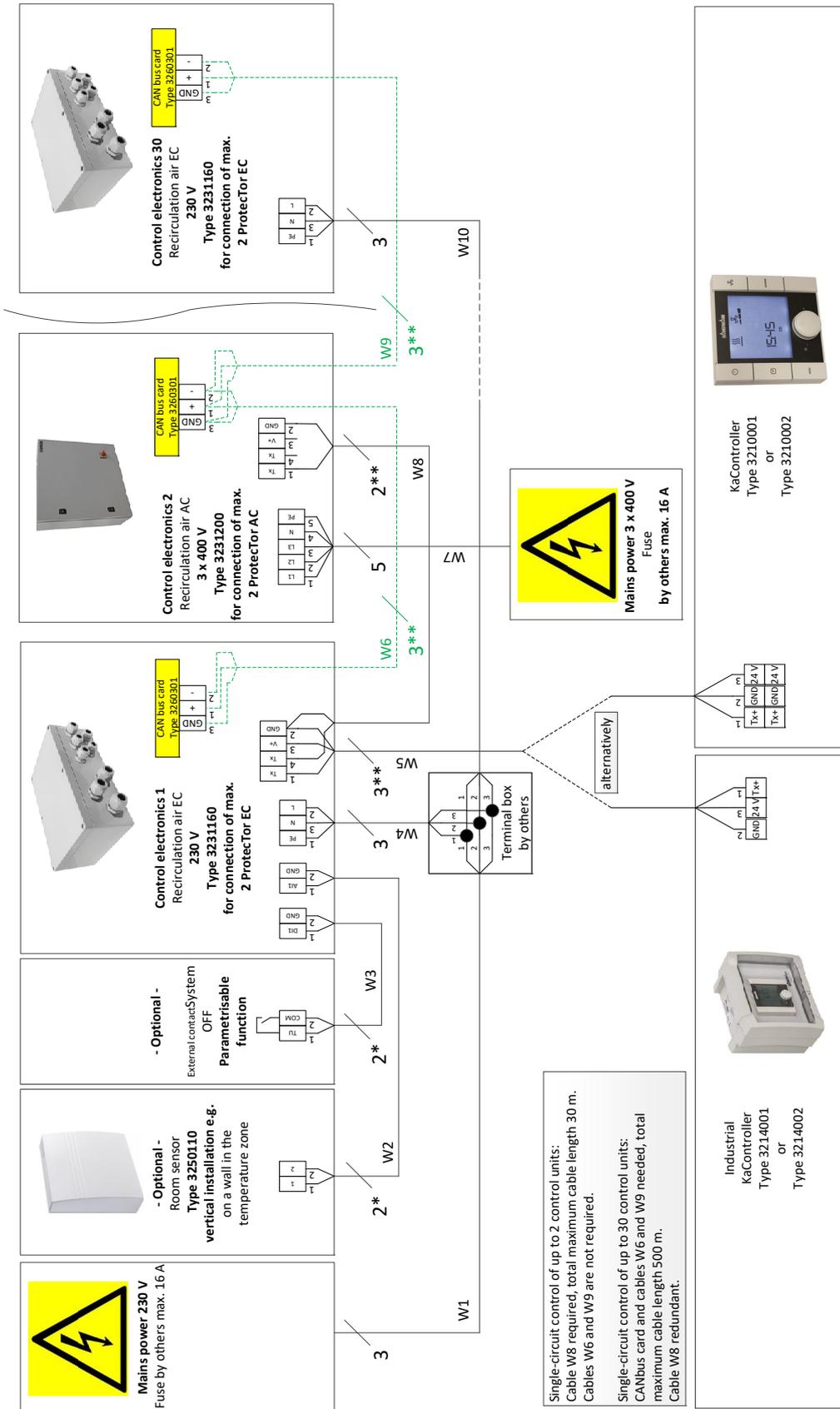
- Comply with the details on the type of cable and cable laying taking into consideration VDE 0100.
- Without *: NYM-J. The requisite number of wires, including PE conductor, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- With *: J-Y(ST)Y 0.8 mm. Lay separately from high voltage lines.
- With **: UNITRONIC BUS LD 0.22 mm². Lay separately from high voltage lines.
- If you are using different cable types they must be at least equivalent to these.
- Length of BUS line from the KaController to the control electronics 1: max. 30 m.
- Maximum number of parallel control electronics: 2 units. Maximum 30 units with a CAN bus card type 3260301 (see Accessories) required for each control electronic unit and a terminal resistor on the 1st and last control electronic unit.
- Length of BUS line from control electronics 1 to control electronics 2 max. 30 m. Max. 500 m with a CAN bus card, type 3260301 (see Accessories) needed for each control electronics unit.
- Cable length for room sensor and switching contact maximum 30 m, maximum 100 m from 1 mm²
- Length of 0-10 V control cable between the control electronics and ProtecTor maximum 30 m; maximum 100 m from 1 mm².
- The connection terminals on the unit for the mains power supply are suitable for a maximum wire cross-section of 2.5 mm².
- Any RCCBs used for ProtecTor units with EC fan must be all current-sensitive (type B). When the power supply to the unit is switched on, pulsating charging currents from the capacitors in the integral EMC filter can cause residual current safety devices to trip.
- Please note the data in the tables above "Electrical data for ProtecTor with AC motor" and/or "with EC motor" when designing the mains power supply and fuses on site.

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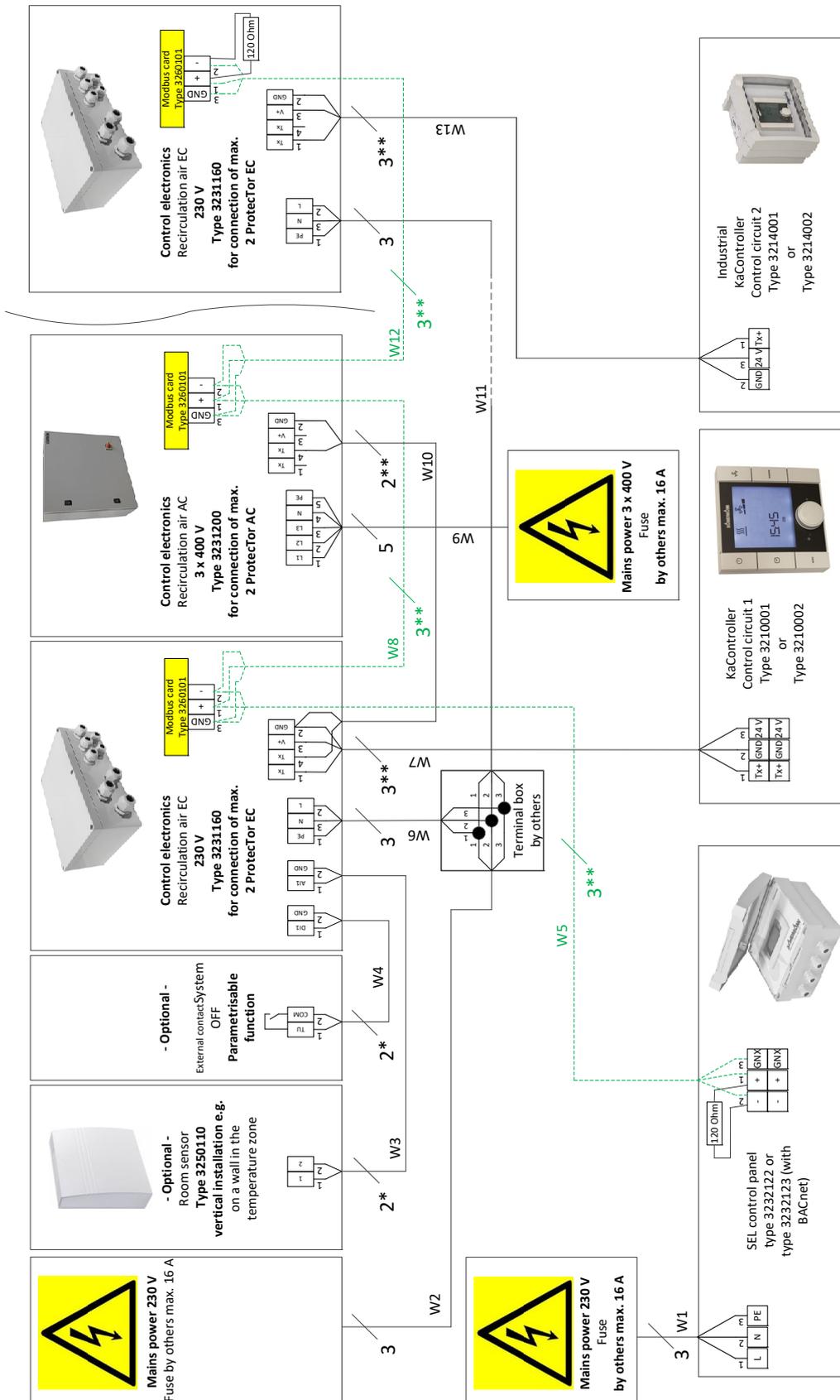
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Installation and operating manual

8.3.6.4 Single-circuit control – Cable laying with ProtecTor EC (*00, *0R), max. 2 control electronic units via tLan or for max. 30 control electronic units via CAN bus



8.3.6.5 Multi-circuit control – Cable laying with ProtecTor EC (*00, *0R), SEL control panel with max. 24 modbus nodes (control electronics)



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9. Technical data

9.1 AC version

ProtecTor		Type								
		*20**66	*30**66	*40**66	*50**66	*20**76	*30**76	*40**76	*50**76	
Mains voltage	V	400	400	400	400	400	400	400	400	
Mains frequency	Hz	50	50	50	50	50	50	50	50	
IP class	--	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54	
Protection class	--	1	1	1	1	1	1	1	1	
Max. power consumption	W	720	1080	1440	1800	1060	1590	2120	2650	
Max. power consumption	A	1.66	2.49	3.32	4.15	2.0	3.0	4.0	5.0	
Number of motors	--	2	3	4	5	2	3	4	5	
Air volume flow (max. - min.)	m ³ /h	9300 – 7300	13900 – 11000	18500 – 14700	23200 – 18300	14400 – 12000	21500 – 17900	28600 – 23900	35800 – 29800	
Max. water temperature	°C	120	120	120	120	120	120	120	120	
Min. water temperature	°C	40	40	40	40	40	40	40	40	
Max. operating pressure with heat exchanger	copper/aluminium	bar	10	10	10	10	10	10	10	
	galvanised steel (cross-counterflow)	bar	16	16	16	16	16	16	16	
Max. air intake temperature	°C	40	40	40	40	40	40	40	40	
Permitted ambient temperature	°C	5 – 40	5 – 40	5 – 40	5 – 40	5 – 40	5 – 40	5 – 40	5 – 40	
Heat exchanger connection	Inches	2	2	2	2	2	2	2	2	
Dimensions (basic unit, without nozzle)	Length	mm	2000	3000	4000	5000	2000	3000	4000	5000
	Height	mm	360	360	360	360	360	360	360	360
	Width	mm	740	740	740	740	840	840	840	840

9.2 EC version

ProtecTor		Type								
		*20**68	*30**68	*40**68	*50**68	*20**78	*30**78	*40**78	*50**78	
Mains voltage	V	400	400	400	400	400	400	400	400	
Mains frequency	Hz	50	50	50	50	50	50	50	50	
IP class	--	IP54	IP54	IP54	IP54	IP55	IP55	IP55	IP55	
Protection class	--	1	1	1	1	1	1	1	1	
Max. power consumption	W	920	1380	1840	2300	1700	2550	3400	4250	
Max. power consumption	A	2.0	2.0	4.0	4.0	3.8	3.8	7.7	7.7	
Number of motors	--	2	3	4	5	2	3	4	5	
Air volume flow (max. - min.)	m ³ /h	11270 – 2000	16910 – 2980	22550 – 3970	28190 – 4960	15820 – 2950	23720 – 4430	31640 – 5910	39530 – 7380	
Max. water temperature	°C	120	120	120	120	120	120	120	120	
Min. water temperature	°C	40	40	40	40	40	40	40	40	
Max. operating pressure	copper/aluminium	bar	10	10	10	10	10	10	10	
	galvanised steel (cross-counterflow)	bar	16	16	16	16	16	16	16	
Max. air intake temperature	°C	40	40	40	40	40	40	40	40	
Permitted ambient temperature	°C	5 – 40	5 – 40	5 – 40	5 – 40	5 – 40	5 – 40	5 – 40	5 – 40	
Heat exchanger connection	Inches	2	2	2	2	2	2	2	2	
Dimensions (basic unit, without nozzle)	Length	mm	2000	3000	4000	5000	2000	3000	4000	5000
	Height	mm	360	360	360	360	360	360	360	360
	Width	mm	740	740	740	740	840	840	840	840

10. Commissioning

10.1 Pre-commissioning checks

Perform the following checks before commissioning the ProtecTor:
(Take into account information on the commissioning of other parts of the system.)

- Is the PE conductor connected properly on all units?
- Are the AC fan thermal contacts wired correctly (thermal contacts in series with multiple ProtecTor units)?
- Are the EC fan fault alarm contacts wired correctly (thermal contacts in series with multiple ProtecTor units)?
- Are all the lines connected properly as per the layout plans?
- Is the pipework (low pressure hot water) properly connected and installed, connected and tested in accordance with the state of the art?
- Are all air routes free? Packaging remains and dirt etc. may need to be removed.
- If required, remove transport aids from standing units and retain them for future work.
- Never close air intake and discharge openings, before or during operation.
- Can loose materials lying close to the unit be drawn in and possibly block the air route? Remove these objects.
- Are there lightweight materials in the discharge area that can be moved by the discharged air flow? Remove them as they could cause material damage and damage to personnel.
- Check once again that all screws and fixings are tight.



Transport aid for standing unit



Vent plug

10.2 Venting the heat exchanger

- Open all (on-site) shut-off devices and valves
- Hold a receptacle in place to catch any water that escapes and protect the environment from spraying water.
- Then open the venting screw(s) to be installed.
- Close the venting screw when no more air and only water escapes.
- Vent all other connecting lines on site.

10.3 Commissioning

After all the above checks have been carried out, start up the ProtecTor by applying voltage to all electrical components. Check the direction of rotation and all stages and/or the continuously variable speed range.

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10.4 Post-commissioning checks

Perform the following checks after commissioning the ProtecTor:



Are all the fans switched off by the thermal contact?

- To do so, disconnect a wire from terminal TK of the stage switch (Caution: 230 V control voltage!) All the fans should switch off immediately. The standby indicator must go out on the stage switch.
- Reconnect the wire to terminal TK. The fans should not start up again.
- Reset the stage switch and switch it on again. The fans should restart.
- Briefly disconnect the connecting wires of all thermal contacts individually to check that all thermal contacts are correctly wired.

Are the fans in all ProtecTor units running in the correct direction at all switching stages?

The direction of rotation is indicated by the arrow. Make sure that the fan is drawing in air. Swap two phases on the stage switch if all three-phase fans are rotating in the wrong direction at all fan stages. Check the wiring of the incorrectly rotating fans if individual fans are rotating in the wrong direction.

Are all the fans running smoothly or are grinding noises audible?

Determine the cause as soon as grinding noises become audible. Possible causes are:

- a unit installed in too confined a space
- site dirt (e.g. pieces of paper) between the fan and heat exchanger

Is warm air discharged during (winter) operation?

Has the right switching stage and / or fan speed been selected to meet demand with continuously variable control?

11 Operation

11.1 Operation of the electromechanical control

Fan speed controller, type 30510

The fan speed controller is used to activate the fan and pre-set the fan speed. Control of a thermoelectric shut-off valve is not possible.



Fan speed controller, type 30510

11.2 Operation of the KaController

The following information is limited to the key content on the operation of the KaController and KaControl system. More information is included separately in the KaControl smart board user manual.

11.2.1 Function keys, display elements

All menus can be selected and set using the navigator dial. The LED backlight is automatically switched off 5 seconds after the KaController is last in operation.

The LED backlight can be permanently disabled using a parameter setting.



KaController with function keys, type 3210002

- | | |
|--|---|
| <ul style="list-style-type: none"> ① Display with LED backlight ② ON/OFF button (depending on setting) <ul style="list-style-type: none"> • ON/OFF • Eco mode / Day mode (factory setting) ③ TIMER button <ul style="list-style-type: none"> • set the time • set timer programs ④ ESC button <ul style="list-style-type: none"> • back to the standard view ⑤ Navigator dial | <ul style="list-style-type: none"> • change settings • call up menus ⑥ House icon <ul style="list-style-type: none"> • external ventilation ⑦ MODE button <ul style="list-style-type: none"> • set operating modes (disabled with 2-pipe applications) ⑧ FAN button <ul style="list-style-type: none"> • set fan control |
|--|---|

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KaController, type 3210001

KaController without function keys (one-button operation), type 3210001

- ① Display with LED backlight
- ② Navigator dial
 - change settings
 - call up menus

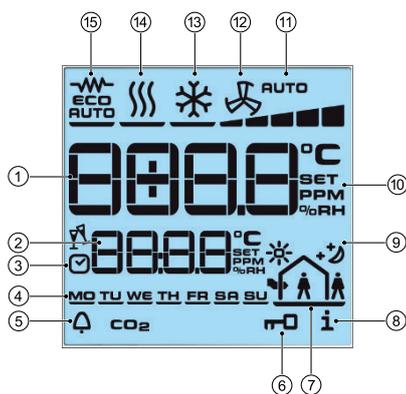


KaController black, type 3210006

KaController, black without function keys (one-button operation), type 3210006

- ① Display with LED backlight
- ② Navigator dial
 - change settings
 - call up menus

The symbols shown on the display depend on the application (2-pipe, 4-pipe etc.) and the parameters set.



Display

- ① Display of setpoint room temperature
- ② Current time
- ③ Timer program enabled
- ④ Weekday
- ⑤ Alarm
- ⑥ Selected function is locked
- ⑦ "External ventilation" operating mode is locked
- ⑧ Filter message
- ⑨ Eco mode
- ⑩ Setpoint adjustment enabled
- ⑪ Fan control setting Auto-0-1-2-3-4-5
- ⑫ Ventilation operating mode
- ⑬ Cooling operating mode
- ⑭ Heating operating mode
- ⑮ Automatic heating / cooling switch-over operating mode

12 Decommissioning (longer term)

- Switch off all electrical components.



If there is a risk of frost, it is essential that the heat exchanger and pipework are protected from freezing by the use of antifreeze!

Important! If there is a risk of frost (it is essential that you take these measures if the unit is not protected from freezing up in another way):

- Shut off the heat exchanger.
- Drain water out of the heat exchanger!

13. Maintenance

13.1 Housing

The ProtecTor housing is maintenance-free. Dirt on the housing does not affect the operation of the unit. Cleaning is only necessary for aesthetic reasons.

13.2 Heat exchanger

Dusty and oily deposits on the fins of the heat exchanger restrict the air flow and heat transfer. Only a clean heat exchanger will produce its full heat output in the long term. For this reason, regularly check the heat exchanger of the ProtecTor for dirt and clean if necessary. Check the unit 2 x a year, and more often in less favourable conditions (high dust content in the air). Carefully blast the heat exchanger with compressed air to remove accumulated dust (aluminium fins).

Heat exchanger in use contains (residual) water! Protect from frost!



13.3 Motor

Immediately rectify any defects established on systems / assemblies / equipment. If the defect constitutes an acute danger, then do not operate the unit / system in its defective state.

- Pay attention to all safety and operating guidelines (EN 50 110, IEC 364) when performing set-up and maintenance work.



Disconnect the motor from the mains voltage supply and prevent it from being re-connected!



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14 Faults

14.1 All ProtecTor

Fault	Possible cause	Troubleshooting
Impeller not running concentrically	Imbalance of rotating parts	Clean the unit, replacing the unit if there is still imbalance after cleaning. Please make sure that no balancing brackets are removed during cleaning.
Air flow is not warm in heating mode	Insufficient heating medium	Check heating medium (heating circuit, boiler) and remedy fault
	Air in the heat exchanger	Vent heat exchanger
Fan is not moving any or too little air	Air flow is interrupted or disrupted e.g. by dirty filter or dirty heat exchanger	Restore a clear air passage, change the filter and / or replace the heat exchanger
	Wrong direction of rotation	Check the direction of rotation of the fan
Water outlet	Fault on the heat exchanger	Replace the heat exchanger if you need to
	Hydraulic connection not properly done	Check supply and return and tighten, if necessary
Unit too loud	Fan speed too high	Select a lower fan speed, if possible
	Air intake / air discharge opening obstructed	Clear air route

14.2 AC three-phase motor with motor junction box, type ...66/76

Fault	Possible cause	Troubleshooting
Fan does not rotate when motor is switched on and standby light on	Setpoint temperature too low	Raise setpoint
	Door contact has switched off	Check door contact, insert jumper if necessary
Fan does not rotate when motor is switched on and standby light is off	No power supply to unit	check fuses in sub-junction box
	No control voltage	Check control fuse in switch unit
	Cable connection broken	Check cable connections
	Fan thermal contact has been triggered (overheating risk)	Check motor temperature and allow to cool down if necessary. Clarify the cause of overheating (e.g blocked motor, intake temperature too high, dirty filter); switch unit off and on again

14.3 EC single-phase motor with motor junction box, type ...68/78

Fault	Possible cause	Troubleshooting
Fan does not rotate when power is applied and control signal > approx. 1.5 V DC	Mechanical blockage	Switch off, disconnect from the power supply (voltage-free) and remove the mechanical blockage
	Fan fault alarm, fault alarm contact open	Find and rectify the cause of the fault, and switch the unit off and on again
	Control voltage poles switched	Correctly connect control voltage
	Temperature monitor has responded	Allow the motor to cool down, find and rectify the cause of the fault and trigger automatic restart lock if necessary
Fan does not rotate 100 % at max. control signal 10 VDC	Active temperature management effective (motor or electronics overheated)	Check that the air routes are clear; remove any foreign bodies, impeller is blocked or dirty. Check the supply air temperature and installation location (air speed over cooling body)

Refer to the operating manual for the fan for further fault messages

14.4 KaControl Control electronics, type 3231160/3231200

Fault	Possible cause	Remedy
EC fan does not rotate when power is applied to the module and control signal > 4 VDC	Control voltage poles switched.	Connect the control voltage correctly.
EC fan does not rotate 100% at max. control signal 10 VDC	Potentiometer for maximum limit incorrectly set on SmartBoard.	Change potentiometer setting.

14.5 KaControl faults

Code	Alarms	Priority
A11	Faulty control sensor.	1
A12	Motor fault.	2
A13	Room frost protection.	3
A14	Condensation alarm.	4
A15	General alarm.	5
A16	Sensor AI1, AI2 or AI3 faulty.	6
A17	Unit frost protection.	7
A18	EEPROM error.	8
A19	Offline slave in the CAN bus network.	9

KaControl unit alarms

Code	Alarms
tAL1	Temperature sensor in the KaController faulty.
tAL3	Real-time clock in the KaController faulty.
tAL4	EEPROM in the KaController faulty.
Cn	Communication fault with the external control.

KaController alarms



IMPORTANT NOTE!

More information on control settings can be found in the separate KaControl SmartBoard user manual.

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15 Parameterlisten KaControl

15.1 Parameterliste Luftschleier

Parameter	Function	Standard – Rev.1.024 ab 01.02.2018	Min. Rev.1.024	Max. Rev.1.024	Unit	Paraschlüssel SAP: 9001162 Luftschleier 19.01.05.2019
P000	Software version	24	0	255	-	24
P001	Base setpoint for setpoint input \pm 3K	22	8	32	°C	32
P002	Switching on / off hysteresis for valves	3	0	255	K/10	1
P003	Neutral zone in a 4-pipe system (only in automatic mode)	3	0	255	K/10	3
P004	Cooling without fan assistance (natural convection)	0	0	255	K/10	0
P005	Heating without fan assistance (natural convection)	5	0	255	K/10	5
P006	Fan On/Off hysteresis (only in ventilation mode)	5	0	255	K/10	5
P007	P-band, heating	20	0	100	K/10	20
P008	P-band, cooling	20	0	100	K/10	20
P009	Offset to the base setpoint for setpoint input \pm 3K	3	0	10	K	3
P010	Clip-on sensor: limit temperature to enable fan stages 1 and 2 in heating mode	26	0	255	°C	26
P011	Clip-on sensor: limit temperature to enable fan stages 3 and 4 in heating mode	28	0	255	°C	28
P012	Clip-on sensor: limit temperature to enable fan stage 5 in heating mode	30	0	255	°C	30
P013	Clip-on sensor: hysteresis for limit temperatures P010, P011, P012, P014	10	0	255	K/10	10
P014	Clip-on sensor: limit temperature for enabling the fan stages in cooling mode	18	0	255	°C	18
P015	Function of input AI1	0	0	19	-	0
P016	Function of input AI2	0	0	19	-	0
P017	Function of input AI3	0	0	9	-	0
P018	Temperature increase of cooling setpoint in Eco mode	30	0	255	K/10	30
P019	Temperature decrease of heating setpoint in Eco mode	30	0	255	K/10	100
P020	ADC limit coefficient	6	0	15	-	6
P021	ADC average coefficient	6	0	15	-	6
P022	Activation/disabling of sun symbol in Comfort mode	0	0	1	-	0
P023	Difference for compensation during cooling	0	-99	127	K/10	0
P024	Coefficient for compensation during heating	0	-20	20	1/10	0
P025	Difference for compensation during heating	0	-99	127	K/10	0
P026	Coefficient for compensation during heating	0	-20	20	1/10	0
P027	Fan setting: maximum run-time for manual fan mode	0	0	255	min	0
P028	Flushing function: fan stage during the flushing function	2	1	5	-	2
P029	Activation of continuous fan mode	0	0	1	-	0
P030	Vent temperature enable	12	0	255	°C	12
P031	Vent interval	27	0	255	°C	27
P032	Flushing function: maximum idle time of fan	15	0	255	min	15
P033	Flushing function: duration of flushing function	120	0	255	s	120
P034	Flushing function: activation in operating modes	0	0	3	-	0
P035	Fan run-on time after operating mode is switched to stage 1	0	0	255	s	0
P036	Type of setpoint	0	0	1	-	1
P037	Display	1	0	7	-	1

Parameter	Function	Standard – Rev.1.024 ab 01.02.2018	Min. Rev.1.024	Max. Rev.1.024	Unit	Paraschlüssel SAP: 9001162 Luftschleier 19.01.05.2019
P038	Lock/disable function on control unit	72	0	255	-	3
P039	Function of digital output V2 (in 2-pipe system)	0	0	3	-	3
P040	Valve actuation via pulse width modulation	0	0	1	-	0
P041	Reset time of PI controller to activate the fan in automatic fan mode	0	0	20	min	0
P042	Fan setting: lock and activate fan stages	0	0	127	-	3
P043	Function of digital input DI1	0	0	22	-	1
P044	Function of digital input DI2	0	0	22	-	15
P045	Threshold voltage for potentiometer that switches on the unit	10	0	100	kOhm	10
P046	Temperature setting corresponds to minimum resistance value = 10 kOhm in the potentiometer	18	12	34	°C	18
P047	Temperature setting corresponds to maximum resistance value = 100 kOhm in the potentiometer	24	13	35	°C	24
P048	Threshold voltage for potentiometer for starting the fans	10	0	100	kOhm	10
P049	Threshold voltage for potentiometer for maximum fan speed	90	0	100	kOhm	90
P050	Fan setting: max. fan speed	100	0	100	%	100
P051	Fan setting: min. fan speed	0	0	90	%	0
P052	Fan setting: enable speed limit	0	0	1	-	0
P053	Valve activation via pulse width modulation of valve switching cycle	15	10	30	min	15
P054	Configuration of bus system	0	0	2	-	0
P055	Display of heating/cooling symbols in automatic mode	0	0	1	-	0
P056	DI2 setting (polarity) when DIP 4 = ON	1	0	1	-	1
P057	Reset setpoint to the value of P01 (after changing an operating program)	0	0	1	-	0
P058	Sensor calibration: sensor AI1	0	-99	127	K/10	0
P059	Supply air temperature setpoint in heating mode	35	0	50	°C	35
P060	Supply air temperature setpoint in cooling mode	18	0	50	°C	18
P061	Sensor calibration: sensor in the KaController	0	-99	127	K/10	0
P062	Sensor calibration: sensor AI2	0	-99	127	K/10	0
P063	Outside temperature < P63 fan increase by P122	0	-99	127	°C	0
P064	Sensor calibration: sensor AI3	0	-99	127	K/10	0
P065	reserved	-	-	-	-	-
P066	Master/Slave assignment in CAN bus	0	0	1	-	0
P067	Serial CAN bus address	1	1	125	-	1
P068	Logic of hydronic algorithms	0	0	7	-	0
P069	Network address	1	0	207	-	1
P070	Dependence of the hydronic algorithms (on Slaves)	0	0	7	-	0
P071	Serial address of Slave 1	0	0	207	-	0
P072	Serial address of Slave 2	0	0	207	-	0
P073	Serial address of Slave 3	0	0	207	-	0
P074	Serial address of Slave 4	0	0	207	-	0
P075	Serial address of Slave 5	0	0	207	-	0
P076	Serial address of Slave 6	0	0	207	-	0
P077	Serial address of Slave 7	0	0	207	-	0
P078	Serial address of Slave 8	0	0	207	-	0

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Parameter	Function	Standard – Rev.1.024 ab 01.02.2018	Min. Rev.1.024	Max. Rev.1.024	Unit	Paraschlüssel SAP: 9001162 Luftschiefer 19.01.05.2019
P079	Serial address of Slave 9	0	0	207	-	0
P080	Serial address of Slave 10	0	0	207	-	0
P081	Dependence of the hydronic algorithms, Slave 1	0	0	7	-	0
P082	Dependence of the hydronic algorithms, Slave 2	0	0	7	-	0
P083	Dependence of the hydronic algorithms, Slave 3	0	0	7	-	0
P084	Dependence of the hydronic algorithms, Slave 4	0	0	7	-	0
P085	Dependence of the hydronic algorithms, Slave 5	0	0	7	-	0
P086	Dependence of the hydronic algorithms, Slave 6	0	0	7	-	0
P087	Dependence of the hydronic algorithms, Slave 7	0	0	7	-	0
P088	Dependence of the hydronic algorithms, Slave 8	0	0	7	-	0
P089	Dependence of the hydronic algorithms, Slave 9	0	0	7	-	0
P090	Dependence of the hydronic algorithms, Slave 10	0	0	7	-	0
P091	Load default values	0	0	255	-	0
P092	Password management	0	0	255	-	0
P093	Type of pre-comfort (room occupancy)	0	0	3	-	0
P094	Pre-comfort timer	60	1	255	min	60
P095	Disable DIP switch settings	0	0	1	-	0
P096	Digital outputs continuously activated	0	0	1	-	0
P097	Read DIP switch	-	0	63	-	-
P098	Activation 0..10V: switch on limit for valves	30	0	100	V/10	30
P099	Activation 0..10V: min. switch on limit for fan speed	40	0	100	V/10	40
P100	Activation 0..10V: max. switch on limit for fan speed	90	0	100	V/10	90
P101	Valve activation by pulse width modulation of P-band in heating mode	15	0	100	K/10	15
P102	Valve activation by pulse width modulation of P-band in cooling mode	15	0	100	K/10	15
P103	Valve activation by pulse width modulation of reset time of PI controller	0	0	20	min	0
P104	Minimum ON time with valve activation PWM	3	0	20	min	3
P105	Compensation: max. negative delta setpoint	50	0	150	K/10	50
P106	Compensation: max. positive delta setpoint	50	0	150	K/10	50
P107	Duration of valve open to check water temperature	5	0	255	min	5
P108	Duration of valve closed	240	35	255	min	240
P109	Dead zone PI control for 3-way valve	10	0	100	K/10	10
P110	Hysteresis to switch between heating/fan operation	0	0	20	°C	0
P111	Threshold for switching between heating/fan operation	0	0	50	°C	0
P112	reserved	-	-	-	-	-
P113	reserved	-	-	-	-	-
P114	reserved	-	-	-	-	-
P115	reserved	-	-	-	-	-
P116	reserved	-	-	-	-	-
P117	Lock function buttons on KaController	0	0	7	-	0
P118	On delay time	0	0	255	sec	10
P119	Off delay time	0	0	255	sec	30
P120	reserved	-	-	-	-	-

Parameter	Function	Standard – Rev.1.024 ab 01.02.2018	Min. Rev.1.024	Max. Rev.1.024	Unit	Paraschlüssel SAP: 9001162 Luftschieber 19.01.05.2019
P121	reserved	-	-	-	-	-
P122	Relative fan speed increase via contact	2	0	5	-	2
P123	Maximum valve running time	150	0	255	sec	150
P124	Minimum P + I output variation for valve motion (0 to 10)	5	0	100	%	5
P125	reserved	-	-	-	-	-
P126	Weeks of operation	0	0	255	week	0
P127	Info weeks of operation reached (filter message)	0	52	255	week	0
P128	Reset weeks of operation counter	0	0	1	-	0
P129	Fan speed limiter activation in certain operating modes	0	0	1	-	0
P130	Absolute fan speed increase via contact	2	0	5	-	4
P131	External ventilation, delay time	0	0	255	min	0
P132	Operating level, master password	22	0	255	-	22
P133	Hysteresis for outside temperature for switching between heating/fan mode	0	0	255	K/10	0
P134	Threshold for outside temperature for switching between heating/fan mode	0	0	50	°C	0
P135	Enable virtual sensor	0	0	1	-	0
P136	Enable external ventilation	0	0	2	-	0

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15.2 Parameterliste KaController

Parameter	Function	Standard	Min.	Max.	Unit	Comment
t001	Serial address	1	0	207	-	Address in Modbus network
t002	Baud rate 0 = Baud rate 4800 1 = Baud rate 9600 2 = Baud rate 19200	2	0	2	-	
t003	Background lighting function 0 = Slow fade in, fast fade out 1 = Slow fade in, slow fade out 2 = Fast fade in, fast fade out	0	0	2	-	
t004	Strong background lighting	4	0	5	-	
t005	Sensor calibration of KaController sensor	0	60	60	°C	
t006	LCD display contrast	15	0	15	-	
t007	BEEP setting 0 = BEEP ON 1 = BEEP OFF	0	0	1	-	
t008	Password for KaController Parameter menu	11	0	999	-	
t009	Minimum settable setpoint temperature	8	0	20	°C	
t010	Maximum settable setpoint temp	35	10	40	°C	
t011	Interval of setpoint setting 0 = Automatic setting depending on PCB (parameterisable, freely programmable) 1 = Increment of 1 °C (parameterisable PCBs) 2 = Increment of 0.5 °C (freely programmable PCBs)	0	0	2	-	
t012	Date/Time setting: Year	9	0	99	-	
t013	Date/Time setting: Month	1	1	12	-	
t014	Date/Time setting: Day	1	1	31	-	
t015	Date/Time setting: Weekday	1	1	7	-	
t016	Date/Time setting: Hour	0	0	23	-	
t017	Date/Time setting: Minute	0	0	59	-	

16 Disposal

Recycle dismantled components if no return or disposal agreement has been concluded:

- Scrap metals.
- Recycle plastics.
- Sort and dispose of other components by material.



IMPORTANT NOTE!

Environmental hazard from incorrect disposal!

Incorrect disposal can present a hazard to the environment.

- Electrical scrap, electronic components, lubricants and other auxiliary materials represent hazardous waste and should only be disposed of by authorised specialist companies.
- If in doubt, seek information on environmentally responsible disposal at the local municipal authority or specialist disposal company.

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17. Declaration of Conformity



EU-Konformitätserklärung

EU Declaration of Conformity
Déclaration de Conformité CE
Deklaracja zgodności CE
EU prohlášení o konformite

Wir (Name des Anbieters, Anschrift):

We (Supplier's Name, Address):
Nous (Nom du Fournisseur, Adresse):
My (Nazwa Dostawcy, adres):
My (Jméno dodavatele, adresa):

KAMPMMANN GMBH & Co. KG
Friedrich-Ebert-Str. 128-130
49811 Lingen (Ems)

erklären in alleiniger Verantwortung, dass das Produkt:

declare under sole responsibility, that the product:
déclarons sous notre seule responsabilité, que le produit:
deklarujemy z pełną odpowiedzialnością, że produkt:
deklarujeme, vědomi si své odpovědnosti, že produkt:

Type, Modell, Artikel-Nr.:

Type, Model, Articles No.:
Type, Modèle, N° d'article:
Typ, Model, Nr artykułu:
Typ, Model, Číslo výrobku:

ProtecTor Luftschleier

***20**66, *30**66, *40**66, *50**66,**
***20**76, *30**76, *40**76, *50**76,**
***20**68, *30**68, *40**68, *50**68,**
***20**78, *30**78, *40**78, *50**78**

auf das sich diese Erklärung bezieht, mit der / den folgenden Norm(en) oder normativen Dokumenten übereinstimmt:

to which this declaration relates is in conformity with the following standard(s) or other normative document(s):
auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou autre(s) document(s) normatif(s):
do którego odnosi się niniejsza deklaracja, jest zgodny z następującymi normami lub innymi dokumentami normatywnymi:
na který se tato deklarace vztahuje, souhlasí s následující(mi) normou/normami nebo s normativními dokumenty:

DIN EN 55014-1; -2
DIN EN 61000-3-2; -3-3
DIN EN 61000-6-1; -6-2; -6-3
DIN EN 60335-1

Elektromagnetische Verträglichkeit
Elektromagnetische Verträglichkeit
Elektromagnetische Verträglichkeit
Sicherheit elektr. Geräte f. den Hausgebrauch und
ähnliche Zwecke

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Friedrich-Ebert-Straße 128–130
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Registergericht: Osnabrück, HRA 205688
USt-IdNr: DE313505294
Kampmann.de

Persönlich haftende Gesellschafterin:
Kampmann Beteiligungsgesellschaft mbH
Sitz: Lingen (Ems)

Registergericht: Osnabrück, HRB 211684
Geschäftsführer: Hendrik Kampmann





Gemäß den Bestimmungen der Richtlinien:

Following the provisions of Directive:
Conformément aux dispositions de Directive:
Zgodnie z postanowieniami Dyrektywy:
Odpovídající ustanovení směrnic:

2014/30/EU **EMV-Richtlinie**
2014/35/EU **Niederspannungsrichtlinie**

Hendrik Kampmann

Lingen (Ems), den 01.09.2020

Ort und Datum der Ausstellung

Place and Date of Issue
Lieu et date d'établissement
Miejsce i data wystawienia
Místo a datum vystavení

Name und Unterschrift des Befugten

Name and Signature of authorized person
Nom et signature de la personne autorisée
Nazwisko i podpis osoby upoważnionej
Jméno a podpis oprávněné osoby

2/2

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kampmanngroup.com/hvac/products/door-air-curtains/protector

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