



TIP

► Assembly, installation and operating instructions

Keep these instructions in a safe place for future use!

Table of contents

1 General	5
1.1 About these instructions	5
1.2 Explanation of Symbols.....	5
2 Safety.....	6
2.1 Correct use.....	6
2.2 Limits of operation and use	7
2.3 Risk from electrocution!.....	8
2.4 Personnel requirements - Qualifications	9
2.5 Personal Protective Equipment	9
3 Transport, storage and packaging.....	10
3.1 General transport instructions	10
3.2 Scope of delivery.....	10
3.3 Storage	11
3.4 Packaging	11
4 Technical data.....	12
5 Construction and function	13
5.1 Overview.....	13
5.2 Brief description.....	13
6 Installation and wiring.....	14
6.1 Requirements governing the installation site.....	14
6.2 Minimum clearances.....	14
6.3 Installation.....	14
6.3.1 Installation of sheet steel accessories	15
6.3.2 Suspension points	16
6.3.3 Universal 4-point brackets type 30042.....	17
6.3.4 Wall brackets, type 3*044, type 3002*	18
6.3.5 Ceiling to wall brackets type 3*049	18
6.3.6 Louvres.....	19
6.4 Installation.....	19
6.4.1 Connection to the pipe network.....	20
7 Electrical connection.....	21
7.1 Maximum electrical rating values	21
7.2 Electromechanical control type ..58/56.....	22
7.2.1 Connection (**00)	22

7.2.2	Cabling of TIP (**00), actuation by speed controller type 30510.....	24
7.2.3	Cabling TIP (**00), activation via speed controller type 30510 with industrial thermostat type 30058/ 30059	25
7.2.4	Cabling of TIP (**00), actuation by speed controller type 30510 with room thermostat type 30055	26
7.2.5	Cabling of TIP(**00), actuation by speed controller type 30510 with clock thermostat type 30056.....	27
7.2.6	Cabling of TIP (**00), actuation by climate controller type 30155, 2-pipe valve actuator 230 V AC, Open/Close.....	28
7.2.7	Cabling of TIP (**00), actuation by climate controller type 30256, 2-pipe valve actuator 230 V AC, Open/Close.....	29
7.2.8	Cabling of TIP (**00), actuation by speed controller type 30515.....	30
7.2.9	Cabling of TIP (**00), actuation by DDC/BMS, 2-pipe valve actuator 230 V AC, Open/Close	31
8	Pre-commissioning checks	32
9	Operation.....	33
9.1	Operation of electromechanical control	33
10	Maintenance	35
10.1	Securing against reconnection	35
10.2	Maintenance Schedule:.....	35
10.3	Clean the inside of the unit.....	35
11	Faults	37
11.1	Fault table.....	38
11.2	Fault table, electromechanical control type ..58/56	39
11.3	Start-up after rectification of fault	39
12	Certificates.....	40
12.1	153_EU-Konformitätserklärung_Lufterhitzer	41
12.2	ERP Datenblatt TIP	43

1 General

1.1 About these instructions

These instructions ensure the safe and efficient handling of this equipment. These instructions form an integral part of the equipment and have to be kept in the direct vicinity of the equipment and available to personnel at all times.

All personnel must have carefully read through these instructions prior to commencing all work on the equipment. A fundamental prerequisite for safe working is compliance with all the stated safety instructions and other instructions contained in this manual.

In addition all local occupational health and safety at work regulations apply, as do general safety provisions governing the use of the equipment.

Illustrations in this guide are intended to provide a basic understanding and may differ from the actual model.

Ongoing tests and further developments may result in small variations between the unit supplied and the instructions.

1.2 Explanation of Symbols

**DANGER!**

This combination of symbol and signal word indicates an immediately dangerous situation caused by electrical power, which will cause death or serious injury if not avoided.

**WARNING!**

This combination of symbol and signal word indicates a possible hazardous situation.

**IMPORTANT NOTE!**

It represents a potentially hazardous situation, which could lead to damage to property or for a measure to optimise workflows.

**IMPORTANT NOTE!**

This symbol highlights useful hints, recommendations and information for efficient and trouble-free operation.

TIP

Assembly, installation and operating instructions

2 Safety

This section provides an overview of all important safety aspects to ensure optimum protection of personnel as well as safe and trouble-free operation. In addition to the safety instructions in these operating instructions, the valid safety, accident prevention and environmental protection regulations must be observed for the area of use of the unit. It is the duty of the operator to ensure that instructions relating to maintenance (e.g. relating to hygiene) are complied with.

2.1 Correct use

These units are used for the decentralised heating and ventilation of high-ceiling buildings, industrial and commercial workplaces and buildings with a connection to a district heating system or broad temperature spreads. Within the room, the unit needs to be connected to the building's heating/cooling/ventilation system and to the building's waste water and power network. The operating limits and limits of use described in Chapter 2.2 [▶ 7] must be observed.

Intended use of the unit also includes adherence to these instructions.

Information in accordance with EN60335-1

- ▶ This unit can be used by children aged 8 years or more and also by people with reduced physical, sensory or mental capabilities or a lack of experience and knowledge, if they are supervised or have been instructed in the safe use of the unit and the resulting dangers. Do not allow children to play with the unit. Do not allow children to clean and maintain the unit without supervision.
- ▶ This unit is not intended for permanent connection to the drinking water supply system.
- ▶ This unit is intended for being accessible to the general public.

Any use beyond or other than the stated intended use is considered as misuse.

Any change to the unit or use of non-original spare parts will cause the expiry of the warranty and the manufacturer's liability.

2.2 Limits of operation and use

Limits of operation		
Min./max. water temperature	°C	5 - siehe Typenschild
Min./max. air intake temperature	°C	-20 - (+40)
Min./max. air humidity	%	15-75
Min. operating pressure	bar/kPa	-
Max. operating pressure	bar/kPa	siehe Typenschild
Min./max. glycol percentage	%	25-50

Tab. 1: Limits of operation

Operating voltage	230 V/ 50/60 Hz
Power/Current consumption	On the type plate

Tab. 2: Operating voltage

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 substances and reactive substances.

Water quality		
pH value (at 20 °C)		8-9
Conductivity (at 20 °C)	µS/cm	< 700
Oxygen content (O ₂)	mg/l	< 0.1
Hardness	°dH	4-8.5
Sulphur ions		not measurable
Sodium ions (Na ⁺)	mg/l	< 100
Iron ions (Fe ²⁺)	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		< 50
Sulfate ions (SO ₄ ²⁻)	mg/l	< 50
Nitrite ions (NO ₂ ⁻)	mg/l	< 50
Nitrate ions (NO ₃ ⁻)	mg/l	< 50

Tab. 3: Water quality

TIP

Assembly, installation and operating instructions



WARNING!

Respect the maximum flow temperatures to protect the EC fan!

Prolonged downtimes can lead to impermissible heating of the EC fan motor if heating media temperatures are too high. The flow temperatures should therefore be limited depending on the application and the motor model.

If a temperature limitation is impossible or inappropriate for the purpose concerned, there is also the option of using suitable valves (thermoelectric, motorised or solenoid) to shut off the heating medium.

This interrupts the flow of heating medium before the EC fan is switched off and the heat exchanger cools down. Appropriate speed controllers with a fan delay shut-off relay and connection terminals for the motorised valve are available on request.



IMPORTANT NOTE!

Warning of misuse!

In the event of misuse, as itemised below, there is a danger of limited or failing operation of the unit. Ensure that the airflow can circulate freely.

- ▶ Never operate the unit in humid areas, such as swimming pools, wet areas etc.
- ▶ Never operate the unit in rooms with an explosive atmosphere.
- ▶ Never operate the unit in aggressive or corrosive atmospheres (e.g. sea air).
- ▶ Never operate the unit above electrical equipment (such as switch cabinets, computers or other electrical units, or contacts that are not drip-proof).

2.3 Risk from electrocution!



DANGER!

Risk of fatal injury from electrocution!

Contact with live parts will lead to fatal injury from electrocution. Damage to the insulation or individual components can lead to a fatal injury.

- ▶ Only permit qualified electricians to work on the electrical system.
- ▶ Immediately disconnect the system from the power supply and repair it in the event of damage to the insulation.
- ▶ Keep live parts away from moisture. This can cause a short circuit.
- ▶ Properly earth the unit.



DANGER!

Risk of fatal injury from electrocution!

- ▶ Where multiple EC fans are connected in parallel, an electrical charge (>50 C) is present between line conductor and protective earth conductor when the power is switched off. Before working on the electrical connection, short-circuit the network connections and PE!
- ▶ The terminals and connectors are still energised even when the unit is switched off. Use a two-pole voltage tester to establish that the unit has been de-energised. Only open the unit 5 minutes after all poles of the voltage have been switched off.
- ▶ The protective earth carries high leakage currents (depending on the frequency, intermediate voltage and motor capacity). Therefore, check EN-compliant earthing under test conditions (EN 50178, art. 5.2.11). Without earthing, hazardous voltages can occur on the motor housing. In case of a fault, electrical voltage will be present on the rotor and impeller. Rotor and impeller are base-insulated. Do not touch!

2.4 Personnel requirements - Qualifications

Specialist knowledge

The installation of this product requires specialist knowledge of heating, cooling, ventilation, installation and electrical engineering. This knowledge, generally learned in vocational training in one of the fields mentioned above, is not described separately.

Damage caused by improper installation is the responsibility of the operator or installer. The installer of these units should have adequate knowledge of the following gained from specialist vocational training

- ▶ safety and accident prevention regulations
- ▶ Guidelines and recognised technical regulations, i.e. Association of German Electricians (VDE) regulations, DIN and EN standards.
- ▶ VDI 6022; maintenance personnel must be trained to Category B (possibly Category C) to comply with hygiene requirements (as required).

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

2.5 Personal Protective Equipment

Personal protective equipment is used to protect people from impaired safety and health when working with the unit. The applicable accident prevention regulations at the place of use apply in all cases.

Personnel have to wear personal protective equipment during maintenance and troubleshooting on and with the unit.

TIP

Assembly, installation and operating instructions

3 Transport, storage and packaging

3.1 General transport instructions

Check on delivery for completeness and transport damage.

Proceed as follows in the event of visible damage:

- ▶ Do not accept delivery or only accept with reservations.
- ▶ Record any transport damage on the transportation documents or on the transport company's delivery note.
- ▶ Submit a complaint to the freight forwarder.



IMPORTANT NOTE!

Warranty claims can only be made within the applicable period for complaints. (More information is available in the T&Cs on the Kampmann website)



IMPORTANT NOTE!

2 people are needed to transport the unit. Wear personal protective clothing when transporting the unit. Only lift the unit on both sides and not by the pipes / valves.



IMPORTANT NOTE!

Material damage caused by incorrect transport!

Units being transported can drop or topple over if transported wrongly. This can cause serious material damage.

- ▶ Proceed carefully when unloading the equipment on delivery and when transporting it on site and note the symbols and instructions on the packaging.
- ▶ Only use the holding points provided.
- ▶ Only remove packaging shortly before assembling the unit.

3.2 Scope of delivery



IMPORTANT NOTE!

Check the scope of delivery!

- ▶ Check the delivery for damage.
- ▶ Check that the articles and type numbers are correct.
- ▶ Is the delivery and number of items delivered correct?

3.3 Storage

Store packaging under the following conditions:

- ▶ Do not store outdoors.
- ▶ Store in a dry and dust-free place.
- ▶ Store in a frost-free place.
- ▶ Do not expose to aggressive media.
- ▶ Protect from direct sunlight.
- ▶ Avoid mechanical vibrations and shocks.

**IMPORTANT NOTE!**

Under certain circumstances, packages can carry storage instructions that exceed the requirements listed here. Comply with these instructions accordingly.

3.4 Packaging

Handling packaging materials

**IMPORTANT NOTE!**

Dispose of packaging materials in line with the applicable statutory requirements and local regulations.

TIP

Assembly, installation and operating instructions

4 Technical data

Unit	TIP			
Series	54	55	56	57
Water content [l]	1.6 - 6.1	2.2 - 8.2	3.4 - 11.5	4.8 - 16.8
Weight [kg]	25 – 62	32 -92	45 – 125	53 – 158
Sound pressure level ⁴ [dB(A)]	13 – 56	19 – 64	20 – 62	22 - 61

Tab. 4: Technical data, TIP

⁴ The sound pressure level was calculated with an assumed room insulation of 16 dB(A). This corresponds to a clearance of 5 m, a room volume of 3000 m³ and a reverberation time of 2.0 s (in accordance with VDI 2081).

5 Construction and function

5.1 Overview

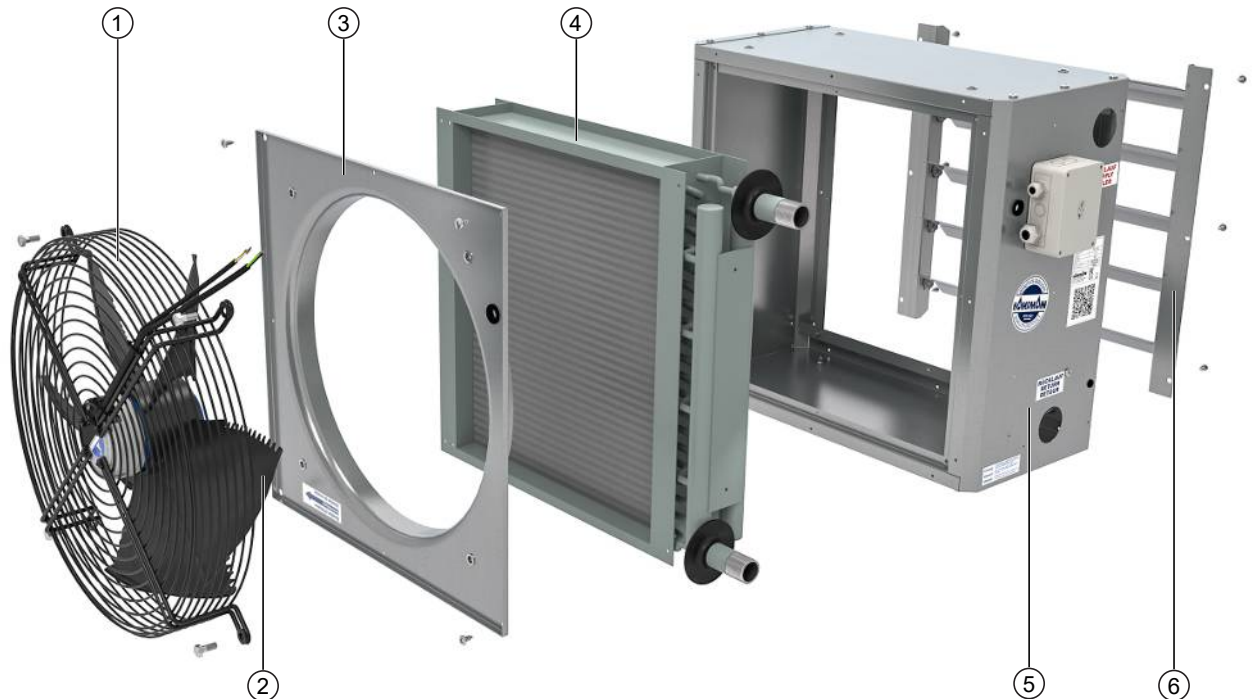


Fig. 1: TIP at a glance

1	Fan guard	2	Whisper-quiet sickle-blade fan
3	Rear panel with nozzle	4	Heat exchanger, copper/aluminium version
5	Unit heater housing	6	Louvre, 1-row (standard)

5.2 Brief description

TIP unit heaters are used for the decentralised heating and ventilation of high-ceilinged buildings, either wall- or ceiling-mounted. Air is drawn in through the axial fan and is blown through the heat exchanger into the room through the standard single-row louvre. The air can optionally be discharged through a double-row louvre or other air diffuser (see Accessories).

TIP

Assembly, installation and operating instructions

6 Installation and wiring

6.1 Requirements governing the installation site

Only install and assemble the unit if the following conditions are met:

- ▶ Make sure that the wall/ceiling is sufficiently load-bearing to take the weight of the unit (Technical data [► 12]).
- ▶ Make sure that the unit is securely suspended/standing.
- ▶ Ensure that the airflow can circulate freely.
- ▶ Provide adequate space for appropriately sized flow and return water connections on site (Connection to the pipe network [► 20]).
- ▶ There is a power supply on site (Maximum electrical rating values [► 21]).

6.2 Minimum clearances

Unit heaters can be installed free-standing or suspended from the wall using the wall brackets supplied or suspended from the ceiling using the ceiling brackets supplied. Installation using existing wall or ceiling brackets is likewise possible.

A minimum clearance L in accordance with the table below must be respected between unit suction area and wall/ceiling! If you do not leave this minimum clearance, the air heater output will be reduced and the noise level will increase.

Be sure to observe the minimum clearances when using accessories or for maintenance purposes!

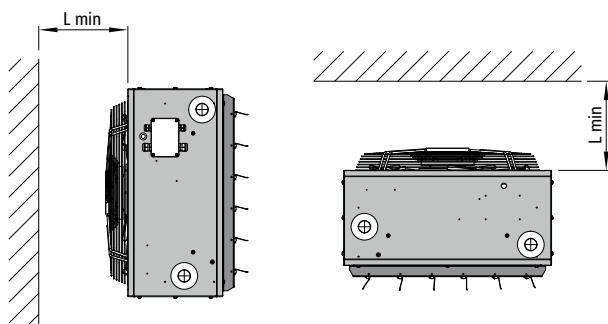


Fig. 2: Minimum clearances TIP


Series	Type	Minimum clearance L min.	Standard clearance L *
54	54_58 / 54_56	160 mm	285 mm
55	55_58 / 55_56	180 mm	285 mm
56	56_58	230 mm	335 mm
57	57_58 / 57_56	300 mm	345 mm

Tab. 5: Type overview with minimum clearances

* when using wall brackets, type 3_044

6.3 Installation

2 people are needed to install the unit.




CAUTION!

Risk of injury from sharp metal housing!

The inner metal of the casing can have sharp edges.

► Wear suitable protective gloves.

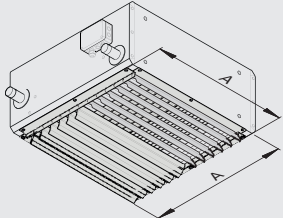
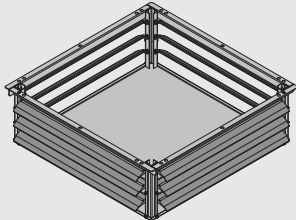
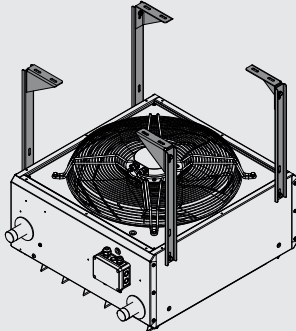


IMPORTANT NOTE!

Horizontal installation of units!

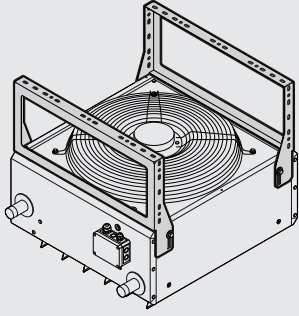
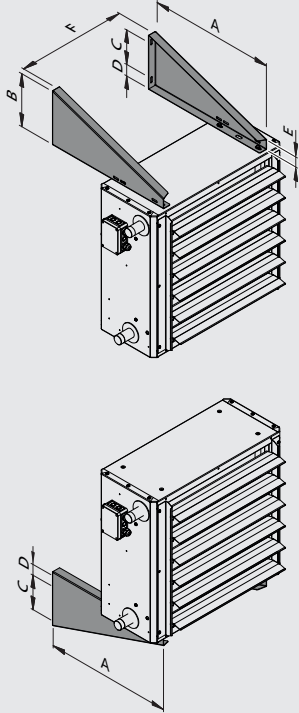
When installing the units, ensure that they are completely horizontal to ensure proper operation.

6.3.1 Installation of sheet steel accessories

Figure	Description	Dimensions [mm]	Suitable for
	2-row louvre, type 3*002	A	
		495	Series 54
		595	Series 55
		695	Series 56
		795	Series 57
	Air diffuser in 4 directions, type 3*004		Series 54-57
	Universal 4-point brackets, type 30042		Series 54-57

TIP

Assembly, installation and operating instructions

Figure	Description	Dimensions [mm]						Suitable for
	Ceiling to wall brackets, type 3*049							Series 54-57
	Wall bracket, type 34044	A	B	C	D	E	F	Series 54
		585	251	160	40	50	340	
	Wall bracket, type 35044	A	B	C	D	E	F	Series 55
		585	251	160	40	50	440	
	Wall bracket, type 36044	A	B	C	D	E	F	Series 56
		635	268	187	40	50	540	
	Wall bracket, type 37044	A	B	C	D	E	F	Series 57
		685	286	204	40	50	640	

Tab. 6: Air-side sheet steel accessories

6.3.2 Suspension points

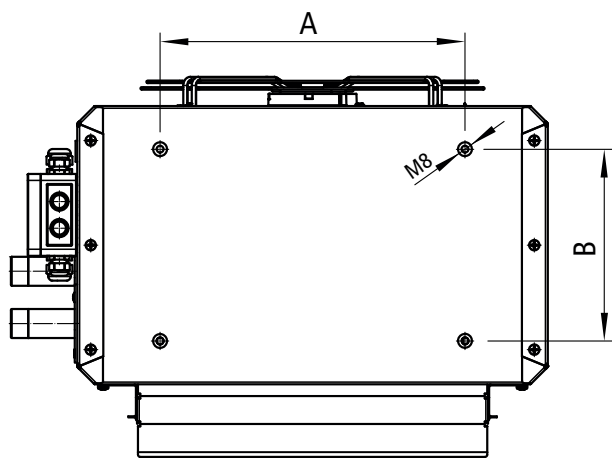


Fig. 3: TIP suspension points

Air heater series	A [mm]	B [mm]
54	350	220
55	450	220
56	550	220
57	650	220

Tab. 7: Suspension points for wall/ceiling installation

6.3.3 Universal 4-point brackets type 30042

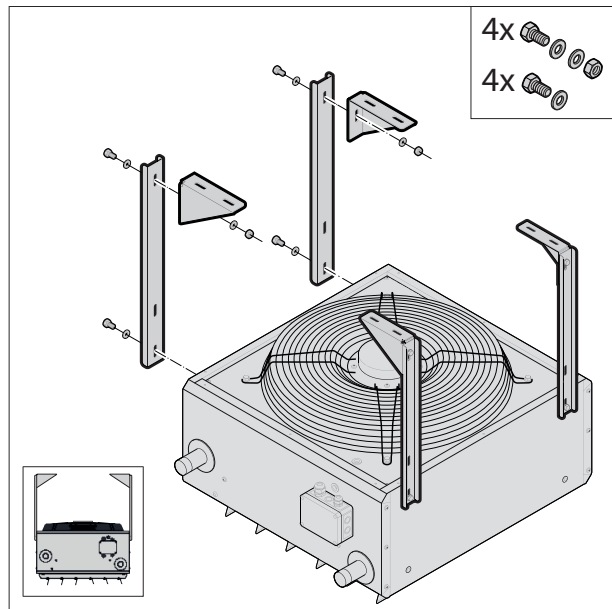


Fig. 4: Universal 4-point brackets, series 54-57

TIP

Assembly, installation and operating instructions

6.3.4 Wall brackets, type 3*044, type 3002*

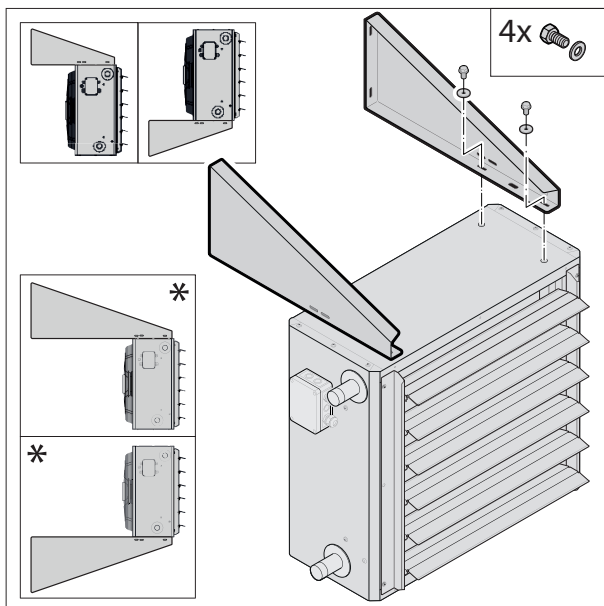


Fig. 5: Wall brackets

* Wall bracket, extended (type 3002*)

6.3.5 Ceiling to wall brackets type 3*049

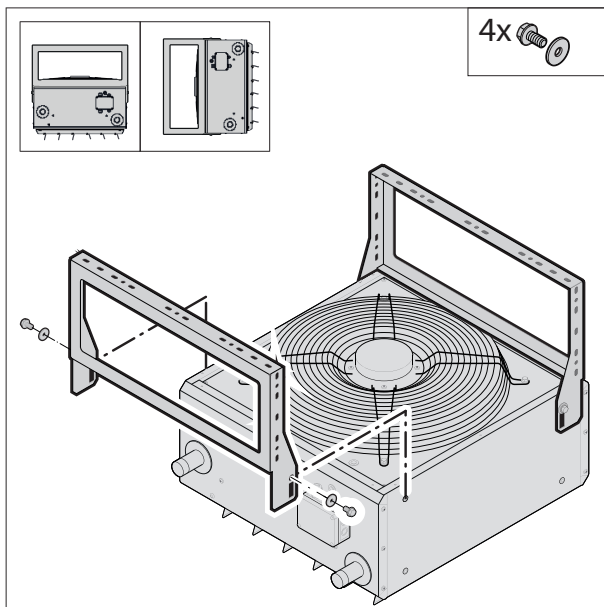


Fig. 6: Ceiling to wall bracket installation

6.3.6 Louvres

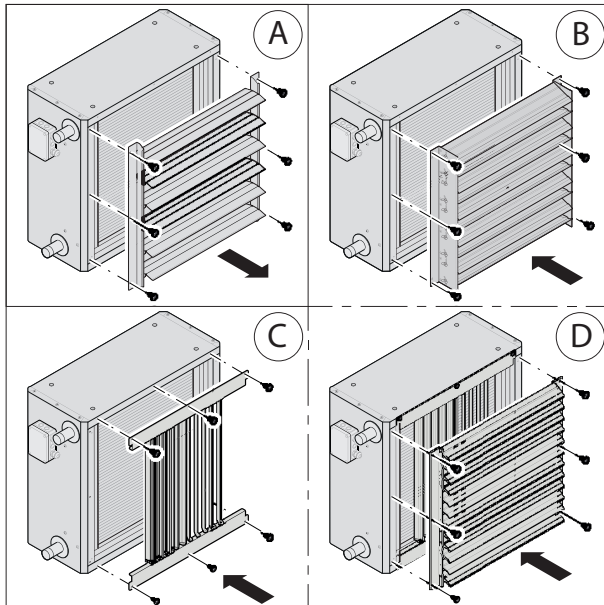


Fig. 7: Louvres

- ▶ Induction louvre mounting (type 3*101): A + B
- ▶ Induction louvre mounting, 2-row (type 3*002): A + C + D

6.4 Installation

Actuator with 'First Open' function

- ▶ When delivered, the actuator is normally open in a de-energised state, thanks to the First Open function. This enables heating mode to run even if the electric wiring is not yet completed.
- ▶ When subsequently commissioned and with the application of power (for longer than 6 minutes), the First Open function is automatically unlocked so that the actuator becomes fully operational.

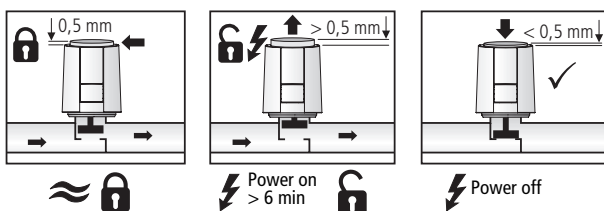


Fig. 8: "First Open" function

Hydraulic connection

Note the following points when connecting the hydraulic side:

- ▶ Install and test safety components (expansion vessels, pressure relief valves and overflow valves).
- ▶ Allow adequate space for the air flow (air inlet and outlet).

TIP

Assembly, installation and operating instructions

6.4.1 Connection to the pipe network

The flow and return connections protrude laterally from the housing. The heat exchanger connection dimensions are:

- ▶ 1" (series 54+55)
- ▶ 1 ¼" (series 56)
- ▶ 1 ½" (Series 57)

Proceed as follows when connecting up the unit's hydraulic pipework:

- ▶ Disconnect supply line from the medium.
- ▶ Connect up the pipework.
- ▶ Remove protective caps from the flow and return.
- ▶ Seal the valve connections and screw in place.

Important! Use an appropriate tool (e.g. pipe wrench) to protect connecting piece from being sheared off and twisted. The connections must be installed without tension!

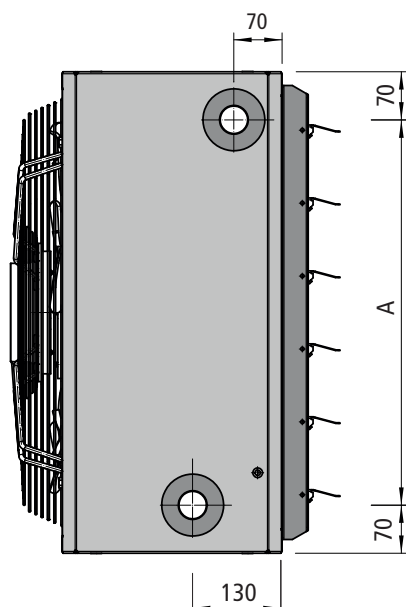


Fig. 9: Connecting dimensions

Series	A [mm]
54	360
55	460
56	560
57	660

7 Electrical connection



IMPORTANT NOTE!

Switch the unit on and off at the control input!

Do not switch the unit on and off at the mains, since a fault message is generated for up to 10 seconds after the mains power is switched on! After this time, the EC fan's electronic circuit is ready for operation and a reliable status message is possible. If no fault is detected, the relay is energised after the initialisation period. The fan restarts automatically when control voltage or the stored speed setpoint is applied, after a mains power failure for example.



IMPORTANT NOTE!

Integrated overload protection for EC fans

All EC fans have integrated overload protection. An upstream motor protective device is not required. First connect the protective earth "PE" conductor to the motor junction box or to the KaControl recirculation air module. When disconnecting, be sure to disconnect the earth terminal last. Connect up the unit in accordance with the valid connection diagram.

To ensure that the switch-on current limit is active, wait until the mains power has been disconnected for at least 90 seconds before restarting!



IMPORTANT NOTE!

Special conditions for use in IT systems

Use in IT systems is governed by special conditions, and these are set out in the EC fan operation manual!



IMPORTANT NOTE!

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! 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.

7.1 Maximum electrical rating values

Electromechanical version (type ... 58/56)

Type	Nominal voltage [V]	Mains frequency [Hz]	Active power [kW]	Nominal current [A]	Leakage current [mA]	Maximum pre-fusing [A]	IP protection rating	Protection class
54**56	230	50/60	0,14	1,27	<3,5	B10	54	I
54**58	230	50/60	0,17	1,46	<3,5	B10	54	I
55**56	230	50/60	0,17	1,51	<3,5	B10	54	I
55**58	230	50/60	0,39	1,74	<3,5	C16	54	I
56**58	230	50/60	0,46	2,13	<3,5	C16	54	I
57**56	230	50/60	0,37	1,69	<3,5	C16	54	I
57**58	230	50/60	0,85	3,83	<3,5	C16	54	I

Tab. 8: Electrical data, TIP

TIP

Assembly, installation and operating instructions

7.2 Electromechanical control type ..58/56

EMC-compliant installation of control cables

To avoid interference, ensure there is sufficient clearance between the mains power and control cables. When using a shielded cable, make sure that the shield is connected just on one side, i.e. only to the signal source with the protective earth (as short and low inductance as possible)!

7.2.1 Connection (**00)

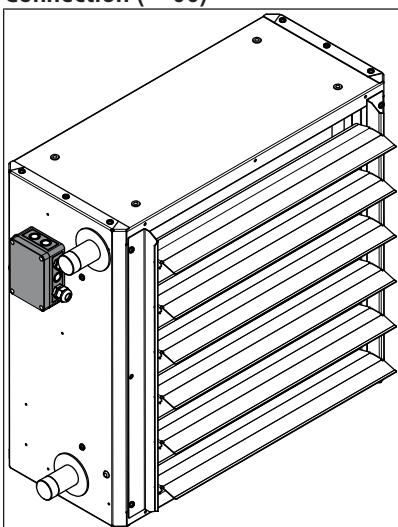


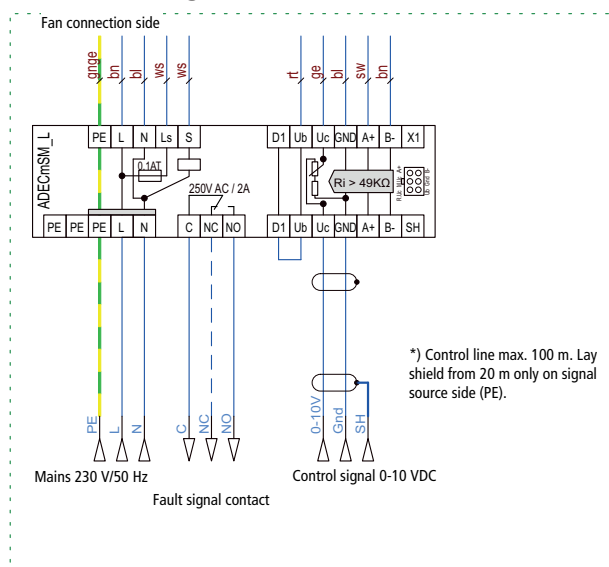
Fig. 10: TIP with motor junction box

Voltage supply and activation

All sizes require a voltage supply of 230 V / 50/60 Hz and can be activated via a control input of 0-10 VDC ($R_i > 49 \text{ KO}\Omega$). Types 55xx58, 56xx58 and 57xx56 and 57xx58 can alternatively be operated via an integral MODBUS RTU interface. The shield of the BUS cable can be wired through to terminal SH, if required.

The motor junction box contains a relay with a floating changeover contact, 24 to 250 V / 2 A. This signals an error message from the EC fan or a power failure. In fault-free operation, the relay is energised (Contact C – NO closed). In case of a fault, the relay becomes de-energised (Contact C – NO open). The fault signalling chain is protected by a relay with a unit fuse Ø5x20 mm, T0.1A.

Terminal configuration for control of air heater with EC fan



Control via 0 - 10 VDC

The 0 - 10 VDC control signal is interpreted for speed according to the following values:

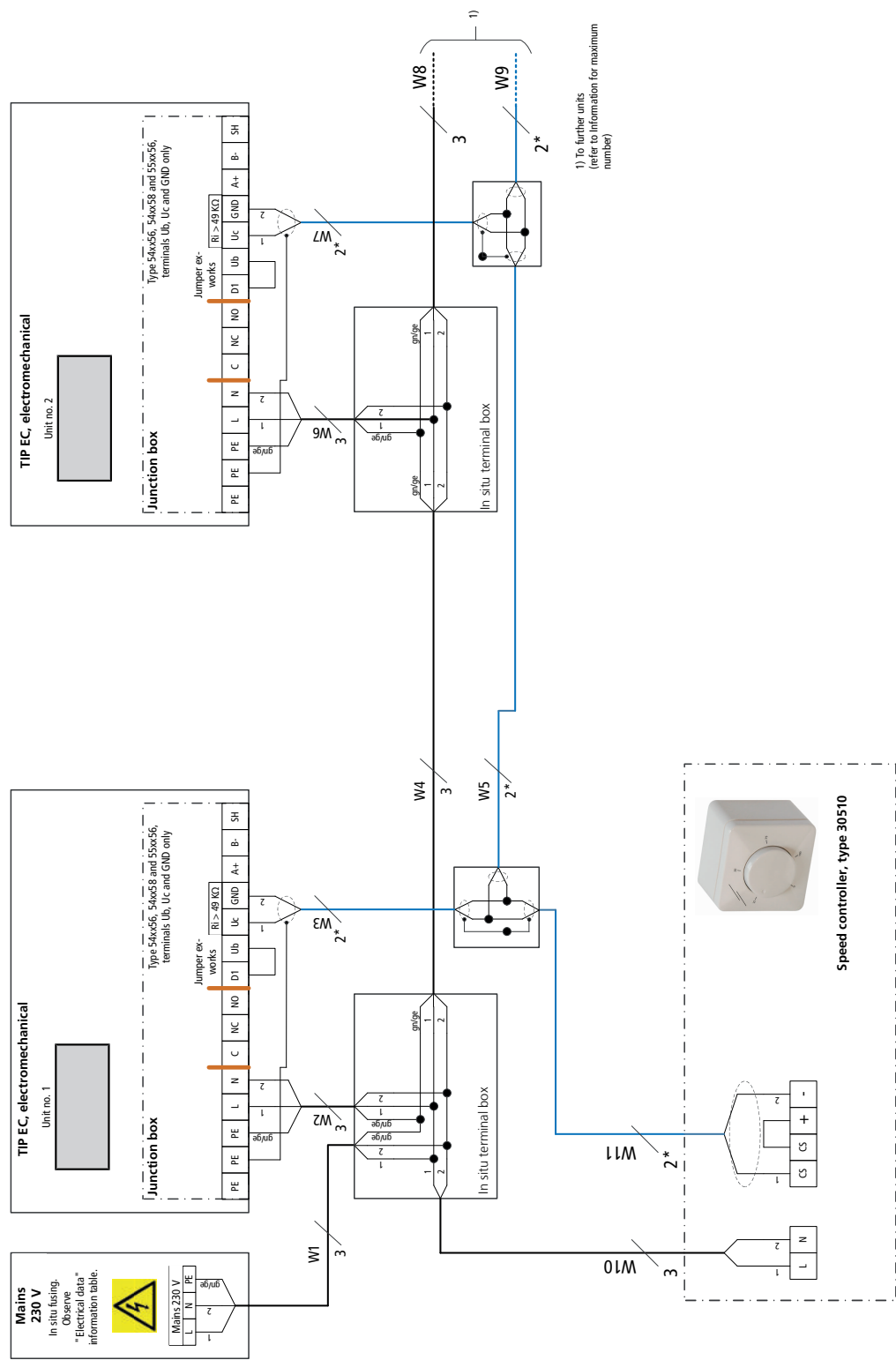
Control signal	Function
0 V	Off
2 - 10 V	$n_{(2V)} - 100\%$

The speed can be limited to approx. 50% of the maximum speed by the potentiometer in the junction box.

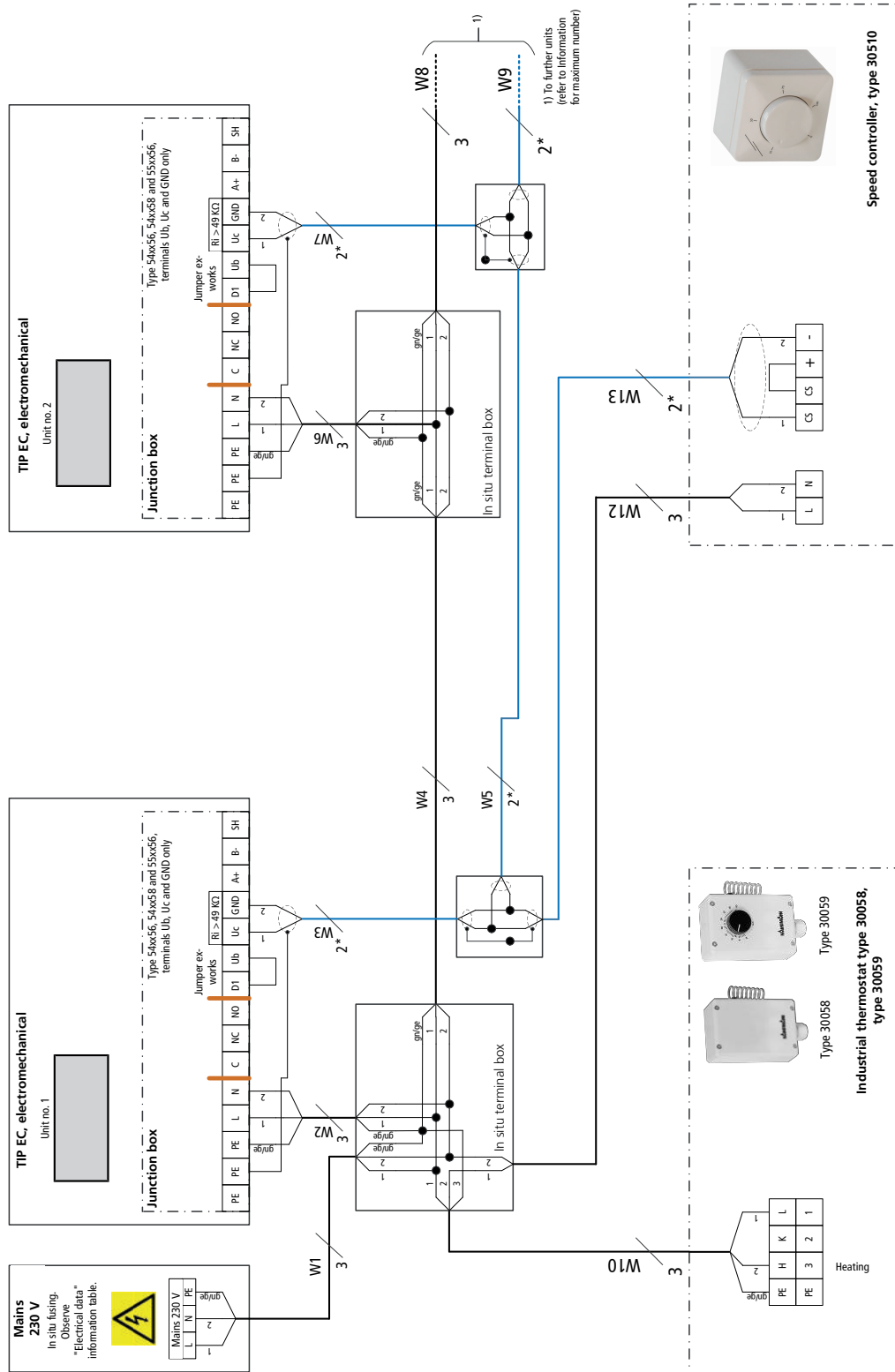
Observe these points in the following installation diagrams for TIP with electromechanical control:

- ▶ Comply with the details on cable types and cabling with due consideration for VDE 0100.
- ▶ Without *: NYM-J. The requisite number of wires, including protective 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 0.8mm, max. 100 m between the speed controller and the last unit heater; provide a shield on one side when longer than 20 m. Lay separately from power lines.
- ▶ With **: Sensor connection cable 1.5 mm² e.g. J-Y(ST) Y, 4 x 2 x 0.8 mm, max. 100 m. Lay separately from high-voltage cables.
- ▶ With ***: J-Y(ST)Y 0.8 mm, max. 100 m between the speed controller and the last unit heater; provide a shield on one side when longer than 20 m. Lay separately from power lines.
- ▶ With ****: J-Y(ST)Y, 0.8 mm, max. 100 m. Lay separately from power lines.
- ▶ If other types of cables are used, they must be at least equivalent.
- ▶ The terminals on the unit are suitable for a maximum wire cross-section of 2.5 mm².
- ▶ Any RCCBs used for motors with EC technology must be sensitive to pulsating currents (type A). It is impossible to protect personnel when operating the unit. This is also the case with frequency inverters that have FI safety devices. When the power supply to the unit is switched on, pulsed charging currents of the capacitors in the integrated EMC filter can cause FI safety devices to trip. A tripping current of 300 mA is recommended to ensure the highest possible operating reliability.
- ▶ The electrical data need to be respected when rating the in situ mains power supply and fusing.

7.2.2 Cabling of TIP (**00), actuation by speed controller type 30510



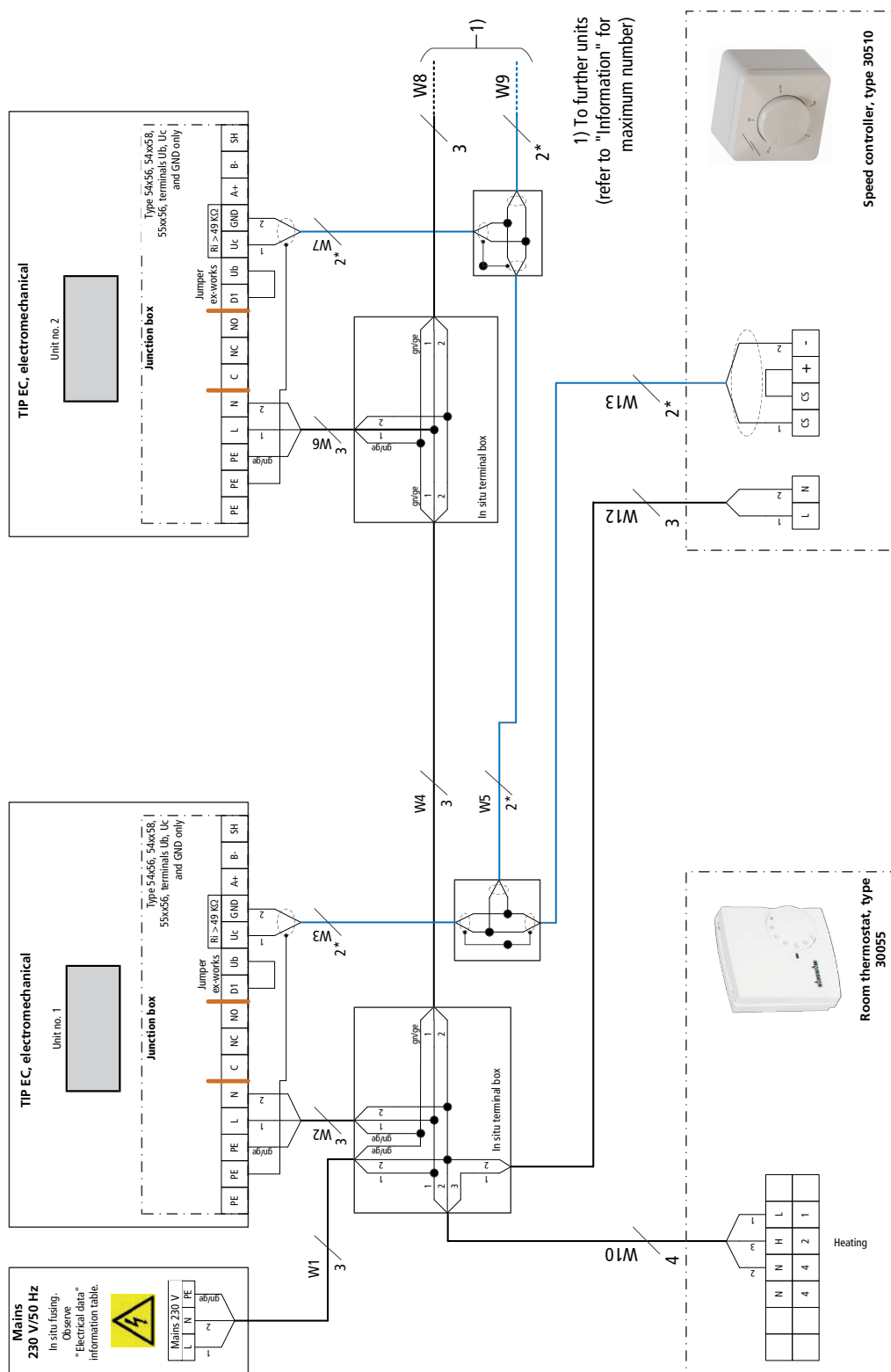
7.2.3 Cabling TIP (**00), activation via speed controller type 30510 with industrial thermostat type 30058/ 30059



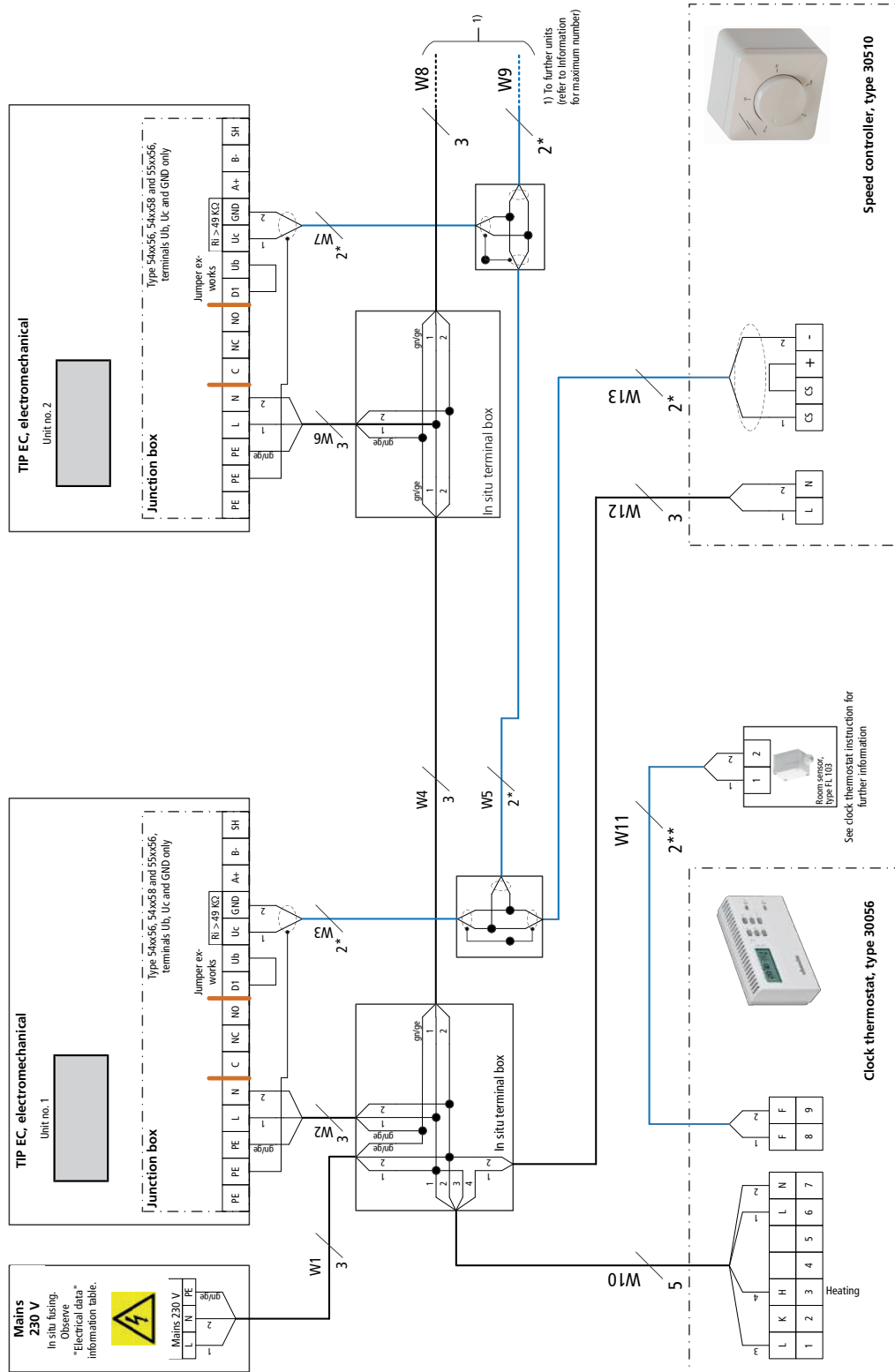
TIP

Assembly, installation and operating instructions

7.2.4 Cabling of TIP (**00), actuation by speed controller type 30510 with room thermostat type 30055



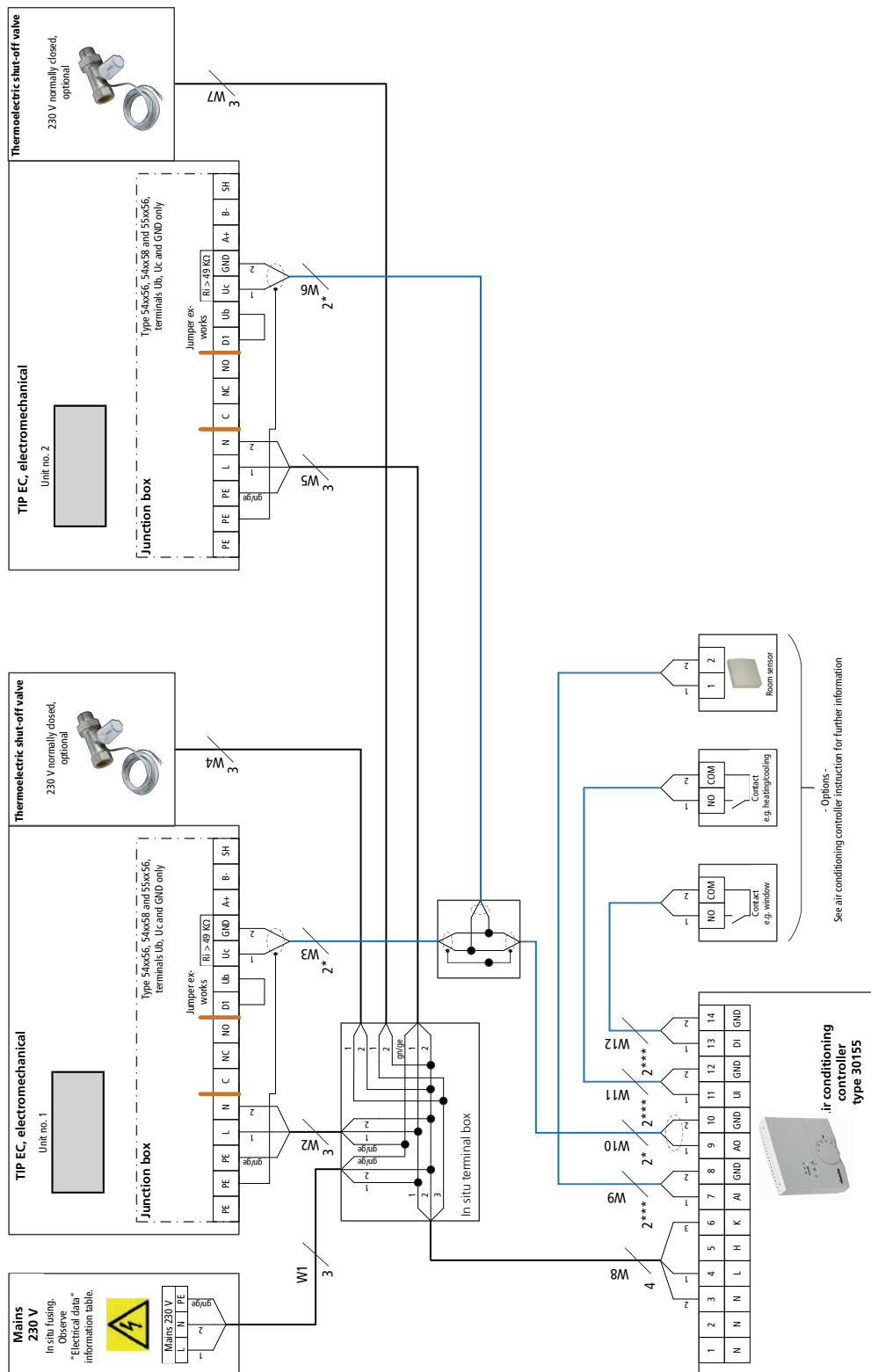
7.2.5 Cabling of TIP(**00), actuation by speed controller type 30510 with clock thermostat type 30056



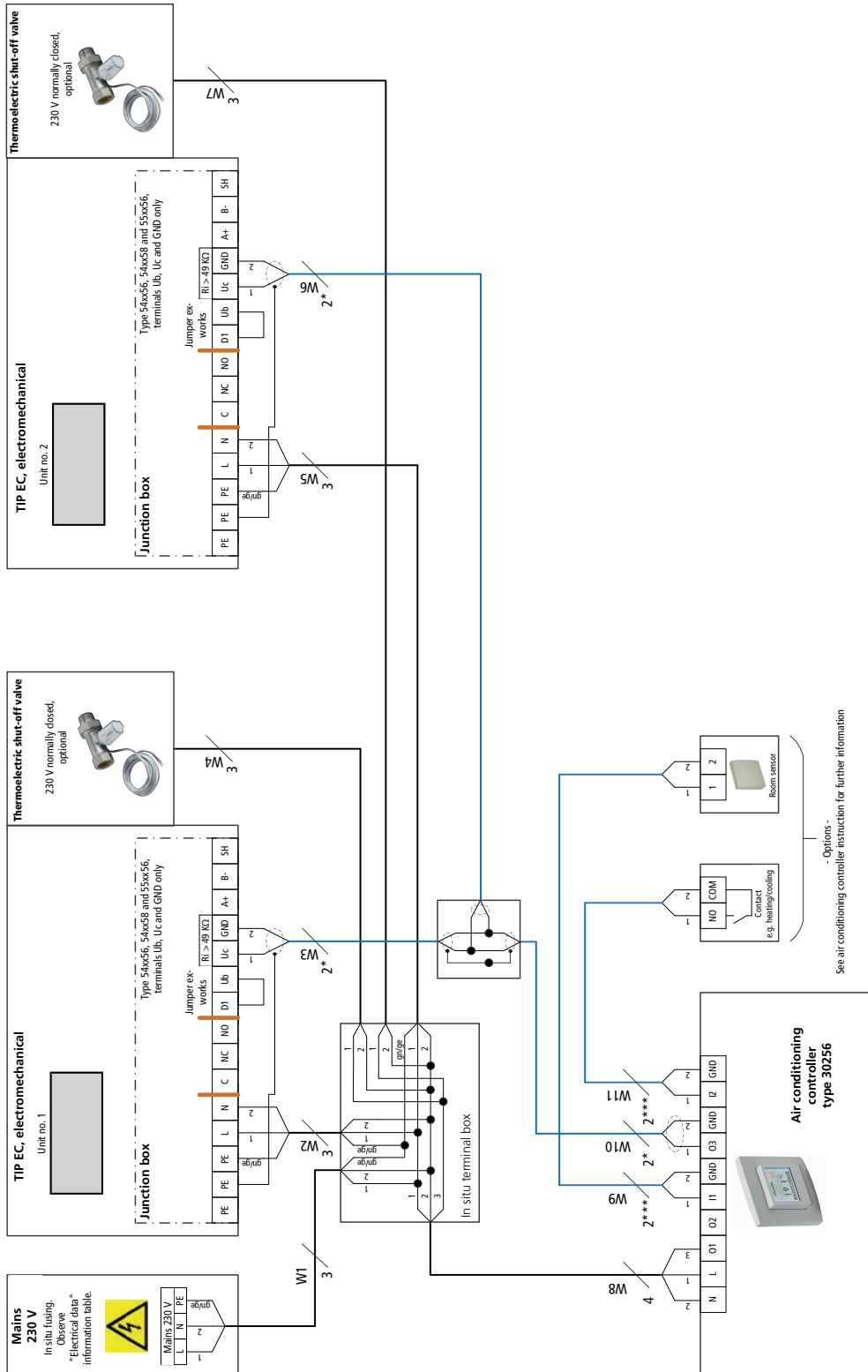
TIP

Assembly, installation and operating instructions

7.2.6 Cabling of TIP (**00), actuation by climate controller type 30155, 2-pipe valve actuator 230 V AC, Open/Close



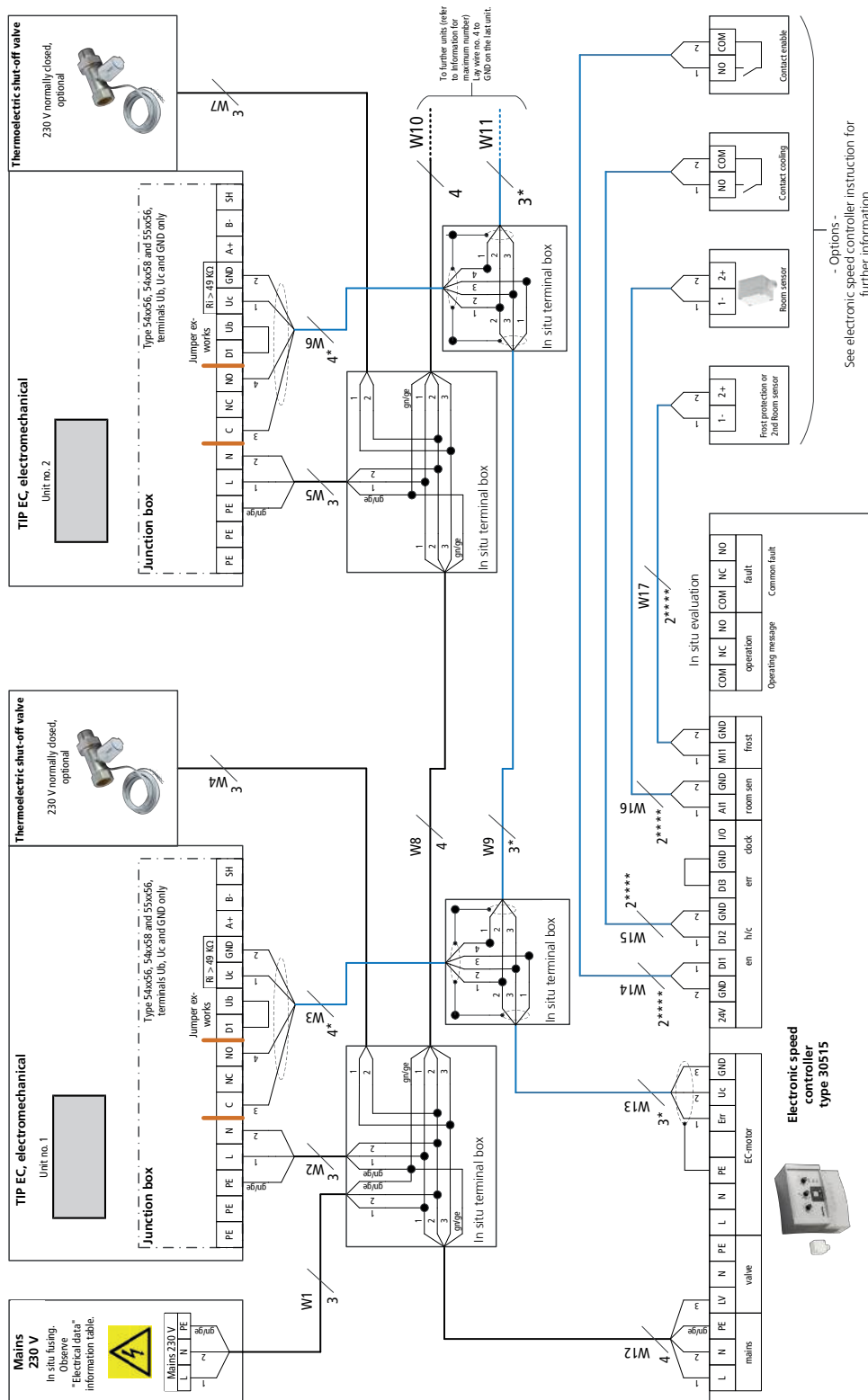
7.2.7 Cabling of TIP (**00), actuation by climate controller type 30256, 2-pipe valve actuator 230 V AC, Open/Close



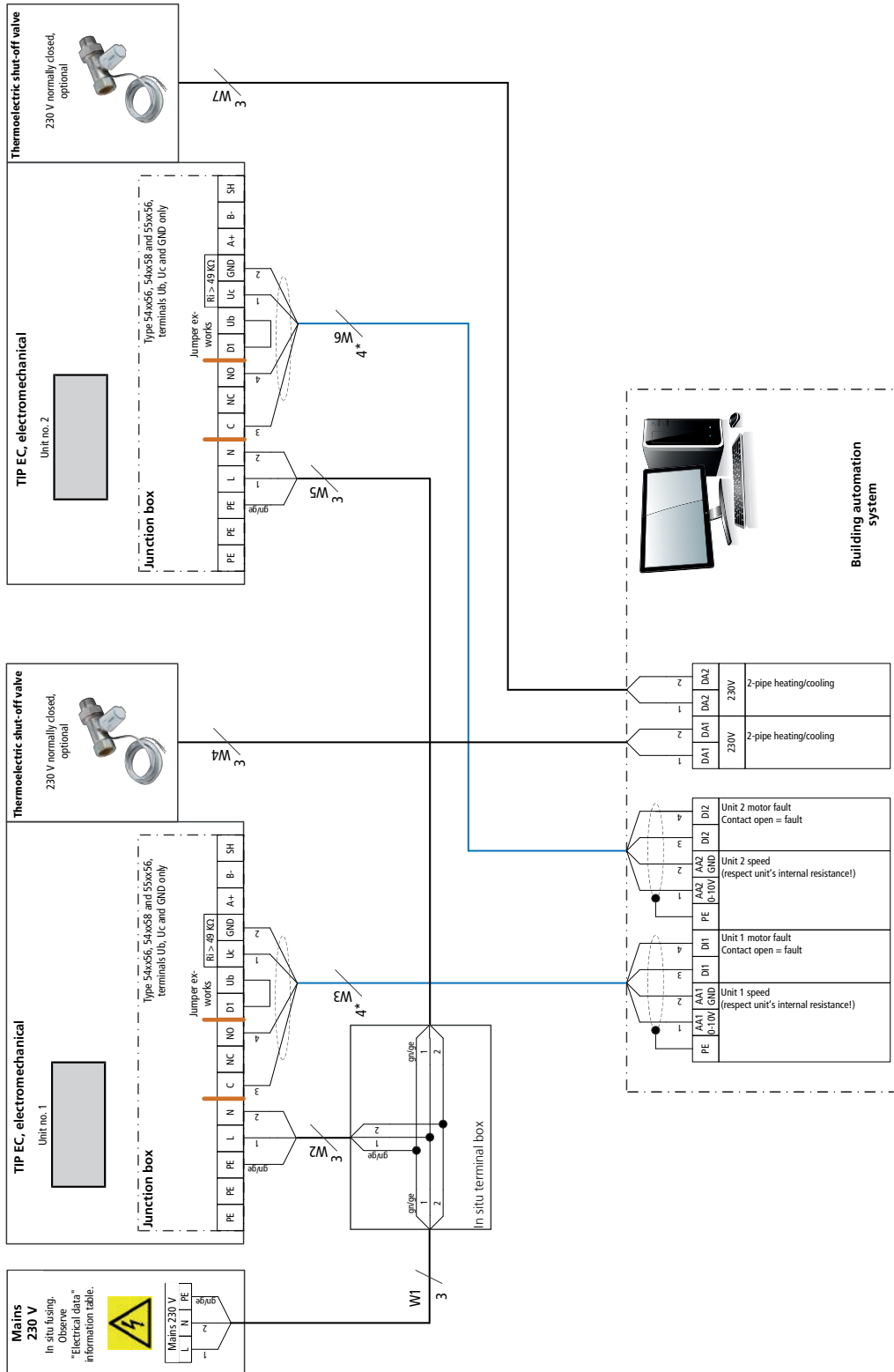
TIP

Assembly, installation and operating instructions

7.2.8 Cabling of TIP (**00), actuation by speed controller type 30515



7.2.9 Cabling of TIP (**00), actuation by DDC/BMS, 2-pipe valve actuator 230 V AC, Open/Close



TIP

Assembly, installation and operating instructions

8 Pre-commissioning checks

Check before initial commissioning whether all necessary conditions have been met so that the unit can function safely and properly.

Structural tests

- ▶ Check that the unit is securely standing and fixed.
- ▶ Check the horizontal installation/suspension of the unit.
- ▶ Check whether all components are properly fitted.
- ▶ Check whether all dirt, such as packaging or site dirt, has been removed.

Electrical tests

- ▶ Check whether all lines have been properly laid.
- ▶ Check whether all lines have the necessary cross-section.
- ▶ Are all wires connected in accordance with the electric wiring diagrams?
- ▶ Is the earth wire connected and wired throughout?
- ▶ Check whether the fault signal contacts of the EC fans have been correctly connected (break contacts in series with multiple units).
- ▶ Check all external electrical connections and terminal connections are fixed in place and tighten if necessary.
- ▶ Check whether DIP switches have been correctly set in accordance with the wiring diagram.

Water-side checks

- ▶ Check whether all supply and drainage lines have been properly connected.
- ▶ Fill pipes and unit with water and bleed.
- ▶ Check whether all bleed screws are closed.
- ▶ Check leak tightness (pressure test and visual inspection).
- ▶ Check whether the parts carrying water have been flushed through.
- ▶ Check whether any shut-off valves fitted on site are open.
- ▶ Check whether any electrically actuated shut-off valves have been properly connected.
- ▶ Check whether all valves and actuators are working properly (note permitted mounting position).

Air-side checks

- ▶ Check whether there is unimpeded flow at the air inlet and outlet.

Once all checks have been completed, initial commissioning can be carried out in line with Chapter 9 "Operation" [▶ 33].

9 Operation

9.1 Operation of electromechanical control




 <p>A white, square-shaped speed controller with a large circular dial in the center. The dial has markings at 25, 50, 75, and 100. There is a small switch on the left side of the dial.</p>	<p>Speed controller, type 30510</p> <p>The speed controller is used to activate the fan and pre-set the fan speed. Actuation of a thermoelectric shut-off valve is not possible.</p>
 <p>A silver, rectangular electronic speed controller with a digital display and several control knobs and buttons. A small white sensor is shown next to it.</p>	<p>Electronic speed controller, type 30515</p> <ul style="list-style-type: none"> ▶ With integrated digital timer, protection rating IP 40 ▶ 230 V, EC, with day, night, week programme, continuously variable fan operation 0 to 100 %, manual or automatic, 0-10 VDC, recirculation air, incl. sensor ▶ Suitable for: EC units, electromechanical, max. number of connectible units: ten TIP, TOP, Ultra or Venkon, two KaCool D AF or KaCool W
 <p>A white, rectangular room thermostat with a large circular dial and several control buttons and switches. The brand name 'KAMPMANN' is visible at the bottom.</p>	<p>Room thermostat type 30155</p> <ul style="list-style-type: none"> ▶ Electronic room thermostat with 3-stage automatic function for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box in visually unobtrusive design ▶ Simple operation using a large dial for temperature setting with mechanical range limitation of the temperature setpoint, operating mode selector switch, Standby, Manual fan, Automatic fan, 3-stage switch for pre-selecting fan speed when operating mode selector switch is in the "Manual fan" position ▶ Option for external room sensor ▶ Control input for heating/cooling changeover with 2-pipe applications ▶ Digital input can be set to Comfort/ECO or ON/OFF switchover ▶ Parallel operation of 2 units is possible

Fig. 11: Speed controller, type 30510

Fig. 12: Electronic speed controller type 30515

Fig. 13: Room thermostat type 30155

TIP

Assembly, installation and operating instructions



Fig. 14: Clock thermostat type 30256

Clock thermostat 230 V, type 30256

- ▶ Electronic clock thermostat for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box in visually unobtrusive design
- ▶ Operation using 4 sensor keys
- ▶ Timer with automatic summer/winter changeover
- ▶ Option for external room sensor
- ▶ Control input for heating/cooling changeover with 2-pipe applications
- ▶ Digital input can be set to Comfort/ECO or ON/OFF switchover
- ▶ Parallel operation of 2 units is possible

10 Maintenance

10.1 Securing against reconnection



DANGER!

Risk of death by unauthorised or uncontrolled restart!

Unauthorised or uncontrolled restarting of the equipment can result in serious injury or death.

- Before restarting, ensure that all safety devices are fitted and working properly and that there is no hazard to humans.

Always follow the procedure described below to prevent accidental restart:

1. de-energise.
2. Prevent accidental re-connection.
3. Check that the equipment is de-energised.
4. Cover and cordon off adjacent live parts.



WARNING!

Risk of injury from rotating parts!

The fan impeller can cause severe injuries.

- Switch off the unit and prevent it from reconnection before commencing any work on moving components of the fan. Wait until all parts have come to a standstill.

10.2 Maintenance Schedule:

The sections below describe maintenance work needed for the proper and trouble-free operation of the equipment.

If there are signs of increased wear during regular checks, shorten the required maintenance intervals to the actual wear and tear. Contact the manufacturer with any questions about maintenance work and intervals.

Interval	Maintenance task	Personnel
As required	Regular visual checks and acoustic checks for damage, dirt and function.	User
every six months	Clean unit components (heat exchanger, condensate tray, condensate pump, float switch).	User
every six months	Check water-side connections, valves and fittings for dirt, leak-tightness and function.	User
every six months	Check the electrical wiring.	Qualified personnel
every six months	Clean components/surfaces that come into contact with air.	User
quarterly	Check the heat exchanger for dirt, damage, corrosion and leak-tightness. Carefully vacuum the heat exchanger if dirty.	User

10.3 Clean the inside of the unit

Check all elements that come into contact with air (internal surfaces of the unit, outlet elements etc.) for dirt or deposits during maintenance and use a commercially available product to remove.

TIP

Assembly, installation and operating instructions



DANGER!

Risk of injury from burning

The electronics housing of the EC fan reaches high temperatures. Avoid direct contact!



IMPORTANT NOTE!

Do not use aggressive cleaning agents!

Aggressive cleaning agents that can damage the paintwork must not be used on the EC fan. Water must not enter the inside of the motor or the electronics (through direct contact with seals or motor openings, for example), respect the protection rating (IP). The condensation drain holes (if present), positioned to suit the installation situation, must be checked for clearance. Run the EC fan for at least 1 hour at 80 to 100% of maximum speed before cleaning to prevent moisture accumulating in the motor! Run the EC fan for a minimum of 2 hours at 80 to 100% of maximum speed after the cleaning process!

11 Faults

The following chapter describes possible causes of faults and the work needed to rectify them. Should faults occur frequently, shorten the maintenance intervals in line with the actual loading on the unit.

Contact the manufacturer with any faults that cannot be rectified using the following informatio.

Behaviour in the event of faults

The following applies:

1. Immediately switch off the unit with faults that pose an immediate danger to persons or property!
2. Determine the cause of the fault!
3. Switch off the unit and prevent it from being reconnected if rectifying the fault requires work in the hazard area. Immediately advise a supervisor on site about the fault.
4. Either rectify the fault yourself or have it repaired by authorised personnel, depending on the nature of the fault.

The fault table, Chapter 11.1 "Fault table" [► 38], provides information on who is authorised to rectify and remedy faults.

Status output via flash code

The EC fans are blockage protected. Protective functions that trigger an automatic shut-off in case of a fault are integrated. These depend on the fan type.

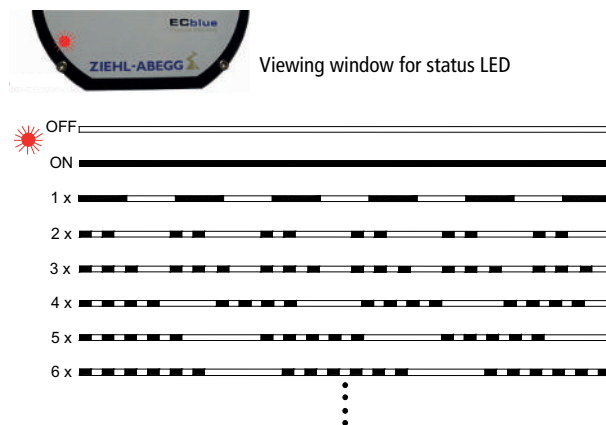


Fig. 15: Flash code

LED code	Relay in the fan*	Cause
OFF	0	No mains power
ON	1	Normal operation without faults
1x	1	No enable = OFF
2x	1	Temperature management active
4x	0	Phase failure (3 ~ types only)
5x	0	Motor blocked
6x	0	Power module fault
7x	0	Intermediate circuit, undervoltage
8x	0	Intermediate circuit, overvoltage
9x	1	Cool down phase, power module
11x	0	Fault, motor start
12x	0	Mains power too low

TIP

Assembly, installation and operating instructions

LED code	Relay in the fan*	Cause
13x	0	Mains power too high
14x	0	Fault, peak current
17x	0	Temperature alarm
20x	0	MODBUS communication fault

Tab. 9: Status via flash code

* Relay in the fan with factory-programmed function (fault message not inverted)

0 relay de-energised

1 relay energised

11.1 Fault table

Fault	Possible cause	Remedy
No function.	No power supply.	Check voltage, switch on repair switch. Replace fuse.
	Unit is switched off.	Switch on the unit via the controller.
Fan is not running.	No power supply.	Check power supply and connect.
	Electrical cable not connected or incorrectly connected.	Check electrical connection and correct if necessary.
	No request from controller, hence fans switch off.	Change controller settings, if required.
	Fan blocked.	Clean dirt from fan.
	Impermissible operating pressure (e.g. excessive back pressure)	Correct operating point. Allow unit to cool down. Switch off the mains power for min. 25 s and switch on again to reset the error message. Alternatively, reset error message by applying a control signal of <0.5 V to DIN1 or by short circuiting DIN1 to GND.
	Temperature monitor has tripped.	Allow the motor to cool down, find and rectify the cause of the fault and release restart lock if necessary.
	Motor winding interrupted.	Replace unit.
Water outlet	Fault on the heat exchanger.	Replace the heat exchanger if you need to.
	Hydraulic connection not properly done.	Check flow and return and tighten, if necessary.
Unit is not heating sufficiently (LPHW)	Fan is not switched on.	Switch on fan at controller.
	Air volume is too low.	Set a higher speed.
	Filter is dirty.	Replace filter.
	No heating or cooling medium.	Switch on heating and/or cooling system, switch on circulation pump, vent unit/system.
	Valves not operating.	Replace faulty valves.
	Water volume too low.	Check pump output, check hydraulics.
	Setpoint temperature on the controller set too low.	Adjust temperature setting on the controller.
	Operating unit with integral sensor and/or external sensor is exposed to direct sunlight or positioned over a heat source.	Place operating unit with integral sensor and/or external sensor in a suitable position.
	Air cannot blow out or in freely.	Remove obstacles at the air outlet/air inlet.
	Heat exchanger dirty.	Clean heat exchanger.

Fault	Possible cause	Remedy
	Air in the heat exchanger.	Vent heat exchanger.
Unit too loud	Speed too high.	Set a lower speed, if possible.
	Air inlet/outlet opening is obstructed.	Free air ducts.
	Filter dirty.	Replace filter.
	Rotating parts unbalanced	Clean and/or replace impeller. Please make sure that no balancing clips are removed during cleaning.
	Fan dirty.	Clean dirt from fan.
	Heat exchanger dirty.	Clean dirt from Heat exchanger.

11.2 Fault table, electromechanical control type ..58/56

Fault	Possible cause	Remedy
EC fan does not rotate when power is applied to the module and control signal > approx. 1.5 VDC	Mechanical blockage.	Switch off, de-energise and remove the mechanical blockage.
	Control voltage poles switched.	Connect the control voltage correctly.
Fan does not rotate 100% at max. control signal 10 VDC	Maximum limit set incorrectly.	Change potentiometer setting in the motor junction box.
	Active temperature management effective (motor or electronics overheated).	Check that the airways are clear; remove any foreign bodies, impeller is blocked or dirty; check supply air temperature; check installation location (air speed over heat sink).
Fault message (Contact C – NO open) and EC fan operational	Electronics in motor junction box faulty.	Replace the motor junction box.
	Fault signal chain fuse faulty.	Replace fuse.

11.3 Start-up after rectification of fault

After correction of the fault, carry out the following steps to re-start:

1. Make sure that all maintenance covers and access openings are sealed.
2. Switch off the unit.
3. Acknowledge fault on controller, if necessary.

TIP

Assembly, installation and operating instructions

12 Certificates

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):

KAMPMANN 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:

TOP/TOP C

TIP

Resistent

Ultra

Bauheizer

44**; 45****; 46****; 47****; 48******

54**; 55****; 56****; 57******

84**; 85****; 86******

73**; 84****; 85****; 96****; 97******

54**; 55****; 56****; 57******

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; -2-40

Elektromagnetische Verträglichkeit

Elektromagnetische Verträglichkeit

Elektromagnetische Verträglichkeit

**Sicherheit elektr. Geräte f. den Hausgebrauch und
ähnliche Zwecke**

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****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

Hendrik Kampmann**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

Information requirements for fan coils according to regulation (EU) No 2016/2281

Informationsanforderungen für Fan Coils gemäß Verordnung (EU) Nr. 2016/2281

TIP Copper-aluminium Kupfer-Aluminium heating only nur heizen 2-pipe unit 2-Rohrsystem				Fan Speed Drehzahl	Motor code no. Motorennziffer	cooling capacity (sensible)	Kühlleistung (sensibel)	cooling capacity (latent)	Kühlleistung (latent)	Heating capacity	Wärmeleistung	Total electric power input	Elektrische Gesamtleistungsaufnahme	Sound power level (per speed setting, if applicable)	Schallleistungspegel (ggf. je Geschwindigkeitseinstellung)
Fan Ventilator	heat exchanger Wärmetauscher	Series			P _{rated,c}		P _{rated,c}		P _{rated,h}		P _{elec}		L _{WA}		
		Serie			kW		kW		kW		kW		dB (A)		
EC, 230 V	20	54	high	58	-	-	5,2	0,165	45/54/62/68/73						
			low	56	-	-	4,7	0,124	42/51/59/66/71						
		55	high	58	-	-	9,2	0,400	34/56/66/75/81						
			low	56	-	-	7,5	0,162	43/52/61/68/72						
		56	high	58	-	-	12,5	0,420	34/55/66/74/80						
			high	58	-	-	16,6	0,685	34/56/68/76/81						
	57	low	56	-	-	14,6	0,340	30/49/61/70/75							
		30	54	high	58	-	-	6,1	0,165	43/52/60/66/71					
	low			56	-	-	5,4	0,124	40/49/57/64/69						
	55		high	58	-	-	11,0	0,400	32/54/64/73/79						
			low	56	-	-	8,8	0,162	41/50/59/66/70						
	56		high	58	-	-	16,0	0,420	32/53/64/72/78						
			high	58	-	-	20,0	0,685	32/54/66/74/79						
	57	low	56	-	-	17,4	0,340	28/47/59/68/73							
		40	54	high	58	-	-	7,7	0,165	41/50/58/64/69					
	low			56	-	-	6,4	0,124	38/47/55/62/67						
	55		high	58	-	-	15,1	0,400	30/52/62/71/77						
			low	56	-	-	11,1	0,162	39/48/57/64/68						
	56		high	58	-	-	19,8	0,420	30/51/62/70/76						
			high	58	-	-	29,4	0,685	30/52/64/72/77						
	57	low	56	-	-	23,8	0,340	26/45/57/66/71							

Standard rating conditions for fan coil units according to regulation (EU) No 2016/2281						
Norm-Prüfbedingungen für Gebläsekonvektoren gemäß Verordnung (EU) Nr. 2016/2281						
Cooling Test	Air temperature	27 °C (dry bulb) 19 °C (wet bulb)	Inlet water temperature	7 °C	Water temperature rise	5 °C
Test Kühlbetrieb	Lufttemperatur	27 °C (Trockenkugel) 19 °C (Feuchtkugel)	Wassertemperatur am Einlass		Anstieg der Wassertemperatur	
Heating Test	Air temperature	20 °C (dry bulb)	Inlet water temperature	45 °C for 2-pipe units 65 °C for 4-pipe units	Water temperature decrease	5 °C for 2-pipe units 10 °C for 4-pipe units
Test Heizbetrieb	Lufttemperatur	20 °C (Trockenkugel)	Wassertemperatur am Einlass	45 °C für 2-Rohrsysteme 65 °C für 4-Rohrsysteme	Sinken der Wassertemperatur	5 °C für 2-Rohrsysteme 10 °C für 4-Rohrsysteme
Sound power test		At ambient conditions without water flow				
Test Schallleistungspegel		Bei Umgebungsbedingungen ohne Wasserdurchsatz				

Contact Details	Kampmann GmbH
Kontaktinformationen	Friedrich-Ebert-Straße 128-130, D-49811 Lingen (Ems), Germany

TIP

Assembly, installation and operating instructions

Table

Tab. 1	Limits of operation.....	7
Tab. 2	Operating voltage.....	7
Tab. 3	Water quality	7
Tab. 4	Technical data, TIP.....	12
Tab. 5	Type overview with minimum clearances	14
Tab. 6	Air-side sheet steel accessories.....	15
Tab. 7	Suspension points for wall/ceiling installation.....	17
Tab. 8	Electrical data, TIP	21
Tab. 9	Status via flash code.....	37

l.kampmann.de/montage-tip

Land	Kontakt
Germany	Kampmann GmbH & Co. KG
	Friedrich-Ebert-Str. 128 - 130
	49811 Lingen (Ems)
	T +49 591/ 7108-660
	F +49 591/ 7108-173
	E export@kampmann.de
	W Kampmann.eu

Country	Contact
Great Britain	Kampmann UK Ltd.
	Dial House, Govett Avenue
	Shepperton, Middlesex, TW17 8AG
	T +44 1932/ 228592
	F +44 1932/ 228949
	E info@kampmann.co.uk
	W Kampmann.co.uk