

MARK TANNER MDA+

0662535_R01



READ THIS DOCUMENT BEFORE INSTALLING THE HEATER

Warning

Incorrect installation, adjustment, alteration, repair or maintenance work may lead to material damage or injury. All work must be carried out by certified, qualified professionals. If the appliance is not positioned in accordance with the instructions, the warranty shall be rendered void. This appliance is not intended for use by children or persons with a physical, sensory or mental handicap, or who lack the required experience or expertise, unless they are supervised or have been instructed in the use of the appliance by somebody who is responsible for their safety. Children must be supervised to ensure that they do not play with the appliance.

EN

1 General

1.1 Application

Appliance type MDA+ is solely suitable for the free and direct intake of the air to be heated and the free discharge of heated air into the room. If areas are to be heated in which corrosive vapours are present (chlorinated hydrocarbons in particular), which are either produced directly in the area, or which may be drawn in from the outside by the heater via a duct or an open connection, wall air heaters cannot be used because of the risk of corrosion to the heat exchanger.

Subject to change

The manufacturer is committed to constantly improving its products and reserves the right to make changes in the specifications without prior notice. The technical details are considered correct but do not form the basis for a contract or warranty. All orders are accepted according to the standard terms of our general sales and delivery conditions (available upon request). The information in this document is subject to change without notice. The most recent version of this manual is always available at www.markclimate.com/downloads.

1.2 General warnings

Incorrect installation, adjustment, alteration, maintenance or repair of the MDA+ may lead to material or environmental damage and/or injuries. The appliance should therefore be installed, adapted or converted by a qualified and certified installer, taking into account national and international regulations. Faulty installation, adjustment, alteration, maintenance activity or repair shall render the warranty void.

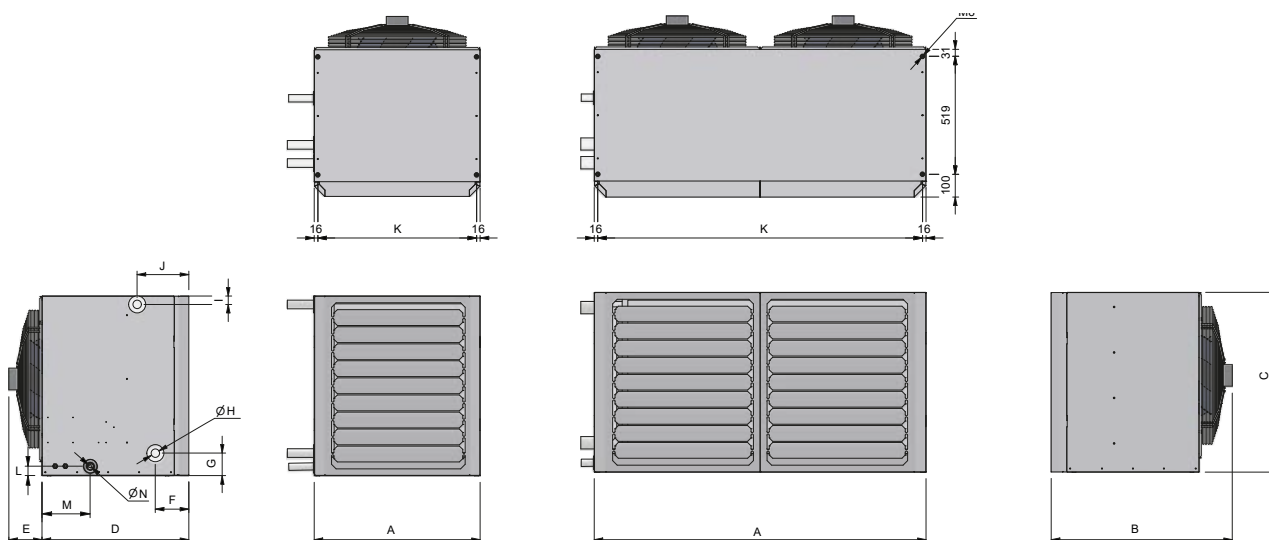
2 Technical specifications

2.1 Technical specifications

Type			241	341	441	541
Weight without accessoires		kg	42	62	82	119
Air flow	max	m ³ /h	3734	5423	8217	10600
Horizontal Throw		m	12	19	27	22
Noise at 5 m	max	dB(A)	55	53	59	56
Consumed current		A	2,2	1,7	2,7	3,4
Nominal electric power		kW	0,32	0,24	0,62	0,76
Speed	max	rpm	1400	950	1000	950

Refer to Chapter 6 for the performance charts of the MDA+.

2.2 Dimensions



Type	A	B*	C	D	E*	F	G	H	I	J	K	L	M	N**
200	580	774	640	650	128	137	97	1"	33	217	548	41	213	32
300	730	794	790	650	144	147	99	1 1/2"	37	227	698	41	213	32
400	860	805	920	650	155	152	101	1 1/2"	39	232	828	41	213	32
500	1460	794	790	650	144	151	129	2"	67	233	1428	41	213	32

* These dimensions are based on EC fans. Other fans may differ from these dimensions.

** An MDA+ with natural slope has a drain with a diameter of 32mm. An MDA+ with optional condensate pump has a 4.5 meter long PVC pipe DN 10.

3 Unit Placement and Installation

3.1 Positioning the appliance

After unpacking, check the appliance for damage. Check that the information relating to the type/model and the electrical voltage is correct. Place the appliance and any accessories to a sufficiently solid structure, taking into account the minimum free space required.

3.2 Installation

3.2.1 Placement considerations

Placement of indoor units should take account of the following considerations:

- » MDA+ units should not be installed in positions where dust or dirt may affect heat exchangers.
- » MDA+ units should not be installed in locations where exposure to oil or to corrosive or harmful gases, such as acidic or alkaline gases, may occur.
- » MDA+ units should not be installed in locations where exposure to salinity may occur unless the anti-corrosion treatment for high-salinity areas is added.
- » Sufficient space for drain piping and for access during servicing and maintenance should be allowed.
- » To ensure a good cooling/heating effect, short-circuit ventilation (where outlet air returns quickly to a unit's air inlet) should be avoided.
- » In case the unit is used for cooling, a condensate drain should be added. A condensate drain should fulfil the local and national regulations. Optional is the use of a integrated condensate pump.
- » There should be a water lock with a height of at least 50mm integrated at the unit

3.2.2 Spacing

Indoor units must be spaced such that sufficient air may flow through each unit. Sufficient airflow across heat exchangers is essential for indoor units to function properly. Figures 3.1 to 3.3 show spacing requirements in three different scenarios.

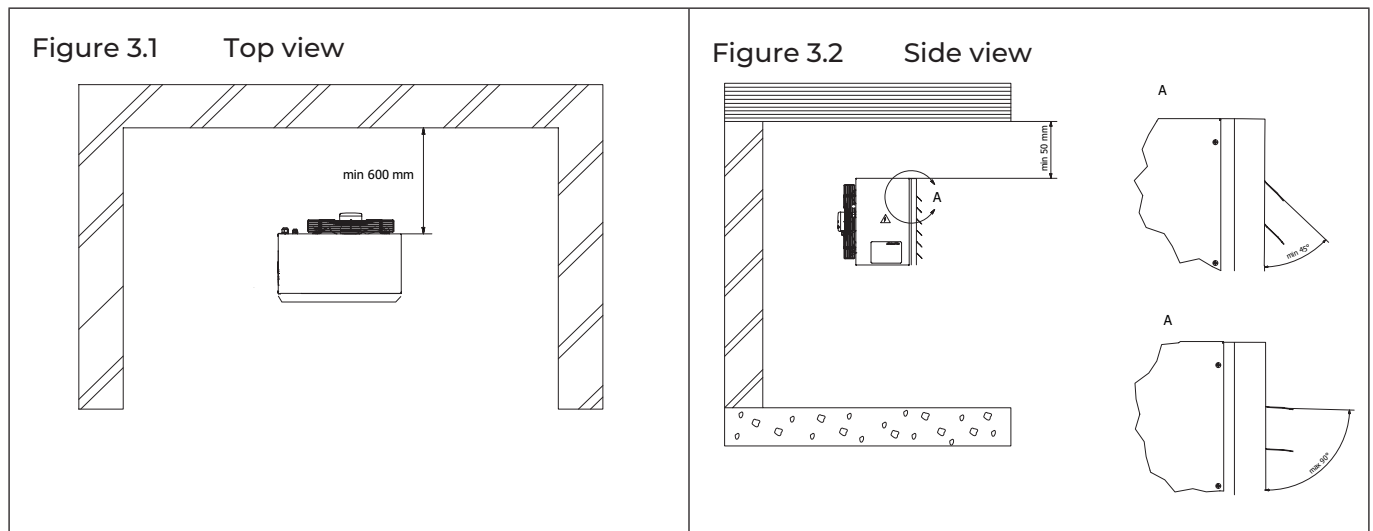
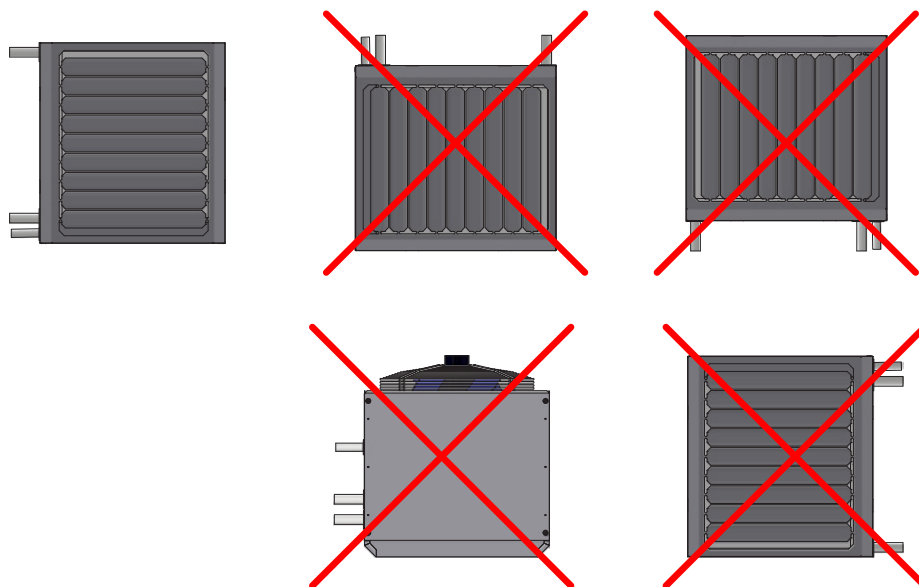


Figure 3.3 Front view



3.2.3 Hoisting

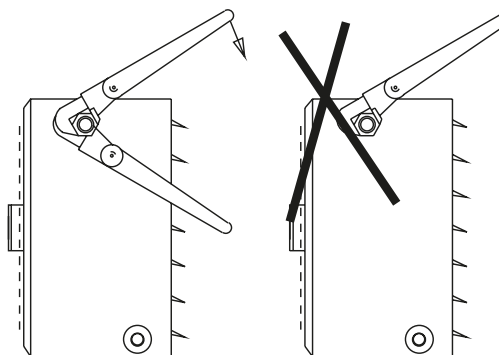
- » Do not remove any packaging before hoisting. If units are not packaged or if the packaging is damaged, use suitable boards or packing material to protect the units.
- » Hoist one unit at a time, using two ropes to ensure stability.
- » Keep units upright during hoisting, ensuring that the angle to the vertical does not exceed 30°.

3.2.4 General

- » When connecting the heater onto the mains use an additional pipe wrench to avoid twisting the pipe.

Max. operating pressure 14 Bar
Max. water temp. 120 Celsius

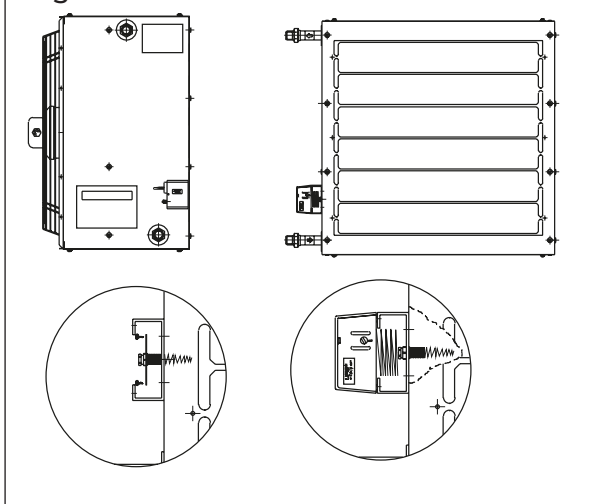
Figure 3.4



3.2.7 Frost protection

- » Because under certain circumstances (outside air colder than 5 degrees) there is a risk of the heater freezing up, protection against freezing must be installed to prevent this from happening.

Figure 3.5



3.3 Controller

In operation cooling the speed of the axial fan must be reduced to avoid condensate waterdrops are taken with the airflow. The level of reduction depends to the local circumstances. The default setting of fan speed reduction is 70% of its normal speed. In case of AC axial fans this should be managed manual, e.g. with a 5-step transformer. In case of EC, the 0-10V signal should be reduced to 7 VDC (default setting).

Advised is to apply the PinTherm Mistral controller, reduction of the airflow in case of Cooling is integrated.

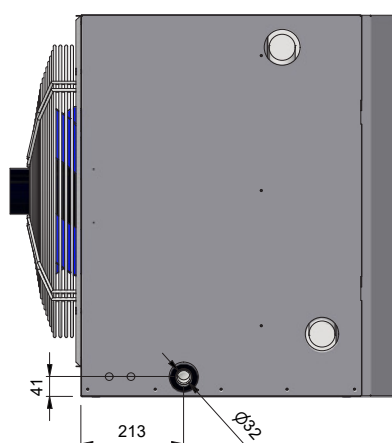
3.4 Instruction optional condensate

3.4.1 Condensate drain without pump

In case there is a condensate drain natural flow in the MDA+. The pipe to drain the condensed water must be connected to the MDA+ as shown in Figure 3.6.

To allow smooth condensate drainage and to ensure unit stability (to prevent excessive noise or vibration), ensure that units are level within 1° of the horizontal. If a unit is not level to within 1° of the horizontal, water leakage or abnormal vibration/noise may occur.

Figure 3.6 Condensate drain without pump

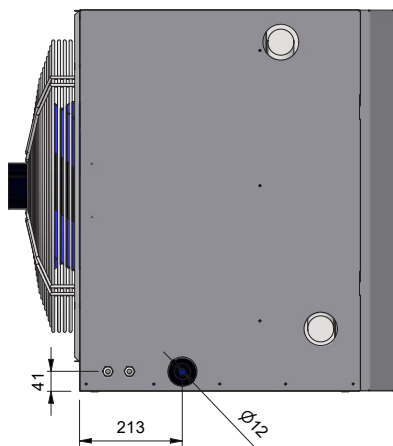


3.4.2 Condensate drain with condensate pump

If there is a condensate drain pump in the MDA+, then the pipe to drain the condensed water must be connected to the MDA+. As shown in the image below.

The condensate pump used in the MDA+ is the Si-83 from Sauermann

Figure 3.7 Condensate drain with pump

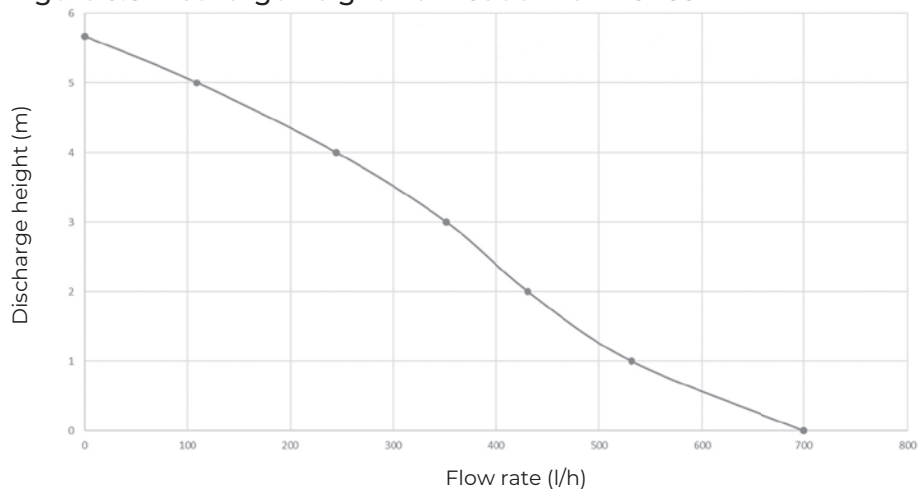


Type	Condensate amount ¹
MDA+ 14x	2 kg/h
MDA+ 24x	2 kg/h
MDA+ 34x	6 kg/h
MDA+ 44x	9 kg/h
MDA+ 54x	16 kg/h

¹ Indoor air temperature 27°C and 50% humidity

* Water temperature 7 - 12 C°

Figure 3.8 Discharge height from Sauermann Si-83



4.0 Maintenance

4.1 Instruction cleaning

Depending at your local circumstances, normally once a year the MDA+ has to be cleaned. So it can perform better. It is not allowed to use aggressive cleaning products or a high pressure sprayer.

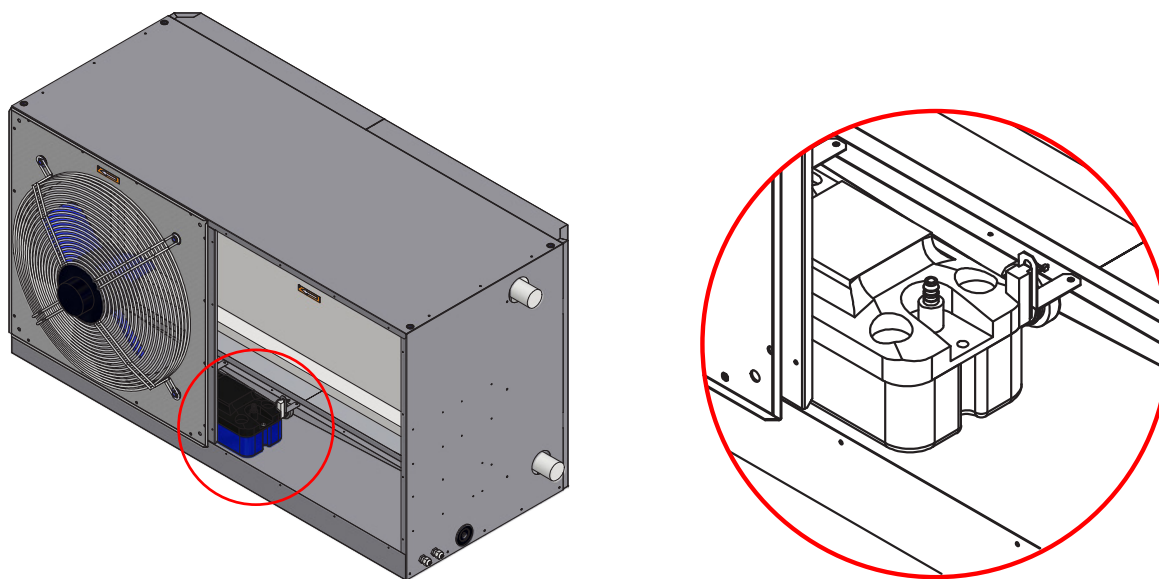
4.2 Replacing a broken condensate pump

When the condensate drain pump breaks down, it must be replaced according the steps below. The location of the pump is shown in the figure.

EN

1. Disassemble the fan on the control side of the unit.
2. Disconnect the control- and power cable.
3. Unscrew the mounting bolts.
4. Replace the broken condensate pump with a new one.
5. Tighten the mounting bolts again.
6. Reconnect the control- and power cable.
7. Mount the fan back onto the MDA+

Figure 4.1 Replacing a broken condensate pump



5.1 Connection diagram for Tanner MDA+ 241 / 341 / 441 230Vac

5.1 Connection diagram for Tanner MDA+ 241 / 341 / 441 230Vac

L = Lead | N = Zero | PE = Earth

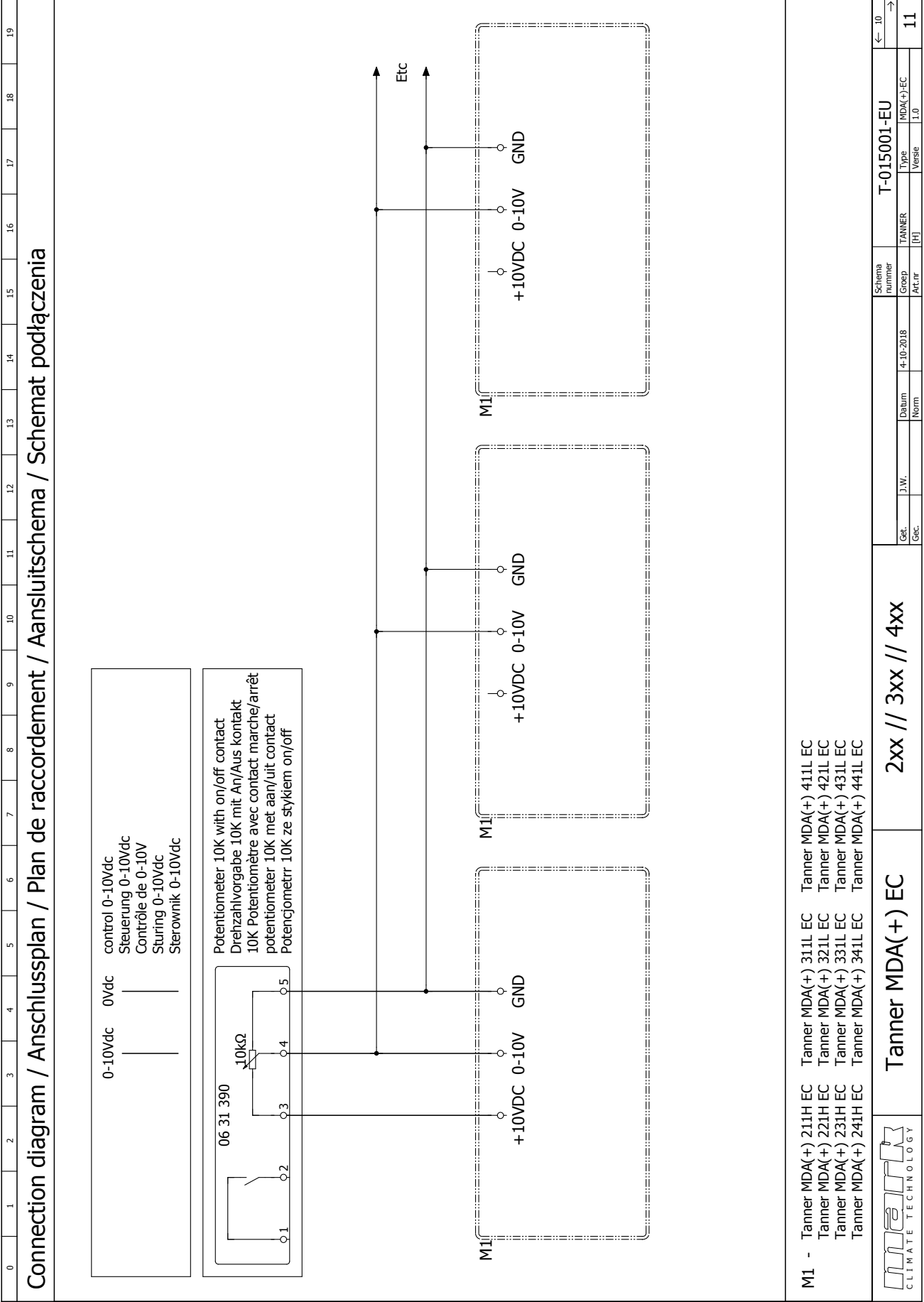
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19					
Connection diagram / Anschlussplan / Plan de raccordement / Aansluitschema / Schemat podłączenia																								
TK TK L1 L2 L3 PE 3 ~ 400V +PE 50Hz					TK TK L1 L2 L3 PE 3 ~ 400V +PE 50Hz					TK TK U1 U2 V1 V2 W1 PE 3 ~ 400V +PE 50Hz					TK TK W2 W1 3 ~ 400V +PE 50Hz					TK TK U1 U2 V1 V2 W1 PE 3 ~ 400V +PE 50Hz				
WS 7 9 10 1 2 3 4 5 6					WS 7 9 10 1 2 3 4 5 6					WS 13 14 15 16 11 12 1 2 3 4 5 6					WS 13 14 15 16 11 12 1 2 3 4 5 6									
M1 TK TK W2 W1 U1 U2 V1 V2 W1 PE					M1 TK TK W2 W1 U1 U2 V1 V2 W1 PE					M1 TK TK W2 W1 U1 U2 V1 V2 W1 PE					M1 TK TK W2 W1 U1 U2 V1 V2 W1 PE									
Tanner MDA(+) 3~400Vac low niedrig bas laag nisko					Tanner MDA(+) 3~400Vac high hoch haut hoog wysoko					Tanner MDA(+) 3~400Vac high/low zweistufig haut/bas hoog/laag wysoko/nisko					Tanner MDA(+) 3~400Vac high/low zweistufig haut/bas hoog/laag wysoko/nisko									
WS 7 9 10 1 2 3 4 5 6					WS 7 9 10 1 2 3 4 5 6					WS 13 14 15 16 11 12 1 2 3 4 5 6					WS 13 14 15 16 11 12 1 2 3 4 5 6									
TK TK U1 U2 V1 V2 W1 PE					TK TK U1 U2 V1 V2 W1 PE					TK TK U1 U2 V1 V2 W1 PE					TK TK U1 U2 V1 V2 W1 PE									
TK TK</																								

5.3 Connection diagram for Tanner MDA+ 241 / 341 / 441 with EC-fan

[illegible]

L = Lead | N = Zero | PE = Earth

5.4 Connection diagram for multiple Tanner MDA+ 241 / 341 / 441 with EC-fan



L = Lead | N = Zero | PE = Earth

5.7 Connection diagram for Tanner MDA+ 541 400Vac

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Connection diagram / Anschlussplan / Plan de raccordement / Aansluitschema / Schemat podłączenia

By changing L1 and L2 you can change the rotation direction
Mittels Umtauschen L1 und L2 kann man die Drehrichtung ändern
En inversant L1 et L2, on change la direction de rotation
Door het verwisselen van L1 en L2, verandert de draairichting
Poprzez zmianę zasilania L1 i L2 można zmienić kierunek rotacji

3 ~ 400V+PE / 50Hz
L1 L2 L3 TK PE

E1

high
hoch
haut
hoog
wysoko

Standard connection made from factory
Standard brücken ab Fabrik
Jumper standard de l'usine
Standaard doorverbinding vanaf fabriek
Połączenia wykonane przez fabrykę

E1

low
niedrig
bas
laag
nisko

E1

high/low
zweistufig
haut/bas
hoog/laag
wysoko/nisko

Remove connection !!!
Brücke entfernen !!!
Éliminer les connexions !!!
Doorverbinding verwijderen !!!
Usun połączenie !!!

TK - Thermal contact
Thermokontakt
Contact thermique
Thermocontact
Podłączenie termostatu

BL - blue blau bleu blauw niebieski	BK - black schwarz noir zwart czarny	GNYE - yellow/green gelb/grün jaune/verte geel/groen żółty/zielony	RD - red rot rouge rood czerwony
BR - brown braun brun bruin brązowy	GR - grey grau gris grijs szary	OR - orange orange orange orange pomarańczowy	WH - white weiß blanc wit biały

E1 - Connection box
Abzweigboxe
Boîte de bornes
Klemmenkast
Skrzynka zaciskowa

BL - blue blau bleu blauw niebieski	BK - black schwarz noir zwart czarny	GNYE - yellow/green gelb/grün jaune/verte geel/groen żółty/zielony	RD - red rot rouge rood czerwony
BR - brown braun brun bruin brązowy	GR - grey grau gris grijs szary	OR - orange orange orange orange pomarańczowy	WH - white weiß blanc wit biały

M1

M2

Tanner MDA(+) 533L
Tanner MDA(+) 543L

Electrical drawing

Get. J.W. TVD

Datum 7-1-2021 Norm

Schena nummer 7-1-2021

Tanner [H]

Type MDA

Versie 1.0

← 30 → 10

L = Lead | N = Zero | PE = Earth

15

EN

5.8 Connection diagram for Tanner MDA+ 541 with EC-fan

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Connection diagram / Anschlussplan / Plan de raccordement / Aansluitschema / Schemat podłączenia

1 ~ 230V +N +PE
50Hz
L1 N PE

max.
max.
max.
max.
maks.

max. B16A

F

WS

External contact on/off
Externe An/Aus kontakt
Contact marche/arrêt externe
Externe aan/uit contact
Kontakt zewnętrzny on/off

control 0-10Vdc
Steuerung 0-10Vdc
Contrôle de 0-10V
Sturing 0-10Vdc
Sterownik 0-10Vdc

Potentiometer 10K with on/off contact
Drehzahlvorgabe 10K mit An/Aus kontakt
10K Potentiomètre avec contact marche/arrêt
potenciometer 10K met aan/uit contact
Potencjometr 10K ze stykiem on/off

06 31 390
10KΩ

E1

E2

M1

M2

L1 N TK TK PE

GND
0-10V
+10VDC

L1 N TK TK PE

GND
0-10V
+10VDC

Tanner MDA(+) 531L EC
Tanner MDA(+) 541L EC

TK - Contact failure
Störmeldung kontakt
Contact défaut
Storingcontact
Styk Usterka

WS - Isolator switch (option)
Reparaturschalter (Wahlbar)
L'interrupteur de proximité (facultative)
Werkschakelaar (optioneel)
Wylacznik serwisowy (Optional)

2A - 250Vac
3A - 30Vdc

Electrical drawing

Get. J.W. Tvd

Datum 8-6-2022

Norm

Schema number

Group

Tanner

Type

MDA

1 1

10

5xx

Tanner MDA(+) EC

T-015002-EU

← 30 →

L = Lead | N = Zero | PE = Earth

5.9 Connection diagram junction box safety switch

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
EN - Connection diagram junction box safety switch FR - Plan de raccordement boîtier de connection interrupteur de sécurité PL - Schemat podłączenia skrzynki przyłączeniowa przelącznik bezpieczeństwa DE - Anschlussplan Anschlussbox sicherheits Schalter NL - Aansluitschema aansluitbox veiligheidschakelaar RO - Schema de conexiune cutii de jonctiune întrerupător de siguranță																			
1 ~ 230V+N+PE / 50Hz L1 N PE COM NC E3 br - brown braun brun brun brązowy maro bl - blue bleu bleu blauw niebieski Albastru g/g - yellow/green gelb/grün jaune/verde geel/groen zółty/zielony galben/verde zw - black schwarz noir zwart czarny negru E4 - Condensate pump Kondensatpumpe Pompe à condensat Condensaatpomp Pompa kondensatu Pompa de condens E3 - Junction box Anschlussbox Boîtier de connection Aansluitbox Skrzynka przyłączeniowa cutii de jonctiune S1 - Safety switch Sicherheits Schalter Interrupteur de sécurité Veiligheidsschakelaar Przelącznik bezpieczeństwa întrerupător de siguranță										Wiring colours Farbe der Verdrähtung Couleurs de câblage Kleuren bedrading Kolory przewodów Culori cablaj									
										Electrical drawing 30.04.491 Get. J.W. Datum 1-3-2024 Gec. Norm									
Schema number A-004050-EU Group 300491 Art. nr 1.0										10									

6.0 Performance charts

6.1 Performance chart Tanner MDA+ 241 EC

241 EC		Control Signal EC fan [VDC]									
		10	9	8	7	6	5	4	3	2	1
heating	90/70 T15°C [kW]	43,13	41,3	37,79	34,57	30,64	26,27	20,92	16,21	N/A	N/A
	dP water [kPa]	2,54	2,34	1,98	1,68	1,4	1	0,66	0,41	N/A	N/A
	80/60 T15°C [kW]	34,93	33,44	30,6	27,98	24,79	21,22	16,82	12,87	N/A	N/A
	dP water [kPa]	1,73	1,6	1,35	1,15	0,91	0,68	0,44	0,27	N/A	N/A
	60/40 T15°C [kW]	13,56	12,86	12,2	11,56	10,73	9,73	8,36	7,01	N/A	N/A
	dP water [kPa]	0,31	0,28	0,25	0,23	0,2	0,17	0,13	0,09	N/A	N/A
	45/40 T 15°C [kW]	18,57	17,77	16,23	14,82	13,1	11,2	8,88	6,85	N/A	N/A
	dP water [kPa]	7,46	6,87	5,79	4,89	3,88	2,9	1,88	1,16	N/A	N/A
cooling	35/30 T 15°C [kW]	10,5	10,04	9,14	8,32	7,3	6,14	4,52	3,7	N/A	N/A
	dP water [kPa]	2,63	2,42	2,03	1,7	1,34	0,97	0,55	0,38	N/A	N/A
	Air amount [m ³ /h]	3734	3495	3060	2686	2261	1826	1348	975	N/A	N/A
	7/12 T28°C (RH = 50%)	N/A	N/A	N/A	7,83	6,37	5,66	5,02	4,41	N/A	N/A
	dP water [kPa]	N/A	N/A	N/A	2,15	1,48	1,19	0,96	0,75	N/A	N/A
	Air amount [m ³ /h]	N/A	N/A	N/A	2686	2261	1826	1348	975	N/A	N/A
	Connection	N/A	N/A	N/A	1,0"	1,0"	1,0"	1,0"	1,0"	N/A	N/A
	Sound dB(A)*	55	54	51	48	44	40	34	30	N/A	N/A

6.2 Performance chart Tanner MDA+ 341 EC

341 EC		Control Signal EC fan [VDC]									
		10	9	8	7	6	5	4	3	2	1
heating	90/70 T15°C [kW]	68,66	63,62	59,83	54,77	49,62	45,29	38,13	27,27	N/A	N/A
	dP water [kPa]	2,76	2,4	2,14	1,82	1,52	1,28	0,93	0,5	N/A	N/A
	80/60 T15°C [kW]	56,39	52,26	49,17	45,02	40,8	37,24	31,34	22,36	N/A	N/A
	dP water [kPa]	1,95	1,7	1,52	1,29	1,08	0,91	0,66	0,36	N/A	N/A
	60/40 T15°C [kW]	29,7	27,33	25,52	23,02	20,32	16,43	14,57	11,52	N/A	N/A
	dP water [kPa]	0,63	0,54	0,48	0,39	0,31	0,21	0,17	0,11	N/A	N/A
	45/40 T 15°C [kW]	29,34	27,15	25,5	23,31	21,08	19,21	16,12	11,46	N/A	N/A
	dP water [kPa]	8	6,93	6,18	5,23	4,35	3,67	2,65	1,42	N/A	N/A
cooling	35/30 T 15°C [kW]	17,28	15,99	15,02	13,72	12,39	11,27	9,4	6,33	N/A	N/A
	dP water [kPa]	3,1	2,69	2,4	2,03	1,68	1,41	1,02	0,49	N/A	N/A
	Air amount [m ³ /h]	5423	4847	4435	3910	3406	3005	2387	1554	N/A	N/A
	7/12 T28°C (RH = 50%)	N/A	N/A	N/A	11,99	9,81	9,17	8,07	6,64	N/A	N/A
	dP water [kPa]	N/A	N/A	N/A	1,72	1,2	1,06	0,84	0,59	N/A	N/A
	Air amount [m ³ /h]	N/A	N/A	N/A	3910	3406	3005	2387	1554	N/A	N/A
	Connection	N/A	N/A	N/A	1,25"	1,25"	1,25"	1,25"	1,25"	N/A	N/A
	Sound dB(A)*	53	51	48	46	41	37	33	29	N/A	N/A

* measured at a distance of 5 meter

6.3 Performance chart Tanner MDA+ 441 EC

441 EC		Control Signal EC fan [VDC]									
		10	9	8	7	6	5	4	3	2	1
heating	90/70 T15°C [kW]	105,2	102,94	88,99	7910	72,65	62,4	53,82	51,06	N/A	N/A
	dP water [kPa]	4,05	3,89	2,98	2,4	2,05	1,55	1,19	1,08	N/A	N/A
	80/60 T15°C [kW]	86,93	85,07	73,62	65,48	60,16	51,7	44,61	42,32	N/A	N/A
	dP water [kPa]	2,91	2,8	2,14	1,73	1,48	1,12	0,86	0,78	N/A	N/A
	60/40 T15°C [kW]	48,37	47,32	40,79	36,09	31,97	27,86	21,54	19,96	N/A	N/A
	dP water [kPa]	1,04	1	0,76	0,61	0,52	0,38	0,24	0,21	N/A	N/A
	45/40 T 15°C [kW]	44,84	43,86	37,82	33,55	30,76	26,35	22,66	21,48	N/A	N/A
	dP water [kPa]	11,68	11,22	8,56	6,87	5,86	4,41	3,35	3,04	N/A	N/A
cooling											
	35/30 T 15°C [kW]	26,88	26,3	22,7	20,14	18,48	15,82	13,58	12,86	N/A	N/A
	dP water [kPa]	4,71	4,53	3,46	2,78	2,38	1,79	1,36	1,23	N/A	N/A
	Air amount [m³/h]	8217	7956	6438	5450	4844	3941	3242	3028	N/A	N/A
	7/12 T28°C (RH = 50%)	N/A	N/A	N/A	21,17	19,46	16,34	11,36	10,93	N/A	N/A
	dP water [kPa]	N/A	N/A	N/A	3,32	2,86	2,08	1,07	1	N/A	N/A
	Air amount [m³/h]	N/A	N/A	N/A	5450	4844	3941	3242	3028	N/A	N/A
	Connection	N/A	N/A	N/A	1,5"	1,5"	1,5"	1,5"	1,5"	N/A	N/A
Sound dB(A)*		59	58	55	52	48	43	37	31	N/A	N/A

EN

6.4 Performance chart Tanner MDA+ 541 EC

541 EC		Control Signal EC fan [VDC]									
		10	9	8	7	6	5	4	3	2	1
heating	90/70 T15°C [kW]	152,51	141,25	132,8	121,47	109,93	100,19	84,12	59,77	N/A	N/A
	dP water [kPa]	5,98	5,2	4,65	3,96	3,3	2,79	2,04	1,1	N/A	N/A
	80/60 T15°C [kW]	127,03	117,74	110,76	101,39	91,84	83,77	70,45	50,19	N/A	N/A
	dP water [kPa]	4,39	3,82	3,42	2,92	2,44	2,07	1,51	0,82	N/A	N/A
	60/40 T15°C [kW]	74,41	69,1	65,09	59,7	54,18	49,5	41,7	29,67	N/A	N/A
	dP water [kPa]	1,76	1,54	1,38	1,18	0,99	0,84	0,62	0,34	N/A	N/A
	45/40 T 15°C [kW]	64,67	59,8	56,16	51,27	46,31	42,13	35,25	24,88	N/A	N/A
cooling	dP water [kPa]	17,1	14,84	13,24	11,23	9,34	7,87	5,71	3,04	N/A	N/A
	35/30 T 15°C [kW]	39,59	36,67	34,47	31,53	28,52	25,99	21,81	15,46	N/A	N/A
	dP water [kPa]	7,28	6,34	5,67	4,82	4,03	3,4	2,48	1,33	N/A	N/A
	Air amount [m³/h]	10600	9474	8669	7643	6658	5873	4666	3037	N/A	N/A
	7/12 T28°C (RH = 50%)	N/A	N/A	N/A	36,49	33,66	31,18	26,87	19,78	N/A	N/A
	dP water [kPa]	N/A	N/A	N/A	6,55	5,68	4,95	3,79	2,19	N/A	N/A
	Air amount [m³/h]	N/A	N/A	N/A	7643	6658	5873	4666	3037	N/A	N/A
	Connection	N/A	N/A	N/A	2,0"	2,0"	2,0"	2,0"	2,0"	N/A	N/A
Sound dB(A)*		56	54	51	49	44	40	36	32	N/A	N/A

* measured at a distance of 5 meter

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