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1 General information

1.1 List of information



DANGER

Direct danger

Failure to comply with this warning leads directly to death or to serious bodily harm.



WARNING

Possible danger

Failure to comply with this warning potentially leads to death or to serious bodily harm.



CAUTION

Hazard with a low risk

Failure to comply with this warning potentially leads to death or to serious bodily harm.

ATTENTION

Hazard with risk of property damage

Failure to comply with this warning leads to property damage.



NOTE

Useful information and notes

1.1.1 Safety symbols



General hazard symbol



Hazard of fire or explosion!



Electrical voltage!



Risk of burning

1.1.2 List of instructions for action

Instruction for action

- ☞ Carry out this action..
- ☞ (if applicable, further action)

Instruction for action with fixed order

1. Carry out this action..
2. Carry out this action.
3. (if applicable, further action)

1.2 Notes on the documentation



WARNING

Hazard as a result of improper dealing with the fan

These operating instructions describe safe use of the fan.

- » Read the operating instructions carefully!
- » Keep the operating instructions and other valid documents such as electrical connection plan or motor instructions with the fan. They must permanently be available at the place of use..

2 Important safety information

2.1 Safety notes

Designers, installers and operators are responsible for the proper mounting and intended use.

- As the operator, please ensure that the valid directives are complied with.
- Only use the fan in a proper condition.
- Provide generally prescribed electrical and mechanical protective devices.
- During mounting, commissioning, maintenance and control, secure the place of mounting and the premises for possible preparations against unauthorised access.
- Observe rules for safe work.
- Safety components must not be bypassed or put out of function.
- Keep all the warning signs on the fan complete and readable.
- Regularly instruct the personnel about safety-conscious behaviour.



NOTE

We have carried out a risk assessment for the fans. However, it can only apply to the fan itself. After in-stallation of the fan, we recommend to carry out a risk assessment for the whole system. In this way, you have the guarantee that there is no risk potential from the system.

2.2 Personnel

2.2.1 Mounting personnel

- Mounting may only be carried out by trained, qualified personnel.

2.2.2 Work on the electrical equipment

- Work on the electrical equipment of the fan may only be done by a qualified electrician or electrotechnically educated person. This person must know the relevant safety rules to recognise and avoid potentially risks.

2.2.3 Personnel for operation, use, maintenance and cleaning

- Operation, use, maintenance and cleaning may only be carried out by trained and authorized personnel. The operating personnel must have appropriate knowledge about handling with the fan. In the case of a malfunction or an emergency they must react correctly and adequately.

2.3 Intended use

The fans are intended for installation in ventilation systems. They can be installed either in duct systems or as a free sucking fan over a nozzle and a sucking side protection grid. A free blow-out and/or suction device via a contact-protection grid is possible following consideration in the design.

- The fans are suitable for extraction of clean air, air with a low dust and grease content, media up to max. density of 1,3 kg/m³.
- The maximum permissible operating data on the name plate apply for an air density $\rho = 1,2 \text{ kg/m}^3$ (sea level) and a maximum air moisture of 80 %.
- The fans are suited for the ambient and conveying agent temperatures stated on the name plate.

2.4 Incorrect use

Above all, the incorrect use means using the fan in a way other than that described. The following points are incorrect and hazardous:

- Extraction of explosive and combustible media
- Conveying of liquids
- Extraction of aggressive, dust or grease containing media
- Operation in an explosion hazardous atmosphere
- Operation without duct system or protective guard
- Operation with the air connections closed

3 Warranty

Warranty for our products shall be based on the contractual stipulations, our quotations and also as a supplement our General Terms and Conditions of Business. Warranty claims shall presuppose that the products are connected properly, operated and used in accordance with the data sheets and are also maintained as required.

4 Delivery, transport, storage

4.1 Delivery

Each device leaves our plant in an electrically and mechanically proper condition. The fans are on pallets. We recommend to transport them to the installation site in original packaging.



CAUTION

Danger from cutting edges!

» Wear protective gloves when unpacking.

Check delivery

- ☞ Check the fan for obvious defects, which can impair safe operation.
- ☞ First of all, pay attention for defects on the connection cable, terminal box and rotor, cracks in the housing, missing rivets, screws or covering caps.

4.2 Transport



WARNING

Hazard of impact if the fan falls down!

- » Transport the fan carefully and with appropriate hoisting device!
- » Wear a safety helmet and safety goggles!



WARNING

Electrical hazard from damaged connection cable or connections

- » Do not use the connection cable, terminal box or rotor for transport.

- ☞ Transport and unload the pallet carefully.
- ☞ Transport the fan either in the original packaging or on the provided transport devices (lifting eyes) with appropriate hoisting devices.
- ☞ When unpacking the fan, only lift it on the base frame.
- ☞ At manual transport observe allowed human lifting or carrying forces (see weight on the name plate).
- ☞ Avoid impacts and distortion of the base plate and other parts of housing.

4.3 Storage



CAUTION

Hazard due to loss of function of the motor bearings!

- » Avoid storing for too long time (recommendation: max. 1 year).
- » Turn the rotor manually every three months, wear safety gloves.
- » Before installation, check proper function of the motor bearings

- ☞ Store the fan in the original packaging dustproof, dry and protected against weather.
- ☞ Avoid effects of extreme heat or cold.

5 Description

Systemair roof fans are available to you in numerous versions, which means that you can make an optimum selection for your individual case of use. Extremely robust and long-living, they ensure reliable waste air solutions in various buildings. You can put your tailor-made ventilation system together with our large range of accessories.

5.1 DVS/DVSI/DHS series

- Voltage-controllable
- Low sound level
- Operationally safe and maintenance-free
- DVS, DHS and DVSI fans have been equipped with backward-bent radial blades and external rotor motors.

For operation of the DVS/DHS/DVSI fans on a frequency inverter, an all-pole sine filter is to be used! The motors have been suspended free of vibrations.

DVS/DHS/DVSI ...EZ / EV / ES: 1~ motor 2-phase operation possible.

DVS/DHS/DVSI ...E4: Designed for 1-phase operation.

DVS/DHS/DVSI ...DV / DS: 3~ 2-phase operation possible via Y/D circuit.

The motors of the DVS/DHS/DVSI fans up to size 311 possess integrated thermo-contacts with automatic and also manual reset pursuant to EN 60335-2-80 as overheating protection. Fans from size 355 have integrated thermo-contacts with finished lines for connection to a motor protection device. The housing comprises salt water-proof aluminium, the base frame powder-coated, galvanised sheet steel. On the base frame with deep-drawn admission nozzle, a bird protection grid of powder-coated, galvanised sheet steel has been fitted. The rotors are made of polyamide PA6 25 GV up to size 355, from size 400 of aluminium.

DVS models possess a vertical blow-out.

DVSI models have been sound-protected with mineral wool 50 mm in thickness.



Fig. 22: Example DVS



Fig. 23: Example DVSI

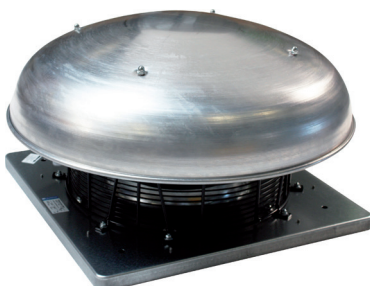


Fig. 24: Example DHS 190 - 500

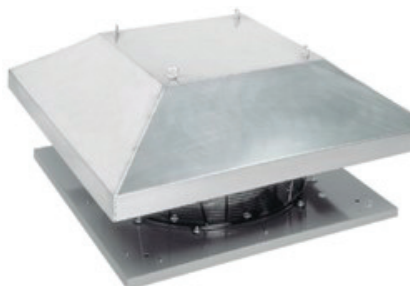


Fig. 25: Example DHS 560 - 710

5.1.1 Installation arrangements



NOTE

The following installation arrangements are also possible for the DVN and DVNI series.

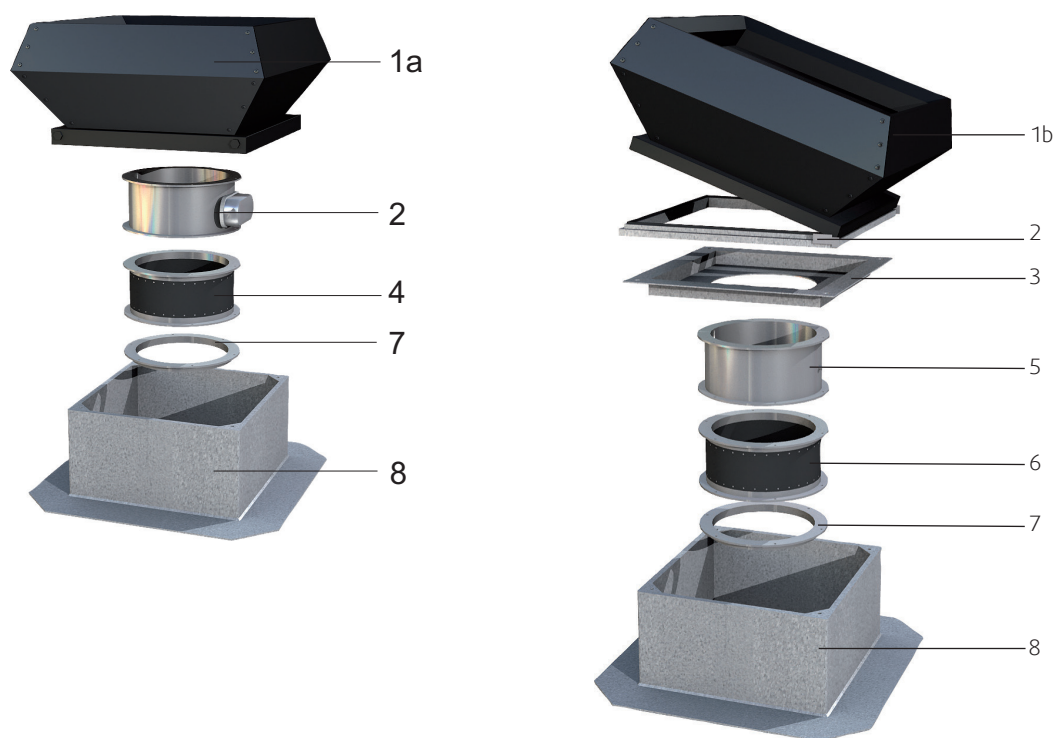
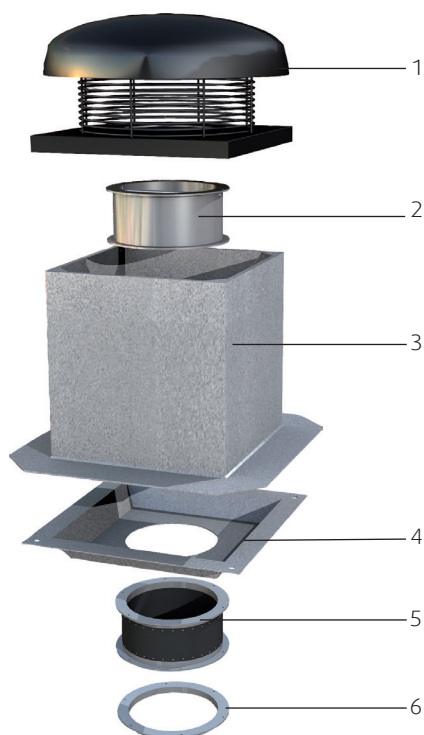


Fig. 26: Examples of the installation arrangement of a fan of the DVS/DVSI series, fixed or hinged

Legend

1a	DVS/DVSI	Ventilator fixed	6	ASS	Flexible connection
1b	DVS/DVSI	Ventilator hinged	7	ASF	Intake flange
2	FTG	Hinged frame	8	FDS	Flat roof base
3	TDA	Adaptor frame for hinged versions			
4	VKM	Motor-driven shutter			
5	VKS	Automatic shutter			



Legend

1	DHS	Fan
2	VKS	Automatic shutter
3	SSD	Base sound absorber
4	ASK	Intake chamber
5	ASS	Flexible connection
6	ASF	Intake flange

Fig. 27: Examples of the installation arrangement of a fan of the DHS series

5.1.2 Name plates

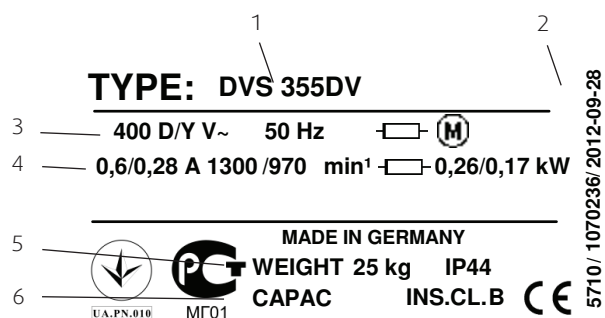


Fig. 28: Example, name plate DVS

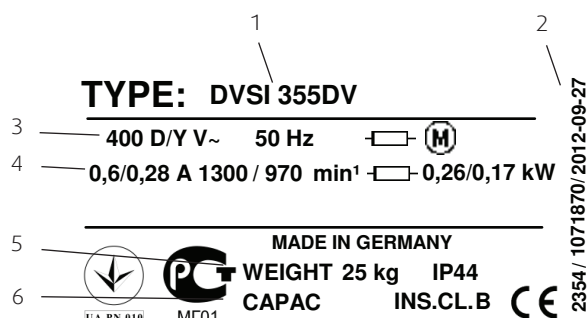


Fig. 29: Example, name plate DVSI

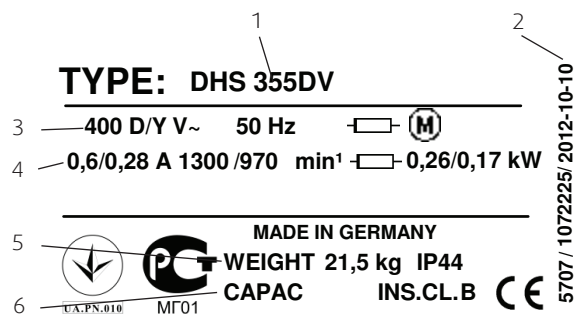


Fig. 30: Example, name plate DHS

Legend

- 1 Type designation
- 2 Article number/ production number/ date of manufacture
- 3 Voltage / frequency / motor output
- 4 Current / speed min./max. / output
- 5 Registration Ukraine, Russia / weight / protection class
- 6 Capacity with 1~/ insulation class motor

5.1.3 Dimensioned drawing of the DVS/DVSI fans

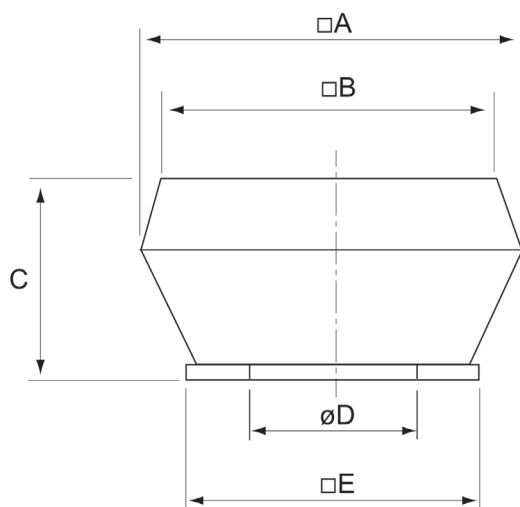


Fig. 31: Dimensioned drawing DVS und DVSI

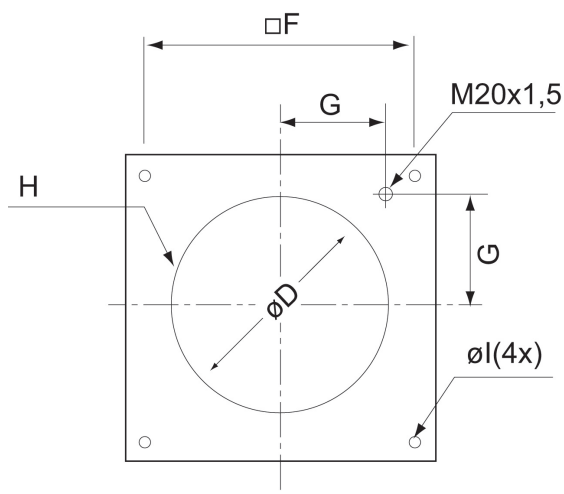


Fig. 32: Underside DVS/DVSI

5.1.4 Dimensions DVS

DVS	A	B	C	D	E	F	G	H	l
190-225	370	295	170	213	335	245	105	6xM6	10 (4x)
310-311	560	470	330	285	435	330	146	6xM6	10 (4x)
355-400	720	618	390	438	595	450	200	6xM8	12 (4x)
450-500	900	730	465	438	665	535	237	6xM8	12 (4x)
560-630	1150	960	560	605	939	750	293	8xM8	14 (4x)
710	1350	1185	660	647	1035	840	320	8xM8	14 (4x)

Table 9: Dimensions of the DVS fans

5.1.5 Dimensions DVSI

DVSI	A	B	C	D	E	F	G	H	l
190-225	497	295	179	213	335	245	105	6xM6	10 (4x)
310-311	690	470	369	285	435	330	146	6xM6	10 (4x)
355-400	874	618	439	438	595	450	200	6xM8	12 (4x)
450-500	968	748	479	438	665	535	237	6xM8	12 (4x)
560-630	1315	960	605	605	939	750	293	8xM8	14 (4x)
710	1483	1185	729	674	1035	840	320	8xM8	14 (4x)

Table 10: Dimensions of the DVSI fans

5.1.6 Dimensioned drawing of the DHS fans

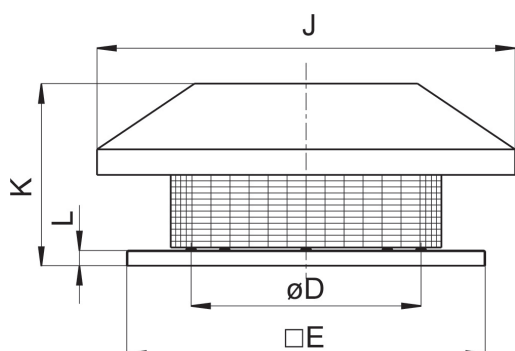


Fig. 33: Dimensioned drawing of the DHS fans, squared

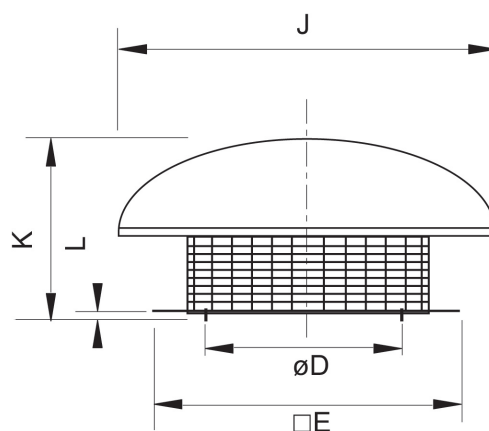


Fig. 34: Dimensioned drawing of the DHS fans, round

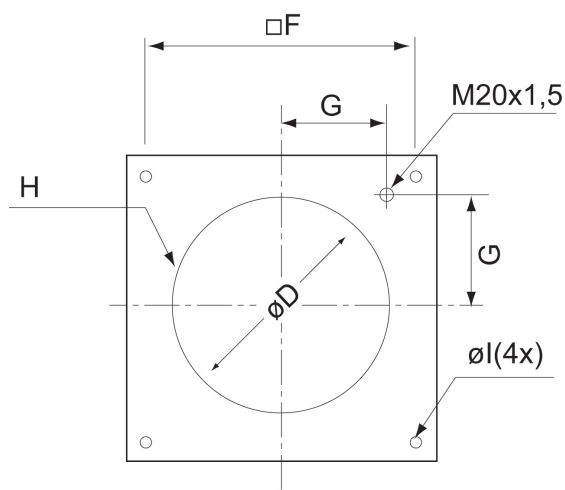


Fig. 35: Underside DHS

5.1.7 Dimensions DHS

DHS	øD	□E	□F	G	H	øl	J	K	L
190 - 225	213	335	245	105	6xM6	10	ø417	150	30
310 - 315	285	435	330	146	6xM6	10	ø540	250	30
355 - 400	438	595	450	200	6xM8	12	ø720	330	30
450 - 500	438	665	535	237	6xM8	12	ø830	490	30
560 - 630	605	939	750	293	8xM8	14	□1100	535	30
710	647	1035	840	320	8xM8	14	□1282	580	40

Table 11: Dimensions of the DHS fans

5.2 DVN/DVNI series

The housing and the backward-bent radial blade comprise salt water-proof aluminium. The base frame with deep-drawn admission nozzle has been made of galvanised sheet steel. Bird protection grid of powder-coated, galvanised sheet steel. The motors have been suspended free of vibrations. 1-phase motors are speed-adjustable via a transformer in 1 phase, and 3-phase motors additionally 2-phase via a D/Y circuit excluded three-phase motors according to IE classification, they are controllable only via frequency converter!. As protection against overheating, the fans have thermo-contacts with finished lines for connection to a motor protection device. The DVNI models are sound protected by mineral wool 50 mm in thickness.

DVN

Roof fans 120°C vertical blow-out: 3000-31500 m³/h, with backward-bent rotor blades, 1~ and 3~ versions

DVNI

Insulated roof fans 120°C vertical blow-out: 3000-31500 m³/h, with backward-bent rotor blades, 1~ and 3~ versions

Motors

The roof fans have been equipped with an effective motor protection via thermo-contacts. The DVS/DHS/DVN series from size 355 have finished thermo-contacts for connection to a motor protection device.

- Motor outside the airflow
- Conveying agent temperature up to 120°C
- Low sound level
- Operationally safe and maintenance-free
- Extensive programme of accessories
- Vertical air throughflow



Fig. 36: Example DVN/DVNI up to 710

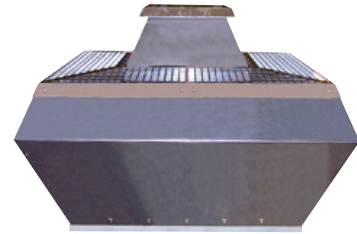


Fig. 37: Example DVN/DVNI 800 - 900

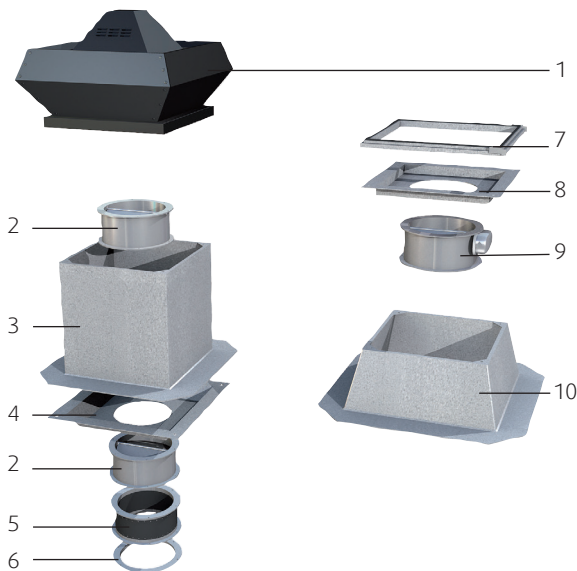


Fig. 38: Example of an installation arrangement with accessories

Legend

1	DVN/DVNI	Fan	6	ASF	Intake flange
2	VKS	Automatic shutter	7	FTG	Hinged frame
3	SSD	Base sound absorber	8	TDA	Adaptor frame
4	ASK	Intake chamber	9	VKM	Shutter
5	ASS	Flexible connection	10	FDS	Flat roof base

5.2.1 Name plates

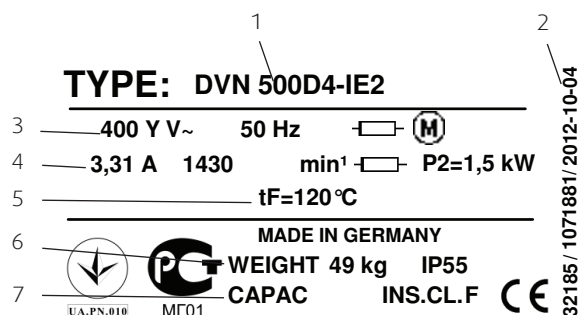


Fig. 39: Example, name plate DVN

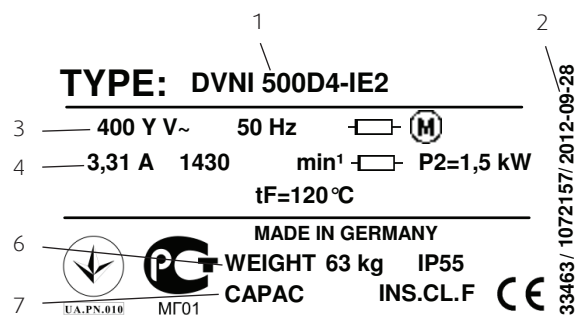


Fig. 40: Example, name plate DVNI

Legend

- 1 Type designation
- 2 Article number/ production number/ date of manufacture
- 3 Voltage / frequency / motor output
- 4 Current / speed min./max. / output
- 5 Conveying agent temperature
- 6 Registration Ukraine, Russia / weight / protection class
- 7 Capacity with 1~/ insulation class motor

5.2.2 Dimensioned drawing of the DVS/DVSI fans

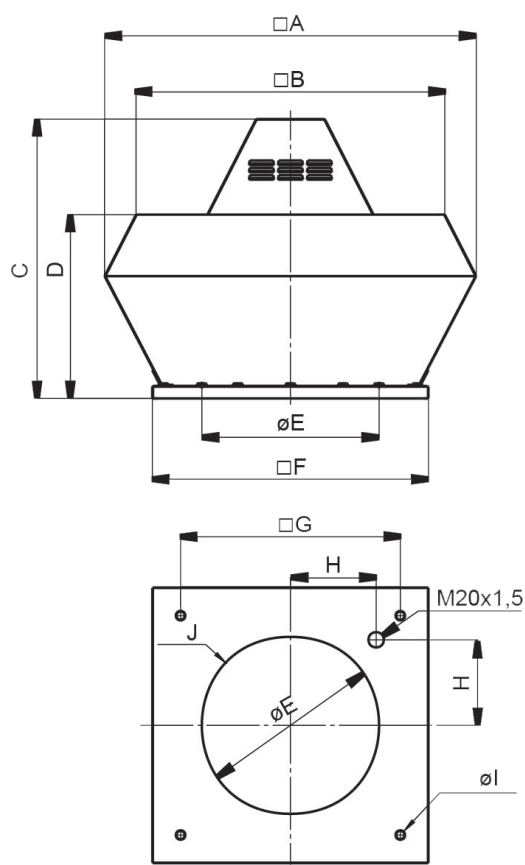


Fig. 41: Dimensioned drawing of fans DVN/DVNI

5.2.3 Dimensions DVN

DVN	□A	□B	C	øD	□E	□F	G	H	øI	J
355 - 400	720	618	600	390	438	595	450	200	12 (4x)	6xM8
450 - 500	900	730	675	465	438	665	535	237	12 (4x)	6xM8
560 - 630	1150	955	900	560	605	939	750	293	14 (4x)	8xM8
710	1350	1178	936	660	674	1035	840	320	14 (4x)	8xM8
800 - 900	1690	-	1180	830	872	1255	1050	433	14 (4x)	8xM8

Table 12: Dimensions of the DVN fans

5.2.4 Dimensions DVNI

DVNI	□A	□B	C	øD	□E	□F	G	H	I	J
355 - 400	874	648	600	439	438	595	450	200	12 (4x)	6xM8
450 - 500	970	730	675	479	438	665	535	237	12 (4x)	6xM8
560 - 630	1315	1035	900	600	605	939	750	293	14 (4x)	8xM8
710	1483	1165	936	729	674	1035	840	320	14 (4x)	8xM8
800 - 900	1590	-	1180	830	872	1255	1050	433	14 (4x)	8xM8

Table 13: Dimensions of the DVNI fans

5.3 Technical data

	DVS/DVSI	DHS	DVN/DVNI
Temperature range [°C] Environment and conveying material	see name plate		
Voltage / current strength	see name plate		
Protection class	see name plate		
Dimensions	see description		
Weight	see name plate		
Rotor diameter	see name plate		
Sound level	see fan data sheet		

Table 14: Technical data of the fan



NOTE

Further technical data can be found in the data sheet of your fan.

5.4 Type key

DHS	500	D	V	A	2	IE2	
							IE2: International Efficiency High degree of efficiency
							Mechanical finish
							Electrical finish
							Number of poles (N/A in EC) V: 4/4-poled variable motor, S: 6/6- poled variable motor, 4: 4/4-poled 6: 6/6-poled
							Motor class E: single-phase AC D: three-phased current
							Rotor diameter
							Fan DVS DVSI DHS DVN DVNI

Fig. 42: Type key

5.5 Safety devices

An internal thermo-contact with finished lines for connection to a motor protection device has been installed as an overheating protection for the motors.



CAUTION

Property damage as a result of motor overheating

- » The motor can overheat and be destroyed if the thermal relays/PTC have not been connected functionally.
- » Thermal relays always connect to a motor protective device!

5.6 Motor data

The motor data can be found on the motor name plate and in the motor manufacturer's technical documents.

6 Installation

6.1 Safety information

- › Mounting may only be carried out by trained, qualified personnel.
- › Comply with the system-related conditions and the requirements of the system manufacturer or plant builder.
- › Safety components, e.g. protective grids, may not be dismantled or circumvented or put out of function.



WARNING

Danger of impact from fan or parts of fans dropping!

- › Check the base before installation for load capacity/strength.
- › When selecting the hoisting device and fitting material observe the weight, tendency to vibrations and shear forces (weight information on the name plate).
- › Wear helmet and protective goggles.

6.2 Preconditions for installation

- Place of installation protected against dust.
- The base or the roof fan must have been integrated into the roof waterproofing.
- For roof inclinations >5° an inclined roof base must be used.
- The minimum distance between the fans if a number of fans are being assembled is 1x rotor diameter.

6.3 Assembly information



WARNING

Risk of crushing in hinged fans by the hinged frame shutting!

- › The hinged frame is very heavy because the fan wheel has been fitted on it.
- › Open and close the hinged frame carefully

- ☞ In installation, do not distort the fan housing.
- ☞ Install the fan such that no vibrations are transmitted to the channel system of the housing frame.
- ☞ Pay attention to the direction of flow (arrows).
- ☞ Provide for contact and intake protection and safety distances according to DIN EN 294 and DIN 24167-1.
- ☞ Ensure uninhibited and constant inflow into the appliance and free blow-out.
- ☞ Ensure that the fan is installed firmly and stably.

6.3.1 Assembly

Examples of assembly can be found in the Description chapter.

- ☞ Ensure secure access to the fan for maintenance and service.
- ☞ Assemble the base frame on a level, flat base (see prerequisites for assembly).
- ☞ Assemble the fan at the corners of the base by means of 4 screws.
- ☞ Seal the contact surface between the base frame and the base with cellular rubber or a foamed band.
- ☞ Install connecting ducts and accessories.
- ☞ Provide for contact/intake protection and safety distances according to EN ISO 13857.



NOTE

In some cases it is better to mount accessories before placing the fan on the roof base.

6.4 Shaft extensions (Types DVN/DVNI)

CAUTION

Damage to the motor and the rotor!

The ball bearings of the motor and the counterbalanced rotor may be damaged by forceful impacts in the assembly of the rotor and/or the shaft extension.

› Attach the rotor and/or the shaft extension to the shaft or the rotor without forceful impacts.



NOTE

For easier assembly and dismantling, the hub can be heated, for example with a hot-air blower.

› Precondition for assembly: the wedge is in the groove provided for it.

› Tool: matching hexagonal wrench and suitable tool for removing, torque wrench for the taper clamping bush.

›

6.4.1 Shaft extension of steel

6.4.1.1 Dismantling

1. Loosen the two screws of the sleeve with the fixed wrench.
2. Loosen the screw at the front of the motor shaft with the fixed wrench.
3. Pull the shaft extension off with the removal tool.

6.4.1.2 Assembly on the shaft

1. Attach the shaft extension such that the sleeve is over the shaft extension so that it can be fitted.
2. Tighten the two screws of the sleeve with the fixed wrench.
3. Tighten the screw at the front of the motor shaft with the fixed wrench.
4. Tighten the two screws of the sleeve with the fixed wrench such that they push against the wedge of the shaft.

6.4.2 Rotor with screw-down hub of aluminium or steel hub

6.4.2.1 Dismantling

1. Loosen the two screws of the hub with the fixed wrench.
2. Pull the rotor off at the intended place with the removal tool.



NOTE on dismantling screw-on hubs of aluminium

If the intended spot cannot be reached:

☞ Break through the rated break point in the aluminium hub and attach the removal tool there.

6.4.2.2 Assembly

1. Place the rotor with aluminium or steel hub on the shaft without using force.
2. Tighten the two screws of the hub with the fixed spanner.
Please consider the fact that the 2 fastening screws push against the straight side of the shaft extension if the shaft extension is small.

6.4.3 Rotor with taper clamping bush

6.4.3.1 Dismantling

1. Loosen the two opposite screws with the fixed spanner.
2. Screw one screw into the middle of the three threaded bores and remove the clamping bush from the shaft.

6.4.3.2 Assembly

1. Insert the clamping bush into the rotor.
2. Slightly tighten the two opposite screws.
3. Place the rotor on the shaft without using force.
4. Tighten the two screws evenly with the torque wrench with the tightening torque according to Table 7.

Type of bush	1008	1108	1210	1215	1310	1610	1615	2012	2517	3020
Tightening moment [Nm]	5,7	5,7	20	20	20	20	20	31	49	92

Table 15: Tightening moments for various types of bush

7. Electrical connection



NOTE

- › The motors contain triple posistors. More than two PTC chains may not be switched in series, as this can lead to undefined cut-outs.
- › Maximum check voltage of PTC is 2,5 V.



WARNING

Hazard from electrical voltage!

- » Electrical connection only by a trained electrician or trained and instructed qualified personnel!
- » Electrical connection in accordance with the valid regulations.
- » Prevent the ingress of water into the connection box.
- » Observe 5 safety rules for the electrical expert!
 - disconnect from the power supply (all-pole),
 - prevent switching on again,
 - test absence of voltage,
 - earthing and short-circuiting,
 - protect adjacent live parts by covers and barriers.

You will find the electrical connection plan on the base plate of the motor on in the terminal box.

☞ Bring about the electrical connection according to the connection plan.



CAUTION

Property damage as a result of motor overheating

- » The motor can overheat and be destroyed if the thermal relays/PTC not been connected.
- » Thermal relays/PTC always connect to a motor protective device!
- » In motors without integrated thermal protection, motor protection devices are to be provided by the customer.

- ☞ Connect the thermo-contacts/posistor connections to a motor protection switching device.
- ☞ In cases of plastic terminal boxes, do not use any gland connections of metal.
- ☞ Use suitable rubber sockets for cable ducts.
- ☞ Lay the mains feed line through a bore from the outside.
- ☞ Tighten the nuts of the cable ducts well in order to guarantee protection class IP68.
- ☞ Screw the lid of the terminal box / repair switch evenly tight.
- ☞ Additionally seal the lid screw connections of plastic terminal boxes with sealing putty.

7.1 Operation of the fans on a frequency inverter

7.1.1 Frequency inversion with sine filter with all-pole effect



NOTE

Do not confuse the all-pole sine filters with motor filters (often also called damping or du/dt filters).

In external rotor motors, an all-pole sine filter has to be fitted between the motor and the frequency inverter for operation on frequency inverters. We recommend the use of sine filters with an all-pole effect for operation of all Systemair fans on frequency inverters.

Sine filters with an all-pole effect provide sine-shaped output voltages phase to phase and phase to protective conductor coming close to the requirements of DIN EN 61000, part 2-2.

- ☞ If you regulate by a frequency inverter, install an all-pole sine filter between the motor and the frequency inverter (all-pole: phase to phase, phase to earth).

7.1.2 Frequency inversion without a sine filter with all-pole effect

In frequency inverters without a sine filter with an all-pole effect, particular measures are necessary in the installation and connection of the motors. These measures can be seen from the operating instructions from the manufacturer of the frequency inverter.

- ☞ In speed control via frequency inverter, please remember that voltage peaks on the motor terminals must be less than 1000 V and voltage increase velocities less than 500 V/μs (IEC 34-17).
- ☞ If you have a long motor feed line, use an output filter between the frequency inverter and the motor.

7.2 Protect the motor

- ☞ Avoid two-phase running:
At 3-phase motors, use an all-pole C- or K-safety cut-out (current consumption, see name plate). (Current consumption see name plate).

7.3 Connection of thermal protection

- ☞ If motor provided with built-in thermal protection, it must be connected to a triggering device and/or a motor-protection device.

8 Commissioning

8.1 Preconditions

- • Mounting and electrical connection have been correctly performed.
- • Installation residuals and foreign objects have been removed from the fan and ducts.
- • Inlet and outlet are free.
- • The safety devices have been fitted (protection against contact).
- • Grounding connected.
- • The thermo-contacts (temperature monitors) have been properly connected to the motor protective device.
- - The motor protective device is functional.
- - The thermal protection is functional.
- • The cable glands are tight.
- • Provided mains connection complies with the data on the name plate. Voltage tolerances are admissible pursuant to IEC 38 at a maximum of +6% or -10%. The nominal current may only exceed the nominal voltage by a maximum of 5 %.
- • Nominal current (from the name plate) does not exceed the mains data.
-



NOTE

If the speed is regulated by voltage reduction, the engine current can exceed the nominal current at low voltages. In such a case, the motor coil is protected by thermo-contacts.

» However, make absolutely show whether a minimum static back pressure has been stated for the fan.

8.2 Commissioning



WARNING

Hazard from electrical voltage!

» » Commissioning by trained and instructed qualified personnel only!

☞ Switch the ventilator on as planned.



WARNING

Hazard from bursting parts!

» When checking the direction of rotation, wear safety goggles.

- ☞ Check:
- the direction of rotation / conveying. The direction of rotation always applies looking at the rotor. If the direction of rotation is wrong, it must be turned by exchanging two phases.
 - smoothly running (eventual vibrations and noise)
 - current with appropriate instrument
 - tightness of all joints

8.2.1 Safety elements

☞ Check, if safety elements e.g. protective guards are fastened.

9 Operation

9.1 Safety notes



WARNING

Hazard from electrical voltage!

- » The device may only be operated by persons
- instructed in function and risks,
 - who have understood handling and can accordingly react.
- » Ensure that children cannot operate or play with the device without supervision.
- » Ensure access only to persons, who can safe handle the device.

9.2 Operating conditions

- Do not operate the fan in an explosion-hazardous atmosphere.
- During operation, touching the rotor must not be possible.
- Safety components must not be bypassed or put out of function.
- The fan may operate inside limits declared on the nameplate.
- Prevent suction of foreign particles, this can destroy the fan.
- Switching frequency:
 - the fan is intended for S1 continuous duty!
 - the controls may not permit any extreme switching duties!
- If the operational leakage current of 3.5 mA is exceeded, the conditions with a view to earthing pursuant to DIN VDE 0160/5.88. ART.6.5.2.1 must be fulfilled.
- Sound development can be reduced by using a sound filter..

9.3 Operation/use

- ☞ Only use the fan in accordance with this operating instruction and the operating instructions of motor.
- ☞ Control the fan during operation for correct function.
- ☞ Switch the fan off as planned.



WARNING

Hazard from electrical voltage and flying parts!

Errors occurring can lead to personal and/or property damage!

Switch the fan off as planned:

- » In cases of a non-typical noise from bearings, vibrations, pressure pulsation.
- » In case of overcurrent, overvoltage or temperature (nameplate)..

9.4 Resetting the thermo-contacts

9.4.1 Automatically resetting thermo-contact (TW)

If the automatically resetting thermo-contact triggers, the fan goes back into operation as soon as the motor has cooled down.

9.4.2 Thermo-contact to be reset manually (TB)

If the thermo-contact to be reset manually (TB) triggers:

- ☞ Reset the thermo-contact (TB) by resetting the TK reset button on the motor with a pointed object (blow-out side of the fan). Some fans have a small opening in the lid for this purpose.

9.4.3 Thermo-contact to be reset manually (SP1)

If the thermo-contact to be reset manually (SP1) triggers:

- ☞ Reset the thermo-contact (SP1) by stopping the current supply for about 10-60 minutes.

9.4.4 Fans with finished thermo-contacts (TK)

- ☞ Reset fans with finished thermo-contact lines (TK) via the external motor protection switch.



NOTE

- » Check whether the rotor is running freely.
- » Get in touch with your supplier if the motor does not restart after examination and/or resetting of the motor protection.

10 Maintenance/troubleshooting



WARNING

Hazard from electrical voltage!

- » Trouble setting and service only by a trained electrician or trained and instructed qualified personnel!
- » Observe rules for safe work while troubleshooting!
- » Observe 5 safety rules for the electrical expert!
 - disconnect from the power supply (all-pole),
 - prevent switching on again,
 - test absence of voltage,
 - earthing and short-circuiting,
 - protect adjacent live parts by covers and barriers.
- » Switch the fan off as planned.



WARNING

Risk of crushing in hinged fans by the hinged frame shutting!

- The hinged frame is very heavy because the fan wheel has been fitted on it.
- » Open and close the hinged frame carefully!

10.1 Preconditions

- Energy supply has been switched off (all-pole current cut-out).
- The rotor is at a standstill

10.2 Faults and troubleshooting

Fault	Possible causes	Remedy
Fan does not run smoothly	Rotor imbalance	Re-balancing by specialist company
	Adhesions to the rotor	Clean carefully, rebalance if necessary
	Material decomposition on the rotor due to aggressive material conveyed	Contact the manufacturer
	Wrong direction of rotation of rotor	Change direction of rotation
	Deformation of rotor due to excessive temperature	Contact manufacturer, install new rotor, check bearings
Air output of fan too low	Wrong direction of rotation of rotor	Change direction of rotation
	Losses of pressure in lines too high	Different line guidance
	Throttle organs not or only partly open	Check opening position on site
	Intake or pressure paths blocked	Remove obstacles
Grinding sounds in operation or start of the fan	Intake line installed twisted	Loosen intake line and realign
Thermo-contacts/posistors have reacted	Capacitor not or not correctly connected	Connect capacitor
	Wrong direction of rotation of rotor	Change direction of rotation
	Motor blocked	Contact the manufacturer
Fan does not reach nominal speed	Electrical switching devices set wrongly	Check and possibly reset setting of switching device
	Motor coil defective	Contact the manufacturer
	Drive motor has been designed wrongly	Contact the manufacturer for check of start torque

Table 16: Troubleshooting

10.3 Cleaning

Regular cleaning of the fan prevents unbalance. A filter extends the cleaning intervals.

Recommendation: Install a filter monitor.



WARNING

Hazard from electrical voltage!

- » Interior cleaning of the fan only by a trained electrician or trained and instructed qualified personnel!
- » Observe 5 safety rules for the electrical expert!
 - disconnect from the power supply (all-pole),
 - prevent switching on again,
 - test absence of voltage,
 - earthing and short-circuiting,
 - protect adjacent live parts by covers and barriers.
- » Switch the fan off as planned.



CAUTION

Danger from hot surfaces!

- » During maintenance and cleaning wear protective gloves!

- ☞ Keep casing clean and clean it if necessary with a brush.
- ☞ Do not use a steel brush.
- ☞ **Do not use a high-pressure cleaner ("steam jet cleaner") under any circumstances.**
- ☞ Do not bend the fan blades when cleaning.
- ☞ Do not use any detergents for interior cleaning.
- ☞ When cleaning the rotor, pay attention to balance weights which have been positioned.

10.4 Maintenance, service

The fan is by built-in for-life lubricated ball bearings as far as possible low-maintenance product. After their life time (app. 30.000 to 40.000 h), a replacement of the bearings is necessary.

In 1~motors, the capacity of the capacitor can drop in the course of life (life expectancy about 30,000 h acc. to VDE 0560-8).



WARNING

Hazard from electrical voltage!

Observe at maintenance and service:

- » Rotor must stand still.
- » Electrical circuit must be interrupted and secured against restarting.
- » Observe the rules for safe work.

- ☞ Pay attention to a non-typical noise from bearings.
- ☞ For replacement use only original ball bearings (special grease) of Systemair.
- ☞ For all other damages (e.g. damage to winding) please contact our Service Department. Defective fans must be replaced completely. Repairs may be accomplished only in the company of manufacturer and by the manufacturer. You find the address on the back of these operating instructions.

10.5 Spare parts



NOTE

You can obtain original replacement parts from Systemair. They have been adapted to the roof fans.

- ☞ Only use original replacement parts.
- ☞ In case of order of spare parts please specify the serial number of the fan. You can find it on the name plate.

11 Uninstalling/dismounting



WARNING

Hazard from electrical voltage!

- » Switching off and de-installation only by a trained electrician or trained and instructed qualified personnel!
- » Observe 5 safety rules for the electrical expert!
 - disconnect from the power supply (all-pole),
 - prevent switching on again,
 - test absence of voltage,
 - earthing and short-circuiting,
 - protect adjacent live parts by covers and barriers.

- ☞ Carefully disconnect all the electrical lines.
- ☞ Disconnect the fan from the supply connections.



WARNING

Danger of impact from falling fan or parts of the fan!

- » When selecting the hoisting device and fitting material observe the weight, tendency to vibrations and shear forces (weight information on the name plate).
- » Wear a safety helmet and safety goggles!



CAUTION

Danger from cutting edges!

- » Wear protective gloves when dismantling!
- » Dismount carefully.

- ☞ Carefully remove the fastening material.
- ☞ Lift the fan with an appropriate hoisting device on the provided lifting eyes.
- ☞ Place the fan on appropriate pallet.

12 Disposal

Both the appliance and also the matching transport packaging predominantly comprise recycling-capable raw materials.

12.1 Disposal of the fan

Should the fan be disposed, proceed as follows:

- ☞ Switch the fan free of voltage.
- ☞ Disconnect the fan from the supply connections.
- ☞ Disassemble the fan into its components.
- ☞ Separate the parts according to
 - reusable material
 - material groups to be disposed (metal, plastics, electrical parts, etc.)
- ☞ Provide for the recycling of material. Consider the national regulation.

12.2 Disposal of packaging

- ☞ Provide for the recycling of material. Consider the national regulation.

13 Declaration of Conformity

EG-Konformitätserklärung

EC Declaration of Conformity



Der Hersteller:
The Manufacturer

Systemair GmbH
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D-97944 Windischbuch
Tel.: +49-79 30 / 92 72-0

erklärt hiermit, dass folgende Produkte:
certified herewith that the following products:

Produktbezeichnung: product designation	Dachventilatoren Roof fans
Typenbezeichnung: type designation	DVS; DHS; DVSI; DVN/DVNI; DVC/DVCI; DHA, DVP
Ab Baujahr: Since year of manufacture	2014

allen einschlägigen Bestimmungen der Maschinen Richtlinie RL 2006/42/EG entspricht.
ensure all relevant regulations of machinery directive RL 2006/42/EG.

Die Maschine entspricht weiterhin allen Bestimmungen der Richtlinien Elektrische Betriebsmittel (2006/95/EG), Elektromagnetische Verträglichkeit (EMV) (2004/108/EG) und RoHS-Richtlinie 2011/65/EU.
The products ensure furthermore all regulations of directives electrical equipment and electromagnetic compatibility (EMC) (2004/108/EG) and RoHS-Directive 2011/65/EU.

Folgende harmonisierte Normen wurden angewandt:
The following standards are used:

DIN EN ISO 12100:2011-03	Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze - Risikobeurteilung und Risikominderung Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 13857:2008	Sicherheit von Maschinen - Sicherheitsabstände gegen das Erreichen von Gefahrstellen mit den oberen und unteren Gliedmaßen Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
EN 60204-1:2006	Sicherheit von Maschinen - Elektrische Ausrüstungen von Maschinen, Teil 1: Allgemeine Anforderungen Safety of machinery - Electrical equipment of machines - Part 1: General requirements
DIN EN 61000-6-1:2007	Elektromagnetische Verträglichkeit (EMV) - Teil 6-1: Fachgrundnormen - Störfestigkeit für Wohnbereich, Geschäfts- und Gewerbebereiche sowie Kleinbetriebe Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments
DIN EN 61000-6-3:2011	Elektromagnetische Verträglichkeit (EMV) - Teil 6-3: Fachgrundnormen - Störaussendung für Wohnbereich, Geschäfts- und Gewerbebereiche sowie Kleinbetriebe Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

Boxberg,

30.12.2013

Datum/date



ppa. Harald Rudelgass, Technischer Leiter

ppa. Harald Rudelgass, Technical director