OUTDOOR CABINETS

CATALOGUE

2003

ZPAS®

Table of contents

Designing Consultant: Janusz Jagodziński, www.pointdesign.republika.pl DTP & Printing by: Usługi Poligraficzne Bogdan Kokot vel Kokociński, www.kokocinski.pl

OUTDOOR CABINETS

Zakład Produkcji Automatyki Sieciowej S.A.

About the company

The company **Zakład Produkcji Automatyki Sieciowej (ZPAS)** was founded in 1973 initially as the Experimental Department of the Power System Automation Institute of Wrocław. At the beginning of 1980s it became the part of the Research and Manufacturing Centre for Power System Automation. In 1990 the company achieved full independence and in 1992 was transformed into a private stock company. Experience got in 30 years history, and mainly during political changes which started in 1989, enable us to keep steady development of the company, extension of infrastructure and forming modern process lines.

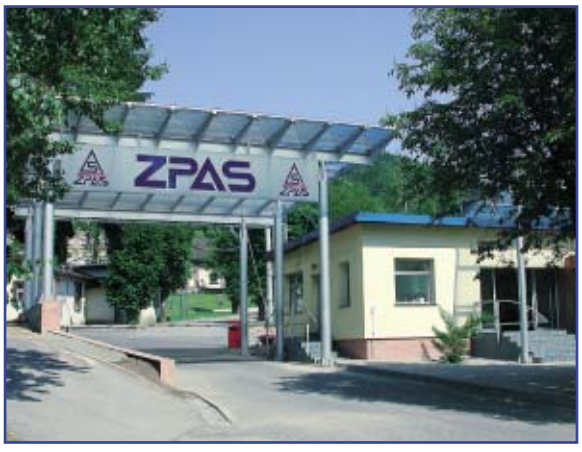
Modern and high-tech equipment, well-educated and selected personnel determine the guarantee of high quality and flexibility of company's offer. ZPAS S.A. has got both the Quality Assurance System certificate ISO 9001:2000 and Environmental Management System certificate ISO 14001:1996.

The product line-up of ZPAS S.A. mainly refers to needs of relatively young IT branch. Our products are frequently important part of teletechnical protection of modern telecommunication, computing and power industry systems.

New technological solutions made by ZPAS S.A. created uniform and comprehensive product line-up. Due to these solutions, it was possible to join previously divided groups of products of computing and power industry branch.

We offer the following product line-up and services:

- 19", 21" and 10" cabinets for data and telecommunication networks (in floor-standing and wall-mounted versions),
- outdoor cabinets,
- cabinets in EMC standard,
- structural cabling system PowerLink,
- fibre optic distribution frames in OptiTel and OptiLan series,
- power industry cabinets,
- mimic panels,
- dispatch and control desks,
- system of supervising climatic conditions ZPAS-Control M-Bus,
- products made of stainless and acid-proof steel,
- other products on customers' request.



Gateway to the plant


Administration Building

In 2002 we introduced brand new products: OptiTel - system of module fibre optic distribution frames, PowerLink - structural cabling system, SZE2 - new series of power industry cabinets, SD and SJ - wall-mounted cabinets, KCS-1 - cassette of central signalling, ZPAS-Control M-Bus - system of supervising climatic conditions. All detailed information about the product line-up are on our website: **http://www.zpas.com.**


View of the upper part of the plant

About the company

Road to the lower part of the plant

View from the company's car park

Marketing Department Building

Electrical Plant Building

The plant is located on the former coal mine grounds RUDOLF (after 1945 coal plant BOLESŁAW) and the former steelworks BARBARA. In 1948 the buildings of steelworks became property of the Central Repair Shop for Coal Industry. From 1964 to 1973 this was a foundry belonging to Świdnica Wagons Factory.

Historic buildings from the beginning of the second half of 19th century of the former steelworks BARBARA (presently ZPAS's Mechanical Plant) are registered as historic monuments. All remodelling and development must conform to preservation service directives.

Mechanical Plant

About the company

1


2

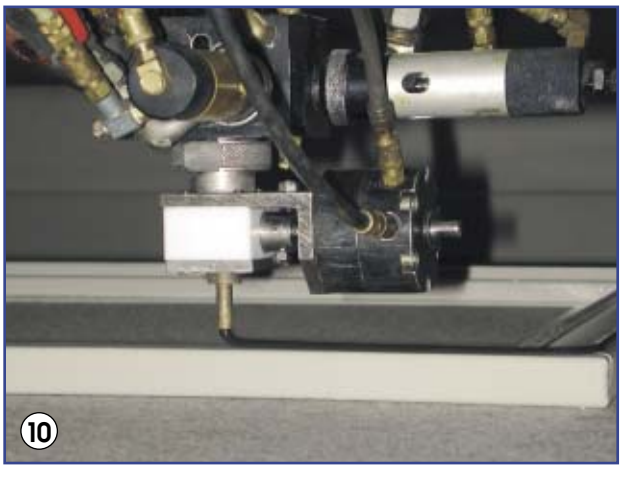
3


4


5

ZPAS S. A. Mechanical Plant: 1. - 3. numerically controlled machinery for sheet working, 4. - 5. welding robot.

About the company



ZPAS S. A. Mechanical Plant: 6. - 8. automated powder paint shop, 9. - 10. cast gasket machinery.

References

ZPAS S.A., as the manufacturer of outdoor cabinets, co-operates with well-known companies like: SIEMENS, TELETRA KOMTRANS, TP S.A., ASCOM, DGT, TELBANK, TELEFONIA POLSKA ZACHÓD, TELEFONIA PILCKA, MSR TRAFFIC, ELTEK POLSKA, ENERGIS POLSKA.

References

ISO 9001, ISO 14001

TÜV CERT

CERTIFICATE

The TÜV CERT Certification Body
of TÜV Rheinland Euroqua Kft.
certifies in accordance with TÜV CERT procedures that

ZAKŁAD PRODUKCJI
AUTOMATYKI SIECIOWEJ S.A.
w Przygórzu
PL 57-431 Wolibórz
Poland

has established and applies a quality system for

data communication and power housings, external access cubicles, fiber-optic switchings, dispatch and control desks, synoptic mosaic boards, elements of structural cabling.

An audit was performed, Report No. 6807
Proof has been furnished that the requirements according to
EN ISO 9001:2000
are fulfilled. The certificate is valid until August 2004.
Certificate Registration No. 75 100 6807

Warsaw, 21.09.2001

TÜV

TÜV-CERT - Certification Body of TÜV Rheinland Euroqua Kft.

TÜV Rheinland / Berlin-Brandenburg

TÜV

CERTIFICATE

The Certification Body for Environmental Management Systems
of TÜV Anlagentechnik GmbH
hereby certifies that the enterprise

Zakład Produkcji Automatyki Sieciowej SA
w Przygórzu, 57 – 431 Wolibórz
Polska

has established and applies an environmental management system for

data communication and power housings, external access cubicles, fiber-optic switchings, dispatch and control desks, synoptic mosaic boards, elements of structural cabling

The audit was performed,

Report No. 010785

Proof has been furnished, that the requirements according to

DIN EN ISO 14001 : 1996

are fulfilled

The certificate is valid until September 2004

Certification Registration No. 01 104 010785

Cologne, 01st September 2001

Certification Body for Environmental Management Systems
TÜV Anlagentechnik GmbH

GUARANTEE

Note: ZPAS S.A. reserves the rights to changes in construction of its products.

General information

In the period of last few years, the increase of telephone-users and density of ducts surrounding cities which are endangered on easy damage, forces the manufacturers of telecommunication links to work out and use ducts under the earth-surface. Together with the increase of transferring wider frequency band, it appeared that there are some difficulties with providing appropriate quality of transmission with using copper wires. Wider pass bands in fast networks, like Gbit Eternet or ATM, means necessity of assistance the copper wires with complicated electronic systems. That is the reason why fibre optics became alternative solution to copper wires.

Not mentioning creation of brand-new networks, one of the biggest tasks for telecommunication network is protection of already made investments and re-usage of the biggest possible part of already existing cable-networks. This possibility is given by access systems. Access systems enable gradual changing distributive copper wires with fibre optics. This solution allows using existing exchange lines not only for transmission telephone and ISDN services, but also for transmission 2Mb/s flux with using digital exchange line technology.

The technology of access exchange guarantees updating existing transmission network with usage of valuable electronic equipment. In order to lower the costs of modernisation, the most common solution is joining old part of installation (copper wires) with new one (fibre optic cables) in outdoor access cabinets (like SZD).

The main task of outdoor access cabinet is full protection of installed equipment. The cabinet fulfils the requirements of protection against negative influence of environment (rain and snow falls, sun, dust etc) and vandalism. Another very important task of SZD cabinets is providing specified climatic conditions which depend on installed equipment.

The construction of SZD cabinet enables optional arrangement of inside equipment. It makes possible to use SZD cabinets not only in access systems, but also in each case where the protection of outdoor equipment working in extreme conditions is very important. SZD cabinets produced by ZPAS have been already used in telecommunication industry, on ships, platforms, stamping press and intermediate pumping gas stations, heat and power stations, power industry plants, refineries, cement plants, for protection of machinery for outdoor lightening operating etc.

SZD cabinets

TECHNICAL DATA

Material:

Cabinet's framework - aluminium profile,
Side shields and doors - aluminium profile,
Roof (internal mantle) - 1.5 mm thick aluminium sheet,
Roof (external mantle) - 1.5 mm thick stainless steel,
Plinth - 2.0 mm thick stainless steel.

Surface finishing:

Aluminium profiles of the framework and aluminium frames of shields and doors:
anodised (in EMC version chromate coated and powder painted in RAL 7032).

Aluminium profiles of shields and doors:
chromate coated and powder painted in RAL 7032.

Internal mantle of the roof:
natural aluminium.

Plinth and external mantle of the roof:
powder painted in RAL 7032.

In EMC version of the cabinet conductivity between each elements of the construction is ensured.

Protection degree:
Standard SZD 100 and SZD 200 cabinets have got protection degree IP 54 in accordance with PN 92/E-08106. If required it can be increased up to IP 65.

NOTE:

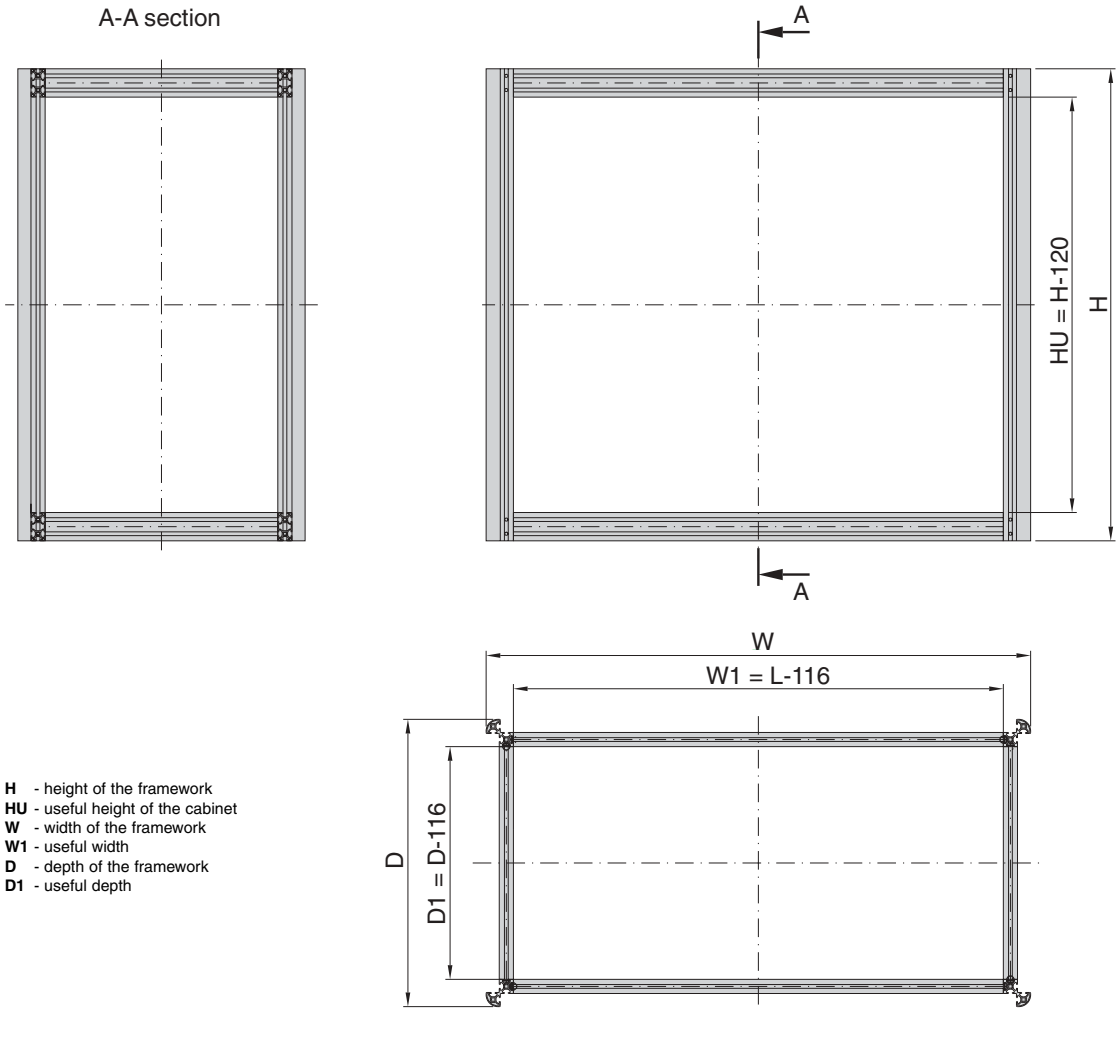
ZPAS reserves the rights to implement changes in construction.
All technical solutions used in construction of SZD cabinets are reserved in Patent Office of Poland.

Framework

Supporting structure of the cabinet is the framework made of aluminium profiles, which are joint together by adaptors. In profiles there are special ducts, which enable the assembly of swing frame or optional creation of supporting structure for mounting equipment.
The framework of the cabinet is in standard set on the plinth. The height of the plinth depends on customer's request: from 40 to 300 mm.

Framework of SZD cabinet set on the plinth

Profile connection



H - height of the framework
HU - useful height of the cabinet
W - width of the framework
W1 - useful width
D - depth of the framework
D1 - useful depth

CONSTRUCTION OF SZD

Doors, side shields

Doors and side shields of SZD cabinets are made of aluminium rail-profiles which are fastened together. The aluminium profiles make double ventilation wall. In the cabinet there are mounted two-point rod-latch locks. The door handle is made of zinc and aluminium alloy. On customer's request it is possible to have optional type of patent insert (ABLOY, KABA, EMKA, etc). It is possible to make special opening for temporary cable entry (e. g. from outside power supply unit).

Lock - view from the inside of the cabinet

Cable entry - view from the inside of the cabinet

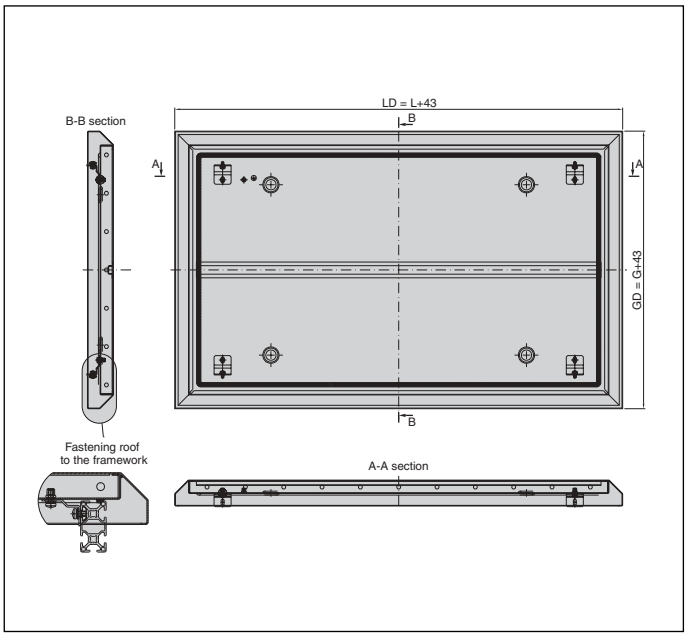
Cable entry - view from the outside of the cabinet

Lock - view from the outside of the cabinet

Standard roof for SZD

Standard roof for SZD cabinets is made of two mantles of 1.5 mm thick sheet steel. Between the mantles there is a gap, which enables to carry away accumulated condensation water.

A part of standard roof

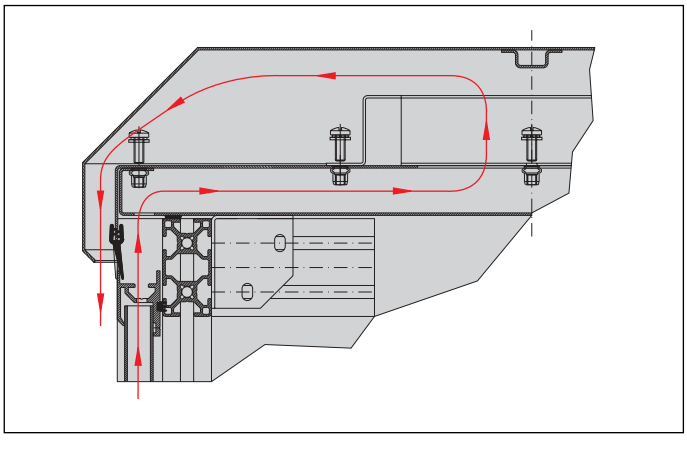


Roof in special configuration

When it is necessary to cool the cabinet not only by ventilating through side shields and doors but also additional cooling system, it is possible to use special roof made of three mantles of sheet steel. This solution creates two air chambers in one of them it is possible to fasten fan units which increase the airflow.

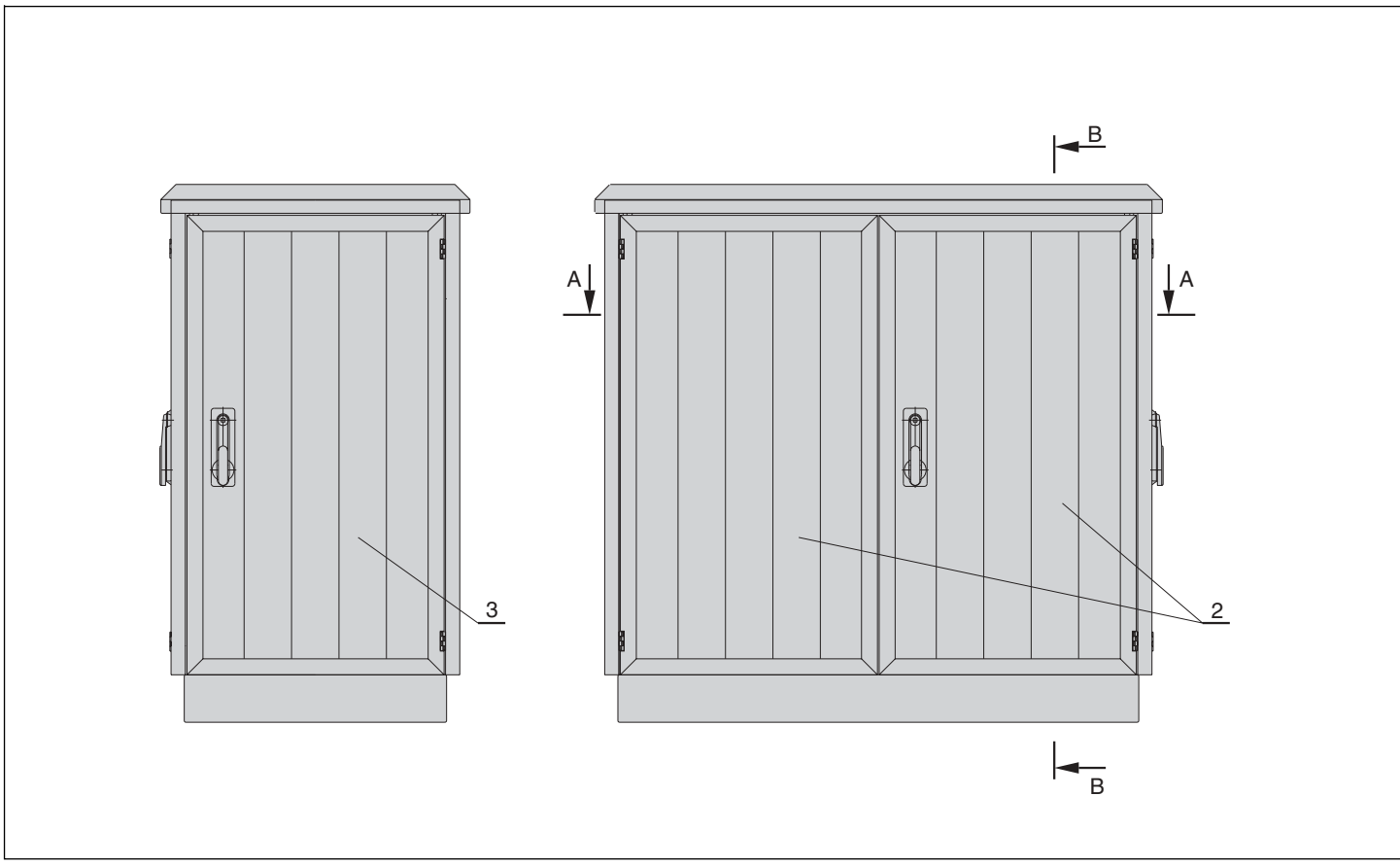
Applying two-chambers roof causes, that the total height of the cabinet is increased by 100 mm.

Additionally, it is possible to fix lifting eyes into the roof.



A part of roof in special configuration

Dimensions of SZD cabinets



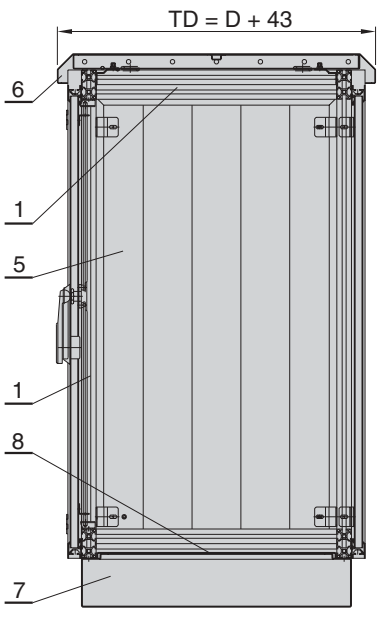
CONSTRUCTION OF SZD

SZD cabinet has got modular construction. Main part of the cabinet is made of panels (which are fastened by latches) and aluminium profiles. Both panels and profiles can be cut for any length. This kind of construction enables to achieve each required dimension. Every cabinet is designed and manufactured on individual request (together with interior installation - it is possible to create universal partitions and supporting structure of the cabinet). When ordering the cabinet, it is necessary to take into account, that useful dimensions are different than total dimensions - in accordance with presented drawings.

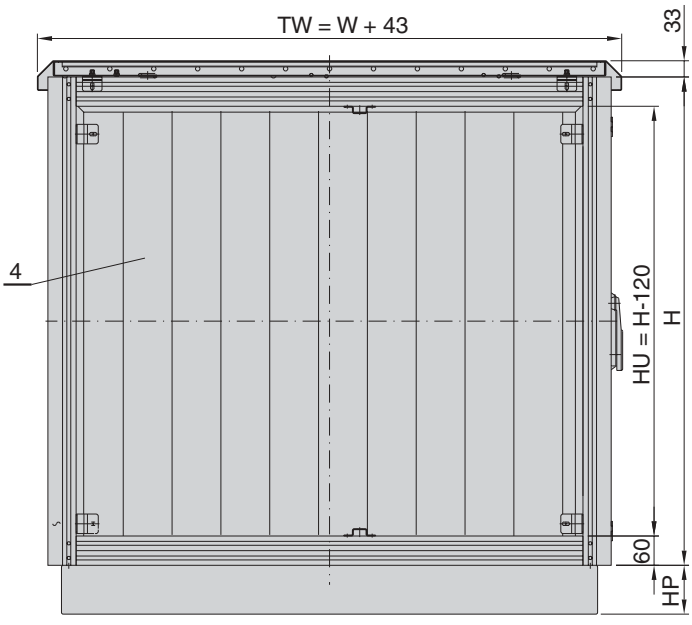
SZD cabinet set on plinth

Dimensions of SZD cabinets

B-B section

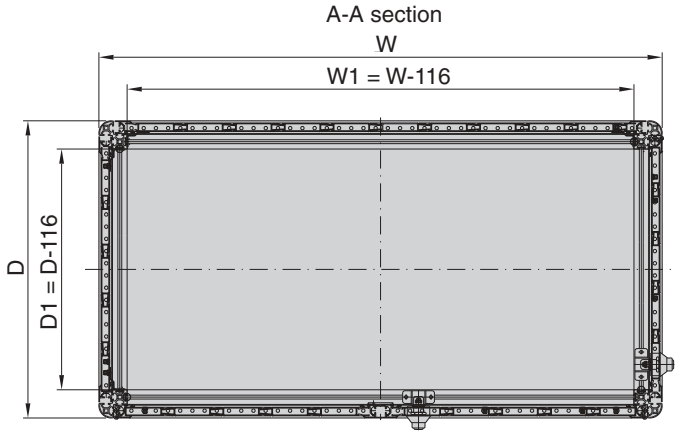


Front view without the door



Height of the plinth HP - by customer's needs

A-A section



CONSTRUCTION

1. Framework
2. Two-wings front door
3. Side door
4. Rear shield
5. Side shield
6. Roof
7. Plinth
8. Bottom plate

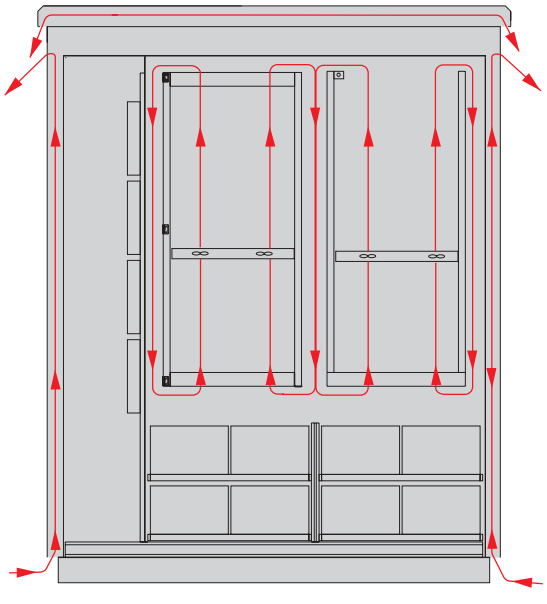
TD - total depth of the cabinet
D - depth of the framework
D1 - useful depth of the cabinet
TW - total width of the cabinet
W - width of the framework
HP - height of the plinth
W1 - useful width of the cabinet

Ventilation system

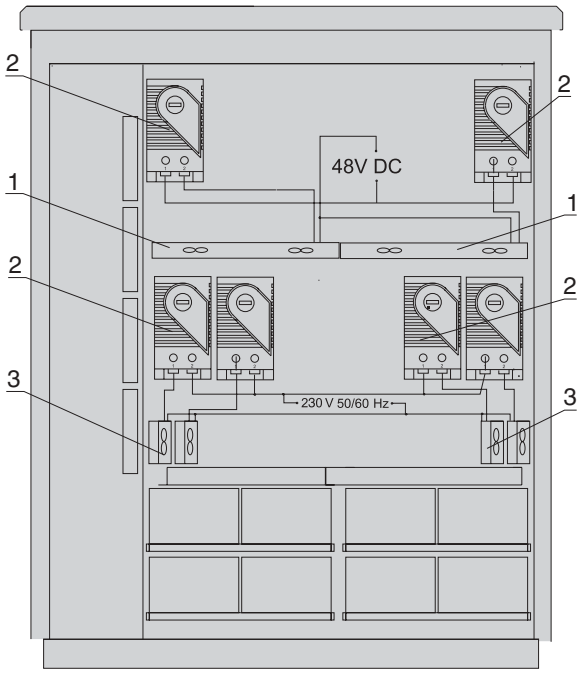
WITH FORCED INTERNAL AND FREE EXTERNAL AIR CIRCULATION

Fan units are mounted inside SZD cabinet in order to shorten time of carrying away heat dissipation emitted by equipment installed in the cabinet. Fan units cause faster air movement inside the cabinet and in the cabinet's walls. In case of low temperature the system of heaters joint with thermostats is applied. Above solutions enable failure-free operation of access systems.

Diagram of air flow



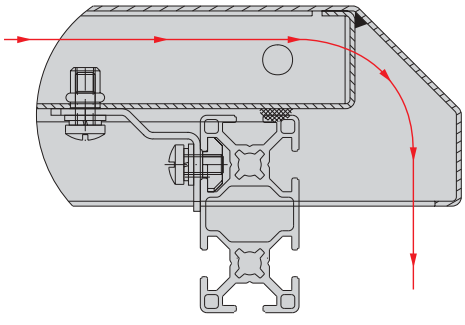
Pictorial diagram of supplying fan units PW and heaters



CONSTRUCTION

1. Fan unit
2. Thermostats
3. 400 W heaters with fan 220 V, 50/60 Hz

Air flow in standard roof



Fan unit with six cooling fans

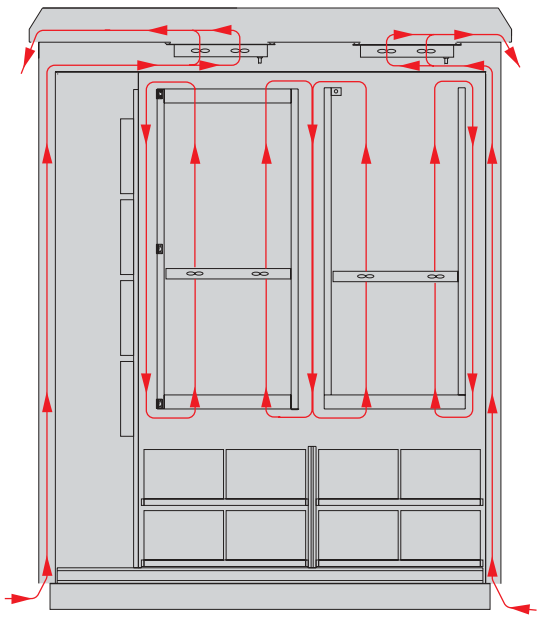
VENTILATION OF SZD CABINET

Ventilation system

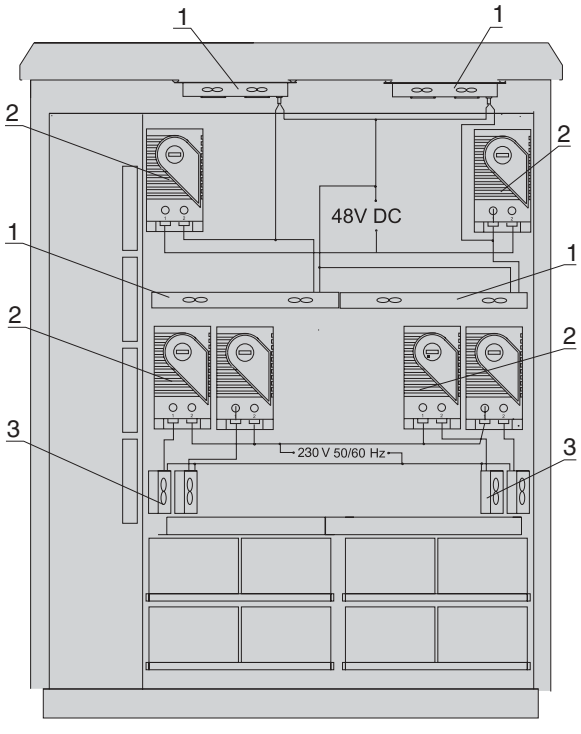
WITH FORCED INTERNAL AND EXTERNAL AIR CIRCULATION

In cabinets which are endangered of strong solar radiation, it is recommended to use ventilation with double air circulation. In this solution, air circulates inside the cabinet and additionally flows between the double walls of the cabinet. Moreover, circulation of external air is forced by fan units mounted in the roof. In case of low temperature the system of heaters joint with thermostats is applied. Above solutions enable failure-free operation of access systems.

Diagram of air flow



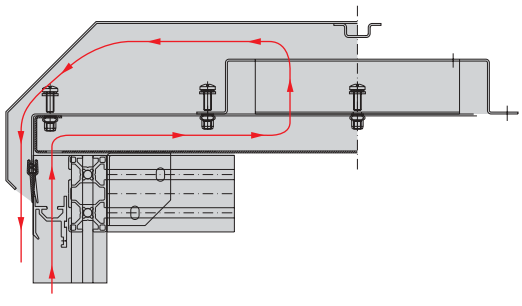
Pictorial diagram of supplying fan units PW and heaters



CONSTRUCTION

4. Fan unit
5. Thermostats
6. 400 W heaters with fan 220 V, 50/60 Hz

Air flow in non-standard roof



Fan unit with four cooling fans

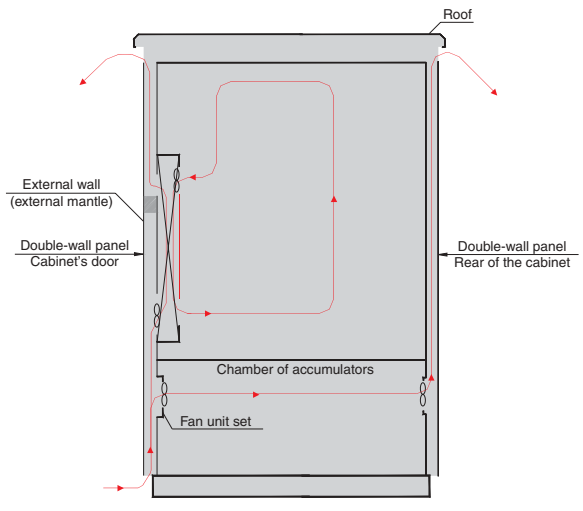
Ventilation system

BASED ON USE OF HEAT EXCHANGER AND DIRECT VENTING

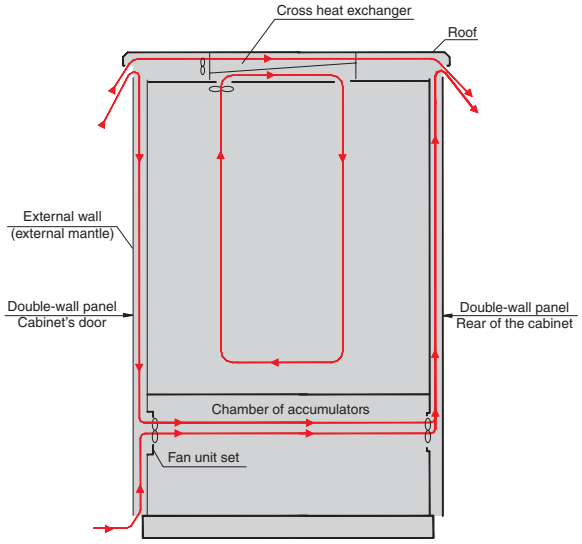
In order to intensify the cooling process in cabinets with installed equipment with high heat dissipation, there is solution based on cross heat exchanger. Heat exchanger is a type of radiator, where there are two air flows: warm from the inside of the cabinet (radiator's plates collect heat) and second from the outside of the cabinet (cooled by exchanger). Cross system of the heat exchanger enables to retain tightness of the cabinet and external and internal air flows do not mix together.

Another solution is direct venting of the cabinet, which is used when it is necessary to carry away lots of heat dissipation. In cabinet's roof or on the door there are mounted fans which pull external air (through double wall and filters system). External air goes through appliances which emit heat and is carried away outside by roof or perforations on the doors.

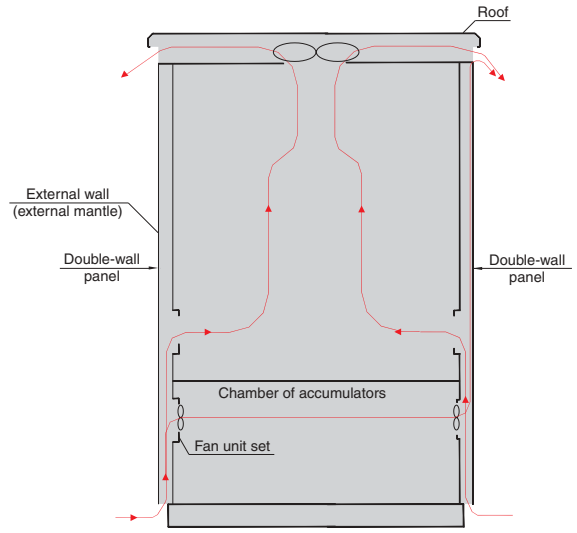
Pictorial diagram of air circulation in the cabinet with heat exchanger mounted on the door.



Pictorial diagram of air circulation in the cabinet with heat exchanger mounted on the roof.



Pictorial diagram of air circulation in the cabinet with direct venting

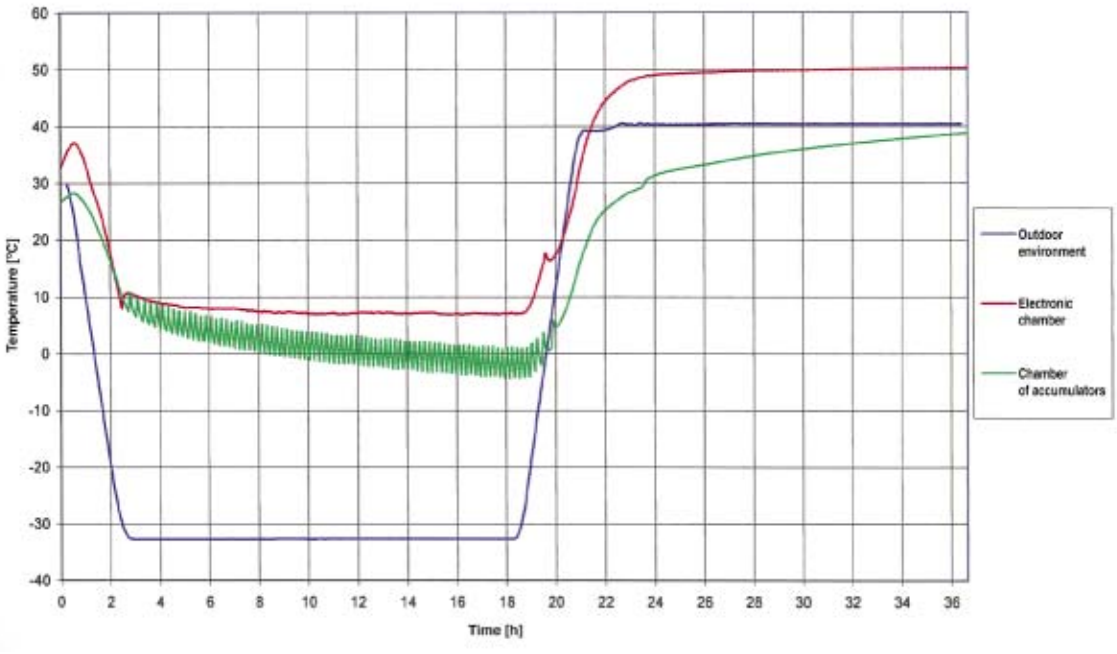


Climatic tests of SZD

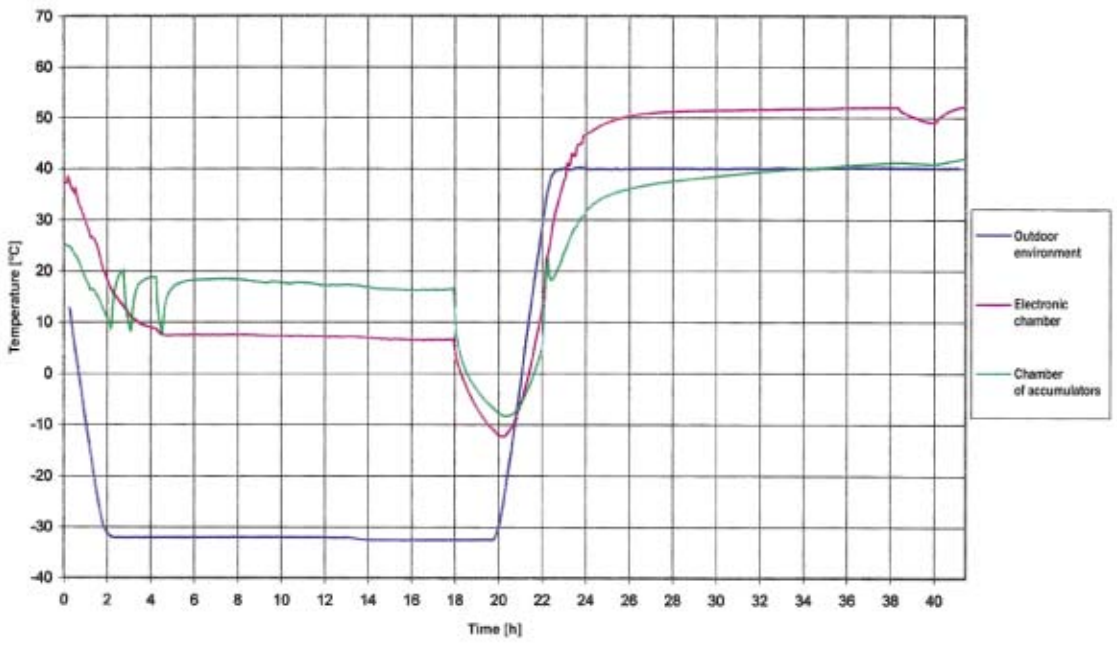
SZD cabinets equipped with access systems of different suppliers (Siemens, Ericsson, DGT, Ascom) have been climatic tested at Laboratory of Telecommunications Accessories and Devices Research in Szczecin. SZD cabinet was placed in climatic chamber, were it was first tested for 12 hours in temperature -33°C and then for 12 hours in temperature +40°C.

Below, there are some climatic diagrams.

Averaged temperatures in electronic chamber and chamber of accumulators' battery



Averaged run of temperature in electronic chamber and chamber of accumulators' battery with tests of failure power supply of the cabinet



Protection degree IP tests

SZD cabinets have been tested for protection degree, IP rated. Measurements have been made in following sequences:

- measurement of IP degree
- vibration test on the shaker
- next measurement of IP degree

Both tests (before and after vibration) proved IP 65 degree

The tests were carried out in two independent laboratories:

- Laboratory of Telecommunications Accessories and Devices Research in Szczecin
- ZPBE Energo Pomiar

TESTS OF SZD CABINETS

POLISH CERTIFICATES OF IP 65 PROTECTION

ZPBE ENERGOPOMIAR Sp. z o.o.
Zakład Techniki i Gospodarki Cieplnej i Elektroenergetycznej
ul. Gen. J. Sowińskiego 3
44-101 Gliwice
tel. (0-32) 237 63 00

ŚWIADECTWO SPRAWDZENIA
STOPNIA OCHRONY IP-65 SZAFY DOSTĘPOWEJ TYPU SZD - JEDNODRZWIOWEJ

Dział Automatyki i Pomiarów

Numer: 443/100
Data wydania: 21.03.2003r.
Strona / stron: 1 / 1

1. CHARAKTERYSTYKA TECHNICZNA

Przedmiot sprawdzenia: Stopień ochrony IP szafy dostępowej typu SZD - jednodrzwiowej wg PN-92/E-08106
Producent: Zakład Produkcji Automatyki Sieciowej S.A. w Przygórzu
Oznaczenie szafy: typ SZD

2. ZLECENIODAWCA:
Zakład Produkcji Automatyki Sieciowej S.A. w Przygórzu
57-431 WOLIBÓRZ

3. WARUNKI SPRAWDZENIA

Zakres sprawdzenia: oględziny zewnętrzne, sprawdzenie zgodności wymiarów z dokumentacją techniczną, sprawdzenie stopnia ochrony przed dostępem do części niebezpiecznych oznaczone pierwszą charakterystyczną cyfrą 6 - Tablica 1 wg PN-92/E-08106, sprawdzenie stopnia ochrony przed obcymi ciałami stałymi oznaczone pierwszą charakterystyczną cyfrą 6 - Tablica 2 wg PN-92/E-08106, sprawdzenie stopnia ochrony przed wodą oznaczone drugą charakterystyczną cyfrą 5 - Tablica 3 wg PN-92/E-08106
Wybór szaf do badań: szafę wybrano losowo z przedmiotowej partii
Warunki środowiskowe: temperatura otoczenia 20 °C, wilgotność względna 50%, ciśnienie barometryczne 970 kPa, temperatura wody wodociągowej 18 °C
Inne dane: szafa dostępowa typu SZD - jednodrzwiowa nr fabryczny 1, nr dokumentacji technicznej 1319-1-3 o wymiarach: szerokość 750 mm, głębokość 750 mm, wysokość 1365 mm, ciężar 95 kg

4. WYMAGANIA

4.1 PN-92/E-08106 - Stopnie ochrony zapewniane przez obudowy (KOD IP)
4.2 Specyfikacja zamawiającego

5. WYNIK SPRAWDZENIA

Stwierdza się, że szafa dostępowa typu SZD - jednodrzwiowa, spełnia stopień ochrony IP-65 wg PN-92/E-08106

Badania wykonał: J. Hibner
Kierownik Działu: mgr inż. A. Łupa
ZAKŁADY POMIAROWO-BADAWCZE ENERGETYKI ENERGOPOMIAR Sp. z o.o. TEL. 237-66-00, FAX 231-65-42 ul. gen. Józefa Sowińskiego 3 SKR. POCZT. 402 44-101 GLIWICE (1)
Dyrektor Zakładu: mgr inż. J. Penar

ZPBE ENERGOPOMIAR Sp. z o.o.
Zakład Techniki i Gospodarki Cieplnej i Elektroenergetycznej
ul. Gen. J. Sowińskiego 3
44-101 Gliwice
tel. (0-32) 237 63 00

ŚWIADECTWO SPRAWDZENIA
STOPNIA OCHRONY IP-65 SZAFY DOSTĘPOWEJ TYPU SZD - DWUDRZWIOWEJ

Dział Automatyki i Pomiarów

Numer: 443/200
Data wydania: 21.03.2003r.
Strona / stron: 1 / 1

1. CHARAKTERYSTYKA TECHNICZNA

Przedmiot sprawdzenia: Stopień ochrony IP szafy dostępowej typu SZD - dwudrzwiowej wg PN-92/E-08106
Producent: Zakład Produkcji Automatyki Sieciowej S.A. w Przygórzu
Oznaczenie szafy: typ SZD

2. ZLECENIODAWCA:
Zakład Produkcji Automatyki Sieciowej S.A. w Przygórzu
57-431 WOLIBÓRZ

3. WARUNKI SPRAWDZENIA

Zakres sprawdzenia: oględziny zewnętrzne, sprawdzenie zgodności wymiarów z dokumentacją techniczną, sprawdzenie stopnia ochrony przed dostępem do części niebezpiecznych oznaczone pierwszą charakterystyczną cyfrą 6 - Tablica 1 wg PN-92/E-08106, sprawdzenie stopnia ochrony przed obcymi ciałami stałymi oznaczone pierwszą charakterystyczną cyfrą 6 - Tablica 2 wg PN-92/E-08106, sprawdzenie stopnia ochrony przed wodą oznaczone drugą charakterystyczną cyfrą 5 - Tablica 3 wg PN-92/E-08106
Wybór szaf do badań: szafę wybrano losowo z przedmiotowej partii
Warunki środowiskowe: temperatura otoczenia 20 °C, wilgotność względna 50%, ciśnienie barometryczne 970 kPa, temperatura wody wodociągowej 18 °C
Inne dane: szafa dostępowa typu SZD - dwudrzwiowa nr fabryczny 2, nr dokumentacji technicznej 1171-1-3 o wymiarach: szerokość 1600 mm, głębokość 655 mm, wysokość 1185 mm, ciężar 180 kg

4. WYMAGANIA

4.1 PN-92/E-08106 - Stopnie ochrony zapewniane przez obudowy (KOD IP)
4.2 Specyfikacja zamawiającego

5. WYNIK SPRAWDZENIA

Stwierdza się, że szafa dostępowa typu SZD - dwudrzwiowa, spełnia stopień ochrony IP-65 wg PN-92/E-08106

Badania wykonał: J. Hibner
Kierownik Działu: mgr inż. A. Łupa
ZAKŁADY POMIAROWO-BADAWCZE ENERGETYKI ENERGOPOMIAR Sp. z o.o. TEL. 237-66-00, FAX 231-65-42 ul. gen. Józefa Sowińskiego 3 SKR. POCZT. 402 44-101 GLIWICE (1)
Dyrektor Zakładu: mgr inż. J. Penar

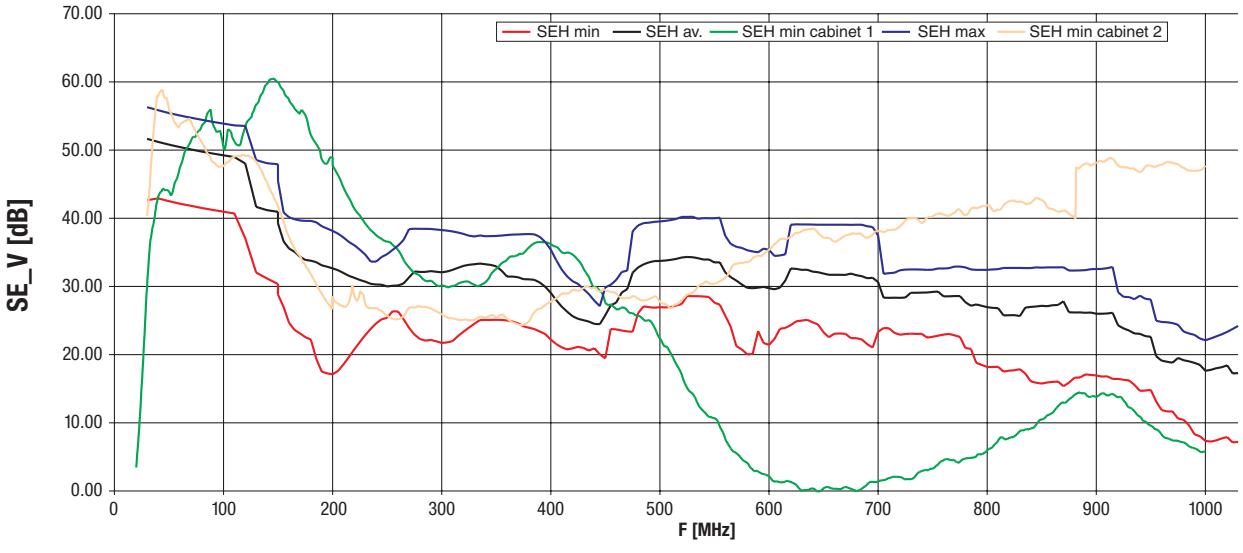
Screening efficiency tests

SZD cabinet was subjected to screening efficiency tests at the Telecommunication and Acoustic Laboratory of the Institute of Technology in Wrocław. On the basis of measurements, the cabinet's screening efficiency was specified in the magnetic field's frequency range of 100 kHz up to 1000 MHz:

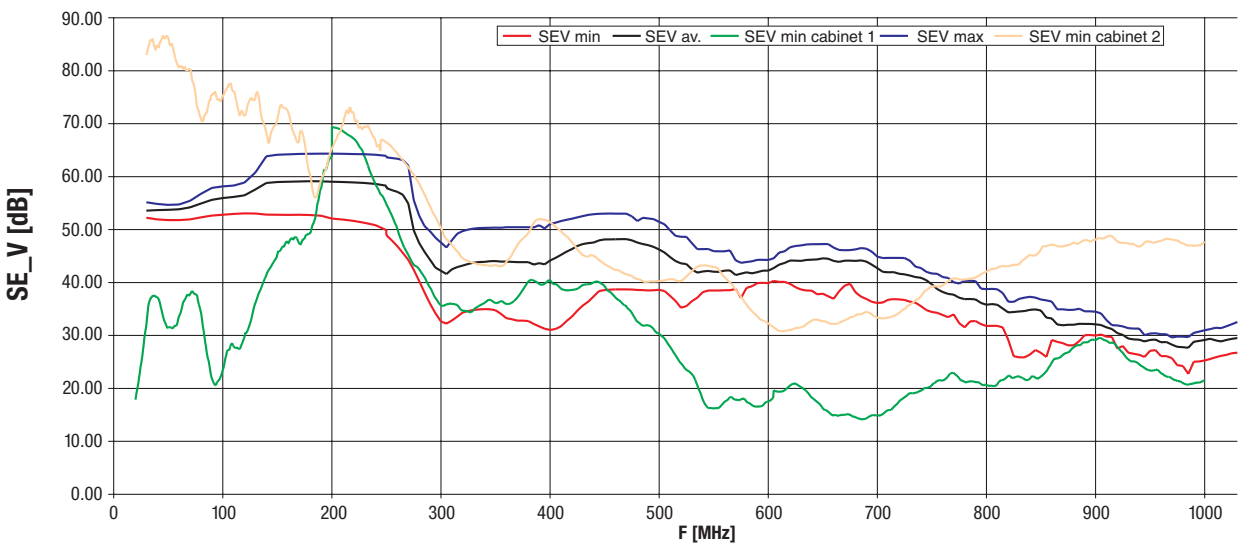
a) Screening efficiency in the frequency range of 100 kHz up to 30 MHz
   - for horizontal polarisation is included in the following limits: from 15 dB to 26 dB (average value varies from 18 dB to 22 dB),
   - for vertical polarisation is included in the following limits: from 21 dB to 44 dB (average value varies from 32 dB to 40 dB).

b) Screening efficiency in the frequency range of 30 MHz up to 1000 MHz
   - for horizontal polarisation is included in the following limits: from 55 dB to 5 dB (average value varies from 52 dB to 19 dB),
   - for vertical polarisation is included in the following limits: from 65 dB to 23 dB (average value varies from 59 dB to 29 dB).

Cabinet's screening efficiency for the horizontal component of the electric field



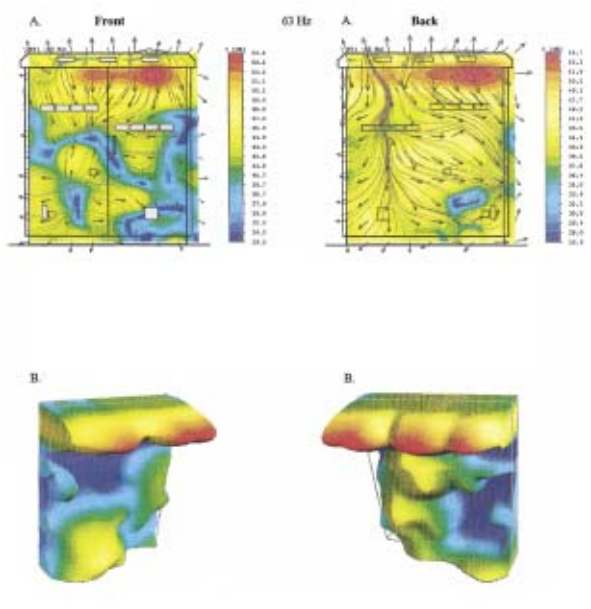
Cabinet's screening efficiency for the vertical component of the electric field



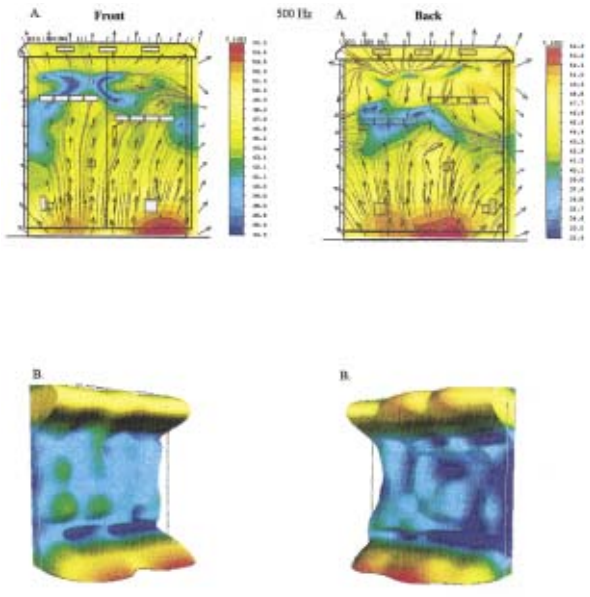
Acoustic tests

Example of sound diffusion in front and rear part of SZD cabinet.

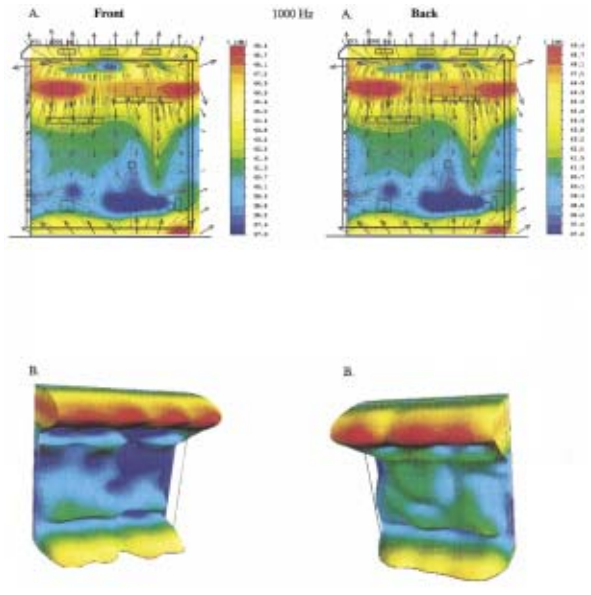
Sound diffusion for 63 Hz



Sound diffusion for 500 Hz

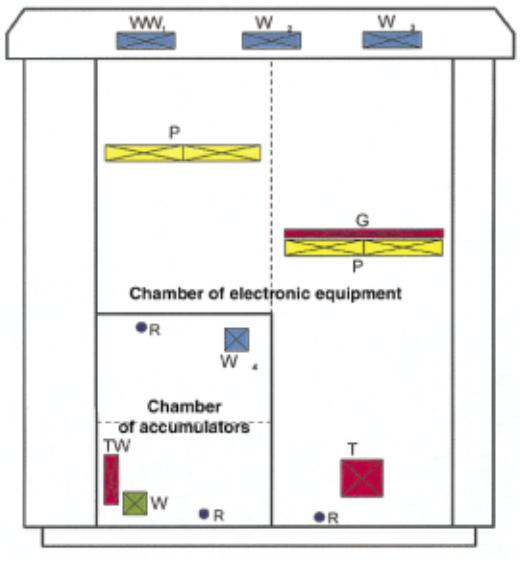


Sound diffusion for 1000 Hz



The SZD cabinet with specified quantity of fans and heaters (in accordance with the below drawing) have been tested for checking the noise emission of the cabinet.

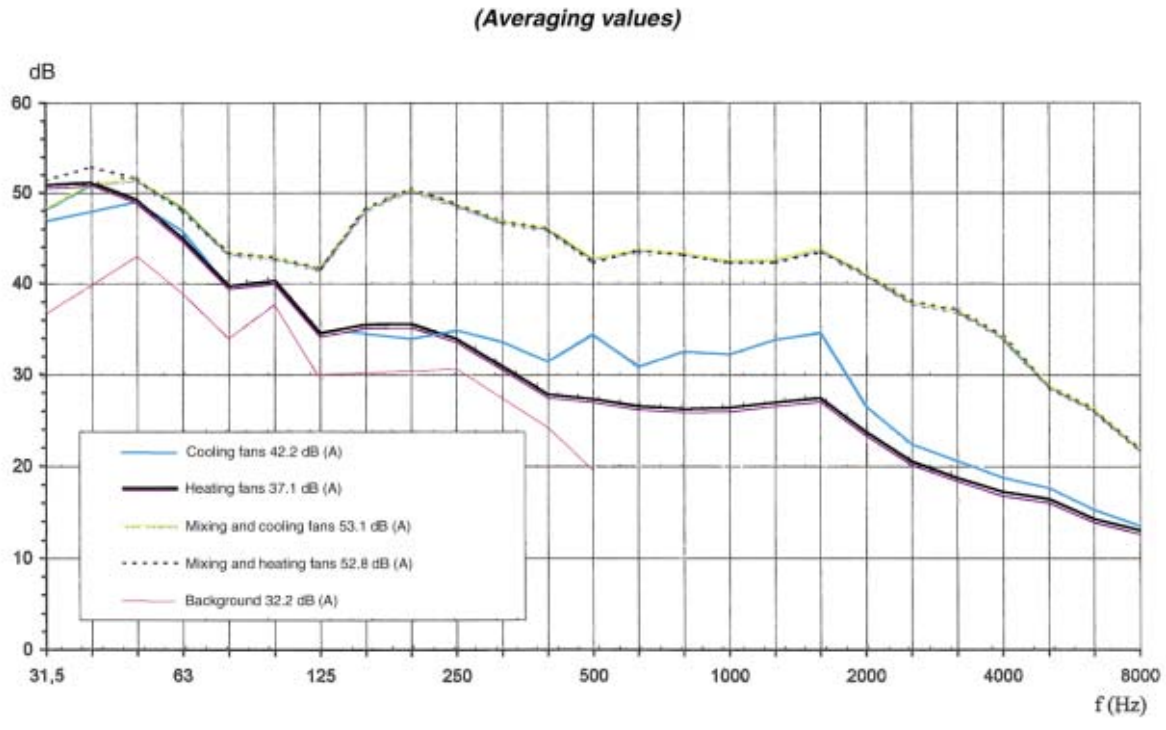
Places of fans in tested cabinet



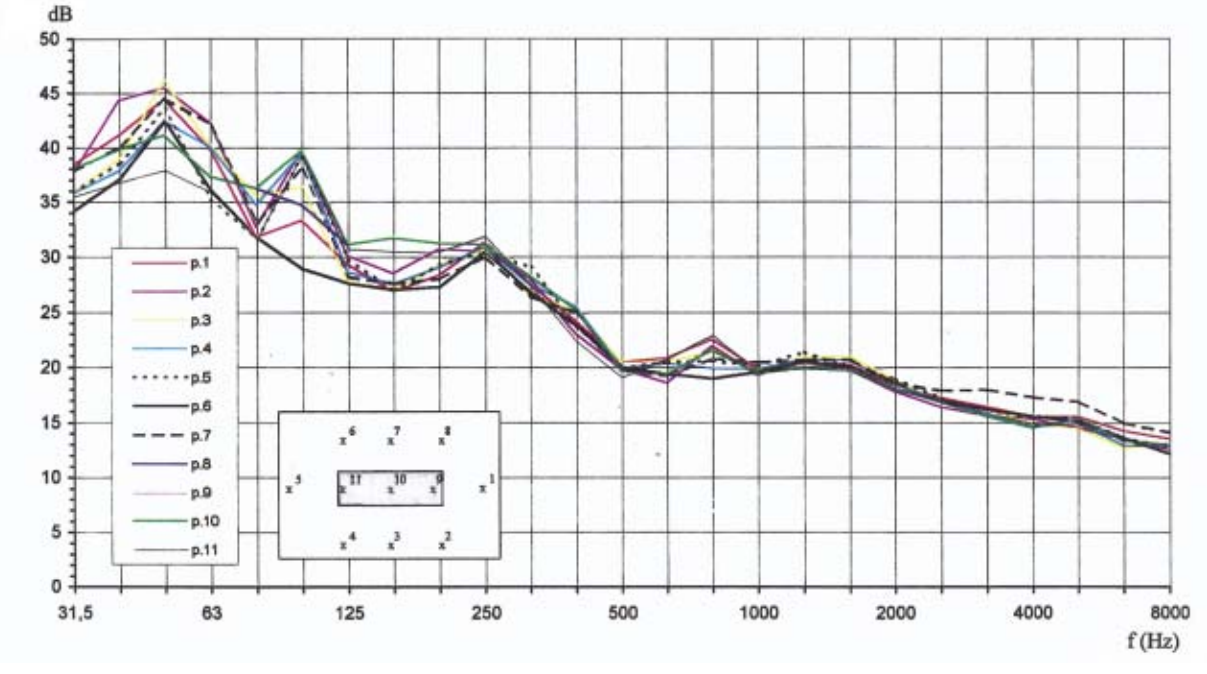
WW_1, WW_2, WW_3	- exhaust fans, placed symmetrical in the upper part of the cabinet under the roof
WW_4	- exhaust fan
WN	- downcast fan
PN	- fan units mixing air inside the cabinet
TW	- thermo fans
G	- heater of transmission shelf
R	- temperature controllers

Acoustic tests

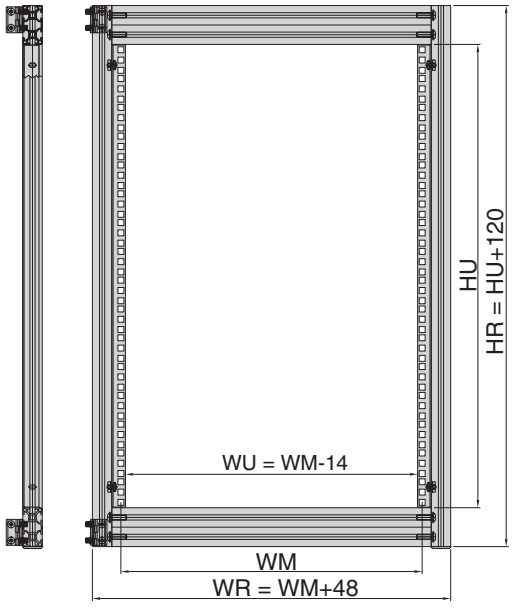
The level of noise emitted by tested SZD cabinet (average values from 11 measuring points)

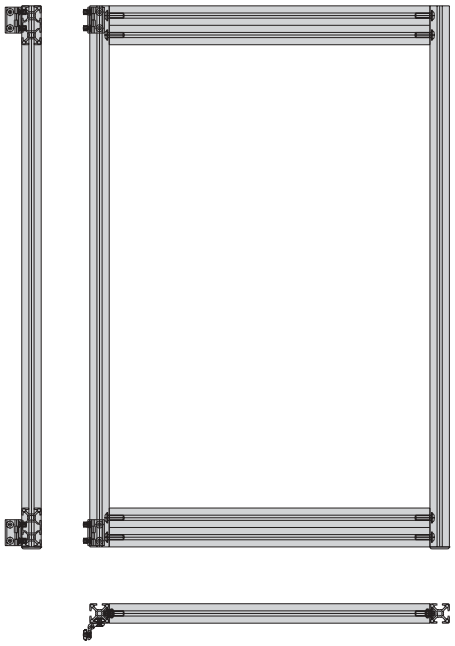


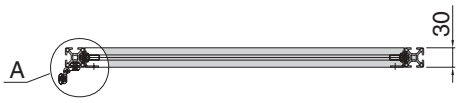
The level of background noise (the cabinet switched off)



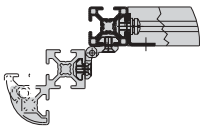
Swing frame







Detail:
frame fastening



WM = 456 (19") or 515 (21") - mounting width
WU - useful width
HU - useful height

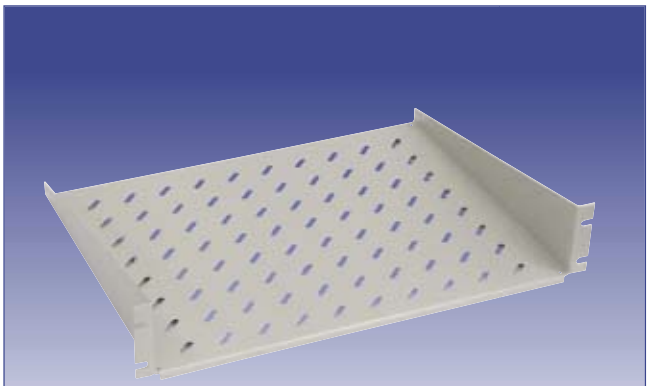
The frames can be manufacture as single-section or double-section.
In case of big loading there are used chest-like frame

Chest-like frame

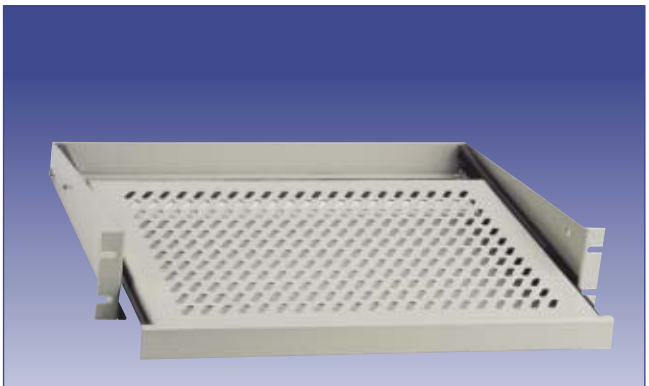
Double-section frame

SUPPLEMENTARY ACCESSORIES

Shelves



Fixed shelf II - 19" standard (load capacity 25 kg)



Pull out shelf II - 19" standard (load capacity 20 kg)

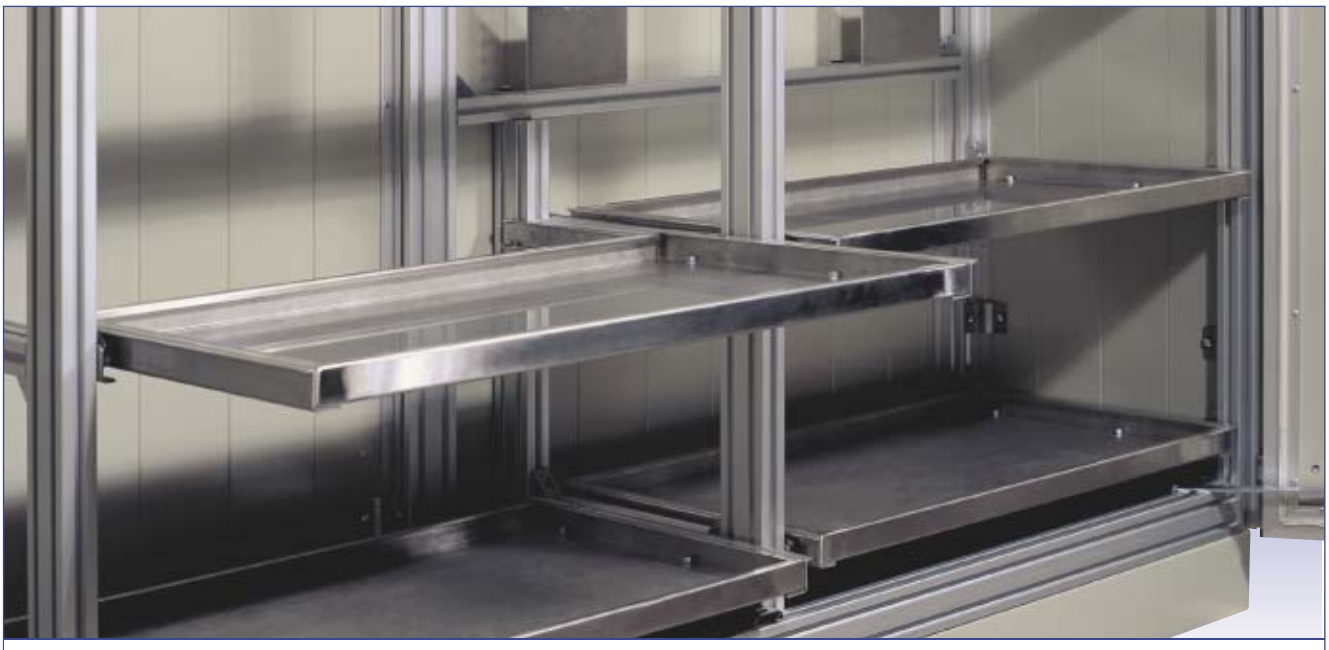
REFERENCE CHART OF FIXED SHELVES II

Depth [mm]	Catalogue number Fixed shelf II
550	SZB - 00-00-49/2
450	SZB - 00-00-49/3
350	SZB - 00-00-49/4
250	SZB - 00-00-49/5

REFERENCE CHART OF DRAWER SHELVES II

Depth [mm]	Catalogue number Pull out shelf II
555	SZB - 28-00-00/1
455	SZB - 28-00-00/2
405	SZB - 28-00-00/3
355	SZB - 28-00-00/4

NOTE:
Shelves are delivered with necessary fixing elements.



Pull out shelf with increased load capacity up to 100 kg (custom order)

Shelves for mounting batteries of emergency power supply are made of stainless steel. Dimensions of shelf depend on quantity of mounted batteries are determined by customer's request.

Partition

The partition divides the chambers of the cabinet. It is made of aluminium sheet. In the partition there can be different types of cable entries: foam cable openings, rubber gland seals, cable entries ROXTEC type.

Cable entry ROXTEC type

Cable entry made of rubber gland seals

Foam cable entry

Micro switch and door stop

The 3-positioned micro switch is mounted at cabinet's door, positions:

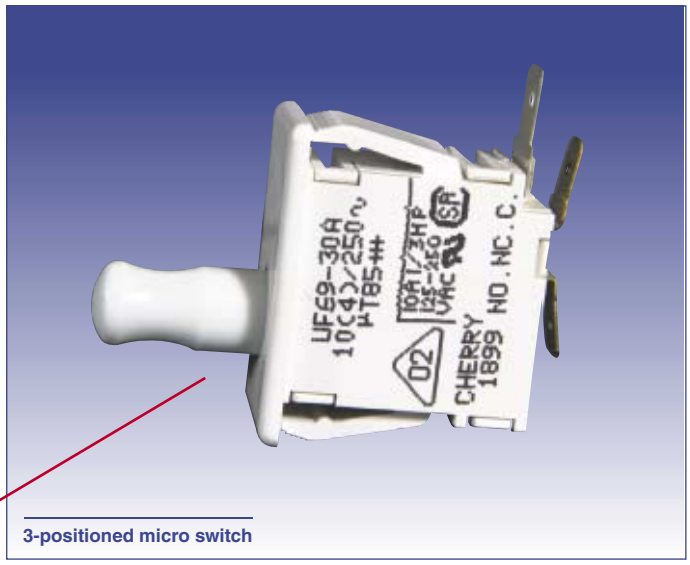
pos. 1 - unstable pushed-in (door closed)
pos. 2 - stable pushed out (door opened)
pos. 3 - "service position", pushed in manually, stable (door opened)

Example:

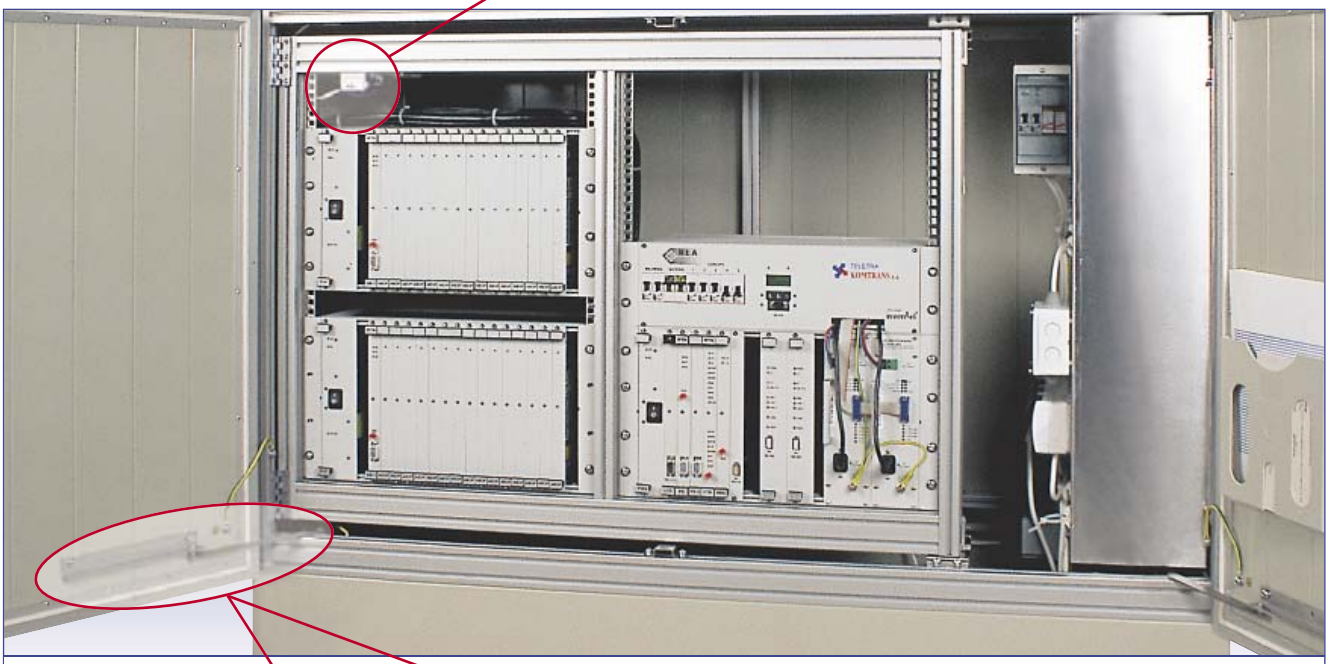
Cabinet's door closed
- option I - open circuit,
- option II - closed circuit;

Cabinet's door opened
- option I - closed circuit,
- option II - open circuit;

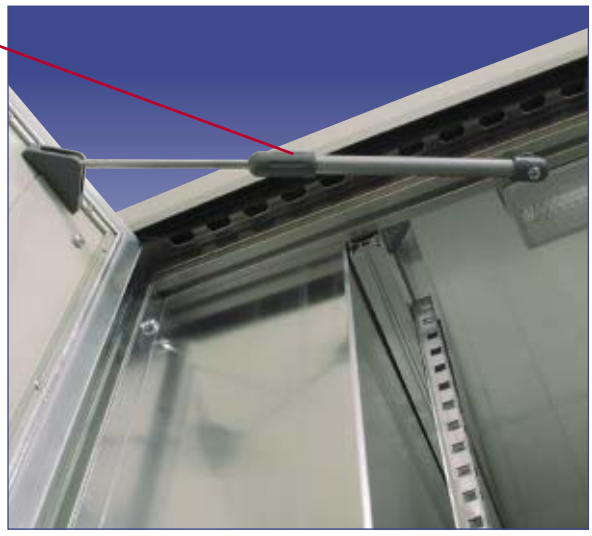
Cabinet's door opened "service" position
- option I - open circuit,
- option II - closed circuit.



3-positioned micro switch



Door stop and micro switch in cabinet with equipment

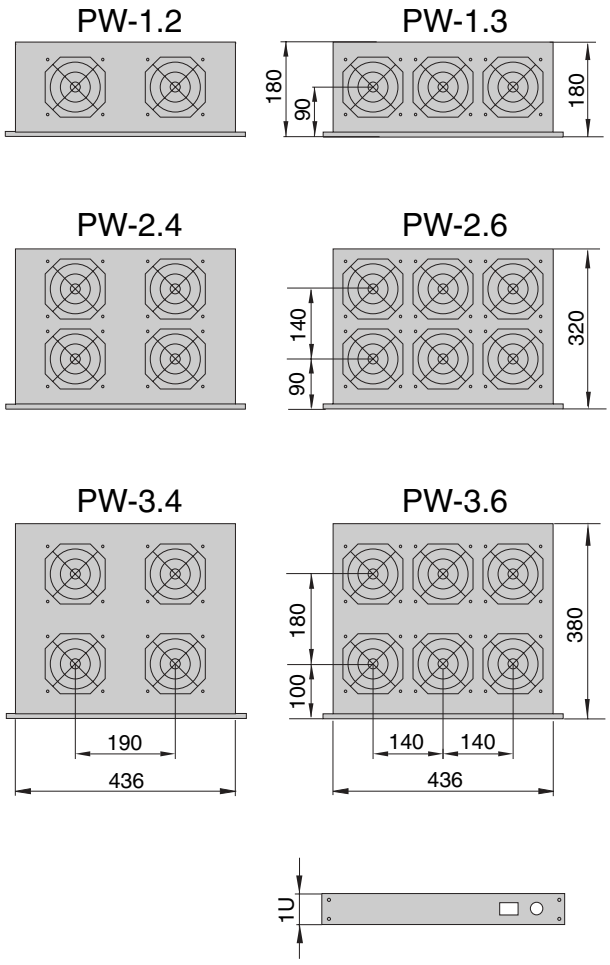


PW fan units

TECHNICAL DATA

- voltage rating . . . . . 220 V / 230 V
- frequency . . . . . 50/60 Hz
- power rating . . . . . .15/14 W
- rated current . . . . . 120/100 mA
- rotational speed . . . . . 2600/2900 obr/min
- noise level . . . . . .37/41 dB
- pressure . . . . . 75/90 Pa
- capacity . . . . . 162/192 m^3/h
- durability . . . . . .min. 50000 h
- dimensions . . . . . 119 x 119 x 38 mm

PW-2.6 fan unit



NOTE:
Symbols of fan units (PW-x. x) represent catalogue number

PARAMETER	PW-1,2	PW-1,3	PW-2,4 PW-3,4	PW-2,6 PW-3,6
Voltage rating [V]	220 (230) V, 50 Hz			
Rated current [A]	0,24	0,36	0,48	0,72
Power rating [W]	30	45	60	90
Capacity [m^3/h]	320	480	640	960
Ambient temperature [K]	253 - 343 (-20 ÷ 70°C)			
Relative humidity [%]	20 ÷ 80			
Work position	arbitrary			
Protection degree	IP 20			
Electric shock protection	neutral grounding			
Colouring	Enclosure - black Masking cover - RAL 7035			

Fan mounted in fan units

SUPPLEMENTARY ACCESSORIES

Thermostat

Application:

Thermostats are used for controlling fan units, heaters and heat exchangers, also can be used as a signal generator for monitoring the enclosure internal temperature.

KTO 1140 Thermostat (normally closed)
Supply includes: thermostat, rail TS-35/7.5, two holders, two screw clamps

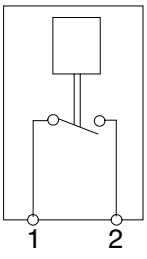
TECHNICAL DATA

sensor element:
thermal bimetal,
temperature range:
0 - 60°C, hysteresis ca. 7K,
contact types:
snap action contact,
power carrying capacity:
6A (1) 250V AC
Radio frequency interference:
"N" (according to VDE 0875)

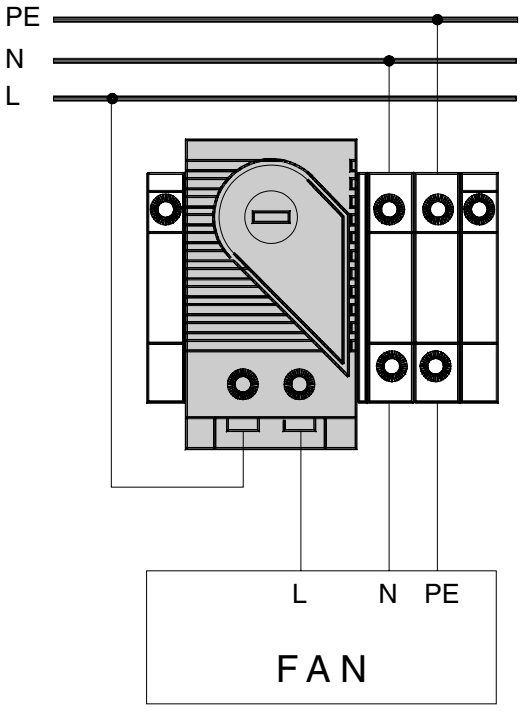
NOTE:
Depending on the way the thermostats work, we divide them into "normally open" and "normally closed".
The colour of handwheel indicates thermostat type:
- KTS 1141 thermostat (normally open) - catalogue number SZB-48-00-00/KTS
- KTS 1140 thermostat (normally closed) - catalogue number SZB-48-00-00/KTO

CONNECTION DIAGRAM

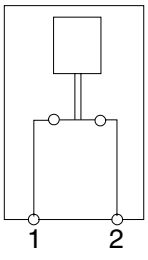
Integral diagram of KTS 1141 thermostat (normally open)



KTS 1141 switches on ventilation system (e. g. fans) at selected temperature limit



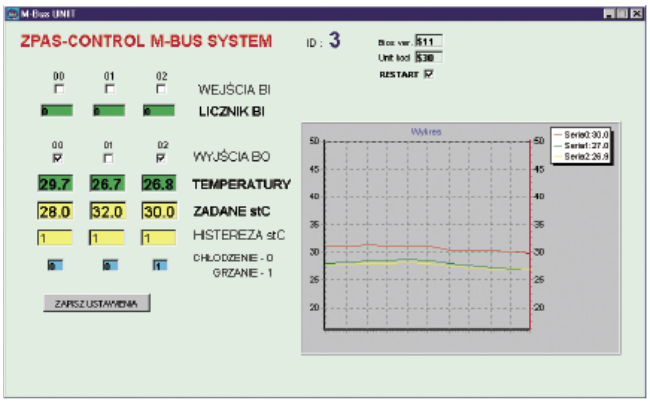
Integral diagram of KTO 1140 thermostat (normally closed)



KTO 1140 switches off devices (e. g. heaters) at selected temperature limit

System of supervising climatic conditions ZPAS-Control M-Bus

ZPAS-CONTROL M-Bus system is a software based on elements digital system of automatics, which allows designing effective, cheap and reliable regulating and measuring systems. It is designed for application in professional systems of supervising climatic conditions in outdoor cabinets, data and telecommunication cabinets, power industry cabinets, mimic panels and in industrial buildings. Possibility of different configurations of ZPAS-CONTROL M-Bus enables to use the system in e. g. intelligent buildings, heat engineering, water and sewage disposal, calculating individual usage of heat in municipal housing estates and others.



Designing systems of automatics based on ZPAS-CONTROL M-Bus is easy thanks to application of universal hardware elements and software modules designed for controlling and regulating by typical controlling equipment. The system comprises of central units, data transmission converters, facility modules, hardware modules and sensors of temperature, humidity, smokiness, movement vibrations, access. Communication between central unit and other modules is based on standard M-Bus enlarged by operation possibilities.

Basic parameters of M-Bus data transmission bus:

- optional topology of cabling (the medium is two-wires spiral),
- connection of up to 250 appliances in one exchange,
- protection data bus from change of poles,
- power supply of end appliances directly from M-Bus

ZPAS-CONTROL M-Bus system is accompanied by attractive software for graphic visualisation working in Windows operating system. It is compatible with superordinated systems SCADA type. Moreover, ZPAS-CONTROL M-Bus system allows to create individual, adjusted to specific needs operating panels.

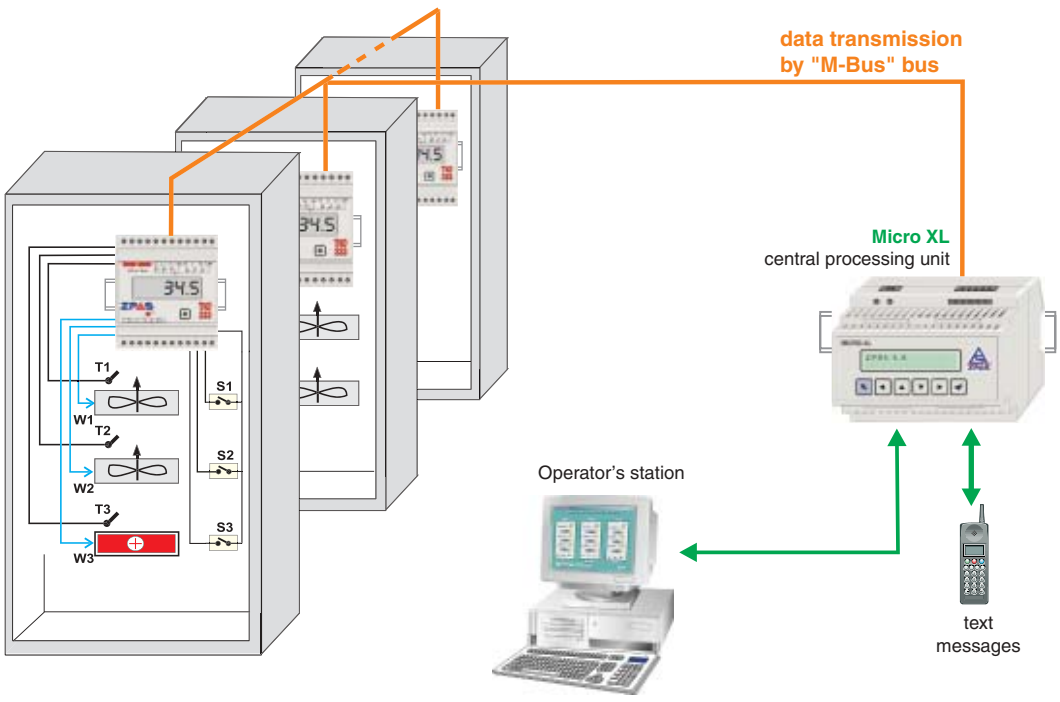
CONFIGURATION WITH PROGRAMMER AND GSM DATA TRANSMISSION

ZPAS-CONTROL M-Bus system in basic configuration enables constant measurement of three temperatures in the range from -55 to +125°C by means of DST temperature sensors (the lenght of conduct 10m), which are connected to temperature controller TIO 333. Programming of temperature controller TIO 333 (setting up the value of temperature and histeresis with precision of regulation up to 1°C) for this configuration of the system is provided by the producer.

Hardware controller (P2 relay or TRIAC 2 power module) designed to control elements like fans, heaters or others on customer's request can be connected to two-state outputs of the TIO 333 temperature controller (three outputs - transistored keys, max. 30 V, 500 mA). The controller is supplied by 15 - 30 V DC power feeder (in accordance with instruction). Configuration of the system in its basic version enables to enlarge the construction of the system by adding modules according to the catalogue or project prepared on customer's request.

System of supervising climatic conditions ZPAS-Control M-Bus

Configuration of the system with the programmer and GSM data transmission



T1 - temperature sensor 1
T2 - temperature sensor 2
T3 - temperature sensor 3

W1 - controlling output 1
W2 - controlling output 2
W3 - controlling output 3

S1 - signalling device of door open
S2 - signalling device of smokiness
S3 - signalling devices of vibrations and humidity

Configuration	Quantity
MICRO-XL programmer	1
TIO 333 temperature controller	1
DST temperature sensor	3
Triac 2	1
24 V DC power supplier	1
GSM modem	1
LMC Logic Master Control software	1

Enlarging basic configuration by:
- MICRO-XL programmer,
- GSM data transmission modem and
- LMC Logic Master Control software,

we additionally achieve:

- possibility of multiple programming of the demanded temperature values as well as hysteresis (precision of regulation - 1°C) by means of attached PC computer or directly from MICRO-XL programmer,
- possibility of connecting up to three two-state signalling devices (for example microswitch, smokiness sensor, movement sensor, humidity sensor, vibration sensor and others) with registration of their activity on a graphic panel,
- possibility of graphic visualisation of the appliances at work (the states of inlets and outlets) as well as registration of the temperatures on the charts,
- possibility of storing data - long term registration of the parameters with possibility of importing them into the data base on PC computer,
- possibility to get connected to the facilities from any place on earth via GSM cell phone or stationary telephone connection. It allows for monitoring and remote supervising of the facilities,
- previewer of registered charts allowing for mathematical working and creating new channels on the basis of already existing records,
- possibility of configuration archive data from different periods which allows to analyse changes in technological lines in the long run,
- software, providing graphic representation in Windows environment, adjusted to co-operation with different superordinated systems. It allows to create own operator's panels adjusted to particular needs.

Configuration of the system in such version allows its further enlargement by adding modules according to the catalogue or to the project prepared on customer's request.

More info about the system and available elements of the system can be found in the separate catalogue, Marketing Department of ZPAS or web site **www.zpas.com**.

Microprocessor control panel of fans

- **Application:**
  Microprocessor control panel with fan system is designed for measurement, control and automatic cabinet temperature maintenance at the pre-set threshold in 19” cabinets.

- **Principle of operation:**
  Panel temperature sensor continuously monitors and compares current temperature with pre-set threshold value, and causes switch on the fans of alternating current in four sequences.

- **Function possibilities:**
  - continuous temperature measurement,
  - automatic fan selection for maintenance of pre-set parameters,
  - ability of service from PC by using RS 232 link (data transmission in both directions),
  - memory storage of pre-set parameters in case of power supply interruption,
  - priority signalling (ex. alarm signal) on RS link in the event of switched all fans sequences (LCD display blinks).

TECHNICAL DATA

Temperature measurement:
- measurement range from +5°C to +80°C,
- indication resolution ± 1°C
- measuring accuracy ± 1°C

Setting parameters:
- control range of pre-set temperature threshold value from +5°C to +80°C,
- tolerance range from the temperature threshold value from +1°C to +10°C,
- delay range of swithching on/off fans from 1 s to 99 s,
- resetting time - 10 s.

Displaying of measuring parameters:
Two-digit module LED:
- didits’ height 14 mm,
- green colour,
- improved quality.

Housing form:
- 19” panel of 1U module, colour: RAL 7035 .

Communication report with computer:
Parameters of RS 232 link:
- transmission speed rate 9600 b/s,
- 8 bita, without even parity bit,
- 1 stop bit.

Temperature sensor:
Miniature, fixed to metal structure by means of latch, flexible conductor length - 2 m.

Fan connections:
- number of inputs - 4
- power supply - 230 V; 50 Hz,
- input’s power carrying capacity - 100 W

Power supply of the panel: 220 V; 50 Hz.

Max. power consumption: 2 W.

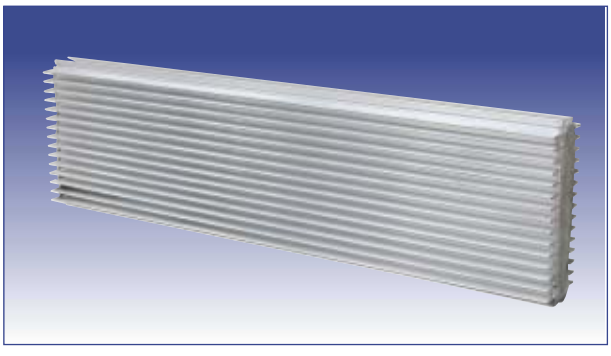
Microprocessor control panel of fans
Cat. No.: SZB-66-00-00

Insulating base

For additional cold and humidity protection, the cabinet can be set on insulating base filled with foam. The insulating frame shall be ordered separately.

Thermal battery

The device is designed for stabilising the temperature (mainly in battery section) . The battery works in 24 hours cycle - absorbs heat from the section when the temperature is high and gives it up when the temperature is low (at night).



Heater HVL 031

Compact heating device includes: heating element, axle fan with bearing, protective thermostat.

TECHNICAL DATA

- voltage rating . . . . . 230 V AC 50-60 Hz
- heating power . . . . . 400 W
- fan capacity . . . . . .108 m^3 /h
- protection class . . . . . I (protective conductor)

Heater HVL 031

Appliances in subscribers' access systems

DIVISION OF CABINET'S INTERIOR

In the cabinet's construction there are four autonomous sections:

1) Battery section

2) Chamber of devices

3) MDF section

4) Energy section

BATTERY SECTION

In standard, it is placed in the bottom part of the cabinet and is designed for installing temporary emergency power supply of the system.
For additional lower of temperature in summer season, there are used two solutions:
- thermal battery,
- ventilating fans - ventilation of the section through the cabinet's mantle.

Appliances in subscribers' access systems

CHAMBER OF DEVICES

In standard, it is placed in the central part of the cabinet and equipped with mounting bars in 19" or 21" standard or the swing frame. This section is designed for mounting active devices of subscribers' access system (service of optical fibre and patch panels).

Appliances in subscribers' access systems

DISTRIBUTION SECTION

This section is designed for operator. It is equipped with teletechnical links (instillation of copper cables) . Additionally, the section can be equipped with support moveable construction which adapts to each type of terminal blocks.

ENERGY SECTION

This section is intended for power industry plants and designed for input of power supply. It has got fuses and a socket to plug in standby diesel generator in case of energy failure. In this section it is also possible to mount electricity meter and additional a special sight-glass, which enables reading of the meter without opening the cabinet's door.

EXAMPLES OF APPLIANCES

SZD cabinets adapted for power supply systems

SZD cabinets are also used for outdoor installation of amplifiers for cordless power supply of telecommunication devices. Cabinet's interior is divided into two autonomous parts: battery section (bottom part of the cabinet) and devices section (upper part of the cabinet). Additionally, on customer's request, it is possible to manufacture a special type of roof intended to assembly of electric accessories.

Inside the cabinets there are mounted telecommunication amplifiers with high power, what is consequence of big power losses (heat dissipation). Direct venting, by means of two fans (which capacity is 510 m^3/h each) mounted on the roof or on the cabinet's door, provides specific climatic conditions inside the cabinet.

Additionally, the system of fans' control can be used. It is able to switch on the roof fans on pre-set inside temperature threshold. Fans' rotation is lineal regulated and depends on temperature of modems installed inside of the cabinet.

Air conditioned SZD cabinets

Air conditioners are used when the required temperature inside of the cabinet is lower than ambient temperature. The power of air conditioners is selected according to pre-set climatic conditions, heat dissipation by active equipment and dimensions of the cabinet. On individual customer's request the air conditioners can be fixed inside or outside of the cabinet. In case of inside installation, they are usually fixed on the doors or side shields, what enables easy service access.

EXAMPLES OF APPLIANCES

SZD cabinets in accordance with EMC standard

EMC shielded cabinets are used when devices which are mounted inside the cabinet require protection in electro-magnetic compatibility. Aluminium profiles used in the cabinet are additionally chromated. Special current conductive gasket is used in order to provide conductivity between each element of the cabinet (roof, plinth, side shields, door).

Notes

Notes

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