

# OUTDOOR CABINETS



# ZPAS

solutions for connections





solutions for connections

**ZPAS**



## Over 50 years of design, manufacturing and integration for industries

### ZPAS milestones

- 2025 – new production plant in Kłodzko, 14 800 m<sup>2</sup> office and production area
- 2016 – opening of an electrical assembly plant with an area of 9 000 m<sup>2</sup> in Nowa Ruda
- 2007 – opening of a production plant with an area 3 500 m<sup>2</sup> in Nowa Ruda dedicating to manufacturing outdoor aluminium cabinets
- 2007 – opening of a 10 000 m<sup>2</sup> serial production plant in Nowa Ruda – Słupiec
- 2003 – extension and modernisation of the plant in Przygórze, expansion of production capacity (13 500 m<sup>2</sup>)
- 1991 – transformation of the experimental plant into the Network Automation Manufacturing Plant (ZPAS) and privatisation of the company – joint stock company established
- 1973 – beginning of the ZPAS history (as an experimental facility of IASE, i.e. the Institute for Power System Automation)

ZPAS bases its development on investments in human potential and modern machinery. From a small experimental plant located in Przygórze, we have turned into a big company that employs nearly 800 people in five production facilities. We operate in the broadly defined ICT, telecommunications, energy, automation, renewable energy and public sectors. Our realisations are in dozens of countries around the world.

The mission of ZPAS is to be a world leader in the production of ICT enclosures, data centers, industrial and outdoor cabinets. We are an innovative company that provides customers with comprehensive solutions from design to on site implementation. We are partner that is searching for optimal solutions for each customer. Our team of more than 70 engineers includes mechanical design specialists, technologists and electricians, as well as R&D department.

We put our effort on getting the satisfaction of our customers, employees and suppliers. We care for the environment and the local community by supporting cultural, sports and social development institutions.

We build our success based on values that are important to us: respect, honesty, not-to-blame and uniqueness. In the goals we set for the company, we pay attention to employee satisfaction, teamwork, as well as productivity and profit.

” People power – the real engine of any business.  
Good people are not just crucial to a business.  
They are the business themselves!

*Richard Branson*



See the video:  
[zpas.pl/qr/f16](https://zpas.pl/qr/f16)



## ZPAS PRODUCTION PLANTS



**Przygórze**  
ZPAS S.A. Management Board Office, administration and design production plant



**Nowa Ruda, Piłsudskiego Street**  
Manufacturing plant – electrical assembly



**Nowa Ruda, Górnicza Street**  
Outdoor Enclosures Production Plant



**Nowa Ruda – Słupiec, Spacerowa Street**  
Serial production plant and warehouse for finished products







## QUALITY AND ENVIRONMENTAL MANAGEMENT SYSTEM

### Certificate

Standard **ISO 9001:2015**  
Certificate Registr. No. 0198 100 01517

Certificate Holder: **ZPAS GROUP**  
**Zakład Produkcji Automatyki Sieciowej S.A.**  
Przygórze 209  
57-431 Wolibórz  
Poland

including the locations according to annex

Scope: design, production, maintenance and sale of data and telecommunication enclosures, industrial enclosures, outdoor cabinets, fibre optic distribution frames, dispatch and control desks, mosaic mimic systems, structured cabling elements

Proof has been furnished by means of an audit that the requirements of ISO 9001:2015 are met.

Validity: The certificate is valid from 2022-11-30 until 2025-11-29.

2022-10-03 *Gregorz Gwabka*  
TÜV Rheinland Polska Sp. z o.o.  
ul. Wolności 347, 41-800 Zabrze

www.tuv.com





AC 129

### Certificate

Standard **ISO 14001:2015**  
Certificate Registr. No. 0198 104 00209

Certificate Holder: **ZPAS GROUP**  
**Zakład Produkcji Automatyki Sieciowej S.A.**  
Przygórze 209  
57-431 Wolibórz  
Poland

including the locations according to annex

Scope: design, production, maintenance and sale of data and telecommunication enclosures, industrial enclosures, outdoor cabinets, fibre optic distribution frames, dispatch and control desks, mosaic mimic systems, structured cabling elements

Proof has been furnished by means of an audit that the requirements of ISO 14001:2015 are met.

Validity: The certificate is valid from 2022-10-01 until 2025-09-30.

2022-10-03 *Gregorz Gwabka*  
TÜV Rheinland Polska Sp. z o.o.  
ul. Wolności 347, 41-800 Zabrze

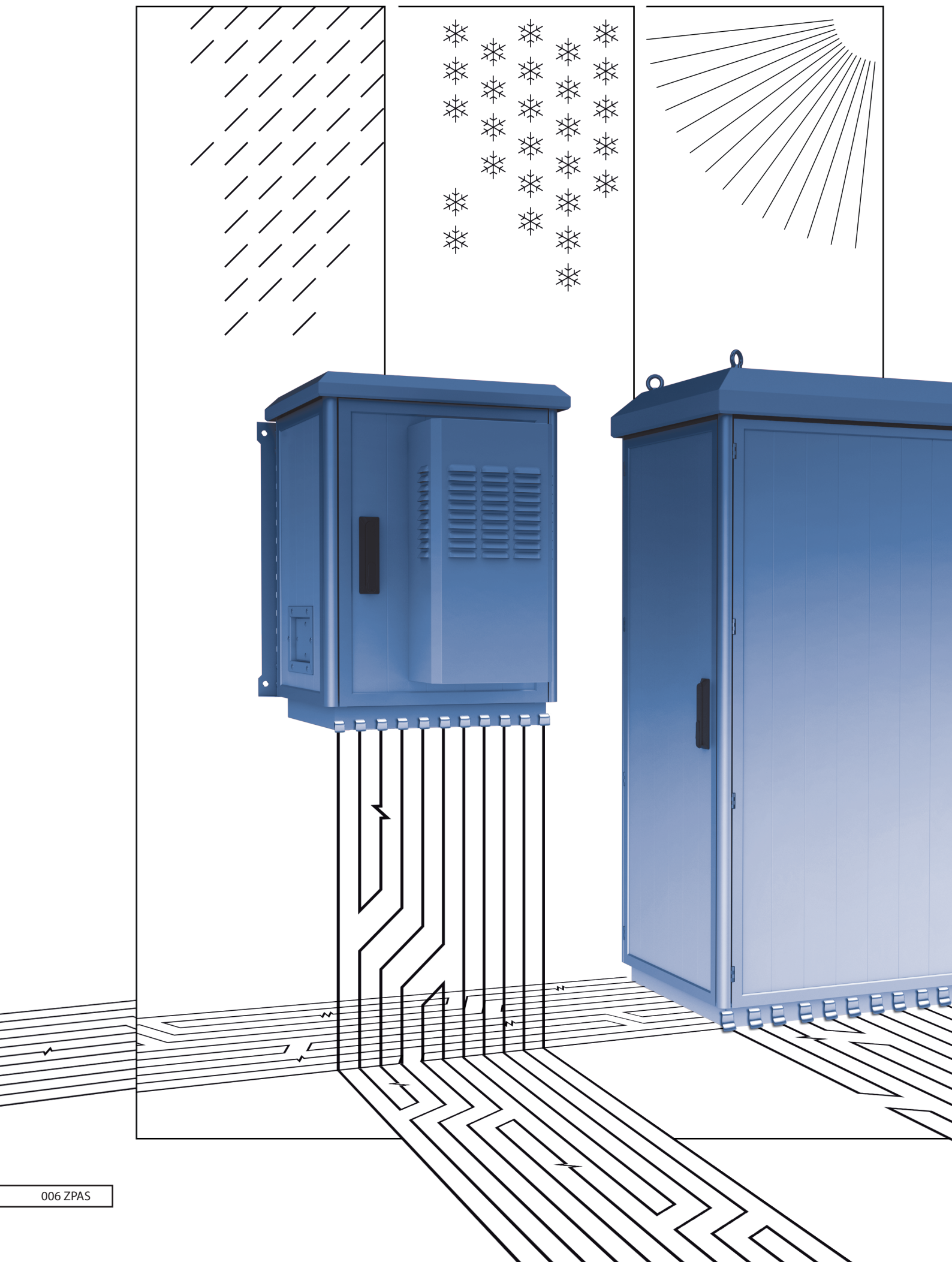
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AC 129







# OUTDOOR CABINETS



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GENERAL INFORMATION



The use of outdoor cabinets

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.





GENERAL INFORMATION





DESIGN



TECHNICAL DATA

Material

- Cabinets framework - aluminium profile,
- Side panels and doors - aluminium profile,
- Roof (internal mantle) - 1.5 mm thick aluminium sheet,
- Roof (external mantle) - alternatively stainless steel sheet, Al-Zn coated (aluzinc) steel sheet or aluminium sheet.

Surface finishing

- Aluminium profiles of the framework and aluminium frames of side panels and doors:  
Anodised (in EMC version chromate coated and powder painted in RAL 7035)
  - Aluminium profiles of side panels and doors:  
Chromate coated and powder painted in RAL 7035
  - Internal mantle of the roof:  
Natural aluminium
  - Plinth and external mantle of the roof:  
Powder painted in RAL 7035
- In EMC version of the cabinet conductivity between each elements of the construction is ensured.

Protection Degree

Standard cabinets have got protection degree IP 54 in accordance with EN 60529. If required it can be increased up to IP 55.

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.

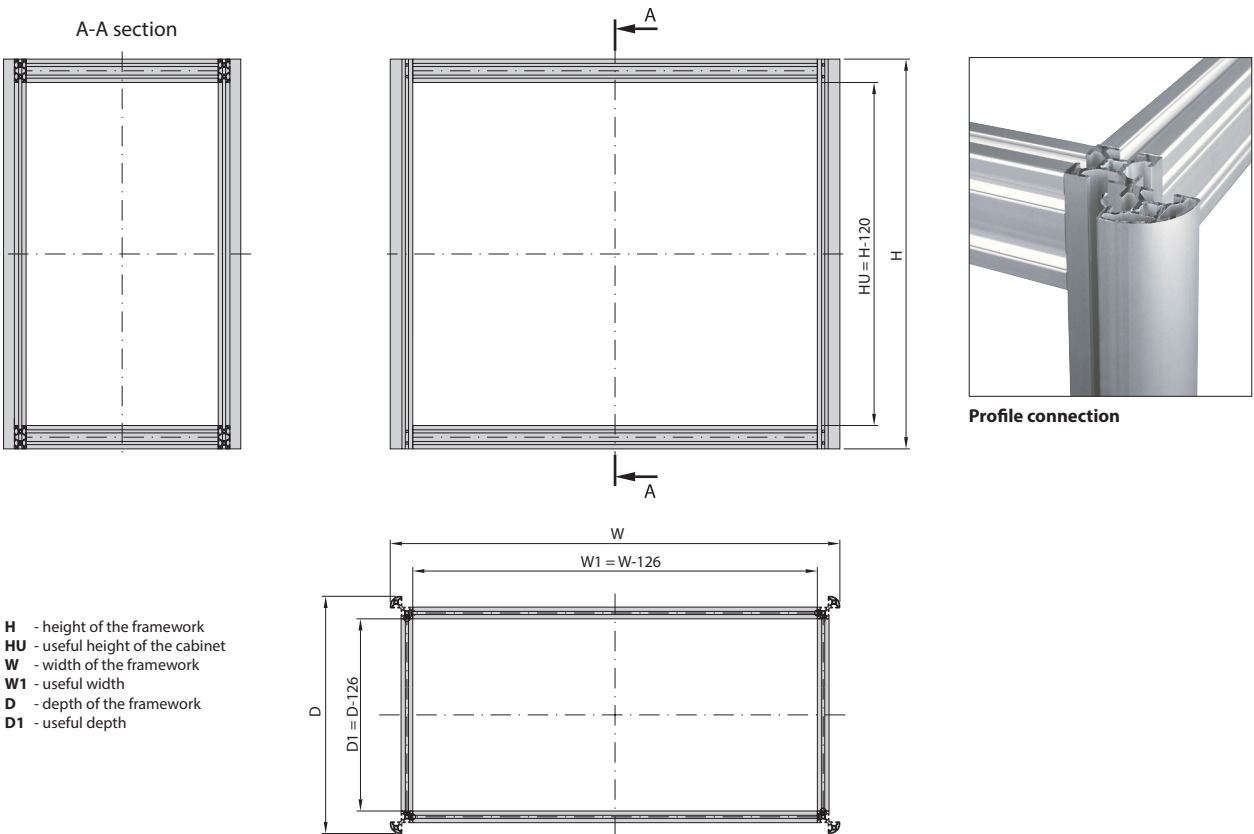


Framework

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



- 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

DESIGN



Doors, side panels

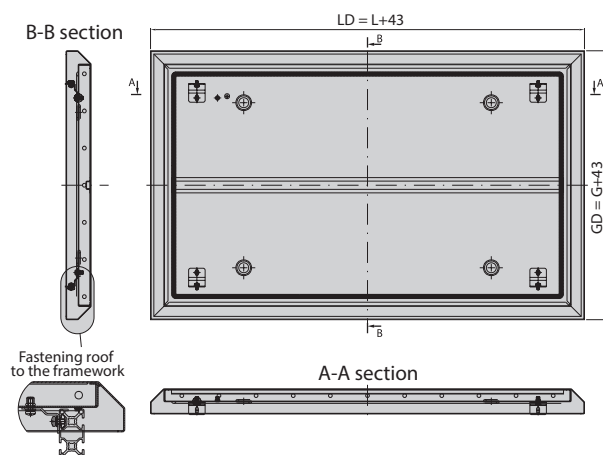
Doors and side panels of SZD cabinets are made of aluminium rail-profiles which are fastened together. The aluminium profiles make double ventilation wall. In the cabinet there are mounted two-point rod-latch locks. The door handle is made of zinc and aluminium alloy. On customer's request it is possible 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).





## Standard roof

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.



## Roof in special configuration

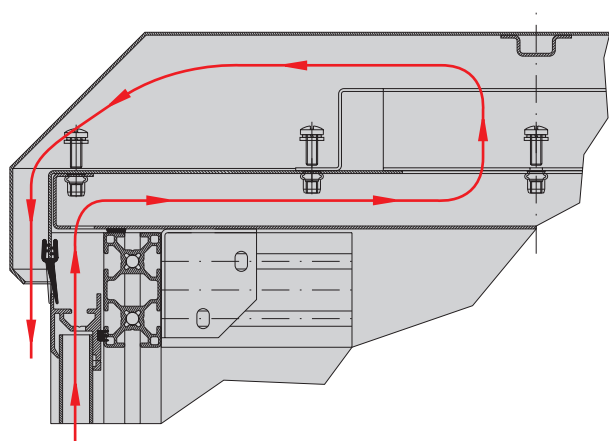
When it is necessary to cool the cabinet not only by ventilating through side panels and doors but also additional cooling system, it is possible to use special roof made of three mantles of sheet steel. This solution creates two air chambers in one of them it is possible to fasten fan units which increase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



DESIGN

Dimensions of SZD cabinets

The SZD cabinet has a modular design. The main part of the cabinet is made of panels (which are fastened by latches) and aluminium profiles. Both panels and profiles can be cut to any length. This type of design makes it possible to achieve the desired cabinet dimensions. **Every cabinet is designed and manufactured on individual request (together with interior installation – it is possible to create all types of partitions and supporting structures of the cabinet).**

As a standard, the technology allows for the manufacture of cabinets with single or double leaf doors.



STANDARD DIMENSIONS  
OF CABINETS WITH SINGLE LEAF DOOR

| External width<br>W [mm] | Internal width<br>W1 [mm] | External depth<br>D [mm] | Internal depth<br>D1 [mm] |
|--------------------------|---------------------------|--------------------------|---------------------------|
| 409                      | 283                       | 409                      | 283                       |
| 509                      | 383                       | 509                      | 383                       |
| 609                      | 483                       | 609                      | 483                       |
| 709                      | 583                       | 709                      | 583                       |
| 809                      | 683                       | 809                      | 683                       |
| 1009                     | 883                       | 1009                     | 883                       |



STANDARD DIMENSIONS  
OF CABINETS WITH DOUBLE LEAF DOOR

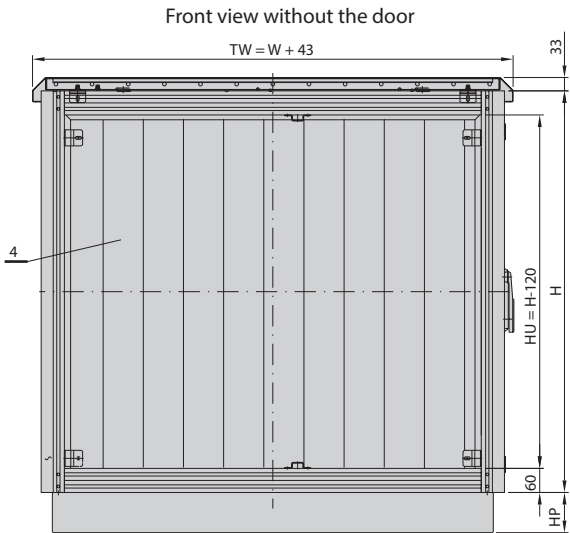
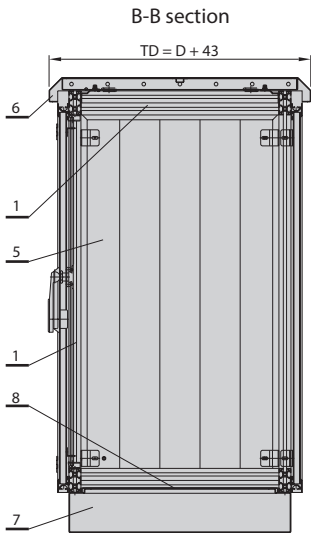
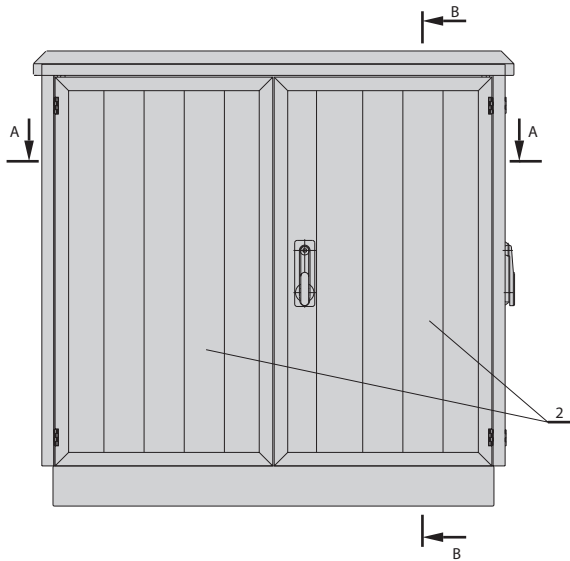
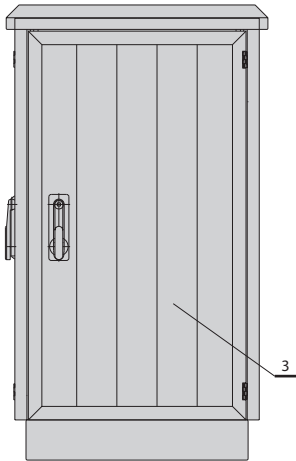
| External width<br>W [mm] | Internal width<br>W1 [mm] | External depth<br>D [mm] | Internal depth<br>D1 [mm] |
|--------------------------|---------------------------|--------------------------|---------------------------|
| 1154                     | 1028                      | 409                      | 283                       |
| 1254                     | 1128                      | 509                      | 383                       |
| 1354                     | 1228                      | 609                      | 483                       |
| 1453                     | 1328                      | 709                      | 583                       |
| 1554                     | 1428                      | 809                      | 683                       |
| 1654                     | 1528                      | 1009                     | 883                       |



MULTI-DOOR CABINETS

On request, we can deliver multi-door cabinets.



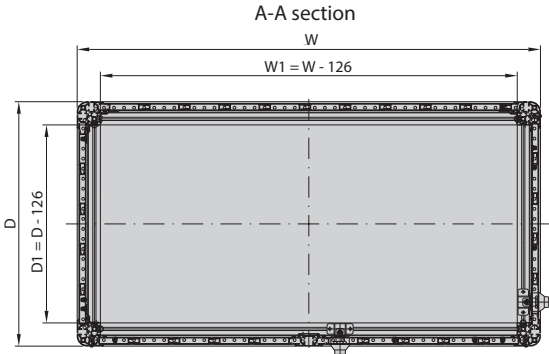


Height of the plinth HP - by customer's needs

DESIGN

- 1. Framework
- 2. Double-leaf front door
- 3. Side door
- 4. Rear panel
- 5. Side panel
- 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



**Note:**  
The cabinets are available in any height.  
For non-standard cabinet sizes, the way of calculating external dimensions is shown in the illustration.

VENTILATION

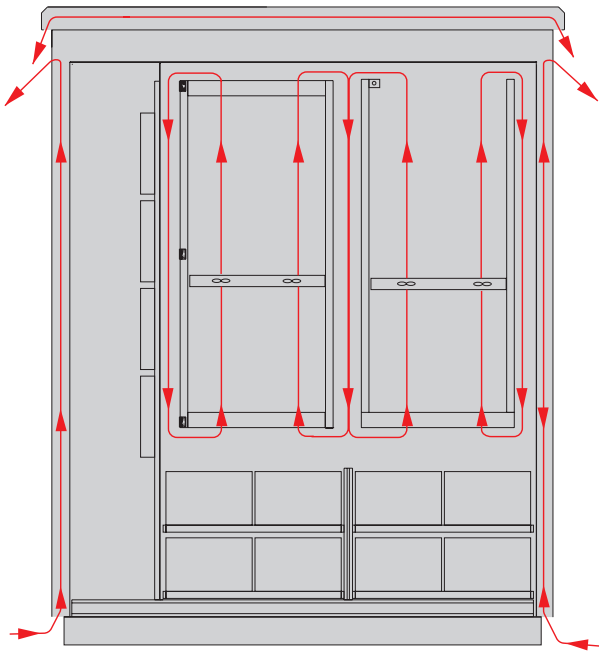


Fan unit with three cooling fans and thermostat

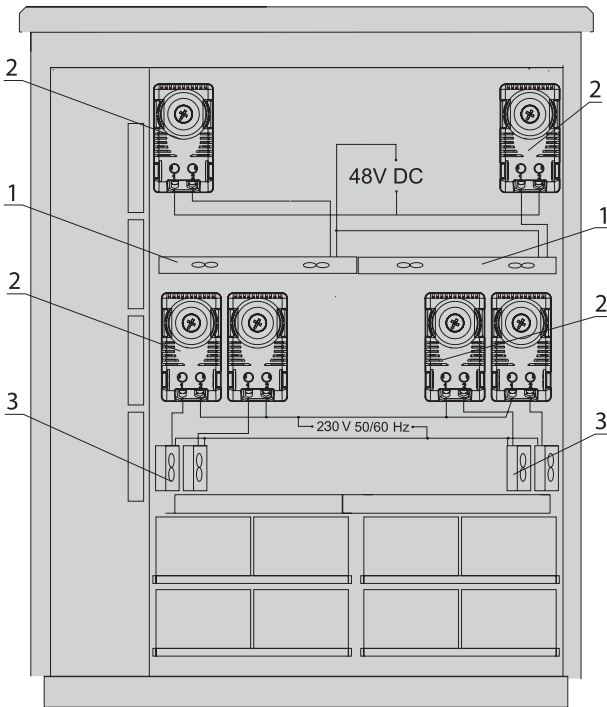
**Ventilation with forced internal and free external air circulation**

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**



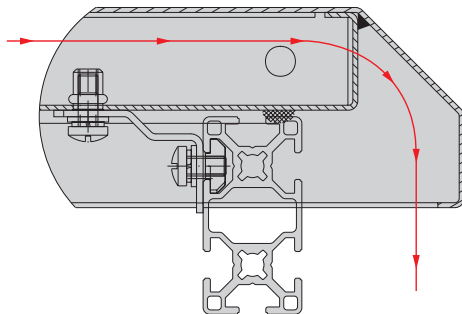
**PICTORIAL DIAGRAM OF SUPPLYING FAN UNITS AND HEATERS**



**DESIGN**

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

**AIR FLOW IN STANDARD ROOF**





VENTILATION

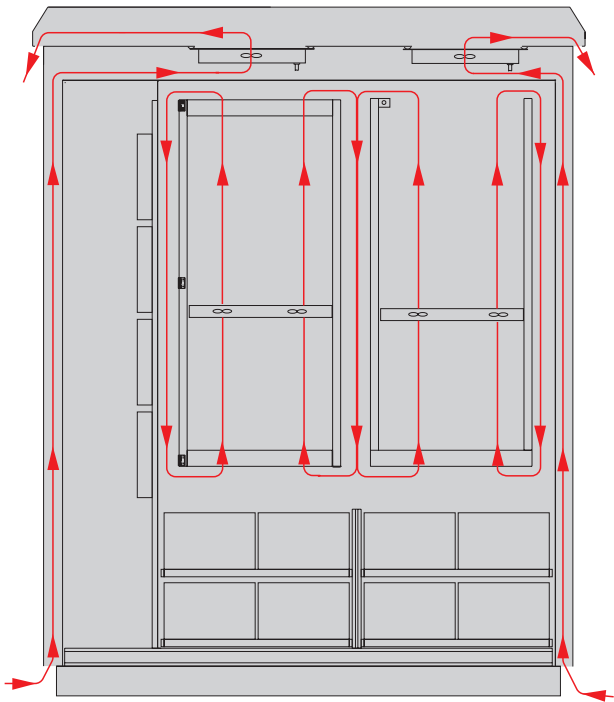
Ventilation with forced internal and external air circulation

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.

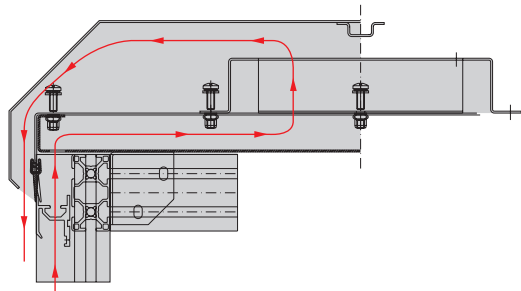


Fan unit with four cooling fans

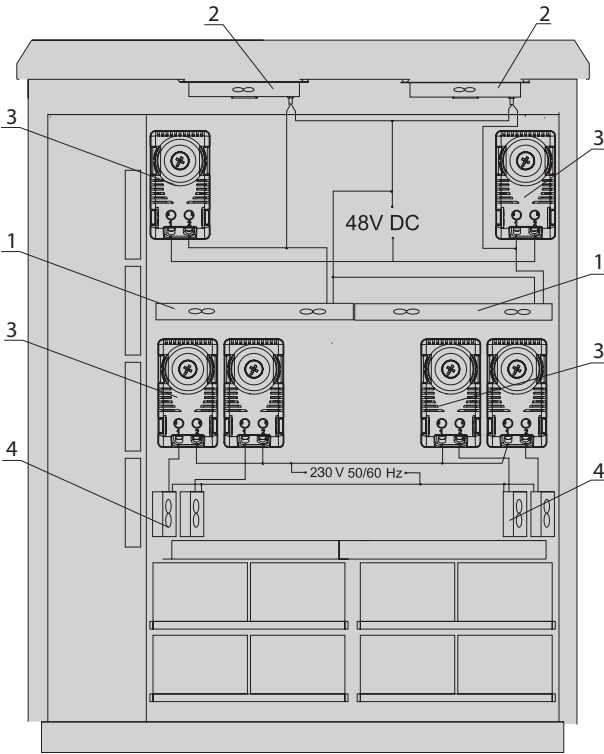
DIAGRAM OF AIR FLOW



AIR FLOW IN NON-STANDARD ROOF



PICTORIAL DIAGRAM OF SUPPLYING FAN UNITS, ROOF VENTILATORS AND HEATERS

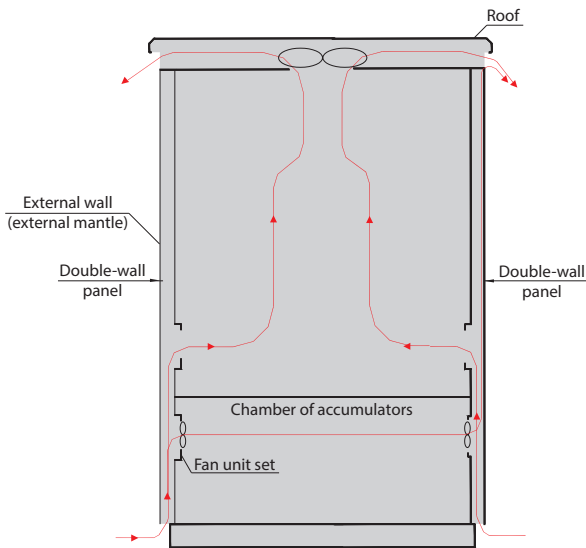


DESIGN

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

VENTILATION

PICTORIAL DIAGRAM OF AIR CIRCULATION  
IN THE CABINET WITH DIRECT VENTING

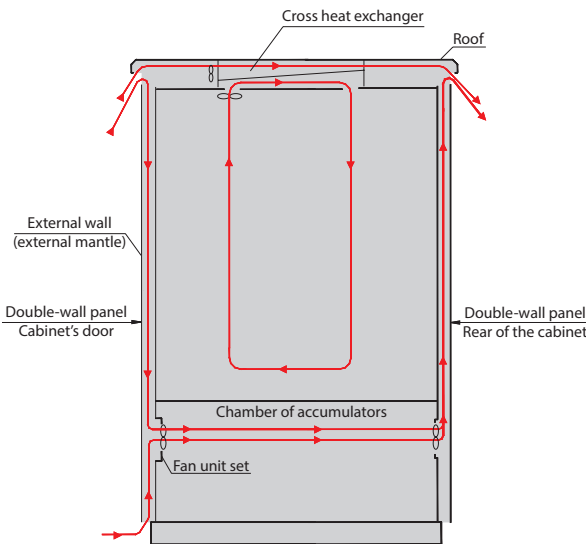


Ventilation based on use of heat exchanger and direct venting

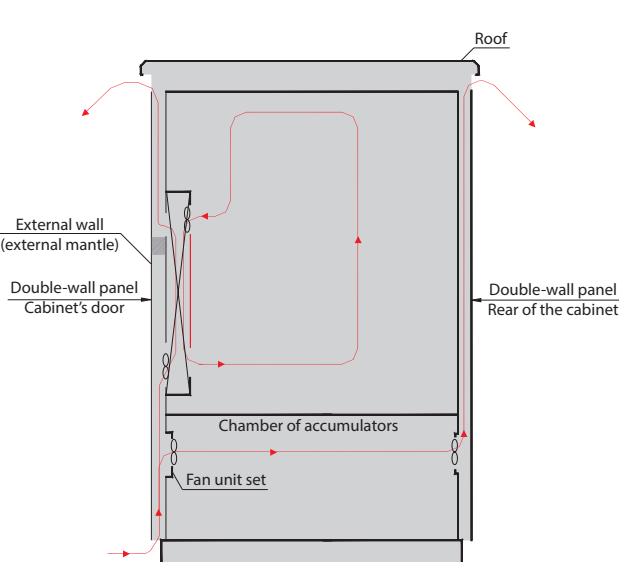
In order to intensify the cooling process in cabinets with installed equipment with high heat dissipation, there is solution based on cross heat exchanger. Heat exchanger is a type of radiator, where there are two air flows: warm from the inside of the cabinet (radiator's plates collect heat) and second 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 ROOF



PICTORIAL DIAGRAM OF AIR CIRCULATION  
IN THE CABINET WITH HEAT EXCHANGER  
MOUNTED ON THE DOOR



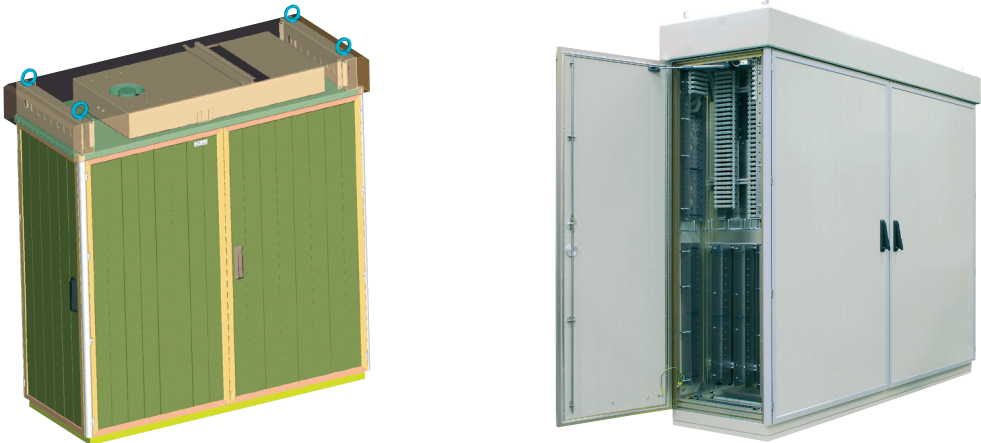


VENTILATION

Cabinet with heat exchanger mounted in the door



Cabinet with heat exchanger mounted in the roof



Cabinet with direct venting



AIR-CONDITIONING



Air conditioner partially flush into 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 panels, what enables easy service access.



Air conditioners fixed inside of the cabinet

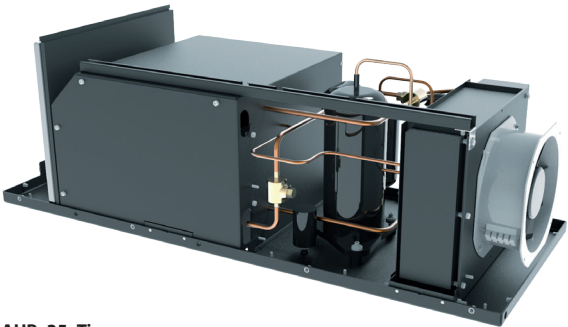




Air conditioners fixed outside of the cabinet

**Cabinets air-conditioned with a reversible air heat pump**

The reversible air heat pump not only serves for conventional air conditioning unit, but also as a heating system. Thanks to this, it can maintain a set temperature and humidity in the cabinet all year round, while allowing lower energy consumption than when using an air conditioner or electric heaters.



**AHP\_35\_Ti**  
**Reversible Air Heat Pump**  
**ZPAS PRODUCT**

See the detailed description on pages 22-24.



# AHP 2.0 REVERSIBLE AIR HEAT PUMP



**SZD outdoor cabinet  
with AHP 2.0 in the horizontal version**



**SZD outdoor cabinet with AHP 2.0 in the vertical  
version, installed on the side panel**

The second-generation AHP 2.0 reversible air heat pump is a precision air-conditioning unit with a heating function. An advanced control algorithm for the fans, compressor and expansion valve maintains the set temperature in the air-conditioned telecommunications cabinet while minimising the consumption of electricity. The control algorithm adjusts the pump operating parameters in real time according to the amount of heat emitted by the active equipment in operation.

Starting up a heat pump, unlike standard air-conditioner cooling solutions, does not require a large inrush current and does not cause interference with the mains supply.

A very important operating parameter to consider when designing a heat pump is the sound level. The introduction of speed-controlled fans has made it possible to reduce the operating sound at night and whenever the pump starts and stops. This is especially important for its use in urban areas.

The AHP reversible heat pump comes in horizontal and vertical versions. In each, the design is optimised to occupy as little space as possible. The ease of connection and installation allows the pump to be used in cabinets or telecommunications containers.

Heating is also done by thermodynamic process and is therefore more economical than using electric heaters. The fact that a single unit performs both cooling and heating functions is also significant. This allows the control to be coordinated and avoids both processes being switched on too frequently.

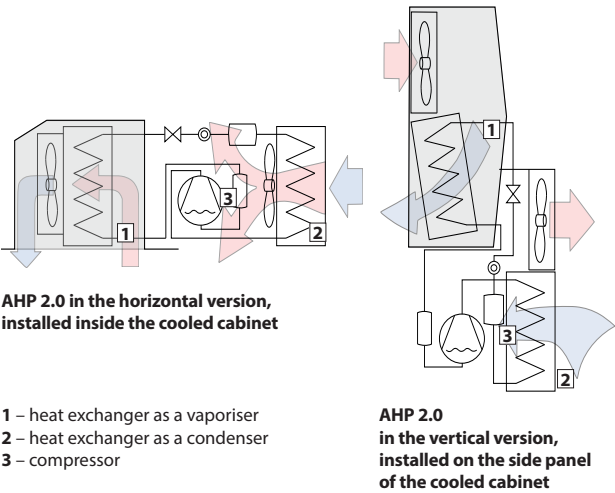
The heat pump controller has remote communication capability, allowing the operation of the unit and the conditions inside the air-conditioned cabinet to be monitored at all times. In this way, service costs can be reduced and failures can be prevented.

## Technical data

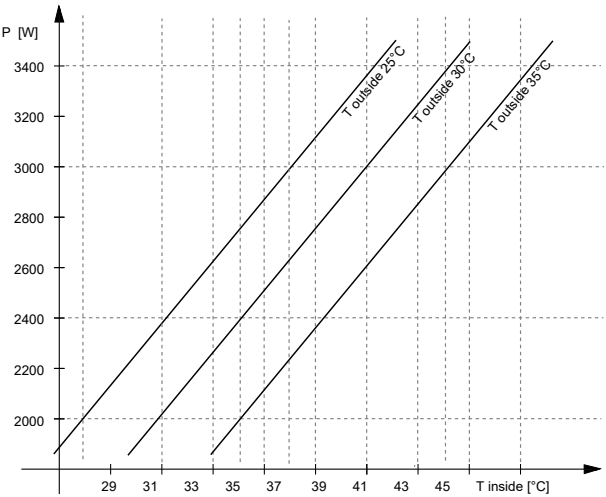
|                                               |                                       |
|-----------------------------------------------|---------------------------------------|
| Cooling capacity A35A35                       | 2.4 kW                                |
| Cooling capacity A35A50                       | 2.0 kW                                |
| Heating capacity                              | 2.5 kW                                |
| Power supply                                  | 230 V, 50 Hz                          |
| Maximum current input – cooling               | 3.5 A                                 |
| Maximum current input – heating               | 6 A                                   |
| Power consumption A35A35                      | 1.4 kW                                |
| Operating time                                | 24/7                                  |
| Amount of agent R134a                         | 0.8 kg                                |
| Maximum pressure                              | 42 bar                                |
| External fan                                  | 1200 m³/h                             |
| Internal fan                                  | 1200 m³/h                             |
| Sound level of the device                     | 54 dB                                 |
| Colour                                        | RAL 9005 / RAL 7035                   |
| Operating temperature                         | from -20 to +42 °C                    |
| Set temperature range                         | from +10 to +50 °C                    |
| Weight                                        | 50 kg                                 |
| Protection degree in accordance with EN 60529 | IP 21/55                              |
| Communication                                 | Ethernet (local) RJ45 HTTP, FTP, SNMP |

REVERSIBLE AIR HEAT PUMP **AHP 2.0**

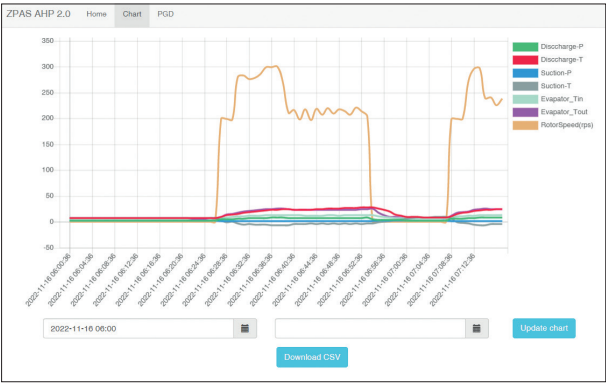
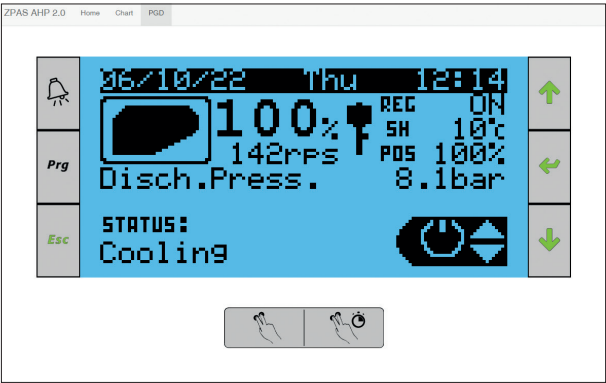
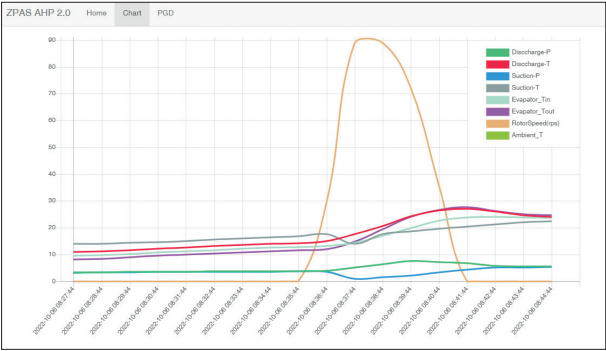
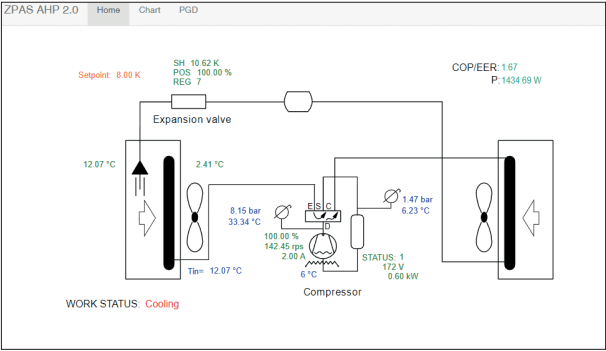
Cabinet cooling circuit



Capacity



An example of remote unit monitoring and control





# AHP 7.0 REVERSIBLE AIR HEAT PUMP



AHP 7.0  
front view



AHP 7.0  
rear view



Acoustic  
shield



The AHP 7.0 heat pump is a modern monoblock heating and cooling unit. With its power range, it goes beyond the requirements of standard ICT cabinet. It was designed for facilities requiring heat dissipation of up to 7 kW due to its reversibility, the power range also applies to the heating function.

We realize that customers' infrastructure is exposed to both outside and inside changing conditions. The varying in time loads of the supervised equipment, changing weather conditions, expansion of the infrastructure result in the variable demand for heat pump operation. The AHP 7.0 solution was designed to have the ability to adjust its output to the existing conditions. This has been achieved through the use of an inverter compressor, electronic expansion valve and speed-controlled fans. The solution is controlled by dedicated algorithms. Based on continuous measurements, it controls the components in such a way that, while optimizing power consumption, the best conditions for the supervised equipment are obtained in a tracking manner.

This device guarantees precise temperature maintenance with minimal noise emissions, thanks to its continuous regulation of heating and cooling power in the range from 4 to 7 kW.

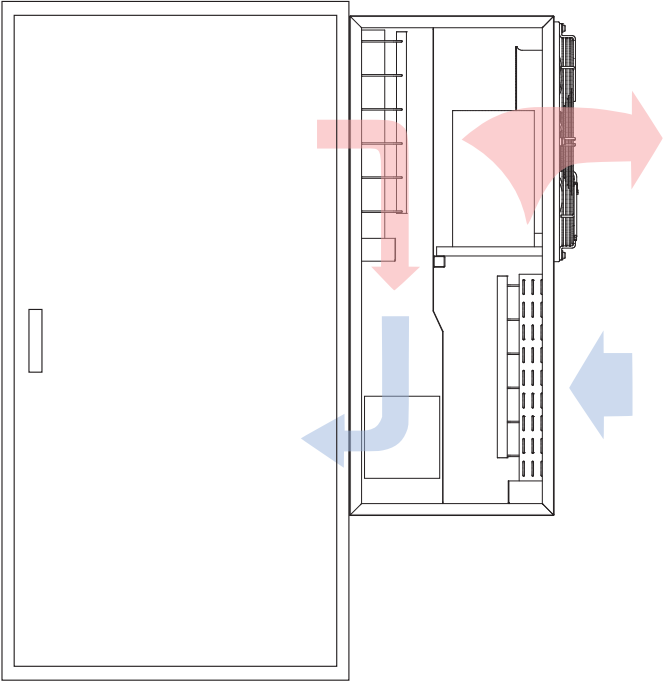
Another important element is the reduction of noise emissions. The use of innovative sound-absorbing materials makes it possible to install the AHP 7.0 device in densely built-up urban areas, which has been confirmed by an external testing unit.

Based on years of experience in manufacturing and servicing heating and cooling equipment, these units are easy to be serviced and remotely diagnosed. Access to the device is provided through a proprietary monitoring and management system, which allows remote setting of operating parameters, archiving of incidents and prediction of potential failures based on monitored operating parameters. The built-in management system significantly reduces potential operating and service costs.

The AHP 7.0 heat pump can operate in a redundant system and in parallel operation, allowing for doubling the power. It ensures optimal climatic conditions for equipment used in telecommunications (telecommunications cabinets and containers) and in energy storage.

REVERSIBLE AIR HEAT PUMP **AHP 7.0**

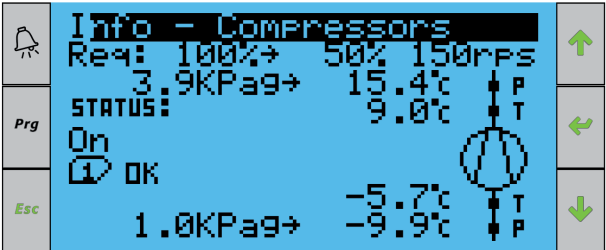
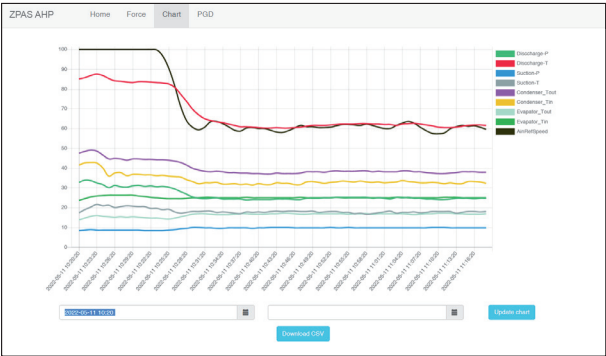
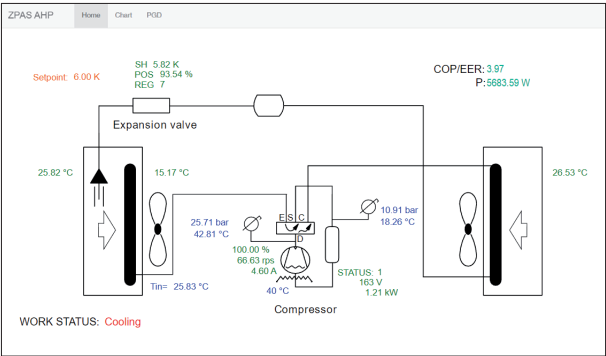
Cabinet cooling circuit



Technical data

|                                    |                       |
|------------------------------------|-----------------------|
| Cooling capacity A35A35            | 7 kW                  |
| Cooling capacity A35A50            | 6.5 kW                |
| Power supply                       | 230 V, 50 Hz          |
| Heating capacity                   | 9 kW                  |
| Maximum current input              | 14 A                  |
| Power consumption A35A35           | 3.5 kW                |
| Operating time                     | 24/7                  |
| Amount of agent R134               | 2.75 kg               |
| Maximum pressure                   | 23 bar                |
| External fan                       | 2400 m³/h             |
| Internal fan                       | 1200 m³/h             |
| Maximum sound level of the device  | 59 dB                 |
| Colour                             | RAL 7035              |
| Operating temperature              | from -15 to +50 °C    |
| Set temperature range              | from +5 to +50 °C     |
| Weight                             | 90 kg                 |
| Protection degree acc. to EN 60529 | IP 21/55              |
| Communication                      | Ethernet (local) RJ45 |
| Supported protocols                | HTTP, FTP, SNMP       |

An example of remote unit monitoring and control



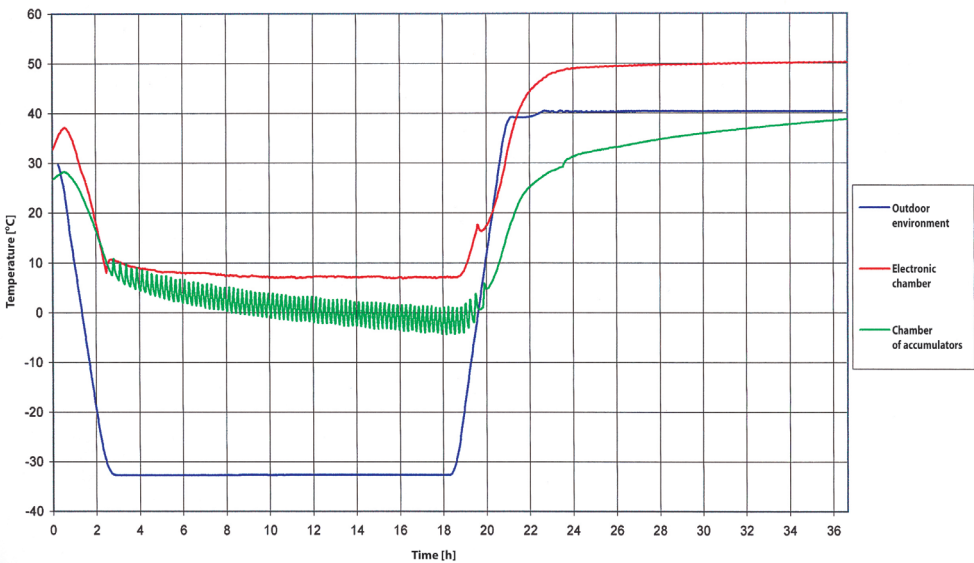
TESTS

Climatic tests

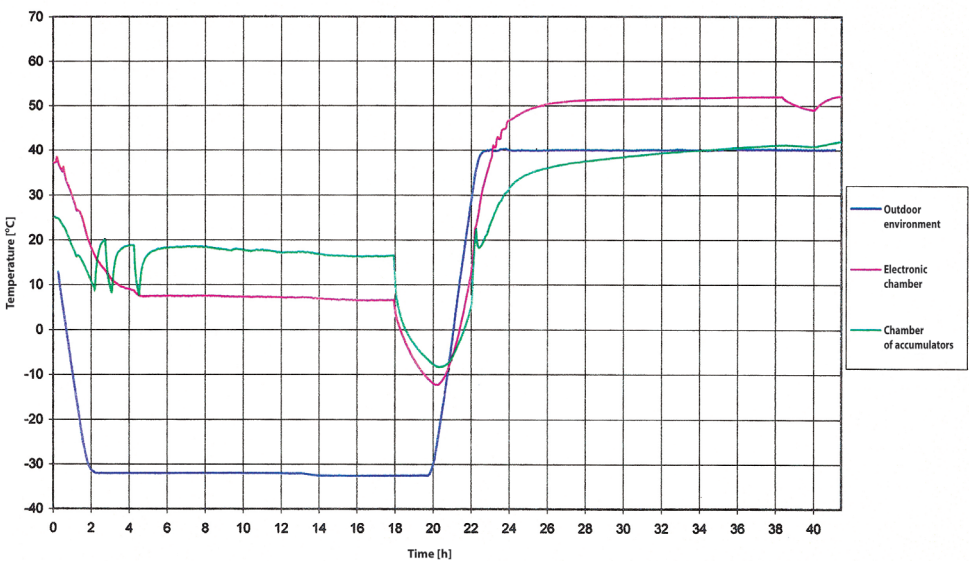
SZD cabinets equipped with access systems of different suppliers (Siemens, Ericsson, DGT, Ascom) have been climatic tested at Laboratory of Telecommunications Accessories and Devices Research in Szczecin. SZD cabinet was placed in climatic chamber, were it was first tested for 12 hours in temperature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



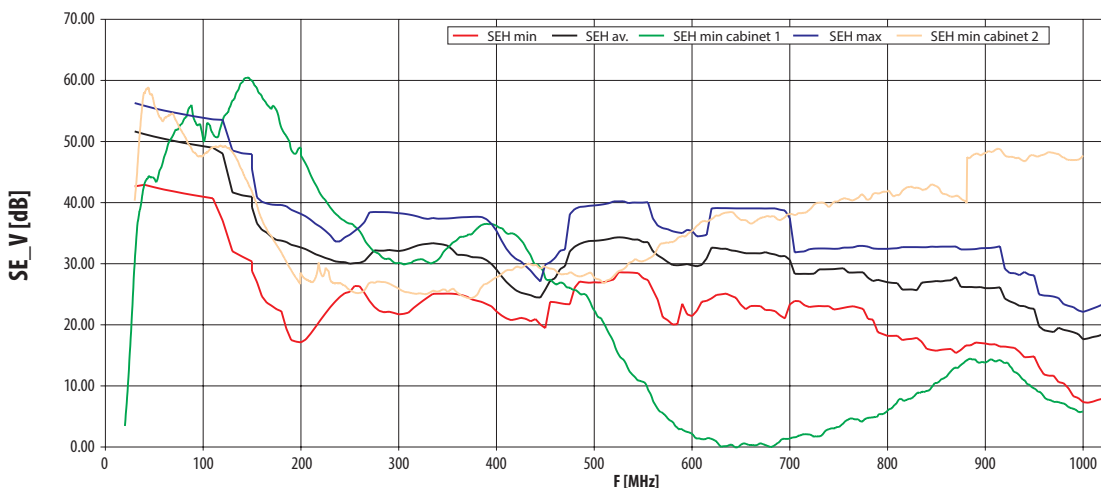


## Screening efficiency tests

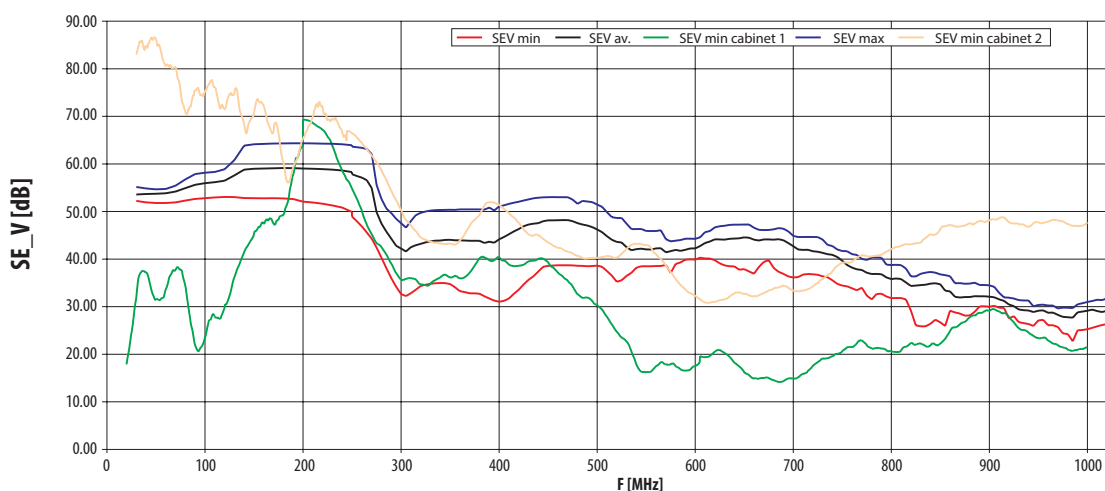
SZD cabinet was subjected to screening efficiency tests at the Telecommunication and Acoustic Laboratory of the Institute of Technology in Wrocław. On the basis of measurements, the cabinet's screening efficiency was specified in the magnetic field's frequency range of 100 kHz up to 1000 MHz:

- |                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>a) Screening efficiency in the frequency range of 100 kHz up to 30 MHz</p> <ul style="list-style-type: none"> <li>- for horizontal polarisation is included in the following limits: from 15 dB to 26 dB (average value varies from 18 dB to 22 dB),</li> <li>- for vertical polarisation is included in the following limits: from 21 dB to 44 dB (average value varies from 32 dB to 40 dB).</li> </ul> | <p>b) Screening efficiency in the frequency range of 30 MHz up to 1000 MHz</p> <ul style="list-style-type: none"> <li>- for horizontal polarisation is included in the following limits: from 55 dB to 5 dB (average value varies from 52 dB to 19 dB),</li> <li>- for vertical polarisation is included in the following limits: from 65 dB to 23 dB (average value varies from 59 dB to 29 dB).</li> </ul> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### CABINET'S SCREENING EFFICIENCY FOR THE HORIZONTAL COMPONENT OF THE ELECTRIC FIELD



### CABINET'S SCREENING EFFICIENCY FOR THE VERTICAL COMPONENT OF THE ELECTRIC FIELD

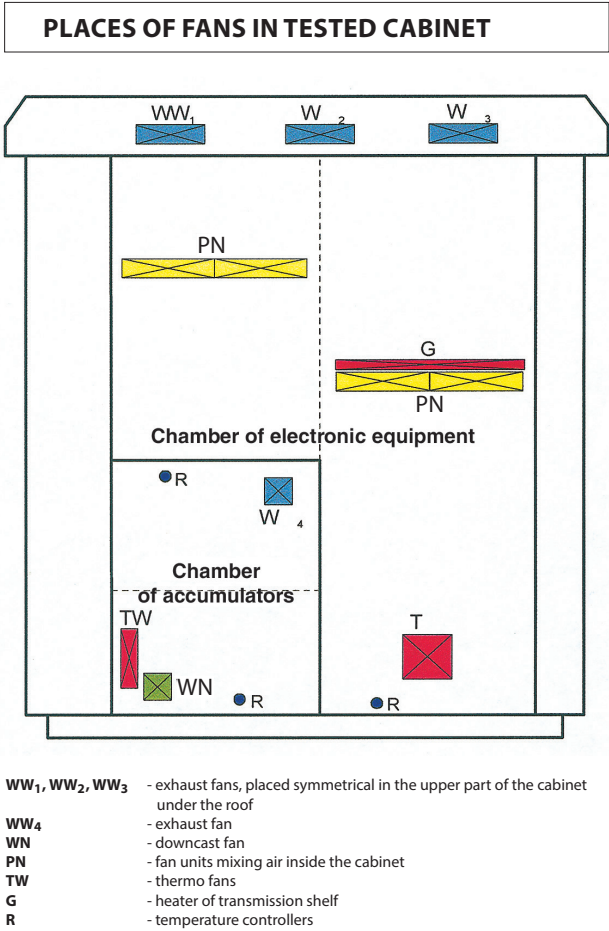


SUPPLEMENTARY ACCESSORIES

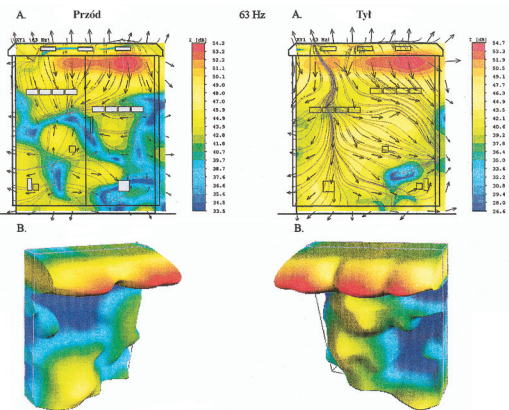
Acoustic tests

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.

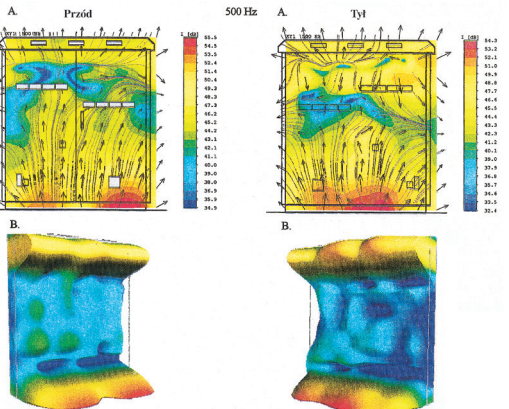
The diagrams below shows an example of the vector field distribution for sound intensity, and spatial radiation of acoustic energy in the front and rear of the cabinet.



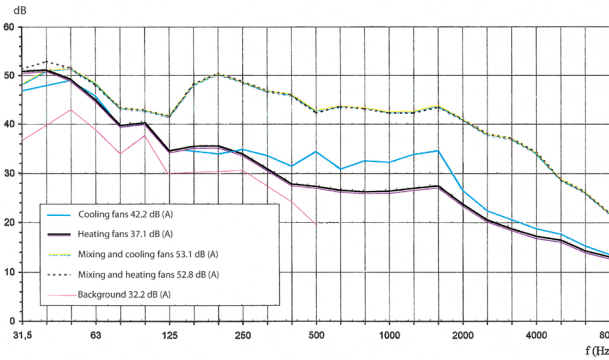
Sound diffusion for 63 Hz



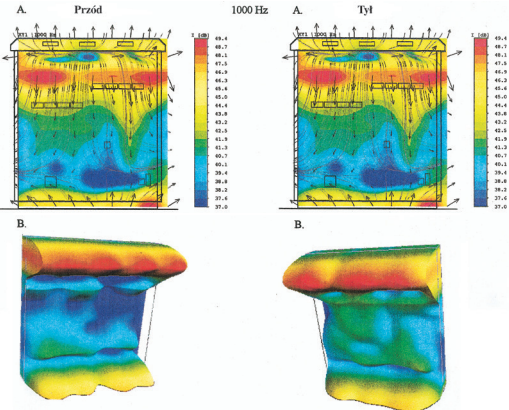
Sound diffusion for 500 Hz



**THE LEVEL OF NOISE EMITTED BY TESTED SZD CABINET (average values from 11 measuring points)**



Sound diffusion for 1000 Hz



SUPPLEMENTARY ACCESSORIES

Shelves

Shelves for mounting batteries of emergency power supply are made of stainless steel. Available in fixed and pull-out versions. Dimensions of shelf depend on quantity of mounted batteries.

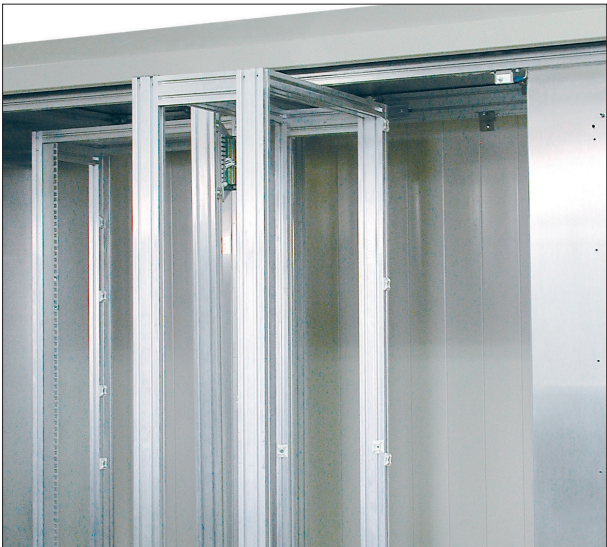


Swing frames

19-inch swing frames for installation of the devices.  
Dimensions of the frames are customised to the specific installation.



Double-section frame



Chest-like frame



SUPPLEMENTARY ACCESSORIES



Partition and cable entry

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



## SUPPLEMENTARY ACCESSORIES

## Door switch and door stop

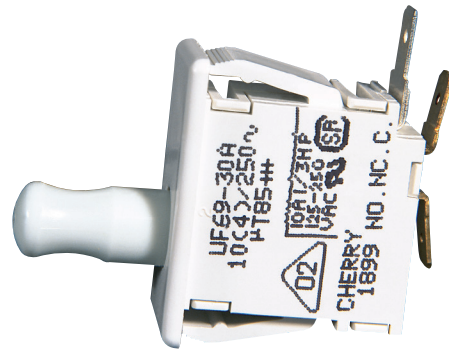
The 3-positioned door switch is mounted at cabinet's door, positions:

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

Use only in circuits with safe (extra-low) voltage.

**Example:**

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



### 3-positioned door switch



**Door stop and door switch in cabinet with equipment**



SUPPLEMENTARY ACCESSORIES

Handles for mounting of cabinet

Often, in case of small cabinets exists necessity to adaptation them to mounting directly on the wall or column. Then to the cabinet we mounted a special mounting handles.



Internal door

The door provides additional protection for the equipment installed in the cabinet. They can also be used as a lightweight mounting plate.





SUPPLEMENTARY ACCESSORIES

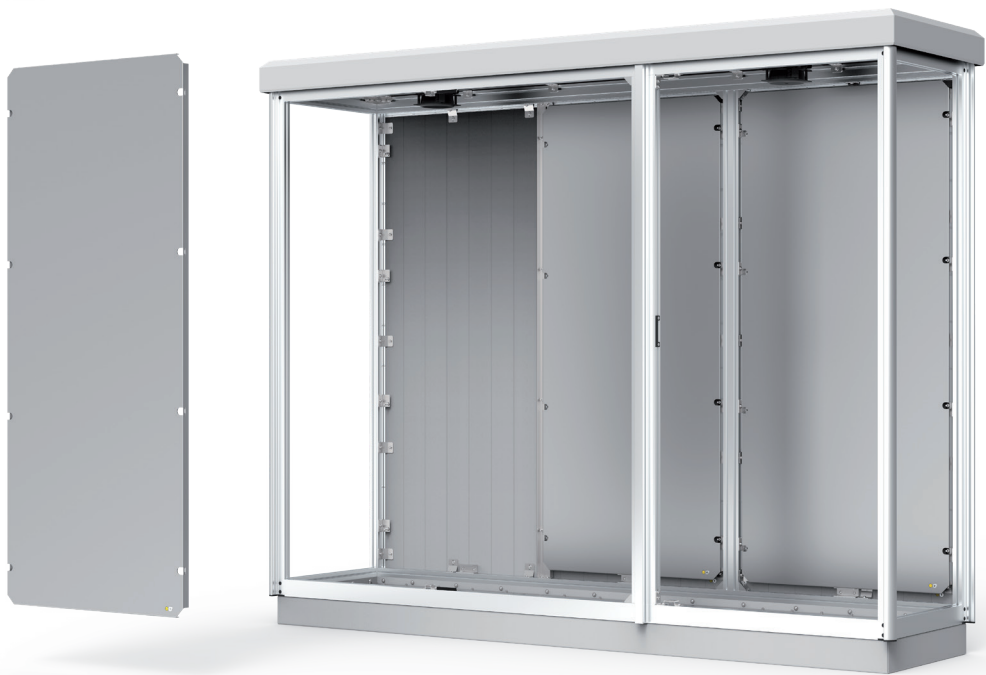
Anti rain roof

Tiltable roof to protect the inside of the cabinet and the service employees during work in the rain.



Divided mounting plate

Mounting plates fixed at the rear wall of the cabinet, creating a uniform surface for electrical equipment installation.



SUPPLEMENTARY ACCESSORIES

Systems of guaranteed power supply

ZPAS, a supplier of a full range of solutions, also offers complete systems of guaranteed power supply from highly reputed manufacturers.

Power supply systems are designed for uninterruptible supply of direct current to consumers with the rated voltage of 48 V in direct full-float operating mode based on rectifiers and battery packs. The systems can be supplied in the Front Terminal version with all terminals and connectors located on the front panel of the system. In the basic version, the enclosure of the power supply system is suitable for installation in 19" cabinets (racks).

Application:

- professional telecommunications systems
- end-user telecommunications systems
- IT network systems
- industrial automation systems



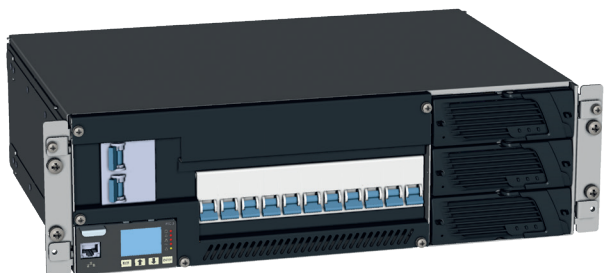
Rectifier power supply system  
19IN-1U

- Max power: 3 x 850 W
- 19" enclosure, 1 U height
- Battery protection: 2 x MCB (50 A)
- Load protection: max. 6 x MCB (max. 30 A)
- Orion controller
- Low voltage disconnect (LVD) in the battery circuit



Rectifier power supply system  
19IN-2U

- Max power: 6 x 850 W
- 19" enclosure, 2 U height
- Battery protection: 2 x MCB (100 A)
- Load protection: max. 12 x MCB (max. 30 A)
- Orion controller
- Low voltage disconnect (LVD) in the battery circuit



Rectifier power supply system  
19IN-3U

- Max power: 3 x 2900 W
- 19" enclosure, 3 U height
- Battery protection: 2 x MCB (80-125 A)
- Load protection: max. 11 x MCB (max. 63 A)
- Orion controller
- Low voltage disconnect (LVD) in the battery circuit

SUPPLEMENTARY ACCESSORIES

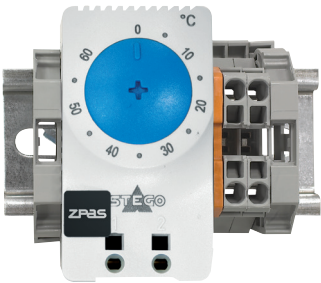
Thermostat

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.

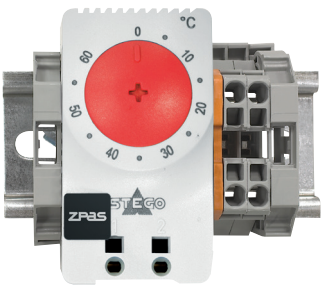
TECHNICAL DATA

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

**Thermostat normally open**  
Switches on ventilation system (e. g. fans) at selected temperature limit.



**Thermostat normally closed**  
Switches off off devices (e. g. heaters) at selected temperature limit.



Heater

Compact heating device including heating element and fan.

TECHNICAL DATA

- voltage rating ..... 230 V AC 50-60 Hz
- heating power (2 levels) ..... 200/400 W
- fan capacity .....10 m<sup>3</sup> /h
- protection degree ..... IP 20
- dimensions ..... 71 x 70 x 95 mm
- mounting ..... bracket for DIN rail mounting





SUPPLEMENTARY ACCESSORIES



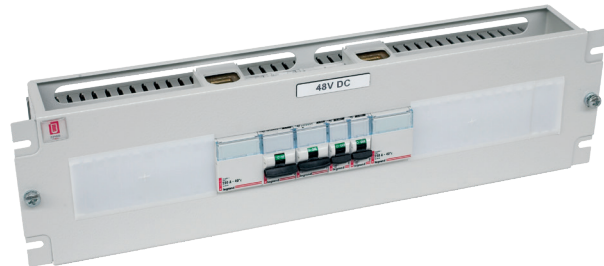
Insulating base

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



Voltage distribution panels

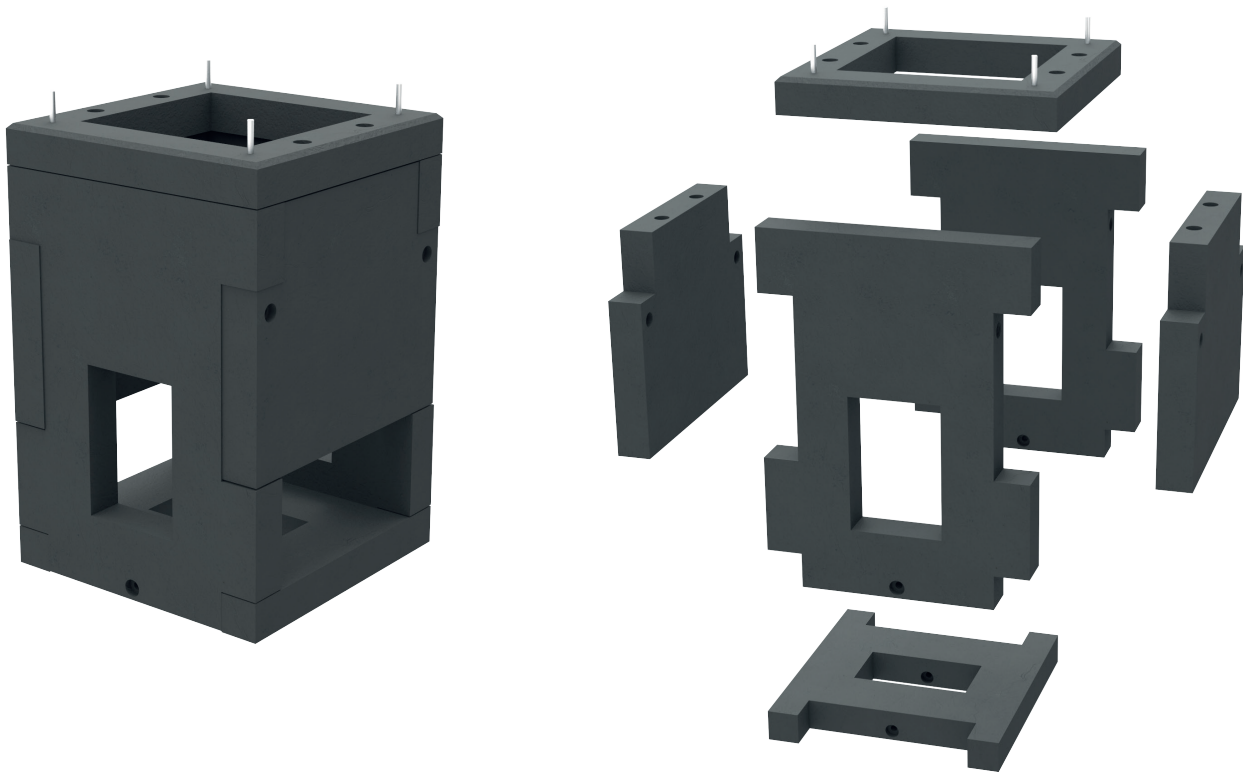
Cabinets can be equipped with power distribution panels configured according to customers' request.



SUPPLEMENTARY ACCESSORIES

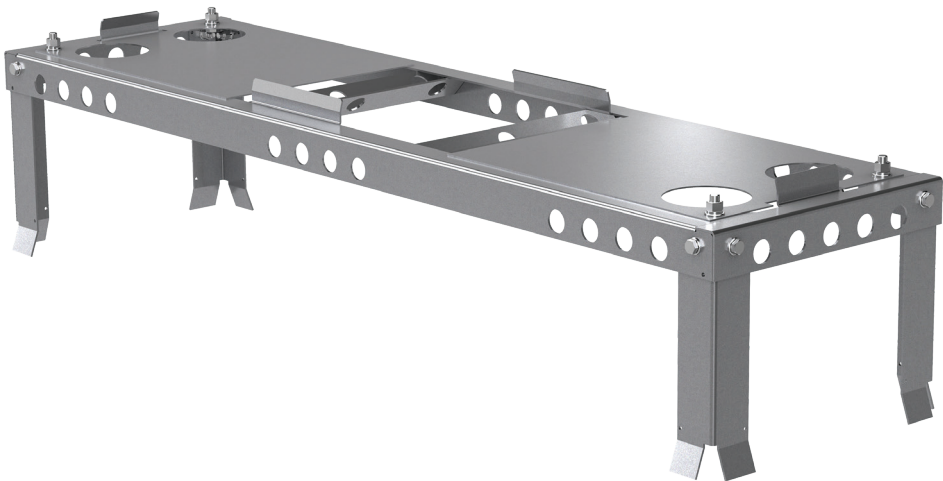
Concrete foundations

In order to provide a complete range of services, ZPAS also offers concrete foundations. These are prefabricated elements either with a monolithic design or connected by means of M10 bolts. In the upper part of the foundations there are M12 anchor bolts welded to the reinforcement. The spacing of the bolts is adjusted to the plinth size of different outdoor cabinets. All parts are moisture-protected. Openings on both sides of the foundations serve as cable entries.

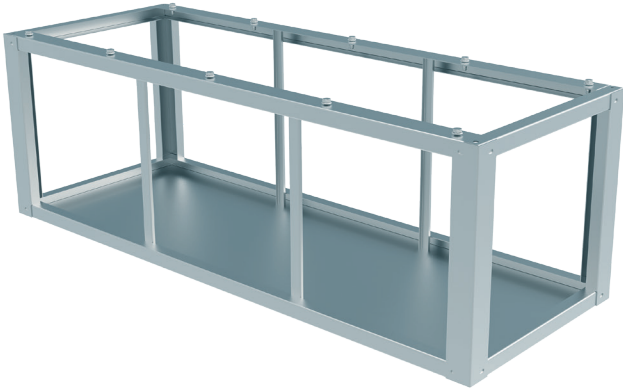


Frame for concrete

Foundation frame for concrete to be placed under SZD cabinet.  
Equipped with positioning handles and templates for laying conduit pipes.



SUPPLEMENTARY ACCESSORIES

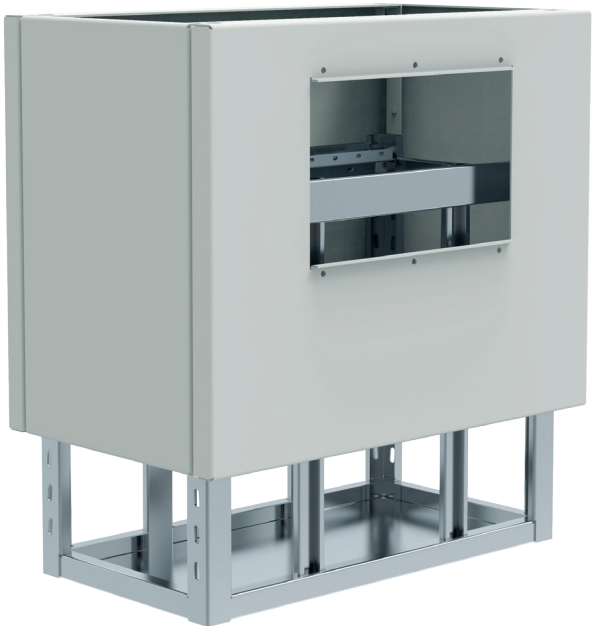


**Plinth base**

Foundation frame for the SZD outdoor cabinet, made of stainless steel.  
Designed to be filled with concrete or backfilled with soil.

**Plinth with height-adjustable base**

A 600 mm high aluminium plinth for the SZD outdoor cabinet, with an extendable stainless steel foundation frame to be filled with concrete or backfilled with soil.





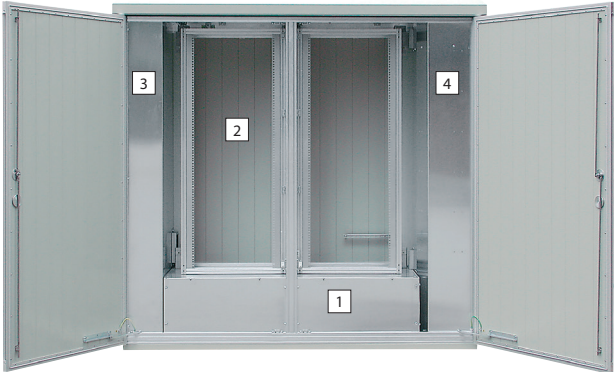
## SZD CABINETS IN ACCORDANCE WITH EMC STANDARD

**EMC shielded cabinets**

EMC shielded cabinets are used when devices which are mounted inside the cabinet require protection in electromagnetic 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 panels, door).



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.

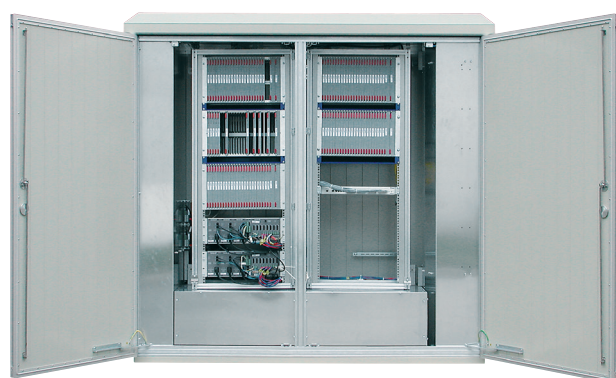




## APPLIANCES IN SUBSCRIBERS' ACCESS SYSTEMS

**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.



## OUTDOOR CABINETS FOR POWER INDUSTRY

SZD Cabinets are used as an enclosure for measuring systems and also for energetic distribution. Enclosures of this type require a special organization of the cabinet interior. Applied in earlier solutions, mounting bars were replaced by mounting boards or systems of special cross bars. Often, on the outside of the cabinets, an energetic terminal socket is additionally installed.



**FS wiring cabinet**

For more information see catalogue  
ZPAS Control Cabinets & Electric Switchgears

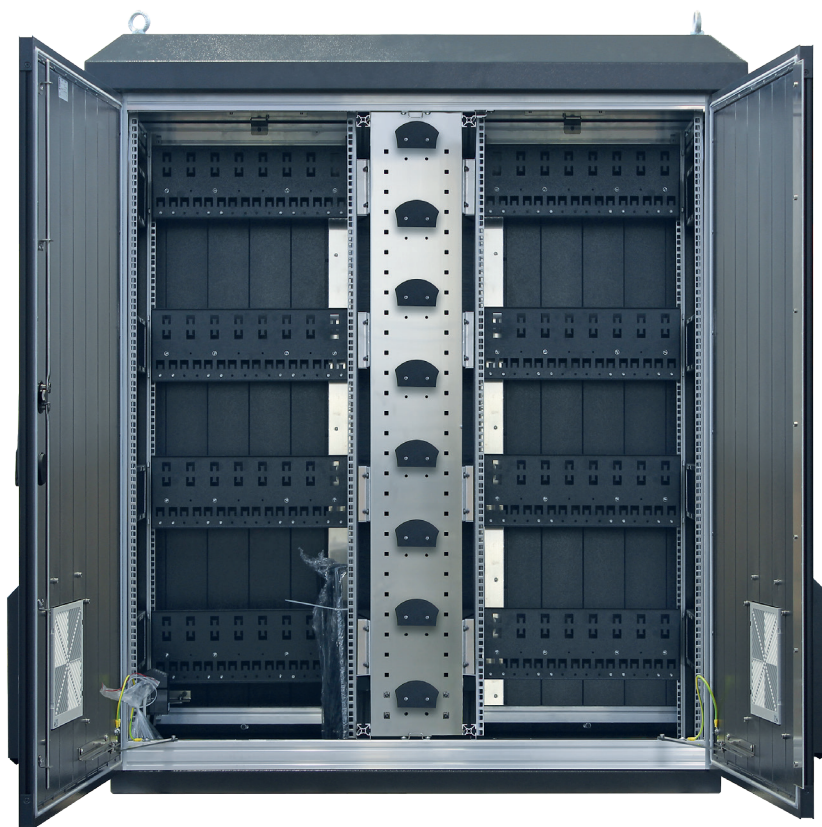


**Outdoor cabinet for lighting control**





## OUTDOOR CABINETS ADAPTED FOR FIBER OPTIC SYSTEMS



SZD cabinets can be equipped with special elements to lay and organize fibre optic cables.

The pictures show sample solutions – cabinets equipped with fibre optic cable tube distributors (mounted on 19" mounting profiles) and a vertical organizer with reserve reels.

It is possible to configure the cabinet for individual customer needs.



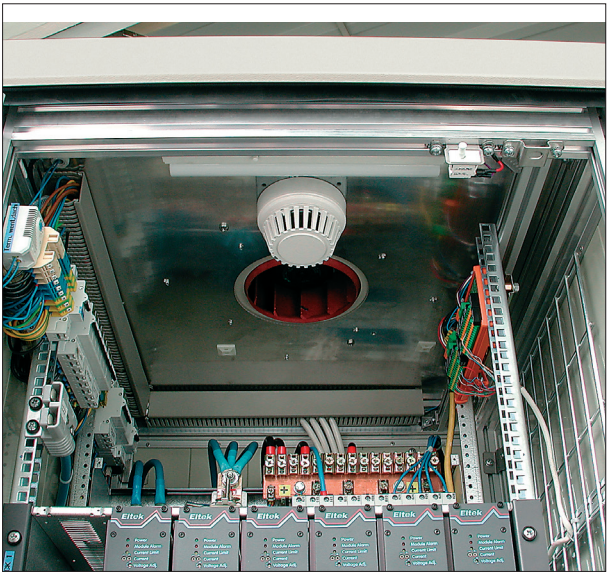


OUTDOOR CABINETS ADAPTED FOR POWER SUPPLY SYSTEMS

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 m³/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.



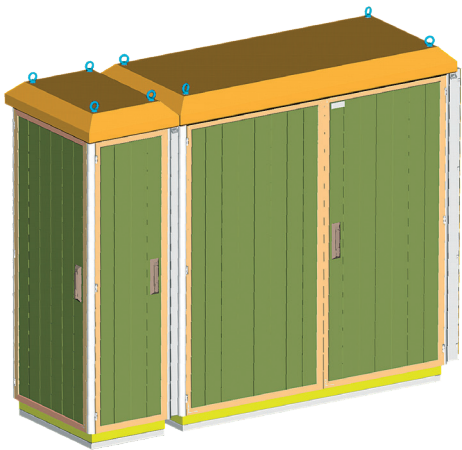
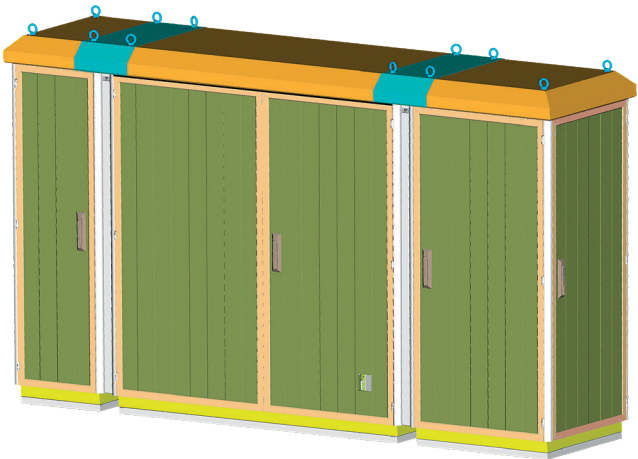
EXTENSION OF OUTDOOR CABINETS

Often after several years since moment of installing the cabinet appears a necessity of installation in enclosures a new equipment. With way on fact that space in cabinets was already used earlier, it state a serious problem for fitters. Going out to opposite of requirement ZPAS company worked out three ways of increasing existing cabinet:



Cabinet before extension

**1) Extension of cabinet on sides** – This solution consists on attaching to existing cabinet extension parts which can be used as f. ex. MDF section, battery section, chamber of devices, power section etc.



Idea of outdoor cabinets Extensions



The cabinet after extension





EXTENSION OF OUTDOOR CABINETS

**2) Cover plate on cabinet** – the solution consists on disassembly of doors and side panels in old cabinet and putting on from top, new larger enclosure. It covers so far installed equipment and it allows on adding new one. This variant does not require stopping work of installed equipment on time of exchange enclosure.



Cabinet before extension



Cabinet during extension



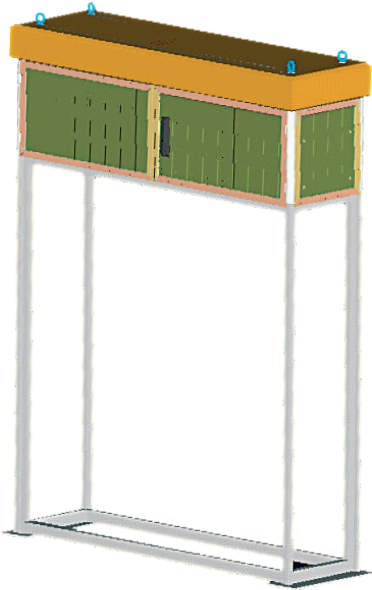
The cabinet after extension



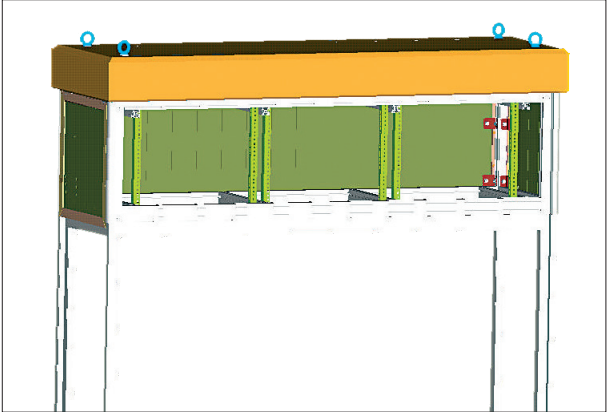
The cabinet after extension



EXTENSION OF OUTDOOR CABINETS



**3) Extension upwards** – the solution consists on disassembly of external mantle and internal roof then putting on and installing top extension part.



Idea of outdoor cabinets extensions



The Cabinet after extension



The cabinet after extension



The cabinet after extension

OUTDOOR CABINETS MADE OF ALUMINIUM SHEETS

Outdoor cabinets made of aluminium sheets come in two types:  
Single-wall cabinet – made of sheet metal with a thickness of 2 mm  
Double-wall cabinet – outer jacket and metal sheet frame with a thickness of 2 mm, metal sheet inner cladding with a thickness of 1 mm or 1.5 mm (depending on the cabinet size).  
All outdoor cabinets are custom-made. You can order a cabinet in size, with partition of cabinet's interior and supporting structure of your choice.



To ensure appropriate climatic conditions inside an enclosure, we use various types of heat removal systems (ventilating fans, heat exchangers, air conditioners), and the right number of heaters, depending on your needs.

To improve insulation, the cabinet's interior can also be lined with insulating foam.

The cabinets have IP 54 protection degree.

OUTDOOR CABINETS MADE OF STAINLESS STEEL SHEET





SAMPLE CUSTOMISED CABINETS



Cabinets with a glass panel in the door, mounting plate, swing frame and air conditioner



Cabinet for battery charger

Cabinet based on standard SZD type; aluminium doors and side panels were replaced by aluminium sheet.



SAMPLE CUSTOMISED CABINETS



Cabinets with a glass panel in the door



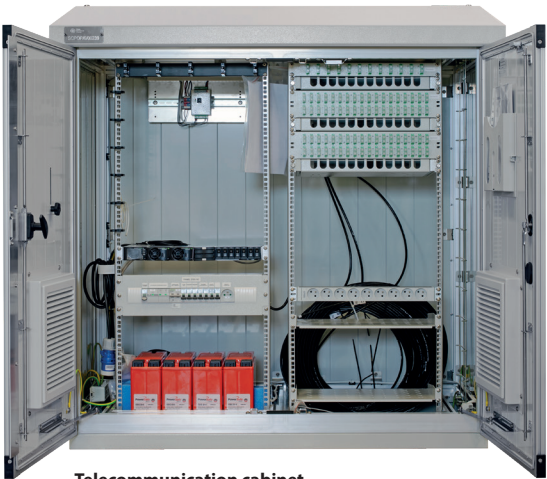
Mobile cabinet



SAMPLE CUSTOMISED CABINETS



4700 mm wide cabinet set



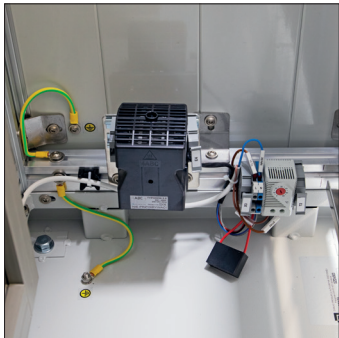
Telecommunication cabinet



Air-conditioned cabinet with foam insulation



SAMPLE CUSTOMISED CABINETS



Cabinet with a mimic panel



SAMPLE CUSTOMISED CABINETS



Inverter cabinet



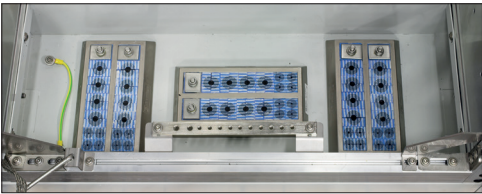
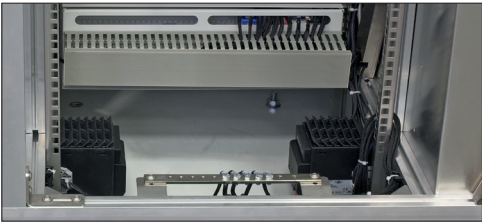
Wiring cabinet



SAMPLE CUSTOMISED CABINETS



Reinforced cabinet





SAMPLE CUSTOMISED CABINETS



Battery cabinet with cooling and additional burglary protection



Cabinet designed as an additional enclosure for a rack, placed in it's inside



SAMPLE CUSTOMISED CABINETS



Cabinets for charging systems



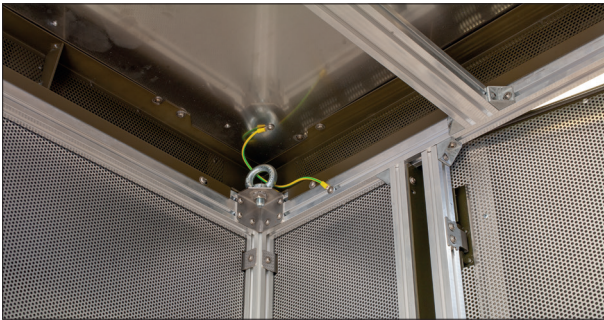
Cabinets for railway systems



SAMPLE CUSTOMISED CABINETS



Large-size customised cabinet





SAMPLE CUSTOMISED CABINETS



Cabinet extensions



Telecommunications cabinet



SAMPLE CUSTOMISED CABINETS



Small cabinets with direct ventilation

SAMPLE CUSTOMISED CABINETS



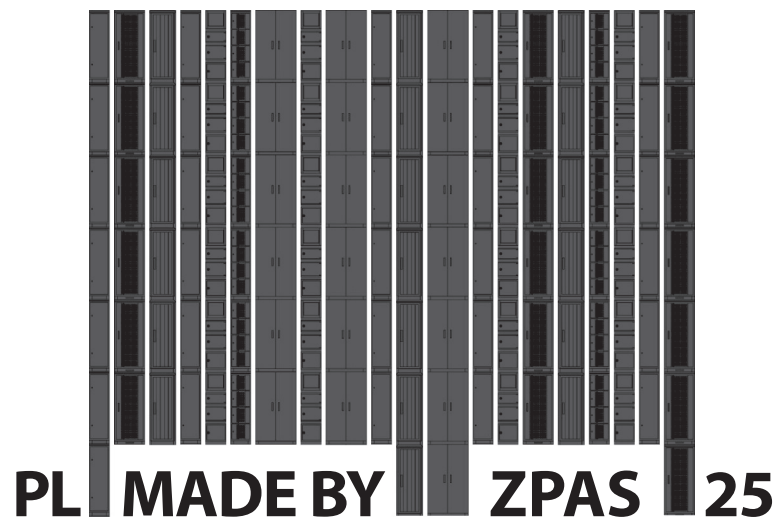
Fibre optic cabinet



TETRA system cabinet







Catalogue of ZPAS Products

**Outdoor Cabinets**

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Technical modifications shall not affect product functionality.  
Misprints and errors of content that may be found in this  
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|                                          |
|------------------------------------------|
| ZPAS S.A.                                |
| PRZYGÓRZE 209 · 57-431 WOLIBÓRZ · POLAND |
| PHONE: +48 74 872 01 00                  |