CODE: **DSOP24V** v.1.0/XII **EN**

TYPE: **Power supply system DSO 24V for Paviro system by BOSCH**

## System features:

CNBOP-PIB

CE 1438 17

Pulsar

Power supply unit for fire systems used in building industry.
Declared performance: Fire safety.
Certificate of constancy of performance: 1438-CPR-0493
Certificate of admittance: 4419/2021
Conformity: EN 54-4:2001+ A1:2004 + A2:2007
EN 12101-10:2007 + AC:2007

CONFI® DSO

Compliant with the requirements of the
- EN 54-4:2001+ A1:2004 + A2:2007
- and EN 12101-10:2007 + AC:2007 standards and pt. 12.2 of the Regulation of the Minister of Interior and Administration of the Republic of Poland of 20.06.2007
- The CONFI-DSO is a program for designers that has been designed with BOSCH to support the DSO configuration
- Calibration of batteries using the installer interface
- Internal memory of the last 30 events is available via the LED display
- LED optical indication
- Output voltage readings
- Readings of the output current during battery operation
- Resistance of the battery circuit readings
- Failure codes with history
- Ethernet communication:
  - Built-in powerful web server
  - Online remote monitoring of operating parameters for a period of around 100 days: voltage, current, and the resistance in the battery circuit
  - Event log of up to 32768 power system failures
  - Automatic email notifications about power failures
  - SSL email encryption
  - Remote battery test
  - The battery operating temperature readings from the period up to 5 years
  - A real-time clock (RTC) with battery backup
  - RTC synchronization with external NTP server
- The PSG3LA LED panel for optical and acoustic indication compliant with the PN-EN54-16 standard for evaluating the DSO system operation
- The LZxxxx safety strip with overcurrent fuses, surge arresters and a dummy connector
- Single-phase or 3-phase power supply
- 230 V AC LDxxxx voltage distribution terminal
- Grounding terminals
- Full wiring of the housing adjusted individually for each configuration
- Dimensions of RACK cabinets: 24U(600x600), 36U(600x600), 42U(600x600, 600x800), 45U(600x600, 600x800), 50U (600x800)
- Protection Class: IP30Ł
- Batteries included
- Mounting bracket for batteries
- Mounting shelves for sound system equipment (controller, routers, amplifiers)
- Support for up to 2 strings of batteries
- 27,6 V DC Uninterruptible Power Supply
- High efficiency (up to 90%)
- 320 W-1000 W power supply units of the PS24DSOxxxx series.
- Independently protected outputs for OUT1…9 amplifiers
- Three independently protected power supply outputs for ROUTER1…6 router outputs
- Fuse status control
- LED indication of fuse failure for all outputs

- Microprocessor-based automation system
- The measurement of the resistance of the battery circuit
- Automatic temperature compensation of the battery charging
- Battery test
- Two-phase battery charging
- The accelerated battery charging function
- Battery electrical continuity control
- Battery voltage control
- Battery fuse status control
- Battery charge and maintenance control
- Under-voltage protection (UVP).
- Battery overload protection.
- Battery output protection against short-circuit
- Battery discharge current control
- Output voltage control
- Acoustic indication of failure
- Adjustable indication time of the 230 V AC power failure indication
- ALARM – technical output of collective failure
- Technical input of collective failure EXTi
- Technical outputs - relay type.
- EPS – technical output of 230 V AC power failure indication
- PSU – technical output of power supply failure indication
- APS technical output of battery failure indication
- Protection types:
  - SCP short-circuit protection
  - OLP overload protection
  - OHP overheat protection
  - Surge protection
- The shelf for firefighter's microphone - optional accessory
- The DSOS24V firefighter's microphone power supply unit compliant with the PN-EN 54-4 and PN-EN12101-10 standards, and article 12.2 of the Regulation of the Minister of Interior and Administration of the Republic of Poland of 20.06.2007 - optional accessory
- The enclosure of the DSOS24V-PU firefighter's microphone - available as an option
- The AWO506 End of Line (EOL) Supervision Board - available as an option
- Forced cooling --fan panel with a thermostat, optional accessory for 24U, standard for 36U, 42U, 45U, 50U
- Warranty:
  - Power supply unit – 3 years from installation date, but not more than 3,5 years from date of manufacture
  - Batteries – 1 year from installation date.

# General description of the power supply system of the DSO.

The DSOP24V power supply system is designed for uninterrupted supply of Voice Alarm Systems requiring stabilized voltage of 24 V DC (-15%, +20%). The system can be equipped with a 320 - 1000 W power supply unit with independently protected outputs for 5 or 9 audio amplifiers (each with 1000 W power), 6 routers, and 1 controller.

The power supply is designed to supply 24 V DC power to the controller and routers while the power supply is powered directly from a 230 V AC mains supply. In the case of mains power loss, all devices immediately switch to a 24 V DC battery backup. The entire VAS system with batteries is configured to provide the alarm and supervision within the time required by the regulations when using backup power.

The DSO power supply system is housed in a RACK 19" enclosure with a space for additional equipment and appropriate battery packs. The power supply unit uses maintenance free Sealed Lead-Acid (SLA) batteries (AGM or gel batteries, included) The system allows connection of 1 or 2 strings (circuits) of batteries, each with up to 230Ah, which allows for a total capacity of 460Ah.

Power supply from the power grid can be supplied to the cabinet in the form of 1-phase or 3-phase connection, which depends on the total power consumed by the DSO devices.

The power supply unit is equipped with a system for measuring the resistance of batteries. Battery monitoring is performed independently for each installed battery string.The power supply is equipped with an additional Ethernet module with a 10Base-T/100Base-TX interface to connect to the Internet. Such a configuration enables the remote monitoring of the Voice Alarm System over the Internet from anywhere. The Ethernet module has a built-in powerful web server that allows remote monitoring of the current status of the power supply in the browser of any PC computer. In addition, an email alert allows sending information about the system status in case of certain events. The CONFI-DSO program is designed for the proper and fast configuration of the DSO cabinet; based on the implemented design parameters, the program selects a complete power supply system taking into account the required backup time.

# The PS24DSOxxxx power supply unit.

The PS24DSOxxxx power supply is the main component of the VAS power supply system supplying power to the controller and routers of the DSO system during normal operation (mains supply operation) and performs advanced battery charger functions.

Due to its modularity, the power supply can be configured in one of several possible variants, differing in power, the number of outputs for audio amplifiers, and the number of battery strings. Depending on the design requirements the power supply can have a power of 320 - 1000W and work with batteries with a capacity of up to 460Ah.

In addition, each power supply unit is equipped with an additional Ethernet module with a 10Base-T/100Base-TX interface to connect to the Internet. Such a configuration enables the remote monitoring of the Voice Alarm System over the Internet from anywhere.

Choosing the right power supply configuration taking into account all the requirements is done automatically using the „CONFI-DSO" support program.

PS24DSOxxx-5W1B-E


PS24DSOxxx-5W2B-E


PS24DSOxxx-9W1B-E


PS24DSOxxx-9W2B-E

# The LZxxxx safety strip.

Safety strip is fitted with circuit breakers, surge arresters, and a dummy connector. The main overcurrent circuit breaker disconnects the 230 / 400 V mains from all system devices.

In addition, the power supply circuit is fitted with an overcurrent circuit breaker allowing its disconnection, e.g. for maintenance purposes, without disconnecting other devices of the DSO. In addition to the main switch, it is fitted with „type 3" surge arresters compliant with the EN 61643-11 standard.

The dummy connector includes overcurrent circuit breaker which can be switched on regardless of the status of the main switch.

LZ1F1B

LZ1F2B

LZ3F1B

LZ3F2B

# 230 V AC LDxxxx voltage distribution terminal.

The voltage distribution terminal is equipped with 230 V connection sockets and is used to supply components of the DSO. Depending on the number of devices and the amount of power consumption, the terminal can have a 1-phase or 3-phase connection. The 3-phase version enables a more uniform load per phase of the power grid. The terminal is placed in the rear of the cabinet.

LD1F6G

LD3F6G

# The PSG3LA panel for optical and acoustic indication.

The optional panel for optical and acoustic indication compliant with the PN-EN54-16 standard indicates the status of the entire DSO system. It is equipped with three LEDs, a sounder, and a reset button of acoustic indication.

The panel can indicate three different operating states

CONTROL – Normal state, indicating the presence of mains power.
ACOUSTIC INDICATION – Fire alarm status, acoustic indication ON
FAILURE – Fire alarm status, acoustic indication ON

The indication panel is fitted with two alarm signal inputs:
- ACOUSTIC INDICATION
- FAILURE

Inputs should be connected to the control panel or other signaling device. For proper signalization, the terminals mustbe normally (without failure) opened; in the case of failure, they must be closed. A voice alarm signal or failure indication triggers the appropriate optical and acoustic indication. The button on the front panel allows muting the acoustic signal, while the optical signal remains unchanged. Once the failure is cleared, the optical and acoustic indication will automatically be stopped and the green indicator will light up to indicate that the system is operating properly.


# The RAWP600RZ fan panel.

The DSO cabinet is equipped with a ventilation panel located in the upper part of the housing to force the air flow to the heat emitting devices. Normally, the ventilation panel is mounted in a 36U, 42U, 45U, 50U, and (optionally) 24U cabinet.

The fans are controlled by a nearby bimetallic thermostat that allows setting the activation temperature in the range 0-60ºC with the adjustment knob. The fans are powered from the 230 V mains; in the case of the power loss, they are switched off.

# Remote monitoring

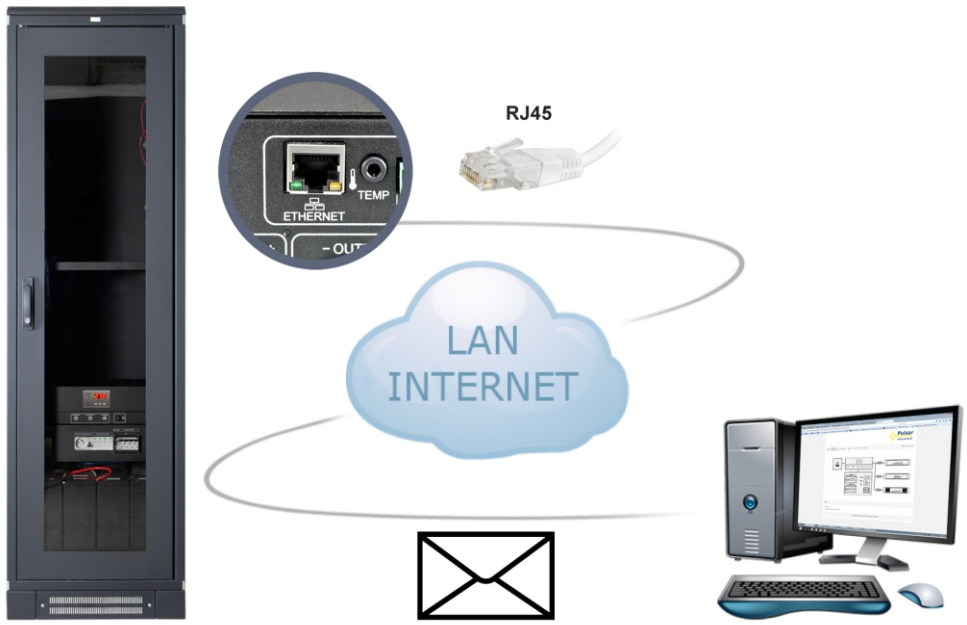
The power supply is equipped with an additional Ethernet module with a 10Base-T/100Base-TX interface to connect to the Internet. Such a configuration enables the remote monitoring of the Voice Alarm System over the Internet from anywhere.

Main features:

- Built-in powerful web server
- Online remote monitoring of operating parameters for a period of around 100 days: voltage, current, and the resistance in the battery circuit
- Event log of up to 32768 power system failures
- Automatic email notifications about power failures
- SSL email encryption
- Remote battery test
- The battery operating temperature readings from the period up to 5 years
- A real-time clock (RTC) with battery backup
- RTC synchronization with external NTP server

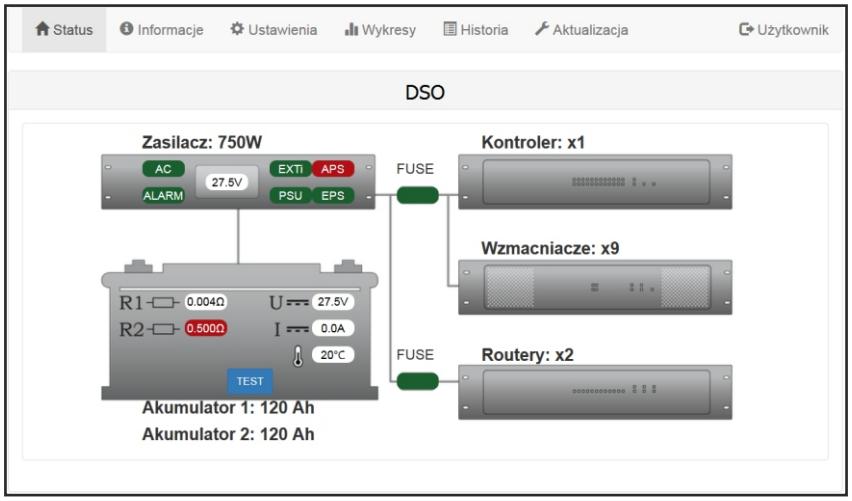
The Ethernet module has a built-in powerful web server that allows remote monitoring of the current status of the power supply in the browser of any PC computer. In addition, an automatic email alert is available. The messages contain information about the current errors, e.g.: „No AC power", „High resistance in the battery circuit", „AUXn fuse failure", etc., with the exact time of failure. In addition, each event contains additional information in the form of technical parameters recorded at the time of occurrence.

Time periods between alerts and types of initiating events are individually configured by the user.



# Remote monitoring

The main screen view.




The operation history diagram.

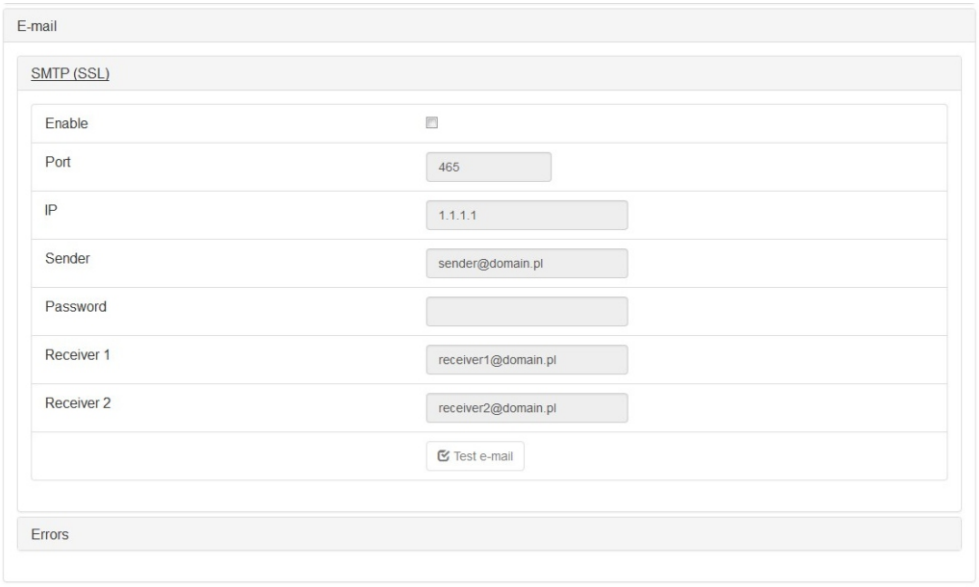

The event log.

| Typ | L.p. | Data i czas | Zdarzenie | Sygnały | Uaux [V] | Ubat [V] | Ibat [A] | Tbat [°C] | R1 [Ω] | R2 [Ω] |
|---|---|---|---|---|---|---|---|---|---|---|
| ℹ | 374 | 27.01.2017, 09:45:43 | I24 - Zalogowany: 192.168.192.84 (2) | 1001100 | 28.0 | 28.0 | 0.0 | 13 | 0.020 | 0.500 |
| ℹ | 373 | 27.01.2017, 09:40:36 | I24 - Zalogowany: 192.168.192.91 (1) | 1001100 | | | 0.0 | 13 | 0.018 | 0.500 |
| ⚠ | 372 | 27.01.2017, 09:40:29 | F18 - Wysoka rezystancja obwodów akumulatora | 1001100 | | | 0.0 | 13 | 0.018 | 0.500 |
| ℹ | 371 | 27.01.2017, 09:40:29 | I25 - Start systemu: (3) | 0000000 | | | 0.0 | 0 | brak | brak |
| ℹ | 370 | 27.01.2017, 09:39:53 | I26 - Aktualizacja oprogramowania | 1001100 | 28.0 | 28.0 | 0.0 | 13 | 0.018 | 0.500 |
| ℹ | 369 | 27.01.2017, 09:39:30 | I24 - Zalogowany: 192.168.192.91 (2) | 1001100 | 28.0 | 28.0 | 0.0 | 13 | 0.018 | 0.500 |
| ℹ | 368 | 27.01.2017, 09:20:20 | I24 - Zalogowany: 192.168.192.84 (2) | 1001100 | 28.0 | 28.0 | 0.0 | 13 | 0.018 | 0.500 |
| ℹ | 367 | 27.01.2017, 09:16:35 | I24 - Zalogowany: 192.168.192.91 (1) | 1001100 | 28.0 | 28.0 | 0.0 | 13 | 0.018 | 0.500 |
| ⚠ | 366 | 27.01.2017, 09:16:23 | F18 - Wysoka rezystancja obwodów akumulatora | 1001100 | 28.0 | 28.0 | 0.0 | 13 | 0.018 | 0.500 |

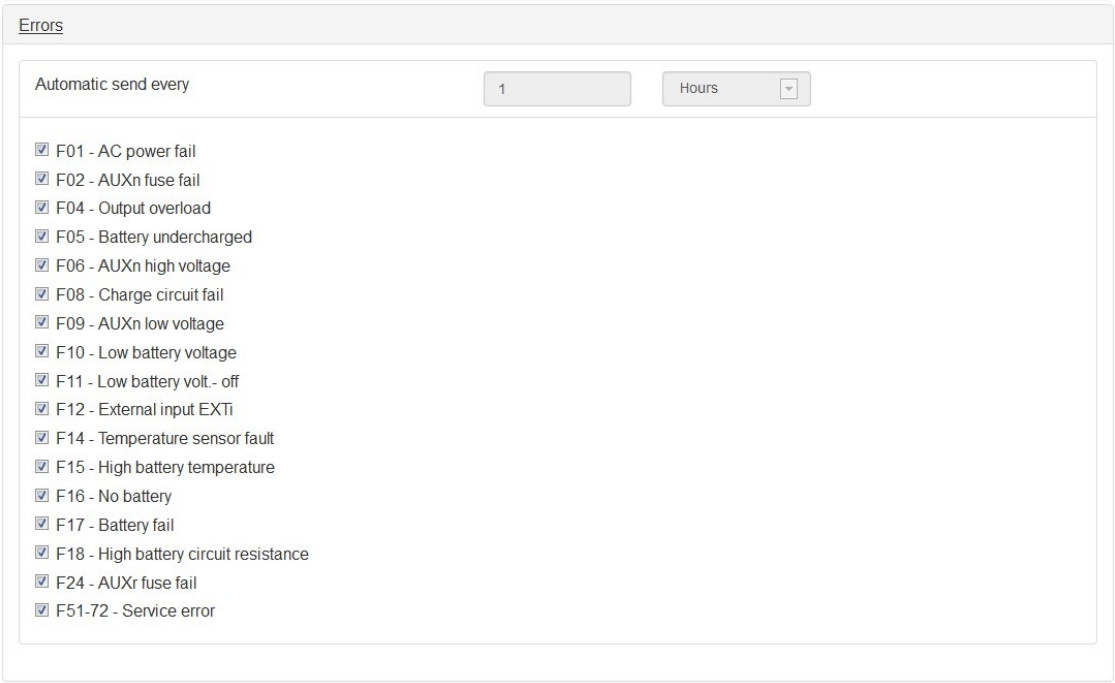
AC - Załączony
LB - Wyłączony
EXTI - Wyłączony
EPS - Zwarty
PSU - Zwarty
APS - Otwarty
ALARM - Otwarty

# E-MAIL messages

The VAS power supply allows sending email notifications to 2 recipients when a specific event occurs. The function includes SSL-encrypted SMTP user authentication to maintain the security of your mail account.



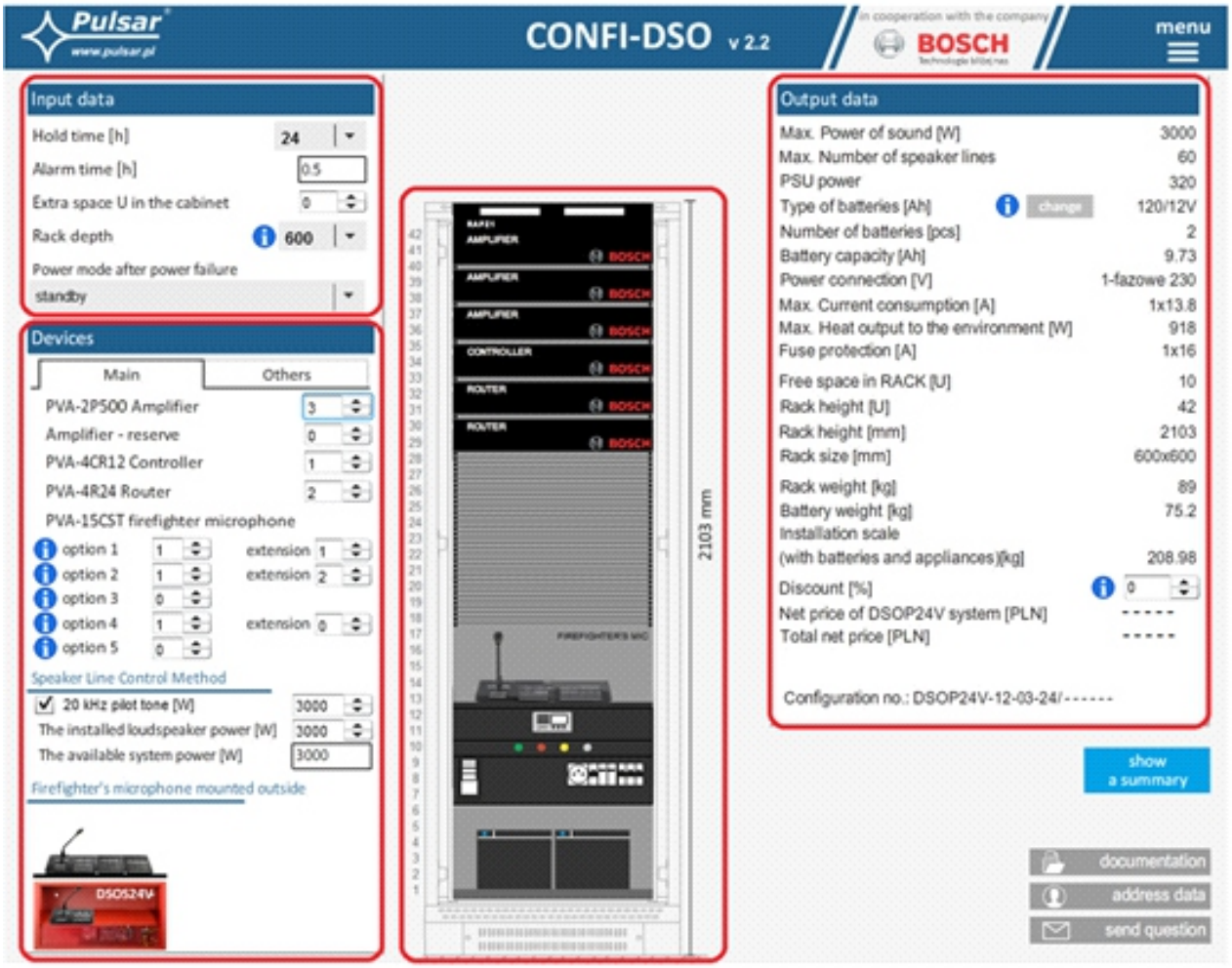

The program allows choosing events, which will initiate notification sending. When an email notification event occurs, the power supply will send the message to the recipients after the time set in the "send automatically" field. A full list of events is shown in the window below.



# The CONFI-DSO program for designers

The CONFI-DSO program is designed for the proper and fast configuration of the DSO cabinet; based on the implemented design parameters, the program selects a complete power supply system taking into account the required backup time.

The program consists of several separate parts: input data, device list, graphical presentation of the DSO cabinet, and output data.




Start using the program by entering the input data based on the assumed parameters of the designed DSO voice alarm system. These include, among others the required system back up time, additional space in the RACK cabinet, power consumption mode of the system after power failure, or speaker line control. In the next step, indicate the DSO voice alarm system devices to be powered using the DSOP24V system.

When entering the data, the CONFI-DSO program continuously performs calculations based on which the minimum configuration of the DSOP24V power supply system is automatically selected. These effects can be observed both in the central graphical part of the window, where the components of the DSOP24V system are changing, and in the output area where the technical parameters are displayed.

After configuring the DSOP24V system, the user is able to print the documentation, which can then be used to complete the order and as an appendix to the documentation of the projected DSO.

# The CONFI-DSO program for designers

DSOP24V Power Supply system

CONFIG-DSO printout 20 2017

Configuration no.: DSOP24V-12-03-24/- - - - - - - - -

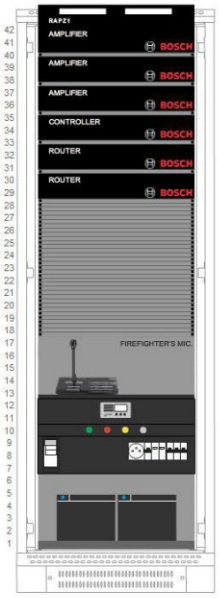
Purchaser | Investment

INPUT DATA

| | |
|---|---|
| Hold time [h] | 24 |
| Alarm time [h] | 0.5 |
| Loudspeaker lines monitored using a pilot tone | 3000 |
| The installed loudspeaker power | 3000 |
| Power mode after power failure | standby |

OUTPUT DATA

| | |
|---|---|
| Max. Power of sound [W] | 3000 |
| Max. Number of speaker lines | 60 |
| Type of batteries [Ah] | 120/12V |
| Number of batteries [pcs] | 2 |
| Battery capacity [Ah] | 9.76 |
| Max. Current consumption [A] | 1x13.8 |
| Max. Heat output to the environment [W] | 918 |
| Fuse protection [A] | 1x16 |
| Free space in RACK [U] | 10 |
| Rack height [U] | 42 |
| Rack height [mm] | 2103 |
| Rack size [mm] | 600x600 |
| Rack weight [kg] | 89 |
| Battery weight [kg] | 75.2 |
| Installation scale (with batteries and appliances)[kg] | 208.98 |


DSOP24V Power Supply system

CONFIG-DSO printout 20 2017

Configuration no.: DSOP24V-12-03-24/- - - - - - - - -

Purchaser | Investment

List of products:

| No. | Code | Name | Company | Quantit |
|---|---|---|---|---|
| 1 | MRA4266 | RACK cabinet, floor standing, fully assembled 42U/6 | PULSAR | 1 |
| 2 | 120Ah/12V | Batteries | PULSAR | 2 |
| 3 | LZ1F1B | Safety strip 230V 1-phase | PULSAR | 1 |
| 4 | PS24DSO320-5W1B-E | Power supply 320W 5 outputs 1 string | PULSAR | 1 |
| 5 | LD1F6G | Voltage distribution 230V 1-phase | PULSAR | 1 |
| 6 | PVA-2P500 | PVA-2P500 amplifier | BOSCH | 3 |
| 7 | PVA-4CR12 | PVA-4CR12 controller | BOSCH | 1 |
| 8 | PVA-4R24 | PVA-4R24 router | BOSCH | 2 |
| 9 | PVA-15CST | firefighter microphone | BOSCH | 3 |
| 10 | PVA-20CSE | call station extensions | BOSCH | 4 |
| 11 | PSG3LA | panel for optical and acoustic indication | PULSAR | 1 |
| 12 | RAWP600RZ | fan unit with thermostat | PULSAR | 1 |
| 13 | RAPZ1 | blanking panel 1U | PULSAR | 1 |
| 14 | EN54-2A17 | EN54-2A17 power supply | PULSAR | 1 |

DSOP24V Power Supply system

CONFIG-DSO printout 20 2017

Configuration no.: DSOP24V-12-03-24/- - - - - - - - -

Purchaser | Investment

ceny [PLN]

| Description | Number of pieces | Net price piece | The net value | Discoun | Price net discount | The net value after discount |
|---|---|---|---|---|---|---|
| DSOP24V-12-03-24/ - - - - - - - - - | 1 | ----- | ----- | 0% | ----- | ----- |
| AWO506 - Enclosure for loudspeaker line sup | 5 | ----- | ----- | 0% | ----- | ----- |
| EN54-2A17 - Power supply for fire alarm syste | 1 | ----- | ----- | 0% | ----- | ----- |
| AWZ627 - Power supply adapter | 1 | ----- | ----- | 0% | ----- | ----- |
| Totality: | | | ----- | | | ----- |

- The price does not include shipping

DSO Power Supply system

DSOP24V-12-03-24/- - - - - - - - - -----

Additional equipment:

AWO506 - Enclosure for loudspeaker line supervision
EN54-2A17 - Power supply for fire alarm systems
AWZ627 - Power supply adapter
-----

# Power supply system DSO 24V for Paviro system by BOSCH
## Power supply for 24 V DC voice alarm systems

**Parameters of the VAS system.**

| | |
|---|---|
| **Functional class:EN 12101-10:2007** | A |
| **230 V mains connection** | Single-phase 230 V or<br>3-phase 3x230 V / 400V [1)] |
| **Surge protection** | type 3 (D) according to the EN 61643-11 standard |
| **RACK cabibnets** | 24U(600x600), 36U(600x600), 42U(600x600, 600x800), 45U (600x600, 600x800), 50U (600x800)[1)] |
| **Height of the RACK cabinet** | 50U max. [1)] |
| **Maximum battery capacity** | 460Ah max. [1)] |
| **The number of batteries** | 4 max [1)] |
| **Battery type** | Sealed Lead-Acid (SLA) batteries (AGM, gel) |
| **The number of battery strings** | 1 or 2 [1)] |
| **Status indication** | Panel for optical and acoustic indication., 60dB/1m;<br>compliant with the PN-EN54-16 standard [1)] |
| **Cooling** | Convection or forced cooling [1)] |

[1)] Depending on the DSO configuration.

**Electrical parameters of the DSO.**

| | |
|---|---|
| **Functional class: PN-EN 12101-10:2007** | A |
| **Supply voltage** | 176 ÷ 264 V AC |
| **Current consumption** | 6 A max. @230 V AC [1)] |
| **Power supply frequency** | 50Hz |
| **Power factor correction (PFC)** | 0,95 |
| **PSU power** | 1000 W max. [1)] |
| **Efficiency** | 90% max |
| **Output voltage** | 22,0 V÷ 28,8 V DC – buffer operation<br>20,0 V÷ 28,8 V DC – battery operation [2)] |
| **Maximum output current (outputs):**<br>**- routers**<br>**- controller** | <br>6x2,5 A<br>10,5 A |
| **Output current $I_{max\ A} = I_{max\ B}$**<br>**(routers + controller outputs)** | 10,6 A |
| **The maximum output current of amplifiers OUT1…9** | 9x32 A [1) 3)] |
| **The maximum resistance of the battery circuit during the calibration process** | 60m Ohm |
| **The maximum increase of the resistance of the battery circuit** | 60m Ohm |
| **Ripple voltage** | 150mV p-p max. |
| **Current consumption by PSU systems during battery operation** | 500mA max. [1)] |
| **Battery charging current** | 24 A max. [1)] |
| **The number of battery strings** | 1 or 2 [1)] |
| **The coefficient of temperature compensation of the battery voltage** | -40mV/ ºC (-5ºC ÷ 40ºC) |
| **Low battery voltage indication** | Ubat < 23 V, during battery operation |
| **Short-circuit protection SCP** | 9xF30 A – OUT1..OUT9 outputs, fast acting melting fuses, failure requires fuse replacement<br><br>3xF6,3 A – „Router" outputs, fast acting melting fuses, failure requires fuse replacement<br><br>F10 A – „Controller" output, fast acting melting fuse, failure requires fuse replacement |
| **Overload protection OLP** | 105÷130% of the PSU power, automatic return |
| **Short-circuit protection in the battery circuit SCP** | 2x100 A max. [1)] – time-delay melting fuses, failure requires fuse replacement |
| **Under-voltage protection (UVP)** | U<20 V (± 2%) – disconnection (+BAT) of the batteries |
| **Technical outputs:**<br>**- EPS; output indicating AC power failure**<br>**- APS; output indicating battery failure**<br>**- PSU; output indicating PSU failure**<br>**- ALARM; output indicating collective failure** | <br>- Type – relay |
| **EXTi technical input** | Normal operation (no failure): opened<br>Failure- electrical contacts are closed |
| **Ethernet communication** | 10Base-T/100Base-TX |
| **Optical indication** | - Output voltage readings<br>- Output current readings<br>- Resistance of the battery circuit readings<br>- Mains supply voltage readings<br>- Failure codes with history |
| **Acoustic indication** | - Piezoelectric indicator ~75dB /0.3m |
| **Mounting dimensions** | W=19", H=2U |
| **Operating conditions** | I environmental class (PN-EN12101-10:2007) -5ºC ÷ 40ºC |

[1)] Depending on the DSO configuration.
[2)] Full range of operating temperatures, taking into account accelerated charging and discharged batteries during battery operation
[3)] Permissible only during battery operation