INSTALLATION AND OPERATION INSTRUCTIONS

Power supply
DPS-1

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Contents

1. Introduction

This document describes how to install and operate the DPS-1. The document is intended for persons responsible for integration of the DPS-1 in a pitch system, cabinet design, installation and operation.
For detailed information about specifications and functions of the DPS-1, refer to DPS-1 datasheet.

It is recommended to print this manual in colour in order to get most information out of the pictures and illustrations.

1.1 Revision history

Apart from editorial changes the following changes have been made in this revision:

Date	Revision	Changes
2018-08-27	D	• Picture updated • Visual and electrical monitoring updated
2017-06-27	C	Total revision of document content.
2012-12-14	B	New document
N/A	A	Not used

1.2 Conventions

The following conventions are used in this document:

Used in document	Description
	A yellow symbol that illustrates hazard type (this symbol is an example for general hazard). There are different types such as electrical, chemical and so on.
Danger!	A signal word used to indicate an imminently hazardous situation, which if not avoided, will result in death or serious injury. (ISO 3864)
Warning!	A signal word used to indicate an imminently hazardous situation, which if not avoided, could result in death or serious injury. (ISO 3864)
Caution!	A signal word used to indicate a potentially hazardous situation, which if not avoided, could result in minor or moderate injury. (ISO 3864)
	A blue symbol illustrates a need for mandatory action. In this example read instructions. Other types of blue symbols exist and always indicate mandatory action.
	A symbol used to draw attention to extra information or an action that is not mandatory

2. Safety precautions

Attention

Company policy and local regulations regarding PPE must always be followed, regardless whether the PPE is shown in this manual or not.

International standards such as IEC 364 and any other relevant international or national standard regarding safety must be observed. Only qualified personnel who is fully capable of recognizing, understanding and judging the dangers of the task at hand may perform the work.

The installation and service of the units should only be handled by qualified persons, who are conscious of the risks involved.

Ensure that the grounded connection wire of the line is correctly connected to the line input of the unit. Load and service or measuring setup must be grounded, if possible, in order to protect the units and the persons working with them.

During normal operation, the persons working with the units must have no contact to dangerous voltages within the unit.

2.1 Mechanical work

Use eye, hand and hearing protection

Use protection for eyes, hand and hearing, if the mounting holes for bolts need to be made.

2.2 Electrical work

Disconnect power

Ensure that all power is disconnected when working with the DPS-1, except for during commissioning and service.

Danger!

Risk of burns and electrical shock from short circuit, electrical arc and uninsulated wires.

Commissioning and maintenance work on this device may only be carried out by a qualified electrician. Observe local regulation when working with electrical components.

3. Package content, tools and handling

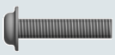
3.1 Package content

	Quantity	Description
	1	DPS-1 power supply

3.2 Required tools and accessories

The following required tools and accessories are not delivered with the DPS-1.

Table 1 Required tools and accessories

	Tool or accessory	Torque	Used to
	Flat Screwdriver 3 mm wide	N/A	Connect / disconnect wires.
	Wire insulation stripping tool	N/A	Strip wires insulation
	Press tool for ferrules	N/A	Press ferrules on wires.
	Ferrules (recommended)	N/A	Terminate wires to connectors (recommended, different size according to wire size).
	Appropriate screwdriver for the selected 4 mm mounting screws. Optional, needed if chassis mounting is selected.	According to screws spec.	Fastening screws (M4).
	4 pcs M4 screws Optional, needed if chassis mounting is selected.	According to screws spec.	Fasten the DPS-1 to the cabinet. Length depends on the cabinet structure.
	4 pcs self-locking nut Optional, needed if chassis mounting is selected.	According to screws spec.	Fasten the DPS-1 to the cabinet.

3.3 Handling

Attention

Sufficient care must be taken to protect the terminal against electrostatic discharges during the installation. Once the unit is installed and connected, these precautions are no longer necessary.

4. Mechanical mounting

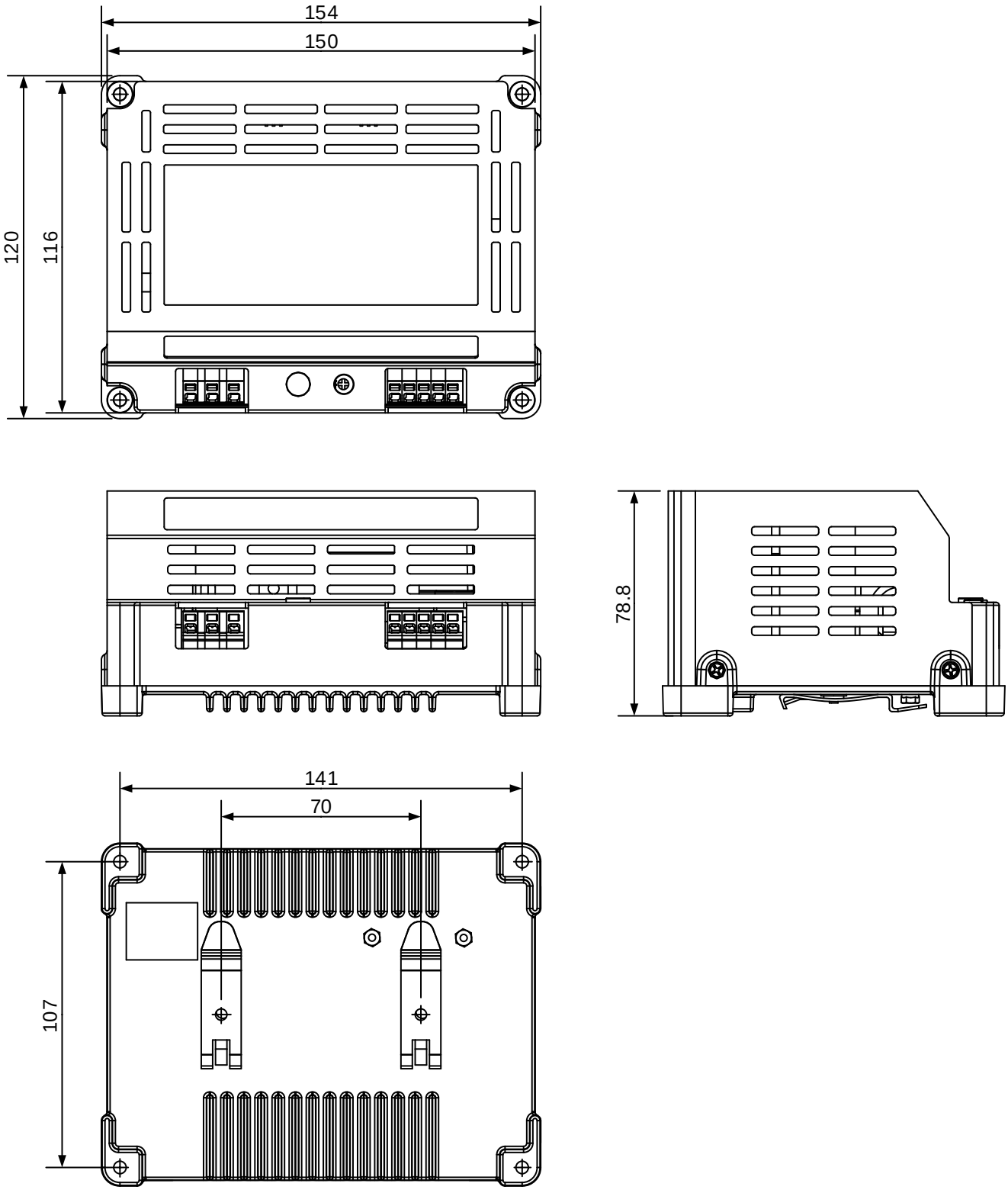


Figure 1 DPS-1 2405 mechanical drawing

The DPS-1 can be mounted on a 35 mm DIN rail, or chassis mounted by using the four holes.

Info
The vibration, shock and bump specifications apply for chassis mounting only

4.1 DIN rail mounting

For DIN rail mounting just clips the DPS-1 onto the DIN rail (first top, then bottom).

4.2 Chassis mounting:

Use eye, hand and hearing protection
Use protection for eyes, hand and hearing, if the mounting holes for bolts need to be made during installation.

Drill four Ø4.5 mm holes according to Figure 2 on page 8 and the cabinet drawings for mounting the DPS-1. Use 4 pcs. 4 mm screws and nuts to mount the DPS-1. Torque according to mounting conditions.

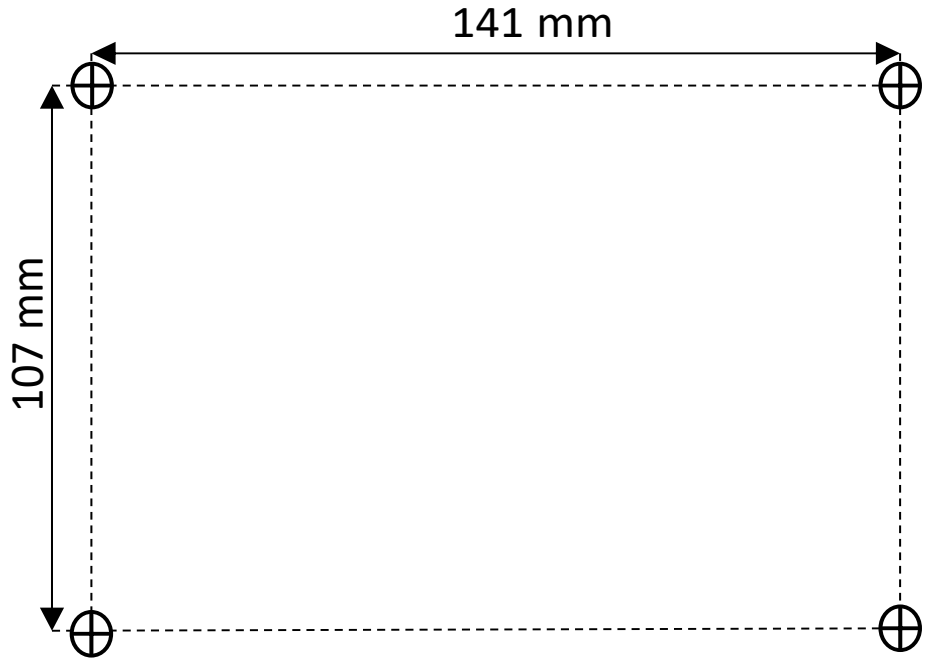


Figure 2 DPS-1 2405 drilling drawing

5. Electrical connections

5.1 Connection diagram

The following figure shows the connections to the DPS-1.

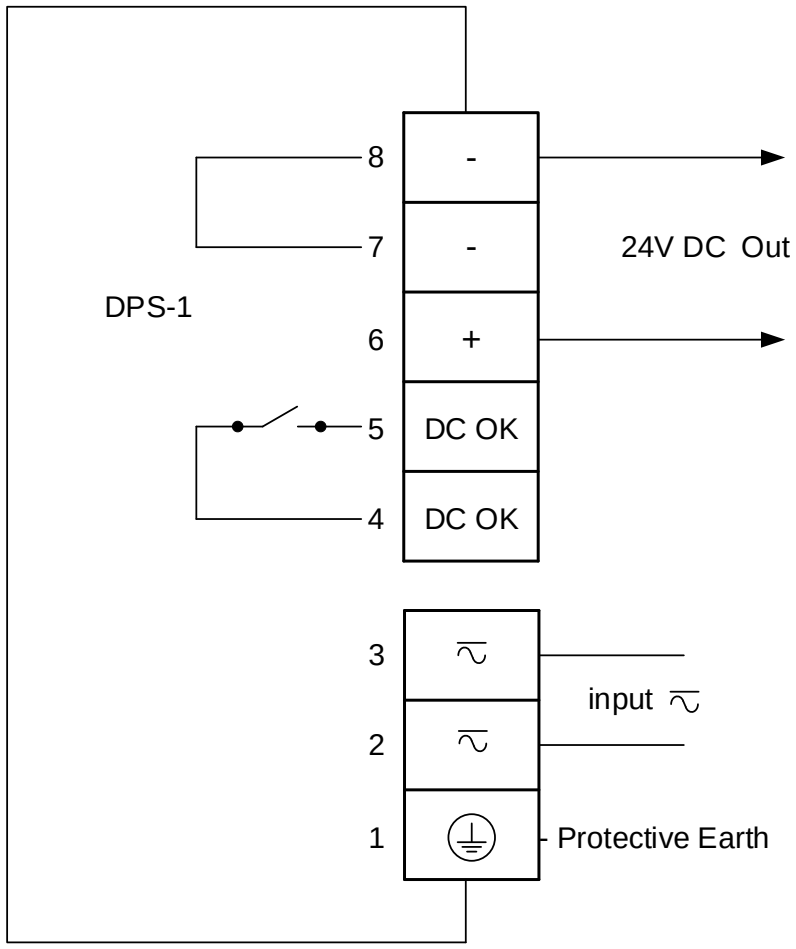


Figure 3 Connection diagram

Connect the wires to the DPS-1 according to the wiring diagram.

Info
Terminals 7 and 8 are internally connected together.

5.2 General recommendations

It is recommended to use ferrules on the wires before connecting it to the connector. The length of ferrule (termination sleeve) is the uninsulated part of the ferrule:

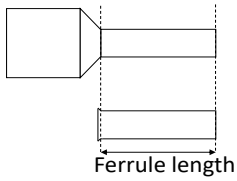


Figure 4 Ferrule length definition

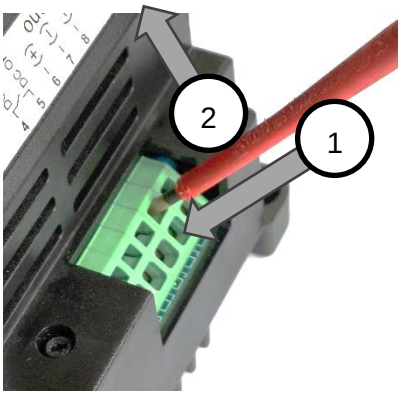
Follow the ferrule manufacturer instruction on how to use a ferrule.

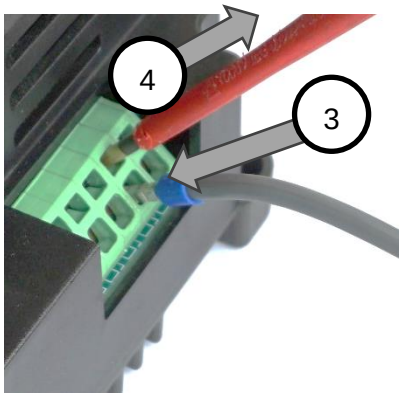
Attention
Ferrules are mandatory if multiple wires are connected to the same terminal. Use the same length as for single wire.

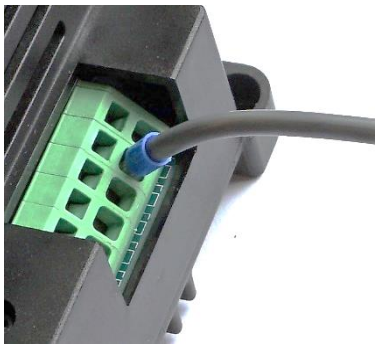
5.3 Connecting wires to connectors

Table 2 Technical data for all connectors (D-ZFKDS 2.5)

Conductor cross section flexible, without ferrule	0.2 to 2.5 mm^2
Conductor cross section flexible, with ferrule without plastic sleeve	0.2 to 2.5 mm^2
Conductor cross section flexible, with ferrule with plastic sleeve	0.2 to 2.5 mm^2
Stripping length	8 mm
Ferrule length	8 mm







To connect wires to terminals:

1. Use a flat screwdriver and press the spring in as illustrated (pos.1 and 2)
2. Press the wire all the way in (pos.3).
3. Lift the screwdriver (pos.4).

6. Operating the DPS-1

The DPS-1 is designed to operate without manual intervention. It is equipped with a visual and electrical indication/alarm that continuously monitors the input and output voltage

6.1 Voltage drop compensation

The power supply can be adjusted to compensate the voltage drop in the wiring between the DPS-1 and the load. Examples of voltage drop can be found in the following table.

Wire cross section (mm^2)	Length (m)	Current (A)	Voltage drop* (V)
0.75	5	5	1.25
1.00	5	5	0.9
1.50	5	5	0.6
2.50	5	5	0.35

* The voltage drop is based on threaded copper wire at 20ºC

The voltage drop formula is: V = length x current x cable resistance x 2
(thus the double current or double length will also double the voltage drop.

Example: 1.5 mm2, 5 m, 5A => V = 0.6 V

Setting: 24.0 + 0.6 = 24.6 V

6.2 Visual and electrical monitoring

DPS-1 has two monitoring types:

- Electrical monitoring: DPS-1 has a dry contact “DC OK” relay output which is closed (energised) under normal operating conditions (no failure).

Contacts voltage rating	Contacts current rating
30 V DC	3 A

- Visual monitoring: A green “STATUS” LED provides visual indication of the DPS-1 operational status.

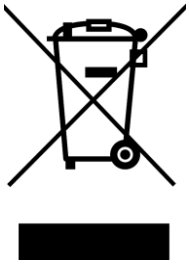
The behavior of the LED and relay is according to the following table:

Table 3 STATUS LED and DC OK relay functions

Status	STATUS LED	DC OK relay contact
Normal operation with or without load	Green	Closed
High temperature/power derating	Green	Closed
Reverse polarity connection on output	Green, flashing*	Alternate open and closed*
Overvoltage on output	Green, flashing*	Alternate open and closed*
Output overload, output voltage under 20.5 V DC	Off	Open
Short circuit on output	Off	Open
No input voltage	Off	Open
Under-voltage on input	Off	Open

* Changes state every approximately 0.5 seconds.

7. Disposal of the DPS-1



All products that are marked with the crossed-out wheeled bin (the WEEE symbol) are electrical and electronic equipment (EEE). EEE contains materials, components and substances that can be dangerous and harmful to people's health and to the environment. Waste electrical and electronic equipment (WEEE) must therefore be disposed of properly. In Europe, the disposal of WEEE is governed by the WEEE directive issued by the European Parliament. DEIF complies with this directive.

You must not dispose of WEEE as unsorted municipal waste. Instead, WEEE must be collected separately, to minimise the load on the environment, and to improve the opportunities to recycle, reuse and/or recover the WEEE. In Europe, local governments are responsible for facilities to receive WEEE. If you need more information on how to dispose of DEIF WEEE, please contact DEIF.

8. Glossary

8.1 Terms and abbreviations

LED	Light emitting diode
MCB	Main circuit breaker
DPS	DEIF Power Supply

8.2 Units

Unit	Unit Name	Quantity name	US unit	US name	Conversion	Alternative units
A	ampere	Current				
ºC	degrees Celsius	Temperature	ºF	Fahrenheit	$T[ºC] = \frac{(T[ºF] - 32º) \times 5}{9}$	
g	gram	Weight	oz	ounce	1 g = 0.03527 oz	
Hz	hertz	Frequency (cycles per second)				
kg	kilogram	Weight	lb	pound	1 kg = 2.205 lb	
m	metre	length	ft	foot (or feet)	1 m = 3.28 ft	
mA	milliampere	Current				
mm	millimetre	Length	in	inch	1 mm = 0.0394 in	
ms	millisecond	Time				
Nm	Newton metre	Torque	Lb-in	pound-force inch	1 Nm = 8.85 lb-in	
s	second	Time				
V	volt	Voltage				
V AC	volt (alternating current)	Voltage (alternating current)				
V DC	volt (direct current)	Voltage (direct current)				
W	watt	Power				