

SAFEONE DN3PW1

Manual

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1 Structure of the document

1.1 Conventions

1.2 Your opinion is important to us!

We do all we can to provide complete, accurate documentation for the product. If you have any suggestions for improvement or advice for us, please share your thoughts with us. Send us your comments by e-mail to the following address.

E-mail: info@dina.de

2.1.3 Hazard symbols

**Note**

The warning symbol may be present alongside another hazard symbol that represents the type of hazard, in order to attract the reader's attention.

Hazard symbols are indicated by a triangular symbol in the context of warnings. The following hazard symbols are used in this documentation:



Electric shock dangerous voltage!

2.2 Qualification of personnel

DINA Elektronik GmbH distinguishes between specialist staff with different qualifications when it comes to carrying out work on the product. The minimum required qualifications are specified for each task and are defined as follows:

2.2.1 Electrician

Specialist, who installs, maintains and repairs the electrical system in the product. A specialist is a person whose specialist training means that they have the knowledge and experience, including knowledge of relevant regulations, necessary to assess the work assigned to them and the potential hazards.

**Note**

When evaluating a person's specialist training, multiple years of work in the relevant field may also be taken into account.

DIN VDE 1000-10 Requirements for persons working in a field of electrical engineering.

2.2.2 Electrical designers

Specialists, who design the electrical system and the product. A specialist is a person whose specialist training means that they have the knowledge and experience, including knowledge of relevant regulations, necessary to assess the work assigned to them and the potential hazards.

**Note**

When evaluating a person's specialist training, multiple years of work in the relevant field may also be taken into account.

DIN VDE 1000-10 Requirements for persons working in a field of electrical engineering.

2.3 Intended use and improper use

When installing the device, the required distances as per DIN EN 50274, VDE 0660514 must be taken into account.

During transport, storage and operation, comply with the conditions set out in EN 60068-2-1, 2-2.

Assemble the device in a control cabinet with at least IP54 degree of protection. Otherwise, dust and moisture can impair the functions. The device must be installed in a control cabinet.

Ensure that the output contacts have sufficient protective circuitry for capacitive and inductive loads.

Follow the specifications in the general technical data.

Note

More detailed information can be found in the **Technical data** section.

It is the responsibility of the manufacturer of a system or machine to ensure the correct overall function

DINA Elektronik GmbH is not able to make any guarantees regarding the properties of an overall system not designed by the company.

DINA Elektronik GmbH accepts no liability for any recommendations given or implied in the following description.

No new guarantee, warranty or liability claims that go beyond DINA Elektronik GmbH's general delivery conditions can be derived from the following description.

To prevent EMC disturbances, the physical environmental and operating conditions where the product is installed must correspond to the EMC section of DIN EN 60204-1.

2.6 Working on live parts



WARNING



Electric shock dangerous voltage! Touching live components can cause severe or even fatal injury, depending on circumstances, as a result of an electric shock.

Never assume that a circuit is dead.

Always check circuits as a safety precaution! Components being worked on may only be live if this is absolutely necessary and stipulated.

Accident prevention regulations (e.g. VBG4 and VDE 105) must be observed during all work.

Only use suitable, intact tools and measuring equipment.

3 EC declaration of conformity

4 Product description

The SAFEONE DN3PW1 measures the phase voltage at the measurement inputs L1, L2, L3.

If one or 3 phases are missing during the operation, the outputs switch off.

The reaction time and the measurement voltage tolerance are adjustable in the device.

The readiness for operation and the switching status of the contact outputs are displayed via LEDs.

The device is intended for mounting on a 35mm standard rail.

Phase monitoring can be deselected by wiring input I1.

4.1 Function description

The **SAFEONE DN3PW1** measures the phase voltage at the measurement inputs L1, L2, L3 and impresses them. This process is repeated every 60 s.

If the measuring voltage of all three phases is within the tolerance range, the contact outputs 13/14, 23/24 and output O3 switch on after 3s. Otherwise the outputs remain switched off.

As soon as a voltage outside the tolerance limit is measured on one or more phases, the outputs switch off after the reaction time.

The outputs remain switched off for at least 1.5s, then-USvoltage side t89tchee urns TJET00BT/Foes08871

4.1.2 Measurement voltage tolerance

The measurement voltage tolerance is adjustable in the device. Voltage fluctuations of one or more phases within the set tolerance do not lead to a shutdown.

shift po- sition	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
tolerance in V $\pm 5\%$	--	10	19	29	38 1)	48	57	67	76	85	95	105	115	124	133	143

1) factory setting

4.2 Connections



L1, L2, L3	Measuring inputs
A1	Power supply +24 V DC
A2	Power supply 0V
I1	Digital input
O3	Signal output
13/14	Contact output K1
23/24	Contact output K2
LED K1	Status display K1
LED K2	Status display K2
LED PWR	PWR on/off

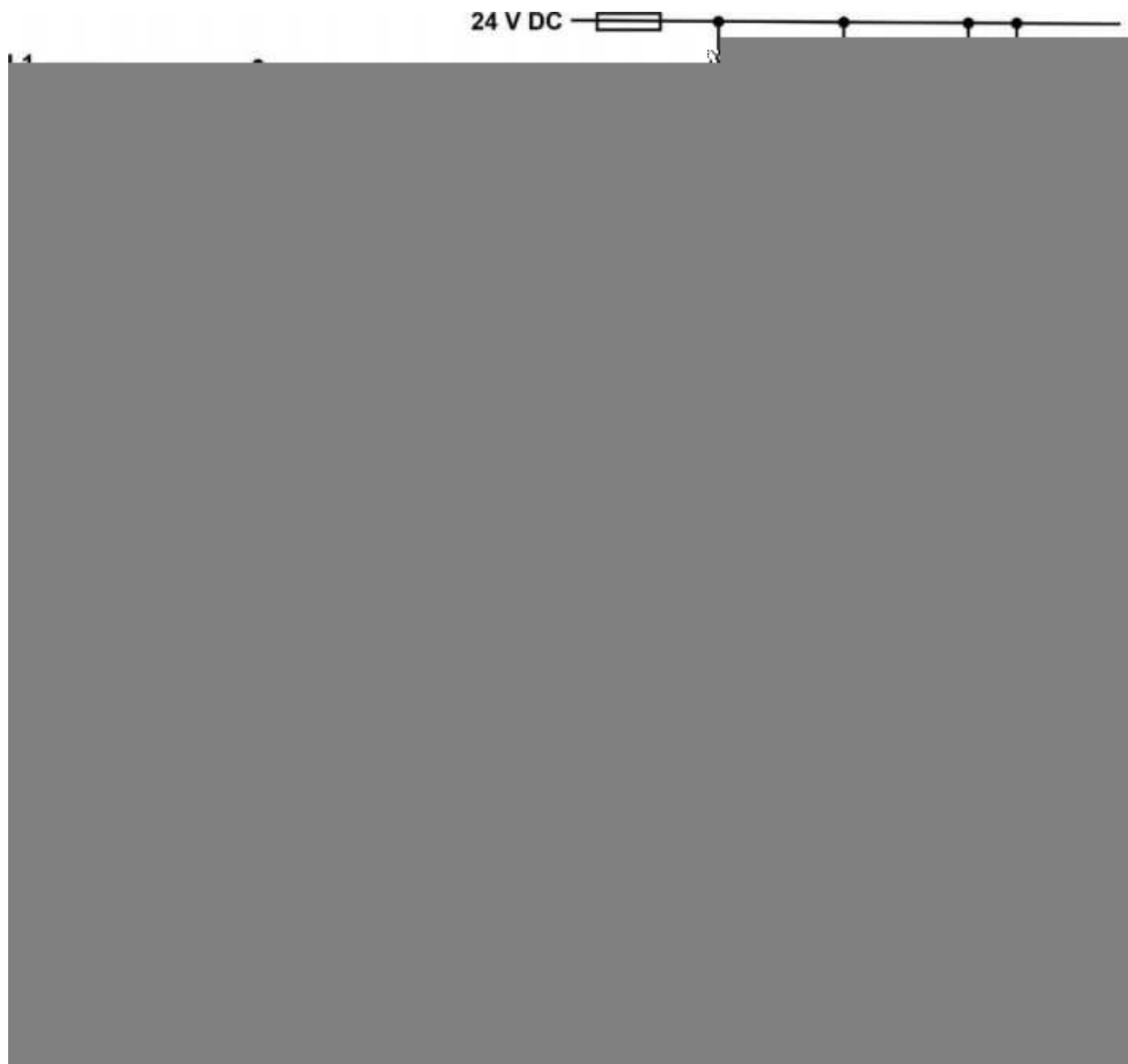
4.3 Block diagram

Measuring inputs

Inputs

Outputs

6 Example of application



Legend:

S1 Switch for deactivating the monitoring

7 Order information

Description	Product	ID-No.
Three phases voltage monitoring	SAFEONE DN3PW1	33PW01

8 Technical data

8.1 Supply

Operating voltage U_B	24 V DC (-15/+10%)
Current consumption at 24V	50 mA
Power consumption at A1/A2	1,2 W

8.2 Digital inputs

Inputs	I1 (galvanically isolated)
Input voltage range	24 V DC (-15/+10%)
Current consumption	typ. 4 mA (at U_B)

8.3 Measuring inputs

Measuring inputs	L1, L2, L3
Maximum voltage	540V AC
	400V AC
Measurement voltage tolerance	-15%/+10%
Current consumption	0,55mA per input

8.4 Transistor outputs

Outputs	O3

Max. switching current	1 A
Min. switching current	1 mA

8.5 Contact outputs

Outputs	13/14, 23/24
Contact material	Ag alloy
Output guidance, performance level	
Minimum switching current	10 mA
Switching capacity in accordance with IEC 60947-5-1	DC13: 1A/30V DC
Mechanical service life	5 x 10 ⁷ switching cycles
Contact fuse	3 A gL/gG
Typical response time	10 ms / 10 ms

8.6 General data

Type of protection (housing and terminals)	IP 20
Type of protection (place of installation)	min. IP 54
Clearance and creepage distances between circuits	In accordance with DIN EN 50178
Rated insulation voltage	50V AC

Conductor cross section	0,25 - 2,5mm ²
AWG conductor cross section	2
Conductor type	Flexible with end sleeves
Stripping length	10 mm

8.8 Environmental conditions

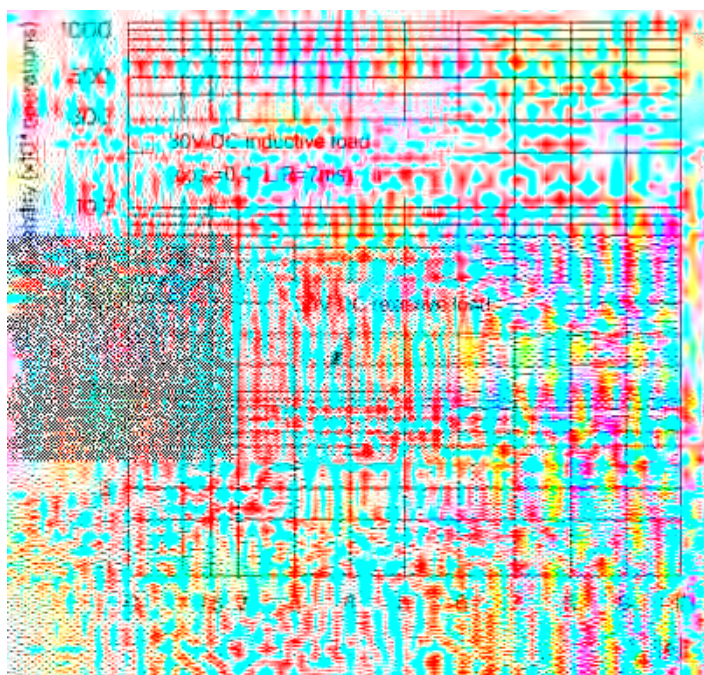
Operating temperature	-10 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Attitude of place of use	< 2000 m above sea level

8.9 Dimensions

B x H x T	22,5 x 114 x 111 mm (0.886 x 4.488 x 4.370 in)
Size of DIN rail	35,0 mm (1.378 in)

8.10 Contact life

Electrical service life of the output contacts in accordance with DIN EN 60947-5-1/ Annex C.3



9 Installation and removal

9.1 Installing a module

9.1.1 Overview

- (A)** 70-75 mm (2,756-2,953 in)
- (1)** Top hat rail
- (2)** Locking slider
- (3)** Cable duct

Procedure

Hook the module onto the top hat rail **(1)** and press it downward.

The locking slider **(2)** engages under the top hat rail.

9.2 Removing a module

Procedure

Use a screwdriver **(1)** to move the locking slider away from the module.