



USER INSTRUCTIONS

English

Voltage Monitor DG 3402 / DG 3482



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► Short description

The Voltage Monitors DG 3402 and DG 3482 are used to monitor limit values of AC and DC voltages. Two switching outputs can be configured simultaneously or independently of each other with the analog control electronics as MIN or MAX alarm in open-circuit or closed-circuit operation. The monitoring states are indicated by yellow LEDs.

Two relay changeover contacts are available on the DG 3402. The DG 3482 is equipped with two isolated transistor switching contacts (open-collector), which can optionally work with pull-up resistors. Input, power supply and the outputs are safely galvanically isolated from each other.

► Functioning

The input signal will be compared with the set limit values. In case of overshooting or undershooting, the output relays react according to the set configuration.

► Configuration

All control elements are accessible by unlocking the front cover at the lower recess. The switching points and the switching hysteresis can be adjusted with potentiometers. With the DIP switch the configuration is set according to the following table:

S-	OFF	ON
1	Open-Circuit Operation	Closed-Circuit Operation
2	Hysteresis 0 to 6 %	Hysteresis 0 to 60 %
3	OUT 1 MAX Alarm	OUT 1 MIN Alarm
4	OUT 2 MAX Alarm	OUT 2 MIN Alarm
5	OUT 2 reacts to SET 2	OUT 2 equals OUT 1
6	Input AC	Input DC

7	8	Input Range
•		50 V
		100 V
•	•	300 V
	•	600 V

Factory settings:
all switches in position OFF
• = on

After configuration switch points and, if required, the hysteresis will be adjusted with the potentiometers on the front:

- 1) Set potentiometer HYST to 0 % (left stop)
- 2) Apply an input signal equal to the desired switch-on value to the input
- 3) Set the switching point with potentiometer SET 1 (or SET 2 if applicable) so that the LED just light up

Additional setting for operation with switching hysteresis:

- 4) Set potentiometer HYST to maximum (right stop)
- 5) Apply an input signal equal to the desired switch-off value to the input
- 6) Turn potentiometer HYST stepwise towards 0 % until the LED switches off
- 7) Check switch-on and switch-off point and readjust if necessary

The hysteresis setting affects both outputs and can also be set directly according to the potentiometer scaling 0...6 % or 0...60 %, one division mark corresponds to 1 % or 10 %.

Note: The LEDs indicate the monitoring states (LED lights up when the input signal fulfills the switching condition). The LEDs indicate not the switching states of the relays, because these may be inverted due to open-circuit or closed-circuit operation.

► Mounting, Electrical Connection

The module is mounted on standard 35 mm DIN rail.

Terminal assignments					
1.1	Power supply +	2.1	Input +		
1.2	Power supply -	3.2	Input -		
OUTPUT 1			OUTPUT 2		
4.1	COM	Out+	6.1	COM	Out+
4.2	NO	Out-	6.2	NO	Out-
5.1	NC	Pull-Up	5.2	NC	Pull-Up

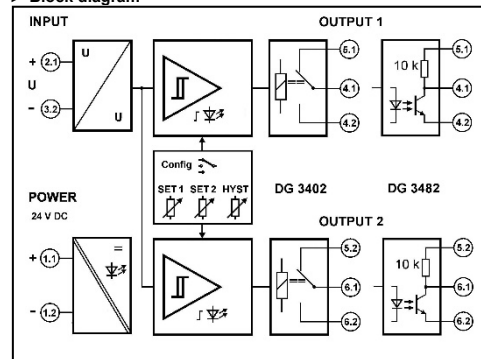
Do not connect terminal 2.2 and 3.1

► Technical Data

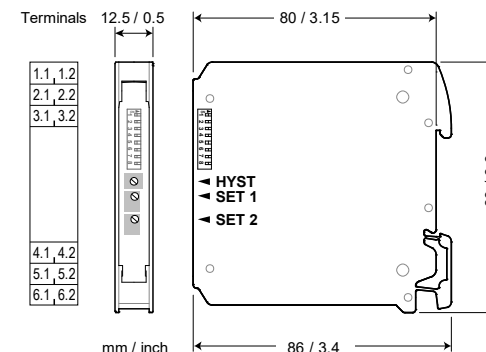
Input	
Input ranges	50 V, 100 V, 300 V, 600 V
Input resistance	1,5 MΩ
Overload max.	1000 V
Frequency	DC or 10 ... 500 Hz sinusoidal, switchable
Switch point setting	0 ... 110 % of input range with 12-turn potentiometer, independently adjustable for each switching output
Hysteresis setting	0 ... 6 % or 0 ... 60 % of input range
Output	
DG 3402	2 SPDT Relays AC: 250 V, max. 6 A, max. 1500 VA DC: 250 V / 0.2 A, 115 V / 0.3 A, 30 V / 6 A Recommended minimum load 300 mW / 5 V / 5 mA
DG 3482	2 transistor switching contacts (open collector) optional with 10 kΩ pull-up resistor 30 V DC, max. 50 mA, residual voltage < 1,5 V fully isolated, not current limited
Status indication	one yellow LED per switching output
Response time	DC: approx. 20 ms AC: approx. 500 ms
General data	
Set point error	< 0.2 % full scale
Temperature coefficient ¹⁾	< 150 ppm/K
Test voltage	4 kV, 50 Hz, input against power supply against both outputs; 3 kV, 50 Hz, output 1 against output 2
Working voltage ²⁾ (Basic insulation)	1000 V AC/DC for overvoltage category II and 600 V AC/DC for overvoltage category III according to DIN EN 61010 with pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.
Protection against dangerous body currents ³⁾	Protective separation according to DIN EN 61140 by reinforced insulation according to DIN EN 61010 up to 600 V AC/DC at overvoltage category II and 300 V AC/DC at overvoltage category III at pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.
Power supply	24 V DC, ± 15 %, 0.7 W
Ambient temperature	Operation -20 °C to + 60 °C (-4 to +140 °F) Transport and storage -35 °C to + 85 °C (-31 to +185 °F)
EMC ³⁾	EN 61326-1
MTBF	575 years acc. to SN 29500, stationary continuous operating, T _{amb} 40 °C, Total FIT 198
Construction	12.5 mm (0.5") housing, protection class: IP 20 mounting on 35 mm DIN rail acc. to EN 60715
Weight	approx. 70 g

- 1) Average TC in specified operating temperature range
- 2) As far as relevant the standards and rules mentioned above are considered by development and production of our devices. In addition, relevant assembly rules are to be considered by installation of our devices in other equipment. For applications with high working voltages, take measures to prevent accidental contact and make sure that there is sufficient distance or insulation between adjacent situated devices.
- 3) Minor deviations possible during interference

► Block diagram



► Dimensions



► Connection data

Connection	Screw terminals (plus-minus clamp screws)
Wire cross-section	0.05 mm ² - 2.5 mm ²
solid wire, fine-stranded or ferruled	AWG 30 - 14
Stripped length	7 mm / 0.3 in
Screw terminal torque	0.5 Nm / 4.5 lbf in

► Order Information

Product	Relay output	Order No.
Voltage Measuring Contactor	Relay output	DG 3402
Voltage Measuring Contactor	Transistor output	DG 3482

LIMITED WARRANTY

DRAGO Automation GmbH hereby warrants that the Product will be free from defects in materials or workmanship for a period of **five (5) years** from the date of delivery ("Limited Warranty"). This Limited Warranty is limited to repair or replacement at DRAGO's option and is effective only for the first end-user of the Product. This Limited Warranty applies only if the Product:

1. is installed according to the instructions furnished by DRAGO;
2. is connected to a proper power supply;
3. is not misused or abused; and
4. there is no evidence of tampering, mishandling, neglect, accidental damage, modification or repair without the approval of DRAGO or damage done to the Product by anyone other than DRAGO.

Delivery conditions are based upon the „GENERAL CONDITIONS FOR THE SUPPLY OF PRODUCTS AND SERVICES OF THE ELECTRICAL AND ELECTRONICS INDUSTRY“ recommended by the Zentralverband Elektrotechnik- und Elektronikindustrie (ZVEI) e.V.

Subject to change!

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When operating the module, certain parts can carry dangerous voltage! Ignoring the warnings can lead to serious injury and/or cause damage!

The module should only be installed and put into operation by qualified staff. The staff must have studied the warnings in these operating instructions thoroughly.

The adjustment with the potentiometer on the front may only be carried out with a screwdriver which is securely insulated against the input voltage! Do not select ranges during operation.

In applications with high operating voltages sufficient distance and isolation as well as shock protection must be ensured.

Safe and trouble-free operation of this device can only be guaranteed if transport, storage and installation are carried out correctly and operation a maintenance are carried out with care.



During assembly and configuration, protective measures against electrostatic discharge (ESD) must be taken!