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Limit Value Monitor
DG 3101

Economical Monitoring of Standard Signals with one Relay Output

The Limit Value Monitor DG 3101 is used to monitor measured values in 0(4) ... 20 mA and 0 ... 10 V standard signal circuits. A transmitter supply +Us is provided for the operation of 2-wire transmitters.

The switching output can be configured with the analog control electronics as MIN or MAX alarm in open-circuit or closed-circuit operation.

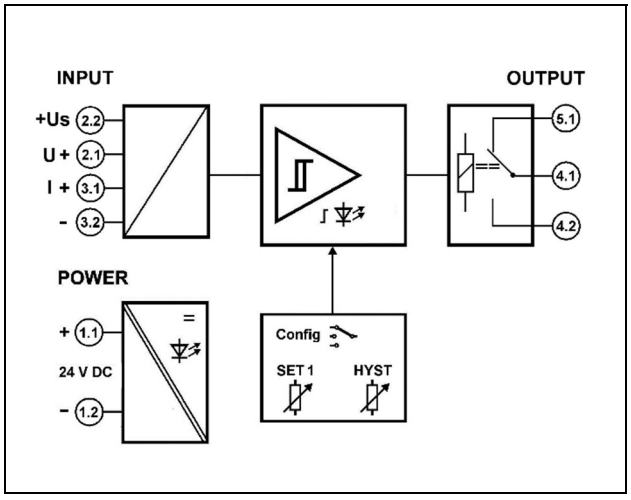
All setting elements are located behind the openable front cover and can also be operated when the unit is mounted. The switching point and the switching hysteresis can be adjusted with potentiometers. The monitoring state is indicated by a yellow LED.

The relay changeover contact switches high power loads up to 6 A.

The Protective Separation and the 24 V DC power supply makes the DG 3101 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Easy configuration on front panel**
  Operating mode switchable via DIP switch, switch point and hysteresis adjustable with potentiometer
- **Status indication by LED**
  Easy monitoring and switching point adjustment
- **True 4-port separation**
  Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61010**
  Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**
  No microprocessor, no integrated software
- **Extremely slim design**
  12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**
  Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant

Block diagram

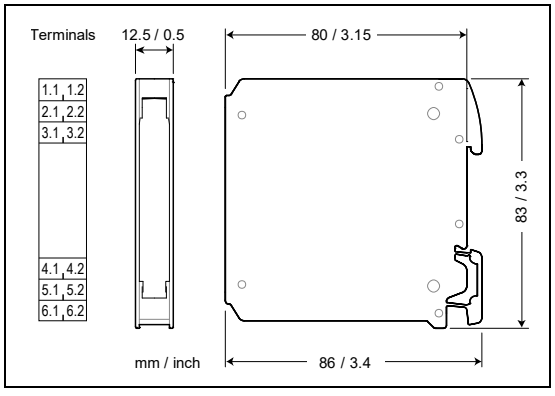


Technical Data

Input			
Input ranges	0(4) ... 20 mA	0 ... 10 V	
Input resistance	Current input approx. 5 Ω	Voltage input approx. 120 kΩ	
Overload max.	Current input 200 mA	Voltage input 300 V	
Transmitter supply +Us	16 V at U_{Power} = 24 V, (13 V ... 22 V depending on the supply voltage) current limited ≤ 30 mA		
Switch point setting	0 to 110 % with 12-turn potentiometer		
Hysteresis setting	0 to 6 % or 0 to 60 % of measuring range switchable, adjustable with potentiometer		
Output			
Contact type	1 changeover relay (SPDT)		
Switching capability AC max.	250 V / 6 A	1500 VA	
Switching capability DC max.	250 V / 0.2 A	115 V / 0.3 A	30 V / 6 A
	Recommended minimum load 300 mW / 5 V / 5 mA		
Status indication	yellow LED		
Response time	approx. 20 ms		
General Data			
Switch error	< 0.2 % full scale		
Temperature coefficient[1)]	< 150 ppm/K		
Test voltage	4 kV AC, 50 Hz, 1 min. input against power supply against switching output		
Working voltage (Basic Insulation)[2)]	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 switching output.		
Protection against electrical shock[2)]	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 switching output.		
Power supply	24 V DC, ± 15 %, approx. 0.8 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 (acc. to EN 61709 / SN 29500)	575.4 years ($T_{amb.}$ 40 °C, FIT 198)		

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
3) Minor deviations possible during interference

Dimensions



Construction
12.5 mm (0.5") housing, protection class IP 20
mounting on 35 mm DIN rail acc. to EN 60715
Weight 70 g

Connection
Captive plus-minus clamp screws
Wire cross-section max. 2.5 mm² / AWG 14
Stripped length 6 ... 8 mm / 0.28 in
Screw terminal torque 0.8 Nm / 7 lbf in

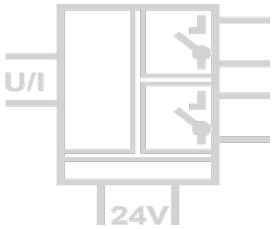
Subject to change!

Product line

Device	Order No.
Limit Value Monitor with relay contact	DG 3101

Limit Value Monitor
DG 3202 / DG 3282

Monitoring of Standard Signals
with 2 Switching Outputs



The Limit Value Monitors DG 3202 und DG 3282 are used to monitor measured values in 0(4) ... 20 mA and 0 ... 10 V standard signal circuits. A transmitter supply +Us is provided for the operation of 2-wire transmitters.

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.

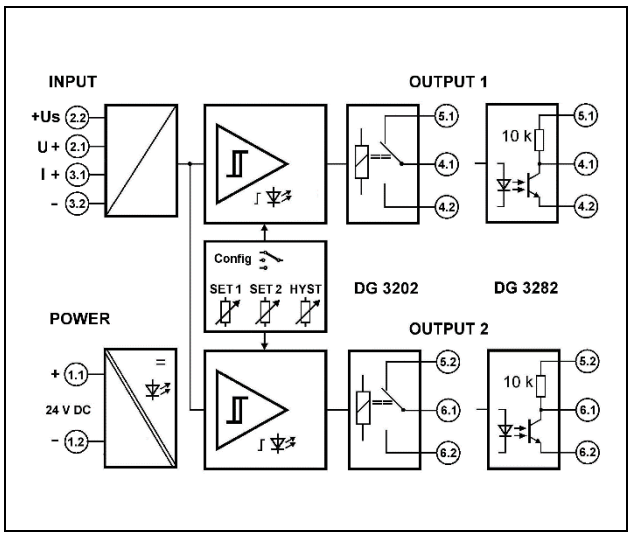
All setting elements are located behind the openable front cover and can also be operated when the unit is mounted. The switching points and the switching hysteresis can be adjusted with potentiometers. The monitoring states are indicated by yellow LEDs.

Two relay changeover contacts are available on the DG 3202. The DG 3282 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.

The Protective Separation and the 24 V DC power supply make the DG 3202 and DG 3282 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Easy configuration on front panel**
  Operating mode switchable via DIP switch, switch point and hysteresis adjustable with potentiometer
- **Status indication by LED**
  Easy monitoring and switching point adjustment
- **Relay changeover contacts with high power handling**
  or fully isolated transistor switching outputs
- **True 4-port separation**
  Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61010**
  Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**
  No microprocessor, no integrated software
- **Extremely slim design**
  12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**
  Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant

Block diagram

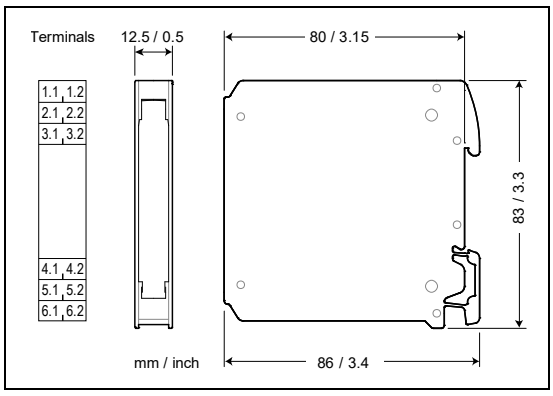


Technical Data

Input			
Input ranges		0(4) ... 20 mA	0 ... 10 V
Input resistance		Current input approx. 5 Ω	Voltage input approx. 120 kΩ
Overload max.		Current input 200 mA	Voltage input 300 V
Transmitter supply +Us		16 V at U_{Power} = 24 V, (13 V ... 22 V depending on the supply voltage) current limited ≤ 30 mA	
Switch point setting		0 to 110 % with 12-turn potentiometer, independently adjustable for each switching output	
Hysteresis setting		0 to 6 % or 0 to 60 % of measuring range switchable, adjustable with potentiometer	
Output			
DG 3202	Contact type	2 changeover relays (SPDT)	
Relay	Switching capability AC max.	250 V / 6 A	1500 VA
	Switching capability DC max.	250 V / 0.2 A	115 V / 0.3 A 30 V / 6 A
		Recommended minimum load 300 mW / 5 V / 5 mA	
DG 3282	Contact type	2 transistor switches, fully isolated, optional 10 kΩ Pull-up resistor	
Transistor	Switching capability	30 V DC, max. 50 mA, residual voltage < 1.5 V, not current limited	
Status indication		one yellow LED per switching output	
Response time		approx. 20 ms	
General Data			
Switch error		< 0.2 % full scale	
Temperature coefficient[1)]		< 150 ppm/K	
Test voltage		4 kV AC, 50 Hz, 1 min. input against power supply against both switching outputs 3 kV AC, 50 Hz, 1 min. switching output 1 against switching output 2	
Working voltage (Basic Insulation)[2)]		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 electrical shock[2)]		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 %, approx. 1.0 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 (acc. to EN 61709 / SN 29500)		575.4 years ($T_{amb.}$ 40 °C, FIT 198)	

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
3) Minor deviations possible during interference

Dimensions



Construction
12.5 mm (0.5") housing, protection class IP 20
mounting on 35 mm DIN rail acc. to EN 60715
Weight 70 g

Connection
Captive plus-minus clamp screws
Wire cross-section max. 2.5 mm² / AWG 14
Stripped length 6 ... 8 mm / 0.28 in
Screw terminal torque 0.8 Nm / 7 lbf in

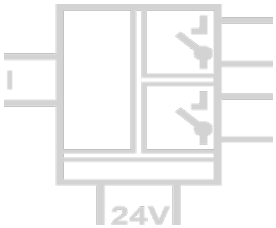
Subject to change!

Product line

Device	Order No.
Limit Value Monitor with relay contacts	DG 3202
Limit Value Monitor with transistor switches	DG 3282

Current Monitor
DG 3302 / DG 3382

Monitoring of AC/DC currents up to 6 A,
additional mV Input for external Shunt Resistor



The Current Monitors DG 3302 and DG 3382 are used to monitor limit values of AC and DC currents.

Currents up to 6 A can be monitored directly. For higher currents, external current transformers or shunt resistors (input 30/150 mV) are connected.

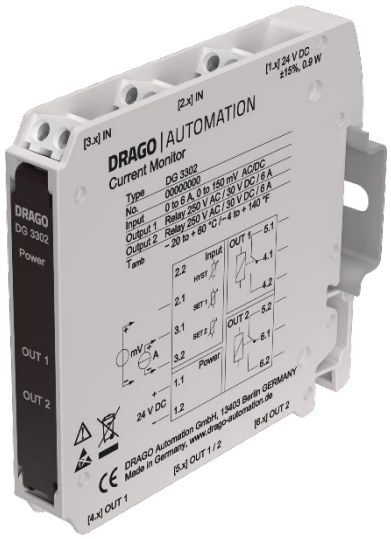
Two switching outputs can be configured simultaneously or independently of each other with the analog control electronics as MIN or MAX alarm in open-circuit or closed-circuit operation.

All setting elements are located behind the openable front cover and can also be operated when the unit is mounted. The switching points and the switching hysteresis can be adjusted with potentiometers. The monitoring states are indicated by yellow LEDs.

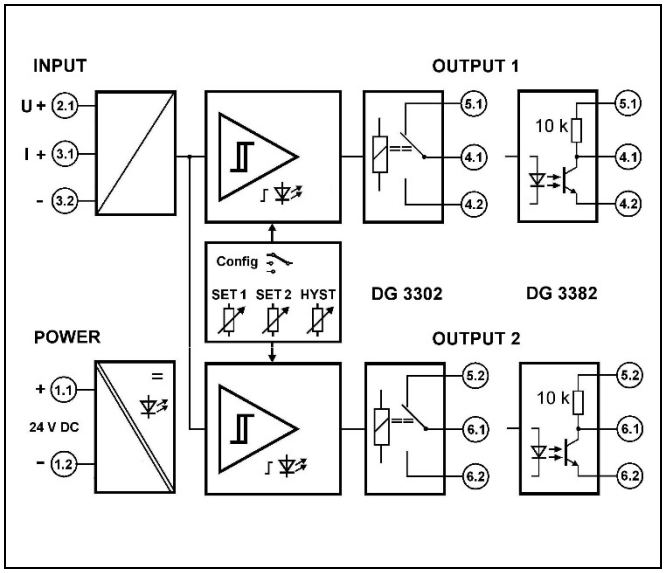
Two relay changeover contacts are available on the DG 3302. The DG 3382 is equipped with two isolated transistor switching contacts (open-collector), which can optionally work with pull-up resistors. Input, power supply and the outputs are safely galvanically isolated from each other.

The Protective Separation and the 24 V DC power supply make the DG 3302 and DG 3382 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Easy configuration on front panel**
  Measuring range and operating mode switchable, switch point and hysteresis adjustable with potentiometer
- **Status indication by LED**
  Easy monitoring and switching point adjustment
- **Relay changeover contacts with high power handling**
  or fully isolated transistor switching outputs
- **True 4-port separation**
  Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61010**
  Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**
  No microprocessor, no integrated software
- **Extremely slim design**
  12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**
  Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant



Block diagram

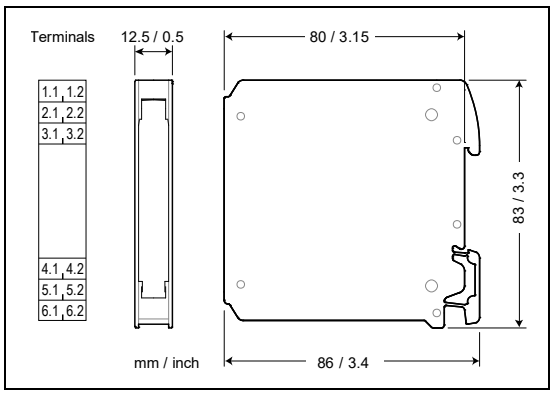


Technical Data

Input		Current Input	mV/Shunt Input
Input ranges		1.2 A 6 A	30 mV 150 mV
Input resistance		0.01 Ω	> 10 kΩ
Overload max.		10 A continuous, surge current 30 A for 1 s	30 V
Frequency		DC o 10 to 500 Hz sinusoidal, switchable	
Switch point setting		0 to 110 % with 12-turn potentiometer, independently adjustable for each switching output	
Hysteresis setting		0 to 6 % or 0 to 60 % of measuring range switchable, adjustable with potentiometer	
Output			
DG 3402	Contact type	2 changeover relays (SPDT)	
Relay	Switching capability AC max.	250 V / 6 A 1500 VA	
	Switching capability DC max.	250 V / 0.2 A 115 V / 0.3 A 30 V / 6 A	
		Recommended minimum load 300 mW / 5 V / 5 mA	
DG 3382	Contact type	2 transistor switches, fully isolated, optional 10 k Pull-up resistor	
Transistor	Switching capability	30 V DC, max. 50 mA, residual voltage < 1.5 V, not current limited	
Status indication		one yellow LED per switching output	
Response time		DC Input: approx. 20 ms AC Input: approx. 500 ms	
General Data			
Switch error		< 0.2 % full scale	
Temperature coefficient[1)]		< 150 ppm/K	
Test voltage		4 kV AC, 50 Hz, 1 min. input against power supply against both switching outputs 3 kV AC, 50 Hz, 1 min. switching output 1 against switching output 2	
Working voltage (Basic Insulation)[2)]		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 electrical shock[2)]		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 %, approx. 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 (acc. to EN 61709 / SN 29500)		575.4 years ($T_{amb.}$ 40 °C, FIT 198)	

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
3) Minor deviations possible during interference

Dimensions



Construction
12.5 mm (0.5") housing, protection class IP 20
mounting on 35 mm DIN rail acc. to EN 60715
Weight 70 g

Connection
Captive plus-minus clamp screws
Wire cross-section max. 2.5 mm² / AWG 14
Stripped length 6 … 8 mm / 0.28 in
Screw terminal torque 0.8 Nm / 7 lbf in

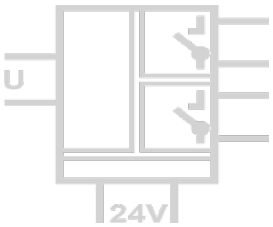
Subject to change!

Product line

Device	Order No.
Current Monitor with relay contacts	DG 3302
Current Monitor with transistor switches	DG 3382

Voltage Monitor
DG 3402 / DG 3482

Monitoring of AC and DC Voltages



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.

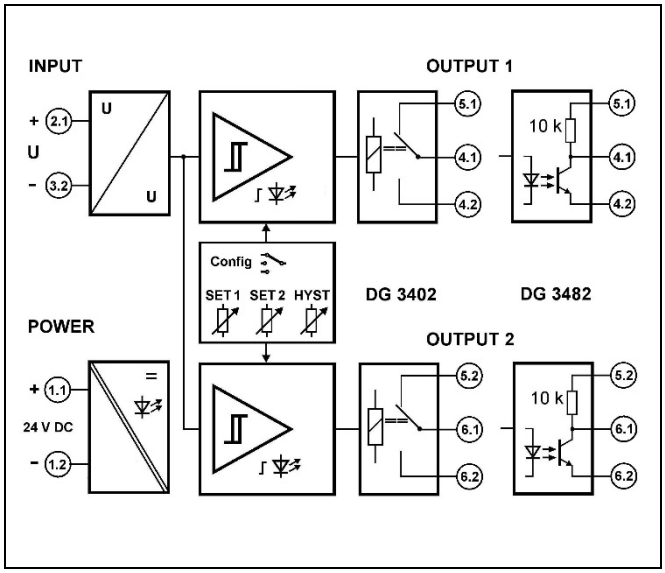
All setting elements are located behind the openable front cover and can also be operated when the unit is mounted. The switching points and the switching hysteresis can be adjusted with potentiometers. The monitoring states are indicated by yellow LEDs.

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.

The Protective Separation and the 24 V DC power supply make the DG 3402 and DG 3482 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Easy configuration on front panel**
  Measuring range and operating mode switchable, switch point and hysteresis adjustable with potentiometer
- **Status indication by LED**
  Easy monitoring and switching point adjustment
- **Relay changeover contacts with high power handling**
  or fully isolated transistor switching outputs
- **True 4-port separation**
  Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61010**
  Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**
  No microprocessor, no integrated software
- **Extremely slim design**
  12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**
  Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant

Block diagram

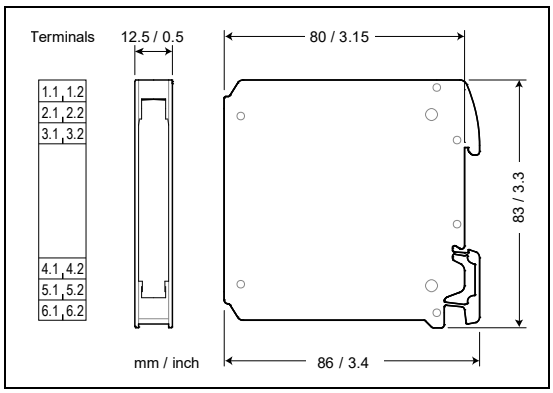


Technical Data

Input			
Input ranges		50 V, 100 V, 300 V, 600 V	
Input resistance		1.5 MΩ	
Overload max.		1000 V	
Frequency		DC or 10 to 500 Hz sinusoidal, switchable	
Switch point setting		0 to 110 % with 12-turn potentiometer, independently adjustable for each switching output	
Hysteresis setting		0 to 6 % or 0 to 60 % of measuring range switchable, adjustable with potentiometer	
Output			
DG 3402	Contact type	2 changeover relays (SPDT)	
Relay	Switching capability AC max.	250 V / 6 A	1500 VA
	Switching capability DC max.	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	Contact type	2 transistor switches, fully isolated, optional 10 k Pull-up resistor	
Transistor	Switching capability	30 V DC, max. 50 mA, residual voltage < 1.5 V, not current limited	
Status indication		one yellow LED per switching output	
Response time		DC Input: approx. 20 ms	AC Input: approx. 500 ms
General Data			
Switch error		< 0.2 % full scale	
Temperature coefficient[1)]		< 150 ppm/K	
Test voltage		4 kV AC, 50 Hz, 1 min. input against power supply against both switching outputs 3 kV AC, 50 Hz, 1 min. switching output 1 against switching output 2	
Working voltage (Basic Insulation)[2)]		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 electrical shock[2)]		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 %, approx. 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 (acc. to EN 61709 / SN 29500)		575.4 years ($T_{amb.}$ 40 °C, FIT 198)	

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
3) Minor deviations possible during interference

Dimensions



Construction
12.5 mm (0.5") housing, protection class IP 20
mounting on 35 mm DIN rail acc. to EN 60715
Weight 70 g

Connection
Captive plus-minus clamp screws
Wire cross-section max. 2.5 mm² / AWG 14
Stripped length 6 … 8 mm / 0.28 in
Screw terminal torque 0.8 Nm / 7 lbf in

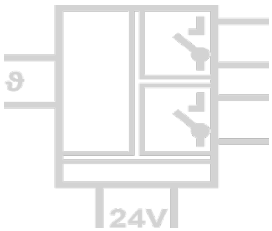
Subject to change!

Product line

Device	Order No.
Voltage Monitor with relay contacts	DG 3402
Voltage Monitor with transistor switches	DG 3482

RTD Temperature Monitor
DG 3602 / DG 3632

Limit Monitoring with
Pt, Ni, KTY and NTC Sensors



The Temperature Monitors DG 3602 and DG 3632 are used for temperature control with RTD sensors in 2-wire connection.

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

Two relay outputs (synchronous switching) can be configured as MIN or MAX alarm in open-circuit or closed-circuit operation with the analog control electronics.

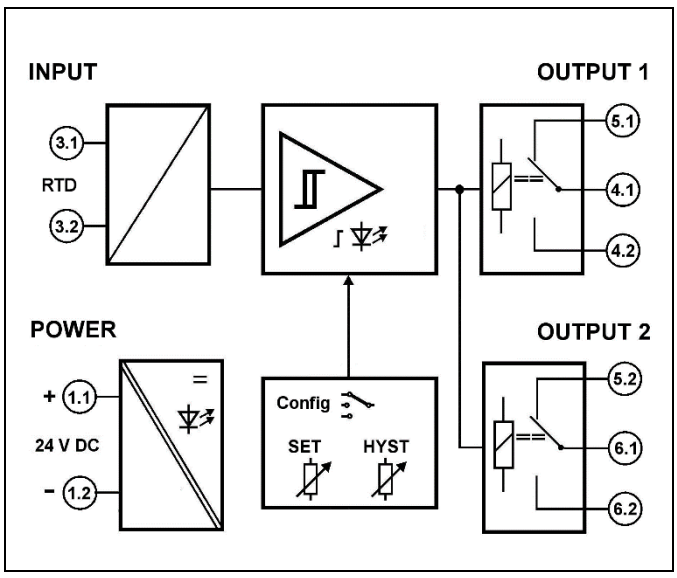
All setting elements are located behind the openable front cover and can also be operated when the unit is mounted. The switching points and the switching hysteresis can be adjusted with potentiometers. The monitoring states are indicated by yellow LEDs.

The relay changeover contacts switch high power loads up to 6 A. Input, power supply and the outputs are safely galvanically isolated from each other.

The Protective Separation and the 24 V DC power supply make the DG 3602 and DG 3632 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Easy configuration on front panel**
  Measuring range and operating mode switchable, switch point and hysteresis adjustable with potentiometer
- **Status indication by LED**
  Easy monitoring and switching point adjustment
- **Relay contacts with high power handling**
  2 fully isolated changeover contacts
- **True 4-port separation**
  Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61010**
  Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**
  No microprocessor, no integrated software
- **Extremely slim design**
  12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**
  Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant

Block diagram

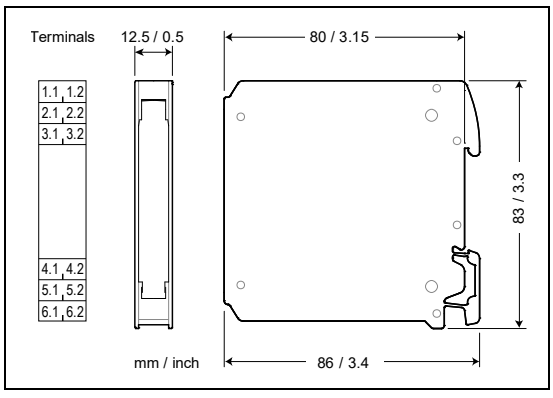


Technical Data

Input	DG 3602	DG3632
Input ranges (switchable)	0 … 300 Ω / 0 … 3 kΩ	0 … 30 kΩ / 0 … 300 kΩ
Monitoring sensors	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni500, Ni1000, KTY and further RTD	NTC Further high impedance RTD
Sensor current	≤ 1.5 mA / 0.15 mA	≤ 0.2 mA / 0.02 mA
Sensor connection	2-wire sensor connection, manual compensation of line resistances required	
Switch point setting	0 to 110 % with 12-turn potentiometer	
Hysteresis setting	0 to 6 % or 0 to 60 % of measuring range switchable, adjustable with potentiometer	
Output		
Contact type	2 isolated changeover relays (SPDT), synchronous switching	
Switching capability AC max.	250 V / 6 A 1500 VA	
Switching capability DC max.	250 V / 0.2 A 115 V / 0.3 A 30 V / 6 A	
Recommended minimum load	300 mW / 5 V / 5 mA	
Status indication	yellow LED	
Response time	< 50 ms	
General Data		
Switch error	< 0.2 % full scale	
Temperature coefficient[1)]	< 150 ppm/K	
Test voltage	4 kV AC, 50 Hz, 1 min. input against power supply against both switching outputs 3 kV AC, 50 Hz, 1 min. switching output 1 against switching output 2	
Working voltage (Basic Insulation)[2)]	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 electrical shock[2)]	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 %, approx. 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 (acc. to EN 61709 / SN 29500)	297.1 years ($T_{amb.}$40 °C, FIT 383.9)	

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
3) Minor deviations possible during interference

Dimensions



Construction
12.5 mm (0.5") housing, protection class IP 20
mounting on 35 mm DIN rail acc. to EN 60715
Weight 70 g

Connection
Captive plus-minus clamp screws
Wire cross-section max. 2.5 mm² / AWG 14
Stripped length 6 … 8 mm / 0.28 in
Screw terminal torque 0.8 Nm / 7 lbf in

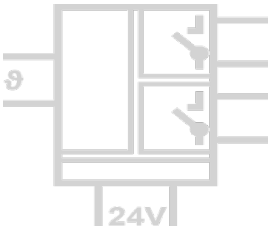
Subject to change!

Product line

Device	Order No.
Temperature Monitor for low impedance sensors	DG 3602
Temperature Monitor for high impedance sensors	DG 3632

Thermistor Motor Protection Relay DG 3802

Reliable Protection against Over-Temperature with Thermistor/ PTC Resistor Sensor and Bimetal Breakers



The Thermistor Motor Protection Relay DG 3802 protects motors und machines against over-temperature caused by heavy starting duties, braking, under-voltage, over-voltage and high switching frequencies.

Additional applications include monitoring the temperature of transformers, pumps, centrifuges, motor bearings, gearboxes, oil and coolants and the avoidance of thermal overload in the event of impeded cooling and high ambient temperatures.

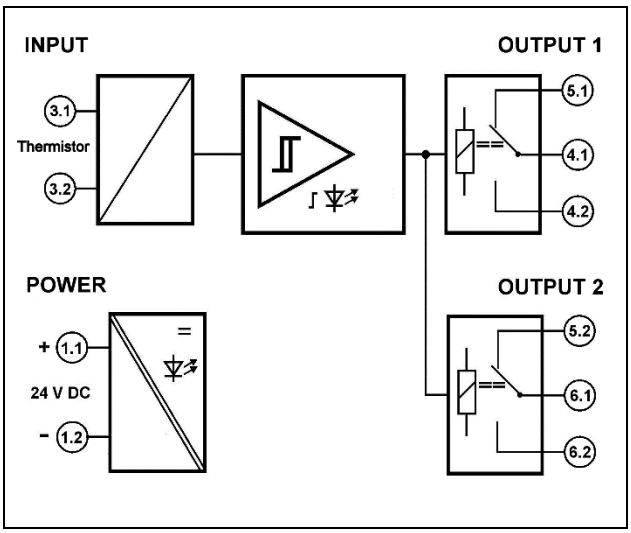
The temperature is monitored directly at the winding using thermistors or bimetal switches. Up to 6 sensors can be connected in series. When a certain resistance is reached, the output relays switch off. Restarting takes place after cooling down via auto-reset.

The motor protection relay works with open circuit operation and also detects broken wire in the sensor circuit. The monitoring state is indicated by a yellow LED. The relay changeover-contact switches high power loads up to 6 A.

The Protective Separation and the 24 V DC power supply makes the DG 3802 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Reliable overtemperature protection**
  Up to 6 thermistors or bimetal switches, wire break detection in the sensor input
- **Fault message in closed-circuit operation**
  2 output relays not activated in the event of fault, restart via auto-reset
- **Status indication by LED**
  Easy monitoring and switching point adjustment
- **Protective 4-Port Separation acc. to EN 61010**
  Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**
  No microprocessor, no integrated software
- **Extremely slim design**
  12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**
  Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant

Block diagram

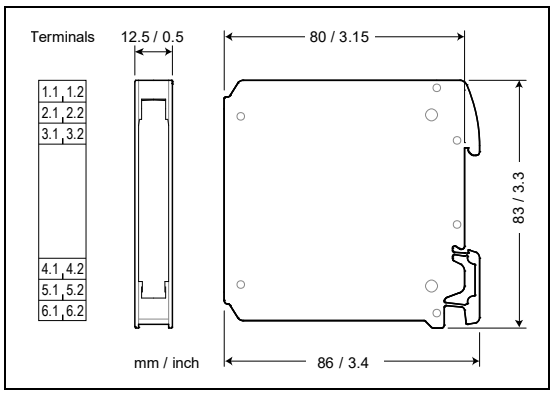


Technical Data

Input	
Monitoring sensors	Thermistor/ PTC Resistor Sensor and Thermical Bimetal Switches (breakers, e.g. Klixon)
Monitoring function	Over-temperature protection in open circuit operation, restart via auto-reset
Number of sensors	1 … 6 pcs
Sensor load	≤ 1 mA / 1 V / 1 mW
Threshold value	≥ 3 kΩ (relays drop out)
Release value	≤ 1,7 kΩ (relays pick up)
Output	
Contact type	2 isolated changeover relays (SPDT), synchronous switching
Switching capability AC max.	250 V / 6 A 1500 VA
Switching capability DC max.	250 V / 0.2 A 115 V / 0.3 A 30 V / 6 A
Recommended minimum load	300 mW / 5 V / 5 mA
Status indication	yellow LED
Response time	< 50 ms
General Data	
Switch error	< 5 %
Temperature coefficient[1)]	< 0,03 %/K
Test voltage	4 kV AC, 50 Hz, 1 min. input against power supply against both switching outputs 3 kV AC, 50 Hz, 1 min. switching output 1 against switching output 2
Working voltage (Basic Insulation)[2)]	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 electrical shock[2)]	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 %, approx. 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 (acc. to EN 61709 / SN 29500)	361,5 years ($T_{amb.}$40 °C, FIT 315,5)

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
3) Minor deviations possible during interference

Dimensions



Construction
12.5 mm (0.5") housing, protection class IP 20
mounting on 35 mm DIN rail acc. to EN 60715
Weight 70 g

Connection
Captive plus-minus clamp screws
Wire cross-section max. 2.5 mm² / AWG 14
Stripped length 6 … 8 mm / 0.28 in
Screw terminal torque 0.8 Nm / 7 lbf in

Subject to change!

Product line

Device	Order No.
Thermistor Motor Protection Relay	DG 3802

Switch Amplifier
DG 31000

Input for NAMUR, SN, S0, DC sensor, Contact, V AC/DC, PNP, NPN and Push-Pull, configurable per DIP switches

The configurable switch amplifier DG 31000 is used to capture, amplify and supply of industrial binary signals. A SPST relay or optionally an isolated, passive transistor switch (Open-Collector) is available at the output.

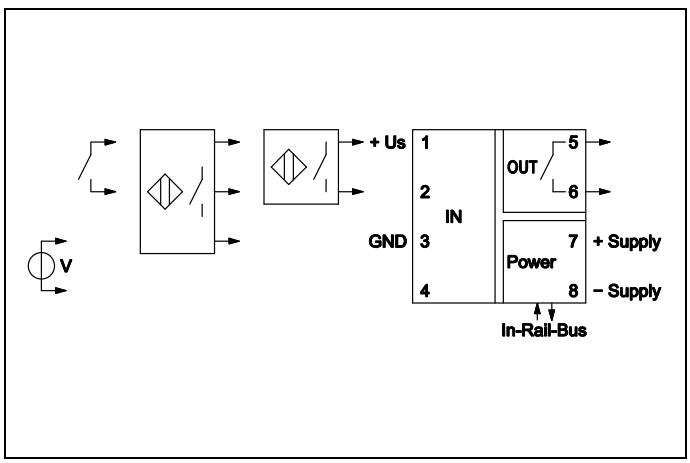
The switching amplifier detects the status of 2- and 3-wire sensors, binary signals and AC/DC voltages und transmit the state to the switching output. The input is protected against polarity reversal and short circuit. The connected sensors can be supplied by the switching amplifier or externally.

The mode of operation and action direction can be switched with DIP switches. The device has an adjustable switch-on delay, a switch-off delay and a wiper function.

The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. The switching status and the device status are indicated by LEDs on the front panel. If the device is operated via the In-Rail-Bus, a common fault message is available on the status line.

- **Universal Binary Input**
  for all common industrial status signals
- **Easily configurable via DIP switches**
  Sensor type, action direction and mode of operation directly selectable
- **Switchable timer functions**
  Switch-on delay, switch-off delay and wiper function
- **3-Port Isolation**
  Protection against switching errors due to parasitic voltages or ground loops
- **Extremely slim design**
  6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**
  Allows fast and cost-effective installation and provides a common fault message
- **Protective separation acc. to EN 61140**
  Protects service personnel and downstream devices against impermissibly high voltage
- **5 Years Warranty**
  Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender)

Prinzipschaltbild



6mm

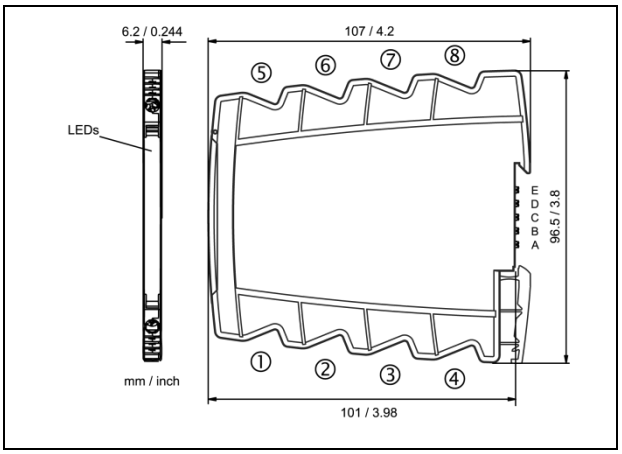
Technical Data

Input				
2-wire Sensors	Terminal 1, 2	NAMUR / SN	S0 Sensor	DC Sensor
	Standard	EN60947-5-6	EN 62053-31, Type B	EN 60947-5-2
	Sensor supply	8 V	16 V	16 V / 25 mA (ext. < 32 V)
	Switching point L/H	1.2/2.1 mA	1.2/2.1 mA	2 mA/6 mA
	Input resistance	1 kΩ	3 kΩ	1 kΩ
Binary Signal	Terminal 1, 2, 3	NPN	PNP / Push-Pull	Mechanical Contact
	Standard	EN60947-5-2	EN60947-5-2	ON/OFF
	Sensor supply	16 V / 25 mA (ext. < 32 V)	16 V / 25 mA (ext. < 32 V)	16 V / 25 mA (ext. < 32 V)
	Switching point L/H	3/5 V	8/10 V	8/10 V
	Input resistance	3 kΩ	3 kΩ	3 kΩ
Voltage	Terminal 3, 4	0 to 300 V AC 50/60 Hz or DC		
	Switching point L/H (preferred range)	7/15 V (24 V)	40/85 V (115 V)	80/160 V (230 V) switchable (any voltage up to 300 V permitted)
	Input resistance	> 500 kΩ		

Output			
DG31000	Relay	250 V AC / 30 V DC / 2 A	Recommended minimum load 300 mW / 5 V / 5 mA
DG31080	Transistor	36 V DC / 50 mA	galvanically isolated, not current limited
Response time		≤ 20 ms	
Switching functions (selectable)		Make / break contact	ON delay, OFF delay or wiper: OFF, 0.5 s, 1 s, 5 s, 10 s
Common fault message		Signal on In-Rail-Bus E (supply circuit) at device failure, cable break und short circuit	
General Data			
Test voltage		3 kV AC, 50 Hz, 1 Min.	Input against output against power supply/In-Rail-Bus
Working voltage[1] (Basic Insulation)		600 V AC/DC for overvoltage category II and pollution degree 2 acc. to EN 61010-1	
Protection against electrical shock[1]		Protective separation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 up to 300 V AC/DC for overvoltage category II and pollution degree 2 between all circuits	
Ambient temperature		Operation: -25 °C to +70 °C (-13 to +158 °F)	Transport and storage: -40 °C to +85 °C (-40 to +185 °F)
Power supply		24 V DC	voltage range 16.8 V to 31.2 V DC, max. 1.0 W
EMC[2]		EN 61326-1	
Approvals (pending)		UL (USA/Canada) ATEX / IECEx	UL 61010, Class I, Div. 2 Zone 2 (nA)
Construction		6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715	
Weight		Approx. 70 g	

1) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
2) Minor deviations possible during interference

Dimensions



Subject to change!

Terminal assignments

1	+	Sensor supply		
2	+	Binary input		
3	–	GND input		
4	≂	AC/DC-voltage input		
5	≂	Relay	+	Transistor output
6	≂	Relay	–	Transistor output
7	+	Power supply (connected to In-Rail-Bus D)		
8	–	Power supply (connected to In-Rail-Bus C)		

Connection

Captive plus-minus clamp screws
Wire cross-section 0.5 to 2.5 mm² / AWG 20-14
Stripped length 8 mm / 0.3 in
Screw terminal torque 0.6 Nm / 5 lbf in
Optional power connection via In-Rail-Bus (see accessories)

Product line

Device	Order No.	Relay	Transistor
Switch Amplifier, configurable per DIP switch		DG 31000 S	DG 31080 S
Switch Amplifier, configurable per DIP switch, In-Rail-Bus for power supply and status message		DG 31000 B	DG 31080 B

Limit Alarm Unit
DG 35200

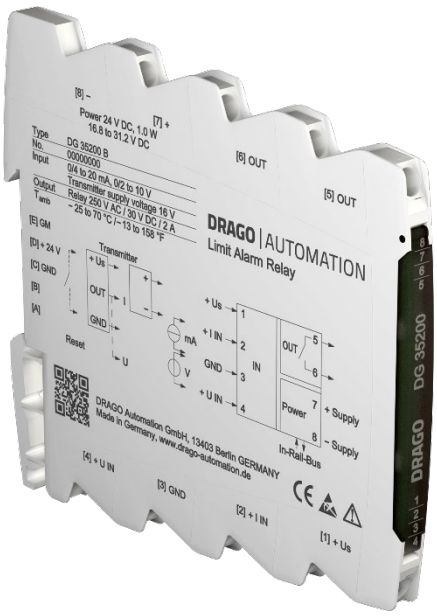
Monitoring of analog standard signals

The configurable Limit Alarm Switch DG 35200 is used for limit monitoring and processing of unipolar and bipolar standard signals. A SPST relay or optionally an isolated, passive transistor switch (Open-Collector) is available at the output.

The Limit Alarm Unit monitors standardized current and voltage signals, and transmits the signal to the switching output. A transmitter power supply is provided for the operation of 2-wire and 3-wire transmitters.

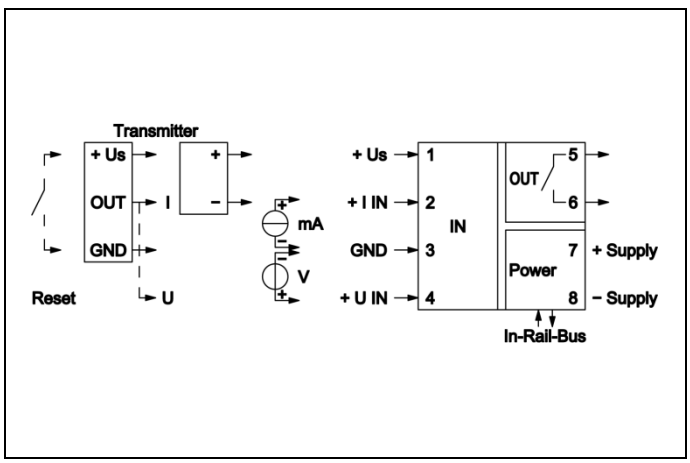
The configuration is carried out via DIP switch or USB interface. The switch point can be taught-in and corrected during operation with the front-side Teach-In buttons. The Alarm Unit has an adjustable switch-on delay, switch-off delay and a wiper function. Further settings such as memory function and window function can be programmed via USB interface.

The input is protected against polarity reversal and short circuit. The power supply can be provided via the connection terminal blocks or via the optional In-Rail-Bus. The switch status and the device status are indicated by LEDs on front panel. If the device is operated via the In-Rail-Bus, a common fault message is available on the status line.



- **Universal input for current and voltage**
  and integrated transmitter supply
- **Easy configurable via DIP switches or via USB**
  Limit point, hysteresis and mode of operation can be directly set, limit point adjust also in operation via teach-in function
- **Switchable timer and special functions**
  Switch-on delay, switch-off delay and wiper function, Memory and window functions
- **3-Port-Separation**
  Protection against switching errors due to parasitic voltages or ground loops
- **Extremely slim design**
  6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**
  allows for fast and economical installation
- **Protective Separation acc. to EN 61140**
  Protects service personnel and downstream devices against impermissibly high voltage
- **5 Years Warranty**
  Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender)

Prinzipschaltbild



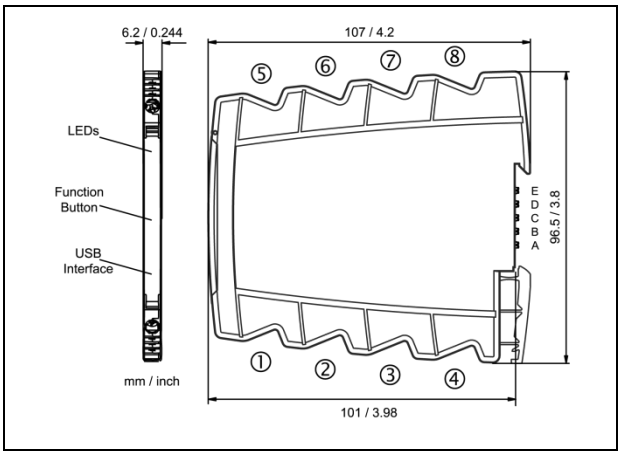
6mm

Technical Data

Input	Current			Voltage		
Input signal	0 to 20 mA 0 to 10 mA ABS 20 mA 4 to 20 mA/NE43 (Relay inactive outside the NAMUR range 3.6 to 22 mA)	4 to 20 mA 2 to 10 mA	± 20 mA ± 10 mA	0 to 10 V 0 to 5 V ABS 10 V	2 to 10 V 1 to 5 V	± 10 V ± 5 V
Input resistance	≤ 20 Ω			≥ 1 MΩ		
Overload	< 50 mA			< 30 V		
Transmitter supply (Tx)	16 V (open circuit voltage/short circuit current < 22 V/35 mA)					
Output						
DG35200 Relay	250 V AC / 30 V DC / 2 A	Recommended minimum load 300 mW / 5 V / 5 mA				
DG35280 Transistor	36 V DC / 50 mA	galvanically isolated, not current limited				
Response time	≤ 20 ms					
Switching functions (selectable)	Make / break contact	ON delay, OFF delay or wiper: OFF, 0.5 s, 1 s, 5 s, 10 s				
Common fault message	Signal on In-Rail-Bus E (supply circuit) at device failure, cable break und short circuit					
General Data						
Test voltage	3 kV AC, 50 Hz, 1 Min.	Input against output against power supply/In-Rail-Bus				
Working voltage[1] (Basic Insulation)	600 V AC/DC for overvoltage category II and pollution degree 2 acc. to EN 61010-1					
Protection against electrical shock[1]	Protective separation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 up to 300 V AC/DC for overvoltage category II and pollution degree 2 between all circuits					
Ambient temperature	Operation: -25 °C to +70 °C (-13 to +158 °F)	Transport and storage: -40 °C to +85 °C (-40 to +185 °F)				
Power supply	24 V DC	voltage range 16.8 V to 31.2 V DC,	max. 1.0 W			
EMV[2]	EN 61326-1					
Approvals (pending)	UL (USA/Canada) ATEX / IECEx	UL 61010, Class I, Div. 2 Zone 2 (nA)				
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715					
Weight	Approx. 70 g					

1) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
2) Minor deviations possible during interference

Dimensions



Subject to change!

Terminal assignments

1	+	Transmitter supply		
2	+	Current input		
3	–	GND		
4	+	Voltage input		
5	≂	Relay	+	Transistor output
6	≂	Relay	–	Transistor output
7	+	Power supply (connected to In-Rail-Bus D)		
8	–	Power supply (connected to In-Rail-Bus C)		

Connection

Captive plus-minus clamp screws
Wire cross-section 0.5 to 2.5 mm² / AWG 20-14
Stripped length 8 mm / 0.3 in
Screw terminal torque 0.6 Nm / 5 lbf in
Optional power connection via In-Rail-Bus (see accessories)

Product line

Device	**Order No.**	**Relay**	**Transistor**
Limit Alarm Unit, configurable		DG 35200 S	DG 35280 S
Limit Alarm Unit, configurable, In-Rail-Bus for power supply and status message		DG 35200 B	DG 35280 B

Our performance–your advantage

- Comprehensive product range
- Customer-specific special solutions
- Individual consulting and support
- Most modern production technology
- Certification according to ISO9001
- 5 years warranty
- Made in Germany

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