

Digital dual limit value switch

Percentual input of 2 switching levels

Input 0...10V / 0...20mA / 4...20mA or temperature dependent resistor PT-100

GWA – 250 – U0

GWAP – 250 – U0

BA0703

Installation and operating instructions

page 1 of 2

- + Input of limit values from 0...99% of the input signal in steps of 1% by using pushwheel switches
- + Two alternating relay contacts, switching separately as limit value switch or switching together with adjustable hysteresis for two-point-regulation
- + Relay function quiet or working current principle
- + Adjustable relay activation delay time
- + Signalling of the relay switching state by LED
- + Integrated sensor feeding 20V / 24mA
- + Wide supply range 20...253V AC and DC
- + Kompakt form (22,5mm width)
- + Assembly on rail fastening DIN EN 50022 – 35



Application:

The dual limit value switch enables the setting of up to two switching levels in addition to continuous measurements without the need of installing additional measurement devices.

The limit value switch GWA – 250 – U0, for connecting standard signals 0...10V, 0...20mA or 4...20mA, is suitable for monitoring of supply and regulation voltages, e.g. in the water and waste water technique for fill level monitoring and pump controlling (e.g. 15% pump on, 95% pump off).

The limit value switch GWAP – 250 – U0, for connecting a temperature dependent resistor PT-100, is suitable for monitoring process temperatures in all areas of the industrial manufacturing.

Function:

The limit value switch GWA is conceived for assembly on rail fastening appropriate to DIN EN 50022 – 35. Because of the integrated wide input power supply for supply voltages from 20...253V AC and DC, the limit value switch is suitable for using in all current international energy supply networks.

The activation of the device is signalled by a front sided integrated green LED.

At the variant GWA – 250 – U0 a connected sensor can be supplied by the integrated sensor feeding. The direct voltage / direct current or the signal of the temperature dependent resistor PT-100, that should be monitored, is compared with the setted limit values after internal processing.

The 2 limit values can be setted in the range from 0...99% in steps of 1% by front sided pushwheel switches.

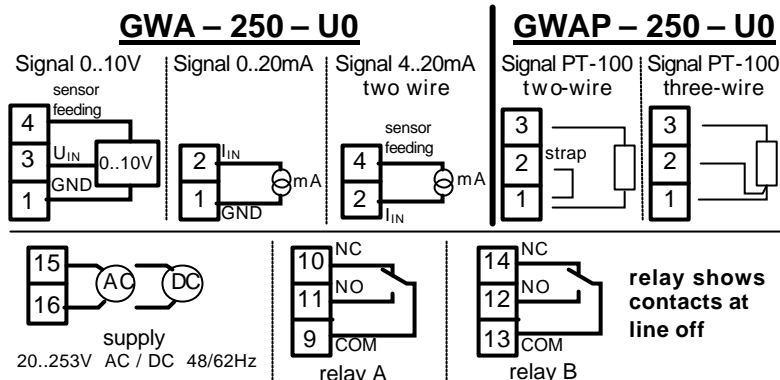
Dependent of the setted function principle the corresponding relay switches at underrun or at transgression.

Front sided integrated red LED signals the activated state of the corresponding output relay.

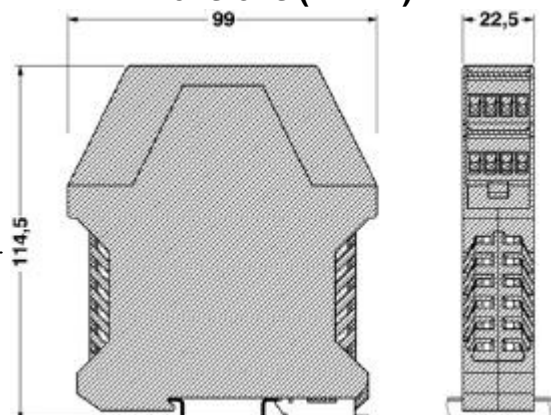
Inside the housing the input signal or the relay function can be setted by dip switches:

- At the variant GWA – 250 – U0: input signal 0...10V / 0...20mA or input signal 4...20mA
- At the variant GWAP – 250 – U0: zero –50°C, 0°C oder +50°C / span 30K, 50K, 100K or 600K
- Relay function: quiet or working current principle
- Relay function: delay time 0,4 seconds or 4 seconds (specially for fluctuating measurement values)
- Relay function: all two relays A and B separately switching at the respective limit value, or all two relays A and B together switching (two point regulation), in which the hysteresis can be freely setted by input the upper and lower limit values from 1 to 99%.

Electrical connection



Dimensions (in mm)



Digital dual limit value switch

Percentual input of 2 switching levels

Input 0...10V / 0...20mA / 4...20mA or temperature dependent resistor PT-100

GWA – 250 – U0

GWAP – 250 – U0

BA0703

Installation and operating instructions

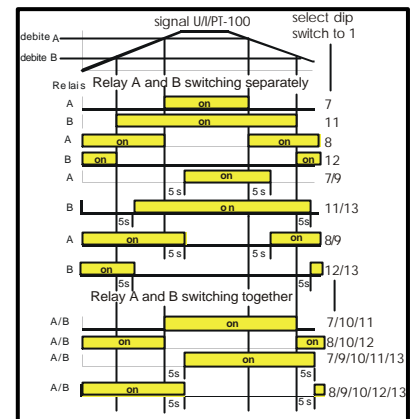
page 2 of 2

Electrical data:

Auxiliary input:	20...253 V AC or DC, 48..62 Hz	power consumption	≤ 1,75W / ≤ 2,5VA
Input GWA – 250 – U0:	direct voltage 0...10V	input resistance	1 MΩ maximum 50 V
	direct current 0...20mA / 4...20mA	input resistance	10 Ω maximum 400 mA - 30 V / self resetting fuse
	sensor feeding 20V +/-1,5V		minimum 24mA, overload and short circuit protected
Input GWAP – 250 – U0:	temperature dependent resistance PT-100, 3-wire- or 2-wire-measurement, resistance linear, max. 40 Ω each wire		measurement current 2 x 0,51mA ± 50 µA, zero: -50°C, 0°C +50°C / span: 30 Kelvin, 50 Kelvin, 100 Kelvin, 600 Kelvin
			at wire break or short circuit of one or more PT-100-connection wires the relays switches off (at function working current principle). At short circuit or at strap between clamp 5 and 6 the device is working in 2-wire measurement
Output relays:	2 potential-free gold-plated switch-over contacts		
	switching power: 1500 VA (ohmic load) or 300 VA at 230V AC (electromagnetic load → contactor, solenoid valve)		
			30V DC → 6A / 110V DC → 0,3A / 220V DC → 0,12A
	switching voltage: max. 253V AC / DC		
	switching current: max. 6A permanent current / 10A switch-on current		
	min. load: 50mW (0,5V / 1mA)		
	function: quiet or working current principle		
			relays A / B separately switching – hysteresis 0,4%
			relays A / B together switching – adjustable hysteresis
	delay time: ≤ 0,4s ± 0,1s or ≤ 4s ± 1s		
measurement deviation GWA: ≤ 0,4%			of nominal measurement range
measurement deviation GWAP: ≤ 0,4%			of nominal measurement range
			at zero -50 / +50°C → end point deviation ≤ 1,6% of measurement range
Temperature deviation: ≤ 0,2% / 10 K			of nominal measurement range
EMC specifications: EN 61326			industrial environment, class A
Isolation voltage: 4kV~			input to output to auxiliary input

Mechanical data:

Protection:	IP20
Material connection housing:	PC
Connection clamps:	line cross cut max. 2,5 mm ² , screws everlasting
Weight:	100 g
Operation temperature:	-40°C...+70°C
Storage temperature:	-40°C...+100°C



Assembly, electrical installation and inauguration, maintenance:

Assembly, electrical installation, inauguration, operation and maintenance of the device must be carried out by an qualified employee. The electrical installation of the device must be carried out according to the respective country specific standards. An incorrect assembly or adjustment could cause applicationally conditioned risks. The device is maintenance free.

The auxiliary voltage at the clamps 15 and 16 may not exceed 253V (AC or DC) to avoid damage of the electronic. Care must be also taken to the maximum values of the inputs (current input maximum 400mA - 30V / voltage input 50V) and the relays. The current input is provided with a self resetting fuse. In the case of activating the fuse the signal current wire must be disconnected for approximately 5 seconds.

Use only shielded signal and measurement wires and install these wires separated from power leading wires. Connect the shield only at one side to earth.

Inductive loads at the relays, e.g. contactors or solenoid valves, may only be used with free-wheeling diode or RC-protection circuit to avoid high voltage peaks.

The modification of the input ranges and the relay functions is carried out by dip switches inside the housing.

!! Dangerous voltage → ensure the safe switch-off of the applied voltages before opening the housing !!

For adjustment release the upper housing part (with clamps) on top and bottom by using a screwdriver and pull it out of the housing. Drop-In pin's avoid a complete pulling out of the PCB. Now the desired functions (see overview below) can be setted by switching the respective dip switches of the corresponding switching block to ON or OFF.

The device meets the legal requirements of the EC-guidelines.

Setting the measurement range GWA – 250 – U0

Signal 0..10V / 0..20mA → SB2 switch 1 to OFF
Signal 4..20mA → SB2 switch 1 to ON

Setting the measurement range GWAP – 250 – U0

Zero -50°C → SB2 switches 2 / 3 to ON (S1 no function)
Zero 0°C → SB2 switch 2 to OFF and 3 to ON (S1 no function)
Zero +50°C → SB2 switches 2 / 3 to OFF (S1 no function)

Span 30 Kelvin → SB3 switches 1 / 2 / 3 to ON
Span 50 Kelvin → SB3 switch 2 to OFF and 1 / 3 to ON
Span 100 Kelvin → SB3 switches 1 / 2 to OFF and 3 to ON
Span 600 Kelvin → SB3 switches 1 / 2 / 3 to OFF

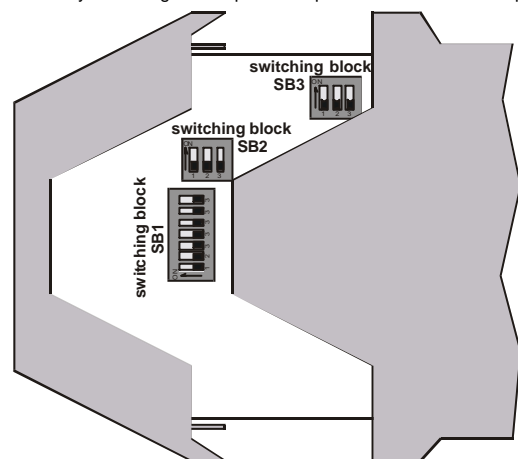
Setting the relay functions

Relays A and B separately switching → SB1 switch 4 to OFF
Relay A (for relay A the switches 5 / 6 / 7 of SB1 are used)

Function working current principle → SB1 switch 5 to ON and 6 to OFF
Function quiet current principle → SB1 switch 5 to OFF and 6 to ON
Function delay time 0,4s → SB1 switch 7 to OFF
Function delay time 4s → SB1 switch 7 to ON

Relay B (for relay B the switches 1 / 2 / 3 of SB1 are used)
Function working current principle → SB1 switch 1 to ON and 2 to OFF
Function quiet current principle → SB1 switch 1 to OFF and 2 to ON
Function delay time 0,4s → SB1 switch 3 to OFF
Function delay time 4s → SB1 switch 3 to ON

Relays A and B together switching → SB1 switch 4 to ON
Function working current principle → SB1 switches 5 / 1 to ON and 6 / 2 to OFF
Function quiet current principle → SB1 switches 5 / 1 to OFF and 6 / 2 to ON
Function delay time 0,4s → SB1 switches 7 / 3 to OFF
Function delay time 4s → SB1 switches 7 / 3 to ON



Application example GWA – 250 – U0

Conditions: Signal 0...20mA

Signal < 10% = minimum → pump switch on
Signal > 90% = maximum → pump switch off
delay time 4 seconds, because of fluctuating signal caused by mixing engine

Setting: SB1 switches 2 / 3 / 4 / 6 / 7 to ON, all others to auf OFF
pushwheel switch for "A" at the front to "90"
pushwheel switch for "B" at the front to "10"

Result: If current of the measurement circuit falls below 2mA (=10%), all two relays switches (pump active, filling e.g. the tank). If current of the measurement circuit rises above 18mA (=90%), all two relays are deactivated.