SYSTEM COMPONENTS

UNICONT

MODULES

3 YEARS WARRANTY @ NIVELCO – WHERE ELSE?

NIVELCO

SYSTEM COMPONENTS

MULTIFUNCTIONAL CURRENT CONTROLLED SWITCH MODULES

MAIN FEATURES

- *4–20 mA input*
- *Relay output*
- *Rail mountable*
- *Intrinsically safe Associated Apparatus*

APPLICATIONS

- *Galvanic isolated limit switch*
- *Power supply for transmitters*
- *Cable state monitoring*

GENERAL DESCRIPTION

The members of the **UNICONT PKK-312** series are 4–20 mA current controlled limit switches featuring galvanic isolation and also available as an intrinsically safe associated apparatus. The input 4–20 mA signals can be transferred from passive or active outputs of 2- or 4-wire transmitters.

The value of the input signal will be compared in the unit with the set (taught) value and the state of the galvanically isolated relay changes in accordance with the comparison mode programmed.

The double throw output relay can be programmed for the following functions:

- Limit switch (high or low fail safe)
- ON-OFF control with selectable switching difference
- Monitoring of discontinuity or short-circuit of the cable
- Window comparison operation mode with energised or de-energised relay state

The **UNICONT PKK-312-8 Ex** is a special version, designed to operate with **NIVELCO's** Ex rated, DC powered 2-wire **NIVOSWITCH** vibrating fork level switches, as an intrinsically safe power supply and amplifier unit. Without doing any programming the galvanic isolated limit switch is able to perform relay switching signal based on the monitoring of the vibrating fork's output current changes between the freely vibrating and the immersed states.

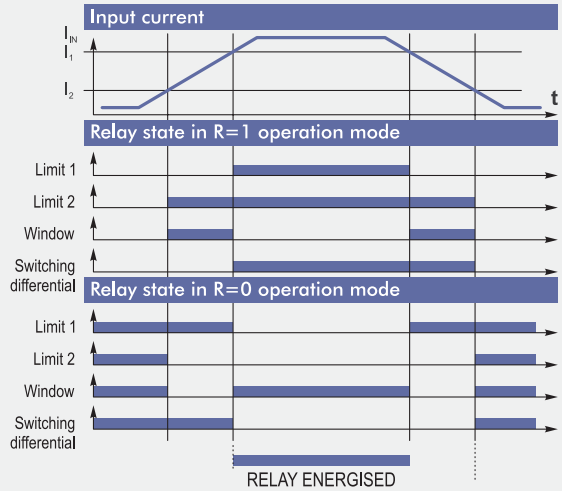
TECHNICAL DATA

Type		PKK–312–☐
Nominal input current range		1–22 mA
Accuracy of switching level / threshold level		± 0.1 mA
Discontinuity threshold / low limit value fault current		3.7 mA
Short circuit threshold / high limit value fault current		22 mA
Input impedance		10 Ω
Input overload capability		max 100 mA (permanent)
Switching delay		0.1 s; 1 s; 2 s; 5 s (selectable)
Output	Relay	1 x SPDT
	Rating	250 V AC, 8 A, AC1
Electrical connection		max. 2.5 mm² (AWG14) twisted, or max. 4 mm² (AWG12) solid wire
Mounting		EN 60715 rail
Module width		2-modules (36 mm / 1.42 inch)
Ingress protection		IP20
Mass		≈ 0.21 kg (0.45 lbs)

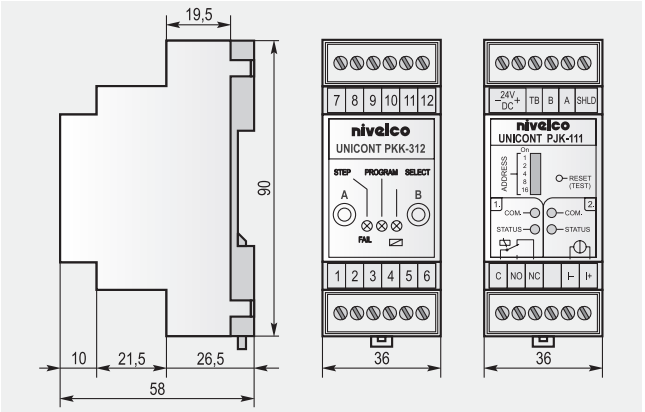
Type	Standard version				Explosion-proof version			
	PKK-312-1	PKK-312-2	PKK-312-3	PKK-312-4	PKK-312-5Ex	PKK-312-6Ex	PKK-312-7Ex	PKK-312-8Ex
Power supply	230V AC ±10% 50…60 Hz	110V AC ±10% 50…60 Hz	24V AC ±10% 50…60 Hz	24V AC ±10%, 50…60 Hz, 24V DC ±15%	230V AC ±10% 50…60 Hz	110V AC ±10% 50…60 Hz	24V AC ±10%, 50…60 Hz, 24V DC ±15%	
Power consumption	< 2.7 VA			<2.5 W	< 2.5 VA		< 2.5 VA / < 2.5 W	
Switching levels	2 values in the range of 1–22 mA				2 values in the range of 1–22 mA			10.5 mA; 12.5 mA
Ex marking	–				⟨Ex⟩ II (1) G [EEx ia] IIB		⟨Ex⟩ II (1) G [EEx ia] IIC	
Intrinsically safe data	–				U_0<28.4 V; I_0<140 mA; P_0<1.1 W; L_0<6 mH; C_0<50 nF		U_0<28.4 V; I_0<80 mA; P_0<0.6 W; L_0<4 mH; C_0<50 nF	
Output load capability	U_0 = 30 V I_{MAX} = 70 mA U_{OUT} min = 16 V			U_0=24 V I_{MAX} = 80 mA U_{OUT} min = 23 V	at 22 mA U_{OUT} ≈ 12 V		at 22 mA U_{OUT} ≈ 15 V	–
Electrical protection	Class II.			Class III.	Class II.		Class III.	
Ambient temperature	–10 °C ... +55 °C (+14 °F ... +131 °F)							

RELAY OPERATION

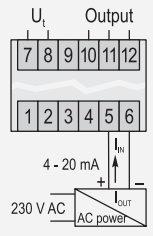
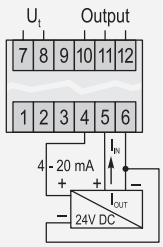
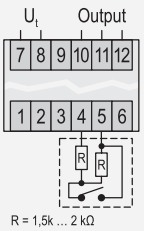
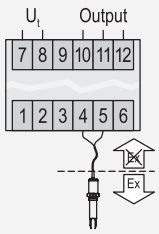
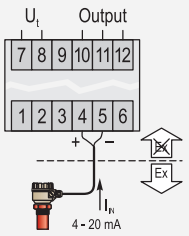
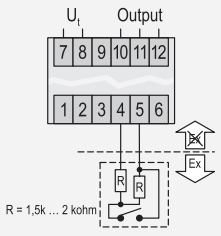
Relay operating modes can be programmed by the press buttons on the front panel and considering the indications of the bicolour LED's.
One of the most important parameters is the operating mode of the relay "R". If R = 1 the output relay will be energised when the input current is over the value set by teaching. If R = 0 the output relay will be de-energised when the current value is over the value set by teaching.
By the help of this parameter the characteristic (normal or reverse) of the ON–OFF control can be decided e.g. depending on the need for emptying or filling in connection with level control as well as heating or cooling control if used for temperature control.



DIMENSIONS

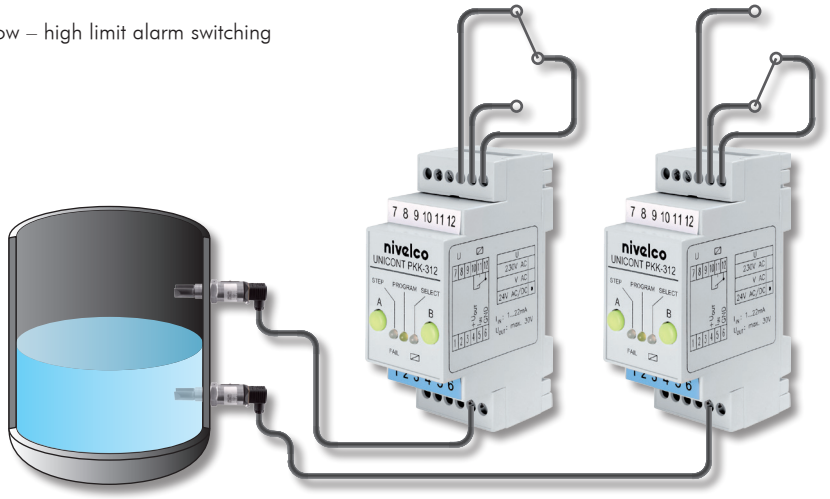


WIRING

Wiring standard models			Wiring Ex certified models		
PKK-312-1 ⋮ PKK-312-4	PKK-312-1 ⋮ PKK-312-4	PKK-312-1 ⋮ PKK-312-4	PKK-312-8 Ex	PKK-312-7 Ex	PKK-312-5 Ex PKK-312-7 Ex
4-wire active transmitter (eg.: EchoTREK STA-46☐)	4-wire active transmitter (eg.: MICROSONAR UTS-211)	monitoring a passive dry contact	NIVOSWITCH Ex vibrating fork	2-wire Ex transmitter (eg.: EchoTREK SEA-380-6 Ex)	monitoring Ex type passive switch and cable discontinuity
					

APPLICATION EXAMPLE

Low – high limit alarm switching



ORDER CODES

UNICONT PKK – 312 – ■ Ex[1]

Power supply / Ex	Code
230 V AC	1
110 V AC	2
24 V AC	3
24 V AC/DC	4
230 V AC / Ex	5
110 V AC / Ex	6
24 V AC/DC / Ex	7
24 V AC/DC / Ex	8[2]

[1] *The order code of an Ex version should end in "Ex"*
[2] *For DC powered, 2-wire **NIVOSWITCH Ex** vibrating forks*

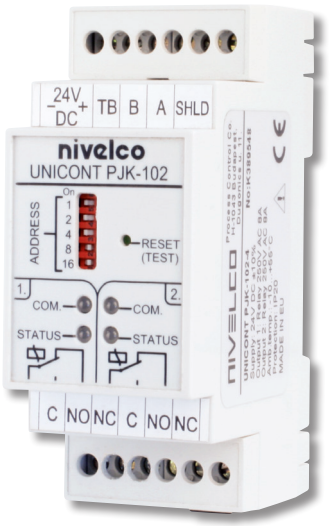
UNICONT PJK UNIVERSAL INTERFACE MODULES

MAIN FEATURES

- *RS 485 input*
- *HART or MODBUS protocol*
- *Output:*
  - *2x relay output*
  - *2x current output*
  - *Mixed: relay and current output*
- *Rail mountable*

APPLICATIONS

- *Universal Interface Module:*
  - *For PLC process control systems*
  - *For automated process control systems operating on RS485*
  - *Expanding module for MultiCONT*



GENERAL DESCRIPTION

The members of the **UNICONT PJK-100** series are universal interface modules which can be controlled via RS485 line, and (depending on type) provides relay(s) and/or 4–20 mA current output(s). The DIP switch in the front panel of the module is for setting the address.

The Universal Interface Modules can be widely used as system components in the following applications:

- Expanding the MultiCONT devices with relay or current outputs
- Peripheral unit of PLC process control systems
- Peripheral unit of PC automated process control systems

The **UNICONT PJK-100** universal interface modules provide essential solution if the number of relays or current outputs of the **MultiCONT** is not enough in a system. The device can be used also as a peripheral unit for PLC or PC controlled process control systems communicating via MODBUS protocol. The sum of relays in the **UNICONT PJK-100** extension modules and the **MultiCONT** must not exceed 64, and the sum of analogue outputs (4–20 mA) must not exceed 16. There is a special module with both relay and current output in the variety of the **UNICONT PJK-100** series. The maximal number of these modules may be 32. The programming of the **UNICONT PJK** modules can be done via HART or MODBUS protocol with the help of the central unit of the communication network, which can be a process control computer or a **MultiCONT** device. The switches in the front panel of the module is only for setting the address.

TECHNICAL DATA

Type	PJK-1-☐☐-4
Power supply	24 V DC ±10%
Power consumption	10 mA + (N_{relay} x 11 mA + $N_{currentgenerator}$ x 25 mA) ±10%
Ambient temperature	– 20 °C … + 50 °C
Electrical connection	max. 2.5 mm² (AWG14) twisted, or max. 4 mm² (AWG12) solid wire
Electrical protection	Class III.
Mounting	EN 60715 rail
Module width	2-modules (36 mm / 1.42 inch)
Ingress protection	IP20
Mass	0.11 kg (0.24 lbs)

MODULE SERVICES

Common services of the units

- Operating time count
- Monitoring communication cycle time-out (communication watchdog)

Services of the units with relay output	Services of the units with current output
■ Static or impulse output ■ Selectable impulse default state ■ Detection of coil break (error indication) ■ Counting the number of relay's energised state ■ Counting number of switching cycles ■ Life-time (max. numbers of switching cycles) monitoring	■ Monitoring correct operation of current generator (error indication) ■ Can be calibrated by the user ■ Low or high error current

OUTPUTS

Type		PJK-102-4	PJK-111-4	PJK-110-4	PJK-120-4
Output units		2 relays	1 relay + 1 current output	1 current output	2 current outputs
Relay	Relay	SPDT		–	
	Rating	250 V AC, 8 A, AC1		–	
	Insulation voltage	2500 V 50 Hz		–	
	Electrical / mechanical lifespan	10^5 / 2 x 10^6 switching		–	
	Impulse width in pulse mode	0.1 … 25.5 s		–	
	Electrical protection	Class II.		–	
Current generator	Linear range	–		3.601 mA … 21.999 mA	
	Error indication	–		≤ 3.6 mA, or ≥ 22 mA	
	Resolution	–		14 bit	
	Accuracy	–		40 µA	
	Temperature dependence	–		max. 15 µA / 10 °C	

ORDER CODES

UNICONT PJK 1☐☐–4

Current output	Code
None	0
1x 4–20 mA	1
2x 4–20 mA	2

Relay output	Code
None	0
1x SPDT	1
2x SPDT	2

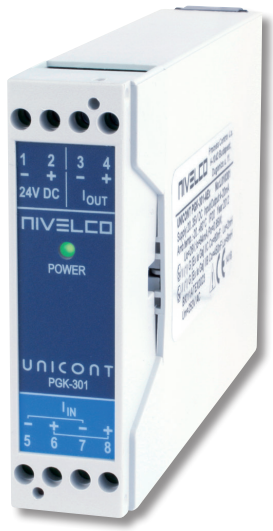
UNICONT PGK INTRINSICALLY SAFE ISOLATOR POWER SUPPLY

MAIN FEATURES

- *Intrinsically safe isolation*
- *Power supply for transmitters*
- *20 – 35 V DC supply voltage*
- *4-20 mA, HART communication*
- *Up to 1 μA transmission accuracy*
- *Rail mountable*

APPLICATIONS

- *For high precision transmitters*
- *For transmitters operating in hazardous applications*
- *For certified measurement instruments*
- *For 2-wire 4–20 mA transmitters*



GENERAL DESCRIPTION

The **UNICONT PGK-301** intrinsically safe isolator and power supply modules are suitable for providing power supply for transmitters operating in hazardous applications, isolating the input, output and supply voltage galvanically. Moreover the device perform high accuracy signal transmission with 4-20 mA or HART communication between Ex and non-Ex areas.

The **UNICONT PGK-301** intrinsically safe isolators perform signal transmission to the non-Ex Zone with microprocessor controlled digital signal processing, which provides transmission accuracy up to 1 μA. This is a special demand in case of certified, high precision (for example magnetostrictive) transmitters. If fast conversion speed is necessary, the high speed types are the ideal choices. The number of connectable transmitters is determined by the intrinsically safe limit data.

TECHNICAL DATA

Type		High precision		High speed	
		PGK-301-A Ex	PGK-301-B Ex	PGK-301-C Ex	PGK-301-D Ex
Input		4–20 mA			
Output	Normal operation	4–20 mA			
	Current error	3.6 mA: I_{IN}=3.6 mA or I_{IN}>24 mA			
Protection		Input, output, power supply: 125 mA fuse			
Loop resistance		300 – 1000 Ω/24 V DC			
Communication		–	HART	–	HART
Power supply		20-35 V DC			
Power supply indication		Green LED			
Power supply for transmitters		23 V DC galvanically isolated			
Galvanic isolation		> 2 kV			
Power consumption		Max. 2.2 W			
Transmission accuracy (at +20 °C / +68 °F)		1 μA + 0.01% reading error (typically max. 2.5 μA)		8 μA + 0.1% reading error (typically max. 20 μA)	
Response time		100 msec		5 msec	
Temperature dependence		< 1 μA/ °C			
Ambient temperature		- 20 °C ... + 60 °C (- 4°F ... +140 °F)			
Electrical connection		Terminal, wire cross section: 0.5 – 2.5 mm² (AWG20 - AWG14)			
Electrical protection		Class III.			
Mounting		EN 60715 rail, module width: 22.5 mm (0.88 inch)			
Mass		0.25 kg (0.55 lbs)			

SPECIAL DATA FOR Ex CERTIFIED MODELS

Protection type		Ex ia	
Ex marking	ATEX	⟨Ex⟩ II (1) G [Ex ia Ga] IIC	⟨Ex⟩II (1) G [Ex ia Ga] IIB
	IEC Ex (1)	[Ex ia Ga] IIC	[Ex ia Ga] IIB
Intrinsically safe data		L_0= 2 mH C_0= 60 nF	L_0= 9 mH C_0= 450 nF
		U_0=26 V I_0=94 mA P_0=0.65 W	
		Um= 253 V AC	

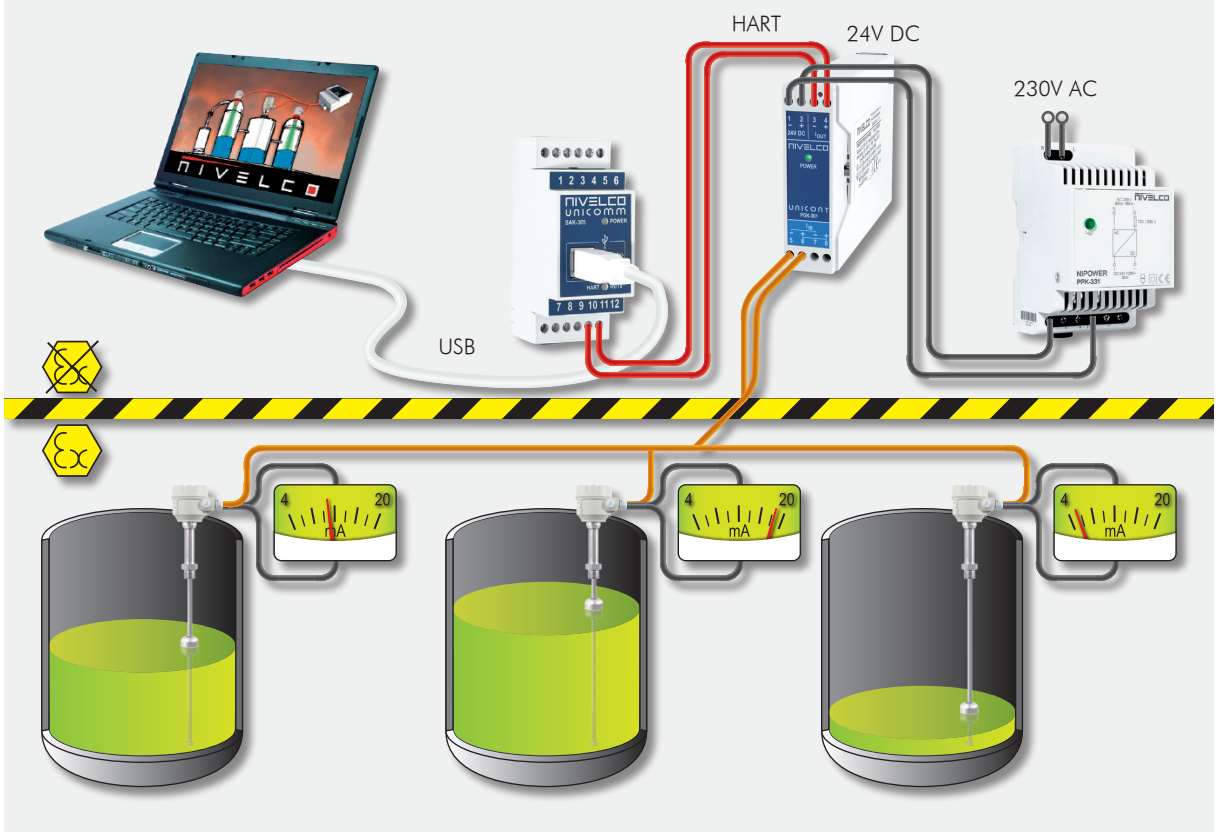
(1) Need of IEC is to be specified with order

ORDER CODES

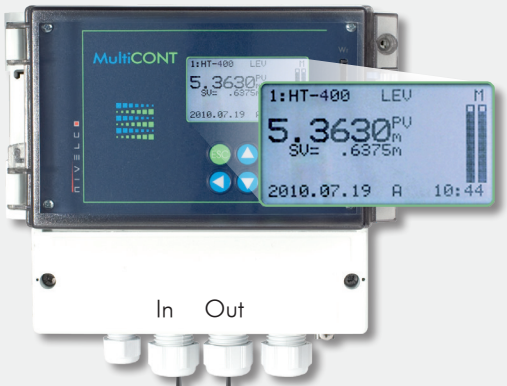
UNICONT PGK–301– ■ Ex

Type / Output	Code
High precision / 4–20 mA	A
High precision / 4–20 mA +HART	B
High speed / 4–20 mA	C
High speed / 4–20 mA + HART	D

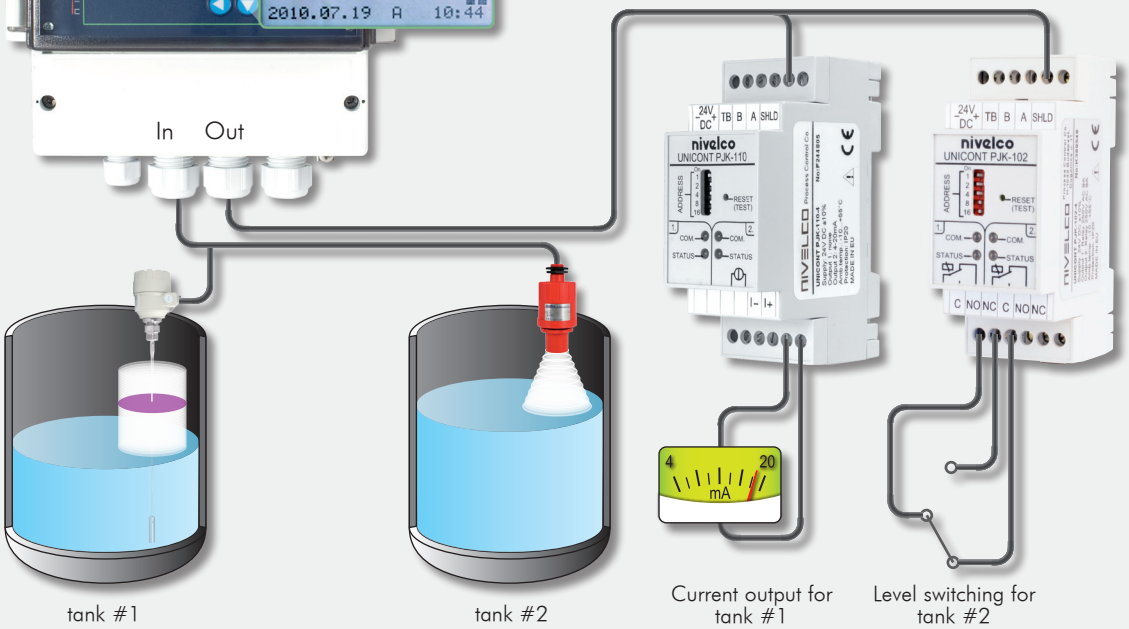
UNICONT PGK INTRINSICALLY SAFE ISOLATOR POWER SUPPLY MODULES



UNICONT PJK UNIVERSAL INTERFACE MODULES



The **MultiCONT** device can be extended with max. 32 **UNICONT** Universal Interface Modules. These modules should be distinguished with different "Short Addresses". The communication loop cannot contain two or more modules with the same Short Addresses. Setting is possible with the switches on the front panel of the module (0…31).



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