

# MULTIFUNCTIONAL CURRENT CONTROLLED SWITCH MODULES MAIN FEATURES APPLICATIONS

- 4–20 mA input
- Relay output
- Rail mountable
- Intrinsically safe Associated Apparatus
- Galvanic isolated limit switch
- Power supply for transmitters
- Cable state monitoring

# 7 8 9 10 11 12 NIVELCO UNICONT PKK-312 STEP PROGRAM SELECT A B B 1231156 Unit 12200 12200 1230156 Unit 2200 1230156 Unit 2200 1230156 Unit 2200 1230156

### 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

Туре		PKK-312-□	
Nominal input current range		1-22 mA	
Accuracy of	of switching level / threshold level	± 0.1 mA	
Discontinu	ity threshold / low limit value fault current	3.7 mA	
Short circu	it threshold / high limit value fault current	22 mA	
Input impe	dance	10 Ω	
Input overl	oad capability	max 100 mA (permanent)	
Switching (	delay	0.1 s; 1 s; 2 s; 5 s (selectable)	
Output	Relay	1 x SPDT	
Culpui	Rating	250 V AC, 8 A, AC1	
Electrical o	connection	max. 2.5 mm <sup>2</sup> (AWG14) twisted, or max. 4 mm <sup>2</sup> (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)	

Tomas		Standard version			Explosion-proof version			
Туре	PKK-312-1	PKK-312-2	PKK-312-3	PKK-312-4	PKK-312-5Ex PKK-312-6		PKK-312-7Ex	PKK-312-8Ex
Power supply	230V AC ±10% 5060 Hz	110V AC ±10% 5060 Hz	24V AC ±10% 5060 Hz	24V AC ±10%, 5060 Hz, 24V DC ±15%	230V AC ±10% 5060 Hz	110V AC ±10% 5060 Hz	24V AC 506 24V DC	60 Hz,
Power consumption	< 2.7 VA <2.5 W			<2.5 W	< 2.5 VA < 2.5 W			/ < 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		-						[EEx ia] IIC
Intrinsically safe data	-				U <sub>0</sub> <28.4 V; P <sub>0</sub> <1.1 W; L <sub>0</sub> <6		U <sub>0</sub> <28.4 V; P <sub>0</sub> <0.6 W; L <sub>0</sub> <4	
Output load capability	$U_0 = 30 \text{ V}$ I <sub>N</sub>	$_{\text{MAX}} = 70 \text{ mA}  \text{U}_{\text{Ol}}$	<sub>UT</sub> min = 16 V	$\begin{array}{c} U_0{=}24~V\\ I_{MAX} = 80~mA\\ U_{OUT}~min = 23~V \end{array}$	at 22 U <sub>OUT</sub> ≈		at 22 mA $U_{OUT} \approx 15 \text{ V}$	-
Electrical protection	Class II. Class III.			Class III.	Class II. Class III.			s III.
Ambient temperature	–10 °C +55 °C (+14 °F +131 °F)							

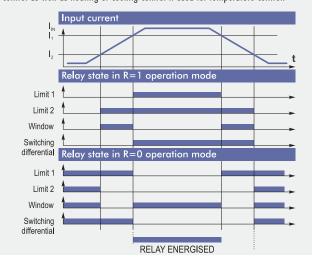
### IS YOUR LEVEL

### RELAY OPERATION

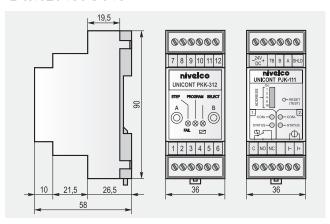
Relay operating modes can be programmed by the press buttons on the front panel and considering the indications of the bicolour LED's.

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

٧	Viring standard mode	ls	Wi	ring Ex certified mod	els
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
U <sub>t</sub> Output    7   8   9   10   11   12     1   2   3   4   5   6     4 - 20 mA   1 <sub>m</sub>     230 VAC   AC power	U <sub>1</sub> Output    7   8   9   10   11   12     1   2   3   4   5   6     4   -20 mA	U <sub>1</sub> Output    7   8   9   10   11   12     1   2   3   4   5   6	U <sub>t</sub> Output    7   8   9   10   11   12     1   2   3   4   5   6	U <sub>t</sub> Output    7 8 9   10   11   12     1 2 3 4 5 6     +   EX     4 - 20 mA	U, Output   7 8 9 10 11 12     1 2 3 4 5 6     R = 1,5k 2 kohm   R   R





### ORDER CODES

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 7

UNICONT PKK - 312 - ■Ex(1)

- (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

Туре	PJK-1-□□-4
Power supply	24 V DC ±10%
Power consumption	10 mA + (N <sub>relay</sub> x 11 mA + N <sub>currentgenerator</sub> 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)

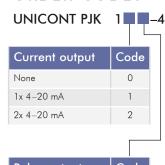
### **MODULE SERVICES**

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

### **OUTPUTS**

Туре		PJK-102-4	PJK-111-4		PJK-110-4	PJK-120-4
Output units		2 relays	1 rel 1 curren	ay + it output	1 current output	2 current outputs
	Relay	SPDT			-	
	Rating	250 V AC, 8	A, AC1		-	
≥	Insulation voltage	2500 V 50 Hz		_		
Relay	Electrical / mechanical lifespan	10 <sup>5</sup> / 2 x 10 <sup>6</sup> switching		-		
	Impulse width in pulse mode	0.1 25.5 s		-		
	Electrical protection	Class II.		-		
	Linear range	_		3.601 mA 21.999 mA		99 mA
Current generator	Error indication	-		$\leq$ 3.6 mA, or $\geq$ 22 mA		
Surrent	Resolution	-		14 bit		
gen gen	Accuracy	-		40 μA		
	Temperature dependence	_		max. 15 μA / 10 °C		

### ORDER CODES



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 transmitters operating in hazardous applications

• For high precision transmitters

- 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  $\mu$ A. 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

Туре		High pı	recision	High speed			
		PGK-301-A Ex	PGK-301-B Ex	PGK-301-C Ex	PGK-301-D Ex		
Input		4-20 mA					
Normal operation		4-20 mA					
Output	Current error	3.6 mA: $I_{\scriptscriptstyle N}$ =3.6 mA or $I_{\scriptscriptstyle N}$ >24 mA					
Protection			Input, output, power	supply: 125 mA fuse			
Loop resistan	се		300 – 1000	Ω/24 V DC			
Communicat	ion	-	HART	-	HART		
Power supply		20-35 V DC					
Power supply	indication	Green LED					
Power supply	for transmitters	23 V DC galvanically isolated					
Galvanic isol	ation	> 2 kV					
Power consu	mption	Max. 2.2 W					
Transmission (at +20 °C /	,	1 μA + 0.01% (typically m	s reading error ax. 2.5 μΑ)	8 $\mu$ A + 0.1% reading error (typically max. 20 $\mu$ A)			
Response tim	e	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			
ATEX		© II (1) G [Ex ia Ga] IIC	©II (1) G [Ex ia Ga] IIB		
Ex marking	IEC Ex (1)	[Ex ia Ga] IIC	[Ex ia Ga] IIB		
Intrinsically safe data		$L_0 = 2 \text{ mH}$ $C_0 = 60 \text{ nF}$	$L_0 = 9 \text{ mH}$ $C_0 = 450 \text{ nF}$		
		$U_0=26 \text{ V}  I_0=94 \text{ mA}  P_0=0.65 \text{ W}$			
		Um= 253 V AC			

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

### ORDER CODES

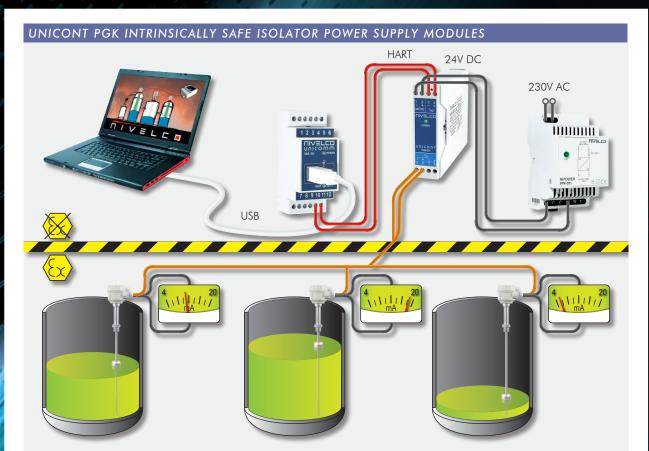
UNICONI PGK-301	- <b>■</b> Ex
Type / Output	Code
High precision / 4–20 mA	Α
High precision / 4–20 mA +HART	В
High speed / 4–20 mA	С
High speed / 4–20 mA + HART	D



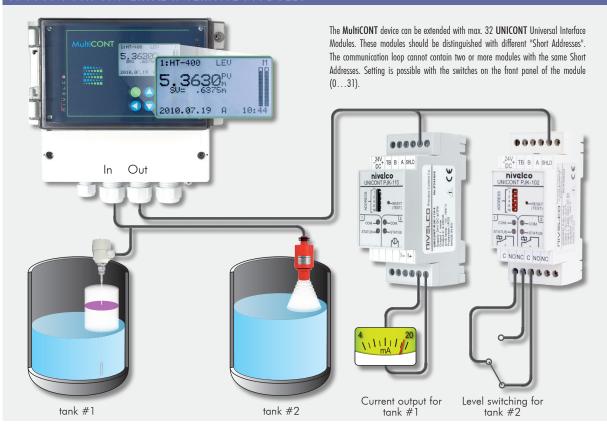








### UNICONT PJK UNIVERSAL INTERFACE MODULES



### NIVELCO PROCESS CONTROL CO.

H-1043 BUDAPEST, DUGONICS U. 11. TEL.: (36-1) 889-0100 • FAX: (36-1) 889-0200 E-mail: sales@nivelco.com http://www.nivelco.com

**ТОВ** "**IHЖЕНЕРНІ ТЕХНОЛОГІЇ ТА СИСТЕМИ**" 03113, м.Київ, пр.Перемоги, буд.62-Б тел.: +38(044)4645040, +38(050)0853790 info@nivelco.com.ua, www.nivelco.com.ua



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