UNICONT

PDF – Loop Indicator and converter to HART®

Installation and programming manual
8th edition

Approvals	Reference document number
BKI ATEX, Certificate No.: BKI15ATEX0013 X/1	pdf4012m0600p_06
INMETRO, Certificate No.: DNV 15.0064 X – Rev. 01	pdf4012p0600p_06

CONTENTS

<div style="text-align:center">

Thank you for choosing NIVELCO instrument.
We are convinced that you will be satisfied with our product!

</div>

1. INTRODUCTION

The **UNICONT** PDF–□01 and PDF–□01–6 / A / C Ex devices are 2-wire on-site indicators that can be inserted into a 4...20 mA current loop without the need for additional power supply. Since the displayed value is proportional to the input, the units are suitable for indication of temperature, pressure, level, etc. values, the information carried by the loop current. The customer can program the engineering units and the indication range.

The HART capable UNICONT P□F–□01-4 and P□F–□01–8 / B / D Ex 3-wire process indicators require additional power supply. Besides displaying the loop current or the process values, these units convert input current to HART signals and so enable devices that have analogue outputs only to be integrated into HART® multidrop systems. The ratio between the input and output current can be programmed.

The intelligent electronics and HART® communication enables versatile signal processing and remote programming. The software uses the Universal HART® commands No. 1 – 3, 6, 7, 11 – 18 and device specific commands No128-132, 135 and 139 of the HART® Revision 5.

Robust enclosure makes applications under harsh conditions also possible. Explosion proof versions are available for hazardous environments.

2. ORDER CODES

<div style="text-align:center">

UNICONT   P ▢ F – ▢ 0 1 – ▢ *

</div>

VERSION	CODE
With local LCD display	D
Without local LCD display	T

HOUSING	CODE
Aluminum (powder-coated)	4
Plastic, PBT, glass fibre reinforced	5
Stainless steel	6

OUTPUT / APPROVAL	CODE
Display	2
4...20 mA + HART®	4
Display / Ex ia	6
4...20 mA + HART® / Ex ia *	8
Display /Ex d *	A
4...20 mA + HART® / Ex d *	B
Display / Ex d+ia *	C
4...20 mA + HART® / Ex d+ia *	D

The models with display outputs are 2-wire units.

Not all combinations are possible!

* The order code of an Ex version should end in "Ex"

3. TECHNICAL DATA

3.1 GENERAL DATA

TYPE	PDF–□01–2, PDF–401–A Ex, PDF–401–C Ex	PDF–□01–6 Ex, PDF–601–A Ex, PDF–601–C Ex	P□F–□01–4, P□F–401–B Ex, P□F–401–D Ex	P□F–□01–8 Ex, P□F–601–B Ex, P□F–601–D Ex
Powering	2-wire		3-wire	
Input signal	4...20 mA current loop			
Measurement range	3.6...22 mA		0…22 mA	
Display / indication	6-digit LCD, engineering units and bargraph			
Range of displayed value	-9999 … 29999			
Engineering units (programmable)	mA, ºC, ºF, %, m, cm, in, ft, l, m^3, gal, ft^3			
Displayed process values (programmable)	**DIST** (distance), **LEV** (level), **VOL** (volume / content)			
Ambient temperature	−40ºC…+70ºC [−40°F…+158°F], with display module: −25ºC…+70ºC [−13°F…158°F]			
Accuracy	±0.1% for displayed values over > 10 000			
Temperature error	±0.05% / 10°C [50°F]			
Output	----		4...20 mA and / or HART for 4...20 mA current limit values: 3.9…20.5 mA terminal resistor for HART $R_{tmin} = 250\ \Omega$	
Error indication on the current output	----		Output = 3.8 or 22 mA	
Power supply	----		Standard version: 10–36 V Ex version: 10–30 V	
Load resistance	----		$R_t \leq (U_s − 10\ V) / 0.022A$, where U_s supply voltage	
Voltage drop	< 1.6 V		< 1 V	
Overvoltage capability	140 mA			
Damping	3 s, 5 s, 10 s or 20 s			
Electric protection	Class III			
Ingress protection	IP67			
Electric connection	Through M20x1.5 cable gland, shielded, twisted cable of ∅6…∅12 mm [∅0.24 in…∅0.47 in], wire cross-section: up to 1.5 mm^2 [15 AWG] Ex version: see additional data for Ex certified versions			
Housing	Powder-coated aluminum PBT glass fibre reinforced or stainless steel (1.4571)			
Weight	Aluminum housing: ~0.9 kg (~2 lb), stainless steel: ~2.4 kg (~5.5 lb), plastic housing: ~0.55 kg (~1.25 lb)			

3.2 ADDITIONAL DATA FOR EXPLOSION-PROOF CERTIFIED VERSIONS

3.2.1. ATEX APPROVAL NO: BKI15ATEX0013 X/1

Type	PDF–501–6Ex	PDF–401–6Ex PDF–601–6Ex	PDF–401–A Ex PDF–601–A Ex	PDF–401–C Ex PDF–601–C Ex
Housing	PBT glass fibre reinforced	Powder-coated aluminum (EN AC-42000) or stainless steel	Powder-coated aluminum (EN AC-43100) or stainless steel	
Protection type	Intrinsically safe		Flame proof enclosure	Flame proof, intrinsically safe
Ex marking	⟨Ex⟩ II 1 G Ex ia IIC T6 Ga		⟨Ex⟩ II 2 G Ex d IIB T6 Gb	⟨Ex⟩ II 1 G Ex d+ia IIB T6 Ga
Intrinsically safe limit data	U_i = 30 V I_i = 100 mA P_i = 0.7 W (in case of IIB gas group: I_i = 140 mA / P_i = 1.1 W) C_i ≈ 0 nF L_i < 200 μH			U_i = 30 V I_i = 140 mA P_i = 1.1 W C_i ≈ 0 nF L_i < 200 μH
Electrical connection	Plastic cable gland M20x1.5 for cable diameter ∅6…12 mm [∅0.24 in…0.47 in]		Ex d cable gland M20x1.5 for cable diameter: ∅8…12 mm [∅0.32 in…0.47 in]	
	Shielded twisted pair cable, wire-end cross-section: 0.25…1.5 mm² [24…15 AWG]			
Ambient temperature	−25ºC…+70ºC [−13°F…+158°F]			

Type	P☐F–501–8Ex	P☐F–401–8Ex P☐F–601–8Ex	P☐F–401–B Ex P☐F–601–B Ex	P☐F–401–D Ex P☐F–601–D Ex
Housing	PBT glass fibre reinforced	Powder-coated aluminum (EN AC-42000) or stainless steel	Powder-coated aluminum (EN AC-43100) or stainless steel	
Protection type	Intrinsically safe		Flame proof enclosure	Flame proof, intrinsically safe
Ex marking	⟨Ex⟩ II 1 G Ex ia IIB T6 Ga		⟨Ex⟩ II 2 G Ex d IIB T6 Gb	⟨Ex⟩ II 1 G Ex d+ia IIB T6 Ga
Intrinsically safe limit data	U_i = 30 V I_i = 140 mA P_i = 1.1 W C_i < 20 nF L_i < 200 μH			U_i = 30 V I_i = 140 mA P_i = 1.1 W C_i < 20 nF L_i <200 μH
Electrical connection	Plastic cable gland M20x1.5 for cable diameter ∅6…12 mm [∅0.24…0.47 in]		Ex d cable gland M20x1.5 for cable diameter: ∅8…12 mm [∅0.32…0.47 in]	
	Shielded twisted pair cable, wire-end cross-section: 0.25…1.5 mm² [24…15 AWG]			
Ambient temperature	−40ºC…+70ºC [−40°F…+158°F], with display module: −25ºC…+70ºC [−13°F…+158°F]			

3.2.2. INMETRO Approval No: DNV 15.0064 X – Rev. 01

Type	PDF–401–6Ex PDF–501–6Ex	P☐F–401–8Ex P☐F–501–8Ex	PDF–401–C Ex	P☐F–401–D Ex
Housing	PBT glass fibre reinforced or powder-coated aluminum		Powder-coated aluminum	
Protection type	Intrinsically safe		Flame proof enclosure and intrinsically safe	
Ex marking	Ex ia IIC	Ex ia IIB	Ex d+ia IIB	
Intrinsically safe limit data	Ui = 30 V Ii = 100 mA Pi = 0.7 W Ci ≈ 0 nF Li < 200 μH	Ui = 30 V Ii=140 mA / Pi=1.1 W) Ci ≈ 20 nF Li < 200 μH	Ui = 30 V Ii = 140 mA Pi = 1.1 W Ci ≈ 0 nF Li < 200 μH	Ui = 30 V Ii = 140 mA Pi = 1.1 W Ci ≈ 20 nF Li < 200 μH

Type	PDF–401–6Ex PDF–501–6Ex	PDF–401–A Ex PDF–401–C Ex	P☐F–401–8Ex P☐F–501–8Ex	P☐F–401–B Ex P☐F–401–D Ex
Ambient temperature	−25ºC…+70ºC [−13°F…+158°F]		Without display module: −40ºC…+70ºC [−40°F…+158°F], with display module: −25ºC…+70ºC [−13°F…+158°F]	

3.3 Dimensions

Aluminum or plastic housing

102 120 108 51 4 4.2 A
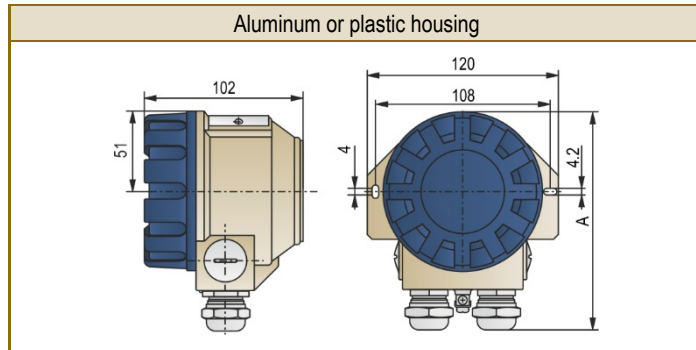
Type	A
Standard, Ex ia	~137 mm
Ex d, Ex d+ia	~145 mm

Stainless steel housing

113 130 117 Ø100 5.4 120 5.4
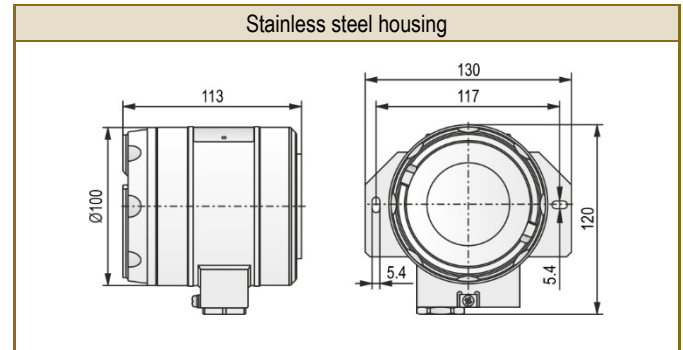
3.4 ACCESSORIES

Standard, Ex ia:		Ex d, Ex d+ia:	
– Installation and programming manual – Warranty Card – EU declaration of conformity	– 2 cable glands – Sticker set of engineering units	– Installation and programming manual – Warranty Card – EU declaration of conformity	– Sticker set of engineering units

3.5 MAINTENANCE REPAIR, AND STORAGE CONDITIONS

UNICONT PDF units do not require maintenance on a regular basis. Repair during or after the guarantee period should only be carried out by **NIVELCO**. Before returning the device for repairs, it must be cleaned carefully, the parts in contact with the medium that might contain harmful substances must be decontaminated. Our official form (Returned Equipment Handling Form) must be enclosed. Download it from our website www.nivelco.com. The device must be sent with a declaration of decontamination. Please provide a statement in the declaration that the decontamination process is completed, the device is clean and free from harmful materials, and there are no hazardous substances on it. Unused devices must be stored within the ambient temperature range specified in the technical data, with a maximum of 98% relative humidity.

4. INSTALLATION AND ELECTRIC CONNECTION

The devices are suitable for working in closed area or they can be used in open-air applications. When choosing the installation place please ensure proper space for the mounting, programming and checking the display. Mounting the units on the wall or to a support can be done with using 2 pcs. of M4 nuts. To avoid overheating the instrument should be protected against direct sunshine.

4.1 WIRING

- 2-wire indicators are used in 4...20 mA current loops. They do not require external power supply.
- 3-wire devices are powered with 10–36 VDC (Ex type devices: 10–30 VDC) through the output.
- Make sure, that current values on the internal terminals should not exceed overload capability limits.
- Wiring should be done with shielded cable, specified under 'Technical Data' table.
- Devices should be grounded by using their grounding screws.
- The screw terminals can be accessed after removal of the housing cover and the display module.
- After wiring and programming the cover should be screwed to tightness of the sealing.
- Shielding should be grounded at one point.

| ⚠	**The housing cover of the flameproof device is allowed to remove only when the unit is de-energized!** The housing cover can be removed after unscrew the M2 size hex socket set screw or after dismounting the safety locking bolt by unscrew the M4 size hex socket set screws.
⚠	The instrument may be damaged by electrostatic discharge (ESD) via its terminal, thus apply the precautions commonly used to avoid electrostatic discharge e.g. by touching a properly grounded point before removing the cover of the enclosure. A possible electrostatic discharge can cause damage for the instrument. Do not touch the internal terminals!
⚠	After wiring and programming the housing cover should be closed properly and the hex socket set screw or the safety locking bolt should be tightened! The sealing ring must be replaced if damaged, otherwise the IP class of the device can be jeopardized.

Wiring of a 2-wire UNICONT in the current loop of a transmitter

PDF– 401–6/A/C Ex
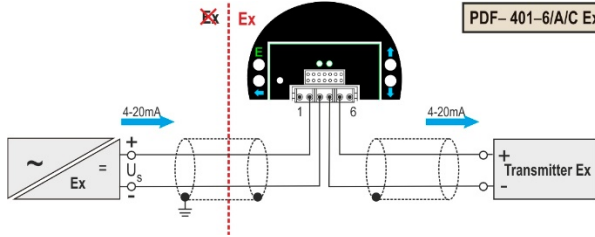
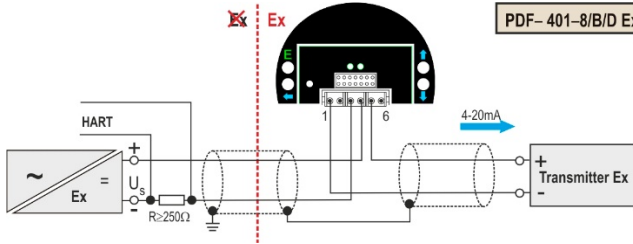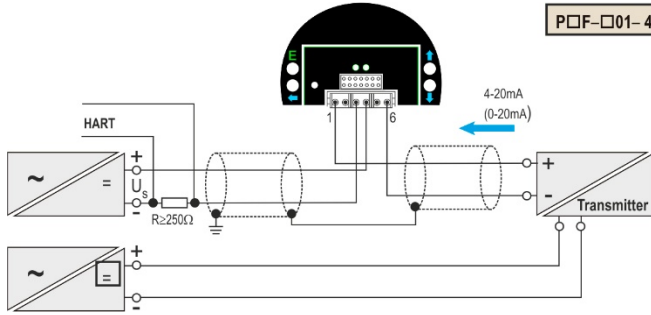## Wiring of a HART capable (3-wire) UNICONT in the current loop of a transmitter
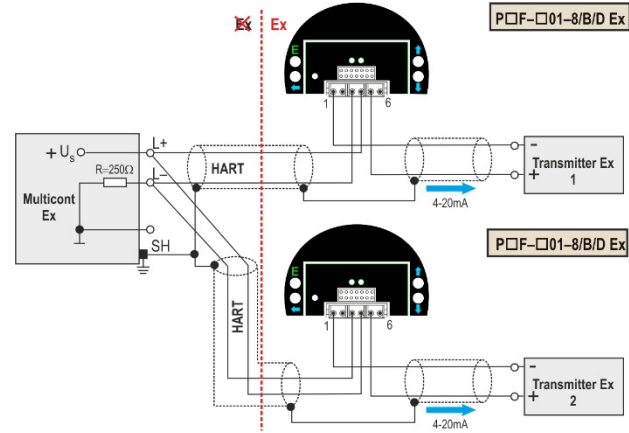
PDF– 401–8/B/D Ex

Wiring of a HART capable (3-wire) UNICONT in the current loop of a 4-wire transmitter

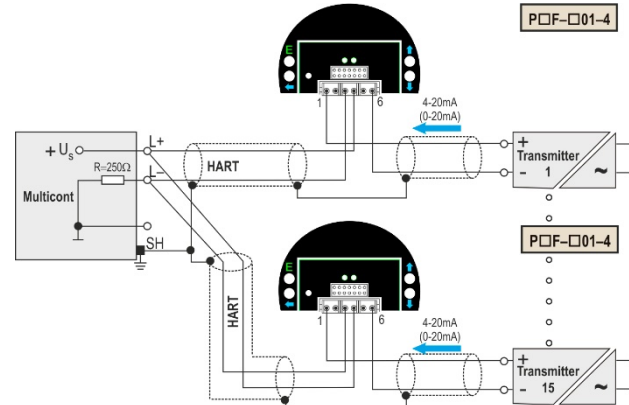P☐F–☐01– 4

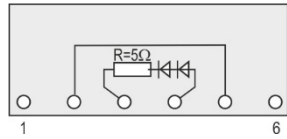## Wiring of 3-wire UNICONTs with MultiCONT controller and 2-wire transmitters

P☐F–☐01–8/B/D Ex

P☐F–☐01–8/B/D Ex

Wiring of 3-wire UNICONTs with MultiCONT controller and 4-wire transmitters

P☐F–☐01–4

P☐F–☐01–4

Internal wiring of the 2-wire UNICONT
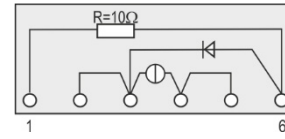
Internal wiring the of 3-wire UNICONT

4.2 SAFETY REGULATIONS FOR THE EX CERTIFIED UNITS

– WARNING! DO NOT OPEN WHILE ENERGIZED!
– Devices should be grounded by connecting their grounding screws to the equipotential system.
– Intrinsically safe units with Ex ia IIC, Ex ia IIB or Ex d+ia IIB markings can only be used in certified intrinsically safe loops with the previously given technical data.
– P☐F–401–... type devices: the aluminum content of equipment with metallic enclosure exceeds the limit, the ⟨Ex⟩ II 1 G Ex ia IIC T6 Ga, ⟨Ex⟩ II 1 G Ex ia IIB T6 Ga and ⟨Ex⟩ II 1 G Ex d+ia IIB T6 Ga marked devices must be protected against impact and friction effects.
– PDF–401–6 Ex type devices: The size of the macrolon window of intrinsically safe equipment with metallic enclosure exceeds the limit, thus the II 1 G Ex ia IIC T6 Ga marked devices must be protected against electrostatic charges.
– P☐F–501–☐ Ex type devices: Equipment's with plastic housing are susceptible to electrostatic charges, thus the devices must be protected against electrostatic charges.
– The units with stainless steel housing (with Ex d or Ex d+ia protection type) are allowed to be operated only with using properly sealed „Ex d" certified cable gland.

5. PUTTING INTO OPERATION, PROGRAMMING

Lighting of the VALID LED indicates that the **UNICONT**, installed and wired correctly, will operate according to the Manufacturer's settings (see 5.1. Default).

The device operates in MEASUREMENT mode. It is indicated by the format of the displayed value and that the PROG display is not lit.
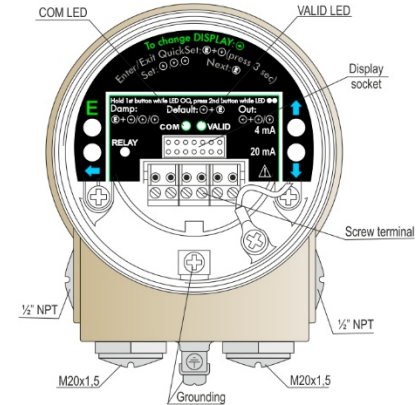
5.1 DEFAULT

Manufacturer's settings are the following
The percental (%) value shown on the display is proportional to the input
(4 mA→ 0%, 20 mA →100.0%).
Damping: 3 s
Noise suppression frequency: 50 Hz
Bargraph indication is proportional to the input (0/4 mA→ 0%, 20 mA →100.0%).
The output of the 3-wire models can be 4...20 mA current and / or HART signal

During operation
COM LED flashes during HART communication
While pressing the ⊕ key the input current appears on the display of the 2-wire models.
While pressing the ⊛ key the output current appears on the display of the 3-wire models.

5.2 DISPLAY OF THE SAP-202 AND KEYS OF THE UNIT

Symbols on the screen

- **DIST** – distance displayed (when ON)
- **LEV** – level displayed (when ON)
- **VOL** – volume/content displayed (when ON)
- **%** – percent displayed (when ON)
- **mA** and **°C** current and temperature displayed (when ON)
- ▼ – arrow (points to the relevant engineering unit)
- **PROG** – programming is in progress (when flashing)

Symbols and sign on the frame

- **M** – metric system
- **US** – imperial engineering unit system

   °F, m, cm, in, ft, l, m³, gal, ft³

LED

VALID lights up during operation

COM flashes during HART communication

5.3 PROGRAMMING

UNICONTs can be programmed by programming keys and the procedure can be followed on the display. HART capable models can also be programmed remotely via the **MultiCONT** controller or with the aid of a HART modem and **EView2** software installed on a PC. During on site programming remote programming is not possible and vice versa.

Adjustment of the **UNICONT** to the conditions of the actual application can be carried out by programming the parameters. If the unit has already been programmed it is going to work according to the last setting.

The unit will work during programming in accordance with the parameters set previously.

The new, modified parameters will only be effective after returning to Measurement Mode.

If the transmitter is left in Programming Mode by mistake, it automatically returns to Measurement Mode after 3 minutes and is going to operate with the parameters entered during the last completed programming cycle.

5.3.1. STEPS OF PROGRAMMING

'Double key pressing' (pressing two keys simultaneously) has to be used to get into and out of PROGRAMMING mode. It is also used in programming mode. This is represented in the manual with the symbols of the two keys and the '+' sign in between them. That is: **E** + ◀ (getting into PROGRAMMING mode). This procedure is should be carried out as follows: press the first key (**E**) and keep it pressed while pressing the key shown after the '+' sign (◀). The two keys should be kept pressed simultaneously for about 3 s (until the display changes).

After double key pressing of **E** + ◀ the device gets into PROGRAMMING mode and 'PROG' symbol is blinking. One of the following two images appears and parameters can be changed.
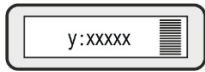
y	one-digit parameter address (**0, 1**, … **9**)
xxxxx	five characters after the colon "**:**"
☰	Bargraph

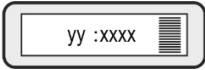|	X	X	X	X	X
possible	–	0	0	0	0
indications	1	:	:	:	:
in place of X	2	:	:	:	:
(– dark)	–	9	9	9	9

yy	two-digit parameter address (**10, 11**, … **19**)
dcba	four characters after the colon "**:**" (during programming parameter value "**a**" blinks first!)
☰	Bargraph

When 'PROG' is blinking programming can be performed. Since modification of P10 makes the unit restart and reset DEFAULT values it is suggested to begin programming with checking and / or changing this parameter.

When 'PROG' is lit, parameters are being protected by secret code and can only be read out. Applying this code (See P19) provides protection against unauthorised or unintended parameter modifications.

OPERATION OF THE PROGRAMMING KEYS

PRESSING KEY(S)	OPERATION	
E + ◀ * (press for minimum 3 sec)	Getting in and out of PROGRAMMING and MEASUREMENT mode (both directions). (Returning to Measurement mode means saving of the modifications)	
▲ or ▼	In MEASUREMENT mode input or output current appears on the screen of the 2-wire or 3-wire model respectively	
	while **Parameter address blinking**	while **Parameter value blinking**
E	to select parameter address and go to parameter value	to save parameter value and return to parameter address
◀ + ▲	Cancel all modifications of the actual programming procedure. **CANCEL** will be displayed for warning.	Neglect value modification of the relevant parameter (if any) and return to the parameter address. **CANCEL** will be displayed
◀ + ▼	Reset all parameter values to default. **LOAD** is be displayed for warning	Reset default value of the relevant parameter. **LOAD** will be displayed for warning
▲ + ▼		GET VALUE – function for automatic setting of P0 and P1. Actual/measured value will be offered as the value to be programmed. After pressing **E** for saving the value, '**SET**' message confirms the modification.
◀	To have the next character to the left blinking (to be able to change that character)	
▲ / ▼	Modify the blinking digit (increase, decrease, minus sign) or scroll up / down … 8, 9, "–", 0, 1, 2, …	

*Make sure that **E** is pressed first!*

Remarks
Double key pressing is indicated by '+'

If, after pressing **E** , blinking does not jump over from the parameter address to the parameter value, then this means that
- *the parameter is either read-out type, or*
- *the secret code prevents the modification (see P19)*

If the modification of the parameter value is not accepted i.e. the parameter value keeps blinking after pressing ENTER **E**
- *the modified value is either out of range, or*
- *the entered code is not valid*

5.3.2. PARAMETERS – DESCRIPTION AND PROGRAMMING

Attention! Before programming it is suggested to read the description of parameter **P10** carefully!

P0:	**- - - a**	**Setting input current (Ia) that is to be assigned to displayed value (Da) See Figure 9, 10 and 11**	**FACTORY DEFAULT: 4 mA**
P1:	**- - - a**	**Setting input current (Ib) to be assigned to displayed value (Db)**	**FACTORY DEFAULT: 20 mA**

The current value can be entered in P0 and P1 manually

For instance, entering 5.6 mA in P0 should be performed as shown below:

1. Press **E** + ◀   to get into PROGRAMMING mode
2. Press ▼ ▲   to go to P0
3. Press **E**   to go to the parameter value
4. Press ▼ / ▲ / ◀   to adjust the display to 5.6
5. Press **E** + ◀   to return to MEASUREMENT mode

If the actual current value is to be entered in P0 or P1 it can automatically be set by the GET VALUE function. To do so the above described procedure should be performed, but pressing ▼ + ▲ (instead of ▼ / ▲ / ◀) (step 4.). Successful setting is indicated by the message 'SET' displayed.

Remarks
If the input current range is set for 4...20 mA, than the value of P11 cannot be set below 4 mA in P0 and the value of P1 cannot exceed 20 mA.
An input current value outside of this range would make VALID LED and current value display blinking.

P2:	Setting displayed value (Da) to be assigned to input current Ia (See figures)		**FACTORY DEFAULT: 0.0**
P3:	Setting displayed value (Db) to be assigned to input current Ib		**FACTORY DEFAULT: 100.0**
P4:	Setting output current pertaining to the input current Ia	(for 3-wire models only)	**FACTORY DEFAULT: 4 mA**
P5:	Setting output current pertaining to the input current Ib	(for 3-wire models only)	**FACTORY DEFAULT: 20 mA**

Display curve of 2-wire models	Display curve of 3-wire models with input range set for 4...20 mA	Display curve of 3-wire models with input range set for 0...20 mA
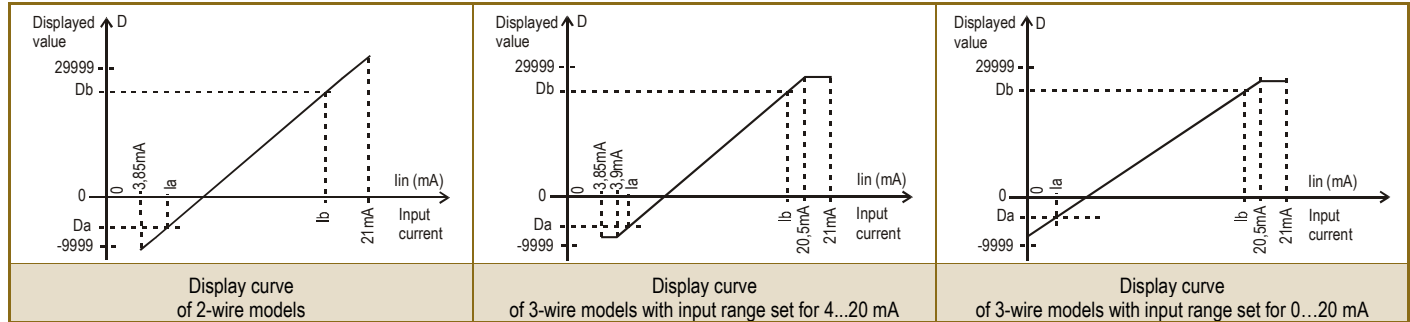
P9:   - - - a   Current generator test   **(for 3-wire models only)**

In this parameter the actual current output is displayed. Going to the parameter value the output current of 3.6...22 mA can be set by the keys ▽ and △. The current value entered this way should conform with the output current measured with an ammeter.

P10:   - - - a   Setting the decimal point   **FACTORY DEFAULT: 0002**

Important remark: modification of P10 represents resetting parameter values to the FACTORY DEFAULT. Thus, it is suggested that programming starts with knowing the range of values to be displayed and programming P10 first.

a	Position of decimal point
0	xx.xxx
1	xxx.xx
2	xxxx.x
3	xxxxx

P11: dcba   **Setting range,* damping, noise suppression, error indication on the output current ***   **FACTORY DEFAULT: 0000**

a   **Range** can be selected with the 3-wire models for 4...20 mA or 0…20 mA. Setting is important in respect to the output current error indication.

b   **Damping** can be used to reduce unwanted fluctuation of the displayed value

c   **Noise suppression** is for eliminating possible disturbance coming from the mains

d   **Error indication on the current output** of the 3-wire models is used to indicate error signals arriving as input current and the error of the **UNICONT** itself according the chart below. Simultaneous occurrence of both errors is going to result output current to be the error indication of the **UNICONT**.

* For 3-wire models only

Attention: character „**a**" is at the right end (this is the first to blink)

a	Range selection
0	4…20 mA
1	0…20 mA

b	Damping
0	3 s
1	5 s
2	10 s
3	20 s

c	Noise suppression
0	50 Hz
1	60 Hz

d	Error indication on the current output		
	UNICONT error	Error indication on the input current*	
		Current > 20 mA	Current < 4 mA
0	3.8 mA	3.8 mA	3.8 mA
1			22 mA
2		22 mA	3.8 mA
3			22 mA
4	22 mA	3.8 mA	3.8 mA
5			22 mA
6		22 mA	3.8 mA
7			22 mA

*– If an error indication of 22 mA arrives (from a transmitter) to the input of the **UNICONT**, with settings 5 (under **d**) than it means that the current output of the **UNICONT** is 3.8 mA (and with setting 6 it is 22 mA)

– If an error indication of 3.8 mA arrives (from a transmitter) to the input of the **UNICONT**, with settings 1 (under **d**) than it means that the current output of the **UNICONT** is 22 mA (and with setting 6 it is 3.8 mA mA)

P12: dcba   Displayed process values and their units   **FACTORY DEFAULT: 0100**

The columns of the chart below can be programmed separately and it is supposed to be done reasonably (i.e. to have symbol LEV lit: **2** should be set under **b,** to have relevant unit lit (m/ft or cm/in) **2 or 3** should be set under **a** and setting 1 under **d** should be chosen if the required unit is meter or centimetre. This also means that there is no engineering unit to set for FLOW (it can be displayed in %)

Settings in column '**a**' make engineering units lit on the frame (**c** should be set to 0)
Settings in column '**b**' make the symbols (**DIST**, **LEV**, **VOL**, **FLOW**) lit on the frame
Settings in column '**c**' make **%, mA or °C** lit on the frame (**a** should be set 0)

	a	b	c	d
1	m^3/ft^3	DIST	%	M
2	m/ft	LEV	mA	US
3	cm/in	VOL	°C	-
4	l/gal	FLOW	-	-
5	t	-	-	-
6	°F	-	-	-

P13: 00ba   HART short address   (for 3-wire models only)   **FACTORY DEFAULT: 00**

The short address of the unit for the multidrop system (HART network) is to be given here.
Please note that in accordance with the HART standards the address of a single device should be 00. In this case current output will change according to the settings in the range of 3.8…22 mA and HART communication is also available.
For systems with more than one device 01…15 addresses should be given. In these cases the output current will be fixed to 4 mA. Thus, information is transferred by the HART communication only (i.e. current output does not carry any information and error indication on the current output is not possible). (See also 'Description of EView2' supplied with HART capable devices.)

P14: dcba   Product version

Hardware and software versions of the model can be found in this parameter.

d = 0 not HART capable   d = 1 HART capable   c = hardware version,   ba = software version

Engineering units transferred by HART® communication can be set in this parameter.

CODE	DIMENSION	CODE	DIMENSION	CODE	DIMENSION	CODE	DIMENSION	CODE	DIMENSION	CODE	DIMENSION	CODE	DIMENSION
0	-	26	ft³/s	52	h	78	MetTon/h	114	in/s	143	deg
1	inH20@68°F	27	ft³/d	53	d	79	MetTon/d	115	in/min	144	rad
2	inHg@0°C	28	m³/s	54		80	lb/s	116	ft/min	145	inH20@60°F
3	ftH20@68°F	29	m³/d	55		81	lb/min	117	deg/s	146	
4	mmH20@68°F	30	Impgal/h	56	uS	82	lb/d	118	rev/s	147	
5	mmHg@0°C	31	Impgal/d	57	%	83	lb/d	119	rev/m	148	
6	psi	32	°C	58	V	84	STon/min	120	m/h	149	Vol
7	bar	33	°F	59	pH	85	STon/h	124	bbl liq	150	
8	mbar	34	°R	60	g	86	STon/d	125	ounce	151	
9	g/cm²	35	Kelvin	61	kg	87	LTon/h	126		152	ft³/lb
10	kg/cm²	36	mV	62	MetTon	88	LTon/d	127	kW	153	pF
11	Pa	37	ohm	63	lb	89		128	kWh	154	mL/L
12	kPa	38	Hz	64	STon	90		129	hp	155	uL/L
13	torr	39	mA	65	LTon	91	g/cm³	130	ft³/h	163	kohm
14	atm	40	gal	66	mS/cm	92	kg/cm³	131	m³/min	164	MJ
15	Ft³	41	L	67	uS/cm	93	lb/gal	132	bbl/s	235	gal/d
16	min	42	Impgal	68	N	94	lb/ft³	133	bbl/min	237	Mpa
17	L/min	43	m³	69		95	g/mL	134	bbl/h	238	inH20@4°C
18	Impgal/min	44	ft	70	g/s	96	kg/L	135	bbl/d	239	mmH20@4°C
19	M³/h	45	m	71	g/min	97	g/L	136	gal/h	**240**	**L/d**
20	ft/s	46	bbl	72	g/h	98	lb/in³	137	Impgal/s	**241**	**kg/dm³**
21	m/s	47	in	73	kg/s	99	STon/yd³	138	L/h	**242**	**ms**
22	gal/s	48	cm	74	kg/min	100	yd³	139	ppm	**243**	**ft/h**
23	Mgal/d	49	mm	75	kg/h	111	ft³	140		**244**	**dB**
24	L/s	50	min	76	kg/d	112	in³	141	HJ/h	**245**	**m/s²**
25	ML/d	51	s	77	MetTon/min	113	in/s	142		**246**	**ft/s²**

Codes over 240 are engineering units defined by NIVELCO They might be different at other manufacturers.

P19:	Secret code	FACTORY DEFAULT: 0000

Settings can be protected by a 4-digit number (secret code) (other than 0000) entered in this parameter. If the secret code is active the PROG symbol is lit and the value of the parameters can only be viewed.

To be able to do any programming or to modify the secret code or to remove protection (modify the secret code to 0000) the secret code, already entered, needs to be known. The procedure is the following: Go to P19 press **E** to select parameter address. Then go to parameter value, enter the secret code. Press **E** to go to the address and **E** again to return to value. Enter the new secret code or 0000.

If there is no secret code or it is not active the PROG symbol is blinking

5.4 ERROR INDICATIONS

5.4.1. VALID LED IS BLINKING AND A MESSAGE OF ERRX APPEARS ON THE DISPLAY

ERR (X)	Error description	Causes and solution
1	Memory error	Contact local agent
2	Programming error: same value in P0 and P1 or in P2 and P3 or same value in P4 and P5 with the 3-wire models	Modify programming
3	Display overflow	_ " _

5.4.2. VALID LED AND THE DISPLAYED VALUE IS BLINKING

For the 4...20 mA range: if Iin < 3.85 mA or Iin > 21 mA

For the 0…20 mA range: if Iin > 21 mA

5.4.3. ERROR INDICATION ON THE OUTPUT CURRENT (FOR 3-WIRE MODELS ONLY)

Output current is 3.8 mA or 22 mA, depending on setting of character **d** in P11