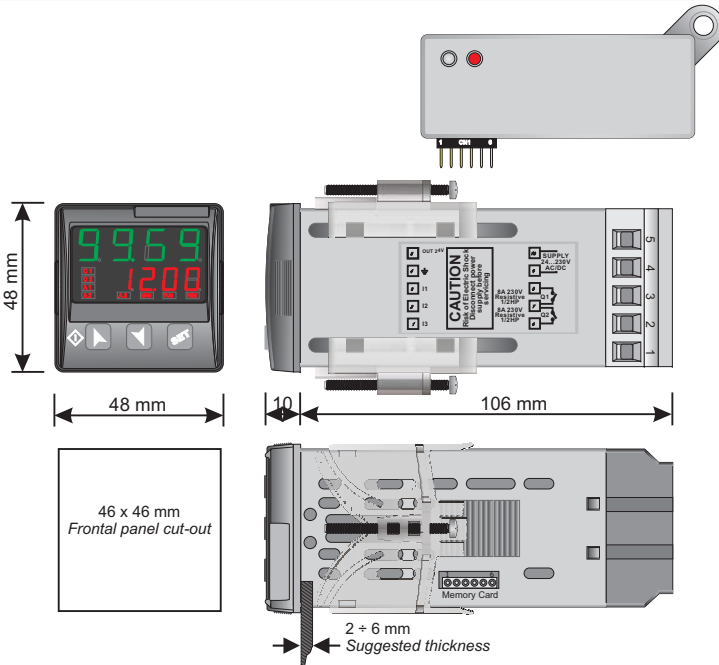# WACHENDORFF

MANUAL COUNTER
VZ484801

Wachendorff Prozesstechnik GmbH & Co. KG www.wp-direkt.de
e-mail: RSS@wachendorff.de
Version 2.0

SIZE AND INSTALLATION

48 mm
48 mm | 10 | 106 mm

46 x 46 mm
Frontal panel cut-out

Memory Card

2 ÷ 6 mm
Suggested thickness

TECHNICAL DATA

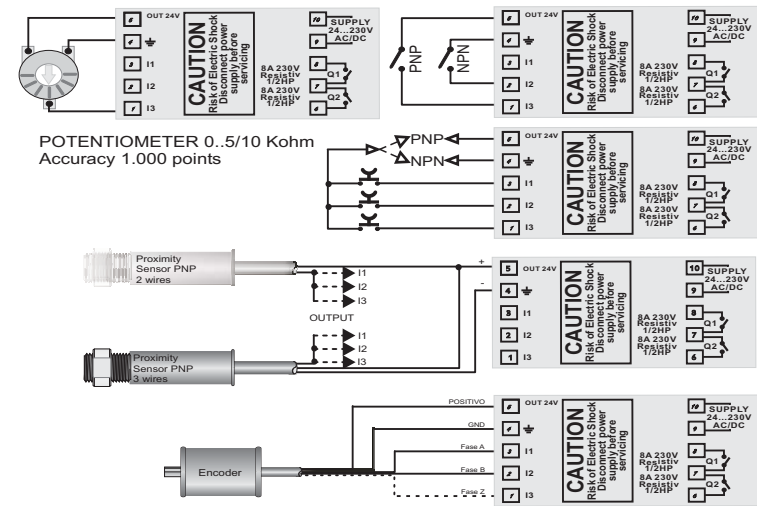|	
Operating conditions	Operating temperature 0-40°C, humidity 35..95uR%
Sealing	Front panel IP65 (with gasket), IP20 box and terminal blocks
Material	PC ABS UL94V0 self-extinguishing
Digital Inputs	3PNP/NPN configurable as analogue for potentiometers.(max 28 Vdc in PNP mode)
Outputs	2 relays 8A resistive charge
OUT 24V	30mA(at 24 VAC supply),40 mA(at 24 VDC supply), 60 mA (at 110 to 230 VAC) .
Back-UP	Rechargeable battery, approx. 60 days autonomy
Power Supply	24...230Vac/Vdc +/-15% 50/60Hz / 2W

INTRODUCTION

Thanks for choosing a Wachendorff Prozesstechnik device.The VZ484801 can be set in 2 different modes: Single or Double counter, all with independent settings. 3 universal digital inputs are available (NPN/PNP/Potential free contact) and can be used for bidirectional encoders reading, UP/DOWN counter function, LOCK/HOLD to lock or hold current visualization.One input is also analogue in order to allow setpoint modification by an external potentiometer.

LED

LED	MEANING
	Report the activation of Q1
	Report the activation of Q2
	Report serial transmission by the VZ484801

WIRING DIAGRAM

POTENTIOMETER 0..5/10 Kohm
Accuracy 1.000 points

PNP / NPN

Proximity Sensor PNP 2 wires

Proximity Sensor PNP 3 wires

OUTPUT

POSITIVO GND Fase A Fase B

Encoder

Potentiometer:

To modify Set1 or Set2 by external potentiometer follow the steps below:

1- use potentiometers 0 to 5/ 10kohm

2- connect cursor to pin I3; a wrong connection may damage the potentiometer and lead to lock of the device.

3- accuracy on input is max 1000 points, therefore set the parameters "Upper limit" and "Lower limit" with a max difference of 1000 units.

(Ex.: LoS1 to 50,0 and uPS1 to 150,0 to modify time value related to Set1 between 50 and 150 seconds with steps of one tenth). Greater differences would make unstable the less significant digit.

4- To calibrate the scale of potentiometer enter the configuration mode and select: Hin.3 as Pot Fin.3 as Set1 or Set2 P.tAr as Enable

Exit configuration mode and place potentiometer at minimum level and press ▲ key, then place potentiometer at max level and press premere ▼ key: the device automatically exit the calibration procedure.

N.B.: A switch-off of the device would interrupt the calibration.

MEMORY CARD (optional)

Parameters and setpoint values can be copied from one device to another using the Memory card. **Attention: Pls. perform first an update of the memory card**

There are two methods:

> With the counter connected to the power supply
insert the memory card **when the counter is off**.

On activation display 1 shows and display 2 shows ----

(Only if the values stored on Mmeory Card are correct).

By pressing the key display 2 shows LoAd

Confirm using the key .

The device loads the new data and starts again.

> With the counter disconnected from the power supply:

The memory card is equipped with an internal battery with a life of about 1000 uses.

Insert the memory card and press the programming button.

When writing the parameters, the LED turns red and on completing the procedure it changes to green. It is possible to repeat the procedure.

⚠ **UPDATING MEMORY CARD.**

To *update* the memory card values, follow the procedure described in the first method, setting display 2 to ---- so as not to load the parameters on controller.

Enter configuration and **change at least one parameter**.
Exit configuration. Changes are saved automatically.

LOADING DEFAULT VALUES

This procedure restores the factory settings of the instrument.

LOADING DEFAULT VALUES

	PRESS	DISPLAY	DO
1	SET for 3 seconds	Display 1 shows 0000 with 1°digit blinking, while Display 2 shows PASS	
2	▲ or ▼	Modifies blinking digit and pass to the next one pressing	Enter password 9999
3	to confirm	Device loads default values	Switch the device off and restart it

SETPOINT MODIFICATION

	PRESS	DISPLAY
1		Visualizes SETPOINT 1 / 2
2	▲ or ▼	Modify selected SET

MODIFY CONFIGURATION PARAMETERS

	PRESS	DISPLAY	DO
1	SET for 3 seconds	Display 1 shows 0000 with first digit blinking, while Display 2 shows PASS	
2	▲ or ▼	Modifies blinking digit and pass to the next one pressing	Enter password 1234
3	to confirm	Display shows first parameter of configuration table Func	
4	▲ or ▼	Scroll paremeters	
5	+ ▲ or ▼	Increase or decrease visualized value pressing and an arrow key	Enter the new data that will be saved when releasing arrow key
6	+	End configuration, controller exits from programming mode	

PARAMETERS LIST

FUNCTION CONFIGURATION

		P-01 Counter Function	*Counter functions*	
SinG	Single (1 Counter)		*1 counter functioning*	Default
doub	Double (2 Counters)		*2 counters functioning*	

BACKUP MEMORY CONFIGURATION

		P-02 Power-off Memory	*Power-off memory*	
diS	Disable		*No counter stored at power-off*	Default
cnt.1	Counter 1		*Counter 1 stored at power-off*	
cnt2	Counter 2		*Counter 2 stored at power-off*	
ALL	All Counters		*All counters stored at power-off*	

INPUT CONFIGURATION

	P-03 Hardware input 1	*Input 1 hardware configuration*
Hin1	P-04 Hardware input 2	*Input 2 hardware configuration*
Hin2	P-05 Hardware input 3	*Input 3 hardware configuration*
Hin3		

nPn	NPN	*NPN (not available on input 3)*	
PnP	PNP	*PNP*	Default
ttL	TTL	*TTL*	
Pot	Potent.	*Potentiometer (available only for input 3)*	

	P-06 Filter Delay Input 1	*Input 1 digital filter configuration*
FIL1	P-07 Filter Delay Input 2	*Input 2 digital filter configuration*
FIL2	P-08 Filter Delay Input 3	*Input 3 digital filter configuration*
FIL3		

00	No delay	*Input filter desabled*	Default
05	0,5 ms	*Filter of 0,5 ms*	
...	...	*...(Step 0,5 ms)*	
1000	100,0 ms	*Filter of 100,0 ms*	

	P-09 Active State Input 1	*Active state input 1*
Ain1	P-10 Active State Input 2	*Active state input 2*
Ain2	P-11 Active State Input 3	*Active state input 3*
Ain3		

HLEu	High Level	*High level (available only for input 1)*	
LLEu	Low Level	*Low level (available only for input 2)*	
riS	Rising edge	*Rising edge*	Default
FALL	Falling edge	*Falling edge*	

	P-12 Function Input 3	*Function associated to input 3*
F.in3		

diS	Disable	*Disabled*	
EncZ	Encoder Z	*Loading encoder Z*	
Ld1	Load Counter 1	*Loading counter 1*	Default
Ld2	Load Counter 2	*Loading counter 2*	
Ld12	Load Counter 1&2	*Loading counters 1 and 2*	
SEt1	Set1	*Set1 setting by potentiometer*	
SEt2	Set2	*Set2 setting by potentiometer*	

	P-13 Function Key UP	*Function associated to UP (up arrow key)*
FtuP		

diS	Disable	*Disabled*	Default
Ld1	Load Counter 1	*Loading counter 1*	
Ld2	Load Counter 2	*Loading counter 2*	
Ld12	Load Counter 1&2	*Loading counters 1 and 2*	

	P-14 Potentiom. Tarature	*Potentiometer calibration procedure*
PtAr		

diS	Disable	*Disabled*	Default
En	Enable		

COUNTER CLOCK CONFIGURATION

	P-15 Clock Counter 1	*Counter 1 count mode selection*
CLC1	P-33 Clock Counter 2	*Counter 2 count mode selection*
CLC2		

diS	Disable	*Disabled*	Default C2
Enc	Encoder	*Bidirectional encoder (I1) phase A, (I2) phase B*	
uP--	I1 Up, I2 Off	*UP mode (I1)*	Default C1
do--	I1 Down, I2 Off	*DOWN mode (I1)*	
--uP	I1 Off, I2 Up	*UP mode (I2)*	
--do	I1 Off, I2 Down	*DOWN mode (I2)*	
uPdo	I1 Up, I2 Down	*UP mode (I1) - DOWN mode (I2)*	
uP.id	I1 Up, I2 Incr./Decr.	*UP mode (I1) with reverse direction (I2)*	
uPEL	I1 Up, I2 En./Lock	*UP mode (I1) with count lock (I2)*	
uPEH	I1 Up, I2 En./Hold	*UP mode (I1) with keeping value on display (I2)*	
doEL	I1 Down, I2 En./Lock	*DOWN mode (I1) with count lock (I2)*	
doEH	I1 Down, I2 En./Hold	*DOWN mode (I1) with keeping value on display (I2)*	
oc2	Output Counter 2/1	*UP count on rising edge of counter 2/1*	

COUNTER DISPLAY CONFIGURATION

	P-16 Display Counter 1	*Counter 1 visualization selection*
dC1	P-34 Display Counter 2	*Counter 2 visualization selection*
dC2		

diS	Disable	*Counter value not visualized*	Default C2
uiSu	Visualized	*Counter value visualized*	Default C1

	P-17 Decimal Point Counter 1	*Counter 1 visualization format*
dPC1	P-35 Decimal Point Counter 2	*Counter 2 visualization format*
dPC2		

0	0	*No decimal digit visualization*	Default
00	0.0	*1 decimal digit visualization*	
000	0.00	*2 decimal digits visualization*	
0000	0.000	*3 decimal digits visualization*	

	P-18 Counter 1 input counts	*Counter 1 input counts (1...9999)*	Default 1
inC1	P-36 Counter 2 input counts	*Counter 2 input counts (1...9999)*	Default 1
inC2	P-19 Counter 1 Visualized Counts	*Counter 1 visualized counts (1...9999)*	Default 1
uiC1	P-37 Counter 2 Visualized Counts	*Counter 2 visualized counts (1...9999)*	Default 1
uiC2			

SETPOINT CONFIGURATION

	P-20 Display Set 1	*Counter 1 setpoint visualization selection*
dS1	P-38 Display Set 2	*Counter 2 setpoint visualization selection*
dS2		

diS	Disable	*Setpoint value not visualized*	Default C2
uiSu	Visualized	*Setpoint value visualized*	
Nod	Modifiable	*Setpoint value visualized and modifiable*	Default C1

	P-21 Lower Limit Set 1	*Set 1 minimum value (0...9999)*	Default 0
LoS1	P-39 Lower Limit Set 2	*Set 2 minimum value (0...9999)*	Default 0
LoS2	P-22 Upper Limit Set 1	*Set 1 maximum value (0...9999)*	Default 999
uPS1	P-40 Upper Limit Set 2	*Set 2 maximum value (0...9999)*	Default 999
uPS2			

AUTOMATIC LOAD CONFIGURATION

	P-23 Automatic Load Counter 1	*Counter 1 automatic loading*
ALC1	P-41 Automatic Load Counter 2	*Counter 2 automatic loading*
ALC2		

diS	Disable	*Automatic loading desabled*	Default
SEt1	Counter = Set 1	*Loading if counter = Set1*	
SEt2	Counter = Set 2	*Loading if counter = Set2*	
Sod1	Counter = Set 1+Output Duration 1	*Loading if counter = Set1 + "Output Duration 1"*	
Sod2	Counter = Set 2+Output Duration 2	*Loading if counter = Set2 + "Output Duration 2"*	
uiC	Counter = Visualized counts	*Loading if counter = "Visualized Counts"*	

COUNTER LOAD VALUE CONFIGURATION

	P-24 Counter Load Value 1	*Counter 1 loading value*	Default 0
CLd1	P-42 Counter Load Value 2	*Counter 2 loading value*	Default 0
CLd2			

COUNTER OUTPUT MODE CONFIGURATION

	P-25 Counter 1 Output Mode	*Counter 1 output mode*
CoN1	P-43 Counter 2 Output Mode	*Counter 2 output mode*
CoN2		

SEt.1	Counter =Set	*Output active if Counter =Set*	Default
tiNE	Counter =Set * Output Duration (time)	*Output active for "Output Duration" time if Counter =Set*	
Coun	Counter =Set * Output Duration (counts)	*Output active for "Output Duration" counts if Counter =Set*	
SE12	Counter =Set1+Set2	*Output active if Counter =Set1+Set2*	

OUTPUT DURATION CONFIGURATION

	P-26 Output 1 Duration	*Counter 1 output duration*	Default 10
odU1	P-44 Output 2 Duration	*Counter 2 output duration*	Default 10
odU2			

uSEr	Output Duration Input by User	*Value modifiable by user*	
LAtc	Latch output (clear only by load)	*Latch output resettable by counter loading*	
1	Min output duration	*Output duration minimum value*	
999	Max output duration	*Output duration maximum value*	

COUNTER FREQUENCY DISPLAY CONFIGURATION

	P-27 Display Frequency Counter 1	*Counter 1 frequency visualization*
dF1	P-45 Display Frequency Counter 2	*Counter 2 frequency visualization*
dF2		

diS	Disable	*Counter frequency value not visualized*	Default
uiSu	Visualized	*Counter frequency value visualized*	

	P-28 Decimal Point Frequency Counter 1	*Counter 1 frequency format*
dPF1	P-46 Decimal Point Frequency Counter 2	*Counter 2 frequency format*
dPF2		

0	0	*Visualization with no decimal digit*	Default
00	0.0	*Visualization with 1 decimal digit*	
000	0.00	*Visualization with 2 decimal digits*	
0000	0.000	*Visualization with 3 decimal digits*	

	P-29 Counter 1 Input frequency	*Counter 1 input frequency (1...9999Hz)*	Default 1
inF1	P-47 Counter 2 Input frequency	*Counter 2 input frequency (1...9999Hz)*	Default 1
inF2	P-30 Counter 1 Visualized Frequency	*Counter 1 visualized frequency*	Default 1
uiF1	P-48 Counter 2 Visualized Frequency	*Counter 2 visualized frequency*	Default 1
uiF2			

	P-31 Output Q1 Setup	*Output Q1 settings*
out1	P-32 Output Q2 Setup	*Output Q2 settings*
out2		

diS	Disable	*Disabled output*	Default C2
C no	Out Counter 1 n.o.	*Counter 1 output on n.o. contact*	Default C1
C nc	Out Counter 1 n.c.	*Counter 1 output on n.c. contact*	
C2no	Out Counter 2 n.o.	*Counter 2 output on n.o. contact*	
C2nc	Out Counter 2 n.c.	*Counter 2 output on n.c. contact*	

VZ484801 "COUNTER"

COUNTER FUNCTION
P-01 Counter Function
Func.
- **SinG** Single (1 Counter)
- **doub** Double (2 Counters)

COUNTER CLOCK CONFIGURATION
P-15 Clock Counter 1
CLC1
- **diS** Disable
- **Enc** Encoder
- **UP--** I1 Up, I2 Off
- **do--** I1 Down, I2 Off
- **--uP** I1 Off, I2 Up
- **--do** I1 Off, I2 Down
- **UPdo** I1 Up, I2 Down
- **UP.d** I1 Up, I2 Incr./Decr.
- **UPEL** I1 Up, I2 En./Lock
- **UPEH** I1 Up, I2 En./Hold
- **doEL** I1 Down, I2 En./Lock
- **doEH** I1 Down, I2 En./Hold
- **oc2** Output Counter 2

BACKUP MEMORY CONFIGURATION
P-02 Power-off Memory
PoME
- **diS** Disable
- **cnt.1** Counter 1
- **cnt2** Counter 2
- **ALL** All Counter

POWER-ON RESET

INPUT CONFIGURATION
I1
P-03 Hardware Input 1 **H in1**
- **nPn** NPN
- **PnP** PNP
- **ttL** TTL

P-06 Filter Delay Input 1 **FiL1**
- **00** No delay
- **05** 0,5 ms
- ...
- **1000** 100,0 ms

P-09 Active State Input 1 **A in1**
- **riS** Rising edge
- **FALL** Falling edge

I2
P-04 Hardware Input 2 **H in2**
- **nPn** NPN
- **PnP** PNP
- **ttL** TTL

P-07 Filter Delay Input 2 **FiL2**
- **00** No delay
- **05** 0,5 ms
- **1000** 100,0 ms

P-10 Active State Input 2 **A in2**
- **HLEu** High Level
- **LLEu** Low Level
- **riS** Rising edge
- **FALL** Falling edge

I3
P-05 Hardware Input 3 **H in3**
- **PnP** PNP
- **ttL** TTL
- **Pot** Potent.

P-08 Filter Delay Input 3 **FiL3**
- **00** No delay
- **05** 0,5 ms
- ...
- **1000** 100,0 ms

P-14 Potentiometer tarature **PtAr**
- **diS** Disable
- **En** Enable

P-11 Active State Input 3 **A in3**
- **riS** Rising edge
- **FALL** Falling edge

P-12 Function Input 3 **F in3**
- **diS** Disable
- **EncZ** Encoder Z
- **Ld 1** Load Counter 1
- **Ld 2** Load Counter 2
- **Ld 12** Load Counter 1&2
- **SEt 1** Set1
- **SEt2** Set2

P-13 Function Key UP **Ft uP**
Key UP
- **diS** Disable
- **Ld 1** Load Counter 1
- **Ld 2** Load Counter 2
- **Ld 12** Load Counter 1&2

AUTOMATIC LOAD CONFIGURATION
P-23 Automatic Load Counter 1
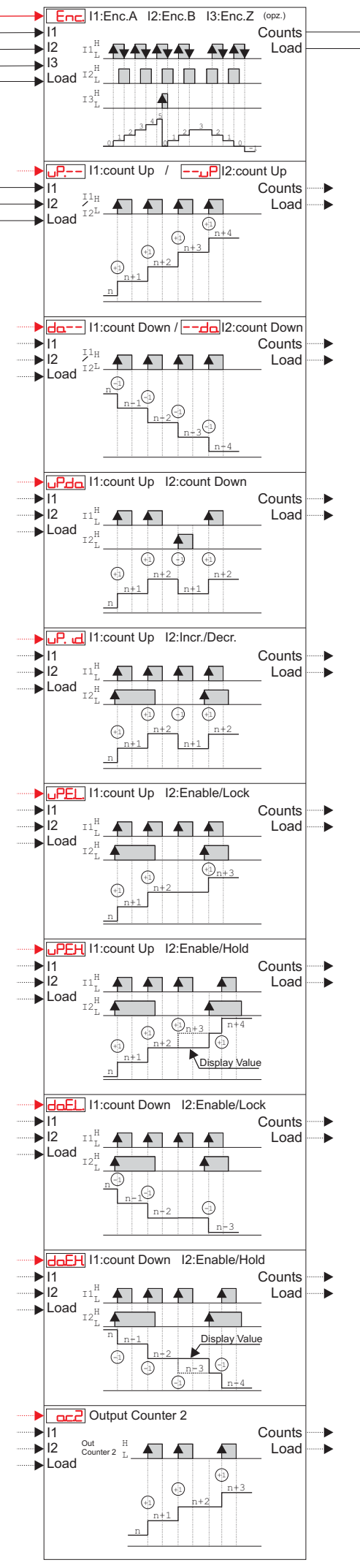**ALC1**
- **diS** Disable
- **SEt 1** Counter 1 = Set 1
- **SEt2** Counter 1 = Set 2
- **Sod 1** Counter 1 = Set 1 + Output Duration 1
- **Sod2** Counter 1 = Set 2 + Output Duration 2
- **u C1** Counter 1 = Visualized counts 1

COUNTER LOAD VALUE CONFIGURATION
P-24 Counter 1 Load Value
CLd 1
- **0** Min value
- **9999** Max value

COUNTER ENC / COUNTS / LOAD (signal diagrams)
Enc I1:Enc.A I2:Enc.B I3:Enc.Z (opz.)
- I1, I2, I3, Load — Counts / Load

UP-- I1:count Up / **--uP** I2:count Up — I1, I2, Load — Counts / Load

do-- I1:count Down / **--do** I2:count Down — I1, I2, Load — Counts / Load

UPdo I1:count Up I2:count Down — I1, I2, Load — Counts / Load

UP.d I1:count Up I2:Incr./Decr. — I1, I2, Load — Counts / Load

UPEL I1:count Up I2:Enable/Lock — I1, I2, Load — Counts / Load

UPEH I1:count Up I2:Enable/Hold — I1, I2, Load — Display Value — Counts / Load

doEL I1:count Down I2:Enable/Lock — I1, I2, Load — Counts / Load

doEH I1:count Down I2:Enable/Hold — I1, I2, Load — Display Value — Counts / Load

oc2 Output Counter 2 — I1, I2, Load — Out Counter 2 — Counts / Load

COUNTER OUTPUT MODE CONFIGURATION
P-25 Counter 1 Output Mode
Con1
- **SEt 1** Counter = Set
- **t ME** Counter = Set * Output Duration (time)
- **Coun** Counter = Set * Output Duration (counts)
- **SE 12** Counter = Set1+Set2

OUTPUT DURATION CONFIGURATION
P-26 Output 1 Duration
odu 1
- **uSEr** Output Duration Input by User
- **LAtc** Latch output (clear only by load)
- **1** Min output duration
- **999** Max output duration

SETPOINT CONFIGURATION
P-20 Display Set 1 **dS1**
- **diS** Disable
- **uiSu** Visualized
- **Mod** Modifiable

P-22 Upper limit Set 1 **uPS1**
P-21 Lower limit Set 1 **LoS1**

COUNTERS DISPLAY CONFIGURATION
P-16 Display Counter 1 **dC1**
- **diS** Disable
- **uiSu** Visualized

P-17 Decimal Point Counter 1 **dPC1**
- **0** 0
- **00** 0.0
- **000** 0.00
- **0000** 0.000

P-18 Counter 1 Input counts **inC1**

P-19 Counter 1 Visualized counts **u C1**

COUNTERS FREQUENCY DISPLAY CONFIGURATION
P-27 Display Frequency 1 **dF1**
- **diS** Disable
- **uiSu** Visualized

P-28 Decimal Point Frequency 1 **dPF1**
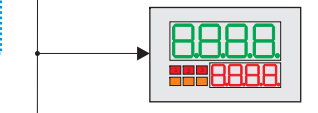- **0** 0
- **00** 0.0
- **000** 0.00
- **0000** 0.000

P-29 Counter 1 Input Frequency **inF1**

P-30 Counter 1 Visualized Frequency **u F1**

OUTPUT CONFIGURATION
P-31 Output Q1 Setup **out 1**
- **diS** Disable
- **C1no** Out Counter 1 n.o.
- **C1nc** Out Counter 1 n.c.
- **C2no** Out Counter 2 n.o.
- **C2nc** Out Counter 2 n.c.

P-32 Output Q2 Setup **out2**
- **diS** Disable
- **C1no** Out Counter 1 n.o.
- **C1nc** Out Counter 1 n.c.
- **C2no** Out Counter 2 n.o.
- **C2nc** Out Counter 2 n.c.

Q1, Q2

Counter output mode diagrams
- **SEt 1** Counter = Set — Output duration, Counts, Set, Load — Out Counter — SET, COUNTER, Load Value, Time
- **t ME** Counter = Set * Output Duration (time) — Output duration, Counts, Set, Load — Output Duration (time) — SET, COUNTER, Load Value, Time
- **Coun** Counter = Set * Output Duration (counts) — Output duration, Counts, Set, Load — Output Duration (counts) — SET, COUNTER, Load Value, Time
- **SE 12** Counter = Set1 + Set2 — Output duration, Counts, Set, Load — SET1+SET2, COUNTER, Load Value, Time

LOGIC LEVEL INPUT TABLE

INPUT TYPE / LOGIC LEVEL	NPN INPUT	PNP INPUT	TTL INPUT
H	< 4,7 v	>5,7 v (I1, I2) / >12,4 v (I3)	>2,5 v
L	> 5,7 v	< 4,7 v (I1, I2) / < 10,2 v (I3)	< 2,0 v

TABLE OF ERROR MESSAGES

Code	Message
E-01	ERROR in WRITING of EEPROM Memory
E-02	ERRORE LETTURA MEMORIA EEPROM
E-03	Incorrect parameters (Note 1)
E-04	Incorrect calibration data (Note 1)
E-05	Incorrect status data (Note 1)
E-06	Incorrect BACKUP registers (Note 1)

Note 1: Switch the device off and restart it; if error is still notified, contact technical service
Note 2: Discharged battery: keep the device connected to power supply in order to recharge the battery.