TCT201-2ABC USER MANUAL

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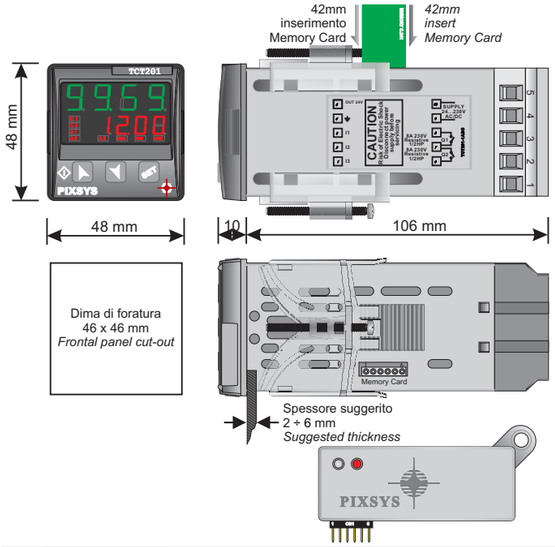
Software V 2.08
2300.10.138-RevG 240314

SIZE AND INSTALLATION



LED	MEANING
Q1	Report the activation of Q1
Q2	Report the activation of Q2
SER	Report serial transmission by the TCT201

SETPOINT MODIFICATION

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

TECHNICAL DATA

Operating temperature	*Operating temperature 0-40°C, humidity 35..95uR%*
Sealing	*IP65 (with gasket) on front panel, Ip20 box and terminal bloks*
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(24Vac),40mA(24 Vdc),60mA (110...230Vac)*
Back-UP	*Rechargeable battery, approx. 60days autonomy*
Programming Software	*Labsoftview 2.6 or later*
Power Supply	*24...230Vac/Vdc +/-15% 50/60Hz / 2W*

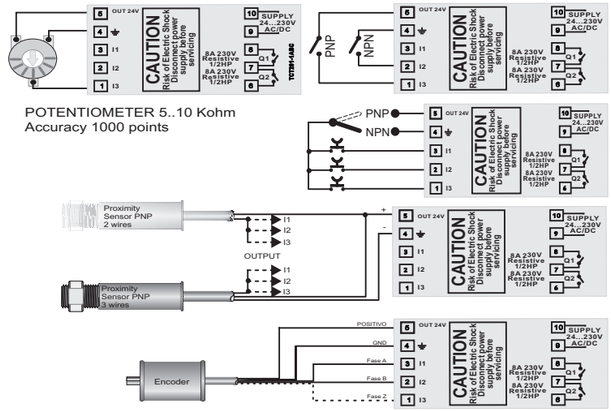
INTRODUCTION

Thanks for choosing a Pixsys device. Counter TCT201 can be set in 2 different modes: Single or Double counter, all with independent setting. 3 universal digital inputs are availables (NPN/PNP/Potential free contact) and can be used for bidirectional encoders reading, or Up/Down count function, count inversion, Lock/ Hold to lock or hold current visualization. One input is also analogue in order to allow setpoint modification by an external potentiometer.

⚠

Read carefully the safety guidelines and programming instructions contained in this manual before using/connecting the device. Disconnect power supply before proceeding to hardware settings or electrical wirings. Only qualified personnel should be allowed to use the device and/or service it and in accordance to technical data and environmental conditions listed in this manual. Do not dispose electric tools together with household waste materials in observance of European Directive 2002/96/CE

WIRING DIAGRAM



Potentiometer:

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

1- use potentiometers 5kOhm to 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.

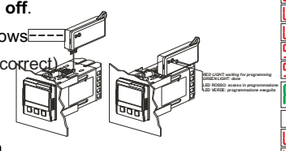
MEMORY CARD (optional)

Parameters and setpoint values can be copied from one device to another using the Memory car.

There are two methods:

> With the device connected to the power supply
insert the memory card **when the controller 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 controller 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

	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

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

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

BACKUP MEMORY CONFIGURATION

PoME	**P-02 Power-off Memory**	**Power-off memory**	
diS	Disable	*No counter stored at power-off*	Default
cnt1	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

Hin1	**P-03 Hardware input 1**	**Input 1 hardware configuration**	
Hin2	**P-04 Hardware input 2**	**Input 2 hardware configuration**	
Hin3	**P-05 Hardware input 3**	**Input 3 hardware configuration**	
nPn	NPN	*NPN (not available on input 3)*	
PnP	PNP	*PNP*	Default
ttL	TTL	*TTL*	
Pot	Potent.	*Potentiometer (available only for input 3)*	
FiL1	**P-06 Filter Delay Input 1**	**Input 1 digital filter configuration**	
FiL2	**P-07 Filter Delay Input 2**	**Input 2 digital filter configuration**	
FiL3	**P-08 Filter Delay Input 3**	**Input 3 digital filter configuration**	
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*	
Ain1	**P-09 Active State Input 1**	**Active state input 1**	
Ain2	**P-10 Active State Input 2**	**Active state input 2**	
Ain3	**P-11 Active State Input 3**	**Active state input 3**	
HLEv	High Level	*High level (available only for input 1)*	
LLEv	Low Level	*Low level (available only for input 2)*	
riSE	Rising edge	*Rising edge*	Default
FALL	Falling edge	*Falling edge*	
F.in3	**P-12 Function Input 3**	**Function associated to input 3**	
diS	Disable	*Desabled*	
Enc2	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*	
FtuP	**P-13 Function Key UP**	**Function associated to UP (up arrow key)**	
diS	Disable	*Desabled*	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*	
PtAr.	**P-14 Potentiom. Tarature**	**Potentiometer calibration procedure**	
diS	Disable	*Desabled*	Default
En	Enable	*Enabled*	

COUNTER CLOCK CONFIGURATION

CLC.1	**P-15 Clock Counter 1**	**Counter 1 count mode selection**	
CLC2	**P-33 Clock Counter 2**	**Counter 2 count mode selection**	
diS	Disable	*Desabled*	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.d	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

dSC.1	**P-16 Display Counter 1**	**Counter 1 visualization selection**	
dSC2	**P-34 Display Counter 2**	**Counter 2 visualization selection**	
diS	Disable	*Counter value not visualized*	Default C2
uiSu	Visualized	*Counter value visualized*	Default C1
dPC.1	**P-17 Decimal Point Counter 1**	**Counter 1 visualization format**	
dPC2	**P-35 Decimal Point Counter 2**	**Counter 2 visualization format**	
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*	
inC.1	**P-18 Counter 1 input counts**	**Counter 1 input counts (1...9999)**	Default 1
inC2	**P-36 Counter 2 input counts**	**Counter 2 input counts (1...9999)**	Default 1
uSC.1	**P-19 Counter 1 Visualized Counts**	**Counter 1 visualized counts (1...9999)**	Default 1
uSC2	**P-37 Counter 2 Visualized Counts**	**Counter 2 visualized counts (1...9999)**	Default 1

SETPOINT CONFIGURATION

dSP1	**P-20 Display Set 1**	**Counter 1 setpoint visualization selection**	
dSP2	**P-38 Display Set 2**	**Counter 2 setpoint visualization selection**	
diS	Disable	*Setpoint value not visualized*	Default C2
uiSu	Visualized	*Setpoint value visualized*	
Mod	Modifiable	*Setpoint value visualized and modifiable*	Default C1
LoS1	**P-21 Lower Limit Set 1**	***Set 1 minimum value (0...9999)***	Default 0
LoS2	**P-39 Lower Limit Set 2**	***Set 2 minimum value (0...9999)***	Default 0
uPS1	**P-22 Upper Limit Set 1**	***Set 1 maximum value (0...9999)***	Default 999
uPS2	**P-40 Upper Limit Set 2**	***Set 2 maximum value (0...9999)***	Default 999

AUTOMATIC LOAD CONFIGURATION

ALC.1	**P-23 Automatic Load Counter 1**	***Counter 1 automatic loading***	
ALC2	**P-41 Automatic Load Counter 2**	***Counter 2 automatic loading***	
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"*	
uC.1	Counter = Visualized counts	*Loading if counter = "Visualized Counts"*	
S-d1	Counter = Set 1-Output Duration 1	*Loading if counter = Set1 - "Output Duration 1"*	
S-d2	Counter = Set 2-Output Duration 2	*Loading if counter = Set2 - "Output Duration 2"*	
Sdt1	Counter = Set 1 after Out. Dur. 1(time)	*Loading if counter = Set1 "Output Duration 1"*	
Sdt2	Counter = Set 2 after Out. Dur. 2(time)	*Loading if counter = Set2 "Output Duration 2"*	

COUNTER LOAD VALUE CONFIGURATION

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

COUNTER OUTPUT MODE CONFIGURATION

CoM1	**P-25 Counter 1 Output Mode**	***Counter 1 output mode***	
CoM2	**P-43 Counter 2 Output Mode**	***Counter 2 output mode***	
SEt1	Counter ≥Set	*Output active if Counter ≥Set*	**Default**
tiME	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*	
SE.12	Counter ≥Set1+Set2	*Output active if Counter ≥Set1+Set2*	
-SE.1	Counter ≤Set	*Output active if Counter ≤Set*	**Default**
-tiM	Counter ≤Set * Output Duration (time)	*Output active for "Output Duration" time if Counter ≤Set*	
-Cou	Counter ≤Set * Output Duration (counts)	*Output active for "Output Duration" counts if Counter ≤Set*	
-S12	Counter ≤Set1+Set2	*Output active if Counter ≤Set1+Set2*	

OUTPUT DURATION CONFIGURATION

odU.1	**P-26 Output 1 Duration**	***Counter 1 output duration***	Default 10
odU2	**P-44 Output 2 Duration**	***Counter 2 output duration***	Default 10
uSEr	Output Duration Input by User	*Value modifiable by user*	Default
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

dFr.1	**P-27 Display Frequency Counter 1**	***Counter 1 frequency visualization***	
dFr2	**P-45 Display Frequency Counter 2**	***Counter 2 frequency visualization***	
diS	Disable	*Counter frequency value not visualized*	Default
uiSu	Visualized	*Counter frequency value visualized*	
dPF.1	**P-28 Decimal Point Frequency Counter 1**	***Counter 1 frequency format***	
dPF2	**P-46 Decimal Point Frequency Counter 2**	***Counter 2 frequency format***	
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*	
inF.1	**P-29 Counter 1 Input frequency**	***Counter 1 input frequency (1...9999Hz)***	Default 1
inF2	**P-47 Counter 2 Input frequency**	***Counter 2 input frequency (1...9999Hz)***	Default 1
uFr.1	**P-30 Counter 1 Visualized Frequency**	***Counter 1 visualized frequency***	Default 1
uFr2	**P-48 Counter 2 Visualized Frequency**	***Counter 2 visualized frequency***	Default 1
out1	**P-31 Output Q1 Setup**	***Output Q1 settings***	
out2	**P-32 Output Q2 Setup**	***Output Q2 settings***	
diS	Disable	*Desabled output*	Default C2
Cno	Out Counter 1 n.o.	*Counter 1 output on n.o. contact*	Default C1
Cnc	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*	

TCT201-2ABC "COUNTER"

COUNTER FUNCTION

P-01 Counter Function — Func.
- 5 inG Single (1 Counter)
- doub Double (2 Counters)

BACKUP MEMORY CONFIGURATION

POWER-ON RESET

P-02 Power-off Memory — PoME
- dis Disable
- cnt1 Counter 1
- cnt2 Counter 2
- ALL All Counter

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.
- uPEn I1 Up, I2 En./Lock
- uPEH I1 Up, I2 En./Hold
- doEn I1 Down, I2 En./Lock
- doEH I1 Down, I2 En./Hold
- oc2 Output Counter 2

INPUT CONFIGURATION

I1

P-03 Hardware Input 1 — H.in1
- nPn NPN
- PnP PNP
- ttL TTL

P-06 Filter Delay Input 1 — F.iL1
- 00 No delay
- 05 0,5 ms
- ...
- 1000 100,0 ms

P-09 Active State Input 1 — A.in1
- r.S 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 — F.iL2
- 00 No delay
- 05 0,5 ms
- ...
- 1000 100,0 ms

P-10 Active State Input 2 — A.in2
- HLEv High Level
- LLEv Low Level
- r.S 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 — F.iL3
- 00 No delay
- 05 0,5 ms
- ...
- 1000 100,0 ms

P-11 Active State Input 3 — A.in3
- r.S Rising edge
- FALL Falling edge

P-12 Function Input 3 — F.in3
- dis Disable
- Enc2 Encoder Z
- Ld 1 Load Counter 1
- Ld 2 Load Counter 2
- Ld 12 Load Counter 1&2
- SEt 1 Set1
- SEt2 Set2

P-14 Potentiometer tarature — PtAr.
- dis Disable
- En Enable

P-13 Function Key UP — F.uP
- dis Disable
- Ld 1 Load Counter 1
- Ld 2 Load Counter 2
- Ld 12 Load Counter 1&2

Key UP

AUTOMATIC LOAD CONFIGURATION

P-23 Automatic Load Counter 1 — AL.C.1
- dis Disable
- SEt 1 Counter 1 = Set 1
- SEt2 Counter 1 = Set 2
- Sod1 Counter 1 = Set 1 + Output Duration 1 (counts)
- Sod2 Counter 1 = Set 2 + Output Duration 2 (counts)
- u.C.1 Counter 1 = Visualized counts 1
- S-d1 Counter 1 = Set 1 - Output Duration 1 (counts)
- S-d2 Counter 1 = Set 2 - Output Duration 2 (counts)
- Sdt.1 Counter 1 = Set 1 after Output Duration 1 (time)
- Sdt2 Counter 1 = Set 2 after Output Duration 2 (time)

COUNTER LOAD VALUE CONFIGURATION

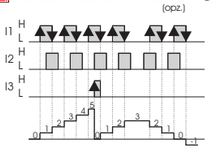
P-24 Counter 1 Load Value — CLd.1
- 0 Min value
- 9999 Max value

TABLE OF ERROR MESSAGES

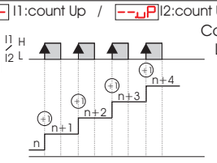
E-01	ERROR IN WRITING OF EEPROM
E-02	ERROR IN READING OF EEPROM
E-03	INCORRECT PARAMETERS (Note 1)
E-04	INCORRECT CALIBRATION DATA (Note 1)
E-05	INCORRECT STATUS DATA (Note 1)
E-06	INCORRECT BACKUP REGISTERS (Note 2)

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 the power supply in order to recharge the battery.

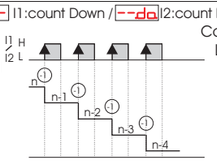
Enc — I1:Enc.A I2:Enc.B I3:Enc.Z (opz.) Counts Load



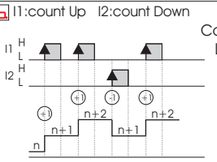
uP-- I1:count Up / --uP I2:count Up Counts Load



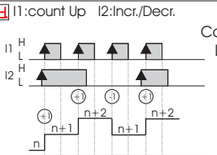
do-- I1:count Down / --do I2:count Down Counts Load



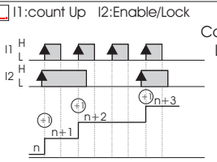
uPdo I1:count Up I2:count Down Counts Load



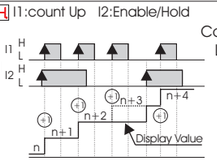
uP.d I1:count Up I2:incr./Decr. Counts Load



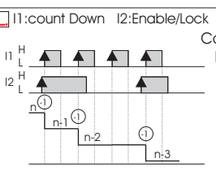
uPEn I1:count Up I2:Enable/Lock Counts Load



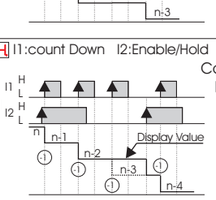
uPEH I1:count Up I2:Enable/Hold Counts Load



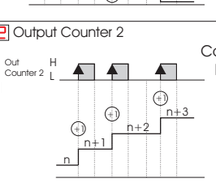
doEn I1:count Down I2:Enable/Lock Counts Load



doEH I1:count Down I2:Enable/Hold Counts Load



oc2 Output Counter 2 Counts Load



COUNTER OUTPUT MODE CONFIGURATION

P-25 Counter 1 Output Mode — CoN.1
- SEt Counter ≥ Set
- tiME Counter ≥ Set * Output Duration (time)
- Coun Counter ≥ Set * Output Duration (counts)
- SE.2 Counter ≥ Set1+Set2
- -SE.1 Counter ≤ Set
- -ti.M Counter ≤ Set * Output Duration (time)
- -Cou Counter ≤ Set * Output Duration (counts)
- -S.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 — diS.1
- dis Disable
- USu Visualized
- Mod Modifiable

P-22 Upper limit Set 1 — uPS.1

P-21 Lower limit Set 1 — LoS.1

COUNTERS DISPLAY CONFIGURATION

P-16 Display Counter 1 — d.C.1
- dis Disable
- USu Visualized

P-17 Decimal Point Counter 1 — dPC.1
- 0 0
- 00 0.0
- 000 0.00
- 0000 0.000

P-18 Counter 1 Input counts — inC.1

P-19 Counter 1 Visualized counts — u.C.1

COUNTERS FREQUENCY DISPLAY CONFIGURATION

P-27 Display Frequency 1 — d.F.1
- dis Disable
- USu Visualized

P-28 Decimal Point Frequency 1 — dPF.1
- 0 0
- 00 0.0
- 000 0.00
- 0000 0.000

P-29 Counter 1 Input Frequency — inF.1

P-30 Counter 1 Visualized Frequency — u.F.1

OUTPUT CONFIGURATION

P-31 Output Q1 Setup — out1
- 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.

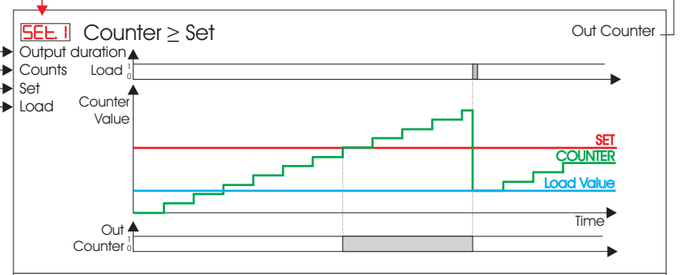
→ Q1

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.

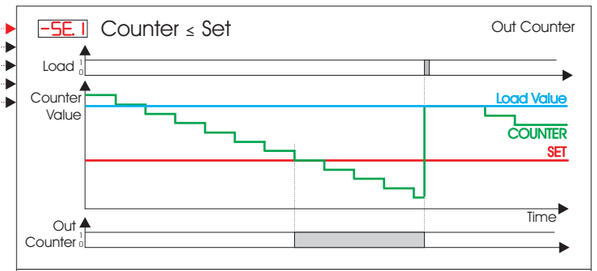
→ Q2

Logic level \ Type of input	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

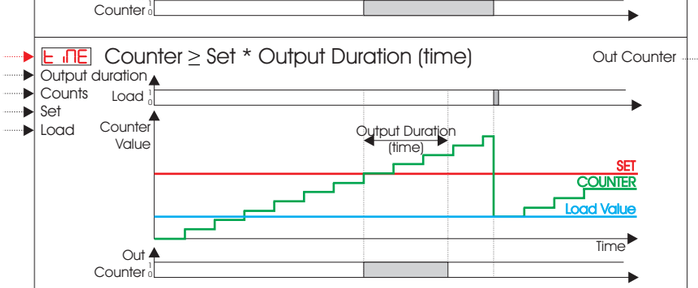
SEt.1 Counter ≥ Set



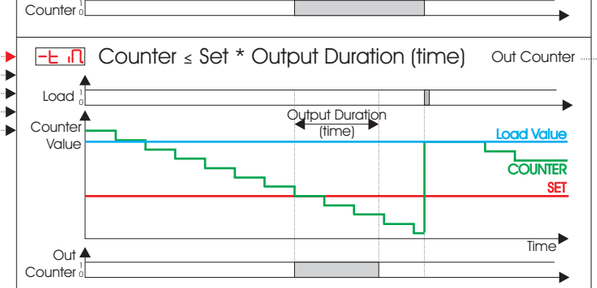
-SE.1 Counter ≤ Set



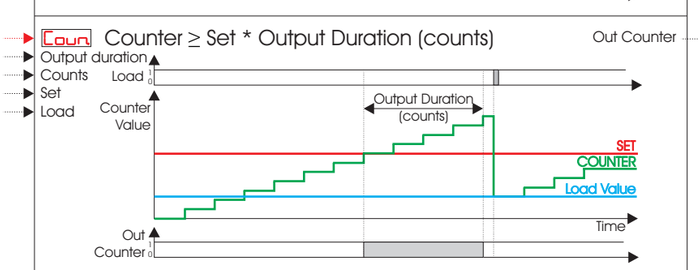
tiME Counter ≥ Set * Output Duration (time)



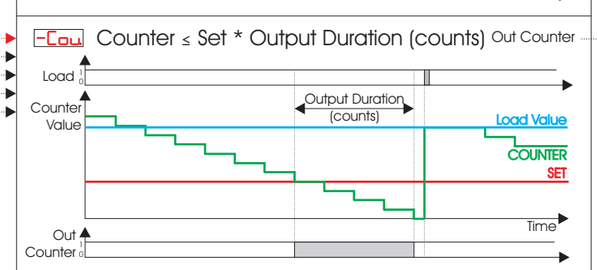
-ti.M Counter ≤ Set * Output Duration (time)



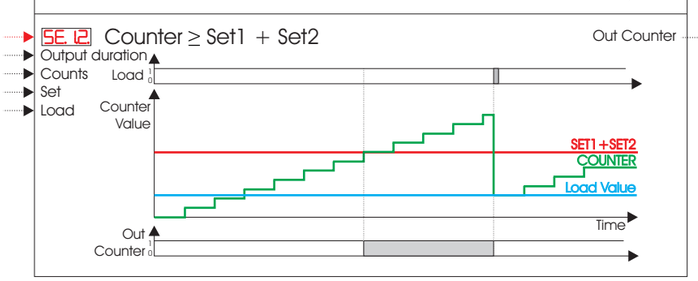
Coun Counter ≥ Set * Output Duration (counts)



-Cou Counter ≤ Set * Output Duration (counts)



SE.12 Counter ≥ Set1 + Set2



-S.12 Counter ≤ Set1 + Set2