WACHENDORFF

MANUAL
TIMER TI327401

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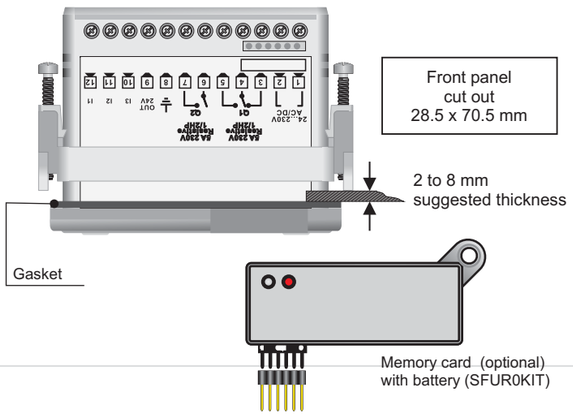
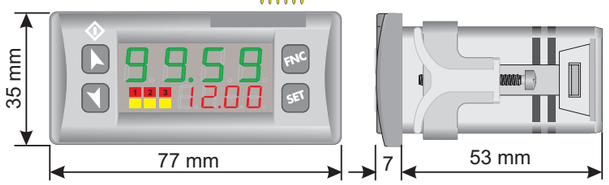
Version 2.0

DIMENSION and INSTALLATION





MODIFY SETPOINT

	PRESS	EFFECT
1	SET	Display SETPOINT 1 / 2
2	OR	Modify selected SETPOINT
2a	FNC	Select the chosen digit
3a	o	Modify the flashing digit of the selected setpoint

TECHNICAL DATA

Operating temperature	*Operating temperature 0-40°C, humidity 35..95uR%*
Sealing	*Front panel IP65 (with optional gasket) , Box IP30, Terminal blocks IP20*
Material	*PC ABS UL94V0 self-extinguishing*
Digital Inputs	*3PNP/NPN configurable as analogue for potentiometers. (max 28 Vdc in PNP mode)*
Outputs OUT 24V	*2 relays 5A resistive charge 30mA(24Vac),40mA(24 Vdc),60mA (110...230Vac)*
Back-UP	*Rechargeable battery, approx. 7days autonomy*
Programming Software	*Labsoftview 2.6 or later*
Power Supply	*24...230Vac/Vdc +/-15% 50/60Hz / 2W*

INTRODUCTION

Thanks for choosing a Wachendorff device.

Timer TI327401 can be set in 5 different modes: Timer-ON, Timer-OFF, Pause-Work, Oscillator, PWM (time-proportioned output), all options with independent setting of ON-OFF time.
3 digital inputs are available (NPN/PNP) for external commands like Start, Stop, Reset; one input is also analogic in order to allow the modification of working times by external potentiometer.
5 different time bases (hundredths, tenths, seconds, minutes, hours).
Counting can be incremental or decremental.

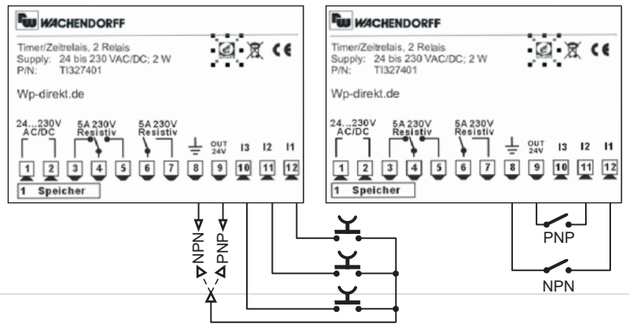
Read carefully the safety guidelines and programming instructions contained in this manual before using/connecting the device.

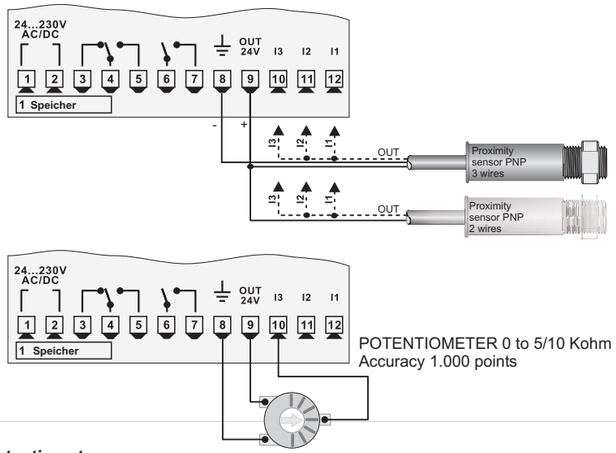
Disconnect power supply before proceeding to hardware settings or electrical wirings.

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 0 to 5/10 Kohm
Accuracy 1.000 points

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. A**ttention: pls. Perform first an update of the memory card.**

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 1.000 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 SETTINGS

	PRESS	EFFECT	OPERATION
1	for 3 seconds	Display 1shows 0000 and 1st digit flashes, Display 2 shows PASS	
2	Or	Modify the flashing digit, press to reach the next digit	Enter password 9999
3	to confirm	The device loads default values (factory settings)	Switch-off and restart the device

MODIFY PARAMETERS

	PRESS	EFFECT	OPERATION
1	for 3 seconds	Display 1 shows 0000 and 1st digit flashes, display 2 shows PASS	
2	Or	Modify flashing digit, press to reach the following digit	Enter password 1234
3	to confirm	Display shows first parameter of configuration table Func	
4	Or	Scroll the parameters	
5	+ Or	Increade or decrease value on display by pressing and one of the arrow keys at same time	Enter new data which will be stored releasing the keys
6		End of configuration, the device exits programming mode.	

LIST of PARAMETERS

FUNCTION CONFIGURATION

	P-01 Timer Function	*Timer operating modes*	
ton	Timer On	*Activate output at elapsing of counting*	*Default*
toFF	Timer Off	*Deactivate output at elapsing of counting*	
PAUS	Pause/Work	*T1 and T2 start in sequence*	
osc	Oscillator	*T1 and T2 start in sequence and cycling*	
PUN	PWM	*Activate a percentage of output on a fixed time base*	

BACKUP MEMORY CONFIGURATION

	P-02 Power-off Memory	*Memory after switch-off*	
diS	Disable	*Disabled*	*Default*
PArt	Only Timer	*Memory stores only value of Timer*	
ALL	Timer / State	*Memory stores value of Timer and START/STOP status*	

INPUT CONFIGURATION

	P-03 Hardware Input 1	*Configuration Input 1*	
nPn	NPN	*NPN*	
PnP	PNP	*PNP*	*Default*
tEL	TTL	*TTL*	

	P-04 Hardware Input 2	*Configuration Input 2*	
nPn	NPN	*NPN*	
PnP	PNP	*PNP*	*Default*
tEL	TTL	*TTL*	

	P-05 Hardware Input 3	*Configuration input 3*	
PnP	PNP	*PNP*	*Default*
tEL	TTL	*TTL*	
Pot	Potent.	*Potentiometer*	

	P-06 Active State Input 1	*Activate Input 1*	
HAEv	High Level	*High level*	
LAEv	Low Level	*Low level*	
r.SU	Rising edge	*Rising edge*	*Default*

	P-07 Active State Input 2	*Activate Input 2*	
HAEv	High Level	*High level*	
LAEv	Low Level	*Low level*	
r.SU	Rising edge	*Rising edge*	*Default*

	P-08 Active State Input 3	*Activate Input 3*	
HAEv	High Level	*High level*	
LAEv	Low Level	*Low level*	
r.SU	Rising edge	*Rising edge*	*Default*

	P-09 Function Input 1	*Function of Input 1*	
diS	Disable	*Disabled*	
SESE	Start / Stop	*Start / Stop*	*Default*
SESr	Start / Stop-Reset	*Start / Stop-Reset*	
rSSE	Reset-Start / Stop	*Reset-Start / Stop*	
rSS	Reset / Start / Stop	*Reset / Start / Stop*	

	P-10 Function Input 2	*Function Input 2*	
diS	Disable	*Disabled*	
rES	Reset	*Reset*	*Default*

	P-11 Function Input 3	*Function Input 3*	
diS	Disable	*Disabled*	
WAit	Wait	*Wait (stop the counting)*	
HoLd	Hold	*Hold (Hold value on display but counting goes on)*	*Default*
SEt1	Potent. To SET1	*Modify SET1 by potentiometer*	
SEt2	Potent. To SET2	*Modify SET2 by potentiometer*	

	P-12 Function Key UP	*Function of key*	
diS	Disable	*Disabled*	*Default*
SESE	Start / Stop	*Start / Stop*	
SESr	Start / Stop-Reset	*Start / Stop-Reset*	
rSSE	Reset-Start / Stop	*Reset-Start / Stop*	
rSS	Reset / Start / Stop	*Reset / Start / Stop*	
rES	Reset	*Reset*	
WAit	Wait	*Wait (stop the counting)*	
HoLd	Hold	*Hold (hold value on display but counting goes on)*	

OUTPUT CONFIGURATION

	P-13 Output Q1 Setup	*Setting of output Q1*	
diS	Disable	*Disabled*	
t.no	Out Timer 1 n.o.	*Output Timer 1 N.O.*	*Default*
t.nc	Out Timer 1 n.c.	*Output Timer 1 N.C.*	
t2no	Out Timer 2 n.o.	*OutputTimer 2 N.O.*	
t2nc	Out Timer 2 n.c.	*Output Timer 2 N.C.*	
StAr	Start	*Start*	
StoP	Stop	*Stop*	

	P-14 Output Q2 Setup	*Setting of output Q2*	
diS	Disable	*Disabled*	*Default*
t.no	Out Timer 1 n.o.	*Output Timer 1 N.O.*	
t.nc	Out Timer 1 n.c.	*Output Timer 1 N.C.*	
t2no	Out Timer 2 n.o.	*Output Timer 2 N.O.*	
t2nc	Out Timer 2 n.c.	*Output Timer 2 N.C.*	
StAr	Start	*Start*	
StoP	Stop	*Stop*	

DISPLAY CONFIGURATION

	P-15 Type of Timer	*Counting mode*	
incr	Incremental	*Incremental*	*Default*
dEcr	Decremental	*Decremental*	

SETPOINT CONFIGURATION

	P-16 Format Set 1	*Format of counting*	
SSCc	Second.Cent	*Seconds, Hundredths*	
SSSd	Second.Decimal	*Seconds, Tenths*	*Default*
SSSS	Second	*Seconds*	
MMSS	Minute.Second	*Minutes, Seconds*	
HHMM	Hour.Minute	*Hours, Minutes*	
HHHH	Hour	*Hours*	

	P-17 Format Set 2	*Format of counting*	
SSCc	Second.Cent	*Seconds, Hundredths*	
SSSd	Second.Decimal	*Seconds, Tenths*	*Default*
SSSS	Second	*Seconds*	
MMSS	Minute.Second	*Minutes, Seconds*	
HHMM	Hour.Minute	*Hours, Minutes*	
HHHH	Hour	*Hours*	

	P-18 Display Set 1	*Visualization of Set 1*	

	P-19 Display Set 2	*Visualization of Set 2*	
diS	Disable	*Disabled*	*Default*
viSu	Visualized	*Visualized*	
Modi	Modifiable	*Visualized and modifiable*	

	P-20 Lower limit Set 1	*Low limit Set 1*	*0.0*

	P-21 Upper limit Set 1	*Upper limit Set 1*	*99.9*

	P-22 Lower limit Set 2	*Low limit Set 2*	*0.0*

	P-23 Upper limit Set 2	*Upper limit Set 2*	*99.9*

	P-24 Potent. tarature	*Calibration of potentiometer*	
diS	Disable	*Disabledd*	*Default*
En	Enable	*Enabled*	

TI327401 "TIMER"

FUNCTION CONFIGURATION

P-01 Timer Function — Func

- ton Timer On (Note 1)
- toFF Timer Off (Note 1)
- PAUS Pause/Work (Note 1)
- oSC. Oscillator
- PUN PWM

BACKUP MEMORY CONFIGURATION

POWER-ON RESET

P-02 Power-off Memory — PoNE

- dis Disabled
- ot in Only Timer
- ALL Timer / State

INPUT CONFIGURATION

I1

P-03 Hardware Input 1 — H. in 1

- nPn NPN
- PnP PNP
- tTL TTL

P-06 Active State Input 1 — A. in 1

- HLEv High Level
- LLEv Low Level
- r. S Rising edge

P-09 Function Input 1 — F. in 1

- dis Disable
- StSt Start / Stop (Note 2)
- StSr Start / Stop-Reset (Note 3)
- rSSt Reset-Start / Stop (Note 4)
- rSS Reset / Start / Stop (Note 5)

I2

P-04 Hardware Input 2 — H. in2

- nPn NPN
- PnP PNP
- tTL TTL

P-07 Active State Input 2 — A. in2

- HLEv High Level
- LLEv Low Level
- r. S Rising edge

P-10 Function Input 2 — F. in2

- dis Disabled
- rES Reset

I3

P-05 Hardware Input 3 — H. in3

- PnP PNP
- tTL TTL
- Pot Potent.

P-08 Active State Input 3 — A. in3

- HLEv High Level
- LLEv Low Level
- r. S Rising edge

P-11 Function Input 3 — F. in3

- dis Disabled
- UAit Wait
- HoLd Hold
- SEt1 Potent. To SET1
- SEt2 Potent. To SET2

P-24 Potentiometer calibration — PtAr

- dis Disable
- En Enable

Key UP

P-12 Function Key UP — F. uP

- dis Disabled
- StSt Start / Stop (Note 2)
- StSr Start / Stop-Reset (Note 3)
- rSSt Reset-Start / Stop (Note 4)
- rSS Reset / Start / Stop
- rES Reset
- UAit Wait
- HoLd Hold

SETPOINT CONFIGURATION

P-16 Format Set 1 — Fo. 1

- SSCC Second,Hundredth
- SSSd Second,Tenth
- SSSS Second
- MMSS Minute,Second
- HHMM Hour.Minute
- HHHH Hour

P-17 Format Set 2 — Fo.2

- SSCC Second,Hundredth
- SSSd Second,Tenth
- SSSS Second
- MMSS Minute,Second
- HHMM Hour,Minute
- HHHH Hour

P-18 Display Set 1 — d. S. 1

- dis Disabled
- ViSu Visualized
- Mod. Modifiable

P-19 Display Set 2 — d. S2

- dis Disabled
- ViSu Visualized
- Mod. Modifiable

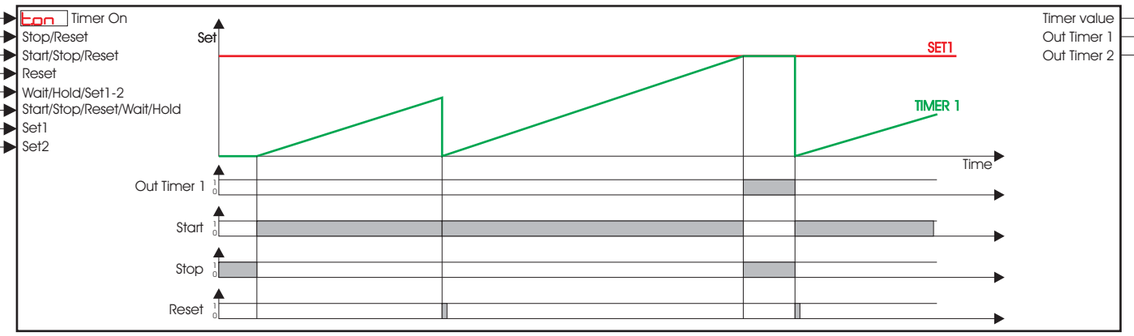
P-20 Lower limit Set 1 — LoS. 1

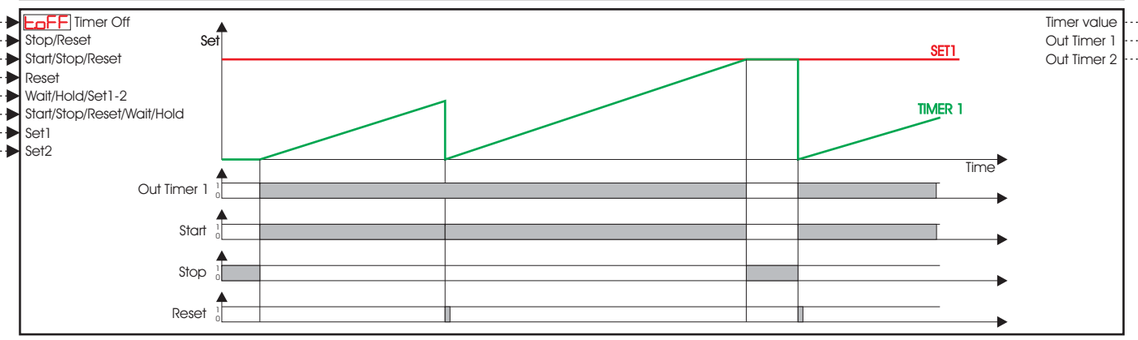
P-21 Upper limit Set 1 — uPS. 1

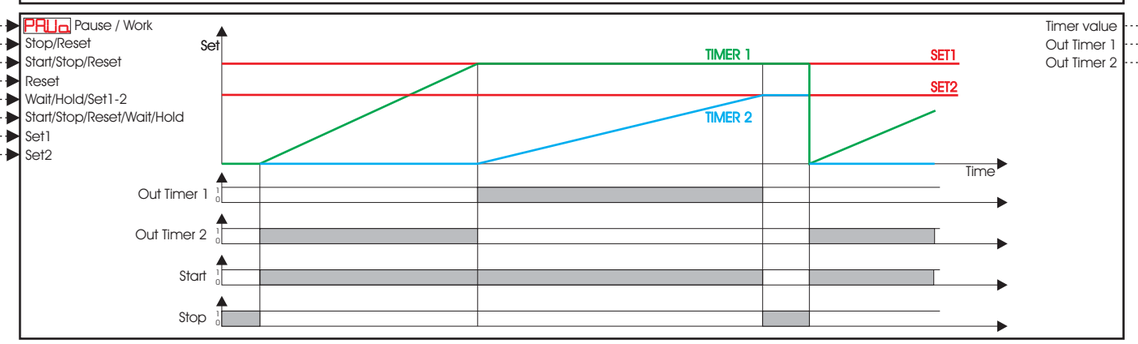
P-22 Lower limit Set 2 — LoS2

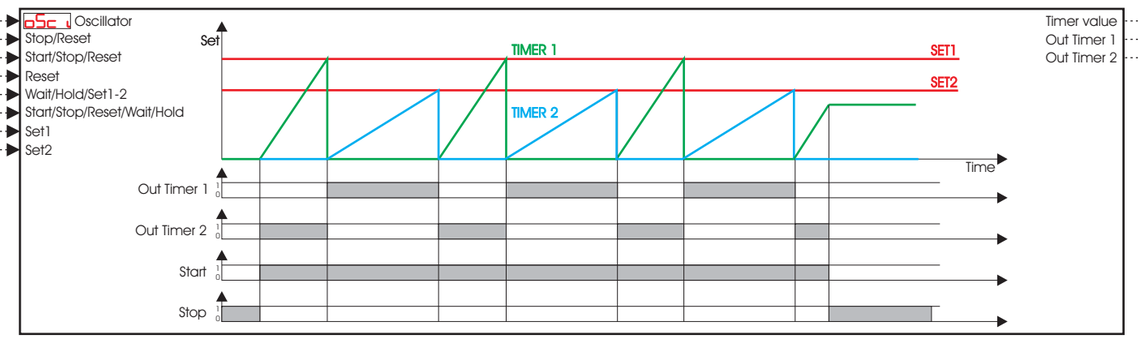
P-23 Upper limit Set 2 — uPS2

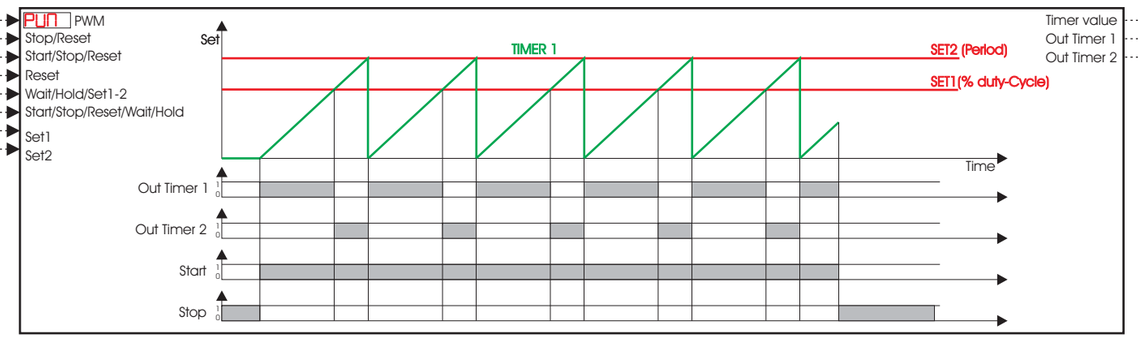
Note 1: *In this timer mode, if P-06 Active State Input 1 = Rising Edge or P-09 Function Input 1 = Disable, at the end of the count (reaching the set), the timer automatically goes to STOP.*
Note 2: *This function does not reset the timer value, therefore requires an input for reset.*
Note 3: *This function resets the timer at the instant of the STOP command.*
Note 4: *This function resets the timer at the instant of the START command.*
Note 5: *This function is active only if P-06 Active State Input 1 = Rising Edge*











DISPLAY CONFIGURATION

P-15 Type of Timer — tYPE

- incr Incremental
- dEcr Decremental

OUTPUT CONFIGURATION

P-13 Output Q1 Setup — out 1

- dis Disabled
- t.no Out Timer 1 n.o.
- t.nc Out Timer 1 n.c.
- t2no Out Timer 2 n.o.
- t2nc Out Timer 2 n.c.
- StAr Start
- StoP Stop

P-14 Output Q2 Setup — out2

- dis Disabled
- t.no Out Timer 1 n.o.
- t.nc Out Timer 1 n.c.
- t2no Out Timer 2 n.o.
- t2nc Out Timer 2 n.c.
- StAr Start
- StoP Stop

Q1

Q2

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

- E-01 ERROR in WRITING of EEPROM Memory (Note 1)
- E-02 ERROR in READING of EEPROM Memory
- E-03 Incorrect parameters (Note 1)
- E-04 Incorrect calibration data (Note 1)
- E-05 Incorrect status data (Note 1)
- E-06 Incorrect BACKUP registersl (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 power supply in order to recharge the battery.

⚠ In PWM mode, the only option available on parameters 16 FoS1 and 17 FoS2 for format of SET1 and SET2 is SSSS (seconds). Low and upper limits for SET1 (related to percentage of work or Duty Cycle) are allowed in the range 0 ... 100 (%).