



102 1

STOP

START

μ μ

102 2

μ

Χαλαρήνη ζε...

102 2

φάλαγγα...

μ μ

# Zelio Logic SF2 B121FU Telemecanique

102 1

μ μ

μ

Όργανο πρ...

Χαλαρήνη ζε...

μ μ

μ μ

Εφαρμογή γραμμού μετά από  
και άμεση διαδικασία μέτρησης

Αυτή είναι η...

αποστολή...

μ μ μ

---

μ μ μ μ  
**Zelio Logic SF2 B121FU**  
**Telemecanique**



PLC

(Programmable Logic Controllers)

PLC.

PLC

PLC

Betford,

MOdular Digital CONTroller,

Modbus

MODICON.

MODICON 084.

1973,

90,

IEC 1131-3.

Telemecanique,

panels

P.L.C.

SMART RELAYS

Telemecanique.

Telemecanique  
Gerin

Schneider Electric,

Merlin

1

2

3

menu

Telemecanique.

4

Ladder FBD,

SR2 SOFT01.

smart relay.

5

6

.....	3
.....	4
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(P.L.C.)



μ 1 :

- 1.1. μ μ μ μ
- 1.2. μ μ μ μ
- 1.3. μ μ μ
- 1.4.
- 1.5.
- 1.6. μ μ
- 1.7. μ
- 1.8. μ P.L.C.





1.2.5.1.

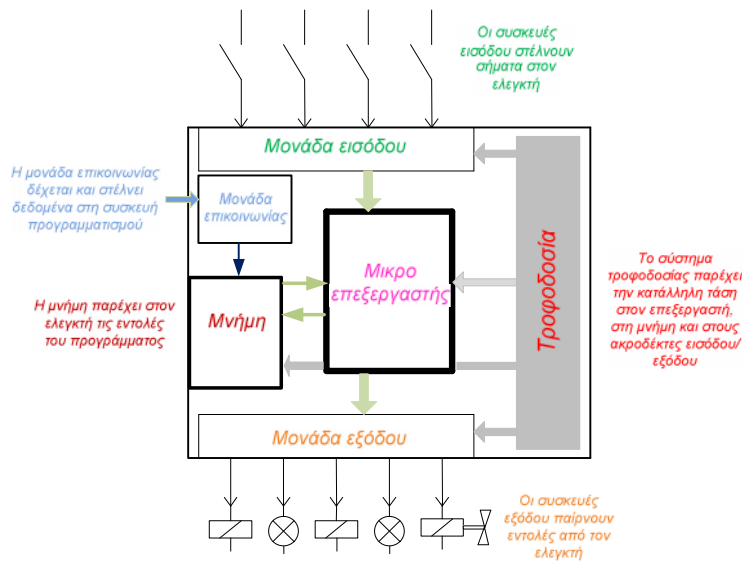
- μ ROM (Read Only Memory).** Η μ ROM είναι μνήμη που δεν μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει.
- μ PROM (Programmable Read Only Memory).** Η μ PROM είναι μνήμη που μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει.
- μ EPROM (Erasable Programmable Read Only Memory).** Η μ EPROM είναι μνήμη που μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει.
- μ EEPROM (Electrically Erasable Programmable Read Only Memory).** Η μ EEPROM είναι μνήμη που μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει.

1.2.5.2.

Η μνήμη RAM (Random Access Memory) είναι μνήμη που μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει. Η μνήμη αυτή είναι προεπιλεγμένη και δεν μπορεί να αλλάξει.

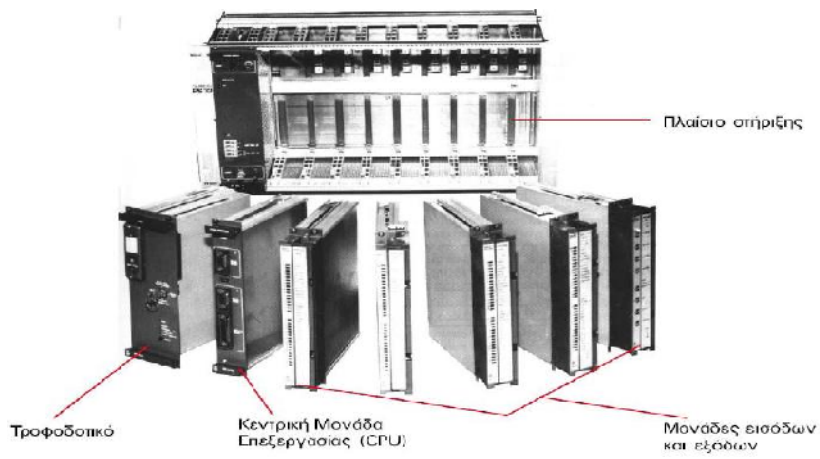
1.2

μ PLC



1.2 μ PLC



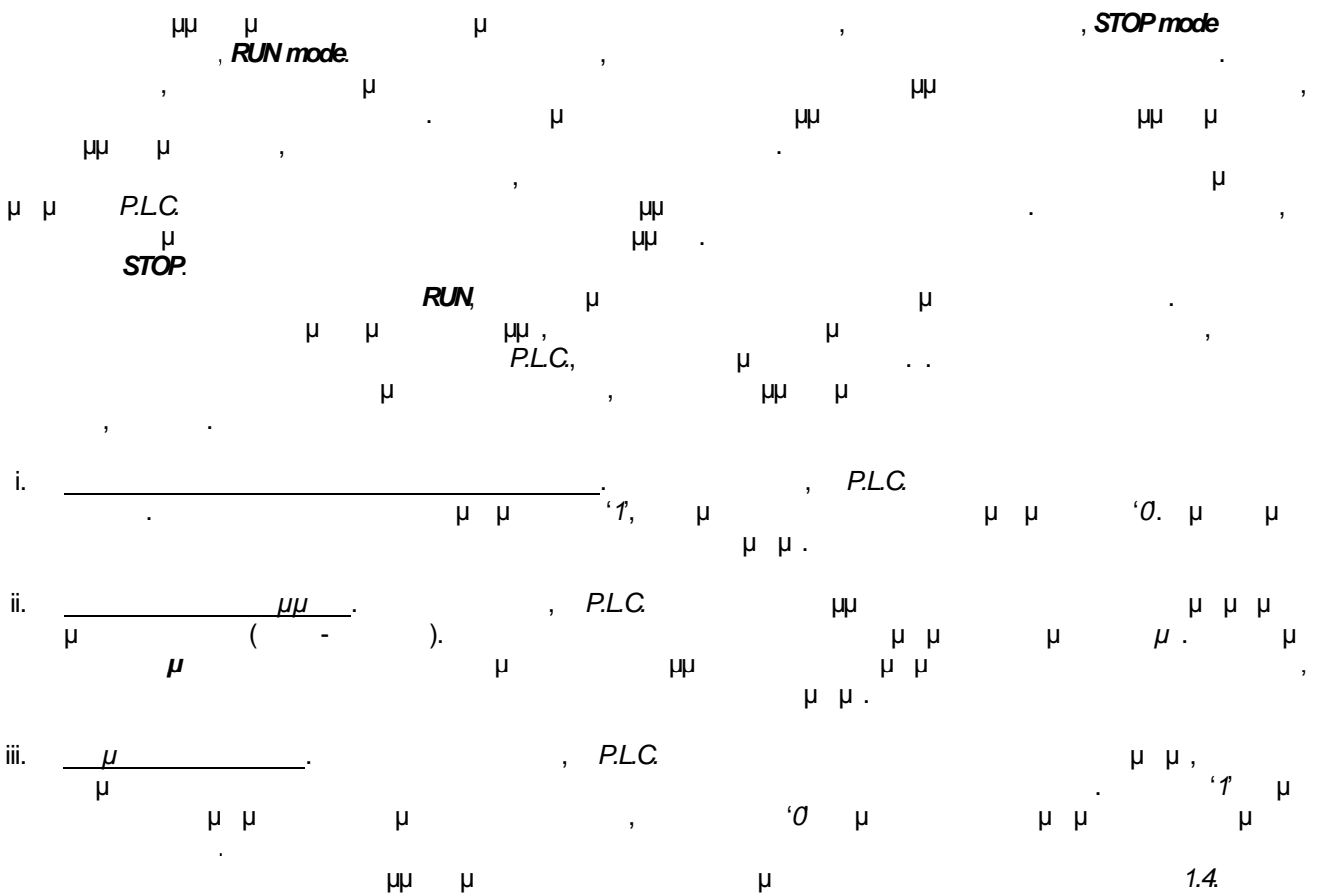


. 1.1.  $\mu$  PLC

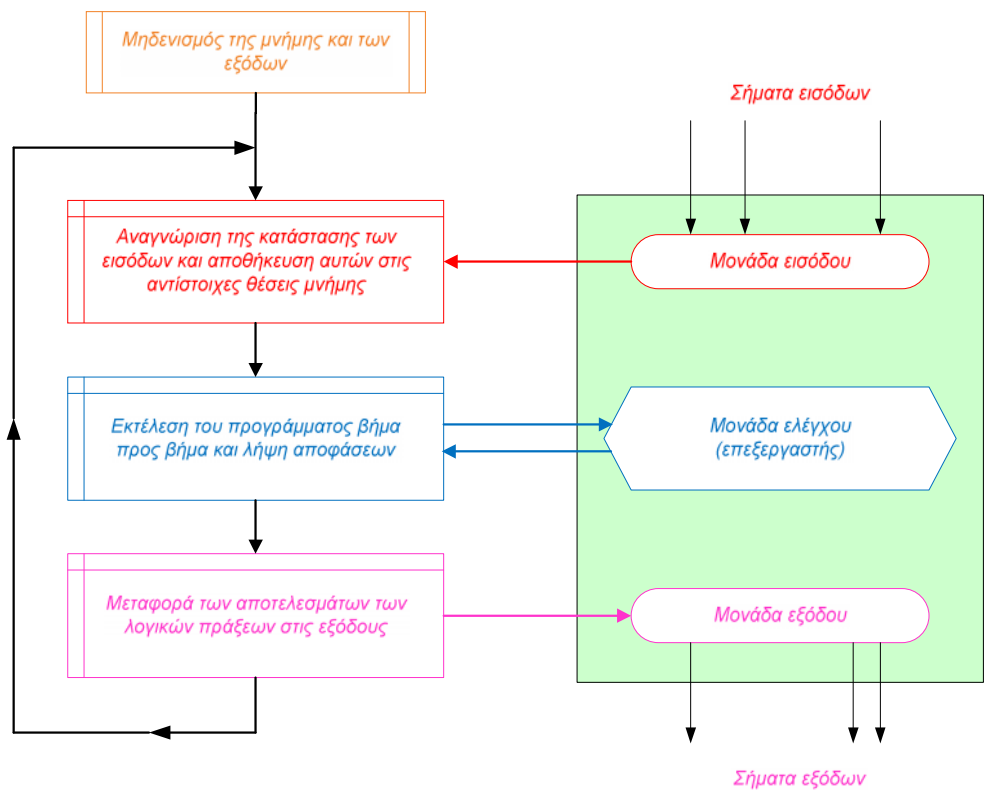




1.6.



- i. \_\_\_\_\_, P.L.C.
- ii. \_\_\_\_\_ ( \_\_\_\_\_ ). P.L.C.
- iii. \_\_\_\_\_, P.L.C.



. 1.4 P.L.C.





✓

μ μ .      μ / ,      μ μ μ μ .      μ μ μ      μ



μ 2 :

- 2.1. μ μ
- 2.2. μ μ
- 2.3. μ μ
- 2.4. μ - μ μ
- 2.5.

21.

PLC  
 IEC 1131-3  
 PLC  
 PLC

21.1.

PLC

21.1.1.

**Statement List (STL).**  
 Boolean.  
 2.1  
 STL

LD I0.0	0.0 (normally open)
OR Q0.0	0.0
LDN I0.1	0.1 (normally closed)
A I0.2	0.2 (normally closed)
LD =Q0.0	
I0.0: START I0.1: STOP I0.2: Q0.0: ( )	

21.1.2.

C

21.2.





























**SMART RELAY: ZELIO LOGIC SR2 B121FU**



μ 3 :

- 3.1. μ μ μ Zelio Logic
- 3.2. μ μ μ Zelio Logic SR2 B121FU
- 3.3. μ μ μ Zelio Logic SR2 B121FU
- 3.4. μ μ μ SR2 SFT01
- 3.5. μ μ μ SR2 USB01
- 3.6. μ μ μ
- 3.7. μ μ μ Zelio Logic

3.1.

**ZELIO LOGIC**

Telemecanique Telemecanique  
 Zelio Logic SR2 B121FU smart relays.  
 .3.1.

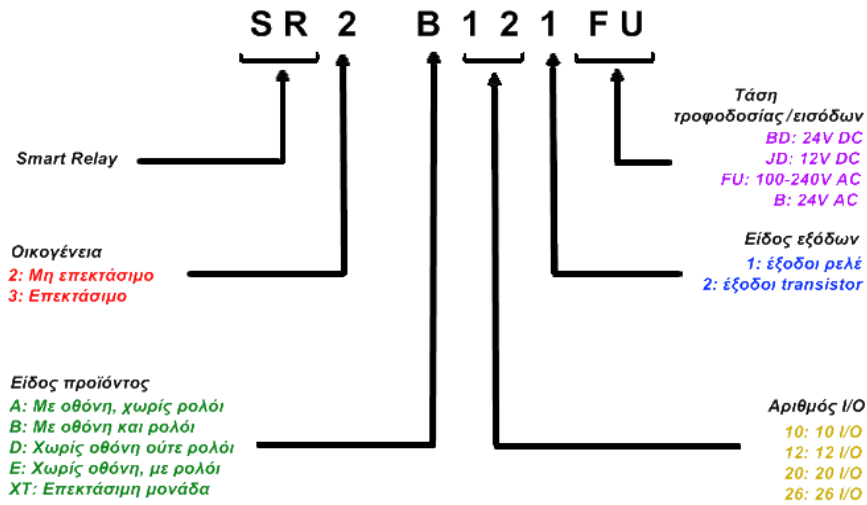
**Zelio Logic SR2 B121FU**

- 
- 
- 
- 



. 3.1. Zelio Logic SR2 B121FU.

.3.1

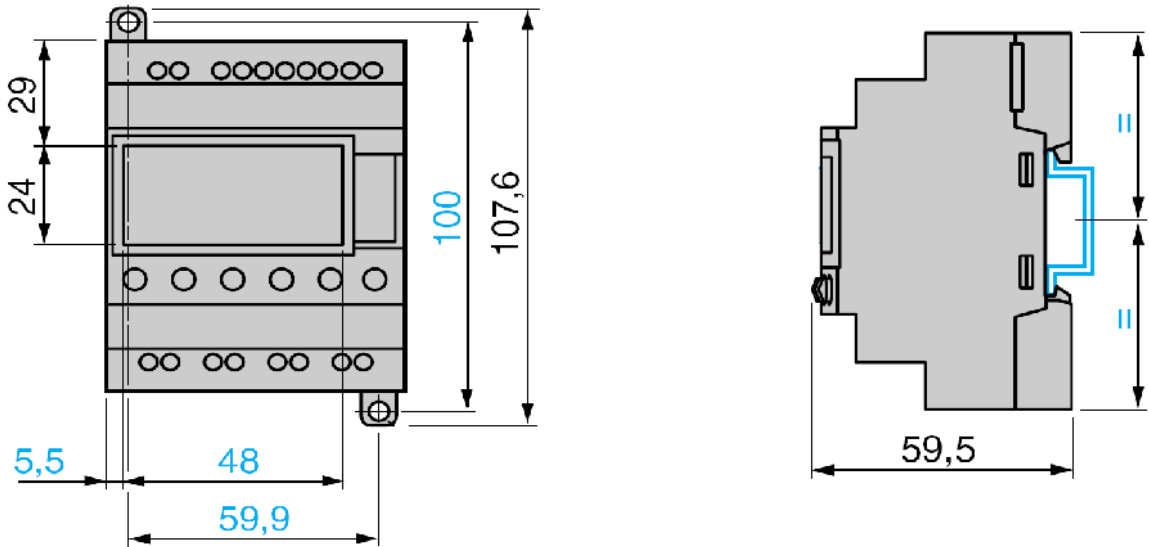


.31.

3.2

**ZELIO LOGIC SR2 B121FU**

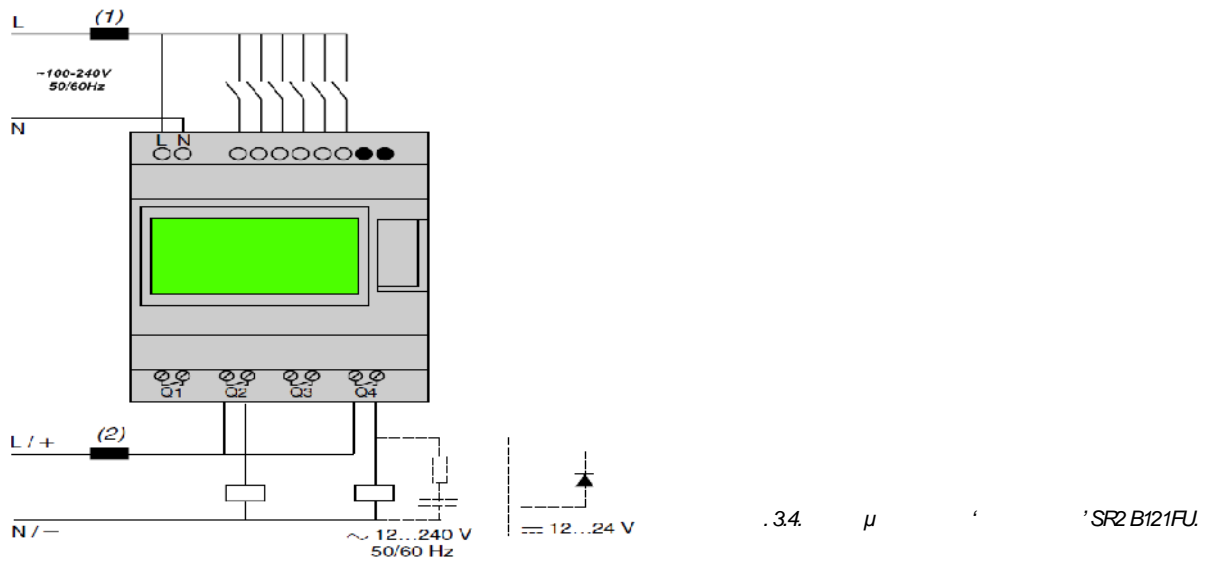
3.2 3.3 μ 6cm



.32 3.3 μ Zelio Logic SR2 B121FU.

3.2.1.

Zelio Logic SR2 B121FU Telemecanique 8 μ μ μ  
μ (1...8). μ μ μ 3.4 μ μ μ  
(CPU). μ μ μ μ μ μ μ μ Q μ  
μ (Q1...Q4).



3.2.2

**Zelio Logic SR2 B121FU**

**SR2 SFT01.**

**IEC 1131-3**, **Ladder diagram**, **Function Block Diagram**, **Sequential Function Chart**, **FBD**

software. **Telemecanique** **Zelio**

3.3.

**SR2 B121FU**, 3.1.

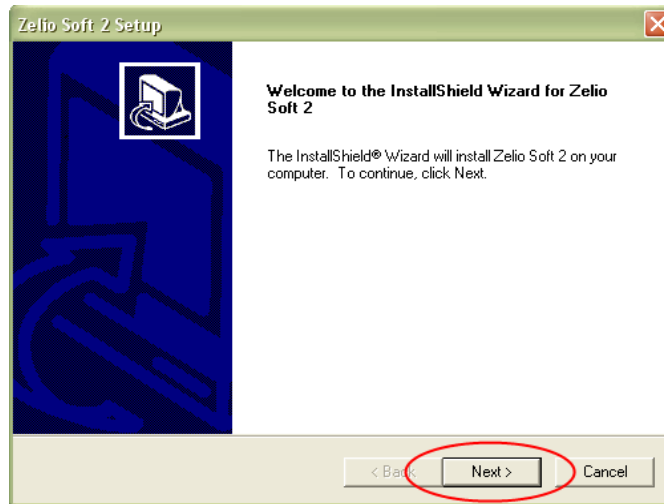
3.1. **SR2 B121FU**.

$\mu$	8
$\mu$	0
$\mu$ ( )	4
$\mu$	0
$\mu\mu$ $\mu$	Ladder/FBD (SFC)
$\mu$ $\mu\mu$ $\mu$	Zelio Soft 2 (SR2 SFT01)
$\mu$ $\mu\mu$ $\mu$	SR2 CBL01 SR2 USB01 SR2 BTC01
$\mu$ $\mu$	SR2 MEM02





Zelio Logic Internet Explorer. Quit, .3.7.  
 >Install Zelio Soft, menu μ . . . >Documentation >Utilities, .3.7.

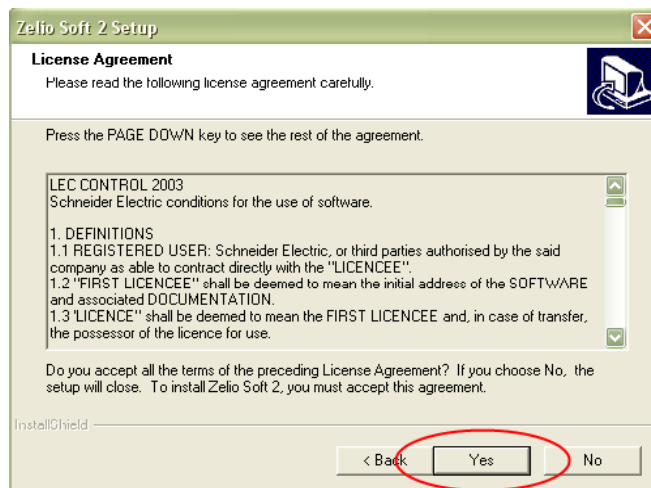


.3.7. μ

Next,

. μ μ , μ

.3.8



.3.8.

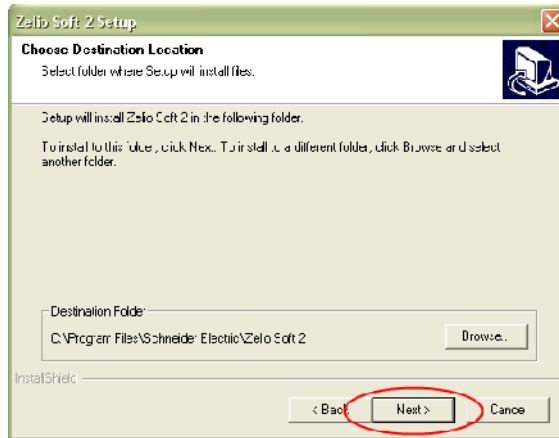
No, μ

Yes,

SR2 SFT01 μ

.3.9.

Next.



. 3.9

μ

**Next**

μ

μ

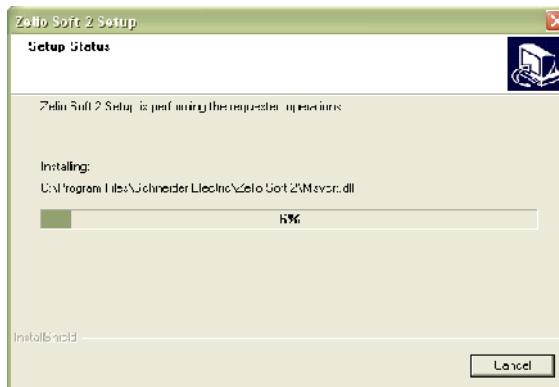
μ

μ

μ

,

. 3.10 μ )



. 3.10

**Cancel**  
μ

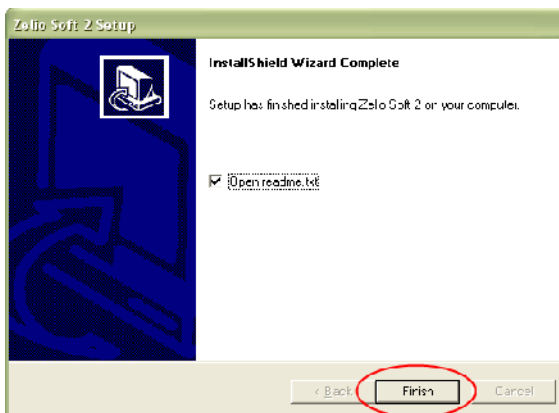
μ

,

μ

100% μ

. 3.11



. 3.11

μ







Continue Anyway.  
Continue Anyway, μ

STOP Installation,  
. 3.17.



. 3.17. μ μ

Finish, μ

SR2 USB01

USB

SR2 USB01 Zelio Logic.

. 3.13.

μ , Install the software automatically (Recommended).

Next, μ

Next, μ

. 3.16.

Continue Anyway. μ μ

Finish, μ

μ μ

. 3.17.

USB  
SR2 USB01

USB

. 3.18.



. 3.18. μ USB.

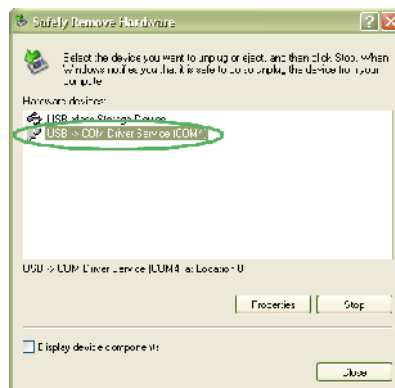
μ μ

μ

. 3.19.

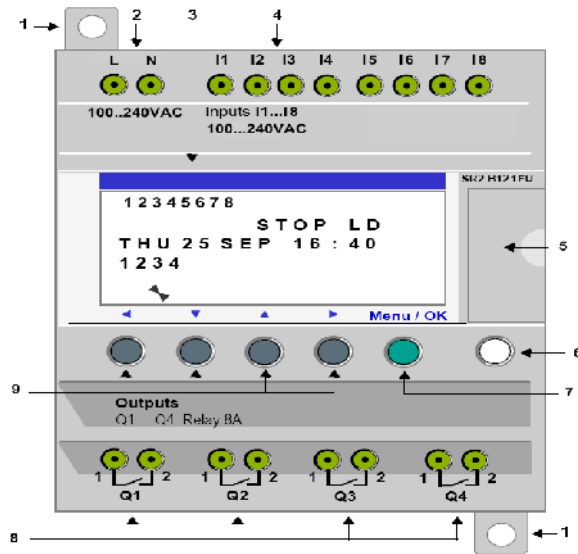
SR2

USB01 μ μ μ USB COM Driver Service (COM..).



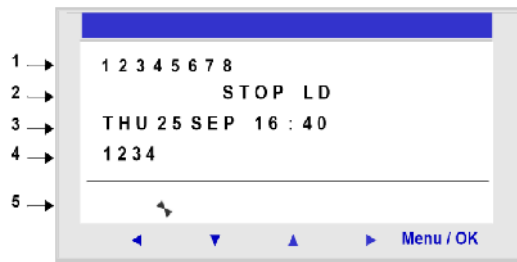
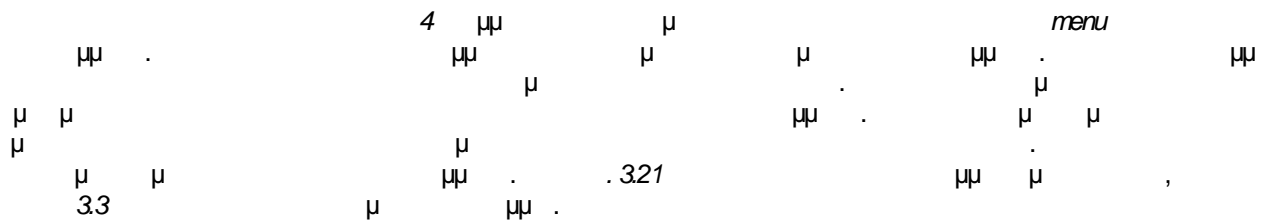
. 3.19. USB





3.5. SR2 B121FU.

### 3.6.2 Zelio Logic

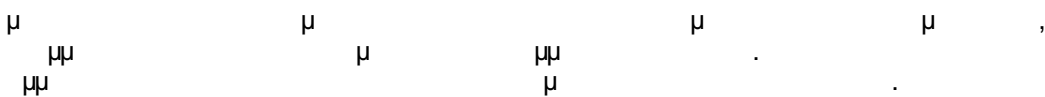


3.21. smart relay.

3.3. mu mu .

1	mu		
2	mu	(RUN/STOP)	mu mu LD FBD
3	mu	mu mu	
4	mu		
5	mu	/mu	

### 3.6.3.





3.7.3. PARAMETER

PARAMETER  
 SR2 SFT01 smart relay  
 Ladder, FBD, Menu/Ok menu  
 Menu/Ok Shift.  
 (NO PARAMETER).

3.7.4. RUNSTOP

STOP RUNSTOP  
 (RUN STOP)  
 STOP RUN

3.7.4.1. With nonvolatile init

NO VOLATILE INIT,

3.7.4.2. No volatile init

,

3.7.4.3. No

NO, menu STOP.  
 . 3.23.



. 3.23. RUNSTOP.

RUN STOP, Menu/Ok Menu/Ok

3.7.5. CONFIGURATION

CONFIGURATION STOP

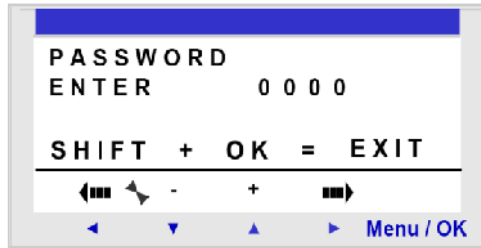
3.7.5.1. PASSWORD

PASSWORD

menu

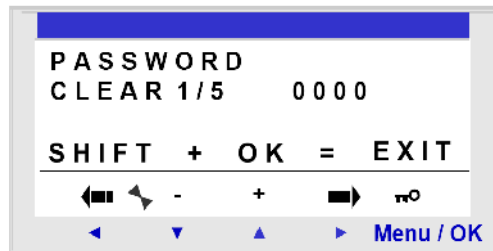
- PROGRAMMING
- MONITORING
- CONFIGURATION
- CLEAR PROGRAM
- TRANSFER

PASSWORD, . 3.24.



. 3.24. PASSWORD.

Menu/Ok smart relay P.L.C.



. 3.25.

30 min. 30 minutes Shift Menu/Ok smart relay

3.7.5.2. FILTER

FILTER

STOP FAST SLOW. 3.4. Menu/Ok



SLOW	'0'	3ms
	'1'	5ms
FAST	'0'	0.3ms
	'1'	0.5ms

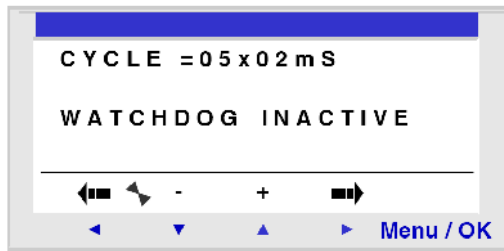
3.7.5.3  $\mu$  Zx

Ladder.  
 YES,  $\mu$  Zx  
 STOP.  
 NO,  $\mu$  Zx  
 relay. smart

3.7.5.4 CYCLE & WATCHDOG

6ms 90ms.  
 CYCLE & WATCHDOG,  
 CYCLE & WATCHDOG,  $\mu$

3.26.



3.26. CYCLE & WATCHDOG.

WATCHDOG  
 Cycle time overrun  
 FAULT menu (  
 STOP  $\mu$   
 INACTIVE).  $\mu$  ( ERROR).  
 Menu/Ok  
 Menu/Ok Shift.  
 CYCLE & WATCHDOG

3.7.6. CLEAR PROGRAM

CLEAR PROGRAM  
 Ladder. smart

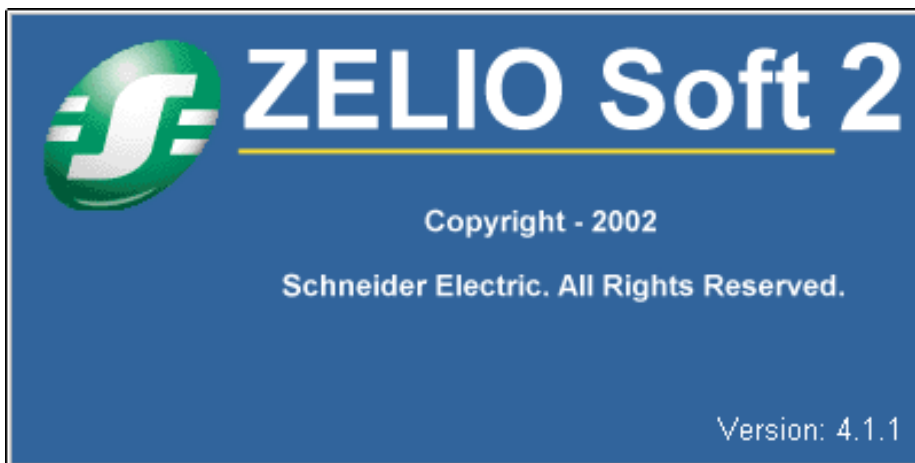








: ZELIO SOFTWARE SR2 SFT01



μ 4

4.1. μ Zelio Soft 2  
4.2. μμ μ Smart Relay

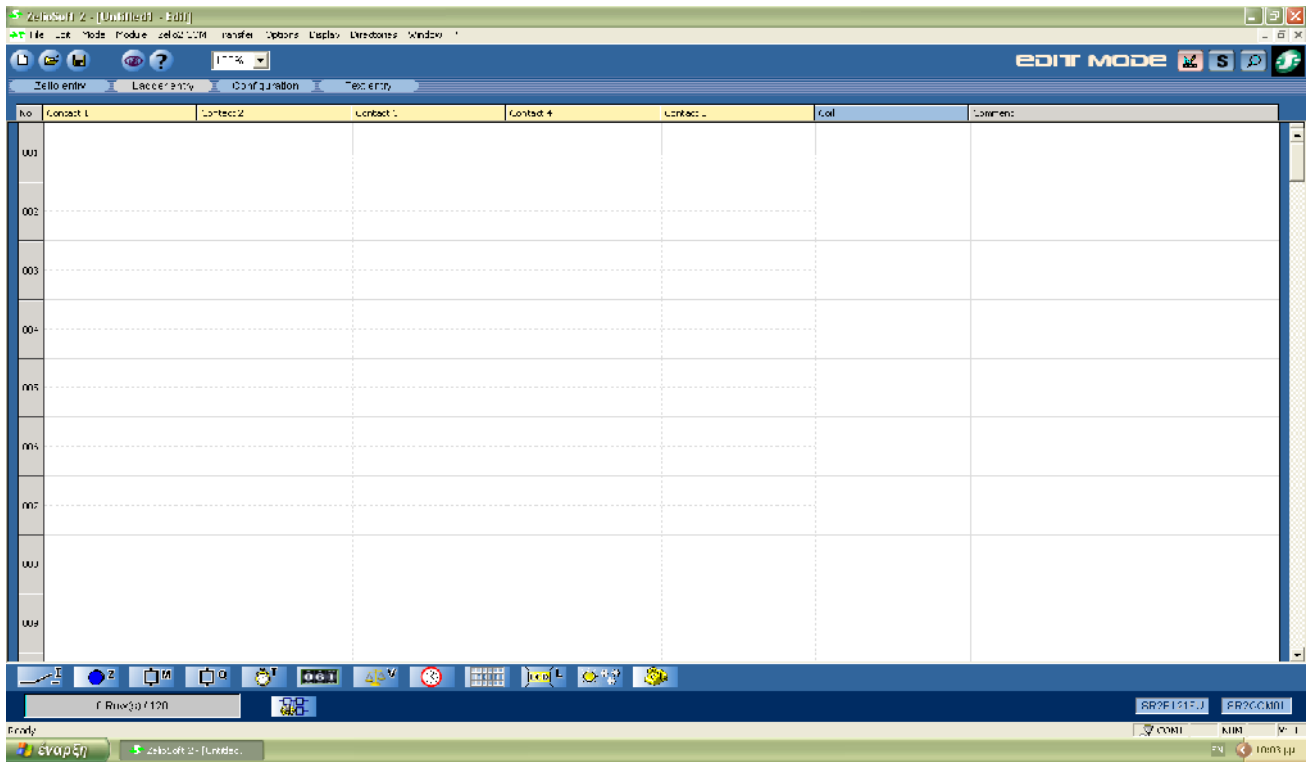






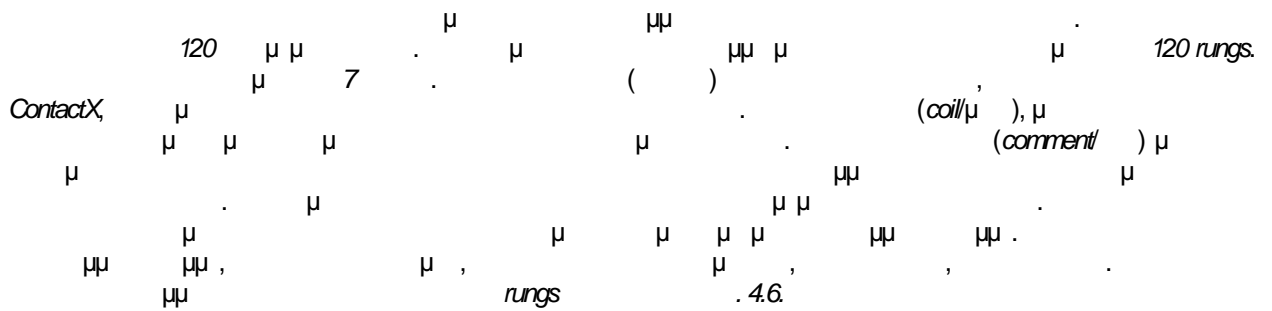
4.1.1.1. Ladder

. 4.5.



. 4.5.

Ladder.



. 4.6.

No	Contact 1	Contact 2	Contact 3	Contact 4	Contact 5	Coil	Comment
001						SC	άσκηση γερανοζυγιστας
002						RC	σπινδαλιος κλητηρας

. 4.6.

μ μ 2 rungs.



. 4.7, μ



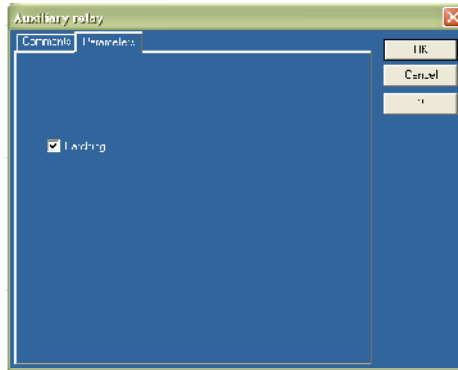




Parameters window, Comments. . 4.16

Parameters, Latching, .

relay. Latching, Locking. smart



. 4.16

. 4.17

No	Q	L	I	S	R	Comment
01	Q1	L	I	S	R	
02	Q2	L	I	S	R	
03	Q3	L	I	S	R	
04	Q4	L	I	S	R	

. 4.17

(Timers)

Zelio Logic

16

. 4.18

No				Comment
01	T1	T	R	
02	T2	T	R	
03	T3	T	R	
04	T4	T	R	
05	T5	T	R	
06	T6	T	R	
07	T7	T	R	
08	T8	T	R	
09	T9	T	R	
10	TA	T	R	
11	TB	T	R	
12	TC	T	R	
13	TD	T	R	
14	TE	T	R	
15	TF	T	R	
16	TG	T	R	

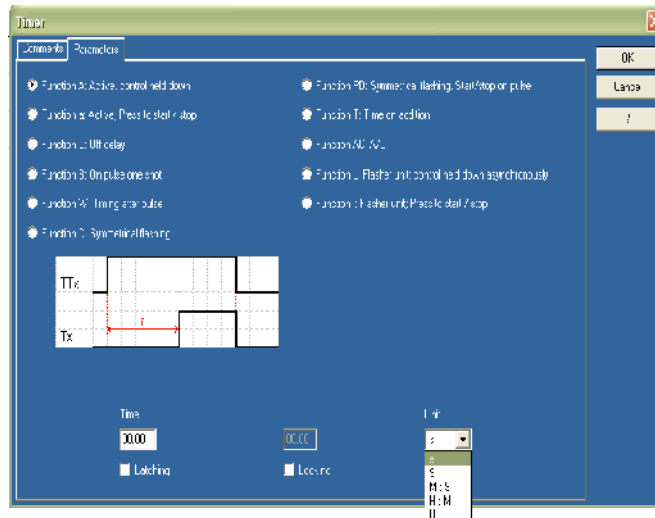
4.18.

Parameters window, menu Parameters, menu Comments.

Function A

Tx

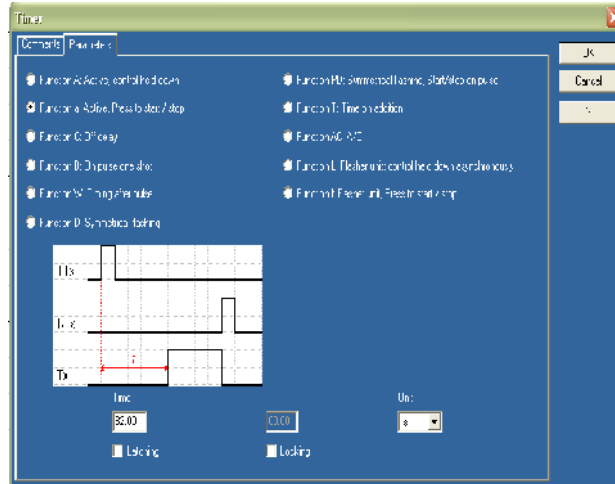
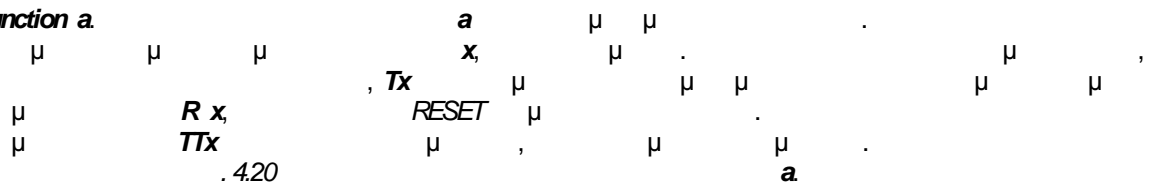
4.19



4.19.

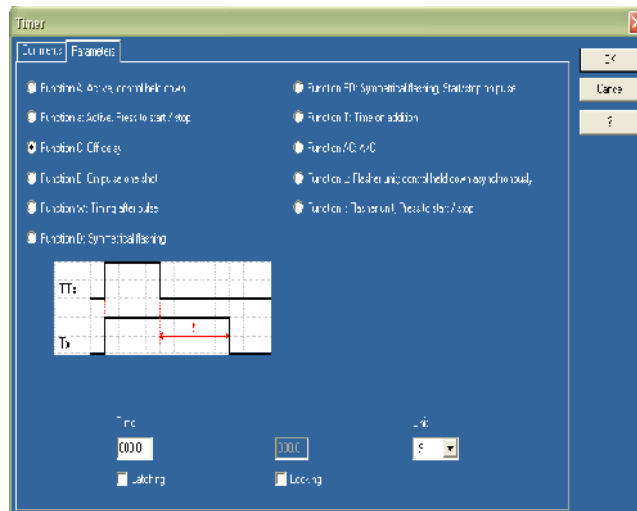
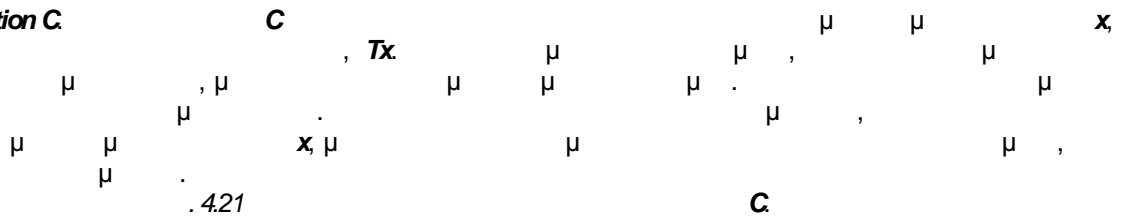
Time, Unit, 99.99sec, 99min : 99sec, 99h : 99min, 9.999h

➤ **Function a**



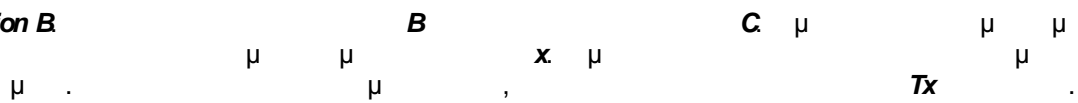
. 420.  $\mu$  a

➤ **Function C**

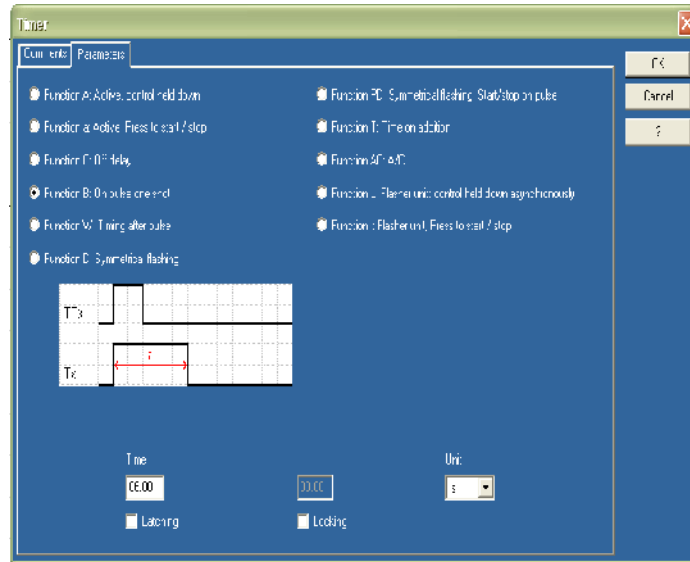


. 421.  $\mu$  C

➤ **Function B**

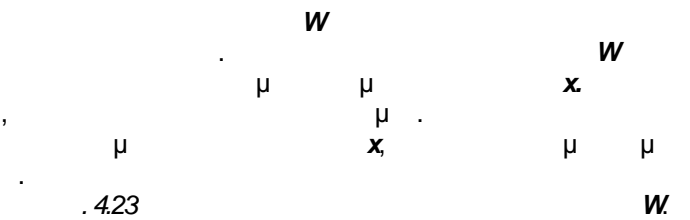


. 4.22



. 4.22.

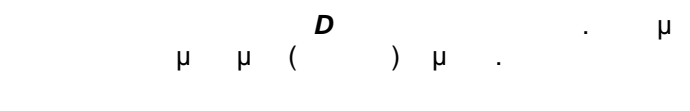
➤ **Function W.**



. 4.23

. 4.23.

➤ **Function D.**









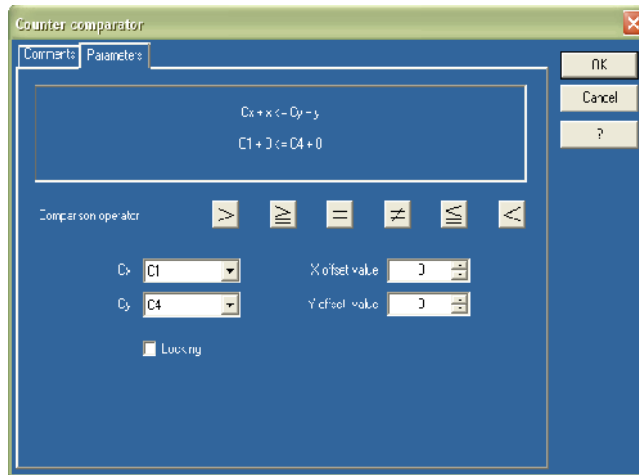






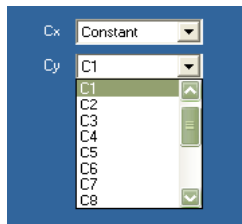


Parameters window, 8, V1...V8, vx, vx, . 4.38.



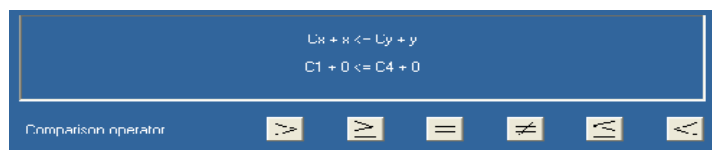
. 4.38.

C1...C8, Cx, Cy, Constant, . 4.39.



. 4.39.

( . 4.40).



. 4.40.

( . 4.41).









**Summer/Winter**

**Summer/Winter**

μ μ

μ

smart relay

μ

.450.

No	Comment
01	W1

.450. Summer/Winter.

μ

μ

μ

μ

.451.



.451. μ μ

SumWIn.

**Change summer/winter time.**

menu smart relay,

μ SR2 SFT01.

μ

μ

**Comments,**

**Message**

**Message**

μ μ

μ

smart relay

μ

P.L.C.

SR2 COM01.

Message

μ

μ

μ

SR2 COM01.

μ

μ

μ

μ

.452.

(S1...S9 SA...SV)

28

μ

μ μ

μ

μ

normally open

μ

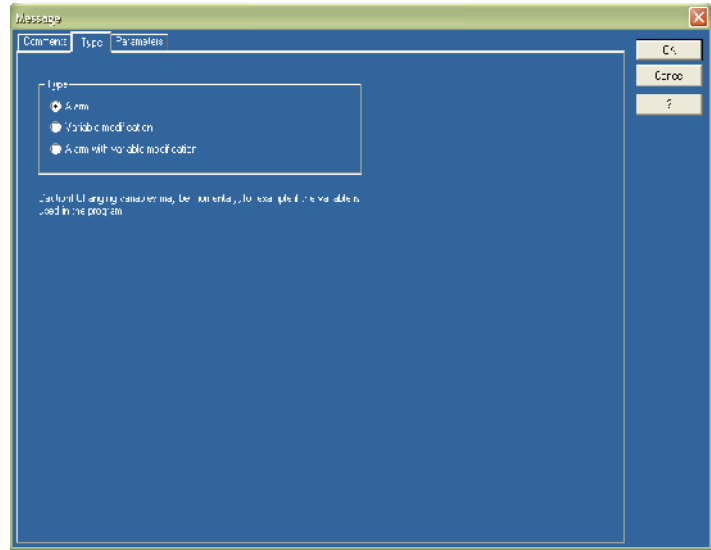
normally closed.

OFF.

No	Comment	No	Comment
01	S1 T	15	SF T
02	S2 T	16	SG T
03	S3 T	17	SH T
04	S4 T	18	SJ T
05	S5 T	19	SK T
06	S6 T	20	SL T
07	S7 T	21	SN T
08	S8 T	22	SP T
09	S9 T	23	SQ T
10	SA T	24	SR T
11	SB T	25	SS T
12	SC T	26	ST T
13	SD T	27	SU T
14	SE T	28	SV T

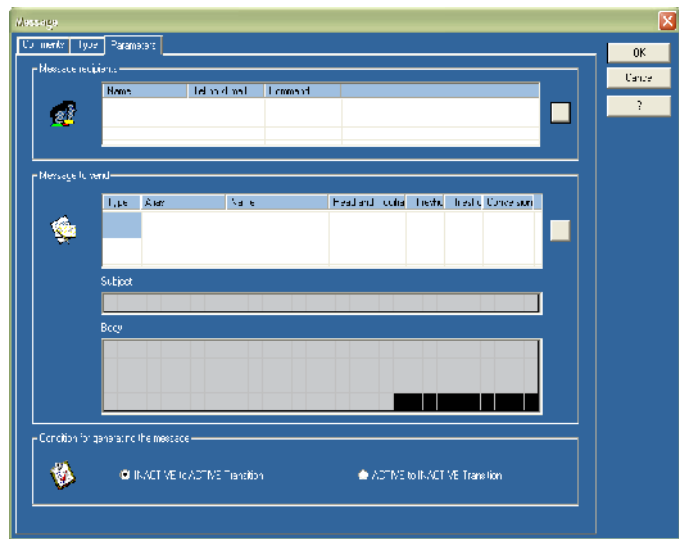
.452. μ μ

Comments, Type tab, . 4.53 4.54.



. 4.53. /Type tab.

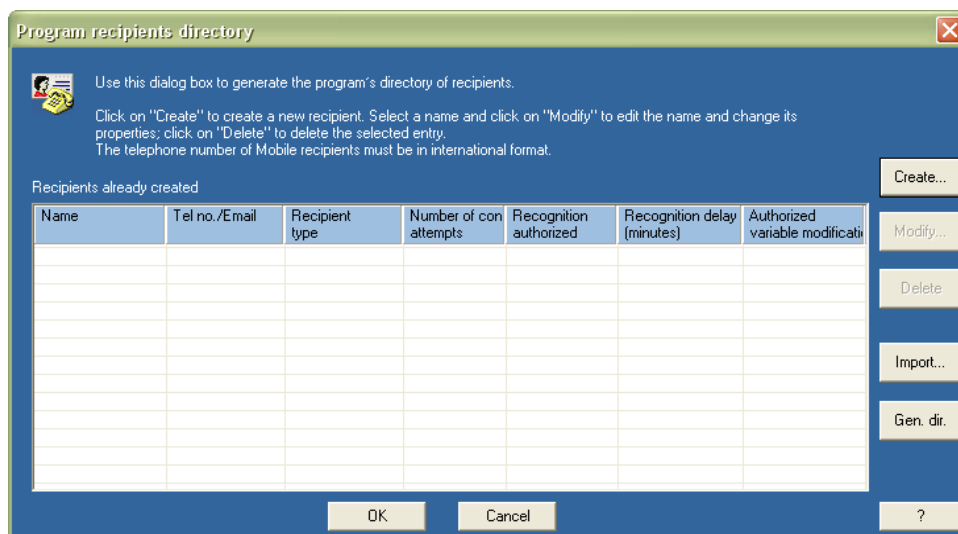
Parameters tab, Directories, Program recipients directory, Variable modification, Type tab.



. 4.54. /Parameters tab.

recipients directory,  
4.55.

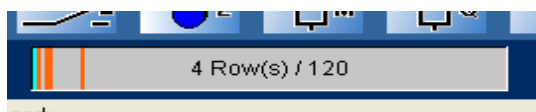
Directories Program



. 4.55.

Create...  
Ok,  
smart relay.

. 4.56,

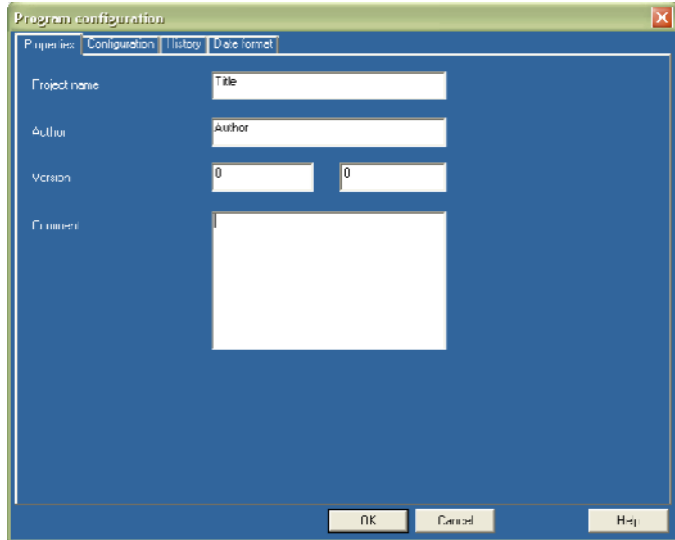


. 4.56.

. 4.56,  
Program properties.  
menu smart relay.  
. 4.57.,  
. 4.58.



. 4.57. Program properties.



. 4.58.

μμ .

, **Properties,** μμ μ μ μ μ μ

μ . μ μ μ μ μ μ μ

**Configuration,** μ . 4.59.

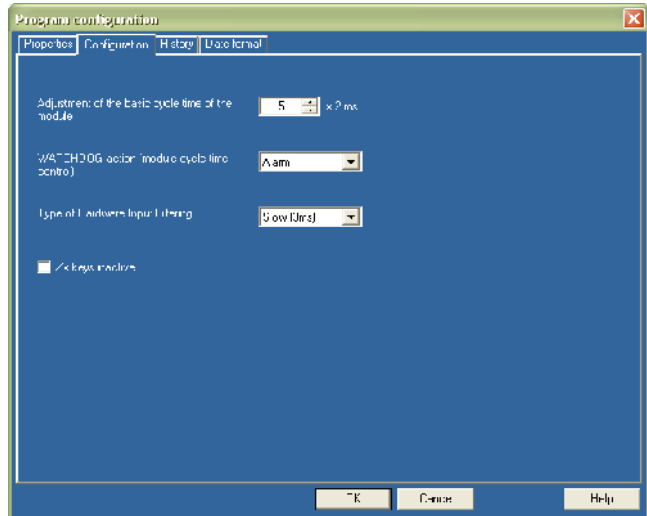
μμ μ μ μ 6ms 90ms.

Watchdog, μ μ μ μ μ

, alarm, error inactive. μ

, 3ms 0.3ms. μ

μ menu smart relay. x



. 4.59.

μμ .

μ μ μ μ μ μ μ

. 4.60, μμ μ μ μ μ μ μ μ μ μ μ .

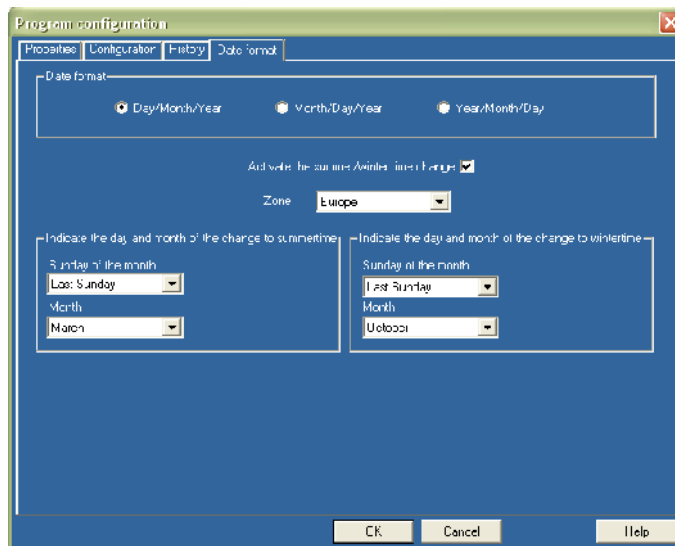
Change summer/winter time. μ μ μ μ μ μ μ μ μ μ μ .

μ μ μ μ μ μ μ μ μ μ μ μ μ μ μ μ .

μ μ μ μ μ μ μ μ μ μ μ μ μ μ μ μ μ .

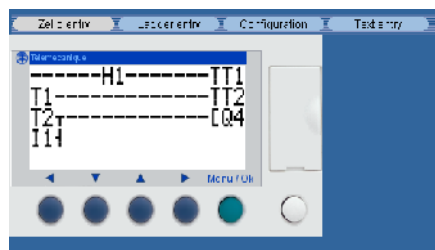
Change summer/winter time, μ μ μ μ μ μ μ μ μ μ μ μ μ μ μ μ .

Ok, μ μ FBD μ μ Cancel, μ



.460. μ μ μ

smart relay μ μ .461 μ Zelio Logic. μ Zelio entry, μ Zx, Menu/Ok Shift



.461. smart relay.

μ , Ladder entry, μ Ladder μ μ , Configuration, μ μ .462. μ μ

Zelio entry   Ladder entry   Configuration   Text entry						
No	Function	Label	Type	Preset	Lock	Comment
001	Timer	T1	W: Timing after pulse	T1 = 010.0 S	No	
002	Timer	T2	D: Symmetrical Flasher Unit; Control Held Down	T2 = 002.0 S	No	
003	Clock	⊕1			No	

.462. μ

μ μ μ μ μ μ μ μ μ μ μ μ . 4.63 4.64 μ μ μ μ μ μ μ μ μ .

Zero entry Ladder entry Configuration Text entry

No Block Comment

### Discrete inputs

No	Block	Comment
01	I1	χειροκίνητη ενεργοποίηση της εξόδου
02	I2	χειροκίνητη ενεργοποίηση της εξόδου
03	I3	
04	I4	
05	I5	
06	I6	

.4.63

### Timers

01	T1	ενεργοποιείται για 10sec οπότε απενεργοποιηθεί η επαφή του ρολογιού πραγματικού χρόνου
02	T2	αναγκάζει την έξοδο Q4 να αλλάζει διαδοχικά καταστάσεις κάθε 2sec για 10sec.
03	T3	
04	T4	
05	T5	

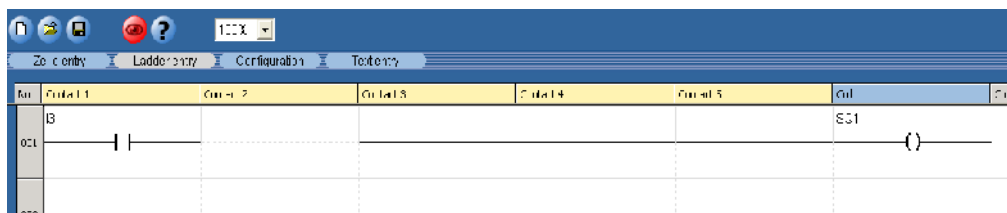
.4.64

μ Ladder, μ μ μ . 4.65



.4.65

μ μ μ μ μ μ μ μ μ μ μ μ μ μ . 4.66 μ μ μ μ μ μ μ μ μ . 4.67, μ

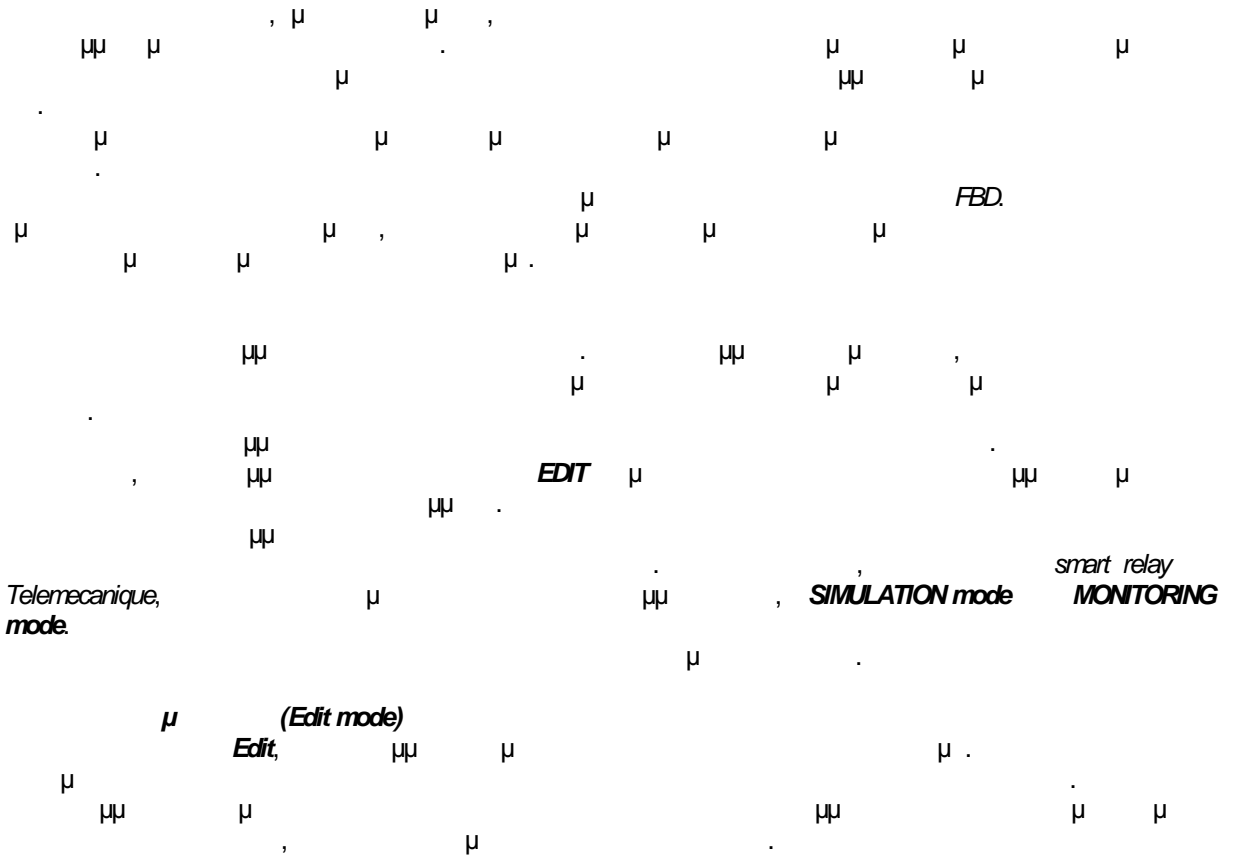


.4.66



Program consistency			
No	Line	Column	Description
001	031	001	Not connected with right-hand cell
002	031	00E	Not connected with left-hand cell
003	031	00E	Q* Rese: input not connected

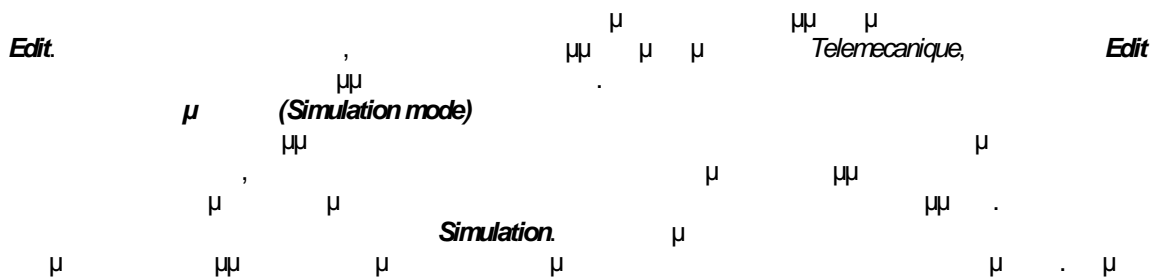
. 4.67.



. 4.68.



. 4.68.





STOP, μ

Edit

(Monitoring mode)

Monitoring, μμ

Simulation.

Simulation

RUN

Simulation  
Simulation

. 4.72.



. 4.72.

(Monitoring mode).

smart relay

P.L.C.

Program properties

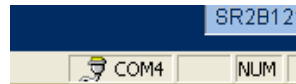
smart relay.

USB

(. 3.18).  
USB

COM Driver Service (COMx).

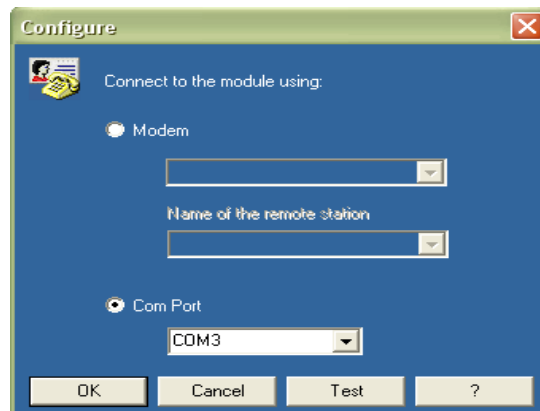
. 4.73



. 4.73.

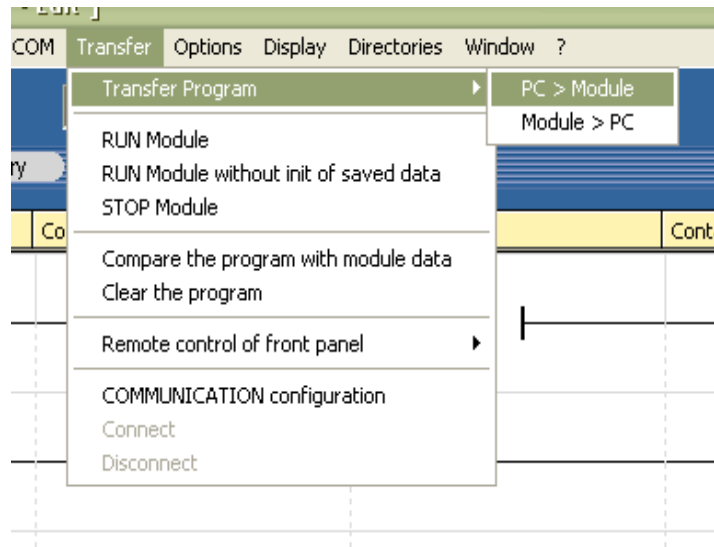
COMMUNICATION configuration.

, Transfer /  
. 4.74

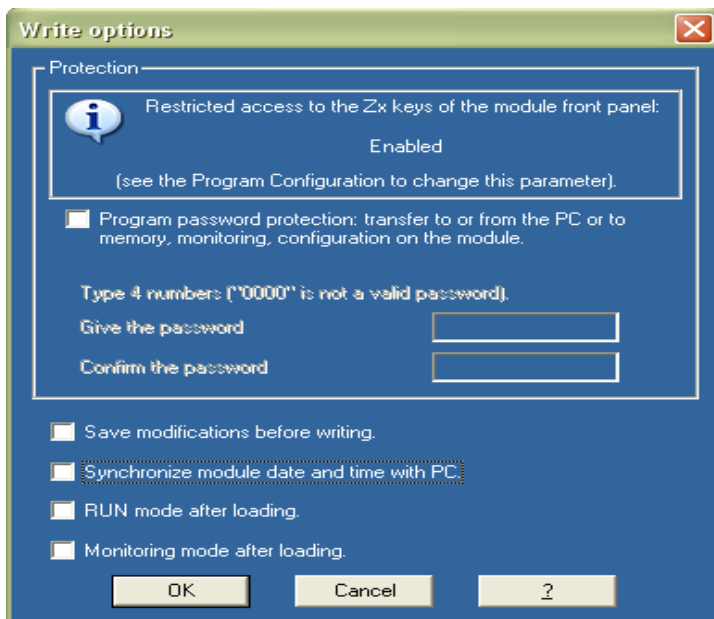


. 4.74.

Ok Transfer Program PC>Module .475 Test smart relay.

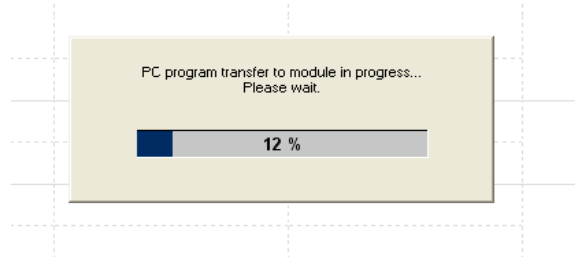


.475 PC>Module, .476 Monitoring RUN smart relay. Zelio Logic.

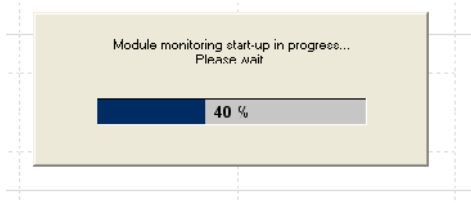


.476 smart relay.

Cancel, Monitoring RUN, Ok, .4.77, .4.78



.4.77. smart relay

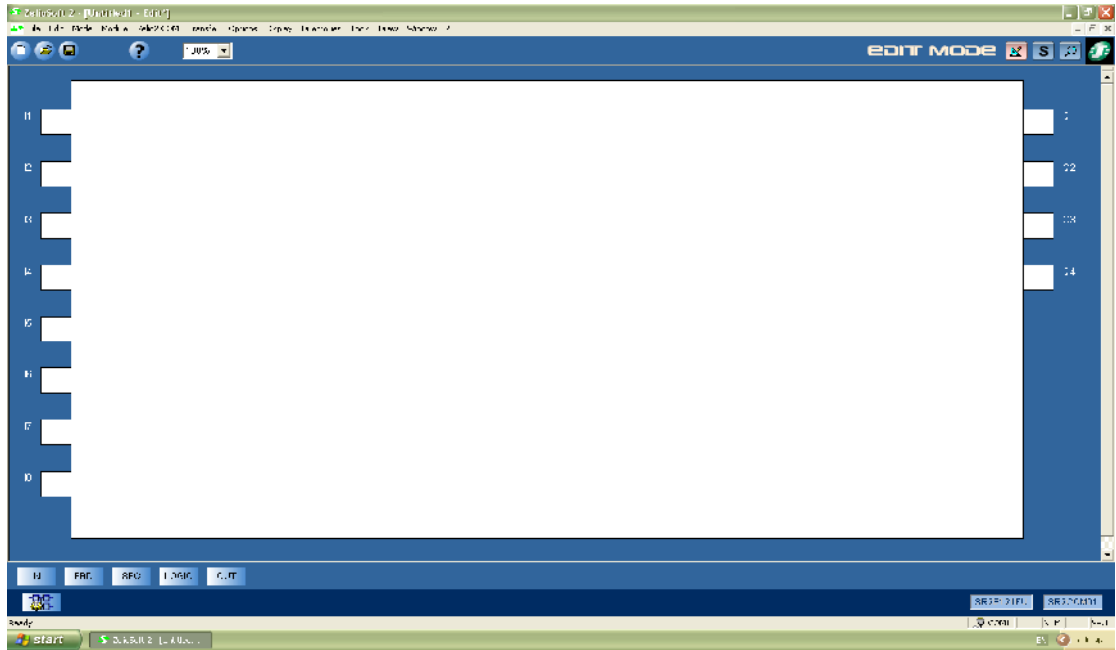


.4.78.

Momentary forcing, maintain, Release, Force and, smart relay, RUN

4.1.1.2 FBD (Function Block Diagram)

blocks, smart relay, FBD, Ladder, (output), (input) block, .4.79.



. 4.79.

FBD.

. 4.80.



. 4.80.  $\mu\mu$

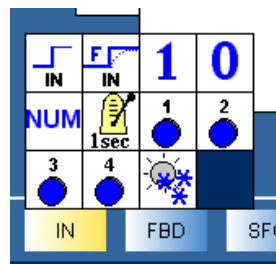
$\mu$

,  $\mu$

$\mu$

FBD.

. 4.81.



. 4.81.



Discrete input

$\mu$

$\mu$

$\mu$

$\mu$

Parameters window

IN

'↑

$\mu$

$\mu$

$\mu$

$\mu$

$\mu$

- Parameters window**
- Filtered discrete input**

10ms 2550ms

Parameters window.
- Constant 'ON'**

(Parameters window).
- Constant 'OFF'**

Constant 'ON'.
- Numerical constant**

-32768 +32767.

Simulation Monitoring.
- 1 second clock**

Simulation Monitoring

Parameters window
- Zx buttons**

smart relay, 1... 4.
- Summertime**

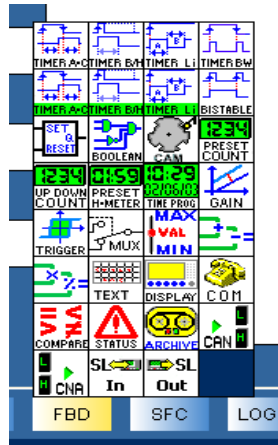
Configuration/Data Format

Edit/Program

FBD

FBD

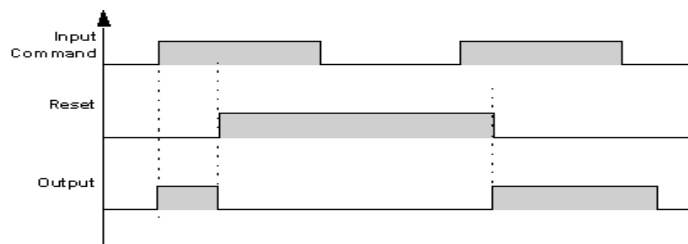
. 4.82.



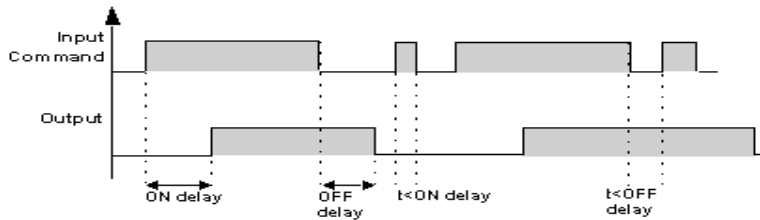
.4.82. FBD.



$\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   
**Command.** **Ladder.** **AC** **AC**



( )

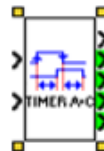


( )

.4.1. AC

**FBD**

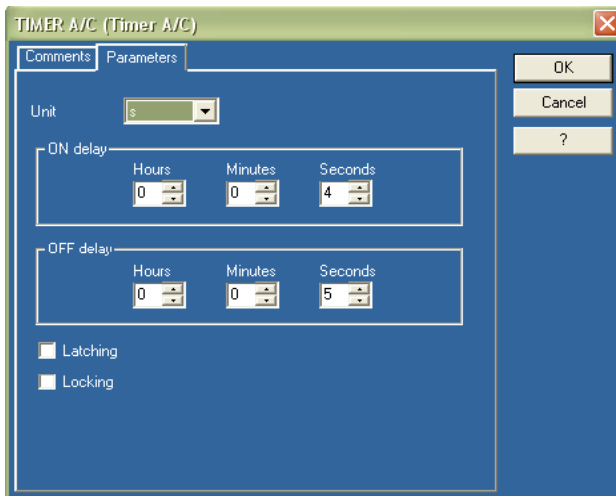
.4.83.



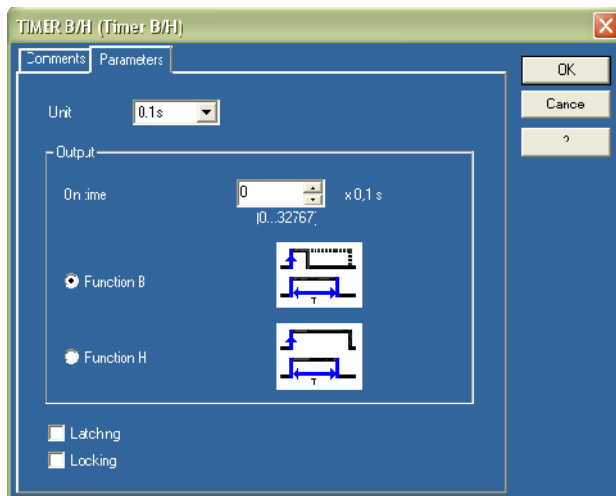
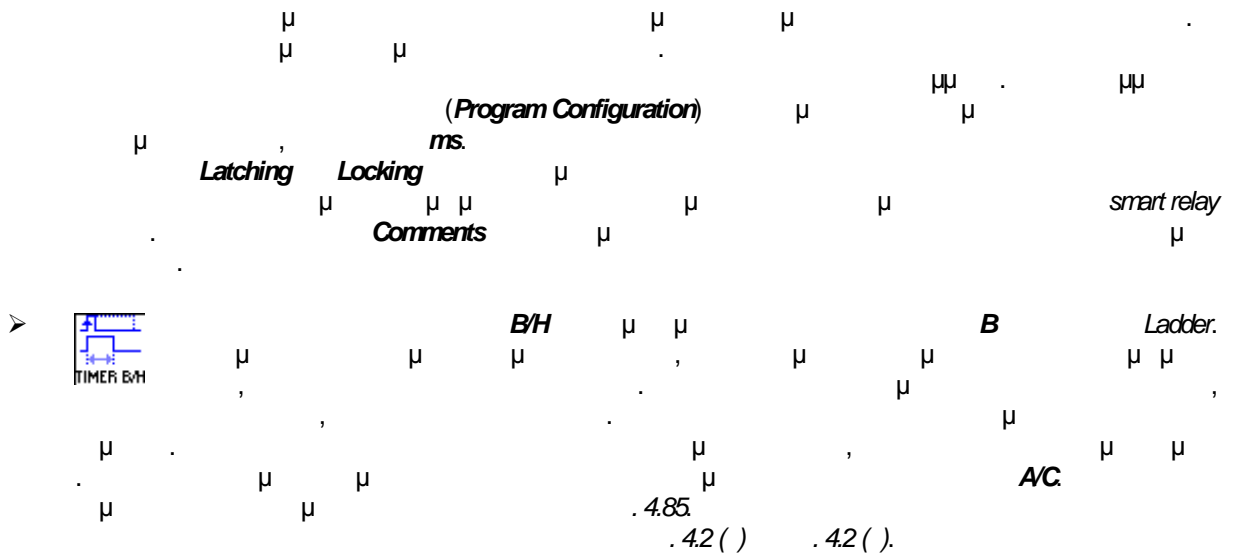
.4.83. AC

( ) **RESET** ( ). ( )  
 $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$

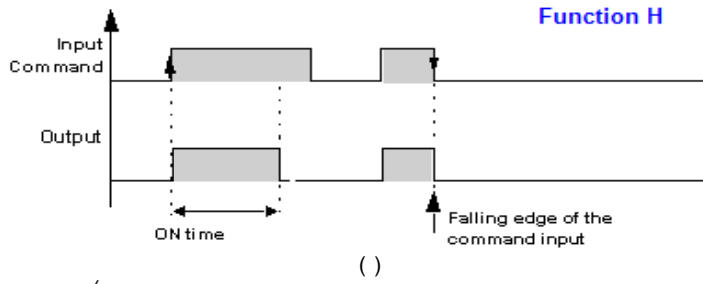
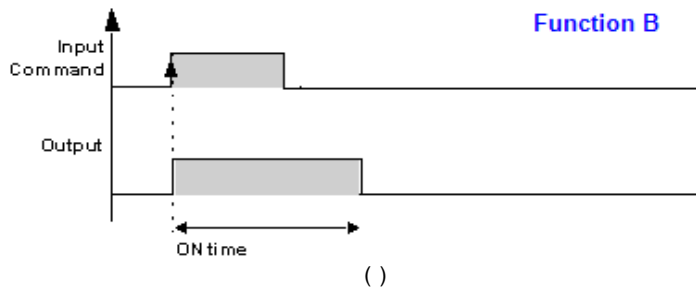




. 4.84. A/C.



. 4.85. / .



.42.

**Comments**  
μ

μ μ μ

μ  
**FBD**

.486.



.486.

BH



**Cyclic timing**

Li

Ladder, μ

FBD μ

μ  
L

'1',

μ  
Li,

μ

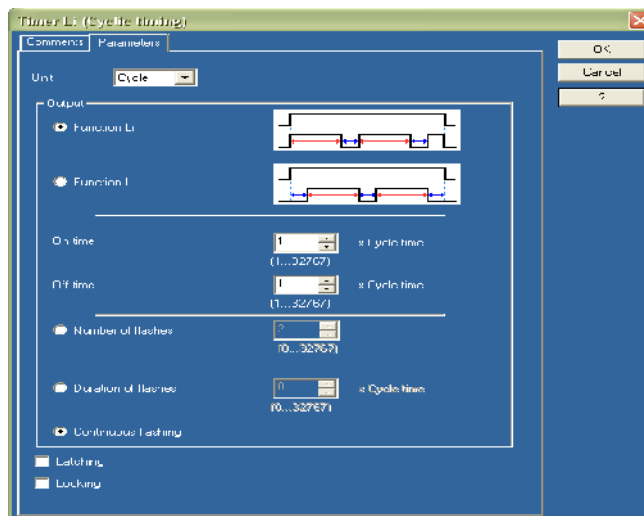
L μ μ

μ

μ

**Parameters window**

.487.

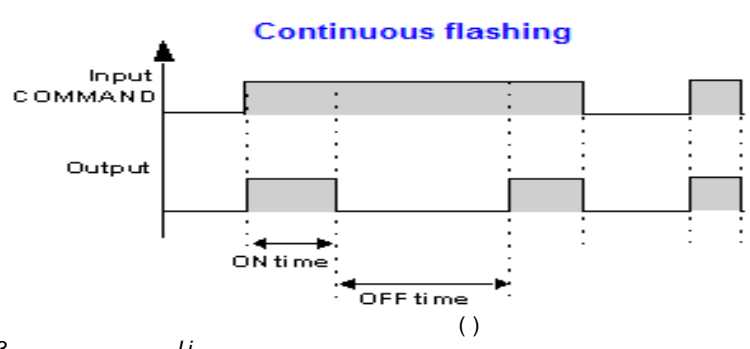
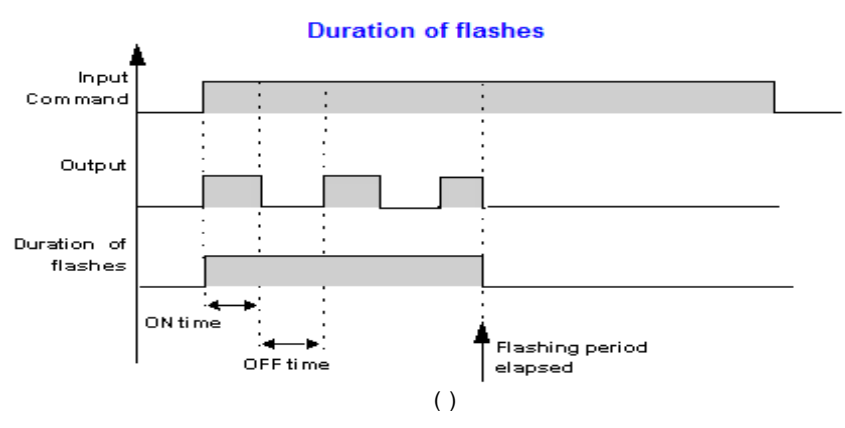
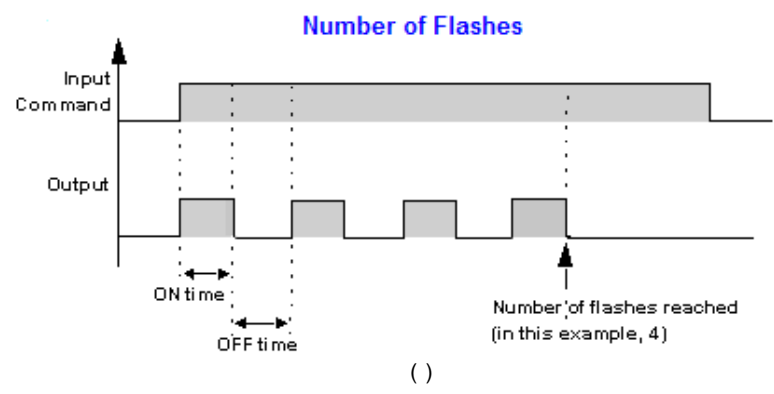


.487.

μ

Li.

μ μ μ . Li L μ μ μ  
 '1 μ μ μ μ μ μ μ μ μ μ  
 μ μ μ μ μ μ μ μ μ μ μ μ  
 .43(,) .43(,) .43(,)



.43

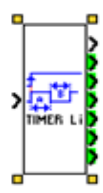
Li

FBD,

μ

μ

.488



.488

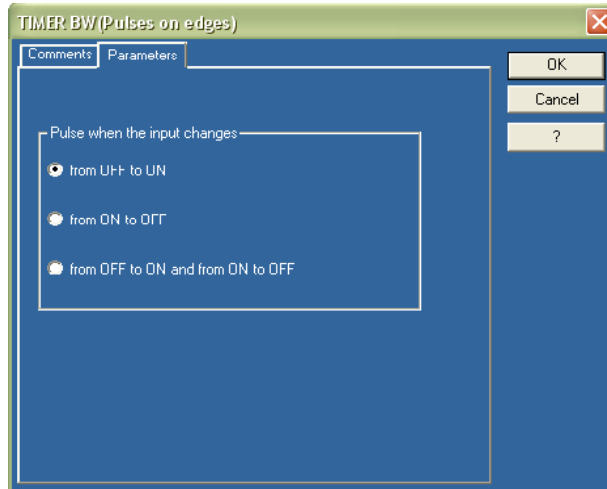
Li



**Pulses on edges**

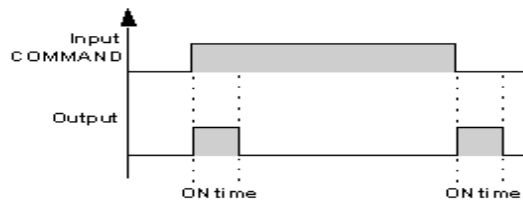
. 4.89.

. 4.4.



. 4.89.

*BW.*

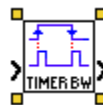


. 4.4.

*Pulses on edges.*

$\mu$

. 4.90.



. 4.90.

*W.*

**Parameters window**

$\mu\mu$   $\mu$



**Timer A/C ext setpoint**

**A/C**

$\mu$

$\mu$  ,

$\mu$

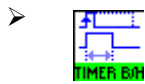
$\mu$

$\mu$

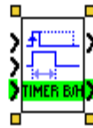
Parameters window (Numerical constant),



. 4.91. A/C ext setpoint.



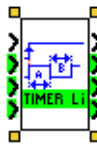
Timer B/H ext setpoint timer B/H, A/C ext setpoint, FBD B/H ext setpoint



. 4.92. B/H ext setpoint.



Cyclic timing ext setpoint Cyclic timing, Parameters window.




. 4.93. L1 (Cyclic timing ext setpoint).




Impulse relay Command RESET, RESET,



. 4.94. Impulse relay.


**RS switching**  
 Parameters window  
 Comments


**Boolean function**  
 16  
 . 4.95

**BOOLEAN (Boolean function)**

Comments Parameters

Option  
 Output OFF if result is TRUE  
 Output ON if result is TRUE

Input 1	Input 2	Input 3	Input 4	Output
0	0	0	0	0
1	0	0	0	0
0	1	0	0	0
1	1	0	0	0
0	0	1	0	0
1	0	1	0	0
0	1	1	0	1
1	1	1	0	1
0	0	0	1	1
1	0	0	1	0
0	1	0	1	1
1	1	0	1	1
0	0	1	1	1
1	0	1	1	0
0	1	1	1	1
1	1	1	1	1


OK  
 Cancel  
 ?

. 4.95. Boolean function.

. 4.96.



. 4.96. Boolean function.


**CAM BLOCK**  
 Forward, Reverse  
 Reverse, Forward  
 RESET  
 50  
 8  
 9  
 . 9  
 . 8  
 . 9  
 . 9

μ  
μ  
FBD

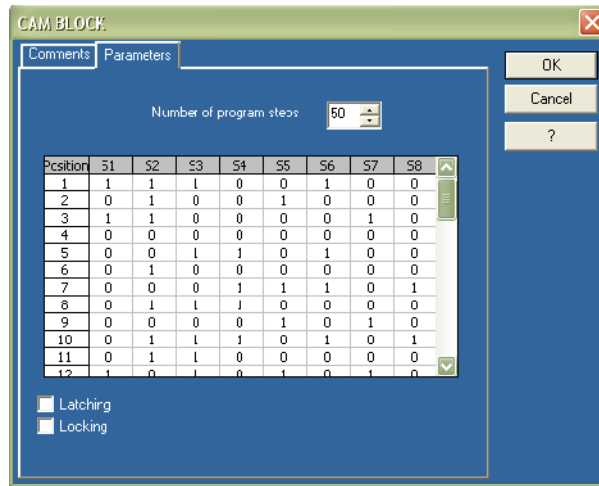
. 4.97.

μ

μ

CAM BLOCK

Latching Locking  
Comments.



. 4.97.

μ

CAMBLOCK



. 4.98.

CAMBLOCK

➤



4.99.

Preset up/down counter

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

Repetitive.

μ

μ

μ

μ

μ

Single,

μ

μ

μ

μ

μ

μ

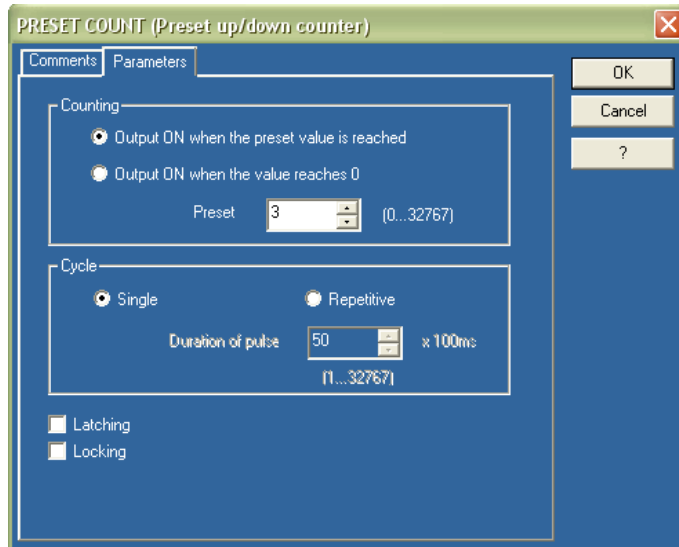
μ

μ

μ

FBD

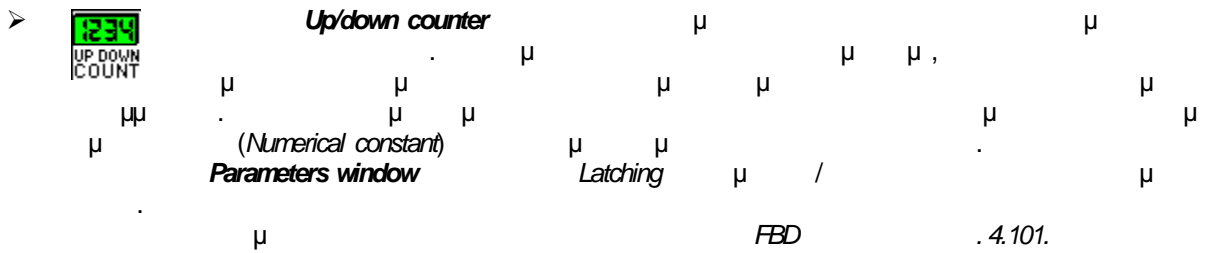
. 4.100.



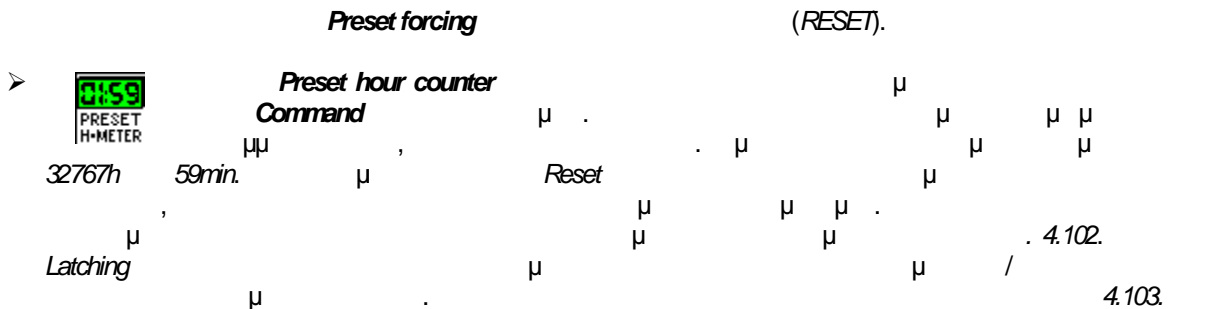
. 4.99.  $\mu$  Preset up/down counter.



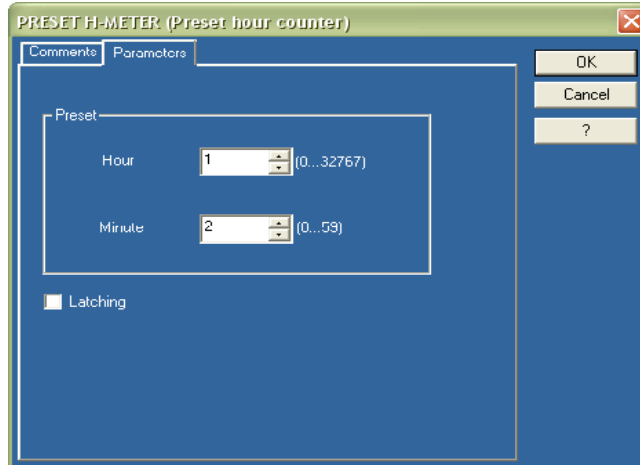
. 4.100. Preset up/down  $\mu$



. 4.101. Up/down  $\mu$







. 4.102.  $\mu$  Preset hour counter.

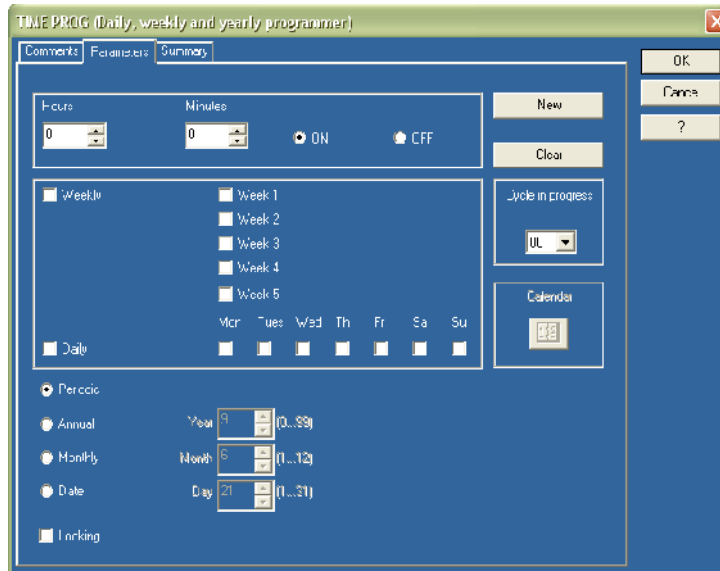


. 4.103. Preset hour  $\mu$



### Daily, weekly and yearly programmer

$\mu$ ,  $\mu$ ,  $\mu$ ,  $\mu$  (  $\mu$  )  $\mu$ ,  $\mu$   
 $\mu$ ,  $\mu$ ,  $\mu$ ,  $\mu$ ,  $\mu$ ,  $\mu$ ,  $\mu$ ,  $\mu$ ,  $\mu$ ,  $\mu$   
 Parameters window, . 4.104.



. 4.104.  $\mu$  TIME PROG.

), ON OFF (

Periodic, Annual,

Monthly, Date,

Annual, Monthly Date,

51 New Clear Locking,

smart relay.

Summary

FBD . 4.105.



. 4.105. Daily, weekly and yearly programmer.

GAIN  $(A/B) * x + C$  Enable Function

x

. 4.106.

**GAIN (Gain = A/B x value + C)** ✖

Comments Parameters

Gain:  $y = (A/B) x + C$

Gain numerator (A) =  (-32768...32767)

Gain denominator (B) =  (-32768...32767 and (not null))

Offset (C) =  (-32768...32767)

Range

Upper limit =  (-32768...32767)

Lower limit =  (-32768...32767)

Locking

. 4.106. Gain.

0

. 4.107. Gain.



. 4.107. Gain.

**Schmitt Trigger** (Value to compare) (maximum minimum).  
 On to off setpoint Off to on setpoint.  
 Enable function.  
 FBD, . 4.108.



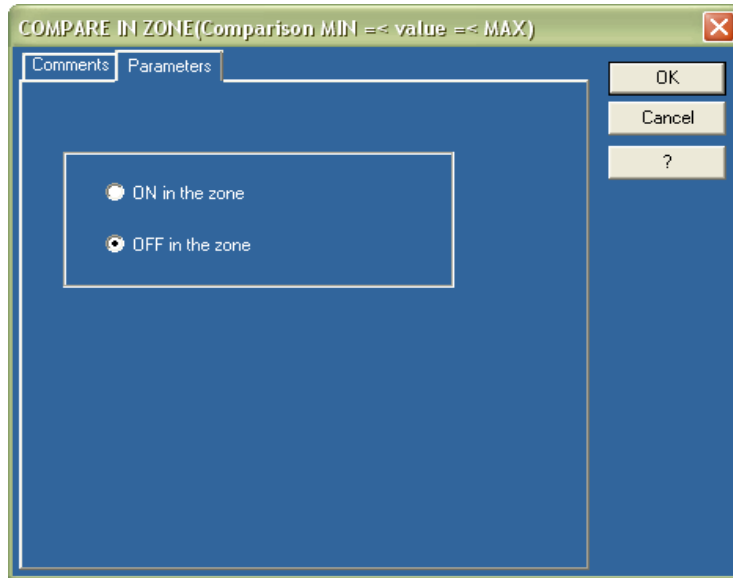
. 4.108. Schmitt Trigger.

**Multiplexing**, Channel A Channel B.  
 Channel . Multiplexing .  
 Parameters window .  
 . 4.109.



. 4.109. Multiplexing.

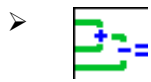
**Comparison MIN<value>MAX** Schmitt Trigger.  
 (Value to compare) (Min value Max value).  
 Enable function . 4.110  
 Parameters window . 4.111.



. 4.110.  $\mu$  COMPARISON.



. 4.111. Comparison  $MIN <= \text{value} <= MAX$ .



**ADD/SUB**

Input 3,  $\mu$

Calculation output  $\mu$

, Input 1, Input 2,  $\mu$

$$\text{Calculation output} = (\text{Input 1} + \text{Input 2}) - \text{Input 3}$$

$\mu$  , Numerical constant,  $\mu$   $\mu$

0

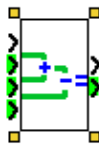
**Error propagation** '0.

**Error/Overflow**  $\mu$

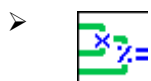
**Simulation Monitoring**

**Error propagation**  $\mu$   $\mu$  0

**ADD/SUB** . 4.112.



. 4.112. **ADD/SUB**



**MUL/DIV**

**ADD/SUB**  $\mu$

$\mu$

:

Calculation output = (Input 1 \* Input 2) / Input 3

MUL/DIV

. 4.113.



. 4.113.

MUL/DIV.



TEXT

/

μμ .

μμ

μμ

SET

smart relay

μ

μ

μ

μ

μ

, SET

Zx

μ

μ

μ

μ

μ

μ

μ

RESET

μ

μ

μ

μ

RESET

μ

μ

μ

SET.

. 4.114.

FBD TEXT (Text)

Comments Parameters

Current text B18

No	Function block	Comment
01	Date	
02	Hour	
03	Calibration	

OK

Cancel

?

. 4.114.

μ

TEXT.

μ

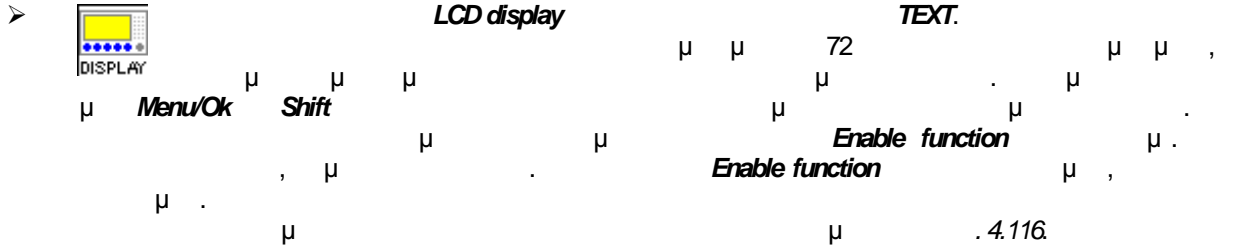
FBD

. 4.115.

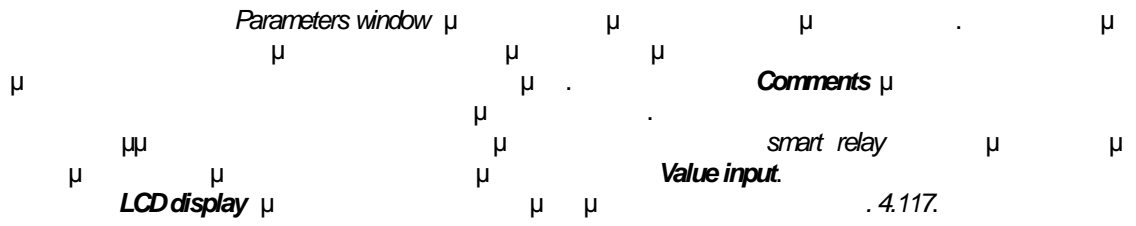


. 4.115.

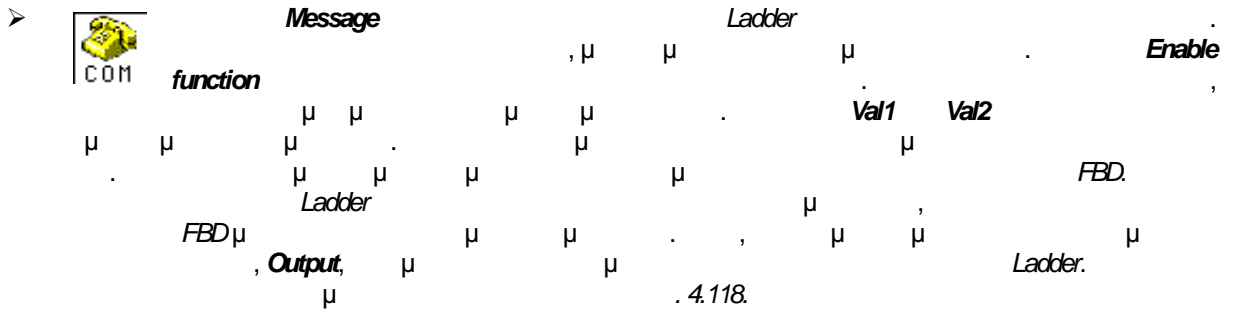
TEXT.



. 4.116. LCD display.



. 4.117. LCD display.





. 4.118. Message.



**Comparison of 2 values**

**Comparison of 2 values**

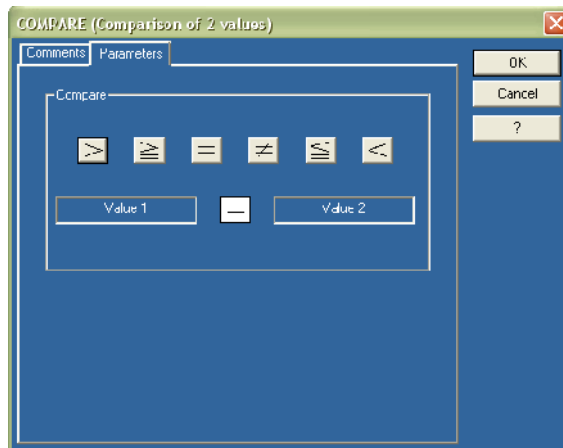
**Enable function**

**Value 1**

**Value 2**

(Numerical constant).

. 4.119.



. 4.119: Comparison of 2 values.

**Comments**

. 4.120.



. 4.120. Comparison of 2 values.



**Module status**

**smart relay**

- **Alarm status**

**Alarm number**

**smart relay.**

**smart relay**

**FAULT.**

- **Run monitoring**

**Monitoring.**

- **Run parameters**

**PARAMETER**

- menu smart relay.
- Cold init STOP, RUN
- Warm init
- RUN Flash cycle
- Module status Simulation, smart relay
- Parameters window
- FBD . 4.121.



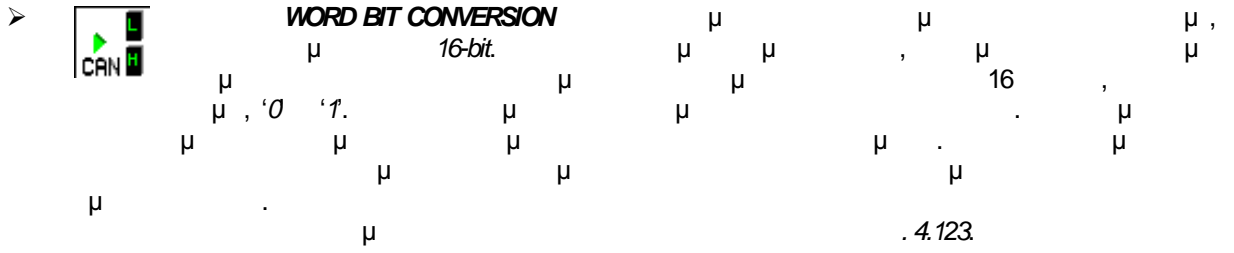
. 4.121. Module status.

- ARCHIVE memorisation.
- Valid archive Reset memorisation.
- , Value 1 Value 2, Value 1 Value 2
- 8. , Valid archive, Archive 1 Archive 2
- Value 1 Value 2, Value 1 Value 2.
- memorisation.
- smart relay Text. Latching
- μ /
- 4.122.



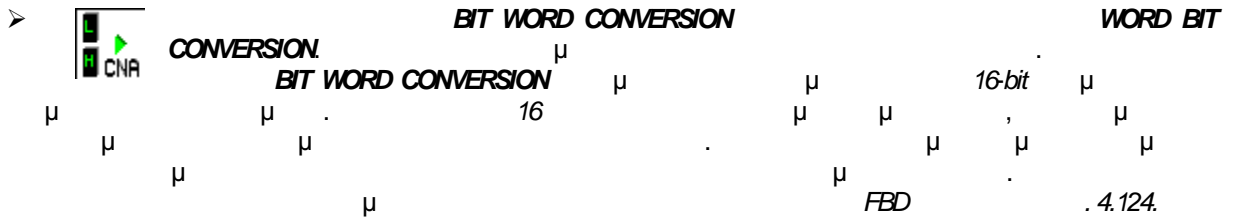
. 4.122. ARCHIVE





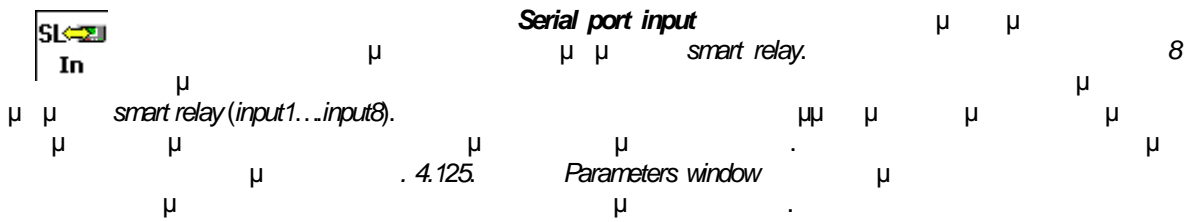
. 4.123.

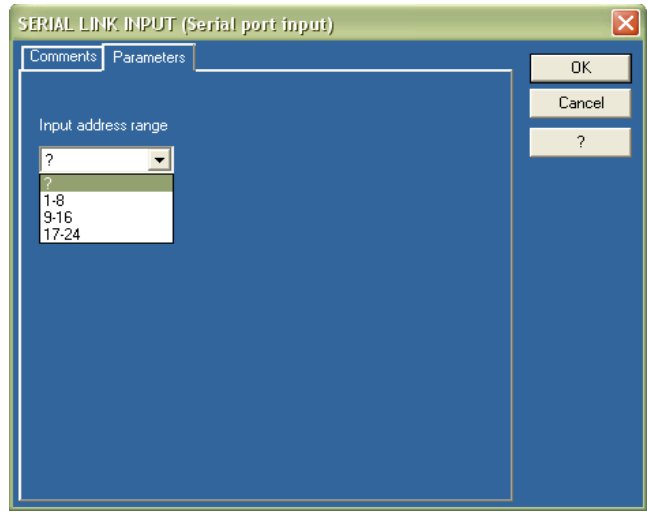
WORD BIT CONVERSION.



. 4.124.

BIT WORD CONVERSION.

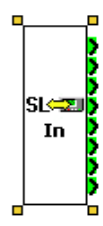




. 4.125.  $\mu$  Serial link input.

**FBD**

$\mu$  . 4.126.  $\mu$



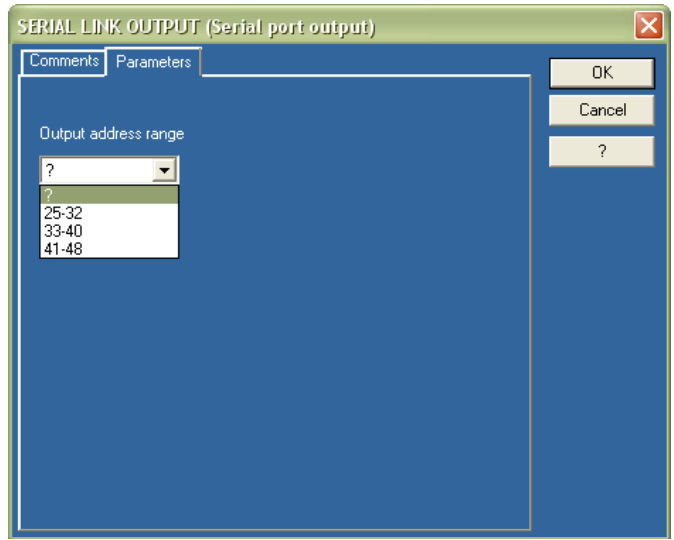
. 4.126. Serial port input.



*Serial port output*  
*smart relay,*  
 $\mu$   
 $\mu$   
 $\mu$   
*Parameters window*

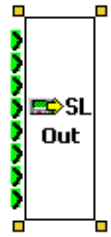
*Serial port input.*  
 $\mu$   
 $\mu$   
 8  
 (*output1...output8*).  
 $\mu$   
 $\mu$   
 $\mu$

. 4.127.  $\mu$



. 4.127.  $\mu$  Serial link output.

$\mu$  FBD . 4.128.



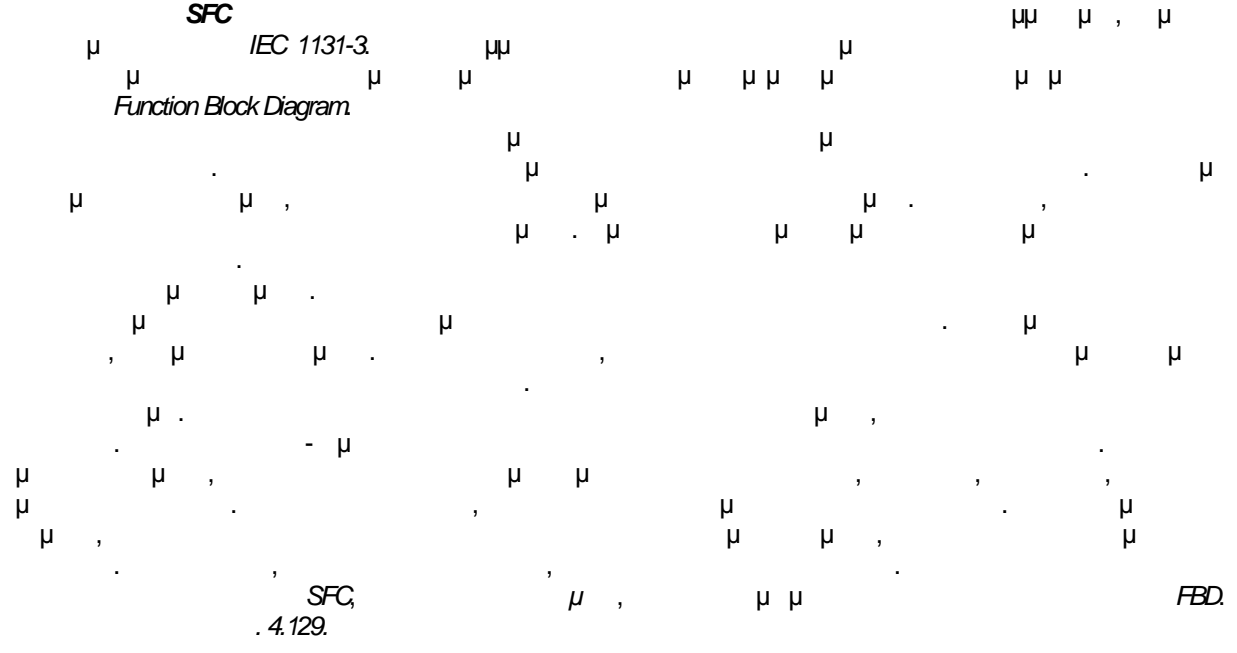
. 4.128. Serial port output.

SFC

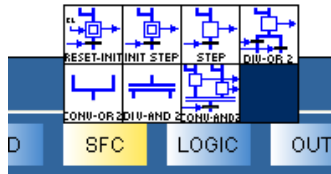
SFC

IEC 1131-3.


Function Block Diagram.



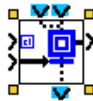
. 4.129. SFC,




. 4.129. SFC.

➤  **Resettable initial SFC step**

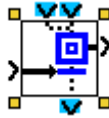
Reinitialized. Transition, Step output, Transition, block FBD . 4.130.



. 4.130. Resettable initial SFC step.

➤  **Initial SFC step**

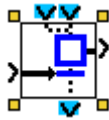
Step inputs, Step output, Transition, Step transition output. Initial SFC step Parameters window block FBD . 4.131.




. 4.131. Initial SFC step.

➤  **SFC step**

Step output, Step transition output, Initial SFC step, Step inputs, (OFF), Transition block FBD . 4.132.



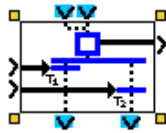
. 4.132.: SFC step.


**Divergence to OR with 2 SFC branches**


Transition 1/2, Step input 1/2, Transition output 1/2 with divergence to OR, Step output

OFF.

FBD . 4.133.



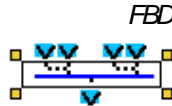
. 4.133. Divergence to OR with 2 SFC branches.


**Convergence to OR with 2 SFC branches**


Output of convergence to OR, Input 1/2-3/4

Parameters window

FBD . 4.134.



. 4.134. Divergence to OR with 2 SFC branches.


**Divergence to AND with 2 SFC branches**


Input 1/2 of divergence to AND, Output 1/2 of divergence to AND.

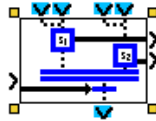
Parameters window

block . 4.135.



. 4.135. Divergence to AND with 2 SFC branches.

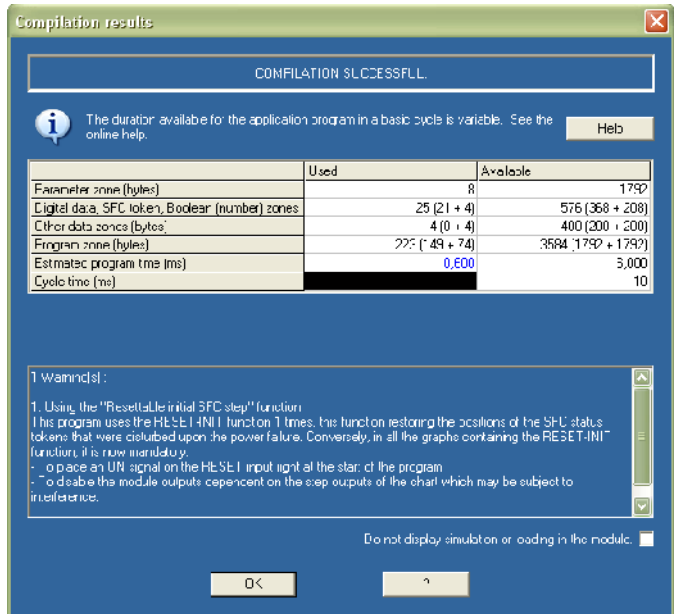
- 
**Convergence to AND with 2 branches**
  - convergence to AND
  - output 1-2 of convergence to AND.
  - Step output 1
  - Step output
  - Transition.
  - Parameters window
  - . 4.136
  - FBD.



. 4.136. Convergence to AND with 2 branches.

- SFC
  - Monitoring
  - Edit Check the program
  - Transfer
  - Compare the program with module data.
  - Simulation Monitoring
  - Edit Simulation Monitoring
  - bytes
  - . 4.137.

μ			
μ 50		μ	
μ 60	μμ		Initial step Resettable initial
μ 61	μμ	μ	Resettable initial



. 4.137.

μ .

**LOGIC**

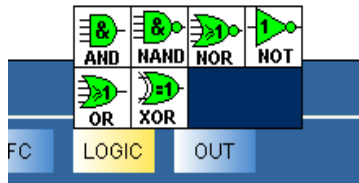
**LOGIC**

μ

.

μ

Logic, . 4.138.



. 4.138.

LOGIC.

μ

XOR

NOT

4.2-4.7.

AND, NAND, NOR

OR



smart relay

Parameters window

'1.



4.2.

AND

	Input 1	Input 2	Input 3	Input 4	Output
	0	0	0	0	0
	0	0	0	1	0
	0	0	1	0	0
	0	0	1	1	0
	0	1	0	0	0
	0	1	0	1	0
	0	1	1	0	0
	0	1	1	1	0
	1	0	0	0	0
	1	0	0	1	0
	1	0	1	0	0
	1	0	1	1	0
	1	1	0	0	0
	1	1	0	1	0
	1	1	1	0	0
	1	1	1	1	1



4.3.

NAND

	Input 1	Input 2	Input 3	Input 4	Output
	0	0	0	0	1
	0	0	0	1	1
	0	0	1	0	1
	0	0	1	1	1
	0	1	0	0	1
	0	1	0	1	1
	0	1	1	0	1
	0	1	1	1	1
	1	0	0	0	1
	1	0	0	1	1
	1	0	1	0	1
	1	0	1	1	1
	1	1	0	0	1
	1	1	0	1	1
	1	1	1	0	1
	1	1	1	1	0

4.4.



NOR

	Input 1	Input 2	Input 3	Input 4	Output
	0	0	0	0	1
	0	0	0	1	0
	0	0	1	0	0
	0	0	1	1	0
	0	1	0	0	0
	0	1	0	1	0
	0	1	1	0	0
	0	1	1	1	0
	1	0	0	0	0
	1	0	0	1	0
	1	0	1	0	0
	1	0	1	1	0
	1	1	0	0	0
	1	1	0	1	0
	1	1	1	0	0
	1	1	1	1	0




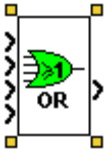
4.5.

NOT.

	Input	Output
	0	1
	1	0



4.6.

OR

	Input 1	Input 2	Input 3	Input 4	Output
 	0	0	0	0	0
	0	0	0	1	1
	0	0	1	0	1
	0	0	1	1	1
	0	1	0	0	1
	0	1	1	0	1
	0	1	1	1	1
	1	0	0	0	1
	1	0	0	1	1
	1	0	1	0	1
	1	0	1	1	1
	1	1	0	0	1
	1	1	0	1	1
	1	1	1	0	1
	1	1	1	1	1

4.7.

XOR

	Input 1	Input 2	Output
	0	0	0
	0	1	1
	1	0	1
	1	1	0

OUT

OUT

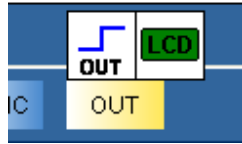
μ μ

,

.

μ

. 4.139.



. 4.139. OUT.



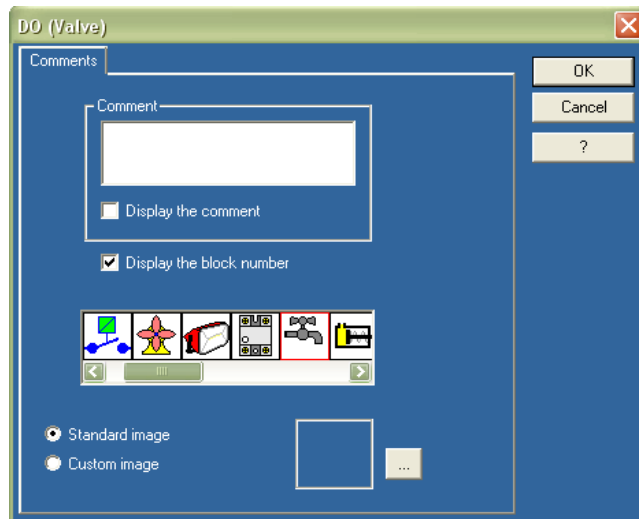
OUT

smart relay.

Parameters window

. 4.140,

FBD.

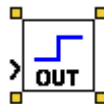


. 4.140.

μ

μ

. 4.141.



. 4.141.

OUT.



smart relay.

μ

μ

μ

μ

μ

smart relay.

μ

μ

μ

μ

μ

μ

μ

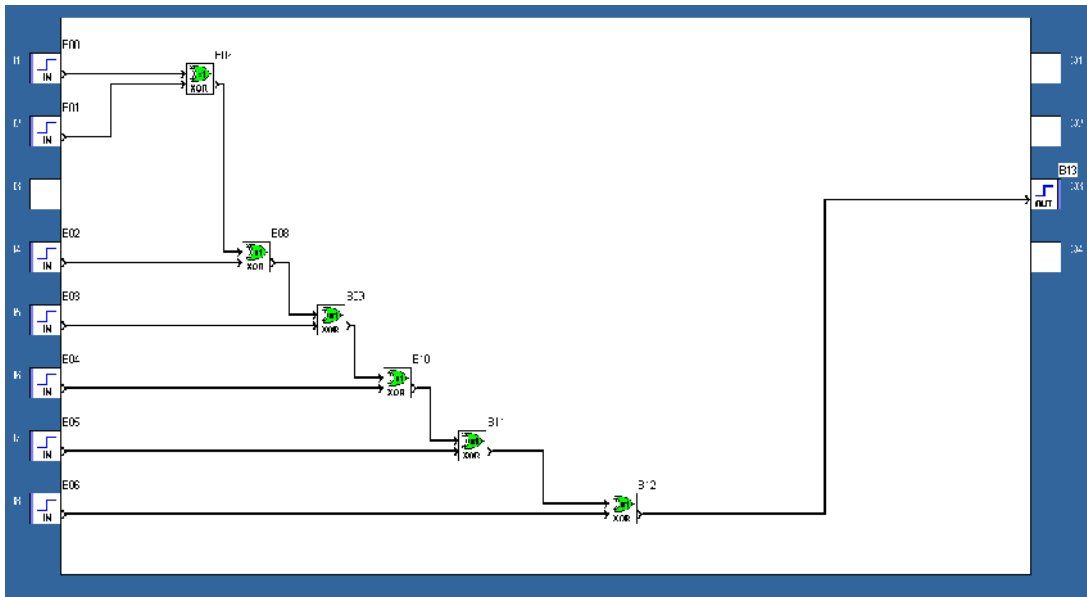
. 4.142.



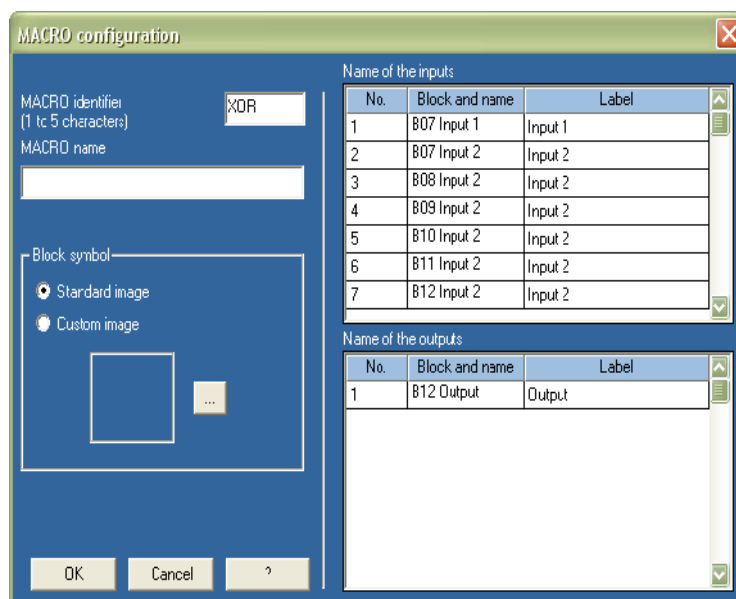
. 4.142.

LCD.

$\mu$  block  $\mu$   $\mu$   $\mu$  255  $\mu$  (block).  
 $\mu$  64  $\mu$   $\mu$   $\mu$  block block  $\mu$   
 $\mu$   $\mu$  FBD  $\mu$   $\mu$  block block  $\mu$   
 $\mu$   $\mu$  FBD  $\mu$   $\mu$   $\mu$   $\mu$  XOR  
 . 4.143  $\mu$   $\mu$   $\mu$  block  $\mu$   $\mu$  XOR  
 Create a MACRO.  $\mu$   $\mu$  . 4.144.



. 4.143.  $\mu$   $\mu$  7 1 .



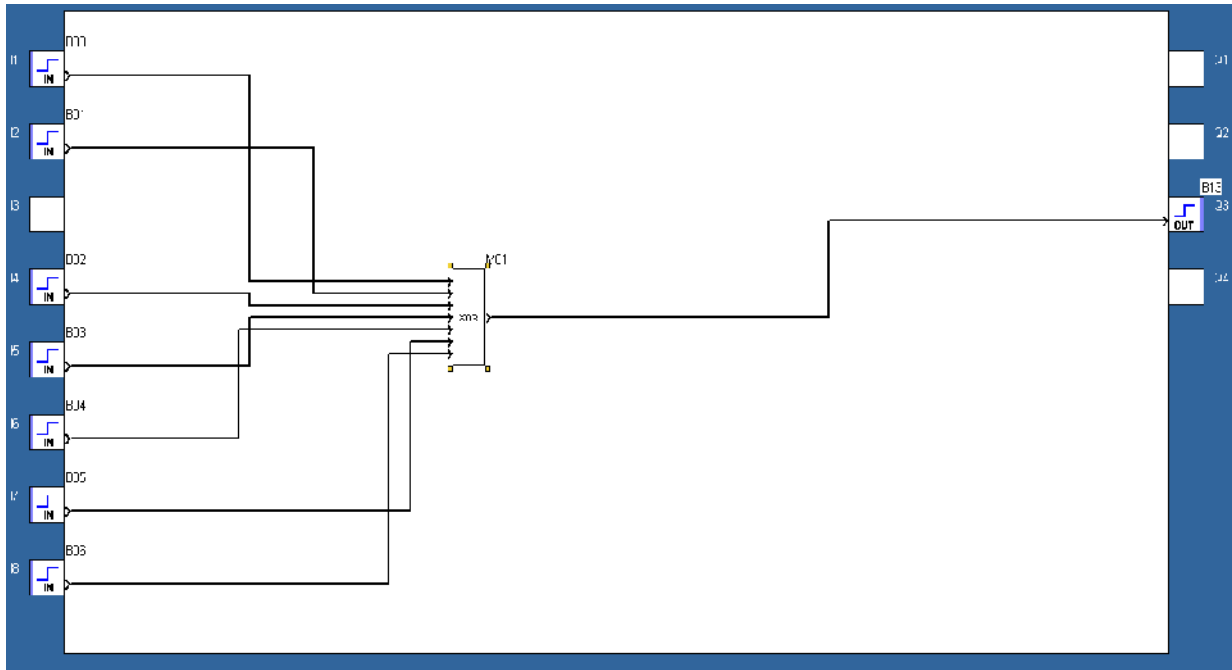
. 4.144.  $\mu$   $\mu$  .

Block symbol  
 the inputs/outputs,  
 Label  
 Parameters window.

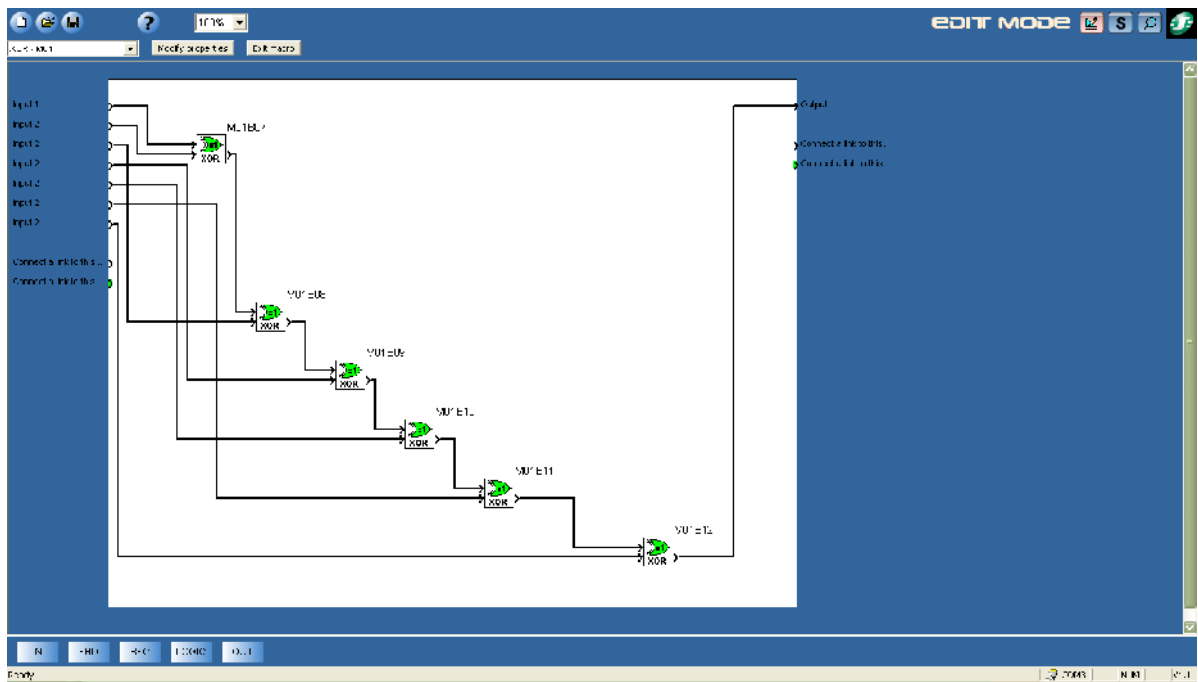
MACRO identifier  
 MACRO name  
 block  
 Display the MACRO.

Name of  
 block  
 . 4.145.

. 4.146.

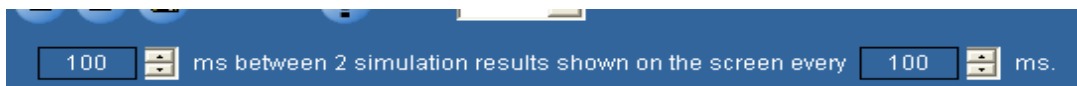


. 4.145.      μμ      block



. 4.146.      μ      μ

Connect a link to this... ( )  
 Modify properties, Exit macro  
 Ladder, smart relay, Edit, Simulation, Monitoring  
 Simulation Monitoring  
 . 4.147.  
 100ms.



. 4.147.

Monitoring . 4.148  
Simulation.



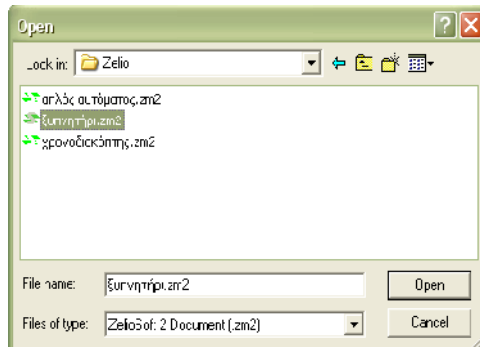
. 4.148.

## 4.1.2 Open an existing program

Open an existing program

Zelio Soft

. 4.149.

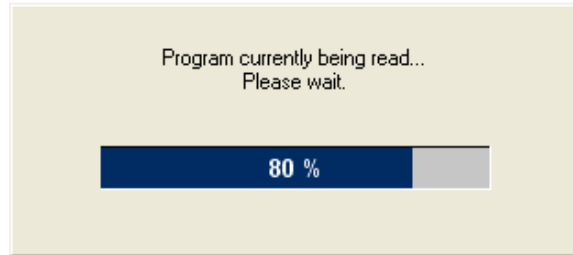


. 4.149.

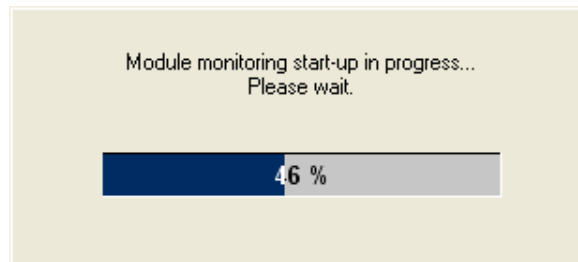
μ μμ



Monitoring.  
Monitoring mode. 4.152 4.153.  
Monitoring.



4.152.



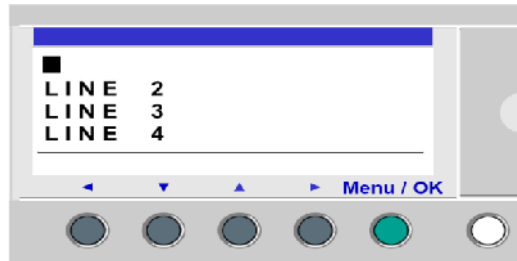
4.153.

## 4.2

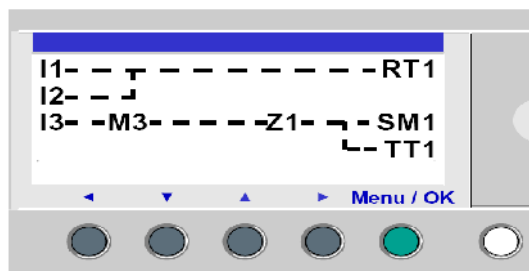
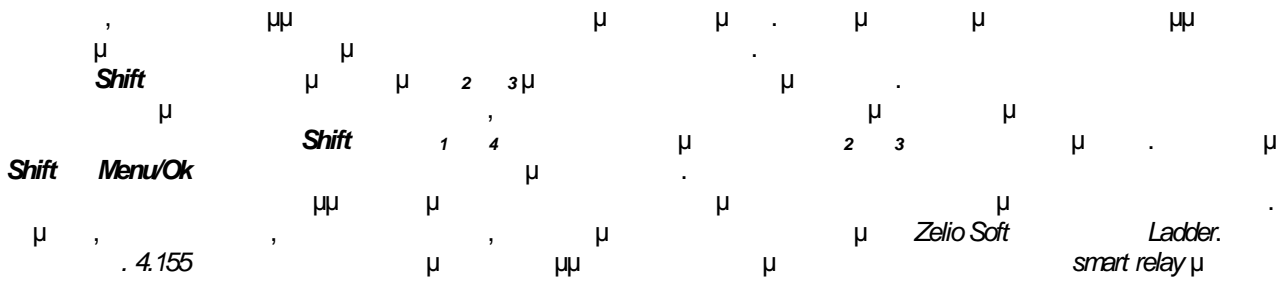
### Smart Relay

smart relay.  
Zelio Logic Ladder.  
menu smart relay  
PROGRAMMING  
Ladder.  
Zelio Logic.  
120 rungs.

4.154



.4.154. μμ μ (on screen programming).



.4.155. μ μ μ smart relay.





$\mu$  5 :

- 5.1.
- 5.2
- 5.3

$\mu$

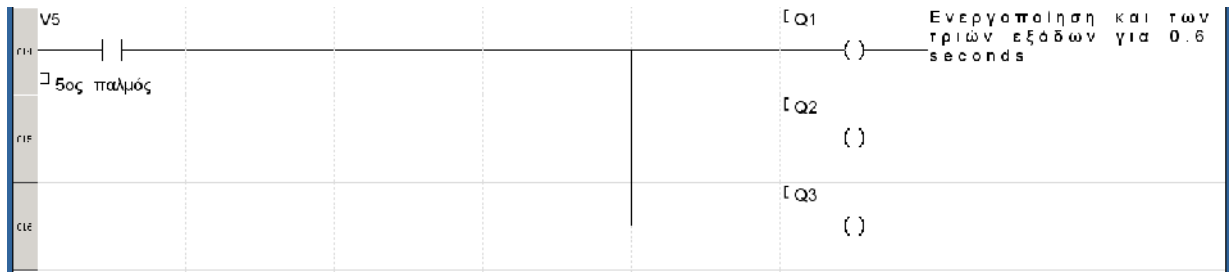




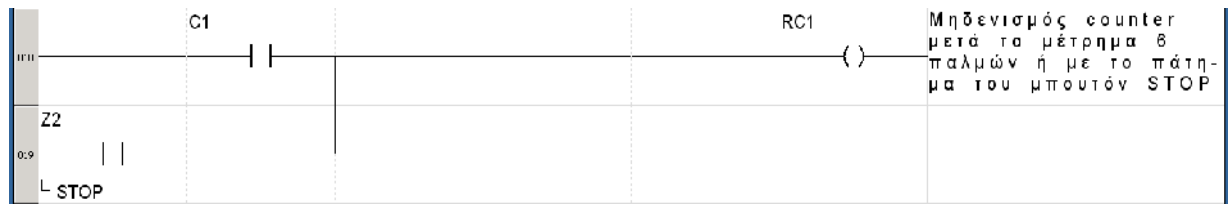
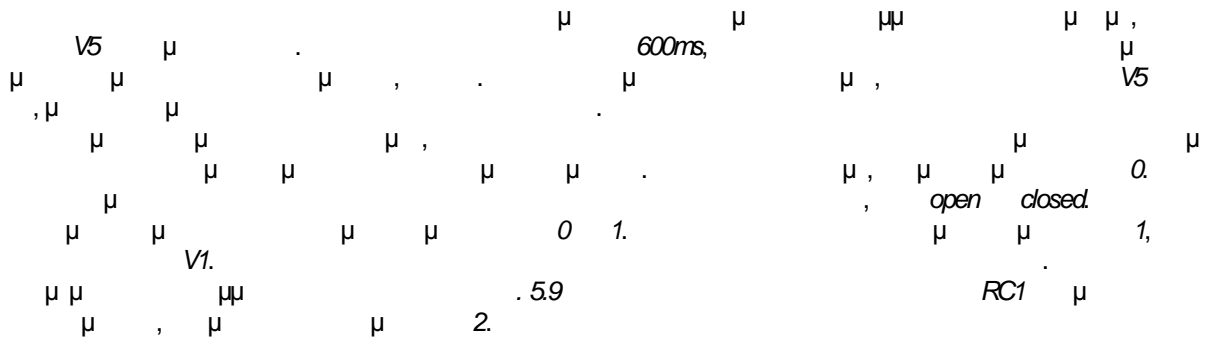








.58



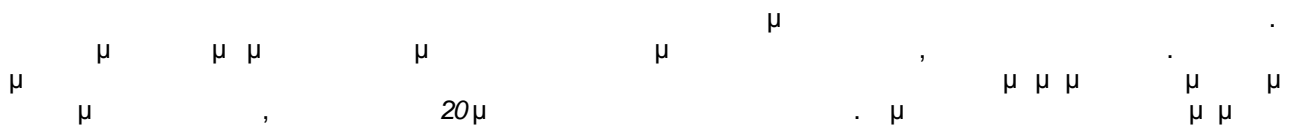
.59

5.1.5.



	: 15€	
	: 6€	
μ (69 μ):	26€	: 48.55€
(3 + 1 μ ):	(1.05 + 0.50) €	

5.2









normally open 1 3

5.2.3.2 ( )

led

TEST RESET.

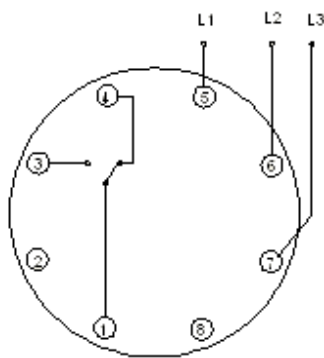
D-TIME O-TIME

230V.

95-98.

5.2.3.3 &

PLC .53



.53 μμ μμ &

PLC, μ

400V, μ

normally closed 1 4

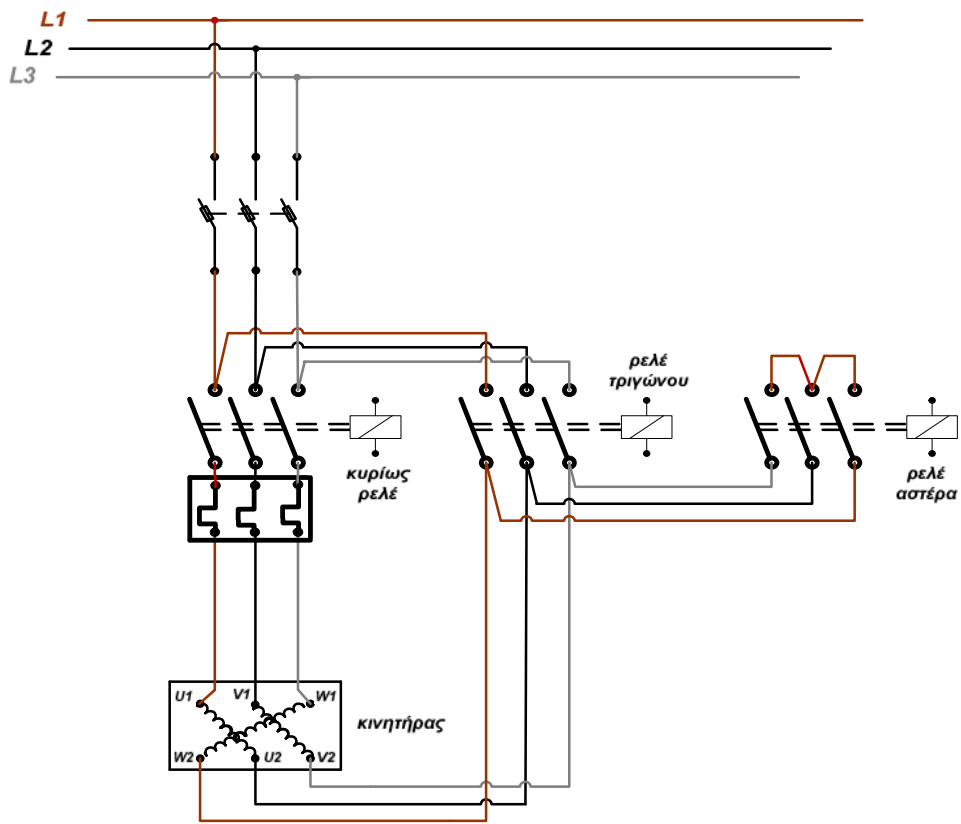
400V 5% 20%

5.24.

Ladder Zelio Logic Telemecanique.

5.24.1.

.54



.54

5.24.2

Telemecanique.



5.25.

μμ

μ

Ladder.

μ

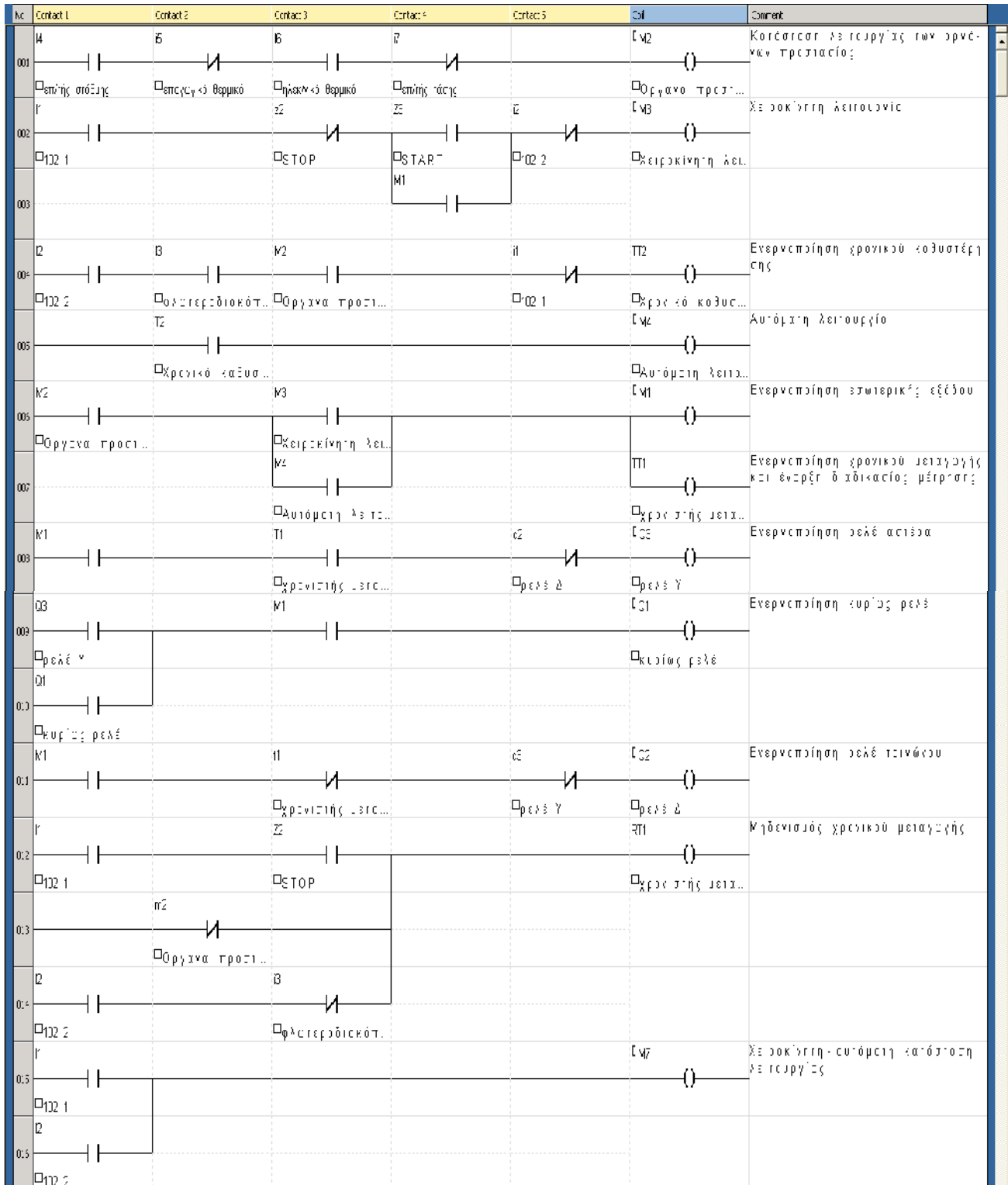
5.10 μ

μ

μ μ

μμ

μμ



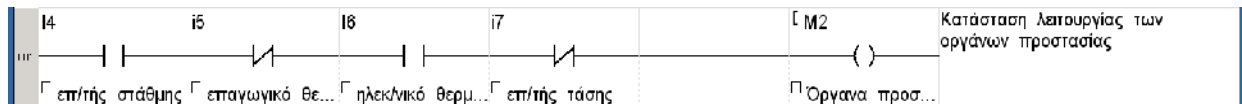
( )











. 5.16.

μ μ

μ μ μ

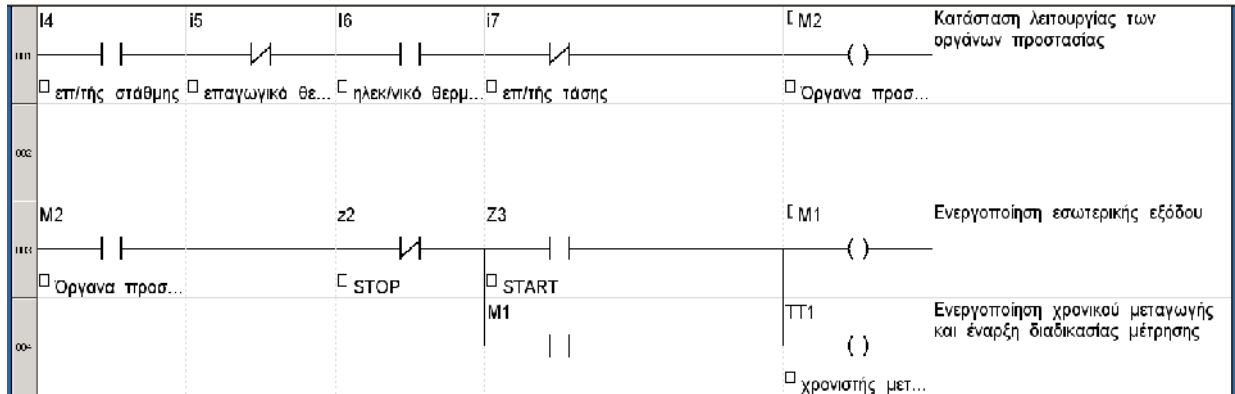
μμ

μ

. 5.17.

μ

μμ



. 5.17.

μμ μ μ

μ

μ

μμ

μ

M2

μμ

μ

μ

μ

RESET

μ

μ

μ

μ

normally

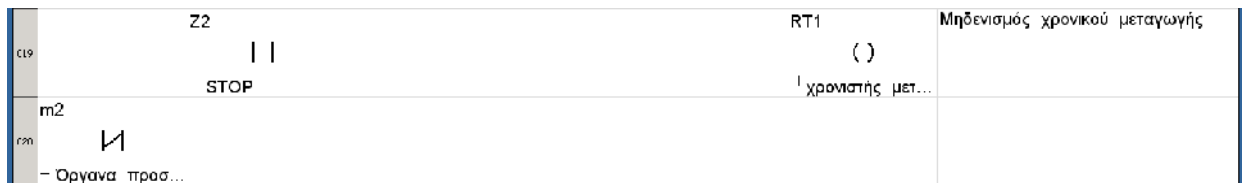
closed

M2.

. 5.18

μ μ

μμ



. 5.18.

μ

μ

3:

μ

-

102.

(

μ

).

,

μ

μ

,

1,

,

μ

2,

,

μ

μ

μ

μ

μ

μ

μ

μ

μ

STOP

START

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

μ

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μ

μ

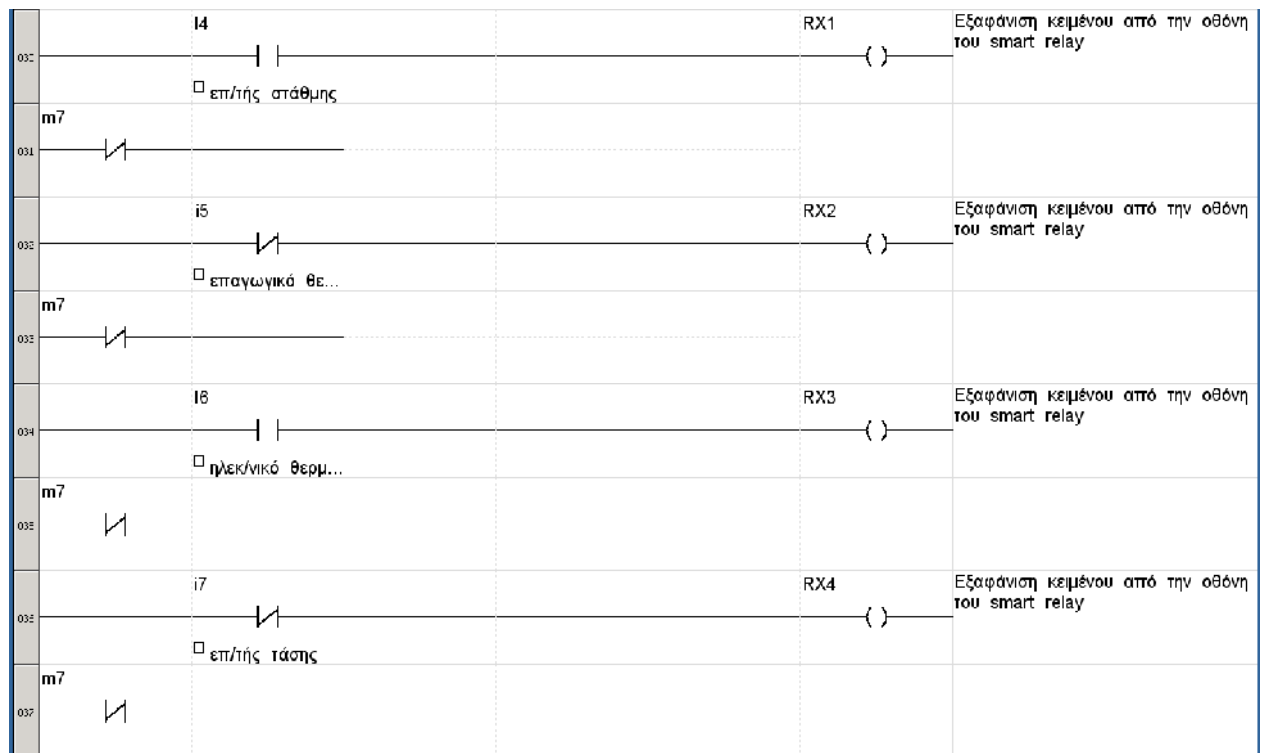
μ

μ

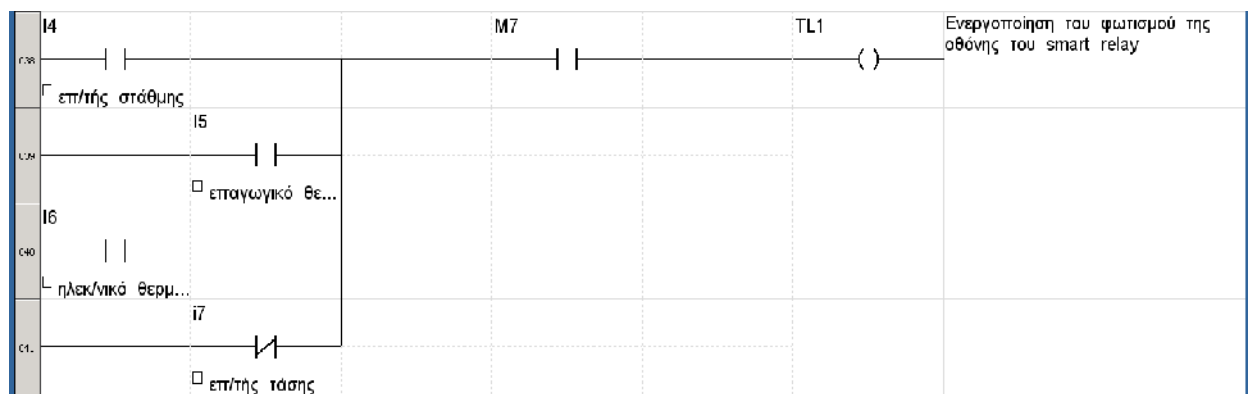








. 524                    μ                    smart relay.



. 525                    μ                    smart relay.

5.26.

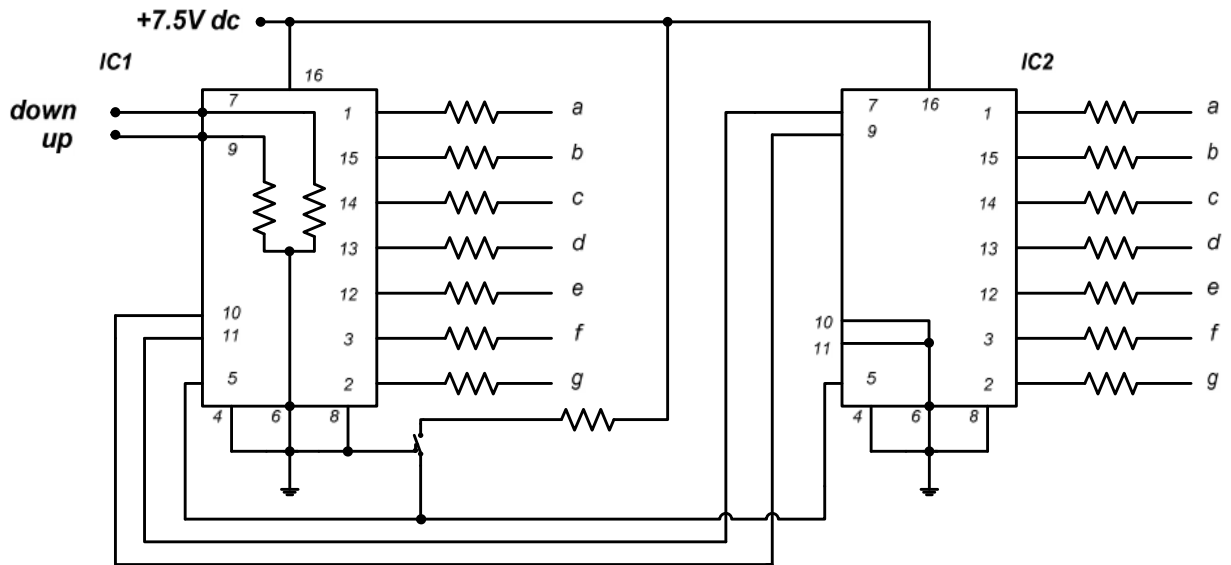
5.3                    μ

μ                    μ                    .

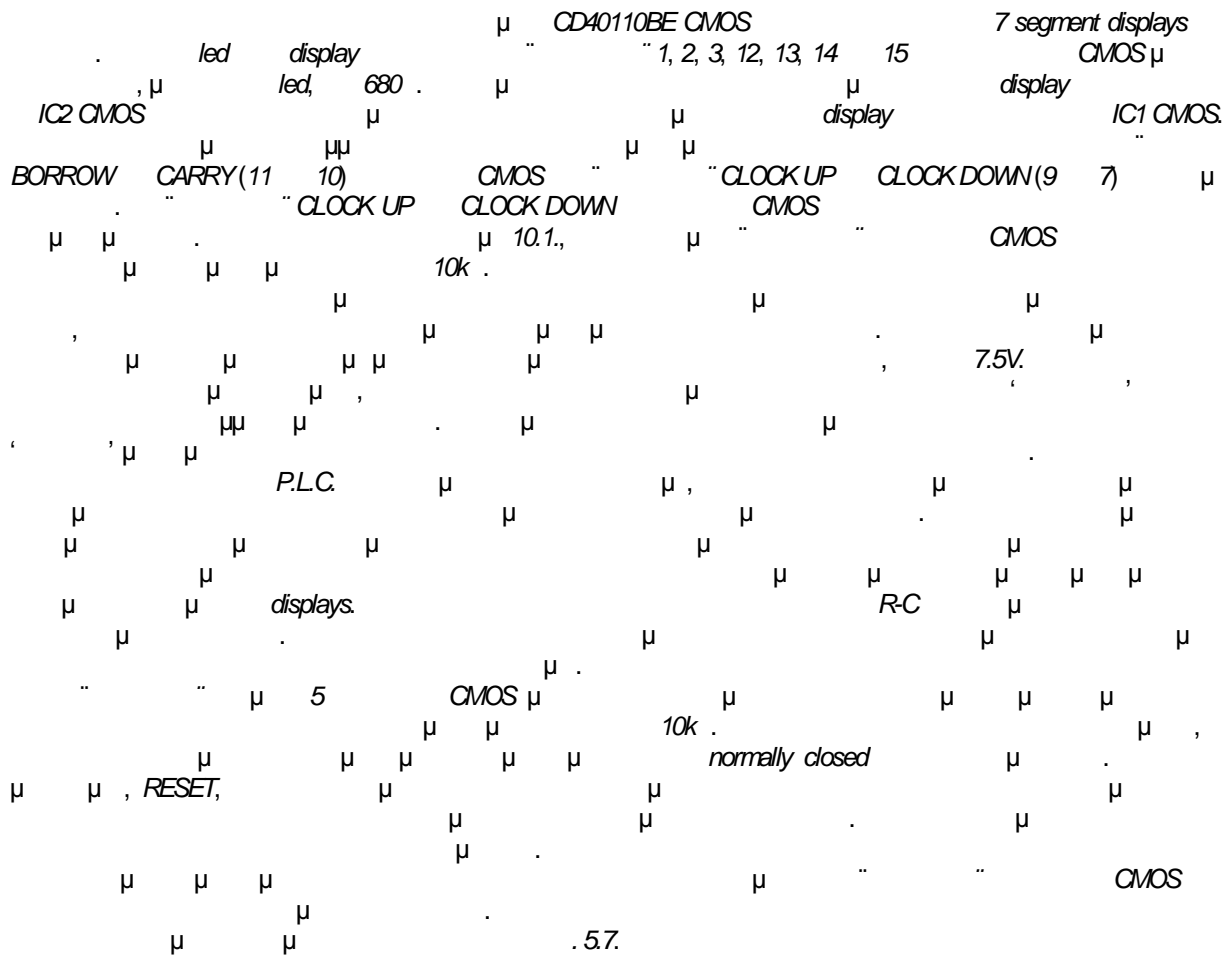
5.3                    .

	: 15€	
	: 6€	
	1m: 1.5€	
	32 : 18.5€	
(10 ) +	+ μ (3): 8.4€	: 164.45€
μ	6 (3): 13.5€	
(3) +	μ (1): 25.5€	

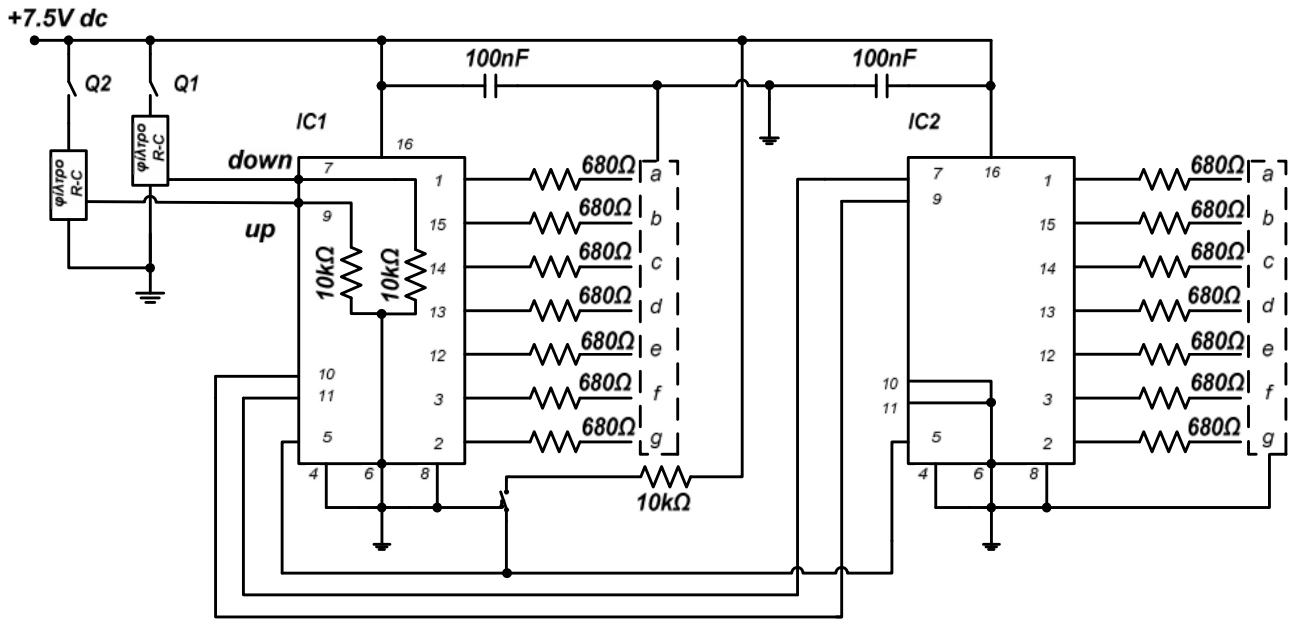




. 5.6.  $\mu$  2 digits up/down  $\mu$

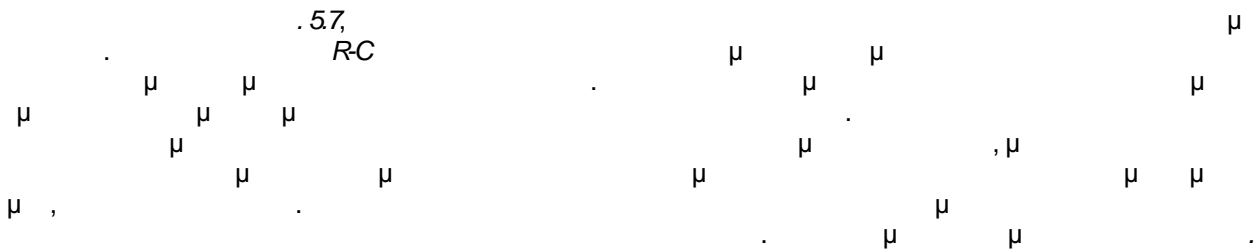


. 5.7.

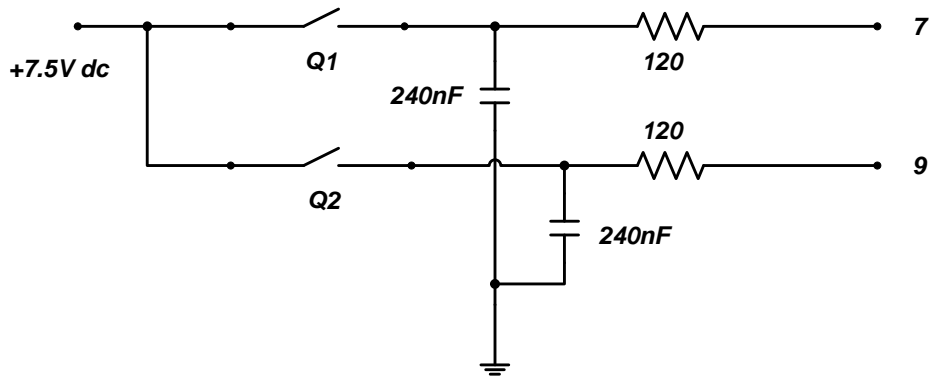


.57.  $\mu$   $\mu\mu$   $\mu$   $\mu$  .

.57,  
R-C

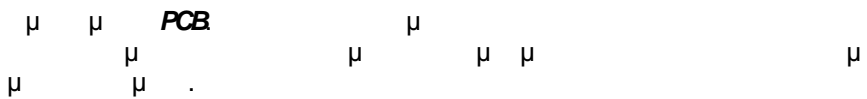


58

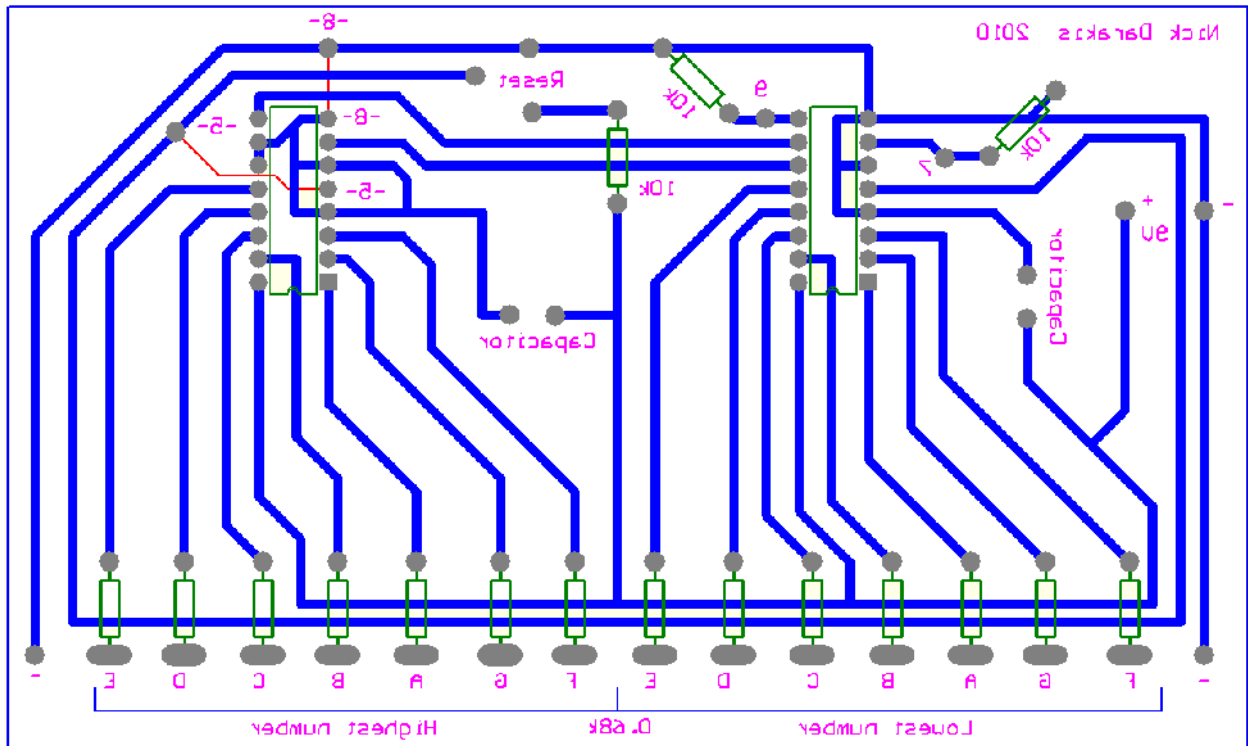


.58

.59

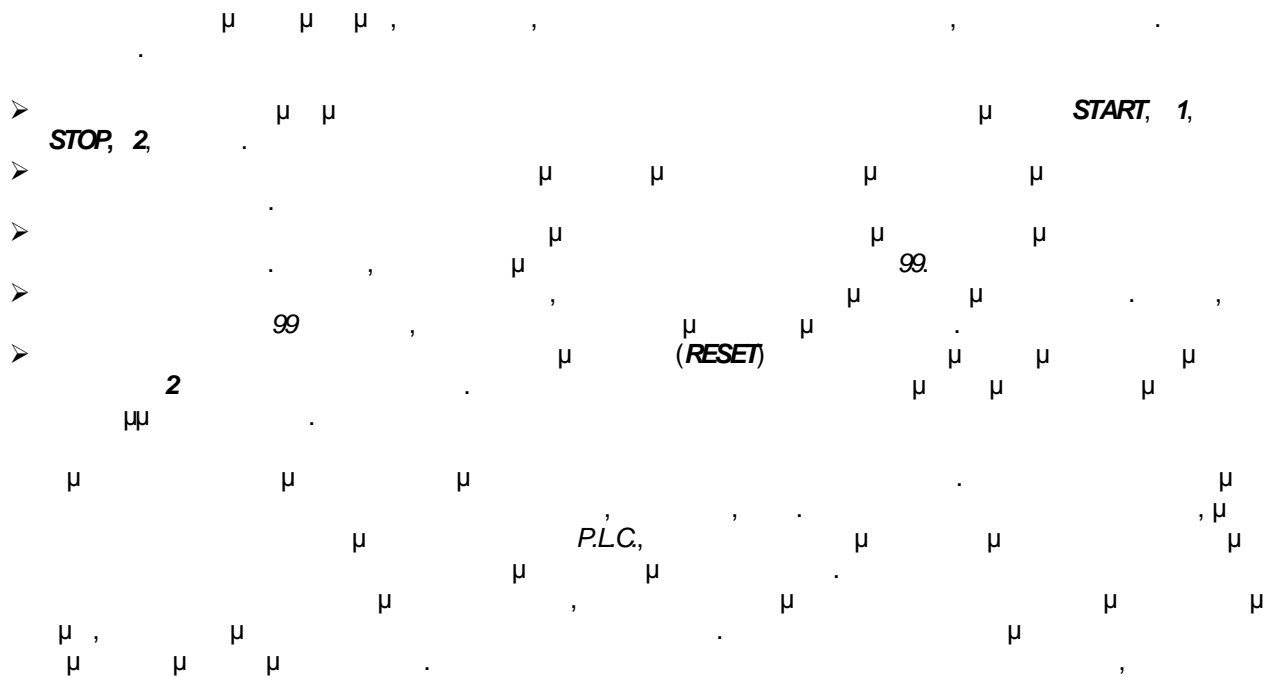




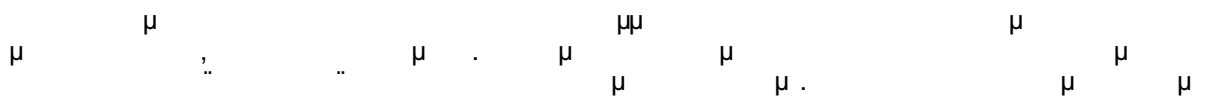


5.9.  $\mu$   $\mu$  PCB

### 5.3.2



### 5.3.3



P.L.C. 1. P.L.C., Q1, (up) Z Z P.L.C., Q2, Q3, displays (Reset).

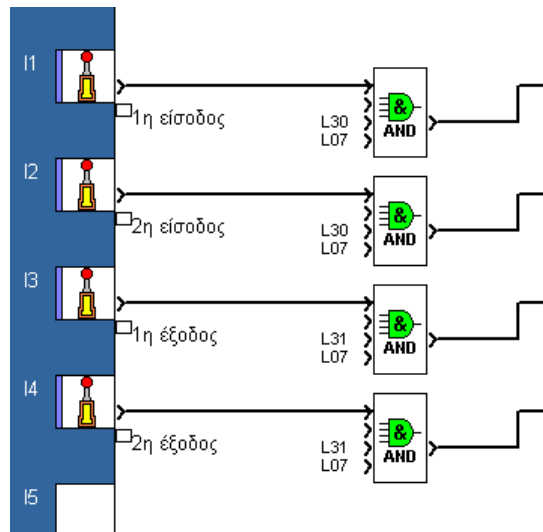
54. /

1	$\mu$	1	I1
2	$\mu$	2	I2
3	$\mu$	1	I3
4	$\mu$	2	I4
5		START	Z1
6		STOP	Z2
1	$\mu$ $\mu$		Q1
2	$\mu$ $\mu$		Q2
3	$\mu$ reset		Q3

P.L.C., 1 2, P.L.C., 3 4, START STOP, 1 2, 2, 1, Reset, displays, Q1, displays, 00., 99, Soft 2., Ladder., Function Block Diagram, Zelio, Zelio Logic, . 5.10, P.L.C.



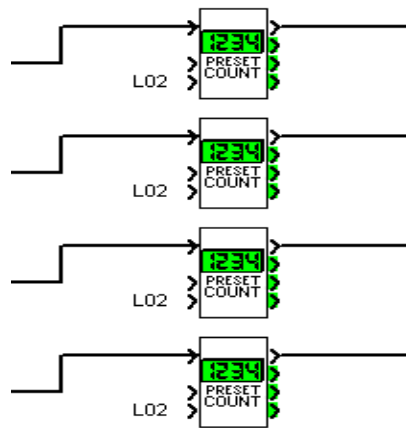




. 528.

AND.

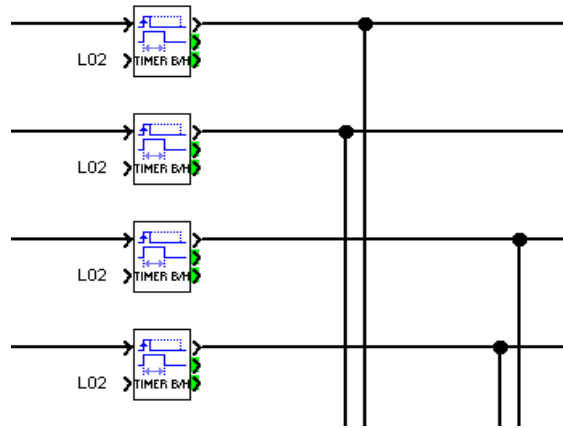
. 529, *AND*  
 μ μ μ μ  
 μ μ μ μ μ μ  
 RESET μ μ μ μ μ μ  
 μ μ μ μ μ μ  
 P.L.C. μ  
 2 (L02).  
 μ . μ μ  
 μ μ μ μ  
 μ μ .  
 μ μ .  
 Upcounting



. 529.

μ

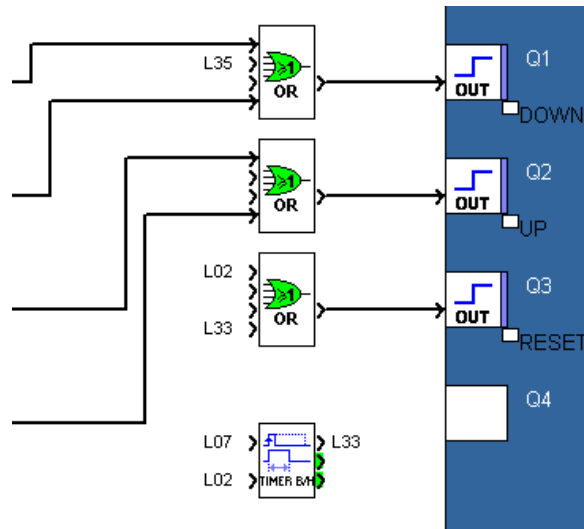
μ  
 μ μ μ μ μ μ  
 μ μ μ μ μ μ  
 μ μ μ μ μ μ  
 μ μ μ μ μ μ  
 RESET μ μ μ μ μ μ  
 . 530 μ μ μ μ μ μ  
 , 1sec, μ μ μ μ μ μ  
 B/H μ μ μ μ μ μ  
 μ μ μ μ μ μ  
 2 (L02).  
 displays



. 530.

1000ms.

Q1 (down) OR Q2 (up) Q3 displays.

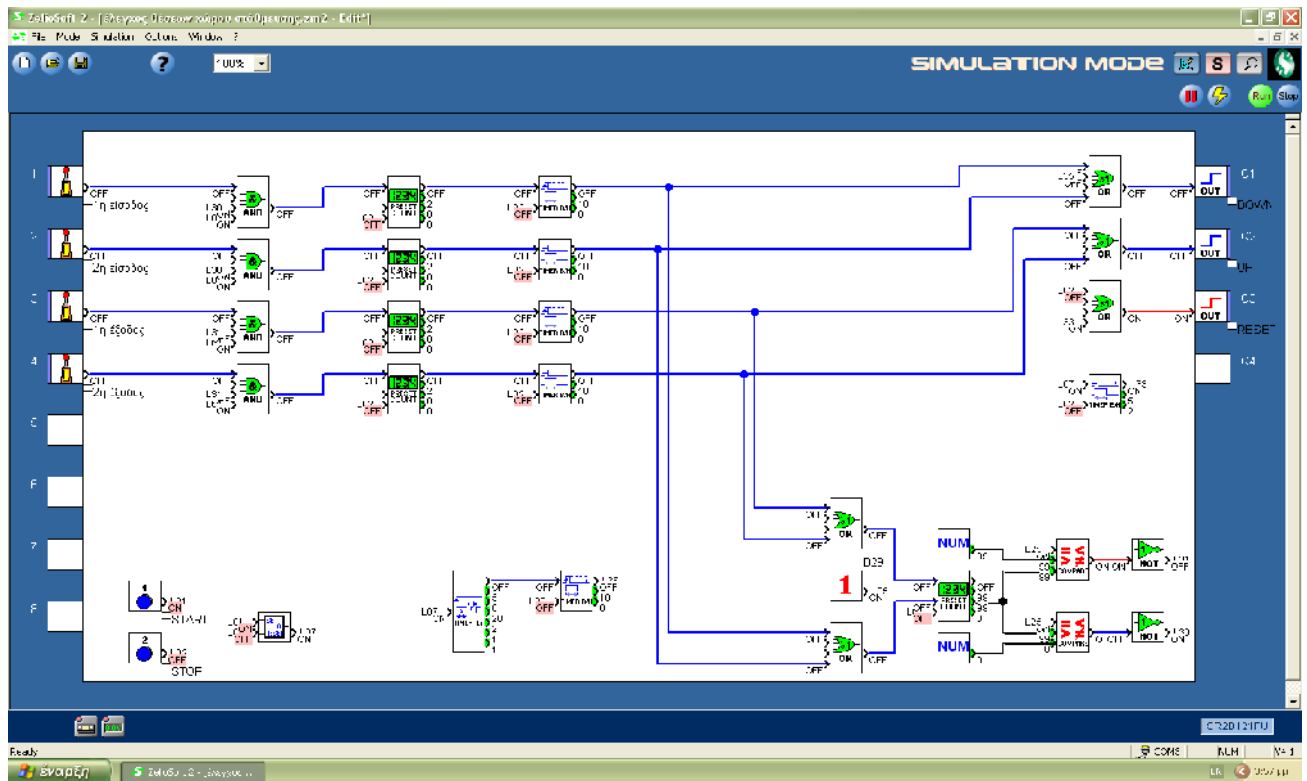


. 531.

PLC.

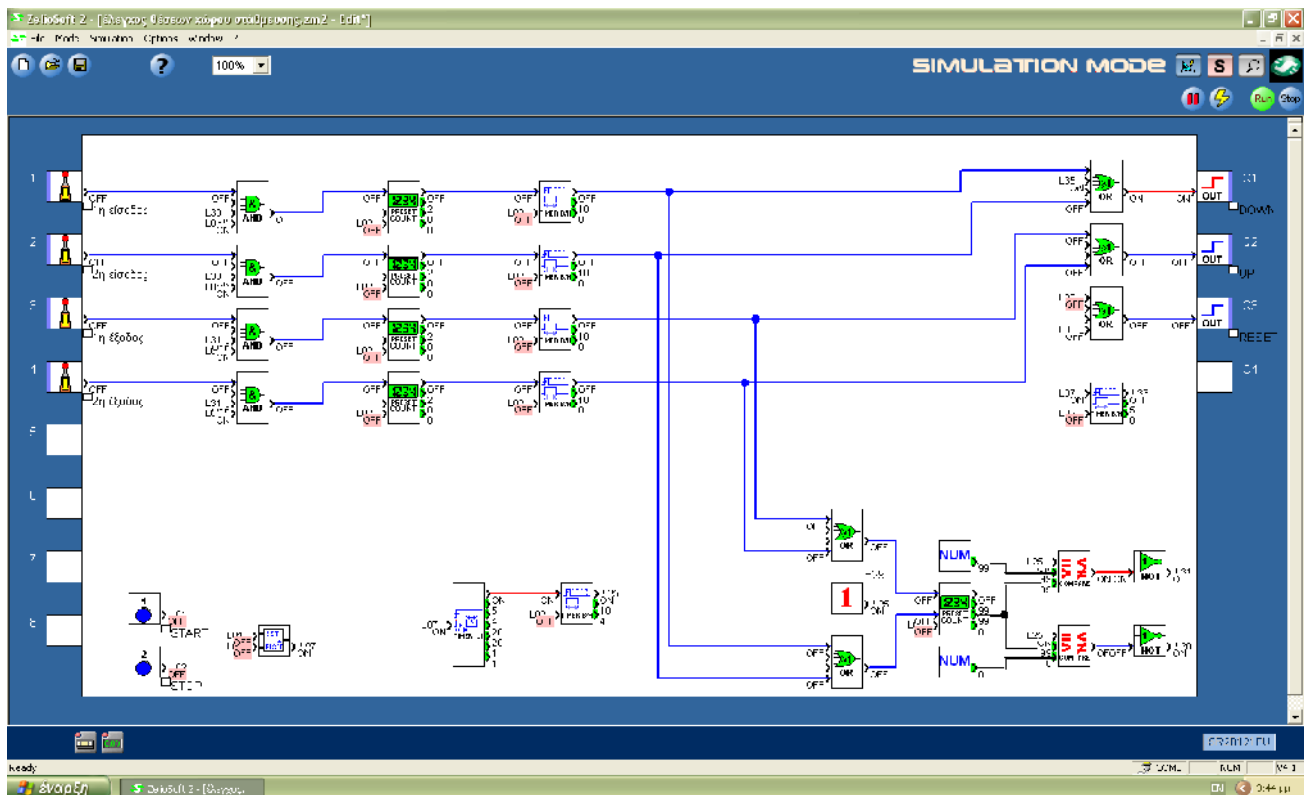
Q3, Reset, 2, STOP, Q1 OR (L35) displays. IC1 CMOS (99), B/H, 1sec, Q1, 00





. 5.34. *Reset*

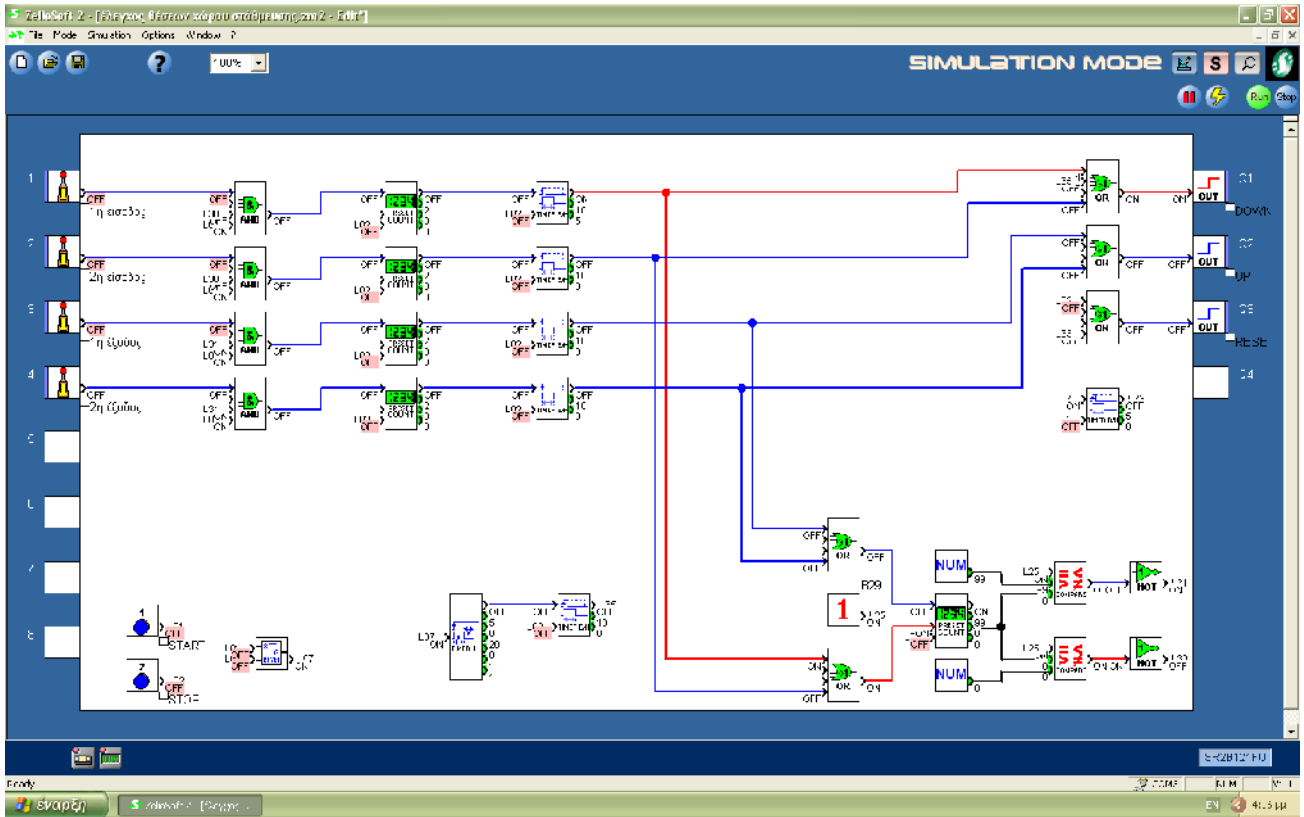
1, . 5.35                  μ                  RUN                  μ                  μ                  μ                  START,



. 5.35.







.537.  $\mu$   $\mu$  .

### 5.3.5.

$\mu$  5.5  $\mu$  .

5.5 .

	: 15€	
	: 10€	
	(4): 10€	
8 pins+	(3): 18€	
/ +	230/7.5V. 6.5€	: 77.05€
Board tester $\mu$	: 6€	
$\mu$ +	+ + 7 segment displays (2): 6.5€	
$\mu$	/ $\mu$ (11): 3.85€	
$\mu$ $\mu$ / $\mu$	(2): 1.2€	



# M

Zelio Software.

Ladder,

FBD,

, Help.

Zelio Logic,

smart relay

PLC.

PLC,

PLC,

PLC

PLC

PLC





- 
1. „ μ μ μ PLC, . , 2008.
  2. Denis Collins Eamonn Lane, . „ , . , 1997.
  3. Petruzella, D., Frank, . , „ , . , 2000.
  4. „ μ μ μ PLC, . , 2008.
  5. „ „ „ μ μ μ ( μ. ), . μ , 2000.
  6. μ N, „ μ μ , . , , 2005.
  7. <http://www.lavranos.com.gr/content/view/28/9/lang,gr/>
  8. <http://www3.telus.net/chemelec/Projects/Counter-UD/Counter-UD.htm>

