

**PRADIS**

**REFERENCE BOOK ON THE MODELS  
MODULE LOGIC**

**THE SOFTWARE FOR SIMULATION OF NON-STATIONARY  
PROCESSES IN MECHANICAL SYSTEMS AND SYSTEMS  
OF OTHER PHYSICAL NATURE**

**VERSION 4.3**

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# 1. Logical models

## 1.1. *AND - Logic element the 3AND*

NAME: Logic element 3AND with the logical function  
$$U_{OUT} = U_{IN1} \text{ .AND. } U_{IN2} \text{ .AND. } U_{IN3}$$

FIELD OF APPLICATION : Control systems

DEGREES OF FREEDOM:

- 1 1 the logical entrance
- is 2nd 2 the logical entrance
- 3- 3 the logical entrance
- 4 the logical output

PARAMETERS:

- 1 the arbitrary number

SPECIAL SITUATIONS:

- with the short duration of front ( $<1E-5$  s) possibly
- the interruption of working program with the communication:
- E (R 008) the assigned magnitude of the minimum step of the integration  
it does not ensure the required precision.

## **1.2. TMR - Logic element of timer**

NAME: Logic element of timer the delivery of the signal of that determined is accomplished duration with the delay with respect to the signal against the entrance

FIELD OF APPLICATION : Control systems

DEGREES OF FREEDOM:

- 1 the logical entrance
- the logical output is 2nd
- 3- the inverse logical output

PARAMETERS:

- 1 signal delay against the output  $>0$
- it is 2nd the duration of signal against the output not more  $>0$

VECTOR OF THE VARIABLES OF THE STATE

- 1 state of the output
- it is 2nd the time of the beginning of the passage of output beside another state

SPECIAL SITUATIONS:

- with the short duration of front ( $<1E-5$  s) possibly
- the interruption of working program with the communication:
- E (R 008) the assigned magnitude of the minimum step of the integration
- it does not ensure the required precision.

### **1.3. UTR - Source of the single periodic signal of trapeziform form.**

NAME: Source of the single periodic signal  
changing about the trapeziform law.

FIELD OF APPLICATION : Control systems

DEGREES OF FREEDOM:

1 output of the source

PARAMETERS:

1 moment of the beginning of the supply of the signal of  $\geq 0$   
it is 2nd the duration of the leading edge of the signal of  $\geq 0$   
3- the duration of the maximum of the signal of  $\geq 0$   
4 duration of the trailing edge of the signal of  $\geq 0$   
is 5th the period of the signal  $> OF PAR (of 2)+PAR (3)+PAR (4)$

HELP

SPECIAL SITUATIONS:

with the short duration of fronts ( $< 1E-5$  s) possibly  
the interruption of working program with the communication:  
E (R 008) the assigned magnitude of the minimum step of the integration  
it does not ensure the required precision.

#### **1.4. KVK - The terminal switch**

NAME: Travelling limit the switch  
with the logical signal against the output

FIELD OF APPLICATION : Control systems

DEGREES OF FREEDOM:

- 1 displacement of the flag of the terminal switch
- it is 2nd the housing of the switch
- 3- the logical output

PARAMETERS:

- 1 lower boundary of the interval of the wear and tear OF SON
- it is 2nd upper boundary of the interval of the wear and tear OF  $SOF \geq SON$

VECTOR OF THE VARIABLES OF THE STATE

- 1 state of the output
- it is 2nd the time of the beginning of the passage of output beside another state

SPECIAL SITUATIONS:

- with the short duration of front ( $< 1E-5$  s) possibly
- the interruption of working program with the communication:
- E (R 008) the assigned magnitude of the minimum step of the integration
- it does not ensure the required precision.

### **1.5. MEM - Logic memory element is (RS trigger)**

NAME:           Logic memory element is (RS trigger)  
                  with the logical function  
                   $UOUT = (UMEM .OR. UOUT) .AND. (.NOT. UDEL)$

FIELD OF APPLICATION : Control systems

DEGREES OF FREEDOM:

- 1 logical entrance of the memorized signal UMEM
- is 2nd the logical entrance of the removing signal UDEL
- 3- logical entrance UOUT

PARAMETERS: 1

VECTOR OF THE VARIABLES OF THE STATE

- 1 state of the output
- it is 2nd the time of the beginning of the passage of output beside another state

SPECIAL SITUATIONS:

- with the short duration of front ( $<1E-5$  s) possibly
- the interruption of working program with the communication:
- E (R 008) the assigned magnitude of the minimum step of the integration
- it does not ensure the required precision.

### **1.6. OR - Logic element the 3OR**

NAME:        Logic element 3OR with the logical function  
               $U_{OUT} = U_{IN1} .OR. U_{IN2} .OR. U_{IN3}$

FIELD OF APPLICATION : Control systems

DEGREES OF FREEDOM:

- 1 1 the logical entrance
- is 2nd 2 the logical entrance
- 3- 3 the logical entrance
- 4 the logical output

PARAMETERS:

- 1 the arbitrary number

SPECIAL SITUATIONS:

- with the short duration of front ( $<1E-5$  s) possibly
- the interruption of working program with the communication:
- E (R 008) the assigned magnitude of the minimum step of the integration
- it does not ensure the required precision.



### **1.7. NOT - *Logic element NOT***

NAME: Logic element NOT with the logical function  
 $U_{OUT} = \overline{U_{IN}}$

FIELD OF APPLICATION : Control systems

DEGREES OF FREEDOM:

1 the logical entrance  
the logical output is 2nd

PARAMETERS:

1 the arbitrary number

SPECIAL SITUATIONS:

with the short duration of front ( $<10^{-5}$  s) possibly  
the interruption of working program with the communication:  
E (R 008) the assigned magnitude of the minimum step of the integration  
it does not ensure the required precision.

### **1.8. KMD - Master switch**

NAME: Master switch  
with the logical signal against the output

FIELD OF APPLICATION : Control systems

DEGREES OF FREEDOM:

- 1 displacement of the flag of the terminal switch
- it is 2nd the housing of the switch
- 3- the logical output

PARAMETERS:

- 1 lower boundary of the interval of the wear and tear  $-360 < FION < 360$
- it is 2nd upper boundary of the interval of the wear and tear OF  $FIOF \geq FION$

VECTOR OF THE VARIABLES OF THE STATE

- 1 state of the output
- it is 2nd the time of the beginning of the passage of output beside another state

SPECIAL SITUATIONS:

- with the short duration of front ( $< 1E-5$  s) possibly
- the interruption of working program with the communication:
- E (R 008) the assigned magnitude of the minimum step of the integration
- it does not ensure the required precision.