1. Input Circuit

A LD instruction is used to designate an input branchable from the bus.

2. AND Circuit 1 (Series Circuit)

AND instructions can be used continuously without limitation.

3. AND Circuit 2 (Series Circuit)

4. OR Circuit 1 (Parallel Circuit)

5. OR Circuit 2 (Parallel Circuit)

OR instructions can be used continuously without limitation.

6. Self-Holding Circuit 1 (RESET Preferred)

Turning on SET input 0 while RESET input 1 is off turns on Output 200, which remains on after SET input 0 goes off.

7. Self-Holding Circuit 2 (SET Preferred)

Turning on SET input 0 turns on Output 200 whether RESET input is on or off, and Output 200 remains on after SET input 0 goes off.

8. Priority Circuit 1 (Continuous Input Signal)

Input 0 or 1 whichever enters first is given priority, nullifying the input which enters next.

9. Priority Circuit 2 (Pulse Input Signal)

This circuit is used when output should be prevented from turning on simultaneously, with forward/reverse control of a motor.

10. Series-Parallel Circuit 1

Turning on SET input 0 while RESET input 1 is off turns on Output 200, which remains on after SET input 0 goes off.
11. Series-Parallel Circuit 2

<table>
<thead>
<tr>
<th>Instruction Word</th>
<th>No./Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOD</td>
<td>0</td>
</tr>
<tr>
<td>AND NOT</td>
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</tr>
<tr>
<td>OR</td>
<td>2</td>
</tr>
<tr>
<td>AND NOT</td>
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</tr>
<tr>
<td>OUT</td>
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12. Series-Parallel (OR-LOD) Circuit 3

Circuit A

<table>
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<td>AND</td>
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Circuit B

13. Series-Parallel (OR-LOD) Circuit 4

Circuit A

<table>
<thead>
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<tr>
<td>AND</td>
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Circuit B

14. Series-Parallel (OR-LOD) Circuit 5

Circuit A

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<td>AND</td>
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</tr>
<tr>
<td>LOD</td>
<td>2</td>
</tr>
<tr>
<td>AND NOT</td>
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</tr>
<tr>
<td>OR-LOD</td>
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<tr>
<td>AND</td>
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Circuit B

15. Series-Parallel (OR-LOD) Circuit 6

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<tr>
<td>OR</td>
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</tr>
<tr>
<td>OR-LOD</td>
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<tr>
<td>LOD</td>
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</tr>
<tr>
<td>AND NOT</td>
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<tr>
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</table>

16. Series-Parallel (AND-LOD) Circuit 1

Circuit A

<table>
<thead>
<tr>
<th>Instruction Word</th>
<th>No./Data</th>
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</thead>
<tbody>
<tr>
<td>LOD</td>
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<td>AND NOT</td>
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<td>LOD</td>
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<tr>
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<tr>
<td>AND-LOD</td>
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<tr>
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</tr>
</tbody>
</table>

Circuit B

17. Series-Parallel (AND-LOD) Circuit 2

Circuit A

<table>
<thead>
<tr>
<th>Instruction Word</th>
<th>No./Data</th>
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<td>AND</td>
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<td>AND</td>
<td>5</td>
</tr>
<tr>
<td>OUT</td>
<td>2 0 0</td>
</tr>
</tbody>
</table>

Circuit B

After Circuits A and B are programmed, these circuits are ORed by an OR-LOD instruction. Therefore, AND3 instruction is programmed.
18. Series-Parallel (AND-LOD) Circuit 3

When modified, the circuit is easy to understand.

19. Series-Parallel (AND-LOD & OR-LOD) Circuit 4

NOTE: Operations of Operation Registers and Stack Registers

20. Series-Parallel (AND-LOD & OR-LOD) Circuit 5

21, Multiple Output Circuit 1

22. Multiple Output Circuit 2
23. Complex Circuit 1

<table>
<thead>
<tr>
<th>Instruction Word</th>
<th>No./Data</th>
</tr>
</thead>
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<tr>
<td>LOD</td>
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<tr>
<td>LOD</td>
<td>1</td>
</tr>
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<td>AND</td>
<td>2</td>
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<td>LOD</td>
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</tr>
<tr>
<td>LOD</td>
<td>4</td>
</tr>
<tr>
<td>OR</td>
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</tr>
<tr>
<td>AND·LOD</td>
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<tr>
<td>OR·LOD</td>
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</tr>
<tr>
<td>AND·NOT</td>
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</tr>
<tr>
<td>OUT</td>
<td>2 0 0</td>
</tr>
</tbody>
</table>

AND circuit of C and D = E
OR circuit of B and E = F
AND circuit of A and F
AND NOT E is added at the end.

24. Complex Circuit 2

<table>
<thead>
<tr>
<th>Instruction Word</th>
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</thead>
<tbody>
<tr>
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<td>AND·LOD</td>
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<tr>
<td>LOD</td>
<td>3</td>
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<tr>
<td>LOD</td>
<td>4</td>
</tr>
<tr>
<td>AND·NOT</td>
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<td>OR·LOD</td>
<td></td>
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<tr>
<td>OR</td>
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<tr>
<td>AND</td>
<td>7</td>
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<tr>
<td>OUT</td>
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</tr>
</tbody>
</table>

1. Branching from a Branch Circuit to a Bus

2. Branching from a Bus to the Middle of a Branch Circuit

3. Branching from a Line to the Middle of a Branch Circuit
1. ON-Delay Timer

(a)  

Instruction Word  No./Data  
LOD  0  
TIM  0  
OUT 200

A TIM instruction requires two addresses.
TIM No.
Reset time (T100) = 10.0 sec

(b) TIM instructions can be programmed in two ways: 1. as with Circuit (a), output can be taken out directly from the TIM instruction, and 2. as with Circuit (b), output can be converted to a contact signal and taken out.

Instruction Word  No./Data  
LOD  0  
TIM  0  
LOD-T 100  
OUT 200

2. OFF-Delay Timer

Instruction Word  No./Data  
LOD-NOT  0  
TIM  0  
LOD-NOT-T 100  
OUT 200

When Input 0 goes off, the NC contact of Input 0 starts TIM 0. After a preset time, the NC contact of TIM 0 turns off Output 200.

Use as signal
Input 0
NC contact
Timer
Output 200
Reset time 10 sec

3. Pulse Generating Circuit

(a) Flicker Circuit

Instruction Word  No./Data  
LOD-NOT-T  0  
TIM  0  
LOD-T 100  
OUT 200

4. Long-Delay Timer 1 (Timer + Timer)

Instruction Word  No./Data  
LOD  0  
TIM  0  
TIM 9000  
T100  
OUT 200  

Example: 9000(900 sec) + 3000(300 sec) + 12000(1200 sec) + 29/3

(b) Constant Duty Ratio Pulse Generating Circuit

Instruction Word  No./Data  
LOD  0  
AND-NOT-T  0  
TIM  0  
LOD-NOT-T 100  
AND 200  
LOD-T 0  
AND-NOT 200  
OR-LOD  
AND 0  
OUT 200

Time Chart

While Input 0 is on, output pulses with same ON and OFF durations (duty ratio 1:1) are generated.

(c) Adjustable Duty Ratio Pulse Generating Circuit

Instruction Word  No./Data  
LOD  0  
AND-NOT-T 1  
TIM  0  
LOD-T 0  
OUT 200  
TIM 1

Time Chart

While Input 0 is on, output pulses with OFF duration of TIM 0 and 0.4 sec duration of TIM 1 are generated.

Output can be programmed in parallel with TIM instructions.
5. Long-Delay Timer 2 (Timer + Counter)

- Time Chart

Input 0

Output 202

After input 0 has turned on, clock pulses generated by TIM 0 are counted to provide a long-delay timer.

6. Circuit to Turn Output Off Temporarily after Time-up

- Time Chart

Input 0

Output 202

Following to a TIM instruction, a circuit can be programmed.

7. Timer Using Special Internal Relay IR 714 (1-ssec clock)

- Time Chart

1 sec clock pulse

8. ON/OFF Delay Circuit

- Time Chart

Output 200 turns on 10 sec after input 0 has turned on, and Output 200 turns off 5 sec after input 0 has turned off.
1. Adding Counter 1

Instruction Word | No./Date
---|---
LOD | 9
LOD | 1
CNT | 9 9 9 9
OUT | 2 0 0

*Pulse Input Acceptance Timing*

- Input i is off, input j pulse signal is counted. When reaching the preset value, output 200 is turned on.

2. Adding Counter 2 (Multi-Stage Setting One-Shot Output Circuit)

Instruction Word | No./Date
---|---
LOD | 0
LOD | 1
CNT | 5
OUT | 2 0 0
FUN | 1 0 5
OUT | 2 0 0
FUN | 1 0 5
OUT | 2 0 0
FUN | 1 0 5
OUT | 2 0 3

*Time Chart*

Output signal is on only when the counted value coincides with the preset value.

3. Adding Counter 3 (Multi-Stage Setting Self-Holding Output Circuit)

Instruction Word | No./Date
---|---
LOD | 0
LOD | 1
CNT | 1 0 0 0
OUT | 2 0 0
FUN | 2 0 7
OUT | 2 0 0
FUN | 2 0 1
OUT | 2 0 0
FUN | 2 0 7
OUT | 2 0 2
FUN | 2 0 7
OUT | 2 0 0
OUT | 2 0 3

*Time Chart*

The multi-stage self-holding output circuit for the adding counter is programmed using a `FUN200` instruction (counter larger/smaller comparison instruction). There is no limit to the number of stages for the multi-stage counter.

4. Adding Counter 4 (Larger/Smaller Comparison Circuit)

Instruction Word | No./Date
---|---
LOD | 0
LOD | 1
CNT | 5 0 0
FUN | 5 0 0
FUN | 2 0 0
OUT | 3 5 0
OUT | 4 0 0
FUN | 2 0 0
AND | 1 5 0
OUT | 2 0 0

*Time Chart*

Output 200 is turned on when the counted value of Counter 0 is between 195 and 300.
5. Multi-Digit Counter 1

When the preset value exceeds 9999, two counters can be used to count up to 10000.

6. Dual-Pulse Type Reversible Counter Circuit (CNT 45)

This reversible counter has two pulse inputs for adding (UP) and subtracting (DOWN).

When Prefset input 0 enters, the counted value is reset to the CNT 45 preset value (1000). Output 200 is on only when the counted value is 6.

6. Multi-Digit Counter 2 (7-Digit Setting)

When the preset value exceeds 4 digits, two counters can be used to provide a 7-digit counter.

7. UP/DOWN Selection Type Reversible Counter Circuit (CNT 46 & 47)

This reversible counter has a pulse input and a selection input for switching the UP/DOWN gate.

When Prefset input 0 enters, the counted value is reset to the CNT 46 preset value (1000). Output 200 is on only when the counted value is 0.