

| FUN148 MPG | | MANUAL PULSE GENERATOR FOR POSITIONING | | | | FUN148 MPG | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|------------------|--|------------------|--|--|--|----|--|----|---|------------------|---------------------|------------------|--------|----|---|---|---|-----|----|---|---|---|-----|----|---|---|---|--|----|---|---|---|--|----|---|----|---|--|--|--|--|--|
| Execution | | EN | | <div><div>148. MPG</div><div>Sc : Ps : Fo : Mr : WR :</div></div> | | ACT | | <div>Sc : Source of high speed counter; 0~7 Ps : Axis of pulse output; 0~3 Fo : Setting of output speed (2 registers) Mr : Setting of multiplier (2 registers) Mr+0 : Multiplicand (Fa) Mr+1 : Dividend (Fb) WR : Starting address of working registers, it needs 4 registers * This instruction can be supported in PLC OS firmware V4.60 or late</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | <table><tr><th rowspan="2">Operand \ Range</th><th>HR</th><th>ROR</th><th>DR</th><th>K</th></tr><tr><th>R0 R3839</th><th>R5000 R8071</th><th>D0 D3999</th><th>16 bit</th></tr><tr><td>Sc</td><td>○</td><td>○</td><td>○</td><td>0~7</td></tr><tr><td>Ps</td><td>○</td><td>○</td><td>○</td><td>0~3</td></tr><tr><td>Fo</td><td>○</td><td>○</td><td>○</td><td></td></tr><tr><td>Mr</td><td>○</td><td>○</td><td>○</td><td></td></tr><tr><td>WR</td><td>○</td><td>○*</td><td>○</td><td></td></tr></table> | | Operand \ Range | HR | ROR | DR | K | R0 R3839 | R5000 R8071 | D0 D3999 | 16 bit | Sc | ○ | ○ | ○ | 0~7 | Ps | ○ | ○ | ○ | 0~3 | Fo | ○ | ○ | ○ | | Mr | ○ | ○ | ○ | | WR | ○ | ○* | ○ | | | | | |
| Operand \ Range | HR | ROR | DR | K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | R0 R3839 | R5000 R8071 | D0 D3999 | 16 bit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sc | ○ | ○ | ○ | 0~7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ps | ○ | ○ | ○ | 0~3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fo | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mr | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WR | ○ | ○* | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | <div>● Let this instruction be executed in 50mS fixed time interrupt service routine (50MSI) 、 or by using the 0.1mS high speed timer to generate 50mS fixed time interrupt service to have accurate repeat time to sample the pulse input from manual pulse generator. If it comes the input pulses, it will calculate the number of pulses needing to output according to the setting of multiplier (Mr+0 and Mr+1), and then outputs the pulse stream in the speed of setting (Fo) during this time interval. The setting of output speed (Fo) must be fast enough, and the acceleration / deceleration rate (Parameter 4 and parameter 8 of FUN141 instruction) must be sharp to guarantee it can complete the sending of pulse stream during the time interval if it is under high multiplier (100 or 200 times) situation.</div> <div>● When execution “EN” =1, this instruction will sample the pulse input from manual pulse generator by reading the current value of assigned high speed counter every time interval; it doesn’t have any output if it doesn’t have any input pulse; but If it senses the input pulses, it will calculate the number of pulses needing to output according to the setting of multiplier (Mr+0 and Mr+1), and then outputs the pulse stream in the speed of setting (Fo) during this time interval. Number of output pulses = (Number of input pulses × Fa) / Fb</div> <div>● This instruction also under the control of hardware resource management; it wouldn’t be executed if the hardware is occupied.</div> <div>● The output indicator ACT=1 if it outputs the pulses; otherwise ACT=0.</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <div>50mS</div> <div>←</div> <div>· Sample pulse input · Output pulse stream in the speed of Fo</div> <div>→</div> | | ... | | <div>50mS</div> <div>←</div> <div>· Sample pulse input · Output pulse stream in the speed of Fo</div> <div>→</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

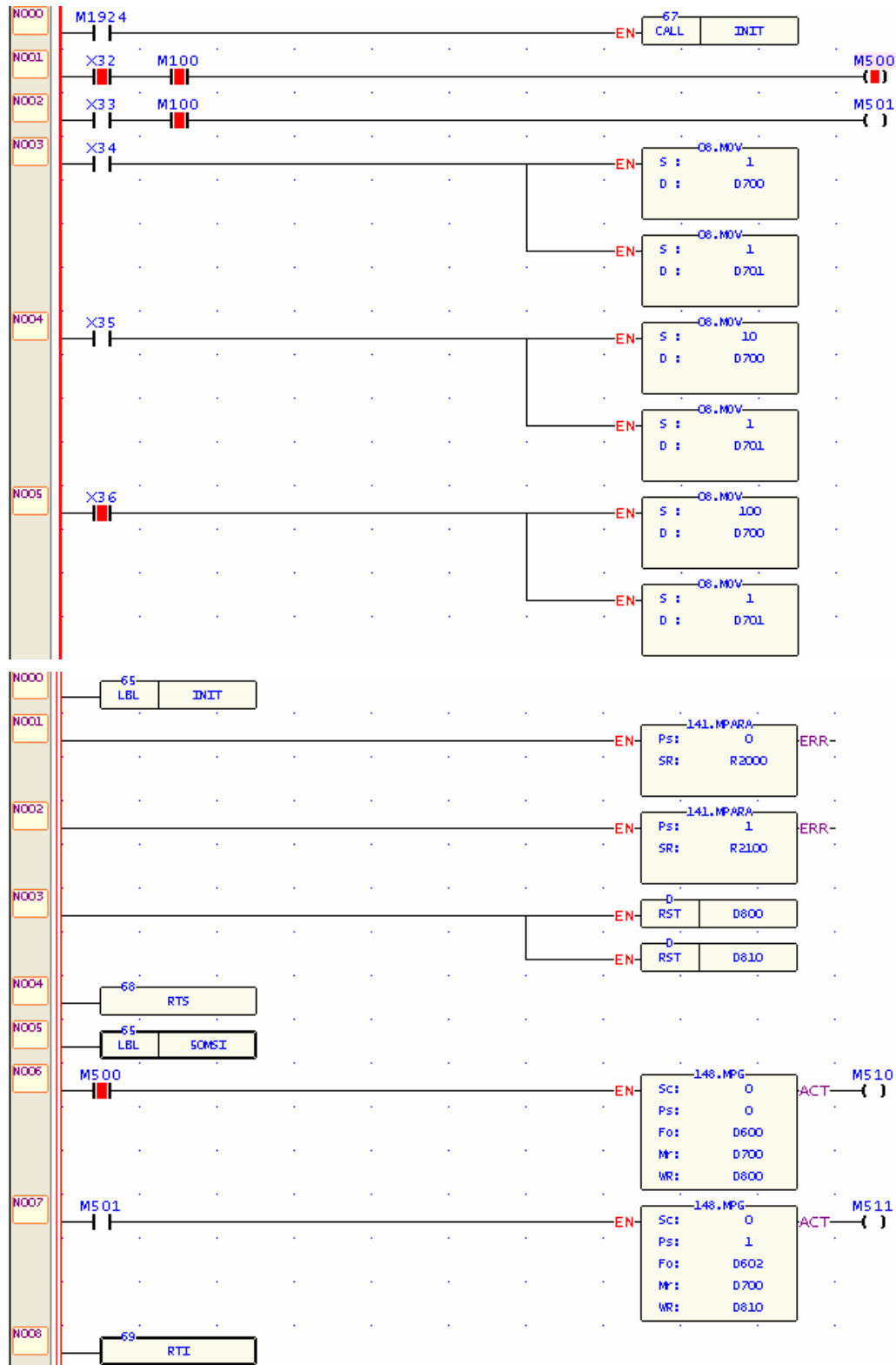
NC positioning instruction

FUN148
MPG

MANUAL PULSE GENERATOR FOR POSITIONING

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Example 1 :



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| Status Monitoring | | | | | | | | | | | |
|-------------------|---------|--------|----------|---------|--------|----------|----------|-------|----------|----------|-------|
| Ref. No. | Status | Data | Ref. No. | Status | Data | Ref. No. | Status | Data | Ref. No. | Status | Data |
| DR4080 | Decimal | 0 | DR4082 | Decimal | 0 | D800 | Decimal | 0 | D810 | Decimal | 2 |
| DR4088 | Decimal | 114200 | DR4090 | Decimal | 21000 | D801 | Hexdecim | 0100H | D811 | Hexdecim | 0001H |
| | | | | | | DD802 | Decimal | 11703 | DD812 | Decimal | 11703 |
| DR2005 | Decimal | 200000 | DR2105 | Decimal | 200000 | DR4096 | Decimal | 11703 | | | |
| R2011 | Decimal | 30 | R2111 | Decimal | 30 | | | | M100 | Enable | ON |
| DD600 | Decimal | 200000 | DD602 | Decimal | 200000 | D700 | Decimal | 100 | D701 | Decimal | 1 |
| M500 | Enable | ON | M501 | Enable | OFF | X34 | Enable | OFF | | | |
| X32 | Enable | ON | X33 | Enable | OFF | X35 | Enable | OFF | X36 | Enable | ON |

X32 : Select axis 0 (Ps0)

X33 : Select axis 1 (Ps1)

X34 : Multiplier = 1

X35 : Multiplier = 10

X36 : Multiplier = 100

M100 : Enable/disable MPG activity

DR2005 : Maximum speed of axis 0 (Parameter 4 of FUN141); 200000K Hz

R2011 : Acc/Dec time of axis 0 (Parameter 8 of FUN141); 30mS

DD600 : Output speed of axis 0 for MPG; 200000K Hz

DR2105 : Maximum speed of axis 1 (Parameter 4 of FUN141); 200000K Hz

R2111 : Acc/Dec time of axis 1 (Parameter 8 of FUN141); 30mS

DD602 : Output speed of axis 1 for MPG; 200000K Hz

Description : Let the MPG instruction (FUN148) be executed in 50mS fixed time interrupt service routine (50MSI) to handle the MPG positioning of Ps0 and Ps1.

When X32=1 and M100=1, it will handle the MPG positioning of Ps0; it will sample the pulse input from reading the current value of HSC0 every 50mS time interval; it doesn't have any output if it doesn't have any input pulse; but If it senses the input pulses, it will calculate the number of pulses needing to output according to the setting of multiplier (D700 and D701), and then outputs the pulse stream in the speed of setting (DD600) during this time interval.

.Number of output pulses = (Number of input pulses from HSC0 × D700) / D701

NC positioning instruction

Example 2 :

The diagram illustrates the logic for a Manual Pulse Generator for Positioning, organized into two main sections.

Top Section (N000 to N005):

- N000:** Initial setup. A call to a subprogram (N000) is made. A label (LBL) is used to mark the start of the main program.
- N001:** A pulse (M100) is generated when input X32 is active.
- N002:** A pulse (M100) is generated when input X33 is active.
- N003:** A pulse (M100) is generated when input X34 is active.
- N004:** A pulse (M100) is generated when input X35 is active.
- N005:** A pulse (M100) is generated when input X36 is active.

Bottom Section (N000 to N009):

- N000:** Initial setup. A label (LBL) is used to mark the start of the main program.
- N001:** A pulse (M100) is generated when input X32 is active.
- N002:** A pulse (M100) is generated when input X33 is active.
- N003:** A pulse (M100) is generated when input X34 is active.
- N004:** A pulse (M100) is generated when input X35 is active.
- N005:** A pulse (M100) is generated when input X36 is active.
- N006:** A pulse (M100) is generated when input X37 is active.
- N007:** A pulse (M100) is generated when input X38 is active.
- N008:** A pulse (M100) is generated when input X39 is active.
- N009:** A pulse (M100) is generated when input X40 is active.

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| Status Monitoring | | | | | | | | | | | |
|-------------------|---------|--------|----------|---------|--------|----------|----------|-------|----------|----------|-------|
| Ref. No. | Status | Data | Ref. No. | Status | Data | Ref. No. | Status | Data | Ref. No. | Status | Data |
| DR4080 | Decimal | 0 | DR4082 | Decimal | 0 | D800 | Decimal | 0 | D810 | Decimal | 2 |
| DR4088 | Decimal | 114200 | DR4090 | Decimal | 21000 | D801 | Hexdecim | 0000H | D811 | Hexdecim | 0101H |
| | | | | | | DD802 | Decimal | 11703 | DD812 | Decimal | 11703 |
| DR2005 | Decimal | 200000 | DR2105 | Decimal | 200000 | DR4096 | Decimal | 11703 | | | |
| R2011 | Decimal | 30 | R2111 | Decimal | 30 | | | | M100 | Enable | ON |
| DD600 | Decimal | 200000 | DD602 | Decimal | 200000 | D700 | Decimal | 100 | D701 | Decimal | 1 |
| M500 | Enable | OFF | M501 | Enable | ON | X34 | Enable | OFF | | | |
| X32 | Enable | OFF | X33 | Enable | ON | X35 | Enable | OFF | X36 | Enable | ON |

X32 : Select axis 0 (Ps0)

X33 : Select axis 1 (Ps1)

X34 : Multiplier = 1

X35 : Multiplier = 10

X36 : Multiplier = 100

M100 : Enable/disable MPG activity

DR2005 : Maximum speed of axis 0 (Parameter 4 of FUN141); 200000K Hz

R2011 : Acc/Dec time of axis 0 (Parameter 8 of FUN141); 30mS

DD600 : Output speed of axis 0 for MPG; 200000K Hz

DR2105 : Maximum speed of axis 1 (Parameter 4 of FUN141); 200000K Hz

R2111 : Acc/Dec time of axis 1 (Parameter 8 of FUN141); 30mS

DD602 : Output speed of axis 1 for MPG; 200000K Hz

Description : By using the 0.1mS high speed timer to generate 50mS fixed time interrupt service (HSTAIL) to handle the MPG positioning of Ps0 and Ps1.

When X33=1 and M100=1, it will handle the MPG positioning of Ps1; it will sample the pulse input from reading the current value of HSC0 every 50mS time interval; it doesn't have any output if it doesn't have any input pulse; but If it senses the input pulses, it will calculate the number of pulses needing to output according to the setting of multiplier (D700 and D701), and then outputs the pulse stream in the speed of setting (DD602) during this time interval.

.Number of output pulses = (Number of input pulses from HSC0 × D700) / D701