```
        0.00
    ┤├─────────────────┌──────────┐
                       │  @CTBL   │
                       ├──────────┤   High-speed counter input 0
                       │  #0000   │   Register target comparison table
                       ├──────────┤   and start comparison
                       │  #0000   │
                       ├──────────┤
                       │   D100   │
                       └──────────┘
```

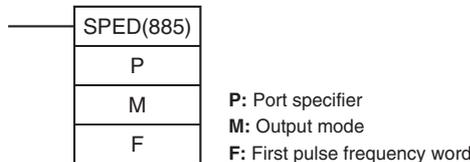|		
D100	0002	Two target values
D101	01F4	Target value 1: 0000 01F4 hex (500)
D102	0000	
D103	0001	Incrementing, Interrupt task number 1
D104	03E8	Target value 2: 0000 03E8 hex (1000)
D105	0000	
D106	0002	Incrementing, Interrupt task number 2

3-20-5 SPEED OUTPUT: SPED(885)

Purpose

SPED(885) is used to set the output pulse frequency for a specific port and start pulse output without acceleration or deceleration. Either independent mode positioning or continuous mode speed control is possible. For independent mode positioning, the number of pulses is set using PULS(886).

SPED(885) can also be executed during pulse output to change the output frequency, creating stepwise changes in the speed.

Ladder Symbol

```
        ┌──────────────┐
────────┤  SPED(885)   │
        ├──────────────┤
        │      P       │
        ├──────────────┤
        │      M       │      **P:** Port specifier
        ├──────────────┤      **M:** Output mode
        │      F       │      **F:** First pulse frequency word
        └──────────────┘
```

Variations

Variations	Executed Each Cycle for ON Condition	SPED(885)
	Executed Once for Upward Differentiation	@SPED(885)
	Executed Once for Downward Differentiation	Not supported
Immediate Refreshing Specification		Not supported

Applicable Program Areas

| Block program areas	Step program areas	Subroutines	Interrupt tasks
OK	OK	OK	OK

Operands

P: Port Specifier

The port specifier specifies the port where the pulses will be output.

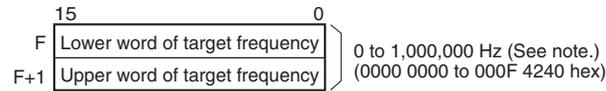| P	Port
0000 hex	Pulse output 0
0001 hex	Pulse output 1
0002 hex	Pulse output 2 (CP1H only)
0003 hex	Pulse output 3 (CP1H only)
0020 hex	Inverter positioning 0 (CP1L only)
0021 hex	Inverter positioning 1 (CP1L only)

M: Output Mode

The value of M determines the output mode.
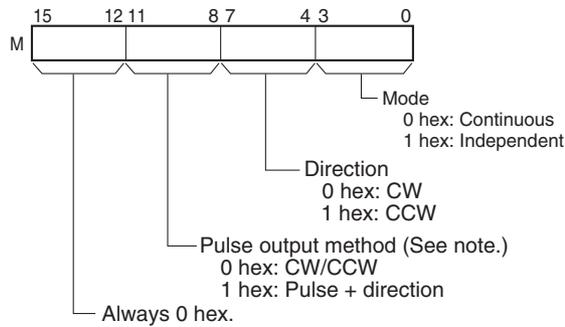
Note: Use the same pulse output method when using both pulse outputs 0 and 1 (CP1H only).

F: First Pulse Frequency Word

The value of F and F+1 sets the pulse frequency in Hz.

Note The maximum frequency that can be specified depends on the model and pulse output support. Refer to the *CP1H Operation Manual.*

Operand Specifications

Area	P	M	F
CIO Area	---	---	CIO 0 to CIO 6142
Work Area	---	---	W0 to W510
Holding Bit Area	---	---	H0 to H510
Auxiliary Bit Area	---	---	A448 to A958
Timer Area	---	---	T0000 to T4094
Counter Area	---	---	C0000 to C4094
DM Area	---	---	D0 to D32766
Indirect DM addresses in binary	---	---	@ D0 to @ D32767
Indirect DM addresses in BCD	---	---	*D0 to *D32767
Constants	See description of operand.	See description of operand.	See description of operand.
Data Registers	---	---	---
Index Registers	---	---	---
Indirect addressing using Index Registers	---	---	,IR0 to ,IR15 −2048 to +2047 ,IR0 to −2048 to +2047 ,IR15 DR0 to DR15, IR0 to IR15 ,IR0+(++) to ,IR15+(++) ,−(− −)IR0 to, −(− −)IR15

Upper Limits to the Target Frequency

Port	CP1H			CP1L
	X40/XA40 version 1.0	X40/XA40 version 1.1 or higher	Y20	
Port 0	100 kHz	100 kHz	1 MHz	100 kHz
Port 1	100 kHz	100 kHz	1 MHz	100 kHz
Port 2	30 kHz	100 kHz	100 kHz	---
Port 3	30 kHz	100 kHz	100 kHz	---

Description

SPED(885) starts pulse output on the port specified in P using the method specified in M at the frequency specified in F. Pulse output will be started each time SPED(885) is executed. It is thus normally sufficient to use the differentiated version (@SPED(885)) of the instruction or an execution condition that is turned ON only for one scan.

SPED(885) executed.
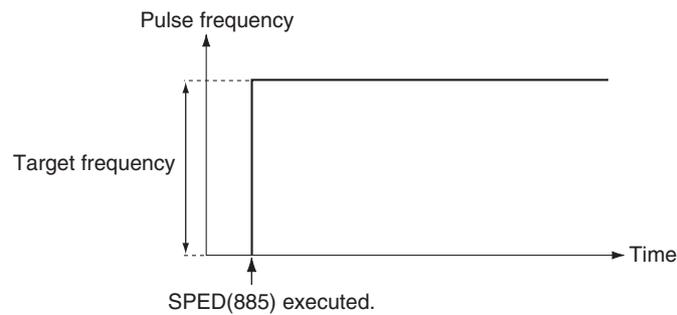
In independent mode, pulse output will stop automatically when the number of pulses set with PULS(886) in advance have been output. In continuous mode, pulse output will continue until stopped from the program.

An error will occur if the mode is changed between independent and continuous mode while pulses are being output.

■ **Continuous Mode Speed Control**

When continuous mode operation is started, pulse output will be continued until it is stopped from the program.

Note Pulse output will stop immediately if the CPU Unit is changed to PROGRAM mode.

Operation	Purpose	Application	Frequency changes	Description	Procedure/ instruction
Starting pulse output	To output with specified speed	Changing the speed (frequency) in one step		Outputs pulses at a specified frequency.	SPED(885) (Continuous)
Changing settings	To change speed in one step	Changing the speed during operation		Changes the frequency (higher or lower) of the pulse output in one step.	SPED(885) (Continuous) ↓ SPED(885) (Continuous)

Operation	Purpose	Application	Frequency changes	Description	Procedure/instruction
Stopping pulse output	Stop pulse output	Immediate stop	Pulse frequency / Present frequency / Time / Execution of INI(880)	Stops the pulse output immediately.	SPED(885) (Continuous) ↓ INI(880)
	Stop pulse output	Immediate stop	Pulse frequency / Present frequency / Time / Execution of SPED(885)	Stops the pulse output immediately.	SPED(885) (Continuous) ↓ SPED(885) (Continuous, Target frequency of 0 Hz)

■ Independent Mode Positioning

When independent mode operation is started, pulse output will be continued until the specified number of pulses has been output.

Note (1) Pulse output will stop immediately if the CPU Unit is changed to PRO-GRAM mode.

(2) The number of output pulses must be set each time output is restarted.

(3) The number of output pulses must be set in advance with PULS(881). Pulses will not be output for SPED(885) if PULS(881) is not executed first.

(4) The direction set in the SPED(885) operand will be ignored if the number of pulses is set with PULS(881) as an absolute value.

Operation	Purpose	Application	Frequency changes	Description	Procedure/instruction
Starting pulse output	To output with specified speed	Positioning without acceleration or deceleration		Starts outputting pulses at the specified frequency and stops immediately when the specified number of pulses has been output. **Note** The target position (specified number of pulses) cannot be changed during positioning.	PULS(886) ↓ SPED(885) (Independent)
Changing settings	To change speed in one step	Changing the speed in one step during operation		SPED(885) can be executed during positioning to change (raise or lower) the pulse output frequency in one step. The target position (specified number of pulses) is not changed.	PULS(886) ↓ SPED(885) (Independent) ↓ SPED(885) (Independent)
Stopping pulse output	To stop pulse output (Number of pulses setting is not preserved.)	Immediate stop		Stops the pulse output immediately and clears the number of output pulses setting.	PULS(886) ↓ SPED(885) (Independent) ↓ INI(880) — PLS2(887) ↓ INI(880)
	Stop pulse output (Number of pulses setting is not preserved.)	Immediate stop		Stops the pulse output immediately and clears the number of output pulses setting.	PULS(886) ↓ SPED(885) (Independent) ↓ SPED(885), (Independent, Target frequency of 0 Hz)

Flags

Name	Label	Operation
Error Flag	ER	ON if the specified range for P, M, or F is exceeded.
		ON if PLS2(887) or ORG(889) is already being executed to control pulse output for the specified port.
		ON if SPED(885) or INI(880) is used to change the mode between continuous and independent output during pulse output.
		ON if SPED(885) is executed in an interrupt task when an instruction controlling pulse output is being executed in a cyclic task.
		ON if SPEC(885) is executed in independent mode with an absolute number of pulses and the origin has not been established.

Example

When CIO 0.00 turns ON in the following programming example, PULS(886) sets the number of output pulses for pulse output 0. An absolute value of 5,000 pulses is set. SPED(885) is executed next to start pulse output using the CW/CCW method in the clockwise direction in independent mode at a target frequency of 500 Hz.
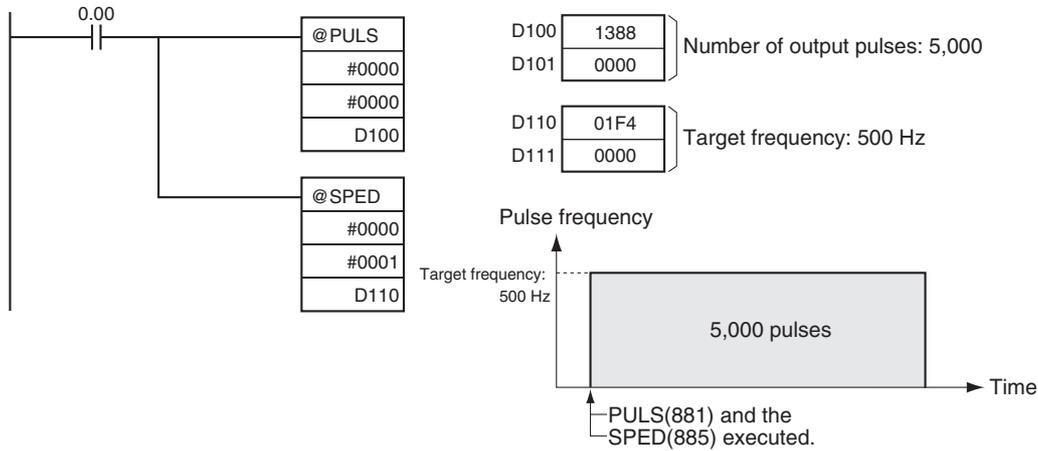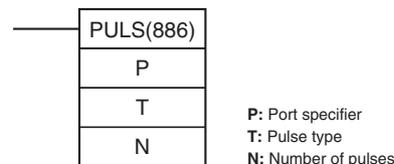

3-20-6 SET PULSES: PULS(886)

Purpose

PULS(886) is used to set the pulse output amount (number of output pulses) for pulse outputs that are started later in the program using SPED(885) or ACC(888) in independent mode.

Ladder Symbol

P: Port specifier
T: Pulse type
N: Number of pulses

Variations

Variations	Executed Each Cycle for ON Condition	PULS(886)
	Executed Once for Upward Differentiation	@PULS(886)
	Executed Once for Downward Differentiation	Not supported
Immediate Refreshing Specification		Not supported