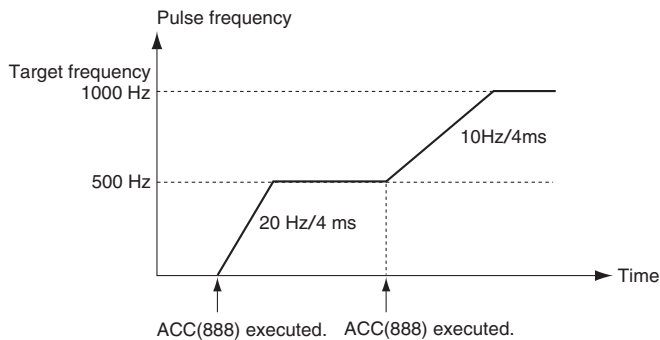
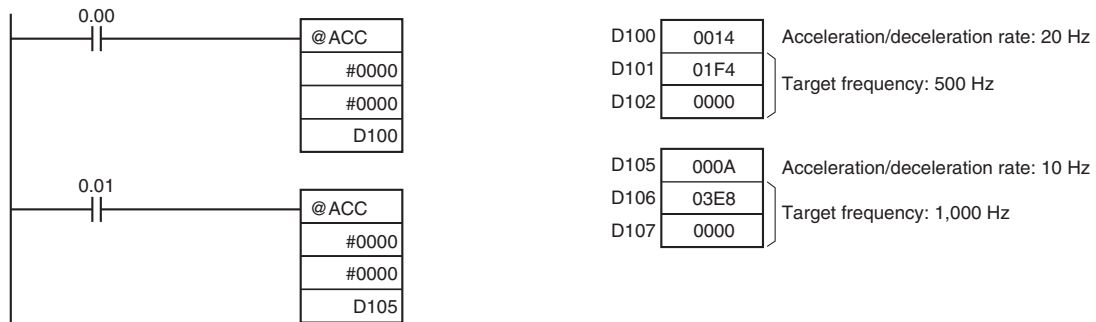


Flags

Name	Label	Operation
Error Flag	ER	ON if the specified range for P, M, or S is exceeded. ON if pulses are being output using ORG(889) for the specified port. ON if ACC(888) is executed to switch between independent and continuous mode for a port that is outputting pulses for SPED(885), ACC(888), or PLS2(887). ON if ACC(888) is executed in an interrupt task when an instruction controlling pulse output is being executed in a cyclic task. ON if ACC(888) is executed for an absolute pulse output in independent mode but the origin has not been established.

Example

When CIO 0.00 turns ON in the following programming example, ACC(888) starts pulse output from pulse output 0 in continuous mode in the clockwise direction using the CW/CCW method. Pulse output is accelerated at a rate of 20 Hz every 4 ms until the target frequency of 500 Hz is reached. When CIO 0.01 turns ON, ACC(888) changes to an acceleration rate of 10 Hz every 4 ms until the target frequency of 1,000 Hz is reached.



3-20-9 ORIGIN SEARCH: ORG(889)

Purpose

ORG(889) performs an origin search or origin return operation.

■ **Origin Search**

Pulses are output using the specified method to actually drive the motor and establish the origin based on origin proximity input and origin input signals.

■ **Origin Return**

The positioning system is returned to the pre-established origin.

**Ladder Symbol**



**Variations**

<b>Variations</b>	<b>Executed Each Cycle for ON Condition</b>	ORG(889)
	<b>Executed Once for Upward Differentiation</b>	@ORG(889)
	<b>Executed Once for Downward Differentiation</b>	Not supported
<b>Immediate Refreshing Specification</b>		Not supported

**Applicable Program Areas**

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

**Operands**

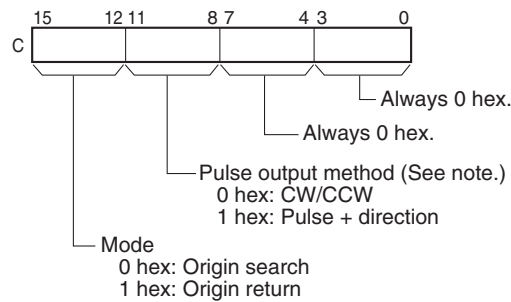
**P: Port Specifier**

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)

**C: Control Data**

The value of C determines the origin search method.



**Note:** Use the same pulse output method when using both pulse outputs 0 and 1.

**Operand Specifications**

Area	P	C
CIO Area	---	---
Work Area	---	---
Holding Bit Area	---	---
Auxiliary Bit Area	---	---
Timer Area	---	---

Area	P	C
Counter Area	---	---
DM Area	---	---
Indirect DM addresses in binary	---	---
Indirect DM addresses in BCD	---	---
Constants	See description of operand.	See description of operand.
Data Registers	---	---
Index Registers	---	---
Indirect addressing using Index Registers	---	---

**Description**

ORG(889) performs an origin search or origin return operation for the port specified in P using the method specified in C.

The following parameters must be set in the PLC Setup before ORG(889) can be executed. Refer to the *CP1H Operation Manual* for details.

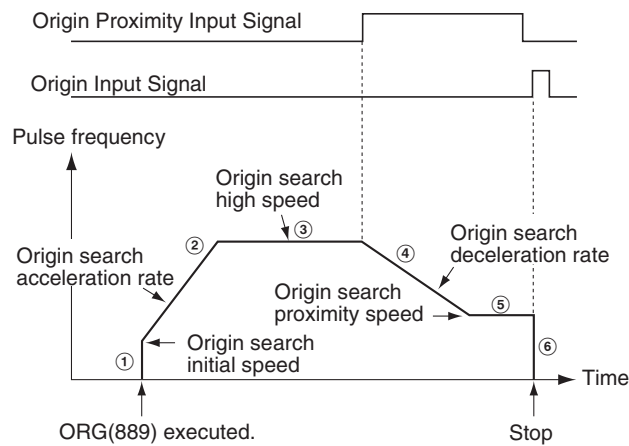
Origin search	Origin return
Origin Search Function Enable/Disable	Origin Search/Return Initial Speed
Origin Search Operating Mode	Origin Return Target Speed
Origin Search Operation Setting	Origin Return Acceleration Rate
Origin Detection Method	Origin Return Deceleration Rate
Origin Search Direction Setting	
Origin Search/Return Initial Speed	
Origin Search High Speed	
Origin Search Proximity Speed	
Origin Compensation	
Origin Search Acceleration Rate	
Origin Search Deceleration Rate	
Limit Input Signal Type	
Origin Proximity Input Signal Type	
Origin Input Signal Type	

An origin search or origin return is started each time ORG(889) is executed. It is thus normally sufficient to use the differentiated version (@ORG(889)) of the instruction or an execution condition that is turned ON only for one scan.

■ **Origin Search (Bits 12 to 15 of C = 0 hex)**

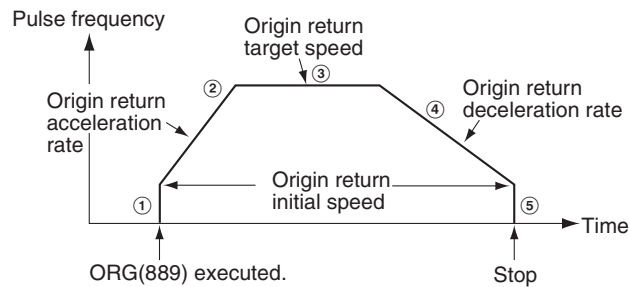
ORG(889) starts outputting pulses using the specified method at the Origin Search Initial Speed (1 in diagram). Pulse output is accelerated to the Origin Search High Speed using the Origin Search Acceleration Rate (2 in diagram). Pulse output is then continued at constant speed until the Origin Proximity Input Signal turns ON (3 in diagram), from which point pulse output is decelerated to the Origin Search Proximity Speed using the Origin Search Deceleration Rate (4 in diagram). Pulses are then output at constant speed until the Origin Input Signal turns ON (5 in diagram). Pulse output is stopped when the Origin Input Signal turns ON (6 in diagram).

When the origin search operation has been completed, the Error Counter Reset Output will be turned ON. The above operation, however, depends on the operating mode, origin detection method, and other parameters. Refer to the *CP1H Operation Manual* for details.



■ Origin Return (Bits 12 to 15 of C = 1 hex)

ORG(889) starts outputting pulses using the specified method at the Origin Return Initial Speed (1 in diagram). Pulse output is accelerated to the Origin Return Target Speed using the Origin Return Acceleration Rate (2 in diagram) and pulse output is continued at constant speed (3 in diagram). The deceleration point is calculated from the number of pulses remaining to the origin and the deceleration rate and when that point is reached, the pulse output is decelerated (4 in diagram) at the Origin Return Deceleration Rate until the Origin Return Start Speed is reached, at which point pulse output is stopped at the origin (5 in diagram).

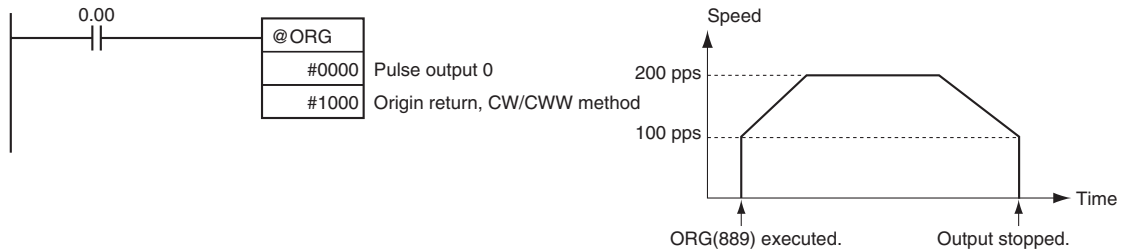


Flags

Name	Label	Operation
Error Flag	ER	ON if the specified range for P or C is exceeded. ON if ORG(889) is specified for a port during pulse output for SPED(885), ACC(888), or PLS2(887). ON if ORG(889) is executed in an interrupt task when an instruction controlling pulse output is being executed in a cyclic task. ON if the origin search or origin return parameters set in the PLC Setup are not within range. ON if the Origin Search High Speed is less than or equal to the Origin Search Proximity Speed or the Origin Search Proximity Speed is less than or equal to the Origin Search Initial Speed. ON if the Origin Return Target speed is less than or equal to the Origin Return Initial Speed. ON if an origin return operation is attempted when the origin has not been established.

**Example**

When CIO 0.00 turns ON in the following programming example, ORG(889) starts an origin return operation for pulse output 0 by outputting pulses using the CW/CCW method. According to the PLC Setup, the initial speed is 100 pps, the target speed is 200 pps, and the acceleration and deceleration rates are 50 Hz/4 ms.



The PLC Setup parameters are as follows:

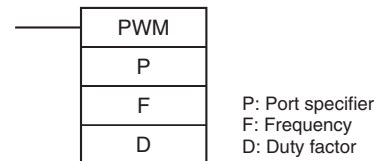
Parameter	Setting
Pulse Output 0 Starting Speed for Origin Search and Origin Return	0000 0064 hex: 100 pps
Pulse Output 0 Origin Return Target Speed	0000 00C8 hex: 200 pps
Pulse Output 0 Origin Return Acceleration Rate	0032 hex: 50 hex/4 ms
Pulse Output 0 Origin Return Deceleration Rate	0032 hex: 50 hex/4 ms

### 3-20-10 PULSE WITH VARIABLE DUTY FACTOR: PWM(891)

**Purpose**

PWM(891) is used to output pulses with the specified duty factor from the specified port.

**Ladder Symbol**



**Variations**

Variations	Executed Each Cycle for ON Condition	PWM(891)
	Executed Once for Upward Differentiation	@PWM(891)
	Executed Once for Downward Differentiation	Not supported
<b>Immediate Refreshing Specification</b>		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 Duty factor in increments of 1%, Frequency in increments of 0.1 Hz
0001 hex	Pulse output 1 Duty factor in increments of 1%, Frequency in increments of 0.1 Hz
1000 hex	Pulse output 0 Duty factor in increments of 0.1%, Frequency in increments of 0.1 Hz
1001hex	Pulse output 1 Duty factor in increments of 0.1%, Frequency in increments of 0.1 Hz