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 Author: Matt Wills

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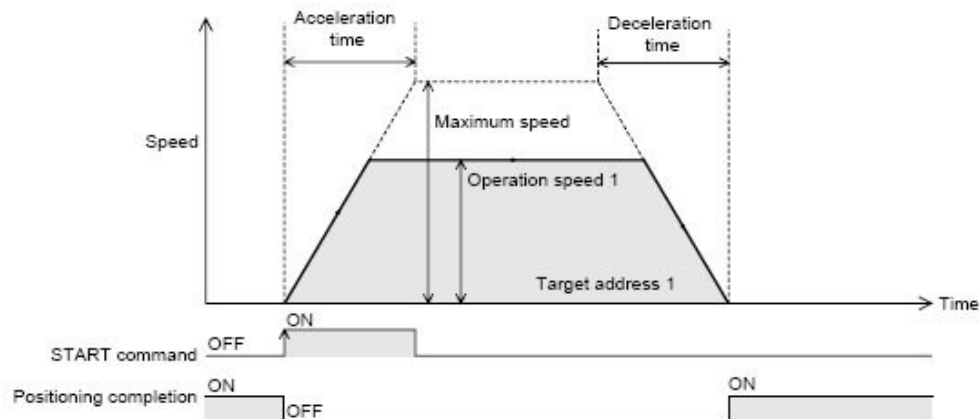
This Data Sheet covers the different types of Positioning control methods and the Table Operation that is available in the FX3U-20SSC-H module.

The Position control methods are:

- 1) 1-speed Positioning Operation
- 2) Interrupt 1-speed Positioning Operation
- 3) 2-speed Positioning Operation
- 4) Interrupt 2-speed Positioning Operation
- 5) Interrupt Stop
- 6) Variable Speed Operation
- 7) Multi Speed Operation
- 8) Linear Interpolation
- 9) Linear Interpolation (interrupt stop)
- 10) Circular Interpolation (Centre & Radius)
- 11) Current Position or Present Address Change
- 12) Absolute Address Specification
- 13) Relative / Incremental Address Specification
- 14) Jump
- 15) Dwell
- 16) m Code
- 17) Continuous Pass

1) 1-Speed Positioning Operation

1. Operation



1) Set the Operation speed 1 and Target address 1.

2) Select the 1-speed positioning operation from the operation patterns and activate the START command to start the 1-speed positioning operation (above figure).
 (The positioning completion signal is turned OFF.)

3) The operation stops at the target address 1, and the operation ends, turning the positioning completion signal ON.

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2. Operation Speed

Actual operation speed is "operation speed 1 x override setting."

Operation speed 1 can be changed using the operation speed change function except for the following conditions.

- During deceleration operation
- When the speed change disable during operation signal is ON.

3. Address Specification

Absolute/Relative address can be specified.

With the specified absolute address: Specifies a target address (position) using address 0 as the base. With the specified relative address: Specifies a travel distance from the current address.

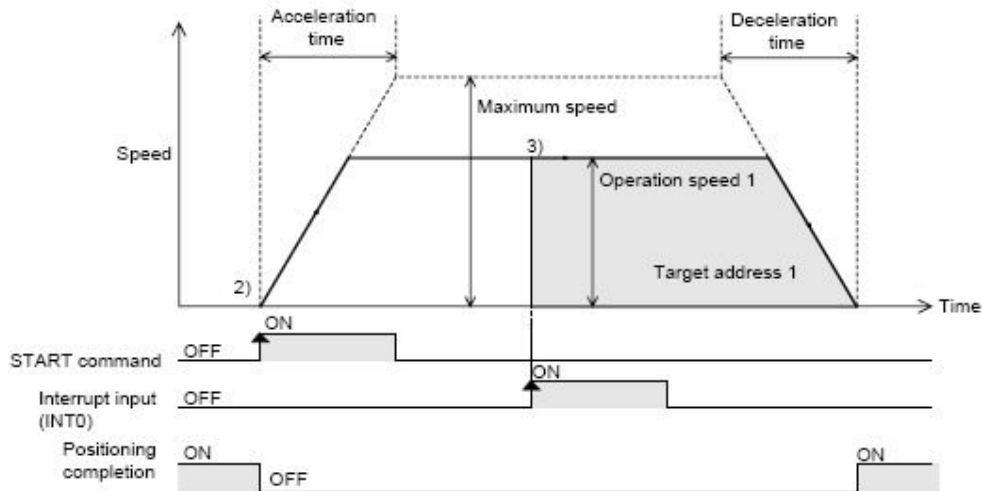
4. Rotation Direction

With the specified absolute address: The rotation direction depends on whether the target address 1 is larger or smaller than the current address.

With the specified relative address: The rotation direction is decided by the sign (positive/negative) of target address 1.

2) Interrupt 1-Speed Positioning Operation

1. Operation



- 1) Set the Operation speed 1 and Target address 1 (travel distance after interrupt input).
- 2) Select the interrupt 1-speed constant quantity feed from the operation patterns and activate the START command to start the interrupt 1-speed constant quantity feed (above figure). (The positioning completion signal is turned OFF.)
- 3) At interrupt input (INT0) ON, the work piece moves at the operation speed 1 to the target address 1, where the operation ends and the positioning completion signal turns ON.

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Note: The travel distance for target address 1 must be larger than the deceleration distance to stop. If the travel distance for target address 1 is smaller, the work piece decelerates as much as possible, and the operation stops.

2. Operation speed

Actual operation speed is "operation speed 1 x override setting."

Operation speed 1 can be changed using the operation speed change function except for the following conditions:

- During deceleration operation
- When the speed change disable during operation signal is ON.

3. Address specification

Specified addresses are handled as relative addresses (travel distance from the current address). (Relative/Absolute address specification is ignored.)

4. Rotation Direction

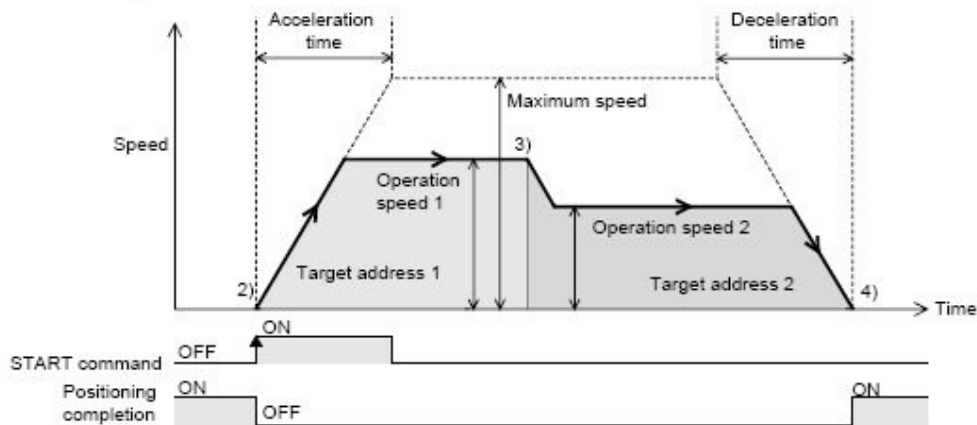
The sign of the target address decides the operation direction.

+: Operates in the direction that increases the current value. (When the value is 0, it is regarded as 1.)

-: Operates in the direction that decreases the current value.

3) 2-Speed Positioning Operation

1. Operation



1) Set the operation speed 1, operation speed 2, target address 1, and target address 2.

2) Select the 2-speed positioning operation from the operation patterns and activate the START command to start the 2-speed positioning operation (above figure). (The positioning completion signal is turned OFF.)

3) Acceleration or deceleration operation to shift to operation speed 2 is started upon reaching the target address 1.

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4) The work piece stops at target address 2 and the operation ends, turning the positioning completion signal ON.

2. Operation speed

The actual operation speed is decided by the following calculation formulas.

- Operation speed 1 x Override setting
- Operation speed 2 x Override setting

Operation speed 1 and operation speed 2 can be changed using the operation speed change function except for the following conditions:

- During deceleration operation from operation speed 2
- When the speed change disable during operation signal is ON.

3. Address Specification

Absolute/Relative address can be specified.

With the specified absolute address: Specifies a target address (position) using address 0 as the base.

With the specified relative address: Specifies a travel distance from the current address.

4. Rotation Direction

With the specified absolute address: The rotation direction depends on whether the target address 1 is larger or smaller than the current address.

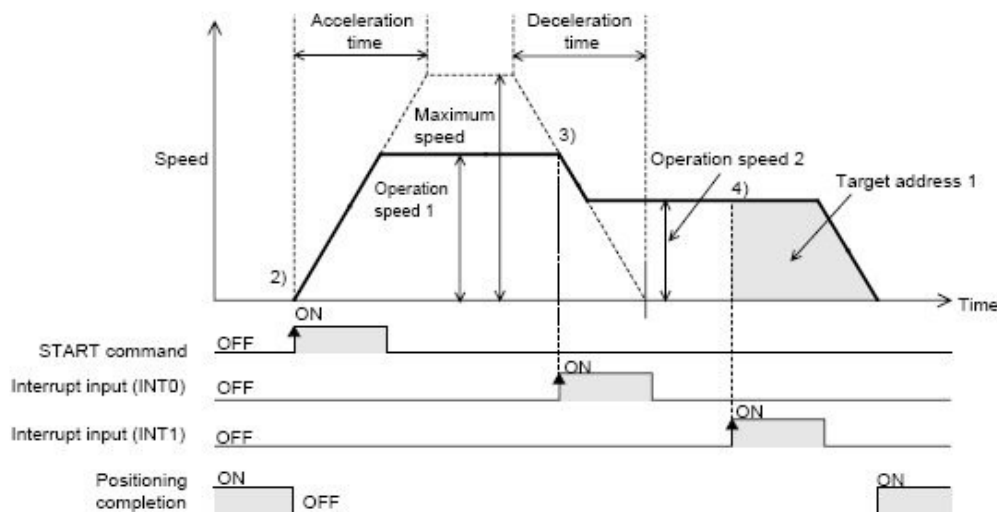
With the specified relative address: The rotation direction is decided by the sign (positive/negative) of target address 1.

Note: If the moving directions of Target Address 1 and Target Address 2 are not the same, a reverse operation is performed immediately after the deceleration stop at target address 1.

Caution: An abrupt change of the rotation direction may damage the machine. It may also cause an error by motor overload.

If the operation in a different direction requires stop time, use 1-speed positioning operation.

4) Interrupt 2-Speed Positioning Operation



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- 1) Set the operation speed 1, operation speed 2, and target address 1.
- 2) Select the Interrupt 2-speed constant quantity feed from the operation patterns and activate the START command to start the Interrupt 2-speed constant quantity feed (above figure).
(The positioning completion signal is turned OFF.)
- 3) At interrupt input (INT0) ON, the work piece starts accelerating/decelerating to the operation speed 2.
- 4) At interrupt input (INT1) ON, the work piece moves at the operation speed 2 to the target address 1, and the operation ends, turning ON the positioning completion signal.

Note:

- Interrupt input is detected in the order of INT0 and INT1.
- The travel distance for target address 1 must be larger than the deceleration distance to stop. If the travel distance for target address 1 is smaller, the work piece decelerates as much as possible, and the operation stops.

2. Operation speed

The actual operation speed is decided by the following calculation formulas.

- Operation speed 1 x Override setting
- Operation speed 2 x Override setting

Operation speed 1 and operation speed 2 can be changed using the operation speed change function except for the following conditions.

- During deceleration operation from operation speed 2
- When the speed change disable during operation signal is ON.

3. Address specification

Specified addresses are handled as relative addresses (travel distance from the current address).

(Relative/Absolute address specification is ignored.)

4. Rotation Direction

The sign of the target address decides the operation direction.

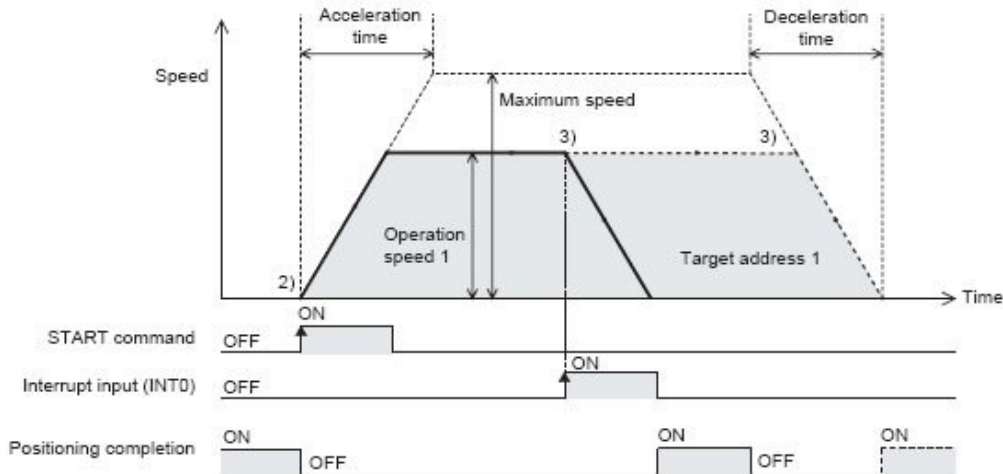
+: Operates in the direction that increases the current value. (When the value is 0, it is regarded as 1.)

-: Operates in the direction that decreases the current value.

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5) Interrupt Stop Operation

1. Operation



1) Set the operation speed 1 and target address 1 (maximum travel distance).

2) Select the Interrupt stop operation from operation patterns and activate the START command to start the Interrupt stop operation at operation speed 1 (above figure). (The positioning completion signal is turned OFF.)

3) At interrupt input (INT0) ON, before target address 1, the work piece decelerates to stop, and the operation ends, turning the positioning completion signal ON. When the interrupt input (INT0) does not turn ON before target address 1, the work piece decelerates to stop at target address 1, and the operation ends, turning the positioning completion signal ON.

2. Operation Speed

Actual operation speed is "operation speed 1 x override setting."

Operation speed 1 can be changed using the operation speed change function except for the following conditions.

- During deceleration operation
- When the speed change disable during operation signal is ON.

3. Address Specification

Absolute/Relative address can be specified.

With the specified absolute address: Specifies a target address (position) using address 0 as the base.

With the specified relative address: Specifies a travel distance from the current address.

4. Rotation Direction

With the specified absolute address: The rotation direction depends on whether the target address 1 is larger or smaller than the current address.

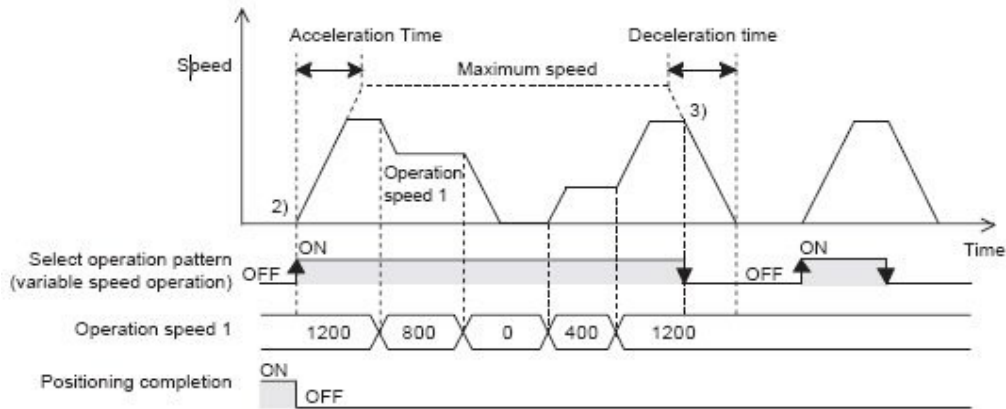
With the specified relative address: The rotation direction is decided by the sign (positive/negative) of target address 1.

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6) Variable Speed Operation

1. Operation



1) Set the operation speed 1 to a value other than 0.

2) Select the variable speed operation from the patterns to start the variable speed operation (above figure). (The positioning completion signal is turned OFF.)

3) When selecting an operation pattern other than the variable speed operation, the work piece decelerates to stop and the operation ends. (Positioning completion signal remains OFF.)

Note:

- When setting the operation speed to 0, the work piece decelerates to stop, but the variable speed operation does not end. The operation pattern should be changed to another pattern when terminating the variable speed operation.

- At STOP command ON, the work piece decelerates to stop. Note that the operation restarts at STOP command OFF.

2. Operation speed

Actual operation speed is "operation speed 1 x override setting."

3. Rotation Direction

The operation direction is decided by the sign of operation speed 1.

+: Operates in the direction which increases the current value. (Decelerates to stop when the value is 0.)

-: Operates in the direction which decreases the current value.

If the sign of the operation speed value changes, the reverse operation starts after decelerating to stop.

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7) Multi Speed Operation

1. Operation



- 1) Set the operation information, speed information, and position (address) information for each table.
- 2) When rebooting the START command at the table operation start number with the specified multi-speed operation, 20SSC-H starts the positioning operation from the designated table number. (The positioning completion signal is turned OFF.)
- 3) The operation continuously executes the table positioning until the END command. (above figure)
- 4) The work piece decelerates to stop at the specified position (address) in the table before the END command. When the operation ends, the positioning completion signal turns ON.

Note:

- In multi-speed operation, preparation for the next table number operation is performed simultaneously with the current operation.
 If a travel distance to shift the operation speed is less than the pulses to accelerate/decelerate, or if the travel time is too short (at 50 ms or less), the current operation does not continue and temporarily stops.
- When using m code in multi-speed operation, use With mode.
 With the m code in After mode, operation does not continue from the table since the 20SSC-H suspends the operation shift to the next table until the m code turns OFF .
- Multi-speed operation ends if another operation information is performed during the multi-speed operation.

2. Operation information

Set multi-speed operation, absolute address specification, relative address specification and end in the operation information.

3. Speed information

Actual operation speed is "operation speed 1 x override setting."

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Operation speed 1 can be changed using the operation speed change function except for the following conditions.

- During deceleration operation
- When the speed change disable during operation signal is ON.

4. Position (address) information

Absolute address and relative address can be specified in the operation information.

With the specified absolute address: Specifies a target address (position) using address 0 as the base. With the specified relative address: Specifies a travel amount from the current address.

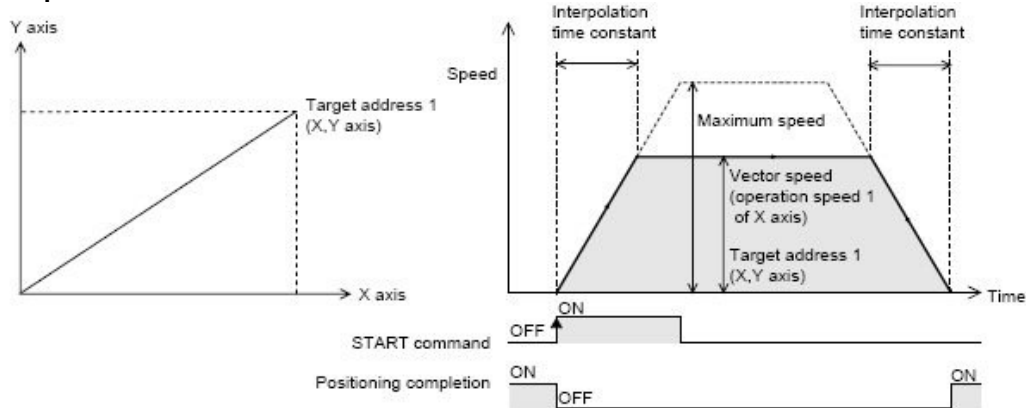
5. Rotation Direction

With the specified absolute address: The rotation direction depends on whether the target address 1 is larger or smaller than the current address.

With the specified relative address: The rotation direction is decided by the sign (positive/negative) of target address 1.

8) Linear Interpolation Operation

1. Operation



1) Set operation speed 1 of X-axis and target address 1 of X/Y-axis.

2) Select the linear interpolation operation from the operation pattern of X-axis and activate the START command of X-axis. The linear interpolation operation shown above will be started at vector speed (X-axis operation speed 1). (The positioning completion signal is turned OFF.) The operation pattern and START command of Y-axis are ignored.

3) The work piece stops at the XY coordinate in target address 1, and the operation ends, turning the positioning completion signal ON.

Note:

- The positioning completion signal turns ON if the travel distance is 0.

If the travel distance is 0 or the travel time is too short, however, it is impossible for the sequence program to detect the positioning completion signal turning OFF.

- When interpolation operation is continued in table operation, it is continuous pass operation.

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2. Operation speed

Actual operation speed (vector speed) is "X-axis operation speed 1 x X-axis override setting."
 Operation speed 1 of X-axis can be changed using the operation speed change function except for operating under the following conditions.

- During deceleration operation
- When the speed change disable during operation signal is ON.

3. Address specification

Absolute/relative address can be specified.

With the specified absolute address: Specifies a target address (position) using address 0 as the base.

With the specified relative address: Specifies a travel amount from the current address.

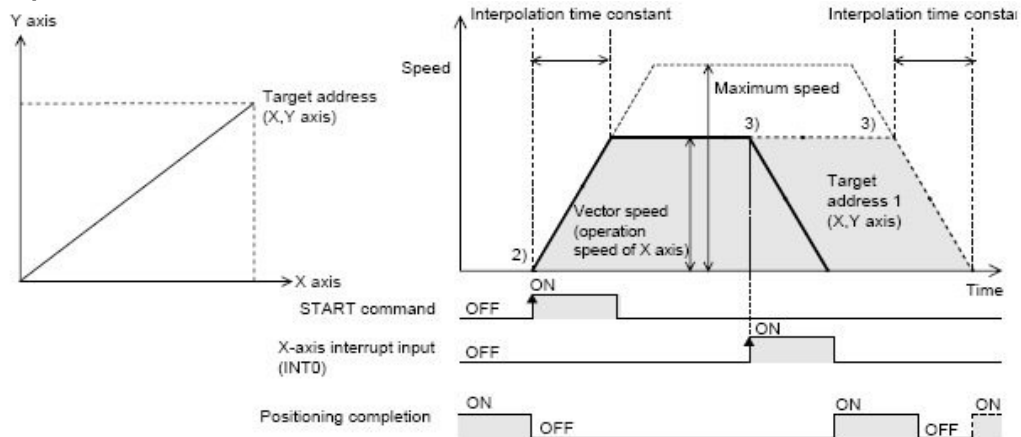
4. Rotation Direction

With the specified absolute address: The rotation direction depends on whether the target address 1 is larger or smaller than the current address.

With the specified relative address: The rotation direction is decided by the sign (positive/negative) of target address 1.

9) Linear Interpolation Operation (Interrupt Stop)

1. Operation



1) Set operation speed 1 of X-axis and target address 1 (maximum travel distance) of X/Y-axis.

2) Select the linear interpolation operation (interrupt stop) from the operation pattern of X-axis and activate the START command. The linear interpolation operation (interrupt stop) shown above will be started at vector speed (X-axis operation speed 1). (The positioning completion signal is turned OFF.) The operation pattern and START command of Y-axis are ignored.

3) At interrupt input (INT0) ON before the XY coordinate in target address 1, the work piece decelerates to stop, and the operation ends, turning the positioning completion signal ON. When the interrupt input (INT0) does not turn ON before the XY coordinate in target address 1, the work piece moves to the target address 1, and the operation ends, turning the positioning completion signal ON.

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2. Operation speed

Actual operation speed (vector speed) is "X-axis operation speed 1 x X-axis override setting."
 Operation speed 1 of X-axis can be changed using the operation speed change function except for operating under the following conditions.

- During deceleration operation
- When the speed change disable during operation signal is ON.

3. Address specification

Absolute/relative address can be specified.

With the specified absolute address: Specifies a target address (position) using address 0 as the base.

With the specified relative address: Specifies a travel amount from the current address.

4. Rotation Direction

With the specified absolute address: The rotation direction depends on whether the target address 1 is larger or smaller than the current address.

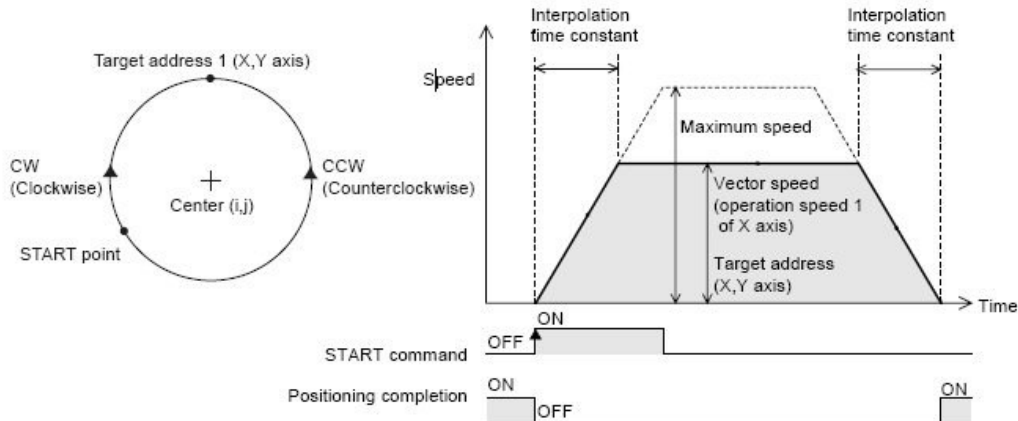
With the specified relative address: The rotation direction is decided by the sign (positive/negative) of target address 1.

10.1) Circular Interpolation Operation – Centre Coordinate specification

1. Operation

The circular interpolation operation is a positioning procedure, available only in the table operation. The circular interpolation operation has the center coordinate specification/radius specification format.

The work piece moves from the start point to the target address, following the circular arc locus around the specified center coordinate:



1) Set table information, X-axis speed, X/Y axis position (address) information and center coordinate in the XY table information.

2) When turning the X-axis START command ON at the table operation start number with the specified circular interpolation (center, CW direction) / (center, CCW direction), the work piece moves to the target position at the specified speed, following the circle's center coordinate.

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3) The work piece stops at the XY coordinate in target address 1, and the operation ends, turning the positioning completion signal ON.

Note:

- The center coordinate is always handled as a relative address from the start point.
- When setting the same address for the start and target points, the work piece moves in a perfect circle. The center coordinate specification is available in the perfect circle operation.
- During continuous pass operation If the circular path is too short and the travel time from the start point to the target point is shorter than the interpolation time constant, the operation temporarily stops and shifts to the next interpolation operation.
- When interpolation operation is continued in table operation, it becomes a continuous pass operation.

2. Operation information

Set a circular interpolation operation ("center, CW direction" or "center, CCW direction") and an absolute/relative address in the operation information.

3. Speed information

Actual operation speed (vector speed) is "X-axis operation speed 1 x X-axis override setting." Operation speed 1 of X-axis can be changed using the operation speed change function except for operating under the following conditions.

- During deceleration operation
- When the speed change disable during operation signal is ON.

4. Position (address) information

Absolute address and relative address can be specified in the operation information.

With the specified absolute address: Specifies a target address (position) using address 0 as the base.

With the specified relative address: Specifies a travel amount from the current address.

5. Circle information (center coordinate)

Set the center coordinate (i, j) by a relative address from a start point.

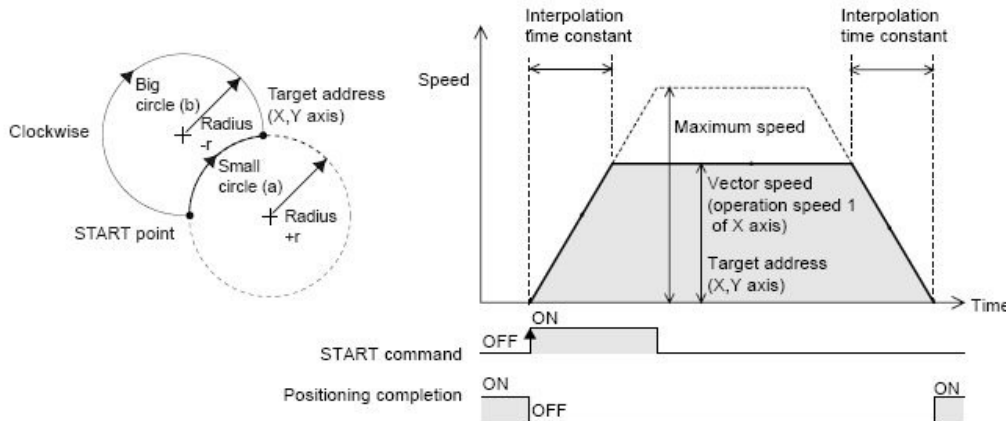
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10.2) Circular Interpolation Operation – Radius Coordinate specification

The work piece moves in a circular arc with a specified radius from the start point to the target address.

1. Operation



1) Set table information, X-axis speed, X/Y axis position (address) and radius in the XY table information.

2) When turning the X-axis START command ON at the table operation start number with the specified circular interpolation (radius, CW direction) / (radius, CCW direction), the work piece moves to the target position at the specified speed, following the circle's center coordinate calculated from the start point, target position and radius.

3) The work piece stops at the XY coordinate in the target address 1, and the operation ends, turning the positioning completion signal ON.

Note:

- The radius is specified as r . When r is a positive value, the small circle (a) path is selected and when it is negative, the big circle (b) path is selected.

- Pulse rate and feed rate

During the circular interpolation operation, the radius value is kept constant and pulses are allocated to the X and Y axes. If the ratio of the pulse rate to the feed rate differs between the X-axis and Y-axis, the circle becomes deformed.

- Use the center coordinate specification in a perfect circle operation.

- During continuous pass operation

If the circular path is too short and the travel time from the start point to the target point is shorter than the interpolation time constant, the operation temporarily stops, and shifts to the next interpolation operation.

- When interpolation operation is continued in table operation, it becomes a continuous pass operation.

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2. Operation information

Set a circular interpolation operation ("radius, CW direction" or "radius, CCW direction") and an absolute/relative address in the operation information.

3. Speed information

Actual operation speed (vector speed) is "X-axis operation speed 1 x X-axis override setting." Operation speed 1 of X-axis can be changed using the operation speed change function except for operating under the following conditions.

- During deceleration operation
- When the speed change disable during operation signal is ON.

4. Position (address) information

Absolute address and relative address can be specified in operation information.

With the specified absolute address: Specifies a target address (position) using address 0 as the base.

With the specified relative address: Specifies a travel amount from the current address.

5. Circle information (radius)

Set the radius of a circular by r.

With specified positive (+) value: Operates the small circle (a) path.

With specified negative (-) value: Operates the big circle (b) path.

11) Current Position Change

This operation information changes the current address (user/pulse) value to the one specified in the position (address) information.

12) Absolute Address Specification

This operation information sets the position data of subsequent table operations to an absolute address based on the (0, 0) point.

Note:

- When table operation is started, the position information is handled on the absolute address specification (default).

To use position information by relative addresses, the operation information of positioning control must be set before hand.

- The arc center (i, j), radius r, Interrupt 1-speed constant quantity feed and, Interrupt 2-speed constant quantity feed setting items are handled as relative addresses.

13) Relative / Incremental Address Specification

This operation information sets the position data of subsequent table operations to a relative address based on the current address.

Note:

When table operation is started, the position information is handled on the absolute address specification (default). To use position information by relative addresses, the operation information of positioning control must be set beforehand.

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14) Jump

When executing this operation information, jumps to the specified table No..
 Note that table No. does not jump from X-axis table information to Y-axis table information.
 Set the table No. of the jump point to the position information of the table information in buffer memory. (On FX Configurator-FP, set the table No. of the jump point by the Jump No.)

15) Dwell

When executing this operation information, operation waits for the specified time. A dwell is used as a wait to move between operations.
 Set the dwell by the position information of the table information in the buffer memory. (On FX Configurator-FP, set the dwell by the Time.)

16) m Code

The m code is an auxiliary command to support positioning data in execution.
 When an m code turns ON in table operation, the 20SSC-H stores the table No. in monitor data as an m code number, while also turning ON the m code ON flag in status information.
 There are two modes for m code, after mode and with mode, and each mode has a different ON timing.

After Mode:

The specified m code turns ON **after** the operation.

1. Operation

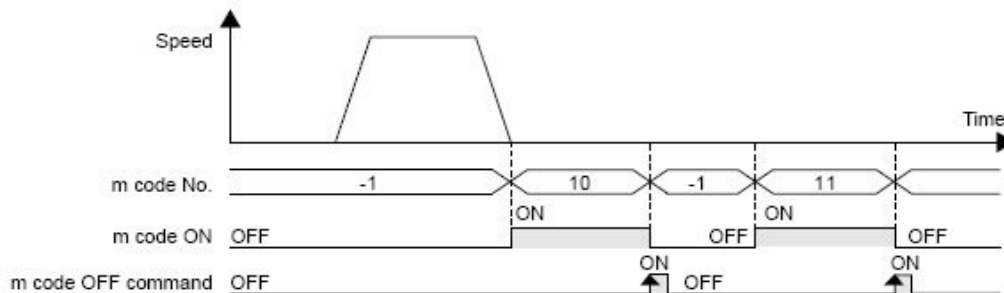


Table No.	Operation information	m code information
0	1 (1-speed positioning)	10 (after mode)
1	-1 (no processing)	11 (after mode)
2	0 (END)	-1

- 1) When the table No. 0 operation with m code "10" ends, the m code ON flag in the status information turns ON, and the 20SSC-H stores "10" in the m code No. of monitor data.
- 2) At m code OFF, the m code ON flag and m code itself turns OFF, and 20SSC-H stores "-1" in the m code No. of monitor data.
- 3) At m code OFF, 20SSC-H executes the next table No..

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Note:

- With after-mode m codes in multi-speed operations and continuous pass operations, the operation does not continue the table since 20SSC-H suspends the operation until m code OFF.
- With "0" in m code information, 20SSC-H turns to standby mode. With start command or m code OFF command, the m code turns OFF.
- To turn only the m code ON without performing positioning operation, set "m code" to the operation information of the table information, and set the m code information.

Available m code Nos.

To use m code in the after mode, set m code in the range 0 to 9999 to the m code information.

With Mode:

The specified m code turns ON **when** the operation starts.

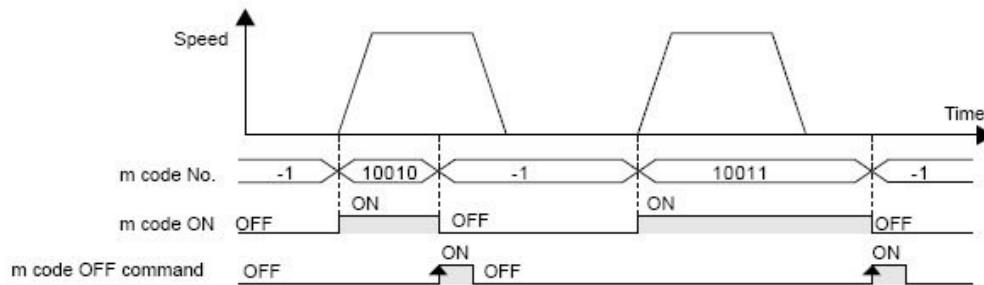


Table No.	Operation information	m code information
0	1 (1-speed positioning)	10010 (with mode)
1	1 (1-speed positioning)	10011 (with mode)
2	0 (END)	-1

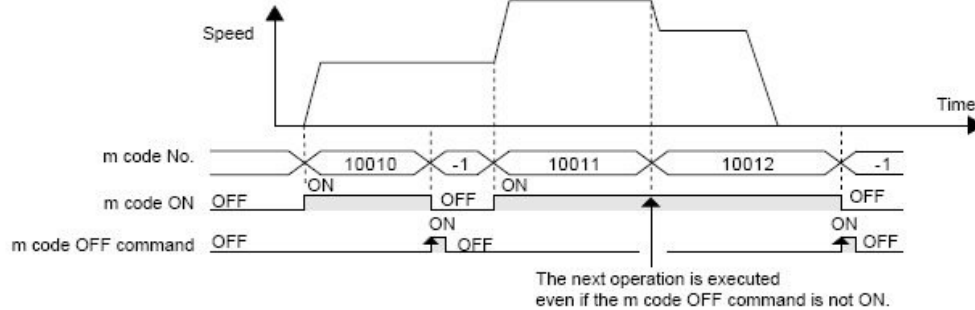
- 1) 20SSC-H stores "10010" in the m code No. of monitor data while also starting table No. 0 with "10010" and turning ON the m code ON flag in the status information.
- 2) At m code OFF, the m code ON flag and m code itself turns OFF, and 20SSC-H stores "-1" in the m code No. of monitor data.
- 3) When operation of the operation information is completed, the next table No. is executed even if the m code OFF command does not turn ON

Note:

- With "0" in m code information, 20SSC-H turns to standby mode. With start command or m code OFF command, the m code turns OFF.
- 20SSC-H continues operating while multi-speed operation and continuous pass operation without m code OFF commands. The specified m codes also turn ON in numerical order.

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Available m code Nos.

To use the m code in the with mode, set the m code in the range from 10000 to 32767.

Related buffer memory

Item	BFM number		Content	
	X-axis	Y-axis		
Control data				
Operation command 1	m code OFF command	BFM #518 b11	BFM #618 b11	When this command is ON, the m code is turned OFF and -1 is stored to the m code No.
Monitor data				
	m code No.	BFM #9	BFM #109	Stores the m code number in ON state. Stores -1 when the m code is OFF.
Status information	m code ON	BFM #28 b8	BFM #128 b8	This flag turns ON when an m code turns ON.

17) Continuous Pass

Continuously executing interpolation operation (linear interpolation, circular interpolation) results in a continuous pass operation.

- Operations that result in continuous pass operation:
 - Linear interpolation
 - Circular interpolation
- Operations that do not result in continuous pass operation:
 - Variable speed operation
 - Manual pulse generator
 - JOG operation
 - 1-speed positioning operation
 - Interrupt 1-speed constant quantity feed
 - 2-speed positioning operation
 - Interrupt 2-speed constant quantity feed
 - Interrupt stop
 - Variable speed operation
 - Multi-speed operation
 - Linear interpolation (interrupt stop)
 - Mechanical zero return
 - Dwell
 - End

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Note:

- The number of continuous passes is not limited.

- Continuous pass operation does not continue if interpolation operations include the following:
 - No processing
 - Jump

- Continuous pass operation is not executed if the program contains the following type of instructed interpolation operation:
 - When after mode m code are set
 - When the travel time of the operation is 50 ms or less
 - When the travel time of the operation is "interpolation time constant · 2" or less
 - When the preparation for the next operation (information pre-reading) is not in time

What is a continuous Pass?

- Consecutive interpolation instructions do not stop, and inflection points become smooth curves.
 The radius of curvature varies depending on the interpolation time constant.
 A larger interpolation time constant makes a larger radius of curvature.

- To draw a precise locus, apply circular interpolation operations.

- When the speeds between each interpolation operation differ, the velocity becomes the composite speed with the one at the next step.

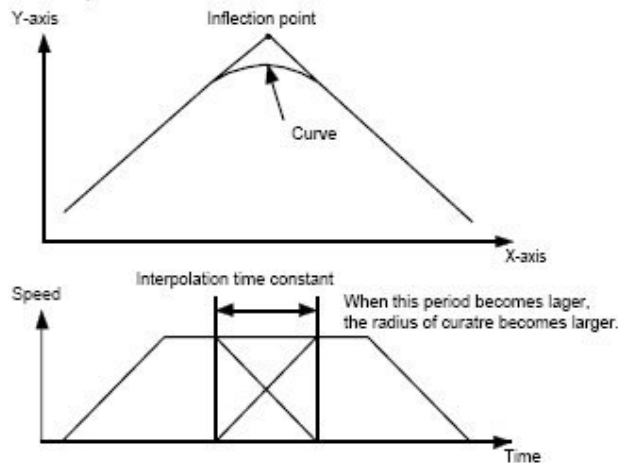


Table Operation

Title:
 Keywords:

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"Table operation" executes preset motion patterns of positioning operations from the table information. By table operation, 20SSC-H continues the supported positioning operation while also combining motion patterns. A few positioning operations are available in table operation only.

Positioning operations for table operation only

- Multi-speed operation
- Circular interpolation
- Continuous pass operation

- **Applicable positioning operations for table operation:**
 - 1-speed positioning operation
 - Interrupt 1-speed constant quantity feed
 - 2-speed positioning operation
 - Interrupt 2-speed constant quantity feed
 - Interrupt stop
 - Multi-speed operation
 - Linear interpolation*1
 - Linear interpolation (interrupt stop)*1
 - Circular interpolation*1
 - Mechanical zero return

- **Inapplicable positioning operations for table operation:**
 - Variable speed operation
 - Manual pulse generator
 - JOG operation

Types of table information and number of registered tables

Type of table information	Number of registered tables	Table number
X-axis table information	300 tables	0 to 299
Y-axis table information	300 tables	0 to 299
XY-axis table information	300 tables	0 to 299

Table operation execution procedure

The following shows the procedure for executing table operation and describes the operation:

1. Configure the X / Y /XY table operations.

Using either a Sequence program or FX-Configurator-FP (Recommended) configure the X/ Y/ X/Y tables for the desired sequence of position operations.

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How to set the Table Information

Setting the table information by Sequence program

To set table information by sequence program, write each setting to 20SSC-H buffer memory by TO instruction, or move instructions (MOV, etc.) for direct specification.
 For details on buffer memory assignments refer to the FX3U-20SSC-H Users Manual

Note:

It is strongly recommended to set and store table information in the flash memory via FX Configurator-FP. When table information is set by sequence program, a considerable amount of the sequence program and devices are used, which makes the program complicated and increases the scan time.

Setting table information with FX Configurator-FP

Set value with the X-axis, Y-axis, XY-axis table information edit windows in FX Configurator-FP. For details on operation of FX Configurator-FP, refer to the FX3U-20SSC-H Users Manual

- 1) Double-click "File name" then "Edit" Then "X-axis table information", "Y-axis table information" or "XY-axis table information" in the file data list.
- 2) The selected X-axis table information, Y-axis table information or XY-axis table information edit window is displayed.
- 3) Enter the Position Data as required:

Example of X or Y Axis Position data


No.	Command code	Address [PLS]	Speed [Hz]	Time [10ms]	Jump No.	m code
0	Absolute address specification					-1
1	Positioning at 1-step speed	2621440	5000			-1
2	Dwell			20		-1
3	Positioning at 1-step speed	0	8000			-1
4	End					
5						
6						

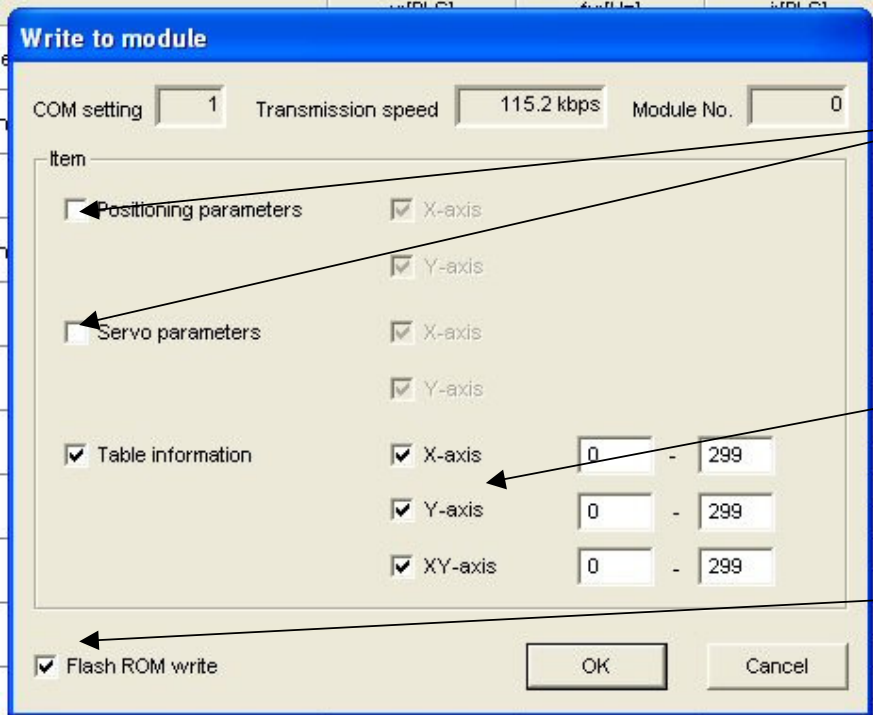
Example of XY Table Position Data

No.	Command code	Address x:[PLS] y:[PLS]	Speed fx:[Hz] fy:[Hz]	Arc center i:[PLS] j:[PLS]	Arc radius r:[PLS]	Time [10ms]	Jump No.	m code
0	Absolute address specification							-1
1	Linear interpolation	x: 2621440 y: 1310770	fx: 5000					-1
2	Dwell					20		-1
3	Linear interpolation	x: 0 y: 0	fx: 8000					-1
4	End							
5								

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Write the Table information to the 20SSC-H by pressing the 'Write to Module' button  or by using **[Online → Write to module (Ctrl+T).]**



The screenshot shows the 'Write to module' dialog box with the following settings and callouts:

- COM setting:** 1
- Transmission speed:** 115.2 kbps
- Module No.:** 0
- Item:**
 - Positioning parameters
 - Servo parameters
 - Table information
- Axis Selection:**
 - X-axis: (Callout: "There is no need to send the Parameters" points to the unchecked 'Positioning parameters' checkbox)
 - Y-axis:
 - XY-axis:
- Range:** 0 - 299 (Callout: "Make sure the Table information is ticked" points to the 'Table information' checkbox)
- Flash ROM write:** (Callout: "Tick the Flash write button so the data is saved without power" points to this checkbox)
- Buttons:** OK, Cancel

2. Set the operation pattern of the control data and the table start number.

The following Buffer Memory Areas need to be mapped out to PLC devices for control in the sequence program:

BFM #518	BFM #818	Operation command 1	b0 Error reset b1 STOP (Deceleration stop) b2 Forward rotation limit (LSF) b3 Reverse rotation limit (LSR) b4 Forward rotation JOG b5 Reverse rotation JOG b8 Mechanical zero return command b7 Not available b8 Relative/absolute address specification b9 START command b10 Simultaneous START flag b11 m code OFF b12 Change command in operation disabled b13 Speed change command in positioning operation b14 Target position change command in positioning operation b15 Not available	H0000	subsection 11.4.10
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BFM #519	BFM #819	Operation command 2	b0 Remaining distance operation cancel command b3 to b1 Not available b4 Positioning parameter enable command b7 to 5 Not available b8 Servo OFF command b9 Servo parameter transfer command b10 Gain change command b15 to 11 Not available	H0000	subsection 11.4.11
BFM #520	BFM #820	Operation pattern selection	b0 1-speed positioning b1 Interrupt 1-speed constant quantity feed b2 2-speed positioning b3 Interrupt 2-speed constant quantity feed b4 Interrupt stop b5 Variable speed operation b6 Manual pulse generator operation b7 Linear interpolation b8 Linear interpolation (interrupt stop) b9 Table operation (independent) b10 Table operation (simultaneous) b15 to 11 Not available	H0000	subsection 11.4.12
BFM #521	BFM #821	Table operation start number	0 to 299	K0	subsection 11.4.13

For Basic Table operation, the PLC sequence program should be written so that the following settings are made for each Axis:

BFM #520 & #620:

- b0
 - b1
 - b2
 - b3
 - b4
 - b5
 - b6
 - b7
 - b8
- } The corresponding bit for the type of move configured in the table to be executed. should be set. For example, for a 2-speed positioning move set bit 2.
-
- b9
 - b10
- } b9 and b10 select between Independent table operation and Simultaneous table operation.

BFM #521 & #621

This number in this BFM points the 20SSC-H unit at the Table operation start number. This is the row in the Axis table that the 20SSC-H unit will start execute until an End instruction is processed. (Setting range is 0-299)

Note:

When BFM #520 & #620 bit 10 is set, (Simultaneous operation) is selected there is no need to set a table operation start number for the Y Axis. The Start number in the X Axis BFM #521 is used for control of both Axis.

BFM #518 & #618

b9 Start command

b10 Simultaneous Start command