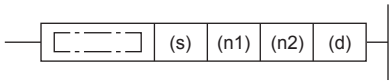
8.16 Shortcut Control Instruction

Rotary table shortest direction control

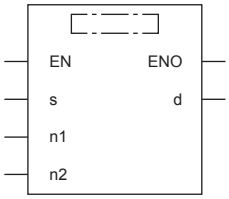
ROTC

FX5S FX5UJ FX5U FX5UC

This instruction is suitable for efficient control of the rotary table for putting/taking a product on/off the rotary table.

Ladder diagram	Structured text
	ENO:=ROTC(EN,s,n1,n2,d);

FBD/LD



Setting data

■Descriptions, ranges, and data types

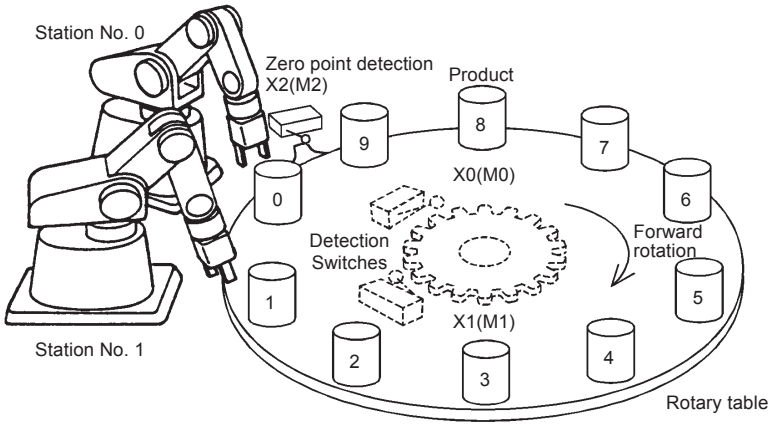
Operand	Description		Range	Data type	Data type (label)
(s)	Registers specifying the calling condition (Set them in advance using the transfer instruction.)	(s)+0: Works as a register for counting.	—	16-bit signed binary	ANY16_ARRAY (Number of elements: 3)
		(s)+1: Sets the station No. to be called.			
		(s)+2: Sets the product No. to be called.			
(n1)	Number of divisions		2 to 32767	16-bit unsigned binary	ANY16
(n2)	Number of low-speed sections		0 to 32767	16-bit unsigned binary	ANY16
(d)	Registers (bit devices) specifying the calling condition (Construct an internal contact circuit in advance which is driven by the input signal (X).)	(d): A phase signal	—	Bit	ANYBIT_ARRAY (Number of elements: 8)
		(d)+1: B phase signal			
		(d)+2: Zero point detection signal			
		(d)+3: Forward rotation at high-speed			
		(d)+4: Forward rotation at low-speed			
		(d)+5: Stop			
		(d)+6: Backward rotation at low-speed			
		(d)+7: Backward rotation at high-speed			
EN	Execution condition		—	Bit	BOOL
ENO	Execution result		—	Bit	BOOL

■Applicable devices

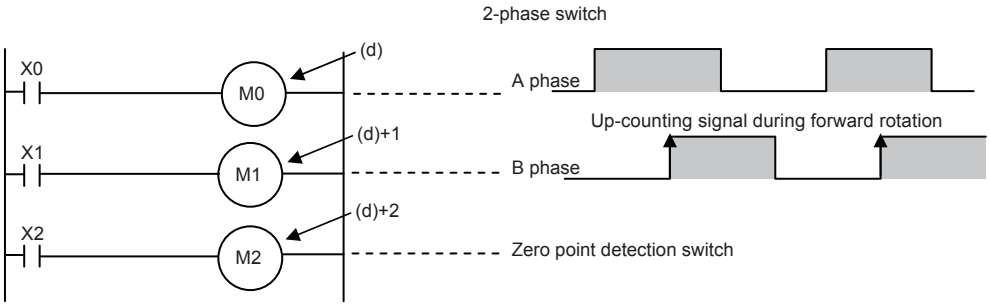
Operand	Bit	Word			Double word		Indirect specification	Constant			Others
	X, Y, M, L, SM, F, B, SB, S	T, ST, C, D, W, SD, SW, R	U□\G□	Z	LC	LZ		K, H	E	$	
(s)	—	○	—	—	—	—	○	—	—	—	—
(n1)	○	○	○	○	—	—	○	○	—	—	—
(n2)	○	○	○	○	—	—	○	○	—	—	—
(d)	○	—	—	—	—	—	—	—	—	—	—

Processing details

- The table rotation is controlled by conditions of "n2", (s), and (d) so that a product can be efficiently put on or taken off the rotary table divided into "n1" (=10) sections as shown in the figure below. When the following conditions are specified, forward/backward rotation and high-speed/low-speed/stop are output to (d)+3 to (d)+7.



- Provide a 2-phase switch (X0 and X1) for detecting the rotation direction (forward or backward) of the table and the switch X2 which turns ON when the product No. 0 reaches the station No. 0. X0 to X2 are replaced with internal contacts of (d) to (d)+2. Any head device number can be specified by X or (d).



- The counter (s) detects which product number is located at the station No. 0.
- Set the station No. to be called in (s)+1.
- Set the product No. to be called in (s)+2.
- Specify the number of divisions (n1) of the table, and number of low-speed sections (n2).

Precautions

- When the command input is set to ON and this instruction is executed, the result will be automatically output to (d)+3 to (d)+7. When the command input is set to OFF, (d)+3 to (d)+7 are set to OFF accordingly.
- For example, when the rotation detection signal ((d) to (d)+2) is activated 10 times in one division, set a value multiplied by "10" to each division, station No. to be called and product No. to be called. As a result, an intermediate value of the division number can be set to a low-speed section.
- When the zero point detection signal (M2) turns ON while the command input is ON, the contents of the register for counting (s) are cleared to "0". This clear operation should be executed before starting the operation.
- Up to four ROTC instructions can be used simultaneously.

Operation error

Error code (SD0/SD8067)	Description
1811H	The number of the ROTC instructions which are used simultaneously exceeds four.
2820H	The device range specified by (s) exceeds the corresponding device range.
	The device range specified by (d) exceeds the corresponding device range.
3405H	The value specified by (n1) is outside the following range. 2 to 32767
	The value specified by (n2) is outside the following range. 0 to 32767
	The value specified by (n1) or (n2) is in the following condition. (n1) < (n2)
	Either (s), (s)+1, or (s)+2 is negative.
	Either (s), (s)+1, or (s)+2 is equal to (n1) or larger.