

Sending data to another station programmable controller

GP.SEND



FX5S

FX5UJ

FX5U

FX5UC

This instruction sends data to another station programmable controller.

CC-Link IE TSN is compatible only with FX5U/FX5UC CPU module.

Ladder diagram	Structured text
	<pre>ENO:=GP_SEND(EN,Un,s1,s2,d);</pre>

FBD/LD
 ("GP_SEND" enters □.)

Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(U) ^{*1}	Position number of the module connected	■ FX5UJ CPU module 1H to 8H ■ FX5U/FX5UC CPU module 1H to 10H	16-bit unsigned binary	ANY16
(s1)	Own station start device where control data is stored		Device name	ANY16 ^{*3}
(s2)	Own station head device where sending data is stored ^{*2}	—	Device name	ANY16 ^{*3}
(d)	Own station device to be turned on for one scan when the instruction completes. When the instruction completes with an error, (d)+1 also turns on.	—	Bit	ANYBIT_ARRAY (Number of elements: 2)
EN	Execution condition	—	Bit	BOOL
ENO	Execution result	—	Bit	BOOL

*1 In the case of the ST language and the FBD/LD language, U displays as Un.

*2 The continuous area specified by the send data length (s1)+9 is required.

*3 Digit specified bit type label cannot be used.

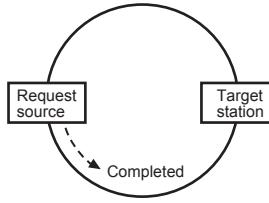
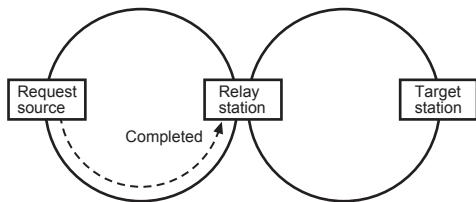
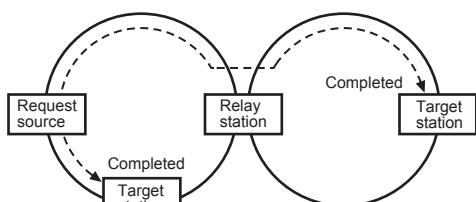
■Applicable devices

Operand	Bit	Word			Double word		Indirect specification	Constant			Others (U)
		X, Y, M, L, SM, F, B, SB, S	T, ST, C, D, W, SD, SW, R	U□\G□	Z	LC		K, H	E	\$	
(U)	—	○	—	—	—	—	○	○	—	—	○
(s1)	—	○	—	—	—	—	○	—	—	—	—
(s2)	—	○	—	—	—	—	○	—	—	—	—
(d)	○ ^{*1}	○ ^{*2}	—	—	—	—	—	—	—	—	—

*1 S cannot be used.

*2 T, ST, and C cannot be used.

■Control data

Device	Item	Description	Setting range	Set by
(s1)+0	Execution/error completion type	<p>b15 b14 ... b8 b7 b6 ... b0 (3) 0 (2) 0 (1)</p> <p>(1) Execution type (b0) • 0: No arrival acknowledgment When the target station is in the same network: Completed when data has been sent from the own station.</p>  <p>When the target station is in another network: Completed when data has arrived the relay station of the own network. (compatible only with CC-Link IE Field Network)</p>  <ul style="list-style-type: none"> • 1: Arrival acknowledgment used Completed when data has been stored in the specified channel of the target station.  <p>(2) Error completion type (b7) Specify whether to set data at completion with an error. • 0: Clock data at error occurrence is not stored in (s1)+11 and later. • 1: Clock data at error occurrence is stored in (s1)+11 and later.</p> <p>(3) Method for specifying the target station address (b15) (compatible only with CC-Link IE TSN) • 0: Specify the network No. in (s1)+4 and the station No. in (s1)+5. • 1: Specify the IP address in (s1)+4 and 5.</p>	0000H 0001H 0080H 0081H 8000H 8001H 8080H 8081H	User
(s1)+1	Completion status	The instruction completion status is stored. • 0: Normal • Other than 0: Error (error code)	—	System
(s1)+2	Own station channel	Specify the channel to be used by the own station. [CC-Link IE Field Network] • Channels 1 and 2 [CC-Link IE TSN] • Channels 1 to 8	1 to 8	User
(s1)+3	Target station storage channel	Specify the channel of the target station for storing data.	1 to 8	User

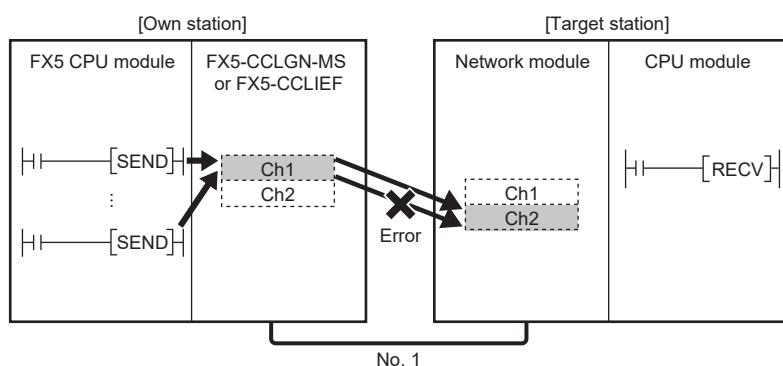
Device	Item	Description	Setting range	Set by																		
(s1)+4	Target network number	<p>[CC-Link IE Field Network] Specify the network No. of the target station. • 1 to 239 (network No.)</p> <p>[CC-Link IE TSN] ■When "0" is specified in b15 in (s1)+0 Specify the network No. of the target station. • 1 to 239 (network No.) ■When "1" is specified in b15 in (s1)+0 Specify the IP address (third and fourth octets) of the target station.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>b15</td><td>...</td><td>b8</td><td>b7</td><td>...</td><td>b0</td></tr> <tr> <td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr> <tr> <td colspan="2"></td><td>3</td><td colspan="2"></td><td>4</td></tr> </table> <ul style="list-style-type: none"> • b8 to b15: Third octet • b0 to b7: Fourth octet 	b15	...	b8	b7	...	b0									3			4	<p>■(s1)+4 • Network No.: 1 to 239</p> <p>■(s1)+5 • Station No.: 1 to 120, 125 and 126 • Group number: 0081H to 00A0H • Specification of all stations: 00FFH</p> <p>■(s1)+4, 5 • IP address: 00000001H to FFFFFFFFEH</p>	User
b15	...	b8	b7	...	b0																	
		3			4																	
(s1)+5	Target station number	<p>[CC-Link IE Field Network] Specify the station number of the target station.</p> <p>(1)Station number specification • 125: Master station • 126: Master operating station • 1 to 120: Local station, intelligent device station or sub-master station</p> <p>(2)Group number specification • 0081H to 00A0H: All stations in group numbers (0001H to 0020H) (This can be set when the execution type specified in (s1)+0 is "0: No arrival acknowledgment".)</p> <p>(3)Specification of all stations • 00FFH: All stations in the target network No. (broadcast (excluding the own station)) (This can be set when the execution type specified in (s1)+0 is "0: No arrival acknowledgment".) If the instruction is executed by specifying the group number or all stations, specify "0000H" or "03FFH" for the CPU type of the target station ((s1)+3).</p> <p>[CC-Link IE TSN] ■When "0" is specified in b15 in (s1)+0 Specify the station number of the target station.</p> <p>(1)Station number specification • 1 to 120: Local station • 125: Master station</p> <p>(2)Group number specification • 0081H to 00A0H: All stations in group numbers (0001H to 0020H) (This can be set when the execution type specified in (s1)+0 is "0: No arrival acknowledgment".)</p> <p>(3)Specification of all stations • 00FFH: All stations in the target network No. (broadcast (excluding the own station)) (This can be set when the execution type specified in (s1)+0 is "0: No arrival acknowledgment".) If the instruction is executed by specifying the group number or all stations, specify "0000H" or "03FFH" for the CPU type of the target station ((s1)+3).</p> <p>■When "1" is specified in b15 in (s1)+0 Specify the IP address (first and second octets) of the target station.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>b15</td><td>...</td><td>b8</td><td>b7</td><td>...</td><td>b0</td></tr> <tr> <td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr> <tr> <td colspan="2"></td><td>1</td><td colspan="2"></td><td>2</td></tr> </table> <ul style="list-style-type: none"> • b8 to b15: First octet • b0 to b7: Second octet 	b15	...	b8	b7	...	b0									1			2		User
b15	...	b8	b7	...	b0																	
		1			2																	
(s1)+6	Not used	—	—	—																		
(s1)+7	Number of resends (retries)	<p>Effective when the execution type specified by (s1)+0 is "1: Arrival acknowledgment used".</p> <p>■At instruction execution Specify the number of resends to be performed if the instruction is not completed within the monitoring time specified by (s1)+8.</p> <p>■At completion of instruction The number of resends performed (result) is stored.</p>	0 to 15	User/system																		

Device	Item	Description	Setting range	Set by		
(s1)+8	Arrival monitoring time	Effective when the execution type specified by (s1)+0 is "1: Arrival acknowledgment used". Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, the instruction will be resent the number of times specified in (s1)+7. <ul style="list-style-type: none">• 0: 10 seconds• 1 to 32767: 1 to 32767 seconds	0 to 32767	User		
(s1)+9	Send data length	Specify the number of sending data from (s2) to (s2)+n. <ul style="list-style-type: none">• 1 to 960 (words) <p>(When sending data to QnACPU: 1 to 480 (words))</p>	1 to 960	User		
(s1)+10	Not used	—	—	—		
(s1)+11	Clock setting flag	The validity status (valid or invalid) of the data in (s1)+12 and later is stored. Note that the data in (s1)+12 and later is not cleared even when the instruction is completed successfully. <ul style="list-style-type: none">• 0: Invalid• 1: Valid	—	System		
(s1)+12	Clock data (Set only in an abnormal state)	Upper 8 bits: Month (01H to 12H) Lower 8 bits: Year (00H to 99H: Lower two digits of the year)	—	System		
(s1)+13		Upper 8 bits: Hour (00H to 23H) Lower 8 bits: Day (01H to 31H)	—	System		
(s1)+14		Upper 8 bits: Second (00H to 59H) Lower 8 bits: Minute (00H to 59H)	—	System		
(s1)+15		Upper 8 bits: Year (00H to 99H: Upper two digits of the year) Lower 8 bits: Day of the week (00H (Sun.) to 06H (Sat.))	—	System		
(s1)+16	Error detection network number ^{*1}	<ul style="list-style-type: none">■ When "0" is specified in b15 in (s1)+0 The network number of the station where an error was detected is stored. (The number is not stored when an error was detected in the own station.)<ul style="list-style-type: none">• 1 to 239 (network No.)■ When "1" is specified in b15 in (s1)+0 (compatible only with CC-Link IE TSN) The IP address (third and fourth octets) of the station where an error was detected is stored. <p>b15 ... b8 b7 ... b0</p> <table border="1"><tr><td>3</td><td>4</td></tr></table> <ul style="list-style-type: none">• b8 to b15: Third octet• b0 to b7: Fourth octet	3	4	—	System
3	4					
(s1)+17	Error-detected station number ^{*1}	<ul style="list-style-type: none">■ When "0" is specified in b15 in (s1)+0 The number of the station where an error was detected is stored. (The number is not stored when an error was detected in the own station.) [CC-Link IE Field Network]<ul style="list-style-type: none">• 125: Master station• 1 to 120: Local station, intelligent device station or sub-master station[CC-Link IE TSN]<ul style="list-style-type: none">• 125: Master station• 1 to 120: Device station■ When "1" is specified in b15 in (s1)+0 (compatible only with CC-Link IE TSN) The IP address (first and second octets) of the station where an error was detected is stored. <p>b15 ... b8 b7 ... b0</p> <table border="1"><tr><td>1</td><td>2</td></tr></table> <ul style="list-style-type: none">• b8 to b15: First octet• b0 to b7: Second octet	1	2	—	System
1	2					

*1 If completion status ((s1)+1) is "Channel in use (dedicated instruction) (error codes: D25AH to D25BH)", data is not stored.

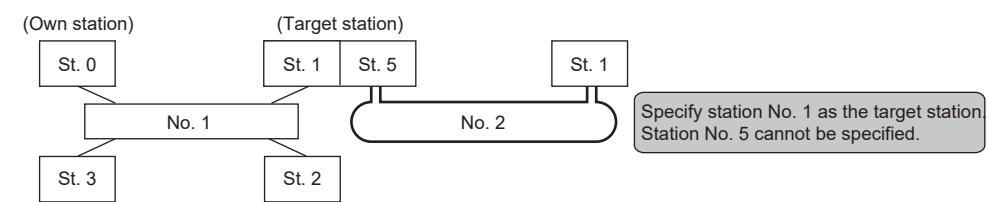
Point

- The continuous area (a maximum of 960 words) specified by the send data length ((s1)+9) is required in the send data storage device (s2).
- When a number from 1 to 120 is specified for the target station number, the instruction should be executed with the execution type set to "Arrival acknowledgment used" to improve data reliability. When a group number or all stations are specified, the instruction should be executed with the execution type set to "No arrival acknowledgment".
- When sending data to the same channel in the receiving station, execute the instruction after data has been read by the GP.RECV instruction in the receiving station. When the execution type is set to "No arrival acknowledgment", successful completion results in the sending station if communication is completed successfully even when the sending data contains an error. Also, even when the sending data is normal, a timeout results in the sending station if the instructions are executed for the same station from multiple stations.
- With the execution type set to "Arrival acknowledgment used", if the sending station sends data to the same channel in the receiving station before the receiving station reads data using the GP.RECV instruction, a buffer full error results in the sending station.



- When multiple network modules are mounted in the target station, specify the network number and station number of the network module that receives a request from the own station.

(Example: In the following figure, specify station No. 1 of network No. 1. (Station No. 5 of network No. 2 cannot be specified.))



No.: Network No.

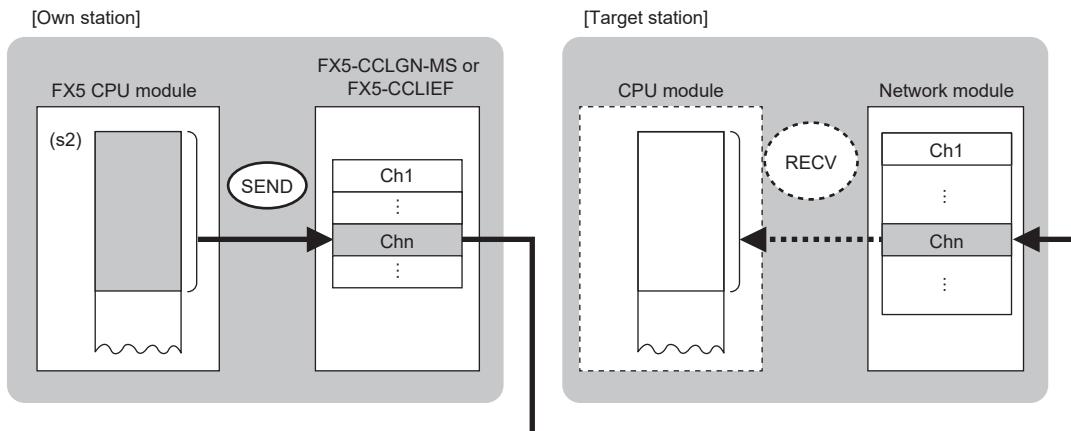
St.: Station No.

- The number of resends (s1)+7 must be set every time the instruction is executed.

Processing details

- The instruction sends data by the specified number of words ((s1)+9) from the own station head device (s2) into the specified channel of a target station. The data that has been sent is stored in the channel specified by (s2) in the target station. To read the sent data in the target station, use the GP.RECV instruction. Upon completion of sending data to the target station number, the completion device specified by (d) turns on.
- For the target stations that can be specified, refer to the following.

 Page 986 Target networks and target station types

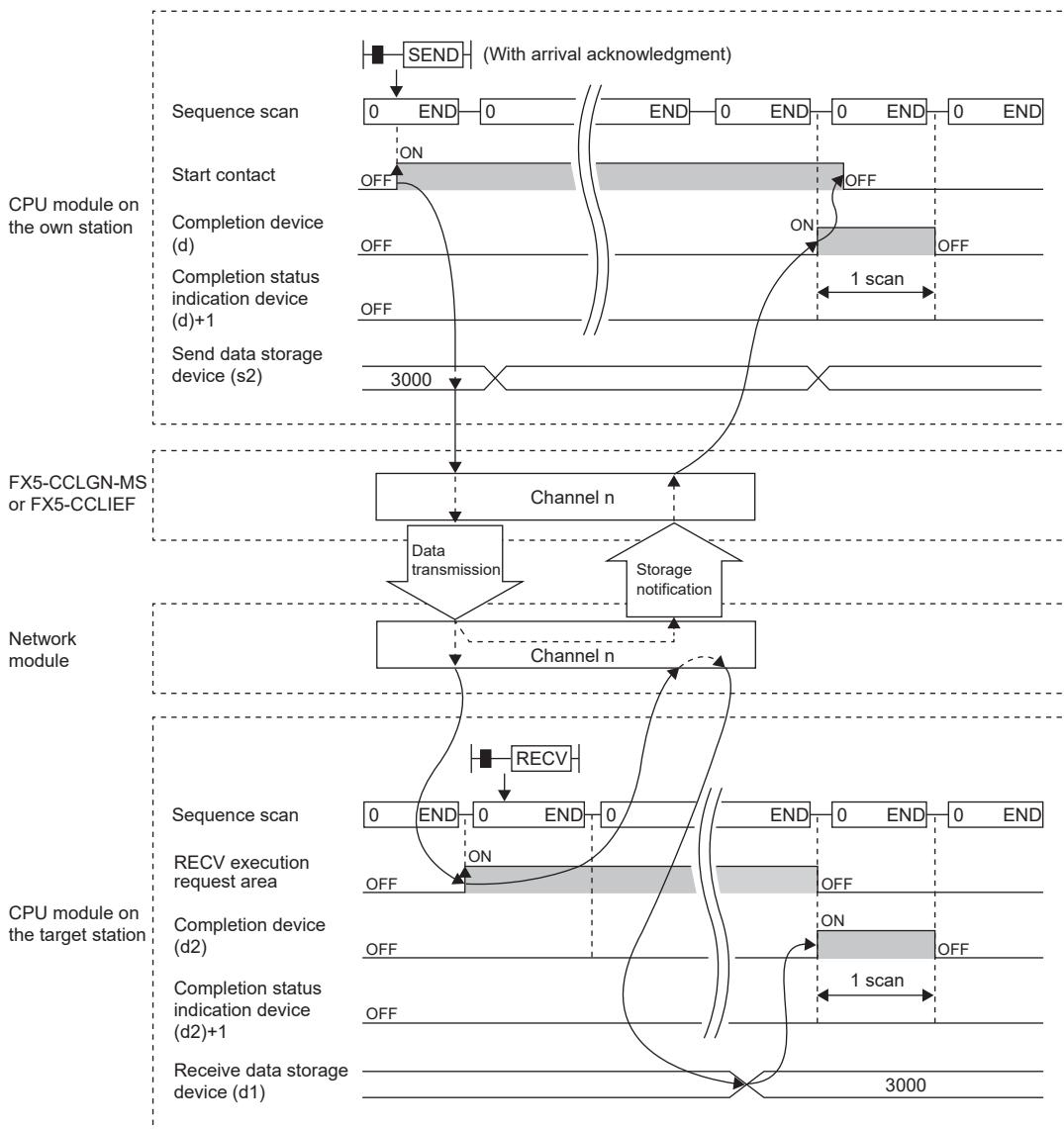


- When executing multiple link dedicated instructions concurrently, be careful not to overlap the channels of the link dedicated instructions. Multiple link dedicated instructions specifying the same channel cannot be used concurrently.
- The execution of the GP.SEND instruction and whether it has been completed normally or completed with an error can be checked with the completion device (d) or completion status indication device (d)+1.

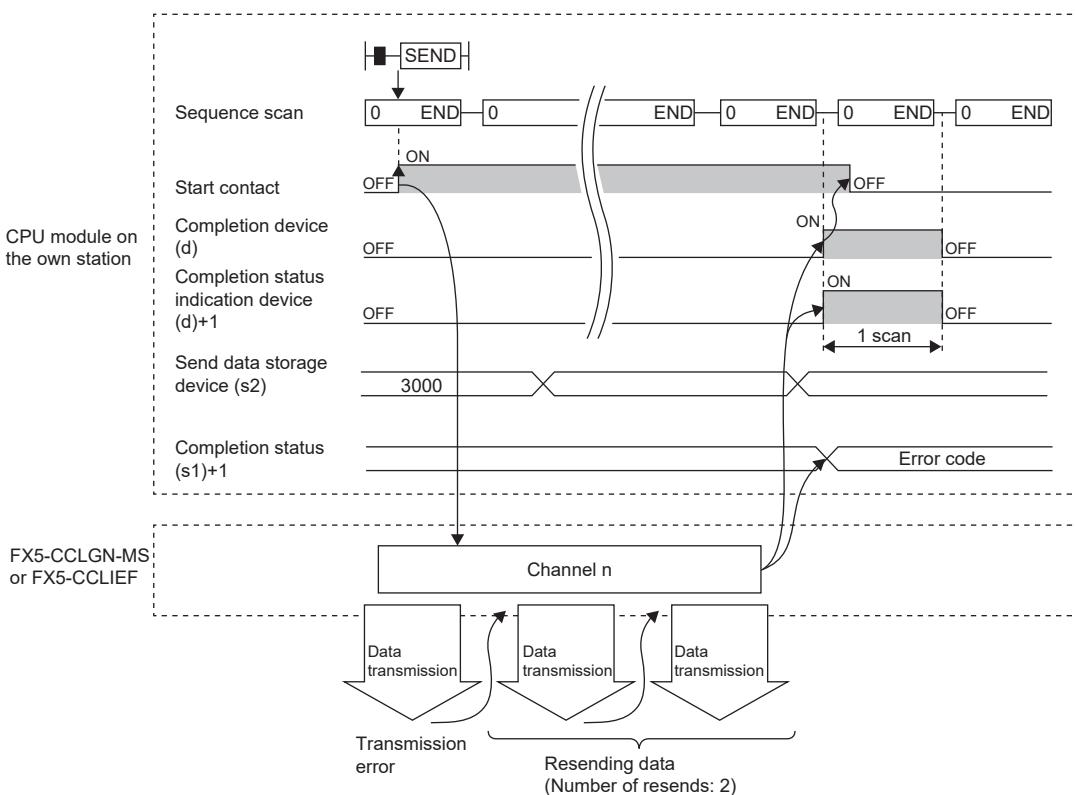
Device	Operation
Completion device (d)	The device turns on during the END processing for the scan in which the GP.SEND instruction is completed, and turns off during the next END processing.
Completion status indication device (d)+1	The device turns on or off depending on the completion status of the GP.SEND instruction. When completed normally: The device does not change (remains off). When completed with an error: The device turns on during the END processing for the scan in which the GP.SEND instruction is completed, and turns off during the next END processing.

- The following figure shows the execution timing of the SEND instruction.

When completed normally



When completed with an error



- Send processing is performed only once on the rising edge when the send command turns on.

Operation error

Error code ((s1)+1)	Description
C000H to CFFFH	Refer to MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual .
D000H to DFFFH	Refer to MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual . Refer to MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual .