CC-Link

Open Field Network

Control & Communication System Profile (CSP+)

Creation Guidelines

CC-Link CLPA PARTNER ASSOCIATION

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1. Introduction

This document describes, for designers who create CSP+, the relationship between the actual CSP+ descriptions and their display on the utility software based on the CC-Link Family System Profile Specification BAP-C2008-001 (hereinafter, "CSP+ Specification").
For each part described in CSP+ (such as the DEVICE_INFO part and COMM_IF_INFO part), where element items of each part are displayed on the utility software or how they are used if not displayed are described.
When creating CSP+, designers can understand which part of CSP+ should be described to use the functions of the utility software by referring to the document. In addition, when testing, designers can check if the created CSP+ is reflected on the screen of the utility software as intended by referring to the document and checking the CSP+ descriptions and the actual display on the utility software.

[Remarks]
CSP+ described in this document is an example for an inverter manufactured by Mitsubishi (model name: FR-A740-90K).
The implementation of the utility software described in the document is just an example. The application of information described in CSP+ is not limited to that described in the document.
The utility software screens used in the document are those of GX Works2/GX Works3 manufactured by Mitsubishi.

1.1 Descriptions

This document includes chapters corresponding to each section of CSP+ and sections corresponding to each part thereof. Each chapter and section include the following (1) to (4).

(1) Explanation of the Specifications of Each Part

(Refer to Section 5.2.1. DEVICE_INFO part in the CC-Link Family System Profile Specification BAP-C2008-001.)

No.	Element	Description	Required/ Optional
1	VendorName	Describes the name of the vendor that manufactured the module.	Required
2	VendorCode	Describes the code of the vendor that manufactured the module. The 5 to 8 digits of the membership number of the CC-Link Partner Association are described.	Required
3	DeviceModel	Describes the model of the module.	Required
4	ProductID	Describes the product ID of the module. The ID managed by the vendor that manufactured the module is described.	Optional
26	Weight	Describes the weight, including the unit.	
27	Price	Describes the price, including the unit.	Optional
28	UI_ATT		Optional

Items in the CSP+ Specification are numbered.
The numbers correspond to those in the red square boxes in the figures of (2), (3), (4).

(2) Example of CSP+ Descriptions

Examples of the creation support tool when CSP+ for an inverter (FR-A740-90K) is used are shown.

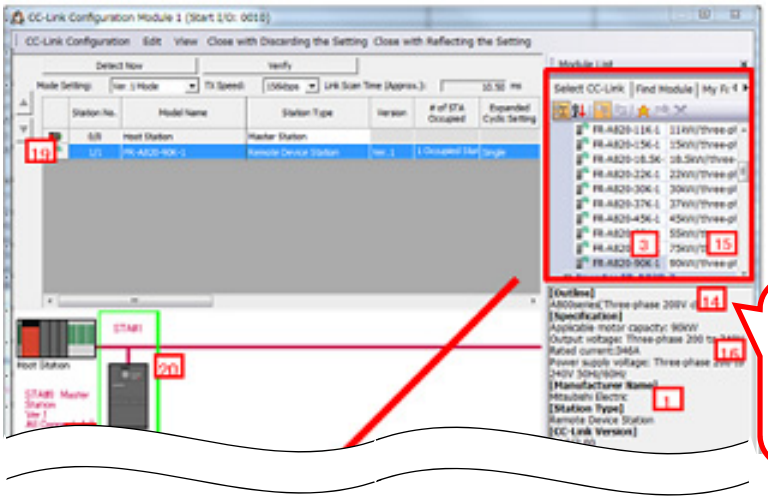
FileInformation

	LABEL	LABEL2	CATEGORY	NAME	DATATYPE	DATA	REMARK
1	CreateDate		COMMON	File created date	STRING(10)	2014/01/08	1
2	CreateTime		COMMON	File created time	STRING(8)	08:57:57	2
3	ModDate		COMMON	Last updated date	STRING(10)	2014/01/08	3
4	ModTime		COMMON	Last updated time	STRING(8)	08:57:57	4

Locations of the items in the CSP+ Specification can be checked with these numbers.

(3) Display Example on the Utility Software

A display example on MELSOFT Navigator or GX Works2 when CSP+ for an inverter (FR-A740-90K) is used is provided.



(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

4	ProductID	Used to check whether or not the ProductID matches the model code acquired from the actual device during automatic detection and scanning. Examples: L26CPU-BT 0x40000548 LJ61BT11 0x00000001 RJ71EN71 0x00000029 - Error cases If the number is incorrect, the utility software recognizes it as a different module.
5	DeviceTypeID	Describes the code of the remote device type list determined by the CC-Link Partner Association. (Example: 0x20 for an inverter) For the assignment of codes, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 -5.2.1.DEVICE_INFO [illegible] - Table 5-24 Remote Device Type List
9	VersionPolicyType	Describes the price, including the unit.

Items which are not displayed on the utility software are described in a separate table.

Definitions of terminology and figures

A black word balloon describes an explanation of the item.

A blue word balloon describes a point of display and processing of CSP+ and utility software.

2. FILE Section

The FILE section comprises one FILE_INFO part only.
The FILE_INFO part describes the information related to the CSP+ file such as file updated date.

2.1 FILE_INFO Part

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.1.1 FILE_INFO part

Table 2.1-1 lists the elements configuring the FILE_INFO part.

Table 2.1-1 List of Elements Configuring the FILE_INFO Part

No.	Element	Description	Required /Optional
1	CreateDate	Describes the date the CSP+ file was created.	Required
2	CreateTime	Describes the time the CSP+ file was created.	Required
3	ModDate	Describes the date last modified.	Required
4	ModTime	Describes the time last modified.	Required
5	Language	Describes the language in which the CSP+ file is written.	Required
6	CCLinkFamilyProfileVersion	Describes the version of the CSP+ Specification.	Required
7	FileVersion	Describes the version of the CSP+ information for the target module.	Required

(2) CSP+ Descriptions

Figure 2.1-1 shows the display example of the FILE_INFO part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool.

FileInformation

	LABEL	LABEL2	CATEGORY	NAME	DATATYPE	DATA	REMARK
1	CreateDate		COMMON	File created date	STRING(10)	2014/01/08	
2	CreateTime		COMMON	File created time	STRING(8)	08:57:57	
3	ModDate		COMMON	Last updated date	STRING(10)	2014/01/08	
4	ModTime		COMMON	Last updated time	STRING(8)	08:57:57	
5	Language		COMMON	Compatible language	STRING(12)	en	
6	CCLinkFamilyProfileVersion		COMMON	CSP+ specifications version	STRING(32)	1.0	
7	FileVersion		COMMON	File version	STRING(32)	1.9	

Figure 2.1-1 Display Example on the CSP+ Creation Support Tool (FILE_INFO)

(3) Utility Software

Elements configuring the FILE_INFO part are not displayed on the utility software.

(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

Table 2.1-2 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 2.1-2 Elements Not Being Used on the Utility Software Screen (FILE_INFO)

No.	Element	Application	Required/ Optional
1	CreateDate	An item not used in the utility software	Required
2	CreateTime	An item not used in the utility software	Required
3	ModDate	An item not used in the utility software	Required
4	ModTime	An item not used in the utility software	Required
5	Language	Displays the corresponding language of CSP+ by comparing the language of the utility software and the string described in this item.	Required
6	CCLinkFamilyProfileVersion	Utility software that does not support the description specification version of CSP+ cannot use the CSP+.	Required
7	FileVersion	Utility software uses CSP+ with the latest file version.	Required

3. DEVICE Section

The DEVICE section comprises one DEVICE_INFO part only.
The DEVICE_INFO part describes the product identification information and the information related to the product specifications.

3.1 DEVICE_INFO Part

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.2.1 DEVICE_INFO part

Table 3.1-1 lists the elements configuring the DEVICE_INFO part.

Table 3.1-1 List of Elements Configuring the DEVICE_INFO Part

No.	Element	Description	Required/ Optional
1	VendorName	Describes the name of the vendor that manufactured the module.	Required
2	VendorCode	Describes the code of the vendor that manufactured the module. The 5 to 8 digits of the membership number of the CC-Link Partner Association are described.	Required
3	DeviceModel	Describes the model of the module.	Required
4	ProductID	Describes the product ID of the module. The ID managed by the vendor that manufactured the module is described.	Optional
5	DeviceTypeID	Describes the ID showing the type of module.	Optional
6	DeviceTypeDetail	Describes the specific device type.	Optional
7	Version	Describes the device version of the module.	Required
8	VersionDisplayFlg	Describes whether to display the device version on the utility software or not.	Required
9	VersionPolicyType	Describes the policy of the relationship between the actual device version and the device version written in the CSP+ file when accessing the device using the CSP+ file.	Required
10	DisplayVersionValue	Describes the device version to be displayed when the device version acquired from the actual device (Version) differs from the one displayed to the user on the utility software.	Optional
11	VersionComment	Describes a comment related to the device version.	Optional
12	ReferenceURL	Describes an URL if the module information is disclosed on the Web.	Optional
13	URLInfo	Describes a description of the information indicated by the reference URL.	Optional
14	Outline	Describes the general specifications of the module.	Optional
15	Feature	Describes the features of the module.	Optional
16	SpecList	Describes the specifications of the module using a set of strings.	Optional
17	PowerSupplyVoltage	Describes the power supply voltage in units of V (volts).	Optional
18	ConsumptionCurrent	Describes the current consumption in units of mA (milliamperes).	Optional
19	IconFileName	Describes the icon file name to be used when displaying the module as an icon on the utility software, including the extension (.ico).	Required
20	GraphicsFileName	Describes the image file name to be used when displaying the module on the utility software, including the extension (.bmp, .png, .jpg, .gif).	Required
21	Height	Describes the height of the external dimensions, including the unit.	Optional
22	Width	Describes the width of the external dimensions, including the unit.	Optional
23	Depth	Describes the depth of the external dimensions, including the unit.	Optional
24	Weight	Describes the weight, including the unit.	Optional
25	Price	Describes the price, including the unit.	Optional
26	UI_ATTRIBUTE_Window**	Describes the name of the Window specified in UI_ATTRIBUTE. The Window number is described in "**".	Optional

(2) CSP+ Descriptions

Figure 3.1-1 shows the display example of the DEVICE_INFO part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool.

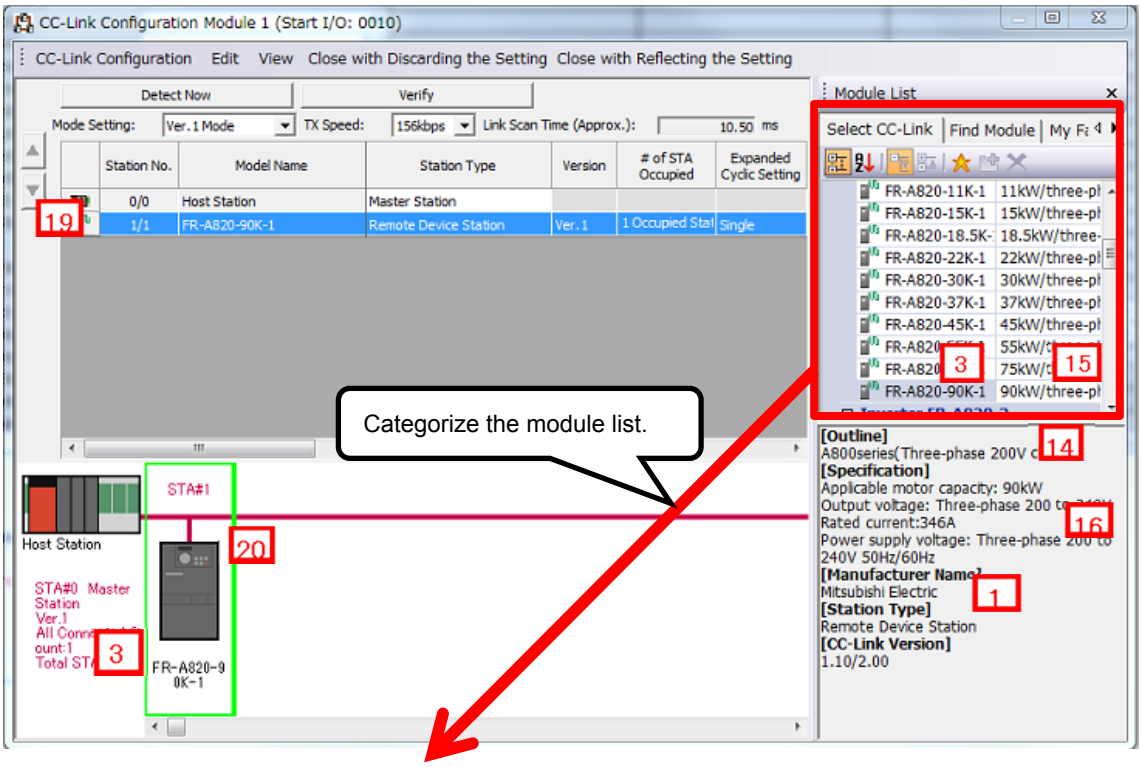
DeviceInformation

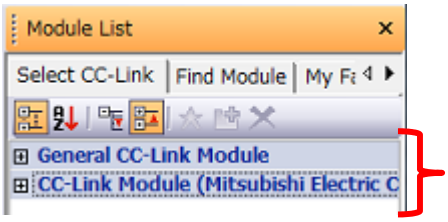
	LABEL	LABEL2	CATEGORY	NAME	DATATYPE	DATA		REMARK
1	VendorName		COMMON	Vendor name	STRING_U(64)	Mitsubishi Electric	1	
2	VendorCode		COMMON	Vendor code	WORD	0x0000	2	
3	DeviceModel		COMMON	Model	STRING(48)	FR-A820-90K-1	3	
4	DeviceTypeID		COMMON	Device type ID	WORD	0x20	5	
5	DeviceTypeDetail		COMMON	Device type detail	STRING_U(256)	Inverter FR-A820-1	6	
6	Version		COMMON	Machine version	STRING(16)	1	7	
7	VersionDisplayFlg		COMMON	Device version indication flag	BOOL	0	8	
8	VersionPolicyType		COMMON	Device version policy	UINT16	0	9	
9	Outline		COMMON	General specification	STRING_U(256)	A800series(Three-phase 200V class)	14	
10	Feature		COMMON	Feature	STRING_U(256)	90kW/three-phase 200V	15	
11	SpecList		COMMON	Specification list	STRING_U(256)()	Applicable motor capacity: 90kW, Output voltage: Three-phase 200 to 240V, Rated current:346A, Power supply voltage: Three-phase 200 to 240V 50Hz/60Hz	16	
12	IconFileName		COMMON	Icon file name	STRING(52)	FR-A800.ico	19	
13	GraphicsFileName		COMMON	Graphic file name	STRING(52)	FR-A800.bmp	20	

Figure 3.1-1 Display Example on the CSP+ Creation Support Tool (DEVICE_INFO)

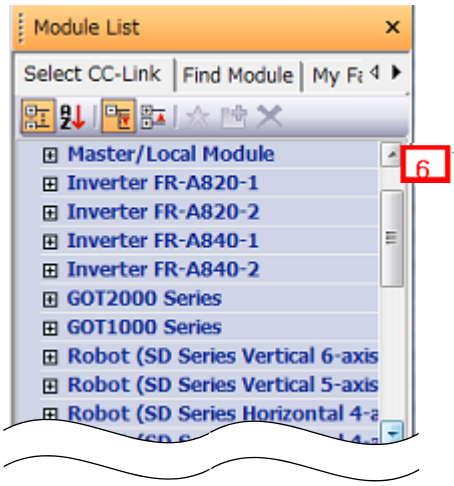
(3) Utility Software - (CC-Link Configuration Diagram)

The descriptions in CSP+ for the FR-A740-90K are displayed on the utility software as shown below. This is a display example of the utility software (CC-Link configuration diagram).

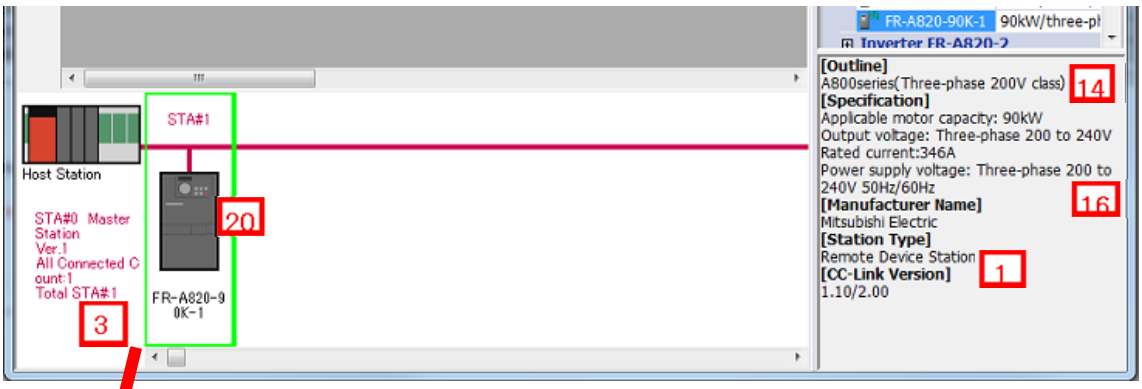


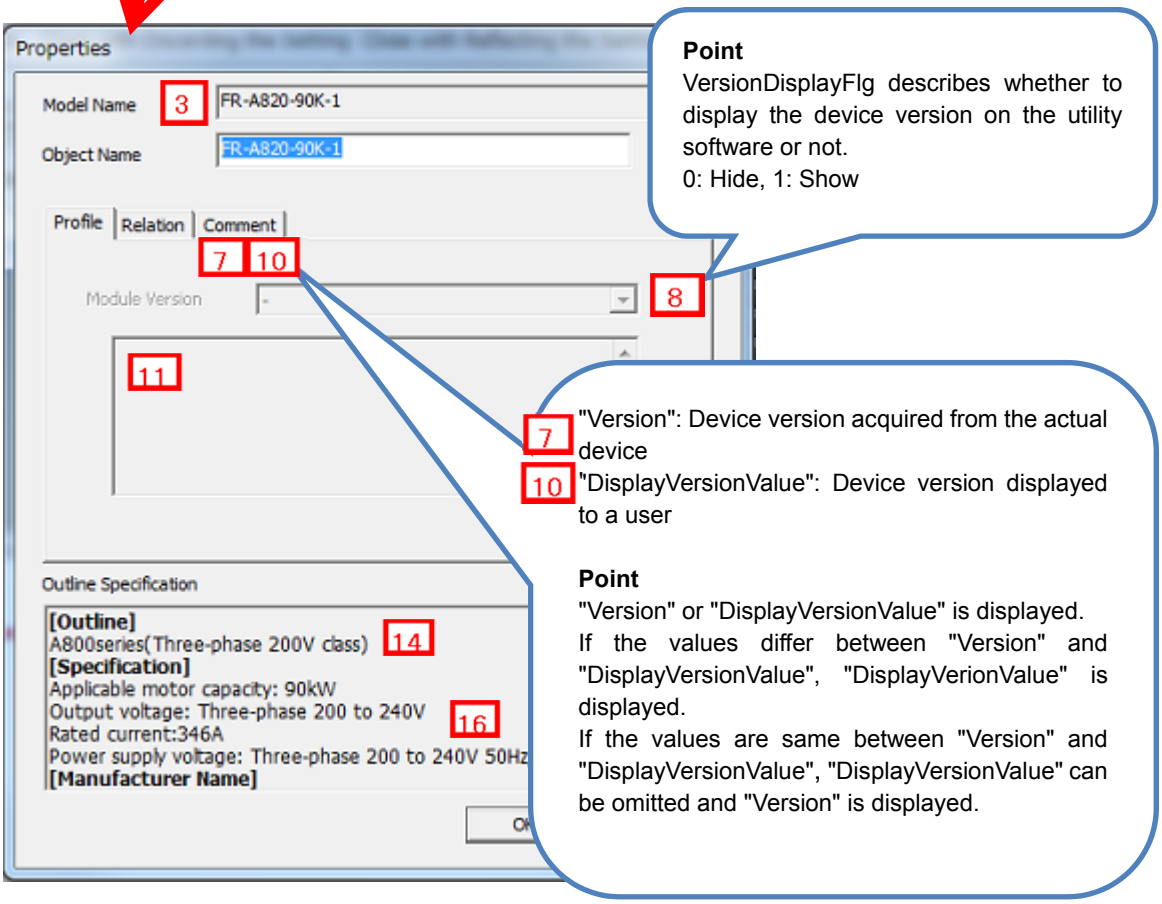


Point
The categories are listed from the top in ascending order of numerical value of VenderCode.



Point
DeviceTypeDetail corresponds to the categories of the module list.
→ Categories are listed in the order of registration.





Point
VersionDisplayFlg describes whether to display the device version on the utility software or not.
0: Hide, 1: Show

7 "Version": Device version acquired from the actual device

10 "DisplayVersionValue": Device version displayed to a user

Point
"Version" or "DisplayVersionValue" is displayed.
If the values differ between "Version" and "DisplayVersionValue", "DisplayVerionValue" is displayed.
If the values are same between "Version" and "DisplayVersionValue", "DisplayVersionValue" can be omitted and "Version" is displayed.

(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

Table 3.1-2 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 3.1-2 Elements Not Being Used on the Utility Software Screen (DEVICE_INFO)

No.	Element	Application	Required /Optional
4	ProductID	Used to check whether or not the ProductID matches the model code acquired from the actual device during automatic detection and scanning. Examples: L26CPU-BT 0x40000548 LJ61BT11 0x00000001 RJ71EN71 0x00000029	Optional
5	DeviceTypeID	Describes the code of the remote device type list determined by the CC-Link Partner Association. (Example: 0x20 for an inverter) For the assignment of codes, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 5.2.1.DEVICE_INFO part - (1) DeviceTypeID element - Table 5-24 Remote Device Type List A string corresponding to the code described in DeviceTypeID is displayed when DeviceTypeDetail is not described.	Optional
9	VersionPolicyType	Describes the policy of the device version between the module and the CSP+ file. The device version to be used is determined based on this value. For the meaning of each value and modules to be used, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 5.2.1.DEVICE_INFO part - (2) Device version (Version element) - (f) Device version comparison policy for module and CSP+ file (VersionPolicyType element)	Required
17	PoweSupplyVoltage	Not used for CC-Link connection devices.	Optional
18	ConsumptionCurrent	Not used for CC-Link connection devices.	Optional
21	Height	Reference information. Displayed in the creation support tool.	Optional
22	Width	Reference information. Displayed in the creation support tool.	Optional
23	Depth	Reference information. Displayed in the creation support tool.	Optional
24	Weight	Reference information. Displayed in the creation support tool.	Optional
25	Price	Reference information. Displayed in the creation support tool.	Optional
26	UI_ATTRIBUTE_Window**	For future support	Optional

4. COMM_IF Section

The COMM_IF section defines the information of the communication functions, and comprises multiple parts as shown in Figure 4-1.

COMM_IF section

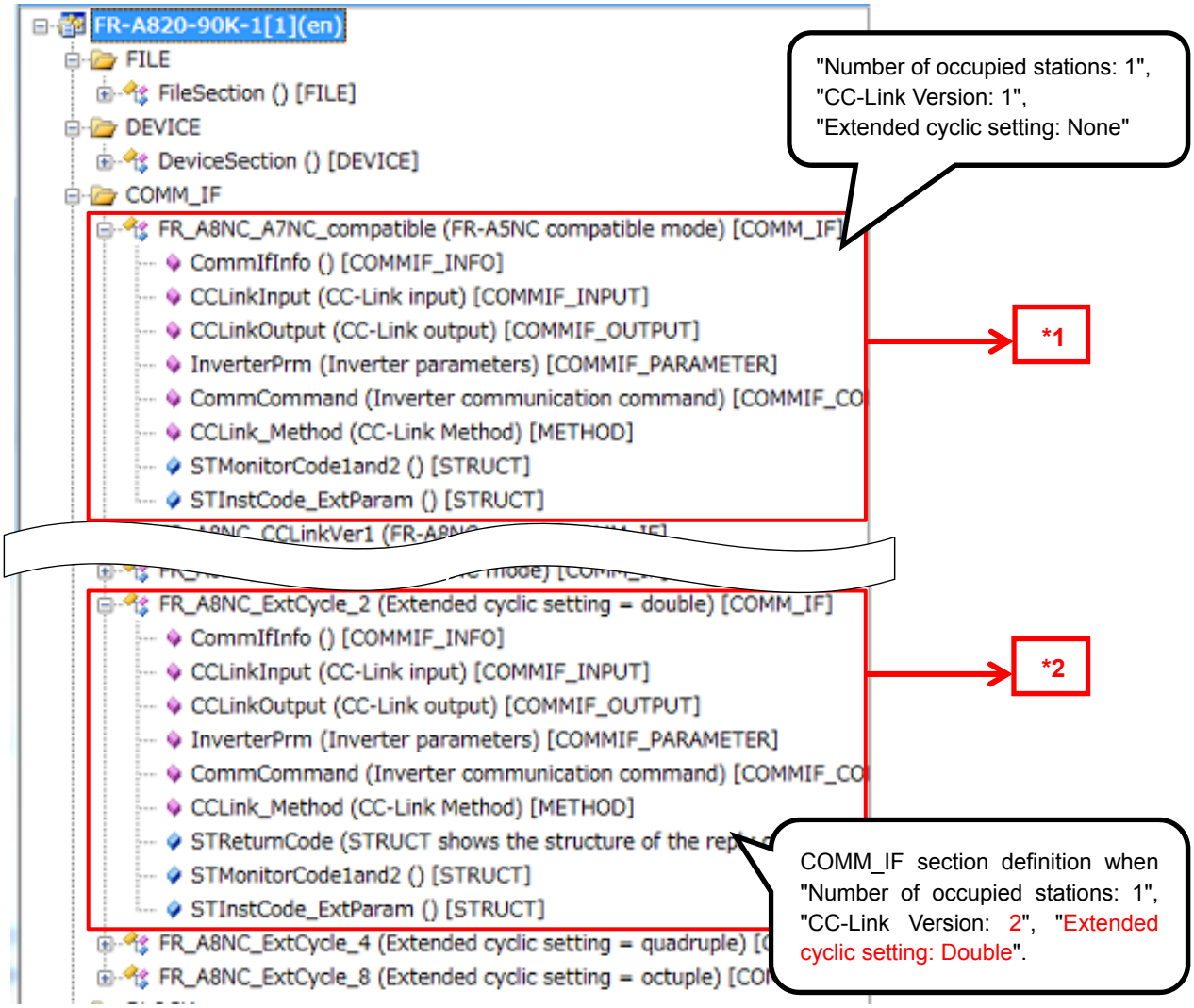
COMM_IF_INFO part	Describes the identification information of the communication interface and communication specifications.
COMM_IF_INPUT part	Describes the input information of the communication interface.
COMM_IF_OUTPUT part	Describes the output information of the communication interface.
COMM_IF_PARAMETER part	Describes the parameter information of the communication interface.
COMM_IF_COMMAND part	Describes the commands to be executed by the communication interface.
METHOD part	Describes the information related to the commands issued from the communication interface and parameter settings.
STRUCT part	Describes the structure of the inputs and outputs of multiple elements.
ENUM part	Describes the options for values and return values to be set for the element.
COMMAND_ARGUMENT part	Describes the argument information of COMM_IF_COMMAND.

Figure 4-1 Structure of COMM_IF Section

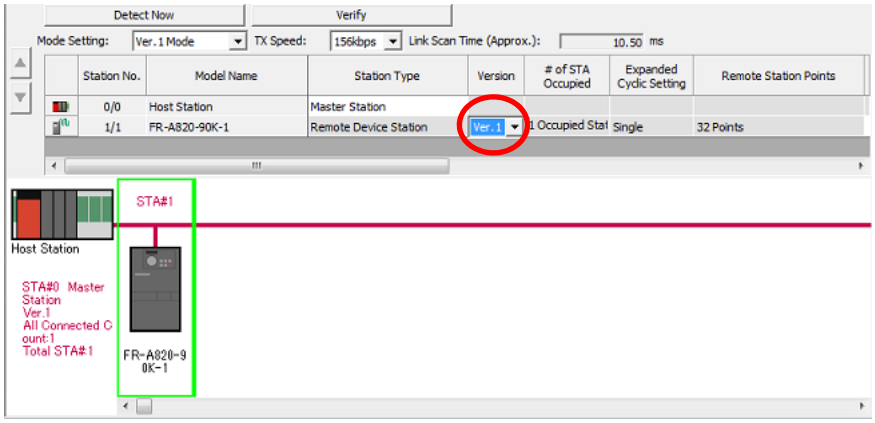
4.1 Points of COMM_IF Section Specifications

(1) When Devices Which Can Change the Following Settings Are Used, Define the COMM_IF Section for Each Setting. [Required]

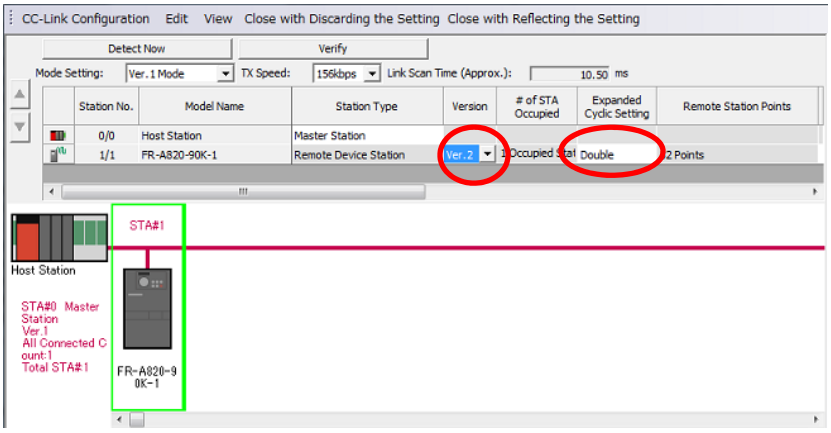
- Number of occupied stations
- CC-Link Version
- Extended cyclic setting



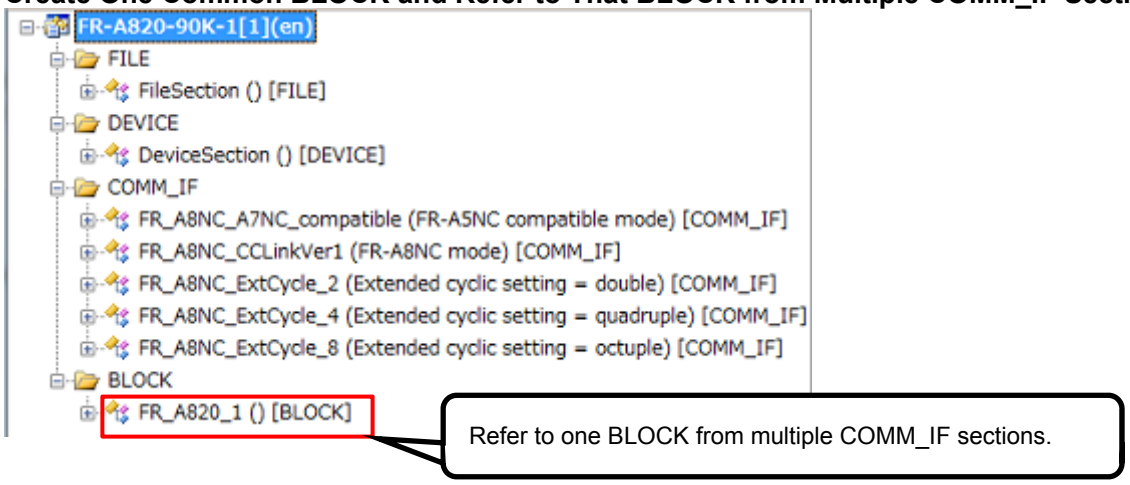
*1



*2



(2) When the Specifications of the Device Itself Do Not Change From the Network Settings, Create One Common BLOCK and Refer to That BLOCK from Multiple COMM_IF Sections.



- Specifications Image

When using a remote device which can select the number of occupied stations from "1" or "2", create COMM_IF section when the number of occupied stations is "1" and COMM_IF section when the number of occupied stations is "2" as shown in Figure 4.1-1. Then, describe the input, output, parameters, and commands at each setting.

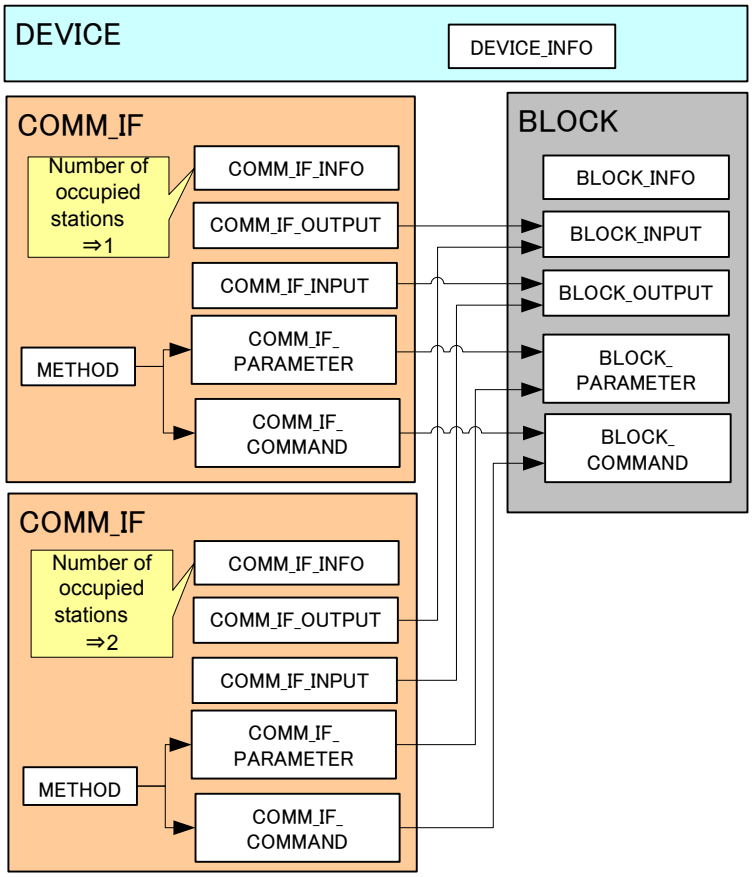


Figure 4.1-1 Example of the Device Model Which Can Change the Number of Occupied Stations

4.2 COMM_IF_INFO Part

The COMM_IF_INFO part describes the identification information of the communication interface and the information related to communication specifications.

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.3.1 COMM_IF_INFO part

Table 4.2-1 lists the elements configuring the COMM_IF_INFO part when the communication interface is CC-Link.

Table 4.2-1 List of Elements Configuring the COMM_IF_INFO Part

	No.	Element	Description	Required/ Optional
Common Part	1	VendorName	Describes the name of the vendor that manufactured the module.	Required
	2	VendorCode	Describes the code of the vendor that manufactured the module.	Required
	3	CommIFTypeID	Describes the ID that indicates the type of communication interface in a string.	Required
	4	Version	Describes the version of the firmware in a string.	Required
	5	ReadVersionType	Describes how to obtain the device version of the module.	Required
Network-Dependent Part	6	StationType	Describes the station type.	Required
	7	StationTypeDetail	Describes the station when the station type is 2: Intelligent device station/Local station.	See the left column.
	8	TotalNumOfIO	Describes the total number of I/O points.	Optional
	9	IOType	Describes the I/O type.	Required
	10	DevModel	Describes the model name.	Required
	11	CcLinkVer	Describes the CC-Link version.	Required
	12	ExtCycle	Describes the extended cyclic setting.	See the left column.
	13	NumOccupiedStations	Describes the number of occupied stations.	Required
	14	ErrReg	Describes the error code storage register.	Optional
	15	MasterFlg	Describes whether the module can be a standby master or not.	Optional

(2) CSP+ Descriptions

Point

1) When devices which can change the following settings are used, define the COMM_IF section for each setting. [Required]
   - Number of occupied stations
   - CC-Link Version
   - Extended cyclic setting
2) When the specifications of the device itself do not change from the network settings, create one common BLOCK and refer to that BLOCK from the multiple COMM_IF sections. Figures 4.2-1 to 4.2-4 show the description examples.

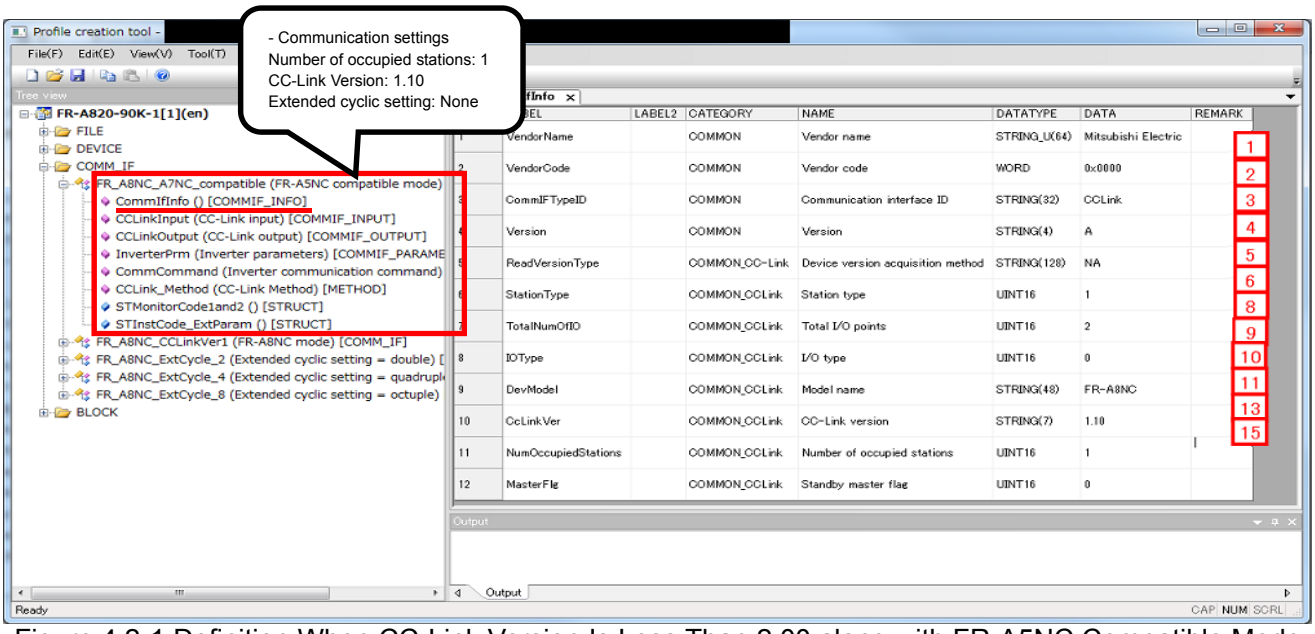


Figure 4.2-1 Definition When CC-Link Version Is Less Than 2.00 along with FR-A5NC Compatible Mode

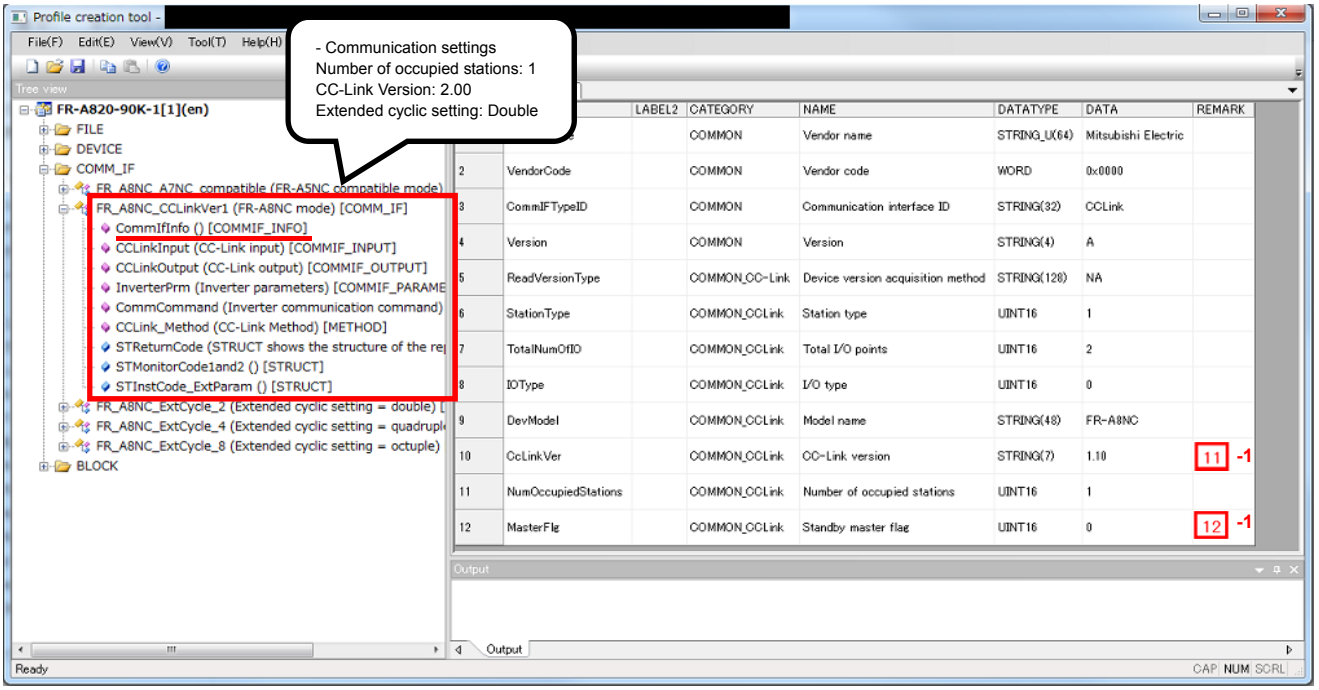


Figure 4.2-2 Definition When CC-Link Version is 2.00 or Greater and the Extended Cyclic Setting is Double

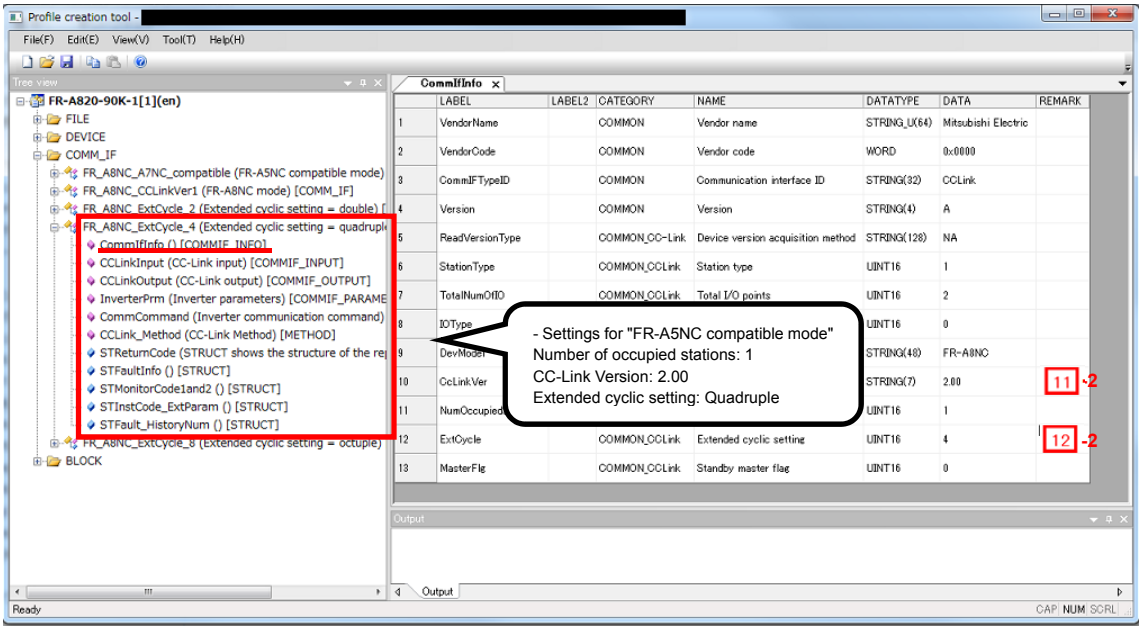


Figure 4.2-3 Definition When CC-Link Version is 2.00 or Greater and the Extended Cyclic Setting is Quadruple

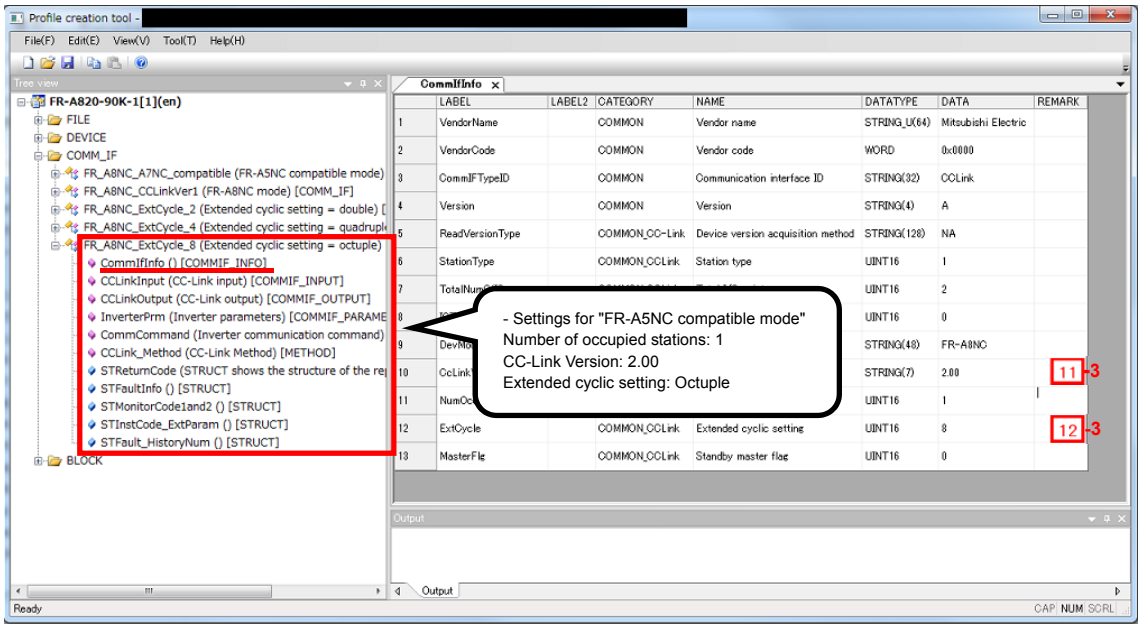
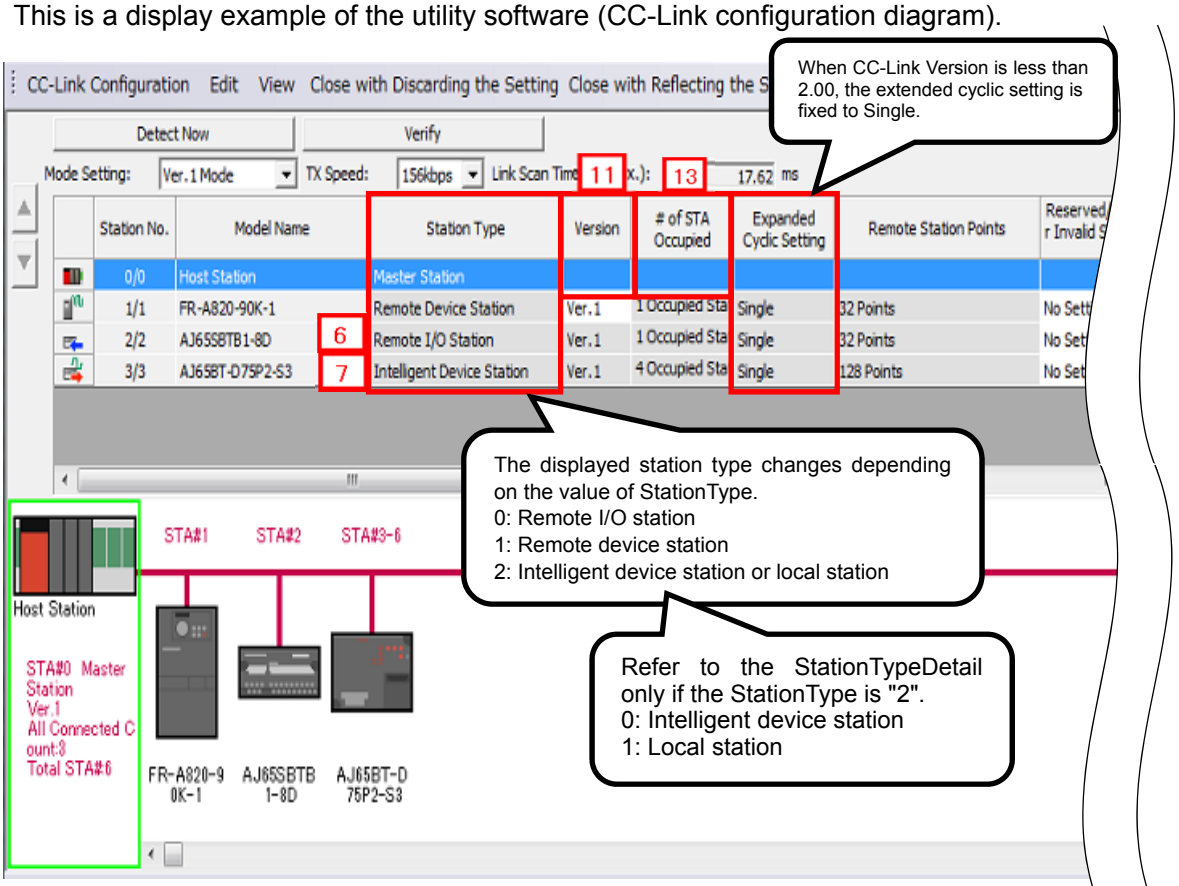


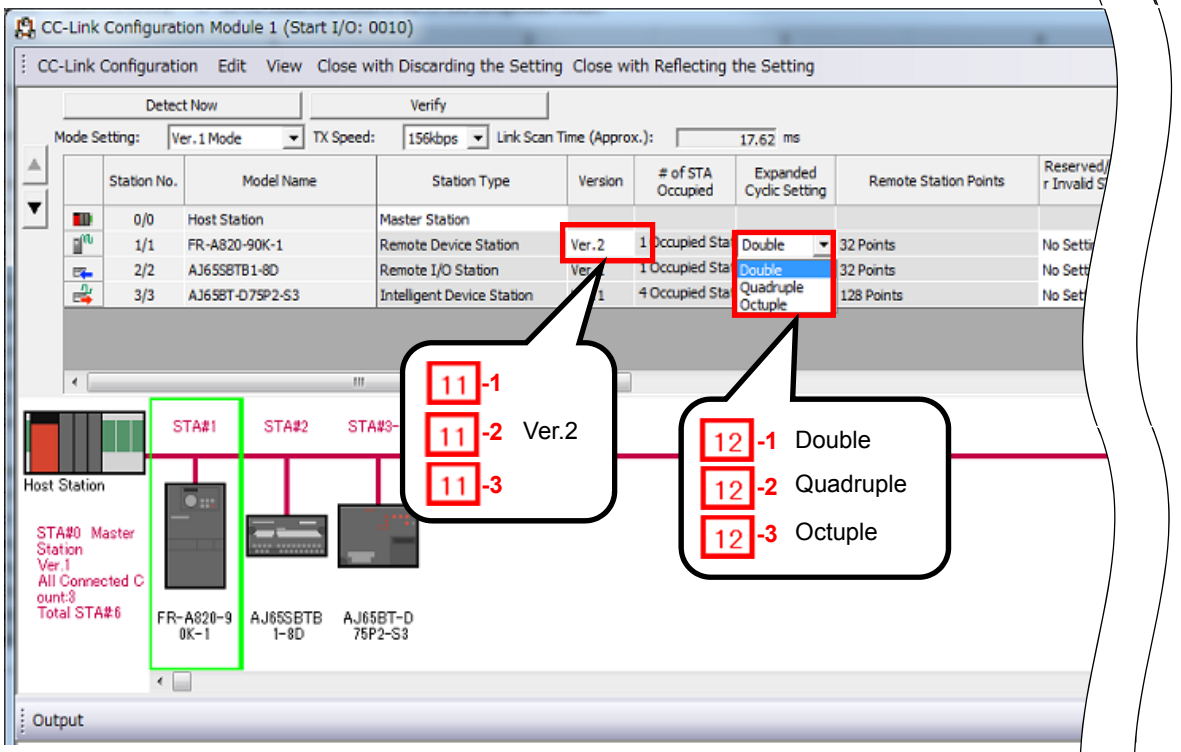
Figure 4.2-4 Definition When CC-Link Version is 2.00 or Greater and the Extended Cyclic Setting is Octuple

(3) Utility Software - (CC-Link Configuration Diagram)

The descriptions in CSP+ for the FR-A740-90K are displayed on the utility software as shown below.

This is a display example of the utility software (CC-Link configuration diagram).





(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

Table 4.2-2 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 4.2-2 Elements Not Being Used on the Utility Software Screen (COMM_IF_INFO)

No.	Element	Application	Required/ Optional
1	VendorName	Reference information. Displayed in the creation support tool.	Required
2	VendorCode	Information to specify the device. If this value is changed at the time of the CSP+ update, the utility software handles it as a CSP+ of a different device.	Required
3	CommIFTypeID	Used to specify in which configuration diagram this device is used based on the description. Example: Described information: "CCLink" → Used in the CC-Link configuration diagram Described information: "CCIEField" → Used in the CC-Link IE Field configuration diagram	Required
4	Version	Reference information. Describe a version following the version description method described in the CC-Link Specification - Overview/Protocol (BAP-05026). It shall be described as A to Z, AA to AZ, BA to BK, not 1, 2, 3, ...possessed by the actual device.	Required
5	ReadVersionType	When checking the versions of the device and CSP+, determine how to obtain the device version based on the described information. For details on the description of the element, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 5.3.1.3. Description of COMM_IF_INFO part - (5) Item description of ReadVersionType element	Required
8	TotalNumOfIO	Reference information. Displayed in the creation support tool.	Optional
9	IOType	Reference information. For details on the description of the element, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 5.3.1.3. Description of COMM_IF_INFO part - (9) Item description of IOType element	Required
10	DevModel	Reference information. Displayed in the creation support tool.	Required
14	ErrReg	Reference information. Displayed in the creation support tool.	Optional
15	MasterFlg	Describes whether the module can become a standby master or not when StationType is 2 (intelligent device station/local station) and StationTypeDetail is 1 (local station). When MasterFlg is 0, the module can only be a local station (unchangeable), whereas when it is 1, the module can be a local station or standby master (selectable).	Optional

4.3 COMM_IF_INPUT Part

The COMM_IF_INPUT part describes the information related to the input information of the communication interface. (This part needs to be described when there is information to be output from the control side of the target module.)
The information includes such as the remote input RX area of the remote I/O module, the AD conversion completion flag of the digital-analog converter module, and the digital output of the analog-digital converter module.
The elements configuring the COMM_IF_INPUT part are defined based on the functions of the target module.

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.3.2 COMM_IF_INPUT part

1) Table 4.3-1 lists the elements configuring the COMM_IF_INPUT part.

Table 4.3-1 List of Elements Configuring the COMM_IF_INPUT Part

No.	Element	Description	Required/ Optional
1	LABEL	Describes the label for identifying the element.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3	CATEGORY	Describes the category for grouping the element.	Optional
4	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Optional
5	DATATYPE *3	Describes the data type of the element.	Optional
6	DEFAULT	Describes the default to be set for the element.	Optional
7	RANGE	Describes the setting range of the element.	Optional
8	MIN_INC	Describes the minimum increment applied to the value of the element.	Optional
9	ENG_UNIT	Describes the engineering unit applied to the value of the element.	Optional
10	ACCESS	Describes the access attribute of the element.	Optional
11	ASSIGN	Describes the remote input/output and remote register where the value of the element is assigned to.	Optional
12	UI_ATTRIBUTE	Describes the display method when the element is to be displayed on the utility software.	Optional
13	REF	COMM_IF_INPUT part: Describes a reference to the element of the BLOCK_OUTPUT part. COMM_IF_OUTPUT part: Describes a reference to the element of the BLOCK_INPUT part.	Optional
14	COMMENT	Describes the meaning of the element and usage precautions.	Optional

*3 When STRUCT is specified, refer to "STRUCT part" in Section 4.4. COMM_IF_OUTPUT Part.

2) Parts and elements with defined applications

In CSP+ specifications, parts other than the FILE_INFO, DEVICE_INFO, COMM_IF_INFO, and BLOCK_INFO parts do not specify elements that should be commonly included for all modules. In other words, the Label name can be freely determined by the creator of CSP+. However, when the module has a certain function or information, there are rules related to the elements used to express such function or information.

3) Elements related to the system area

CC-Link defines the specifications related to the system area. When describing a flag of the system area, the following elements (Label name) are used. Table 4.3-2 lists the specifications of the flags of the system area.

Table 4.3-2 Specifications of the Flags of the System Area (COMM_IF_INPUT)

No.	Element	Description	Required/ Optional
15	InitialDataProcessReq	Describes the initial data processing request flag.	Optional
16	InitialDataSetComp	Describes the initial data setting completion flag.	Optional
17	ErrorStatus	Describes the error status flag.	Optional
18	RemoteReady	Describes the remote ready flag.	Optional
19	MessageTransReceive	Describes the message transmission receive flag.	Optional
20	MessageHandshakeRX	Describes the input_message handshake flag.	Optional

(2) CSP+ Descriptions

Figures 4.3-1 and 4.3-2 show the display examples of the COMM_IF_INPUT part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool.

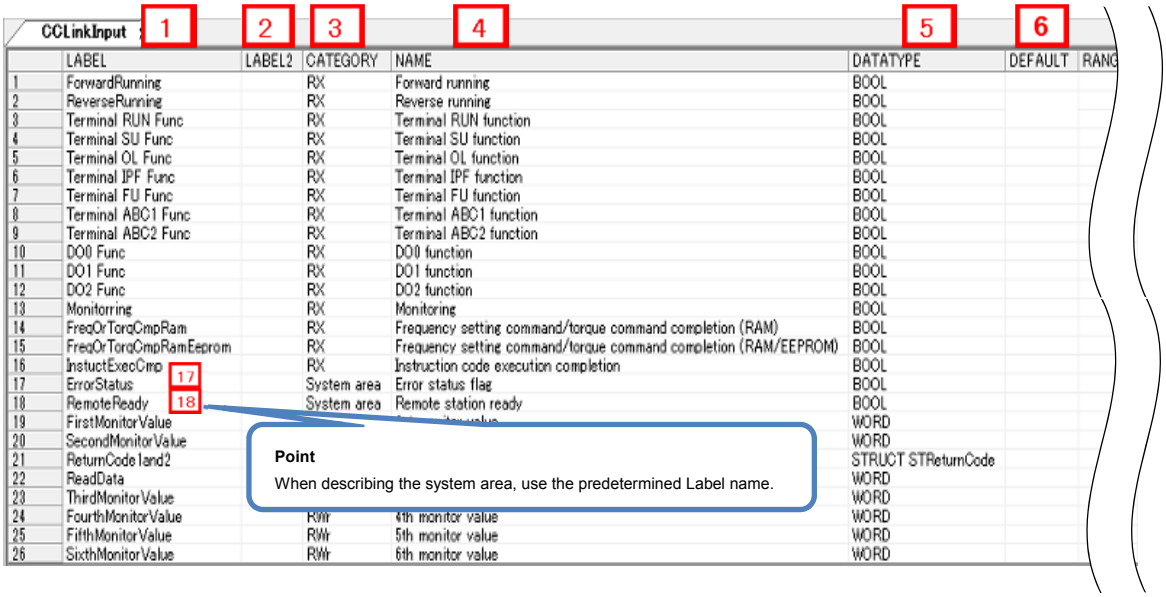


Figure 4.3-1 Display Example 1 on the CSP+ Creation Support Tool (COMM_IF_INPUT)

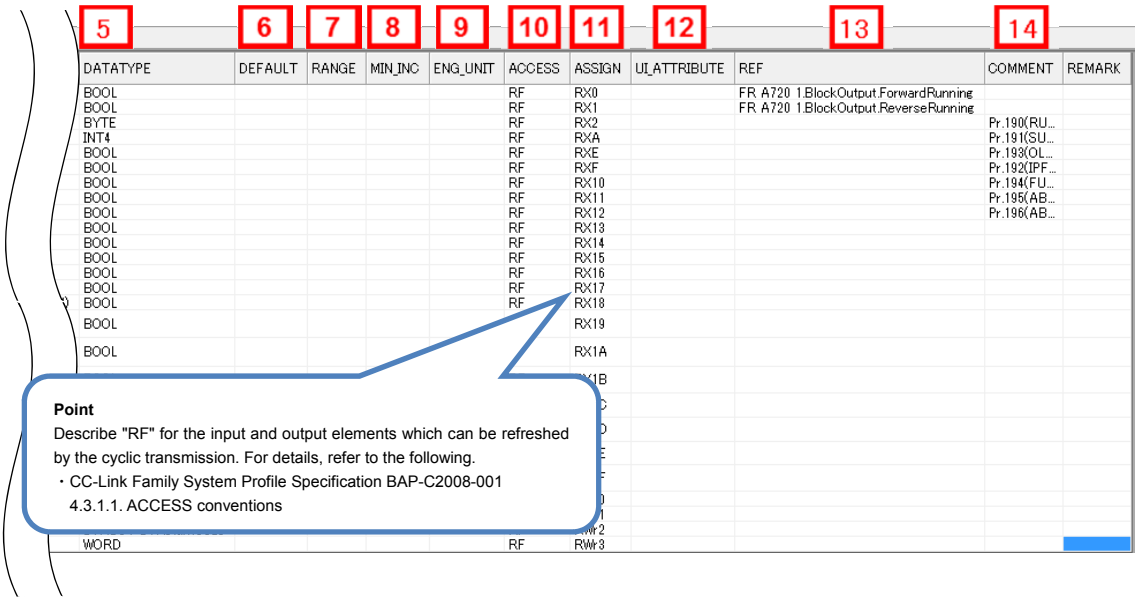
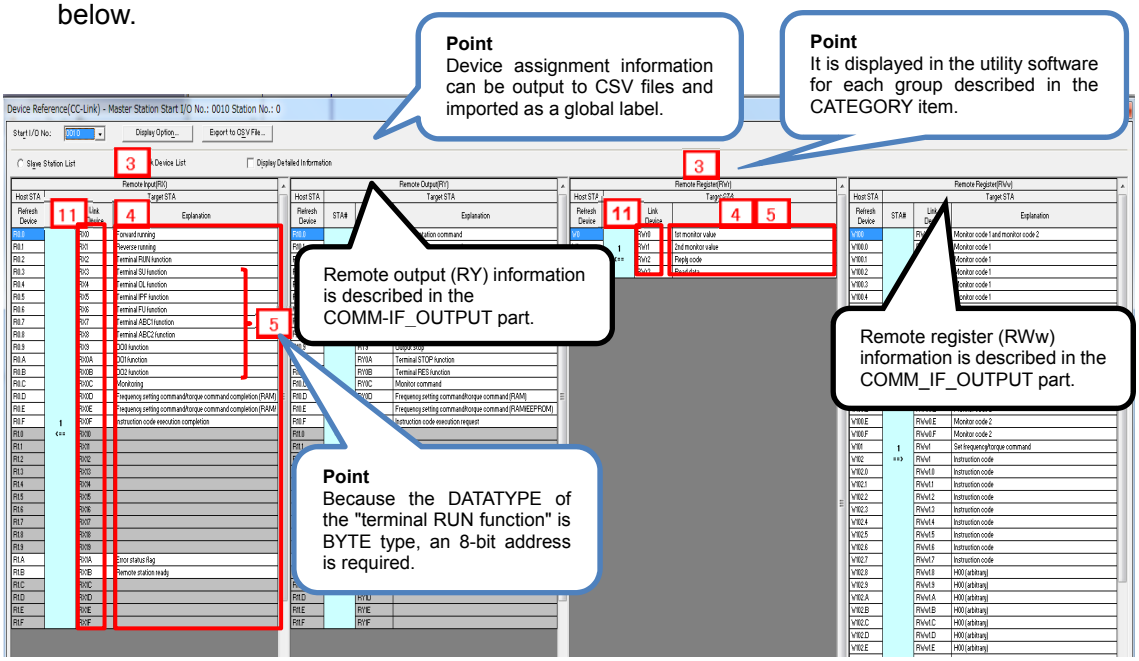


Figure 4.3-2 Display Example 2 on the CSP+ Creation Support Tool (COMM_IF_INPUT)

(3) Utility Software - (Device Assignment Screen)

The descriptions in CSP+ for the FR-A740-90K are displayed on the utility software as shown below.



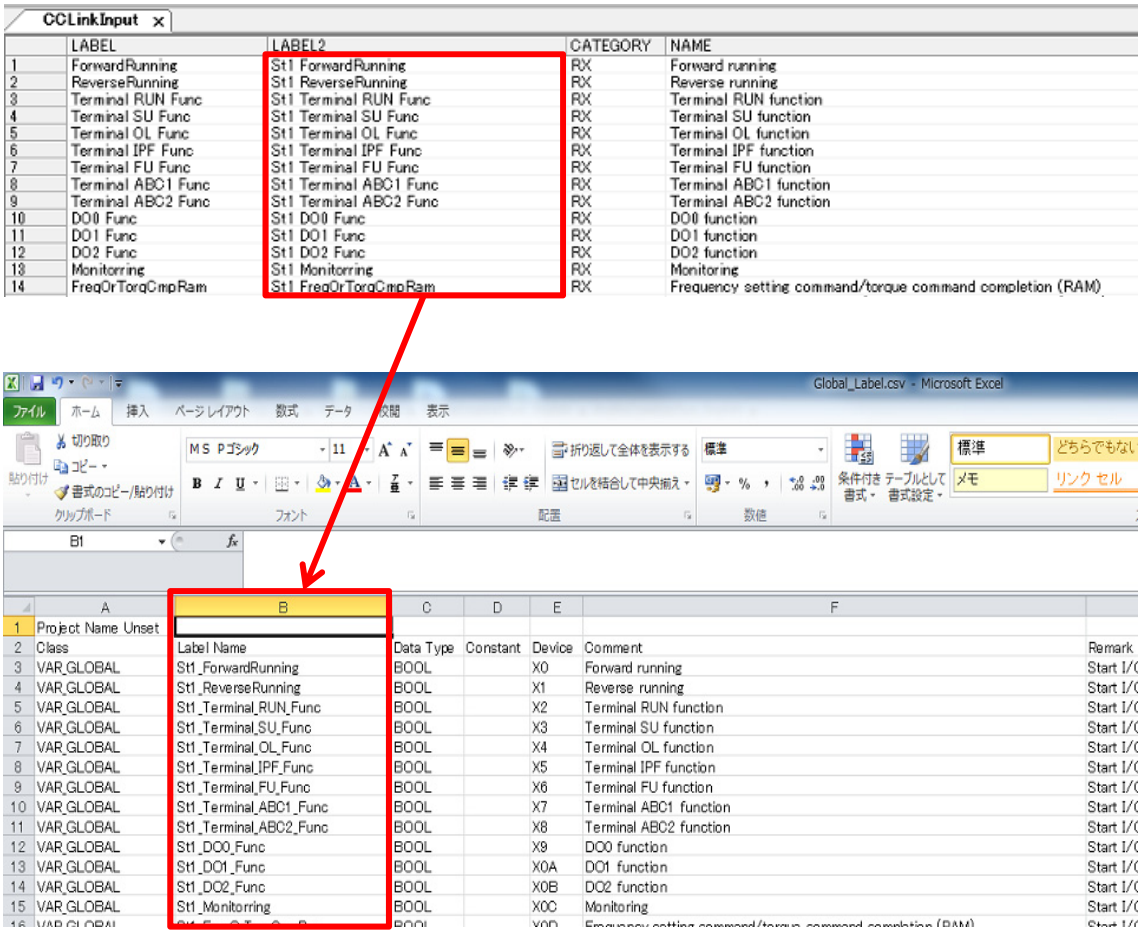
(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

Table 4.3-3 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 4.3-3 Elements Not Being Used on the Utility Software Screen (COMM_IF_INPUT)

No.	Element	Application	Required/ Optional
1	LABEL	Used as an identifier.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
6	DEFAULT	Used to set the default.	Optional
7	RANGE	Used to check the setting range of the item. An error is output when the value is out of range.	Optional
8	MIN_INC	Numerical values in which the user input value is multiplied by the value described here are used during internal processing.	Optional
9	ENG_UNIT	Displays the engineering value described here as an explanation of the item. (ENG_UNIT is not used for the display in the COMM_IF_INPUT and COMM_IF_OUTPUT parts.)	Optional
10	ACCESS	Used to identify the access information of the target item: "Readable", "Writable", "Readable and Writable", "Auto refreshable", or "Inaccessible". For details on the description of the element, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 4.3.1.1. ACCESS conventions	Optional
12	UI_ATTRIBUTE	For future support	Optional
13	REF	Used to identify the reference relationship.	Optional
14	COMMENT	Reference information. Displayed in the creation support tool.	Optional

Point
When the "Label name" is output as a global label, the one described in LABEL2 is output.
When LABEL2 is omitted, the one described in LABEL is output as the "Label name".



CCLinkInput

	LABEL	LABEL2	CATEGORY	NAME
1	ForwardRunning	St1 ForwardRunning	RX	Forward running
2	ReverseRunning	St1 ReverseRunning	RX	Reverse running
3	Terminal RUN Func	St1 Terminal RUN Func	RX	Terminal RUN function
4	Terminal SU Func	St1 Terminal SU Func	RX	Terminal SU function
5	Terminal OL Func	St1 Terminal OL Func	RX	Terminal OL function
6	Terminal IPF Func	St1 Terminal IPF Func	RX	Terminal IPF function
7	Terminal FU Func	St1 Terminal FU Func	RX	Terminal FU function
8	Terminal ABC1 Func	St1 Terminal ABC1 Func	RX	Terminal ABC1 function
9	Terminal ABC2 Func	St1 Terminal ABC2 Func	RX	Terminal ABC2 function
10	DO0 Func	St1 DO0 Func	RX	DO0 function
11	DO1 Func	St1 DO1 Func	RX	DO1 function
12	DO2 Func	St1 DO2 Func	RX	DO2 function
13	Monitorring	St1 Monitorring	RX	Monitoring
14	FreqOrTorqCmpRam	St1 FreqOrTorqCmpRam	RX	Frequency setting command/torque command completion (RAM)

Global_Label.csv - Microsoft Excel

	A	B	C	D	E	F	
1	Project Name Unset						
2	Class	Label Name	Data Type	Constant	Device	Comment	Remark
3	VAR_GLOBAL	St1_ForwardRunning	BOOL		X0	Forward running	Start I/O
4	VAR_GLOBAL	St1_ReverseRunning	BOOL		X1	Reverse running	Start I/O
5	VAR_GLOBAL	St1_Terminal_RUN_Func	BOOL		X2	Terminal RUN function	Start I/O
6	VAR_GLOBAL	St1_Terminal_SU_Func	BOOL		X3	Terminal SU function	Start I/O
7	VAR_GLOBAL	St1_Terminal_OL_Func	BOOL		X4	Terminal OL function	Start I/O
8	VAR_GLOBAL	St1_Terminal_IPF_Func	BOOL		X5	Terminal IPF function	Start I/O
9	VAR_GLOBAL	St1_Terminal_FU_Func	BOOL		X6	Terminal FU function	Start I/O
10	VAR_GLOBAL	St1_Terminal_ABC1_Func	BOOL		X7	Terminal ABC1 function	Start I/O
11	VAR_GLOBAL	St1_Terminal_ABC2_Func	BOOL		X8	Terminal ABC2 function	Start I/O
12	VAR_GLOBAL	St1_DO0_Func	BOOL		X9	DO0 function	Start I/O
13	VAR_GLOBAL	St1_DO1_Func	BOOL		X0A	DO1 function	Start I/O
14	VAR_GLOBAL	St1_DO2_Func	BOOL		X0B	DO2 function	Start I/O
15	VAR_GLOBAL	St1_Monitorring	BOOL		X0C	Monitoring	Start I/O

4.4 COMM_IF_OUTPUT Part

The COMM_IF_OUTPUT part describes the information related to the output information of the communication interface. (This part needs to be described when there is information to be input from the control side of the target module.)
The information includes such as the remote output RY area of the remote I/O module, the AD conversion completion flag of the digital-analog converter module, and the digital input of the analog-digital converter module. The elements configuring the COMM_IF_OUTPUT part are defined based on the functions of the target module. The structure of each element of the COMM_IF_OUTPUT part, in other words, the items to be described in the element, is the same as that of the COMM_IF_INPUT part.

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.3.3 COMM_IF_OUTPUT part

1) Table 4.4-1 lists the elements configuring the COMM_IF_OUTPUT part.

Table 4.4-1 List of Elements Configuring the COMM_IF_OUTPUT Part

No.	Element	Description	Required/ Optional
1	LABEL	Describes the label for identifying the element.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3	CATEGORY	Describes the category for grouping the element.	Optional
4	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Optional
5	DATATYPE *3	Describes the data type of the element.	Optional
6	DEFAULT	Describes the default to be set for the element.	Optional
7	RANGE	Describes the setting range of the element.	Optional
8	MIN_INC	Describes the minimum increment applied to the value of the element.	Optional
9	ENG_UNIT	Describes the engineering unit applied to the value of the element.	Optional
10	ACCESS	Describes the access attribute of the element.	Optional
11	ASSIGN	Describes the remote input/output and remote register where the value of the element is assigned to.	Optional
12	UI_ATTRIBUTE	Describes the display method when the element is to be displayed on the utility software.	Optional
13	REF	COMM_IF_INPUT part: Describes a reference to the element of the BLOCK_OUTPUT part. COMM_IF_OUTPUT part: Describes a reference to the element of the BLOCK_INPUT part.	Optional
14	COMMENT	Describes the meaning of the element and usage precautions.	Optional

*3

STRUCT part

The STRUCT part (structure) describes the information related to the structure of the inputs and outputs of multiple elements. A structure is used when an area is divided. Each of the elements in the structure needs to be assigned to a consecutive address.

When describing the reference to the STRUCT part, describe it in the DATATYPE of the reference source. When referring to a description of the STRUCT part from an element within the COMM_IF section, describe the STRUCT part within the same COMM_IF section.

Table 4.4-2 List of Elements Defined in the STRUCT Part

No.	Element	Description	Required/ Optional
1′	LABEL	Describes the label for identifying the element.	Required
2′	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3′	CATEGORY	Describes the category for grouping the element.	Optional
4′	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Optional
5′	DATATYPE	Describes the data type of the element.	Optional
6'	DEFAULT	Describes the default to be set for the element.	Optional
7'	RANGE	Describes the setting range of the element.	Optional
8'	MIN_INC	Describes the minimum increment applied to the value of the element.	Optional
9'	ENG_UNIT	Describes the engineering unit applied to the value of the element.	Optional
10'	OFFSET	Describes the offset position of the element.	Optional
11'	REF	Describes the reference to be referred to by the element. When defining a structure in the COMM_IF section, this item is used to refer to the input/output of the BLOCK section from each element of the structure. * For references which can be described, refer to Section 4.3.1.28.	Optional
12'	COMMENT	Describes the meaning of the element and usage precautions.	Optional

2) Parts and elements with defined applications

In CSP+ specifications, parts other than the FILE_INFO, DEVICE_INFO, COMM_IF_INFO, and BLOCK_INFO parts do not specify elements that should be commonly included for all modules. In other words, the Label name can be freely determined by the creator of CSP+. However, when the module has a certain function or information, there are rules related to the elements used to express such function or information.

3) Elements related to the system area

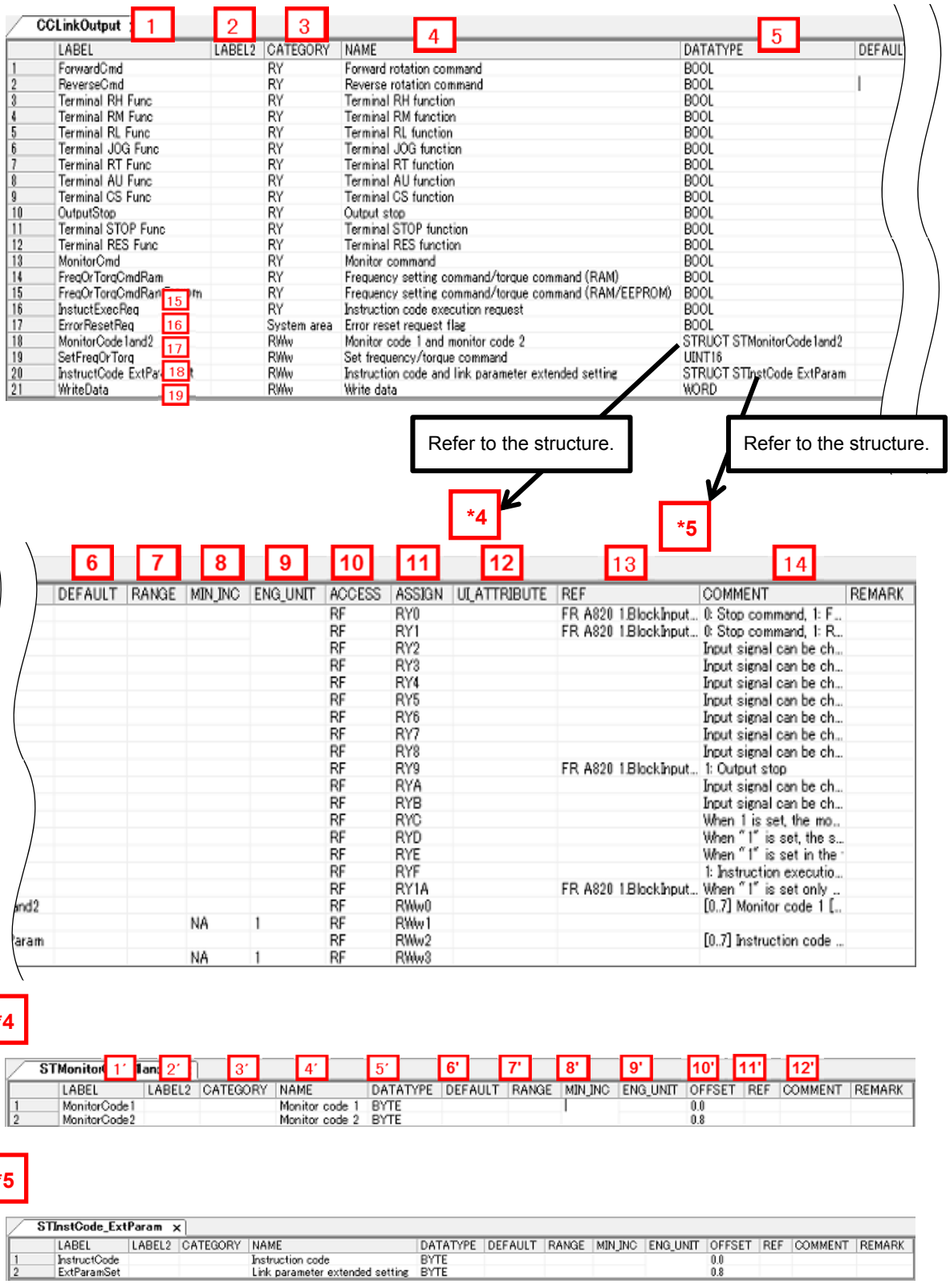
CC-Link defines the specifications related to the system area. When describing a flag of the system area, the following elements (Label name) are used. Table 4.4-3 lists the specifications of the flags of the system area.

Table 4.4-3 Specifications of the Flags of the System Area (COMM_IF_OUTPUT)

No.	Element	Description	Required/ Optional
15	InitialDataProcessComp	Describes the initial data processing completion flag.	Optional
16	InitialDataSetReq	Describes the initial data setting request flag.	Optional
17	ErrorResetReq	Describes the error reset request flag.	Optional
18	MessageTransReq	Describes the message transmission request flag.	Optional
19	MessageHandshakeRY	Describes the message handshake flag.	Optional

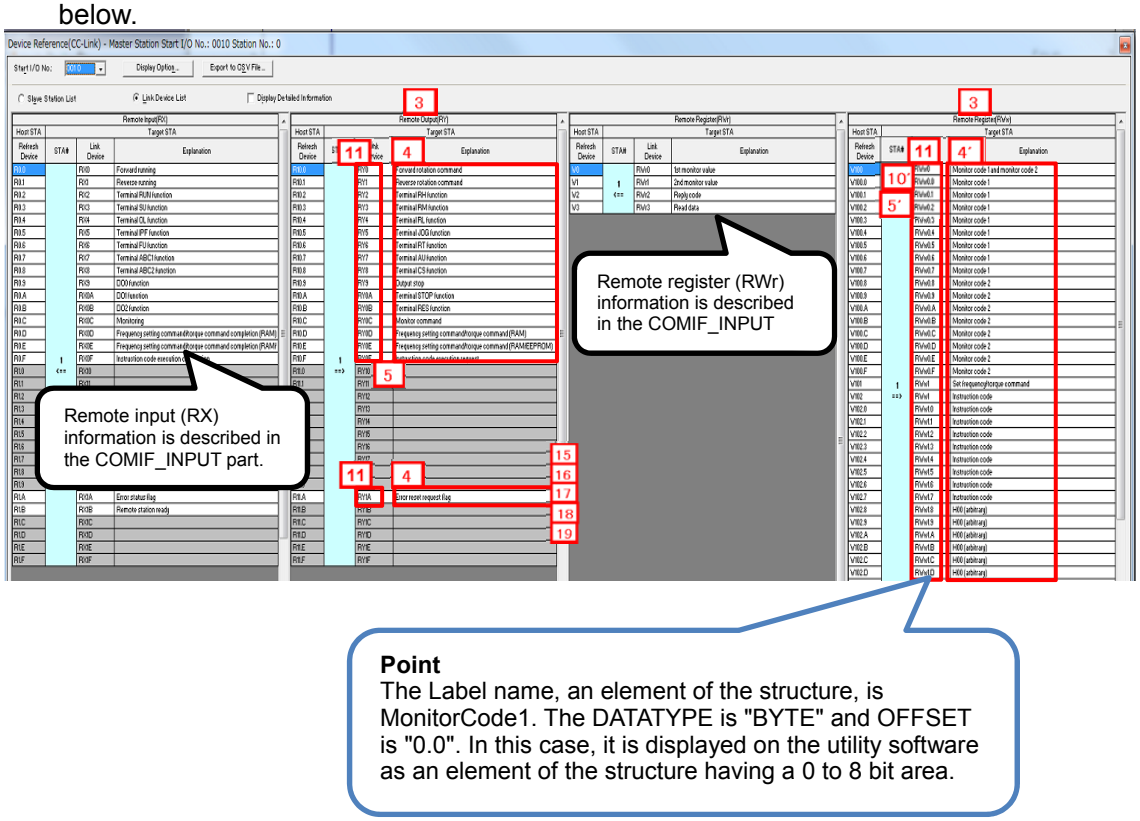
(2) CSP+ Descriptions

The following figure shows the display example of the COMM_IF_OUTPUT part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool.
The COMM_IF_OUTPUT part describes the information related to the output information of the communication interface and refers to the structure. The following example includes the STRUCT part.



(3) Utility Software - (Device Assignment Screen)

The descriptions in CSP+ for the FR-A740-90K are displayed on the utility software as shown below.



Point
The Label name, an element of the structure, is MonitorCode1. The DATATYPE is "BYTE" and OFFSET is "0.0". In this case, it is displayed on the utility software as an element of the structure having a 0 to 8 bit area.

(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

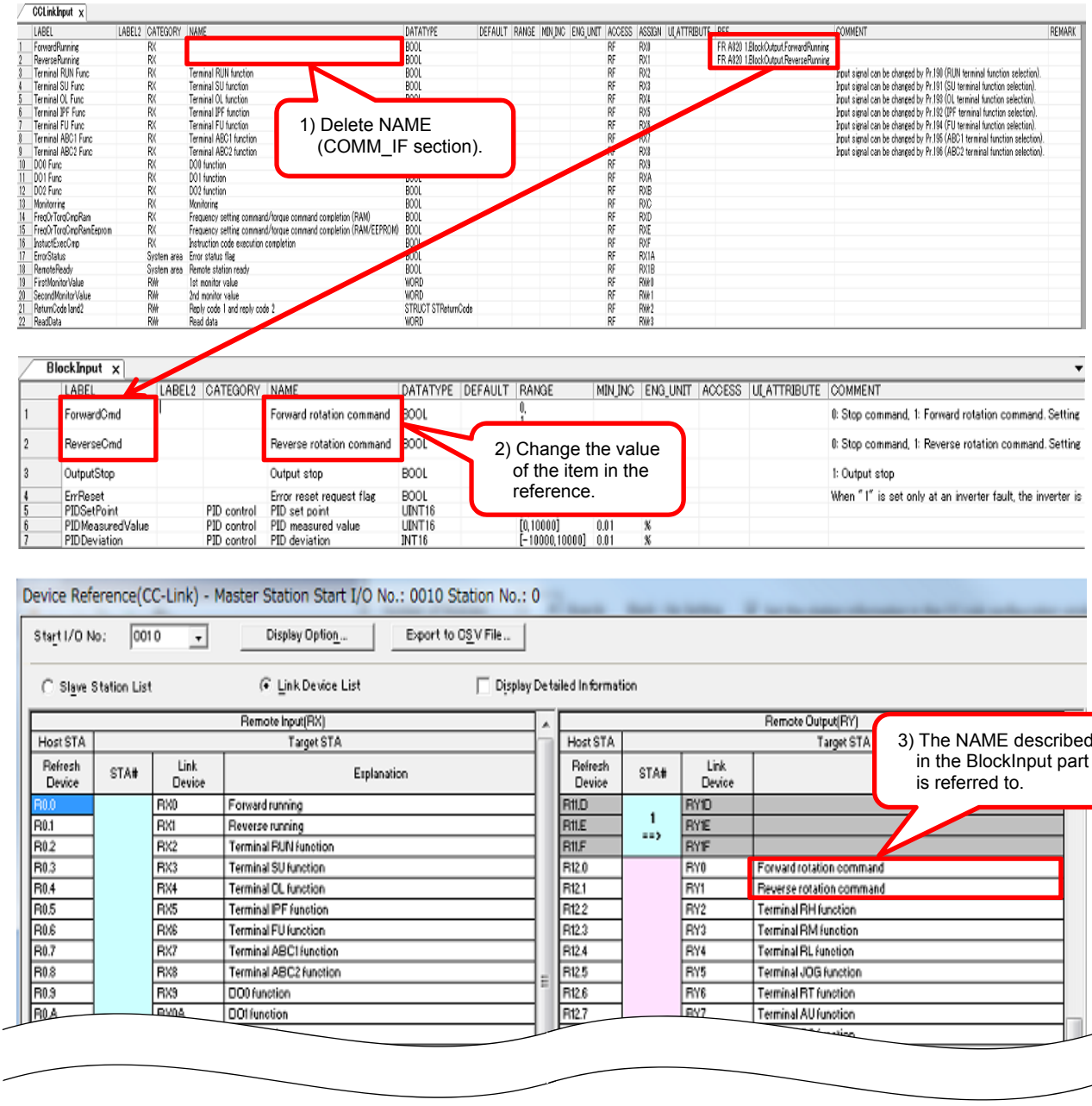
Table 4.4-4 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 4.4-4 Elements Not Being Used on the Utility Software Screen (COMM_IF_OUTPUT, STRUCT)

No.	Element	Application	Required/ Optional
1 1'	LABEL	Used as an identifier.	Required
2 2'	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
6 6'	DEFAULT	Used to set the default.	Optional
7 7'	RANGE	Used to check the setting range of the item. An error is output when the value is out of range.	Optional
8 8'	MIN_INC	Numerical values in which the user input value is multiplied by the value described here are used during internal processing.	Optional
9 9'	ENG_UNIT	Displays the engineering value described here as an explanation of the item. (ENG_UNIT is not used for the display in the COMM_IF_INPUT and COMM_IF_OUTPUT parts.)	Optional
10	ACCESS	Used to identify the access information of the target item: "Readable", "Writable", "Readable and Writable", "Auto refreshable", or "Inaccessible". For details on the description of the element, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 4.3.1.1. ACCESS conventions	Optional
12	UI_ATTRIBUTE	For future support	Optional
13 11'	REF	Used to identify the reference relationship.	Optional
14 12'	COMMENT	Reference information. Displayed in the creation support tool.	Optional

Point

When the same item is described in the BlockInput part which is the reference of the COMM_IF_Output part, the value of the item from the reference source (item described in the CCLinkOutput part) is displayed. The Name attribute is not an item required to be described. To refer to the value of the Name item in the BlockInput part, delete the value of the Name item in the CCLinkOutput part and check the display on the utility software again.



4.5 COMM_IF_PARAMETER Part

The COMM_IF_PARAMETER part describes the information related to the parameters of the target module.
The information includes such as the voltage/current specification and CH1 averaging process setting of the analog-digital converter module.
However, information which cannot be set or referred to via the communication interface, such as the values set by using the DIP switch, is not described. The elements configuring the COMM_IF_PARAMETER part are defined based on the communication functions of the target module.

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.3.4 COMM_IF_PARAMETER part

1) Table 4.5-1 lists the elements configuring the COMM_IF_PARAMETER part.

Table 4.5-1 List of Elements Configuring the COMM_IF_PARAMETER Part

No.	Element	Description	Required/ Optional
1	LABEL	Describes the label for identifying the element.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3	CATEGORY	Describes the category for grouping the element.	Optional
4	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Optional
5	DATATYPE	Describes the data type of the element.	Optional
6	DEFAULT	Describes the default to be set for the element.	Optional
7	RANGE	Describes the setting range of the element.	Optional
8	MIN_INC	Describes the minimum increment applied to the value of the element along with ENG_UNIT.	Optional
9	ENG_UNIT	Describes the engineering unit applied to the value of the element along with MIN_INC.	Optional
10	ACCESS	Describes the access attribute of the element.	Optional
11	WRITE_ORDER	Describes the order in which the element is to be written into the module.	Optional
12	ASSIGN	Describes the address and code where the value of the element is assigned to.	Optional
13	UI_ATTRIBUTE	Describes the display method when the element is to be displayed on the utility software.	Optional
14	REF	Describes a reference to an element of the BLOCK_PARAMETER referred to by an element of the communication parameter list.	Optional
15	COMMENT	Describes the meaning of the element and usage precautions.	Optional

2) Reference specifications of the COMM_IF_PARAMETER part

The reference specifications of the parts related to the COMM_IF_PARAMETER part and between the communication services are described here.

The reference to the elements of the METHOD part and the elements of the COMM_IF_PARAMETER part which carries out the settings and execution using the elements referred to is described. The reference to the BLOCK_PARAMETER part cannot be described directly from the METHOD part.

In the example of Figure 4.5-1, "Parameter Write" and "Parameter Read" are described as a METHOD to write and read parameters 1, 2, ..., of the control function.

Then, the reference from each METHOD part to the BLOCK_PARAMETER part is described via the COMM_IF_PARAMETER part.

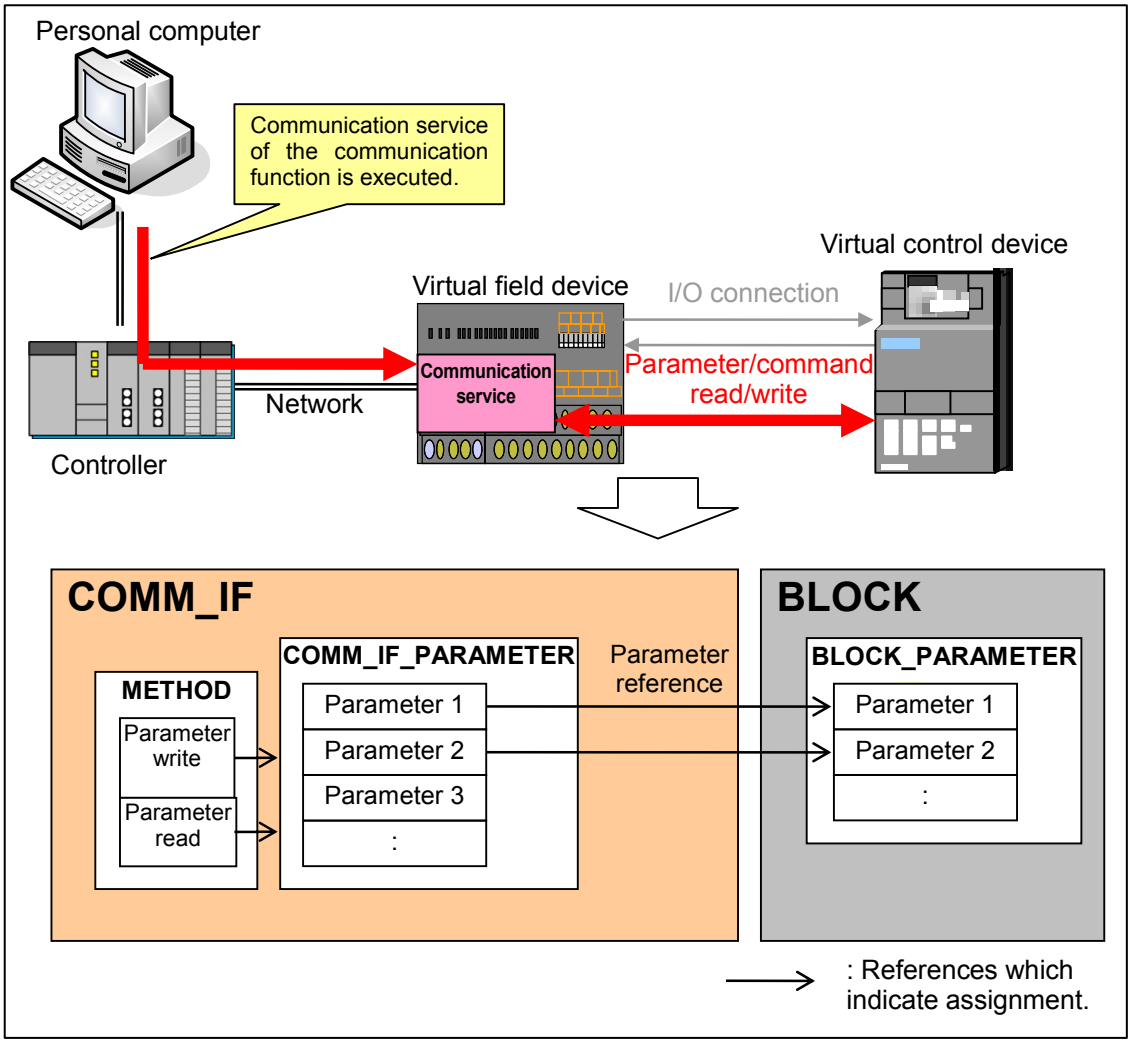
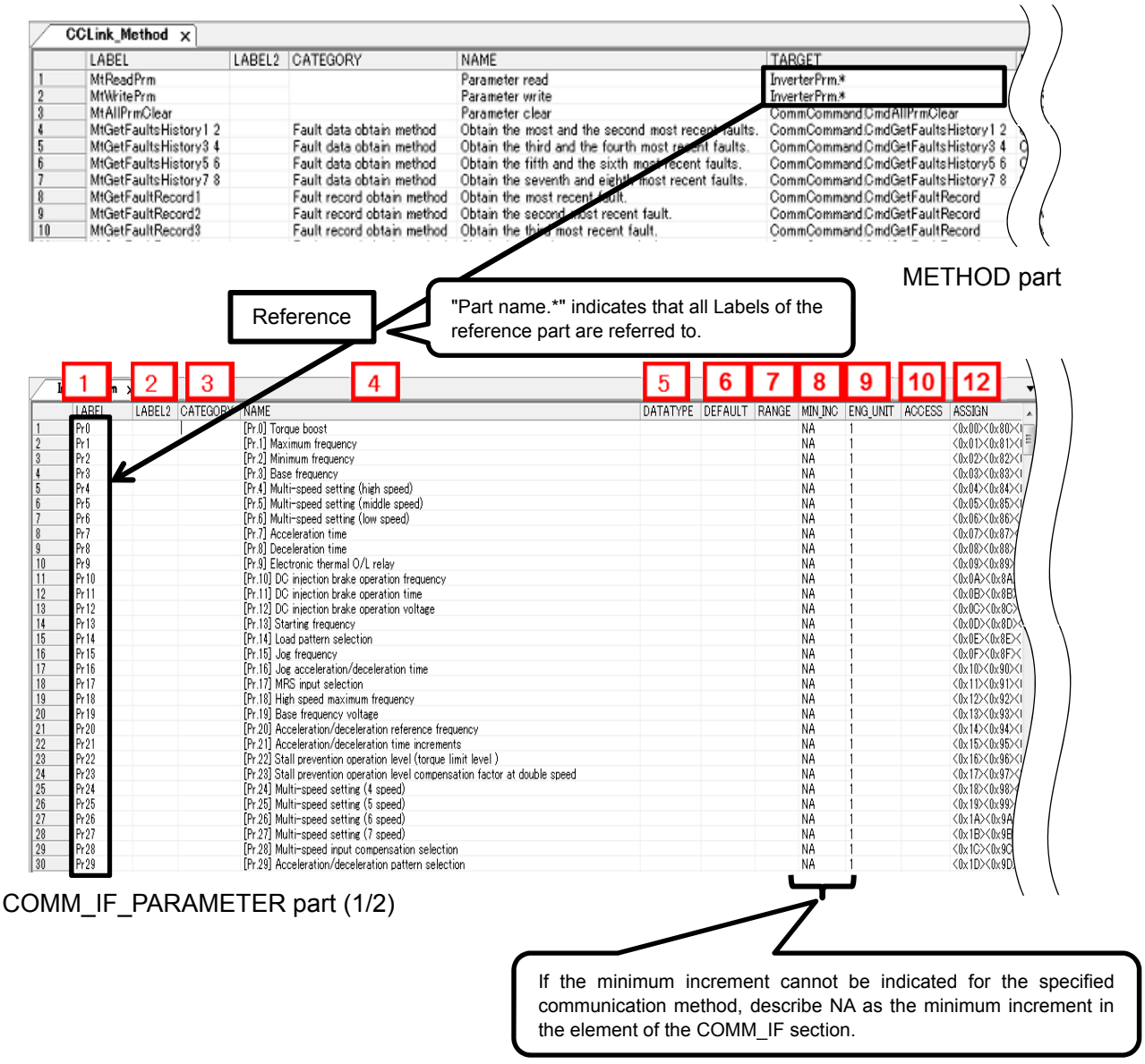


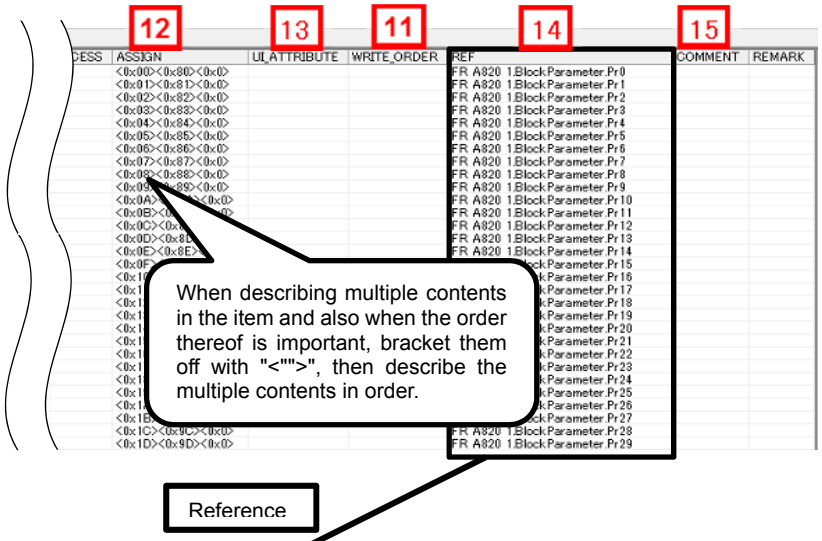
Figure 4.5-1 Reference Specifications Example of the COMM_IF_PARAMETER Part

(2) CSP+ Descriptions

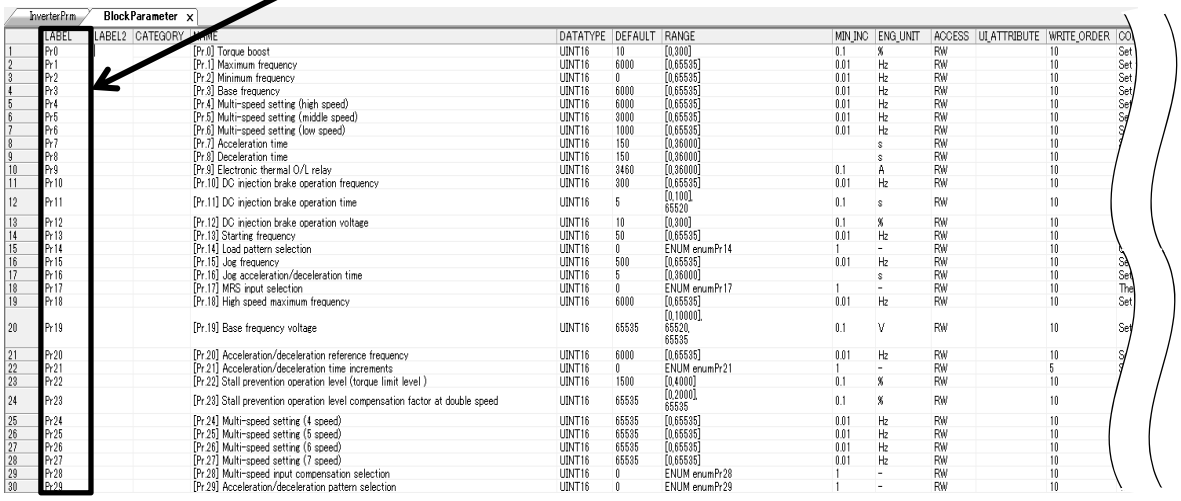
Parameters are referred to in the following order.
METHOD part (CCLinkMethod) → COMM_IF_PARAMETER part (InverterPrm) → BLOCK_PARAMETER part (BlockParameter)

The following figure shows the display example of the COMM_IF_PARAMETER part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool.

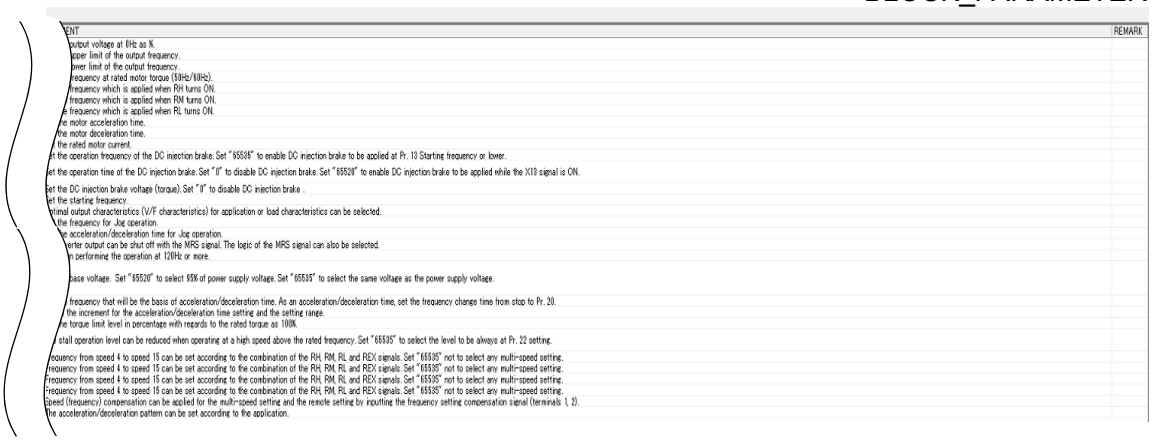




COMM_IF_PARAMETER part (2/2)



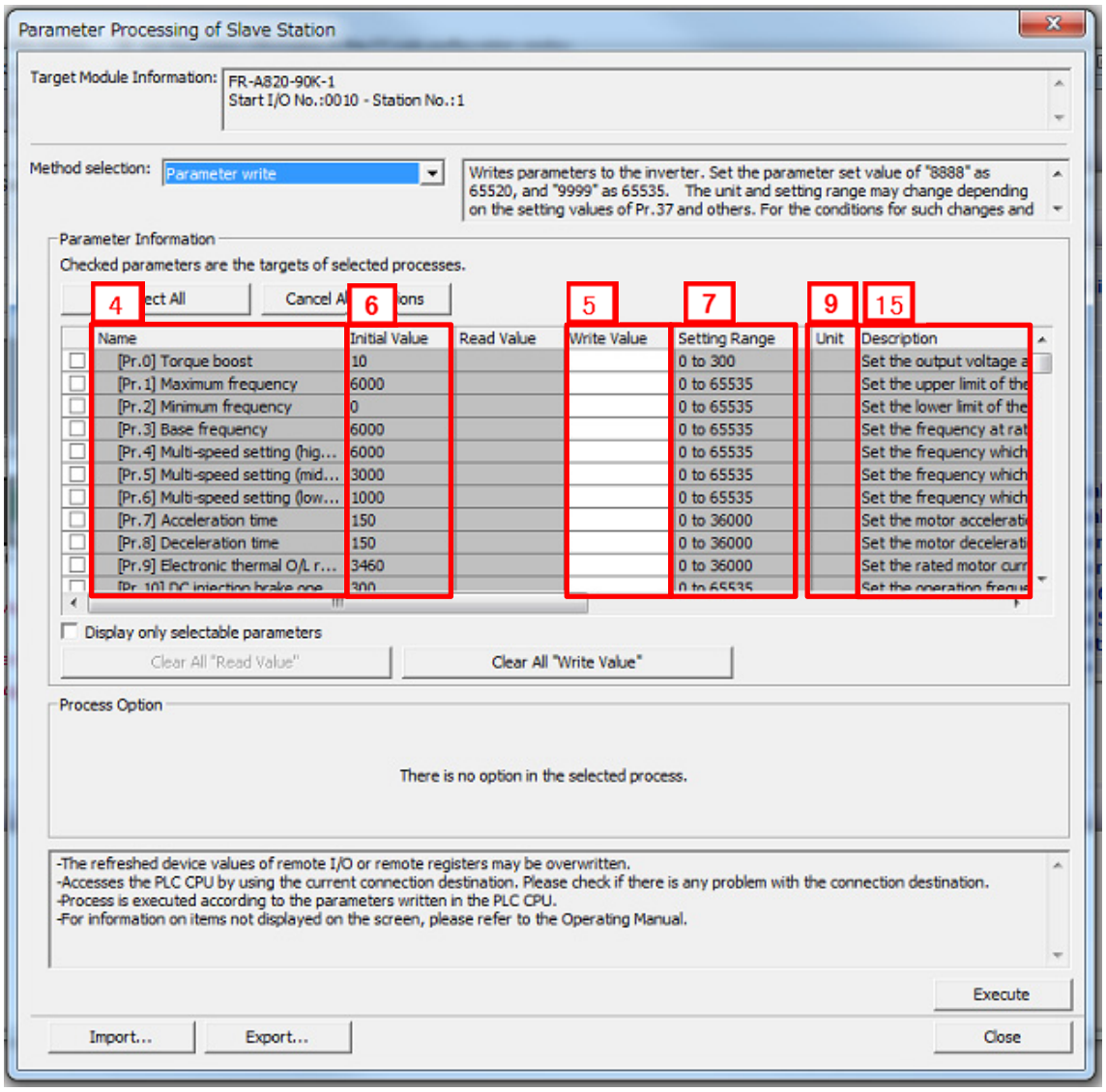
BLOCK_PARAMETER part (1/2)



BLOCK_PARAMETER part (2/2)

(3) Utility Software - (Parameter Processing Screen of the Slave Station)

The descriptions in CSP+ for the FR-A740-90K are displayed on the utility software as shown below.



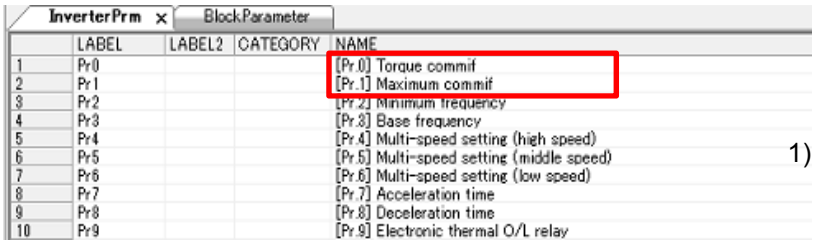
(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

Table 4.5-2 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 4.5-2 Elements Not Being Used on the Utility Software Screen (COMM_IF_PARAMETER)

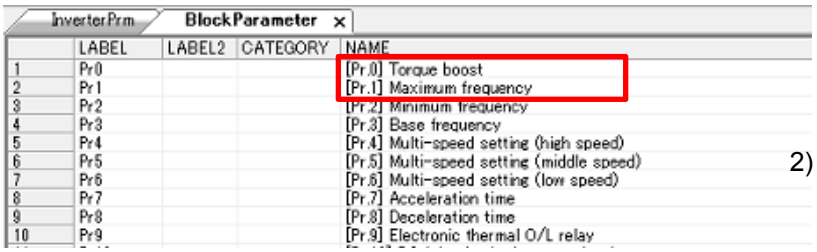
No.	Element	Application	Required/ Optional
1	LABEL	Used as an identifier.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3	CATEGORY	Reference information. Displayed in the creation support tool.	Optional
8	MIN_INC	Numerical values in which the user input value is multiplied by the value described here are used during internal processing.	Optional
10	ACCESS	Used to identify the access information of the target item: "Readable", "Writable", "Readable and Writable", "Auto refreshable", or "Inaccessible". For details on the description of the element, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 4.3.1.1. ACCESS conventions	Optional
11	WRITE_ORDER	Used as sequence information when writing parameters to the actual device. (Values are written in ascending order.)	Optional
12	ASSIGN	Used to analyze the address and code assigned to the element.	Optional
13	UI_ATTRIBUTE	For future support	Optional
14	REF	Used to identify the reference relationship.	Optional

Point
When both the COMM_IF_PARAMETER part and the BLOCK_PARAMETER part have a NAME item, the NAME in the COMM_IF_PARAMETER part is displayed on the utility software.

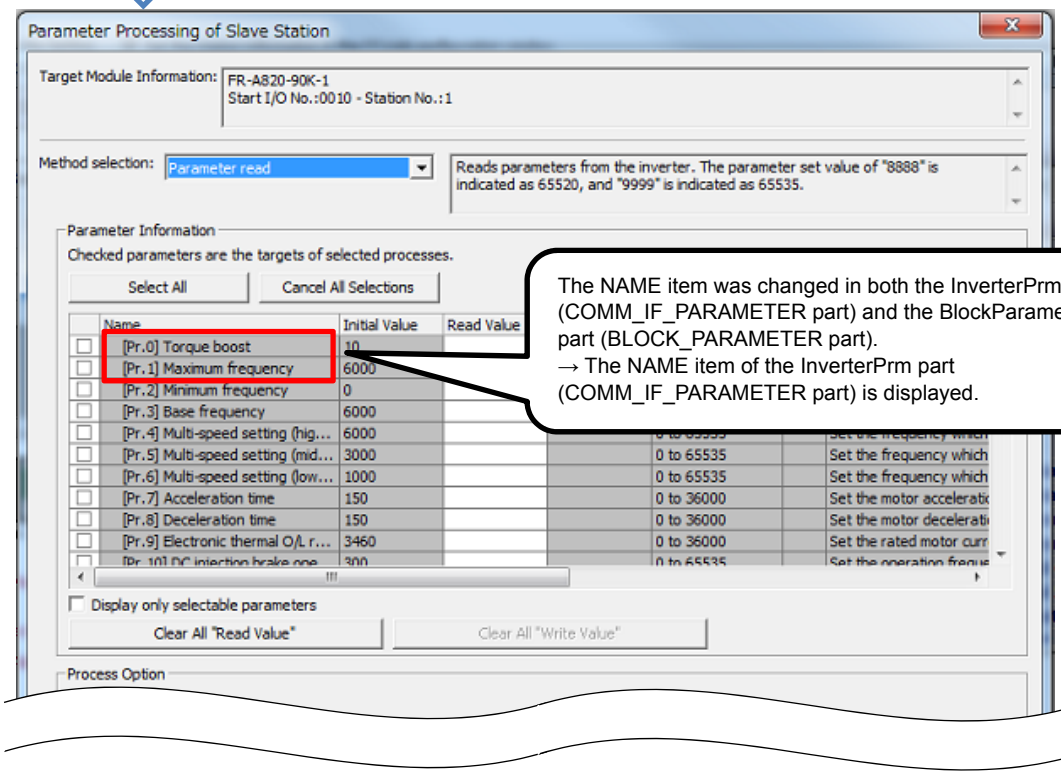


1) The NAME is changed.

The InverterPrm part (COMM_IF_PARAMETER part) and the BlockParameter part (BLOCK_PARAMETER part) have a reference relationship.



2) The NAME is changed.



The NAME item was changed in both the InverterPrm part (COMM_IF_PARAMETER part) and the BlockParameter part (BLOCK_PARAMETER part).
→ The NAME item of the InverterPrm part (COMM_IF_PARAMETER part) is displayed.

4.6 METHOD Part

The METHOD part provides the information related to the communication services.
The procedures of the following services are described: the I/O read service for the remote input RX and remote register RWr areas, the I/O write service for the remote output RY and remote register RWw areas, the parameter write/read service for the parameter area, and the command execution service.
The structure of each element of the METHOD part, in other words, the items to be described in the element, is the same.

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.3.6 METHOD part

1) Table 4.6-1 lists the elements configuring the METHOD part.

Table 4.6-1 List of Elements Configuring the METHOD Part

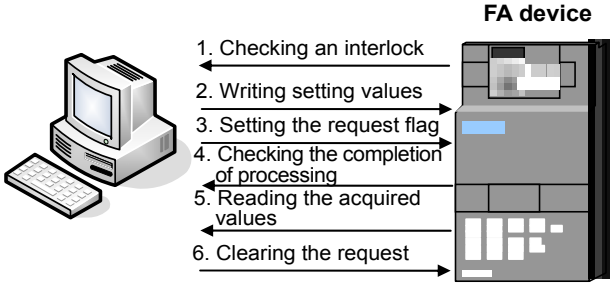
No.	Element	Description	Required/ Optional
1	LABEL	Describes the label for identifying the element.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3	CATEGORY	Describes the category for grouping the element.	Optional
4	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Required
5	TARGET	Describes the element processed by the corresponding METHOD part.	Required
6	METHOD_TYPE	Describes the METHOD type.	Required
7	WRITE_REGISTER	Describes the remote output and remote register for writing.	Optional
8	WRITE_DATA	Describes the value to be written. If several of the above WRITE_REGISTER items are specified, the same number of write values needs to be described.	Optional
9	WRITE_DATATYPE	Describes the remote output and remote register data type for writing. If several of the above WRITE_REGISTER items are specified, the same number of data types needs to be described.	Optional
10	READ_REGISTER	Describes the remote input and remote register for reading.	Optional
11	READ_DATA	Describes the reference for the storage location of the read value. If several of the READ_REGISTER items are specified, the same number of storage locations needs to be described.	Optional
12	READ_DATATYPE	Describes the remote input and remote register data type for reading. If several of the READ_REGISTER items are specified, the same number of data types needs to be described.	Optional
13	INTERLOCK	Describes the interlock remote input/output, remote register and on/off status or value.	Optional
14	REQ_FLAG	Describes the request flag to implement a handshake using an assignment expression.	Optional
15	END_CONDITION	Describes the normal end condition when implementing a handshake.	Optional
16	ERR_CONDITION	Describes the error end condition when implementing a handshake.	Optional
17	ERR_REGISTER	Describes the remote register for storing a value when an error occurs.	Optional
18	ERR_CODE_RANGE	Describes the error code range.	Optional
19	RELATED_METHOD	Describes the reference to the METHOD element that indicates pre-processing of the METHOD part.	Optional
20	COMMENT	Describes the meaning of the element and usage precautions.	Optional

2) Communication service (METHOD) specifications

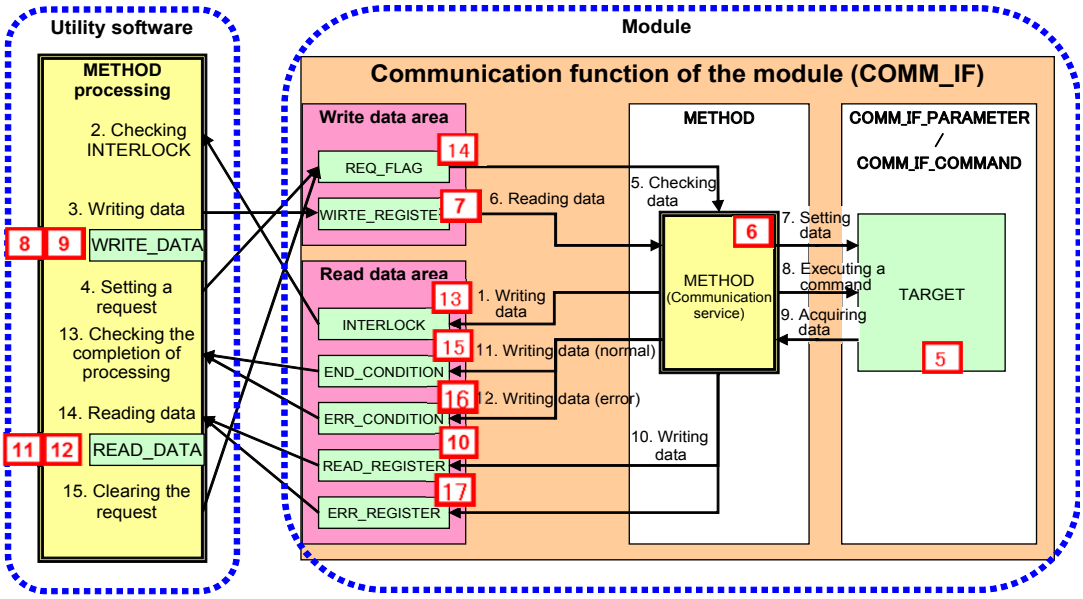
The communication service information is described in the communication service specifying the procedure and data area, and METHOD.

- METHOD operation

When a procedure-based communication service is executed by the utility software on an FA device, the following steps are taken.



This procedure is developed into a model as METHOD, describing remote register and shared memory based procedures as well as data area information.



(2) CSP+ Descriptions

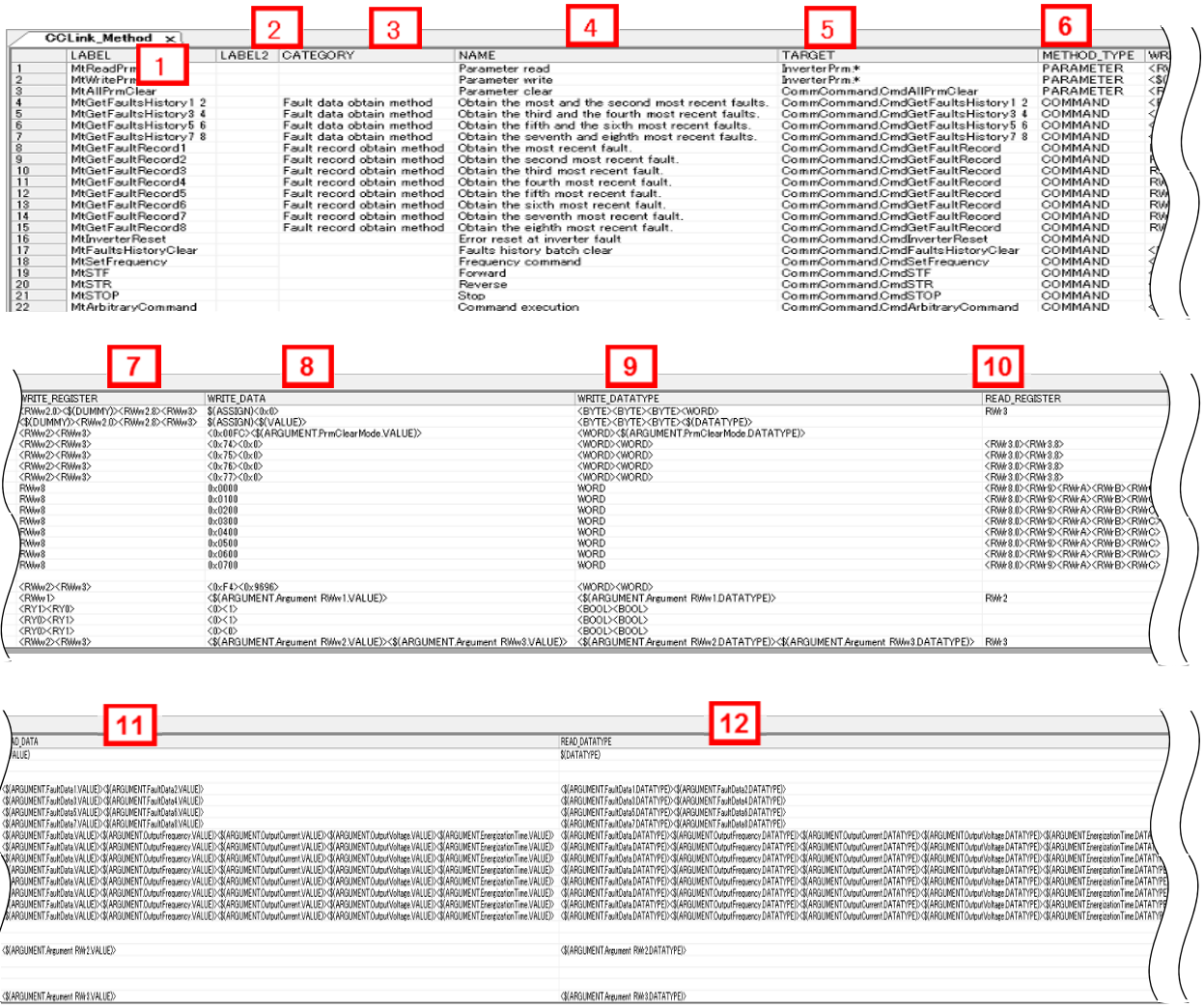
Parameters are referred to in the following order.

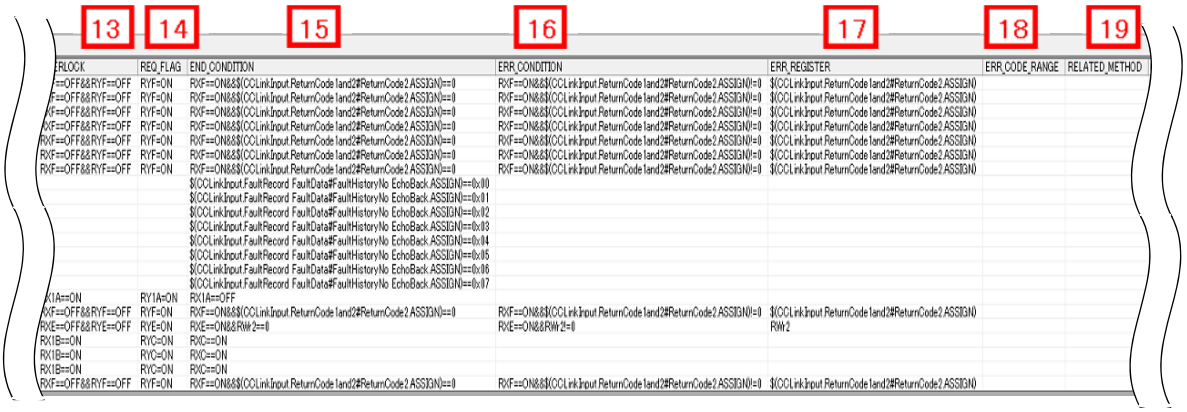
1) METHOD part (CCLinkMethod) → COMM_IF_PARAMETER part (InverterPrm) → BLOCK_PARAMETER part (BlockParameter)
(Related information is also described in Section 4.5 COMM_IF_PARAMETER Part.)

> In this example, only a reference to the Block_Parameter part and the Block_Command part is described. However, as CSP+ specifications, the reference description from the METHOD part to the COMM_IF_INPUT part and COMM_IF_OUTPUT part can be defined.

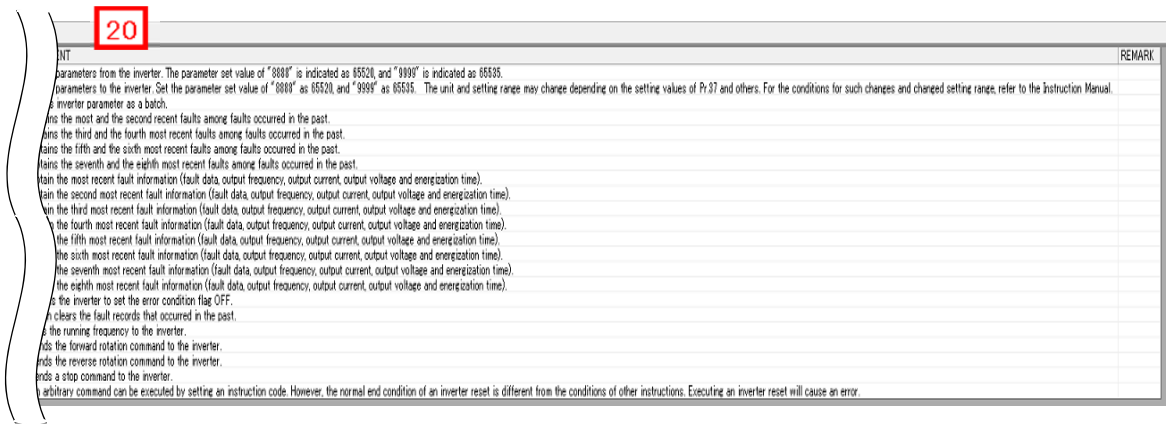
2) METHOD part (CCLinkMethod) → COMM_IF_COMMAND part (CommCommand) → BLOCK_COMMAND part (BlockCommand)
(Related information is also described in Section 4.7 COMM_IF_COMMAND Part.)

The following figure shows the display example of the METHOD part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool.





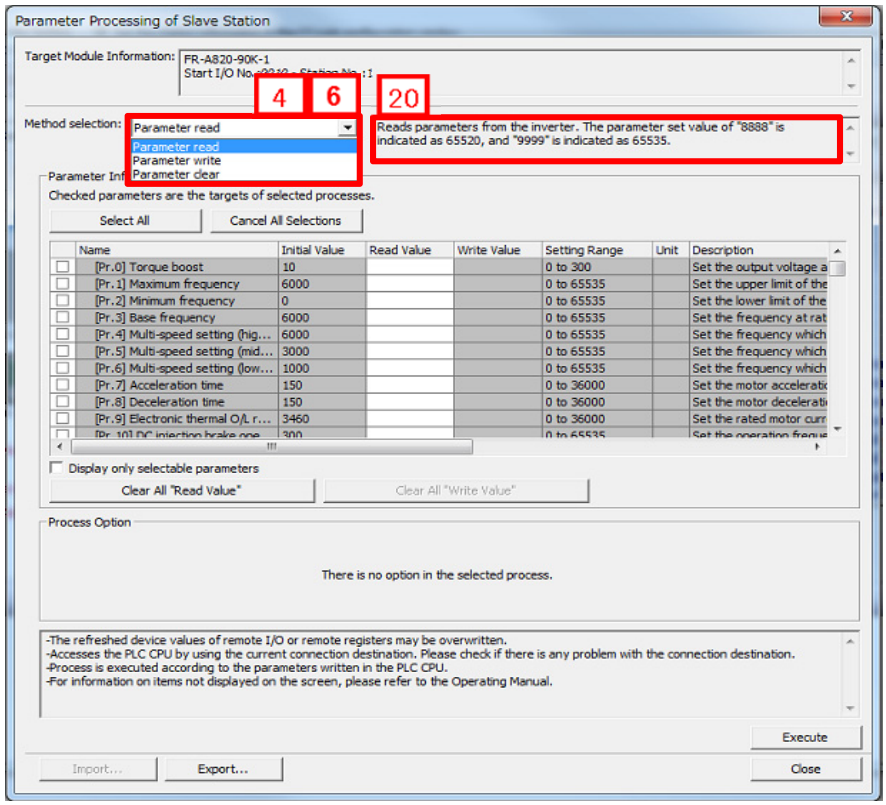
13	14	15	16	17	18	19
ERLOCK	REQ_FLAG	END_CONDITION	ERR_CONDITION	ERR_REGISTER	ERR_CODE_RANGE	RELATED_METHOD
==OFF&&RYF==OFF	RYF=ON	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)==0	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)!=0	$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)		
F==OFF&&RYF==OFF	RYF=ON	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)==0	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)!=0	$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)		
XF==OFF&&RYF==OFF	RYF=ON	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)==0	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)!=0	$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)		
RXF==OFF&&RYF==OFF	RYF=ON	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)==0	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)!=0	$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)		
RXF==OFF&&RYF==OFF	RYF=ON	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)==0	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)!=0	$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)		
RXF==OFF&&RYF==OFF	RYF=ON	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)==0	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)!=0	$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)		
		$(CCLink.Input.FaultRecord.FaultData#FaultHistoryNo.EchoBack.ASSIGN)==0x00				
		$(CCLink.Input.FaultRecord.FaultData#FaultHistoryNo.EchoBack.ASSIGN)==0x01				
		$(CCLink.Input.FaultRecord.FaultData#FaultHistoryNo.EchoBack.ASSIGN)==0x02				
		$(CCLink.Input.FaultRecord.FaultData#FaultHistoryNo.EchoBack.ASSIGN)==0x03				
		$(CCLink.Input.FaultRecord.FaultData#FaultHistoryNo.EchoBack.ASSIGN)==0x04				
		$(CCLink.Input.FaultRecord.FaultData#FaultHistoryNo.EchoBack.ASSIGN)==0x05				
		$(CCLink.Input.FaultRecord.FaultData#FaultHistoryNo.EchoBack.ASSIGN)==0x06				
		$(CCLink.Input.FaultRecord.FaultData#FaultHistoryNo.EchoBack.ASSIGN)==0x07				
X1A==ON	RY1A=ON	RX1A==OFF				
XF==OFF&&RYF==OFF	RYF=ON	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)==0	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)!=0	$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)		
RXE==OFF&&RYE==OFF	RYE=ON	RXE==ON&&RWr2==0	RXE==ON&&RWr2!=0	RWr2		
RX1B==ON	RYC=ON	RXC==ON				
RX1B==ON	RYC=ON	RXC==ON				
RX1B==ON	RYC=ON	RXC==ON				
RXF==OFF&&RYF==OFF	RYF=ON	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)==0	RXF==ON&&$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)!=0	$(CCLink.Input.ReturnCode.1and2#ReturnCode2.ASSIGN)		

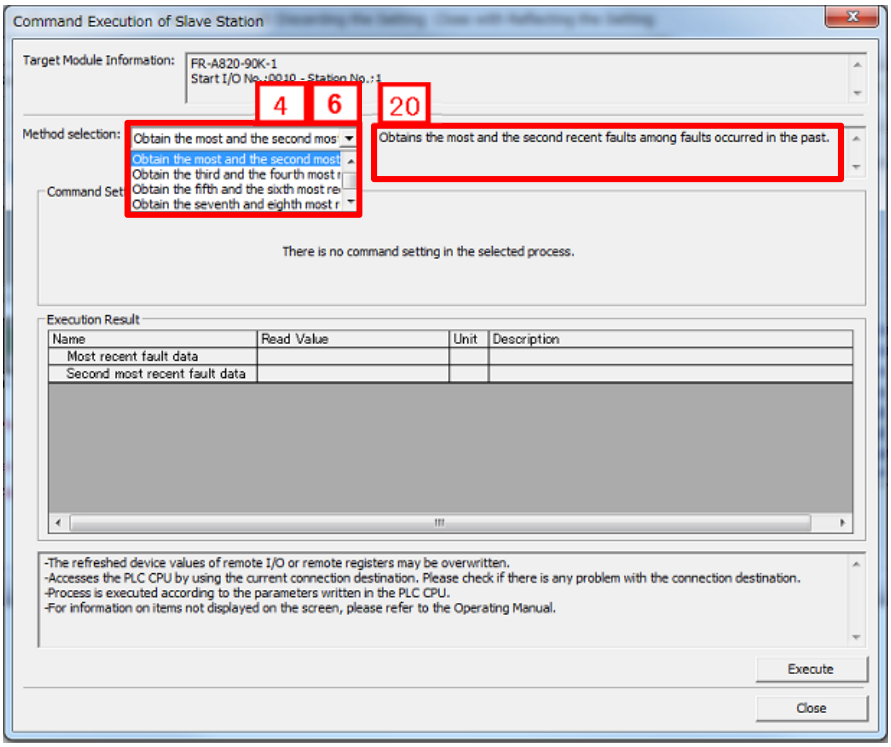


20
NT	REMARK
parameters from the inverter. The parameter set value of "8888" is indicated as 65520, and "9999" is indicated as 65535.	
parameters to the inverter. Set the parameter set value of "8888" as 65520, and "9999" as 65535. The unit and setting range may change depending on the setting values of Pr.37 and others. For the conditions for such changes and changed setting range, refer to the Instruction Manual.	
s inverter parameter as a batch.	
ins the most and the second recent faults among faults occurred in the past.	
ains the third and the fourth most recent faults among faults occurred in the past.	
ains the fifth and the sixth most recent faults among faults occurred in the past.	
ains the seventh and the eighth most recent faults among faults occurred in the past.	
ain the most recent fault information (fault data, output frequency, output current, output voltage and energization time).	
ain the second most recent fault information (fault data, output frequency, output current, output voltage and energization time).	
in the third most recent fault information (fault data, output frequency, output current, output voltage and energization time).	
the fourth most recent fault information (fault data, output frequency, output current, output voltage and energization time).	
the fifth most recent fault information (fault data, output frequency, output current, output voltage and energization time).	
the sixth most recent fault information (fault data, output frequency, output current, output voltage and energization time).	
the seventh most recent fault information (fault data, output frequency, output current, output voltage and energization time).	
the eighth most recent fault information (fault data, output frequency, output current, output voltage and energization time).	
s the inverter to set the error condition flag OFF.	
s clears the fault records that occurred in the past.	
the running frequency to the inverter.	
ds the forward rotation command to the inverter.	
nds the reverse rotation command to the inverter.	
nds a stop command to the inverter.	
arbitrary command can be executed by setting an instruction code. However, the normal end condition of an inverter reset is different from the conditions of other instructions. Executing an inverter reset will cause an error.	

(3) Utility Software - (Parameter Processing Screen of the Slave Station)

The descriptions in CSP+ for the FR-A740-90K are displayed on the utility software as shown below.





(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

Table 4.6-2 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 4.6-2 Elements Not Being Used on the Utility Software Screen (METHOD)

No.	Element	Application	Required/ Optional
1	LABEL	Used as an identifier.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3	CATEGORY	Reference information. Displayed in the creation support tool.	Optional
5	TARGET	Used as information for identifying the reference information.	Required
7	WRITE_REGISTER	Used to identify the register for writing.	Optional
8	WRITE_DATA	Acquires the value to be written and writes it to the actual device.	Optional
9	WRITE_DATATYPE	Used to identify the data type of the register for writing.	Optional
10	READ_REGISTER	Used to identify the register for reading.	Optional
11	READ_DATA	Acquires the value to be read and displays it on the utility software.	Optional
12	READ_DATATYPE	Used to identify the data type of the register for reading.	Optional
13	INTERLOCK	Determines the start conditions for reading and writing data.	Optional
14	REQ_FLAG	Determines the conditions of the read (write) request flag.	Optional
15	END_CONDITION	Determines the end conditions of read and write processing.	Optional
16	ERR_CONDITION	Determines the error end flag of read and write processing.	Optional
17	ERR_REGISTER	Used to identify the data type of the error code register when an error occurs.	Optional
18	ERR_CODE_RANGE	Used to compare an error code with an error code described in CSP+ when an error occurs. When ENUM is used in ERR_CODE_RANGE, an error string corresponding the error code is displayed.	Optional
19	RELATED_METHOD	Executes multiple METHODs based on the execution order indicated by the keywords ("PRE", "SEQ").	Optional

Point
When all the METHOD part, COMM_IF_COMMAND, and BLOCK_COMMAND part have a NAME item, the NAME in the METHOD part (reference source) is displayed on the utility software.

4.7 COMM_IF_COMMAND Part

The COMM_IF_COMMAND part describes the information related to the commands issued in the communication interface.
The information includes such as the CH1 conversion enable/disable setting of the analog-digital converter module.
The elements configuring the COMM_IF_COMMAND part are defined based on the communication functions of the target module.
The structure of each element of the COMM_IF_COMMAND part, in other words, the items to be described in the element, is the same.

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.3.5 COMM_IF_COMMAND part

1) Table 4.7-1 lists the elements configuring the COMM_IF_COMMAND part.

Table 4.7-1 List of Elements Configuring the COMM_IF_COMMAND Part

No.	Element	Description	Required/ Optional
1	LABEL	Describes the label for identifying the element.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3	CATEGORY	Describes the category for grouping the element.	Optional
4	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Optional
5	ARGUMENT	Describes the label of the COMMAND_ARGUMENT part for indicating the argument to be used by the element. *6	Optional
6	REF	Describes the reference to the BLOCK_COMMAND part from the element.	Optional
7	COMMENT	Describes the meaning of the element and usage precautions.	Optional

*6

COMMAND_ARGUMENT part

The COMMAND_ARGUMENT part (command argument list) describes the information related to command arguments.

Table 4.7-2 List of Element Defined in the COMMAND_ARGUMENT Part

No.	Element	Description	Required/ Optional
1'	LABEL	Describes the label for identifying the element.	Required
2'	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3'	CATEGORY	Describes the category for grouping the element.	Optional
4'	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Required
5'	DATATYPE	Describes the data type of the element.	Required
6'	DEFAULT	Describes the default to be set for the element.	Optional
7'	RANGE	Describes the setting range of the element.	Optional
8'	MIN_INC	Describes the minimum increment applied to the value of the element in the command argument list along with ENG_UNIT.	Optional
9'	ENG_UNIT	Describes the engineering unit applied to the value of the element in the command argument list along with MIN_INC.	Optional
10'	ACCESS	Describes the access attribute of the element.	Required
11'	ASSIGN	Describes the address and code to be assigned to the element.	Optional
12'	REF	Describes the reference to be referred to by the element. Use of this element is prohibited under the current specifications.	Optional
13'	COMMENT	Describes the meaning of the element and usage precautions.	Optional

2) Reference specifications of the COMM_IF_COMMAND part

The reference specifications of the parts related to the COMM_IF_COMMAND part and between the communication services are described here.

The reference to the elements of the METHOD part and the elements of the COMM_IF_COMMAND part which carries out the settings and execution using the elements referred to is described. The reference to the BLOCK_COMMAND part cannot be described directly from the METHOD part.

In the example of Figure 4.7-1, "Parameter Write" and "Parameter Read" are described as a METHOD to write and read parameters 1, 2, ..., of the control function.

Then, the reference from each METHOD part to the BLOCK_COMMAND part is described via the COMM_IF_COMMAND part.

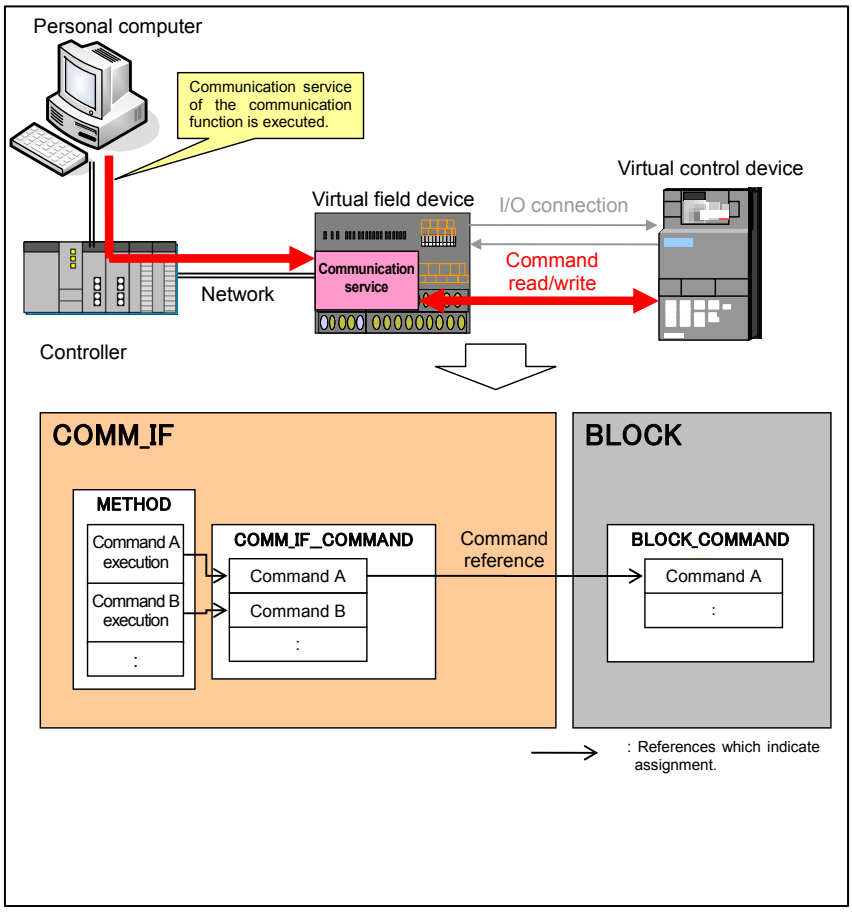


Figure 4.7-1 Reference Specifications Example of the COMM_IF_COMMAND Part

(2) CSP+ Descriptions

Parameters are referred to in the following order.
METHOD part (CCLinkMethod) → COMM_IF_COMMAND part (CommCommand) → BLOCK_COMMAND part (BlockCommand) → COMMAND_ARGUMENT part

The following figure shows the display example of the COMM_IF_COMMAND part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool. The following is the reference example for the NAME: Command execution.

CCLink_Method

	LABEL	LABEL2	CATEGORY	NAME	TARGET	METHOD_TYPE	WRITE_REGISTER
1	MtReadPrm			Parameter read	InverterPrm:*	PARAMETER	<RWw2.0><$(DUMMY)><RWw2.8><RWw3>
2	MtWritePrm			Parameter write	InverterPrm:*	PARAMETER	<$(DUMMY)><RWw2.0><RWw2.8><RWw3>
3	MtAllPrmClear			Parameter clear	CommCommand:CmdAllPrmClear	PARAMETER	<RWw2><RWw3>
4	MtGetFaultsHistory1_2		Fault data obtain method	Obtain the most and the second most recent faults.	CommCommand:CmdGetFaultsHistory1_2	COMMAND	<RWw2><RWw3>
5	MtGetFaultsHistory3_4		Fault data obtain method	Obtain the third and the fourth most recent faults.	CommCommand:CmdGetFaultsHistory3_4	COMMAND	<RWw2><RWw3>
6	MtGetFaultsHistory5_6		Fault data obtain method	Obtain the fifth and the sixth most recent faults.	CommCommand:CmdGetFaultsHistory5_6	COMMAND	<RWw2><RWw3>
7	MtGetFaultsHistory7_8		Fault data obtain method	Obtain the seventh and eighth most recent faults.	CommCommand:CmdGetFaultsHistory7_8	COMMAND	<RWw2><RWw3>
8	MtInverterReset			Error reset at inverter fault	CommCommand:CmdInverterReset	COMMAND	
9	MtFaultsHistoryClear			Faults history batch clear	CommCommand:CmdFaultsHistoryClear	COMMAND	<RWw2><RWw3>
10	MtSetFrequency			Frequency command	CommCommand:CmdSetFrequency	COMMAND	<RWw1>
11	MtSTF			Forward	CommCommand:CmdSTF	COMMAND	<RY1><RY0>
12	MtSTR			Reverse	CommCommand:CmdSTR	COMMAND	<RY0><RY1>
13	MtSTOP			Stop	CommCommand:CmdSTOP	COMMAND	<RY0><RY1>
14	MtArbitraryCommand			Command execution	CommCommand:CmdArbitraryCommand	COMMAND	<RWw2><RWw3>

METHOD part

Reference

CCLink_Method | CommCommand

	LABEL	LABEL2	CATEGORY	NAME	ARGUMENT	REF	COMMENT	REMARK
1	CmdAllPrmClear			Parameter clear		FR_A820_1.BlockCommand:CmdAllPrmClear		
2	CmdInverterReset			Inverter reset		FR_A820_1.BlockCommand:CmdInverterReset		
3	CmdGetFaultsHistory1_2		Fault data obtain command	Obtain the most and the second most recent faults.		FR_A820_1.BlockCommand:CmdGetFaultsHistory1_2		
4	CmdGetFaultsHistory3_4		Fault data obtain command	Obtain the third and the fourth most recent faults.		FR_A820_1.BlockCommand:CmdGetFaultsHistory3_4		
5	CmdGetFaultsHistory5_6		Fault data obtain command	Obtain the fifth and the sixth most recent faults.		FR_A820_1.BlockCommand:CmdGetFaultsHistory5_6		
6	CmdGetFaultsHistory7_8		Fault data obtain command	Obtain the seventh and eighth most recent faults.		FR_A820_1.BlockCommand:CmdGetFaultsHistory7_8		
7	CmdFaultsHistoryClear			Faults history batch clear		FR_A820_1.BlockCommand:CmdFaultsHistoryClear		
8	CmdSetFrequency			Frequency command		FR_A820_1.BlockCommand:CmdSetFrequency		
9	CmdSTF			Forward rotation command		FR_A820_1.BlockCommand:CmdSTF		
10	CmdSTR			Reverse rotation command		FR_A820_1.BlockCommand:CmdSTR		
11	CmdSTOP			Stop command				
12	CmdArbitraryCommand			Execution of arbitrary command.		FR_A820_1.BlockCommand:CmdArbitraryCommand		

COMM_IF_COMMAND part

Reference

CCLink_Method | CommCommand | BlockCommand

	LABEL	LABEL2	CATEGORY	NAME	ARGUMENT	COMMENT	REMARK
1	CmdAllPrmClear			Parameter clear	ArgAllPrmClear		
2	CmdInverterReset			Inverter reset			
3	CmdGetFaultsHistory1_2		Fault data obtain command	Obtain the most and the second most recent faults.	ArgGetFaultsHistory1_2		
4	CmdGetFaultsHistory3_4		Fault data obtain command	Obtain the third and the fourth most recent faults.	ArgGetFaultsHistory3_4		
5	CmdGetFaultsHistory5_6		Fault data obtain command	Obtain the fifth and the sixth most recent faults.	ArgGetFaultsHistory5_6		
6	CmdGetFaultsHistory7_8		Fault data obtain command	Obtain the seventh and eighth most recent faults.	ArgGetFaultsHistory7_8		
7	CmdGetFaultRecord			Obtain faults history.	ArgGetFaultRecord		
8	CmdFaultsHistoryClear			Faults history batch clear			
9	CmdSetFrequency			Frequency command	ArgSetFrequency		
10	CmdSTF			Forward rotation command			
11	CmdSTR			Reverse rotation command			
12	CmdSTOP			Stop command			
13	CmdArbitraryCommand			Execution of arbitrary command.	ArgArbitraryCommand		

BLOCK_COMMAND part

※7

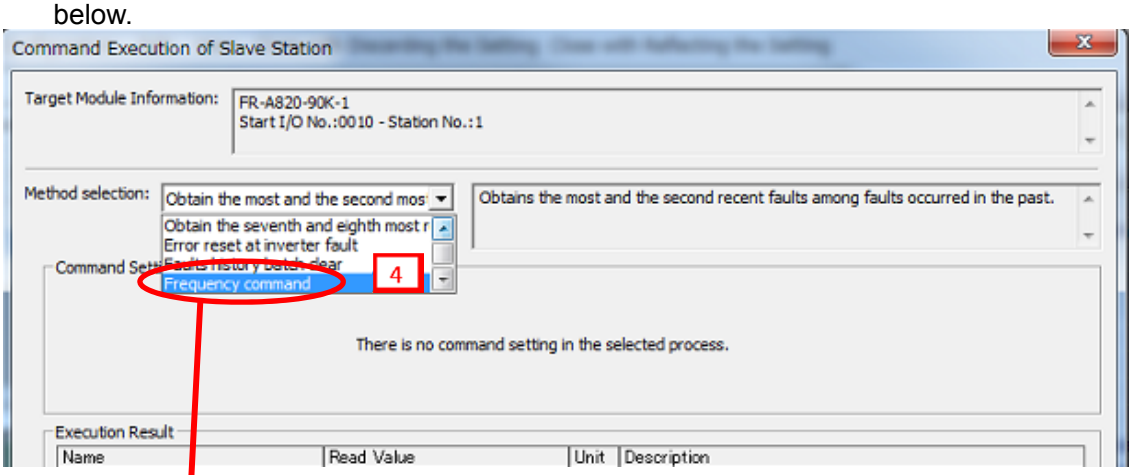
CCLink_Method | CommCommand | ArgArbitraryCommand

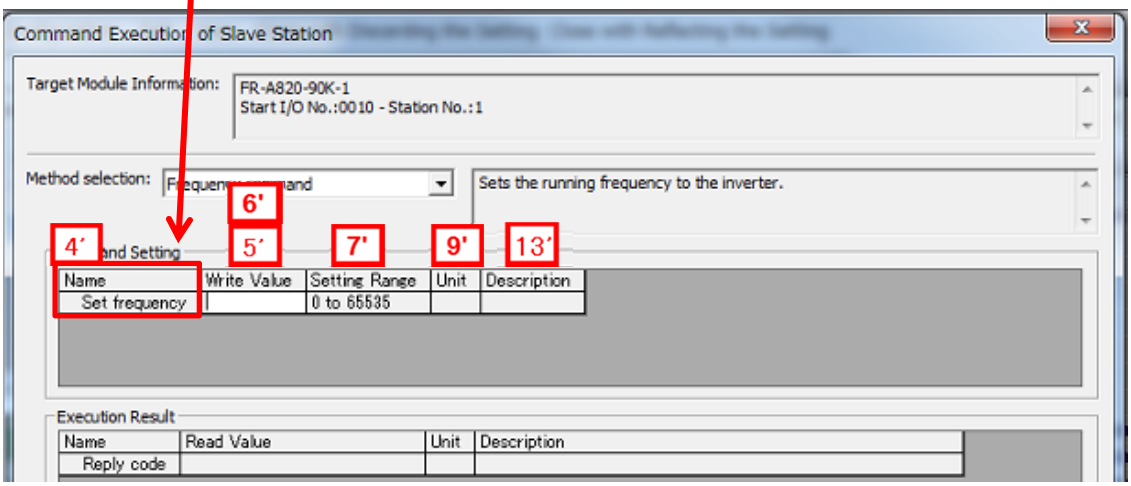
	LABEL	LABEL2	CATEGORY	NAME	DATATYPE	DEFAULT	RANGE	MIN_INC	MIN_UNIT	ENG_UNIT	ACCESS	ASSIGN	REF	COMMENT	REMARK
1	Argument RWw2			Link parameter extended setting/Instruction code(RWw2)	WORD		[0x0000,0xFFFF]				W			Input a value for writing RWw2. Add "0x" in front of the input value (hexadecimal).	
2	Argument RWw3			Write data (RWw3)	WORD		[0x0000,0xFFFF]				W			Input a value for writing RWw3. Add "0x" in front of the input value (hexadecimal).	
3	Argument RWr3			Read data (RWr3)	WORD		[0x0000,0xFFFF]				R			Displays the reading data of RWr3.	

COMMAND_ARGUMENT part

(3) Utility Software - (Parameter Processing Screen of the Slave Station)

The descriptions in CSP+ for the FR-A740-90K are displayed on the utility software as shown below.





(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

Table 4.7-3 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 4.7-3 Elements Not Being Used on the Utility Software Screen (COMM_IF_COMMAND, COMMAND_ARGUMENT)

No.	Element	Application	Required/ Optional
1 1'	LABEL	Used as an identifier.	Required
2 2'	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3 3'	CATEGORY	Reference information. Displayed in the creation support tool.	Optional
5	ARGUMENT	Used to identify the reference relationship to the COMMAND_ARGUMENT part.	Optional
6 12'	REF	Used to identify the reference relationship.	Optional
7	COMMENT	Reference information. Displayed in the creation support tool.	Optional
8'	MIN_INC	Numerical values in which the user input value is multiplied by the value described here are used during internal processing.	Optional
10'	ACCESS	Used to identify the access information of the target item: "Readable", "Writable", "Readable and Writable", "Auto refreshable", or "Inaccessible". For details on the description of the element, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 4.3.1.1. ACCESS conventions	Required
11'	ASSING	Used to analyze the address and code assigned to the element.	Optional

5. BLOCK Section

The BLOCK section comprises multiple parts as shown in Figure 5-1.

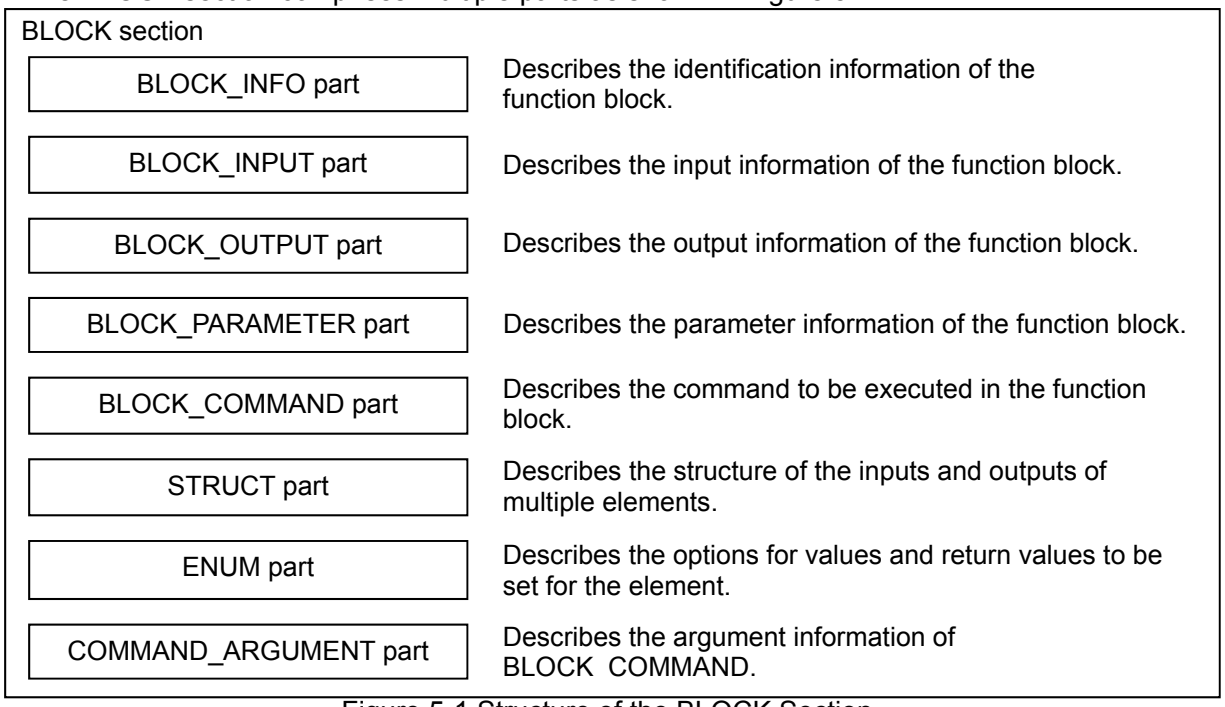


Figure 5-1 Structure of the BLOCK Section

5.1 BLOCK_INFO Part

The BLOCK_INFO part describes the information related to the identification of the function block. Basically, the elements described in the BLOCK_INFO part are not displayed on the utility software. The structure of each element of the BLOCK_INFO part, in other words, the items to be described in the element, is the same.

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.4.1 BLOCK_INFO part

Table 5.1-1 lists the elements configuring the BLOCK_INFO part.

Table 5.1-1 List of Elements Configuring the BLOCK_INFO Part

No.	Element	Description	Required/ Optional
1.	VendorName	Describes the name of the vendor that manufactured the module.	Required
2.	VendorCode	Describes the code of the vendor that manufactured the module. The 5 to 8 digits of the membership number of the CC-Link Partner Association are described.	Required
3.	Version	Describes the version of the firmware in a string.	Required

Table 5.1-2 lists the items to be described in the elements in the BLOCK_INFO part.

Table 5.1-2 List of Items in the BLOCK_INFO Part

No.	Element	Description	Required/ Optional
1.	LABEL	Describes the label for identifying the element.	Required
2.	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3.	CATEGORY	Describes the category for grouping the element.	Optional
4.	NAME	Describes the name of the element. This item is used when displaying the element name or contents on the utility software.	Optional
5.	DATATYPE	Describes the data type of the contents described in DATA.	Optional
6.	DATA	Describes the contents of the element.	Required

(2) CSP+ Descriptions

Figure 5.1-1 shows the display example of the BLOCK_INFO part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool.

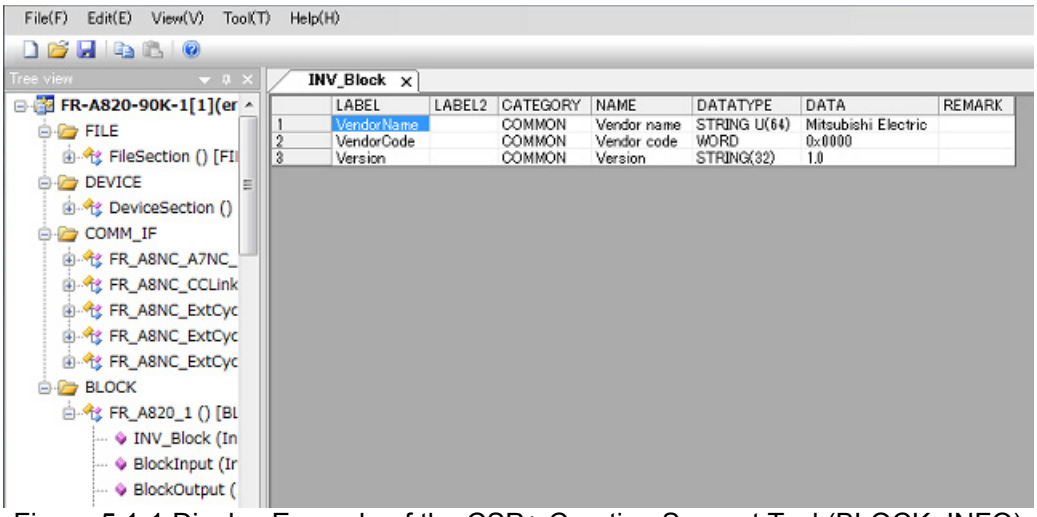


Figure 5.1-1 Display Example of the CSP+ Creation Support Tool (BLOCK_INFO)

(3) Utility Software

The items described in the BLOCK_INFO part are not displayed on the utility software.

5.2 BLOCK_INPUT Part

The BLOCK_INPUT part describes the information related to the input of the function block.
The elements configuring the BLOCK_INPUT part are defined based on the functions of the target module.
The structure of each element of the BLOCK_INPUT part, in other words, the items to be described in the element, is the same.

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.4.2 BLOCK_INPUT part
Table 5.2-1 lists the elements configuring the BLOCK_INPUT part.

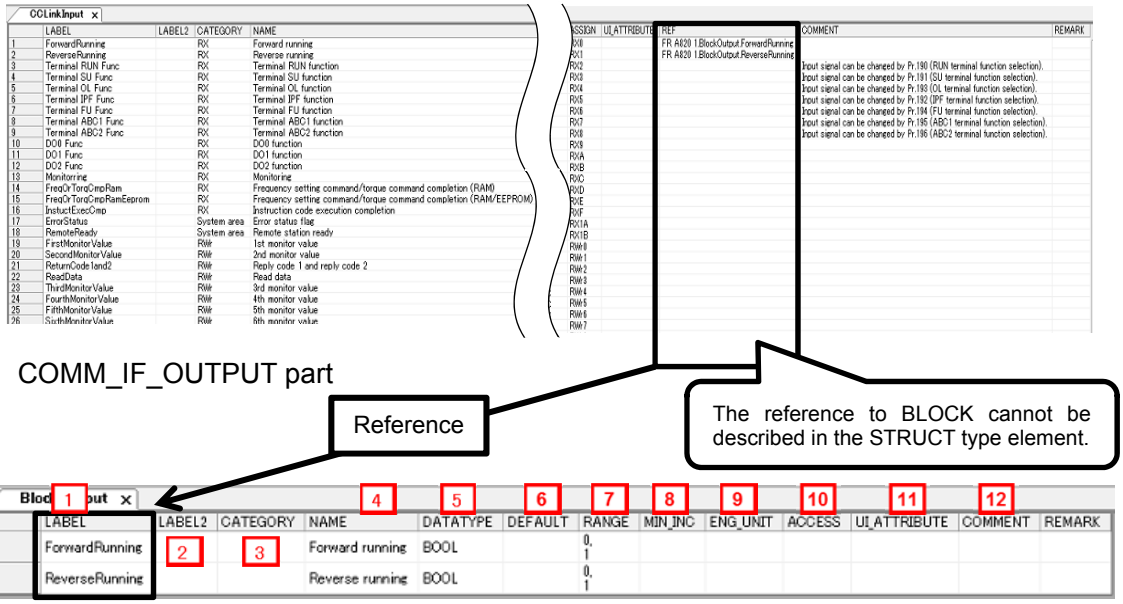
Table 5.2-1 List of Elements Configuring the BLOCK_INPUT Part

No.	Element	Description	Required/ Optional
1	LABEL	Describes the label for identifying the element.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3	CATEGORY	Describes the category for grouping the element.	Optional
4	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Required
5	DATATYPE	Describes the data type of the element.	Required
6	DEFAULT	Describes the default to be set for the element.	Optional
7	RANGE	Describes the setting range of the element.	Optional
8	MIN_INC	Describes the minimum increment applied to the value of the element along with ENG_UNIT. When ENG_UNIT is described, this item is required.	Optional
9	ENG_UNIT	Describes the engineering unit applied to the value of the element along with MIN_INC.	Optional
10	ACCESS	Describes the access attribute of the element.	Optional
11	UI_ATTRIBUTE	Describes the display method when the element is to be displayed on the utility software.	Optional
12	COMMENT	Describes the meaning of the element and usage precautions.	Optional

(2) CSP+ Descriptions

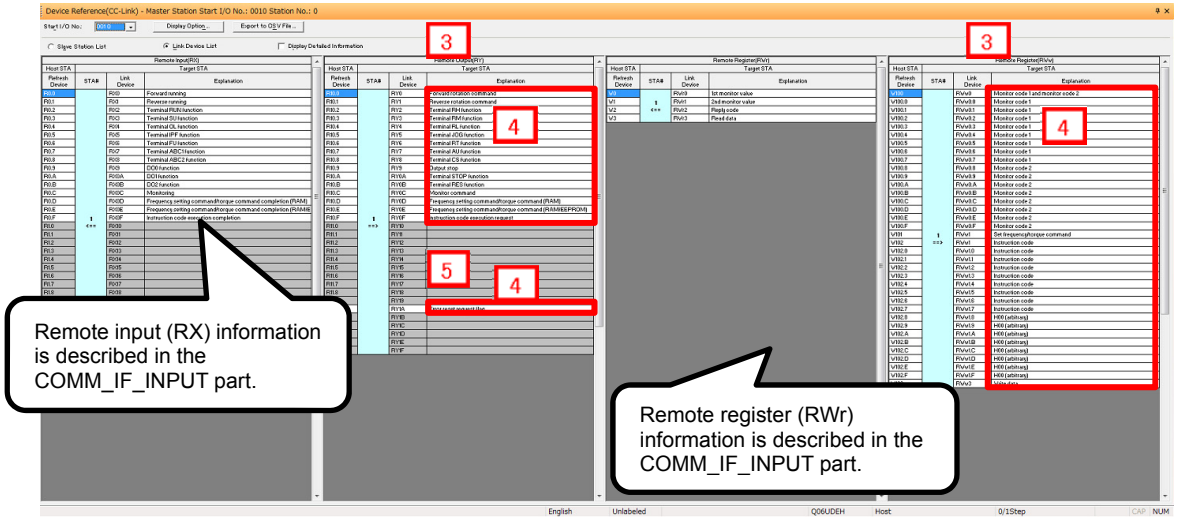
Parameters are referred to in the following order.
COMM_IF_OUTPUT (CCLinkOutput) → BLOCK_INPUT (BlockInput)
(For details on COMM_IF_OUTPUT, refer to Section 4.4 COMM_IF_OUTPUT Part.)

The following figure shows the display example of the BLOCK_INPUT part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool.



(3) Utility Software - (Parameter Processing Screen of the Slave Station)

The descriptions in CSP+ for the FR-A740-90K are displayed on the utility software as shown below.



(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

Table 5.2-2 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 5.2-2 Elements Not Being Used on the Utility Software Screen (BLOCK_INPUT)

No.	Element	Application	Required/ Optional
1	LABEL	Used as an identifier.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
6	DEFAULT	Used to set the default.	Optional
7	RANGE	Used to check the setting range of the item. An error is output when the value is out of range.	Optional
8	MIN_INC	Numerical values in which the user input value is multiplied by the value described here are used during internal processing.	Optional
9	ENG_UNIT	Displays the engineering value described here as an explanation of the item.	Optional
10	ACCESS	Used to identify the access information of the target item: "Readable", "Writable", "Readable and Writable", "Auto refreshable", or "Inaccessible". For details on the description of the element, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 4.3.1.1. ACCESS conventions	Optional
11	UI_ATTRIBUTE	For future support	Optional
12	COMMENT	Reference information. Displayed in the creation support tool.	Optional

5.3 BLOCK_OUTPUT Part

The BLOCK_OUTPUT part describes the information related to the input of the function block.
The elements configuring the BLOCK_OUTPUT part are defined based on the functions of the target module.
The structure of each element of the BLOCK_OUTPUT part, in other words, the items to be described in the element, is the same.

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.4.3 BLOCK_OUTPUT part
Table 5.3-1 lists the elements configuring the BLOCK_OUTPUT part.

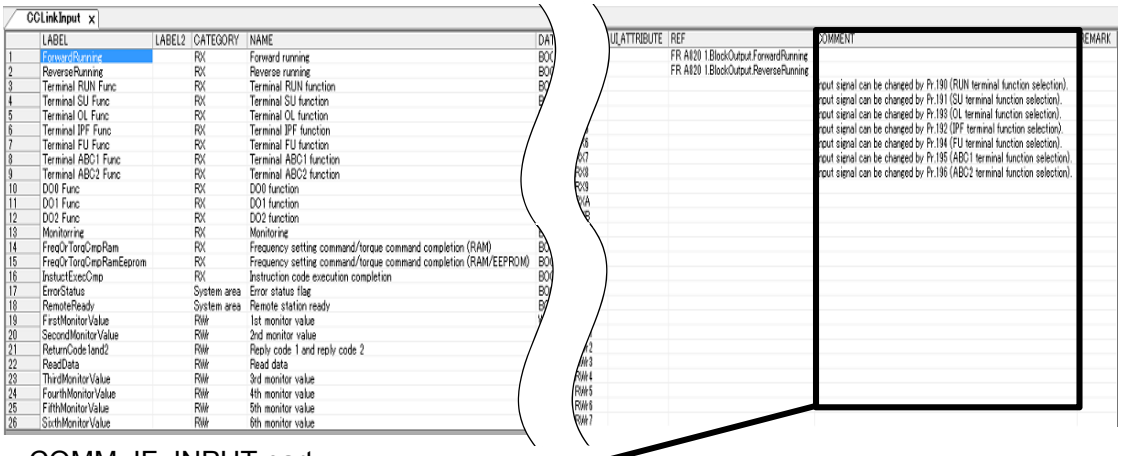
Table 5.3-1 List of Elements Configuring the BLOCK_OUTPUT Part

No.	Element	Description	Required/ Optional
1	LABEL	Describes the label for identifying the element.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3	CATEGORY	Describes the category for grouping the element.	Optional
4	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Required
5	DATATYPE	Describes the data type of the element.	Required
6	DEFAULT	Describes the default to be set for the element.	Optional
7	RANGE	Describes the setting range of the element.	Optional
8	MIN_INC	Describes the minimum increment applied to the value of the element along with ENG_UNIT. When ENG_UNIT is described, this item is required.	Optional
9	ENG_UNIT	Describes the engineering unit applied to the value of the element along with MIN_INC.	Optional
10	ACCESS	Describes the access attribute of the element.	Optional
11	UI_ATTRIBUTE	Describes the display method when the element is to be displayed on the utility software.	Optional
12	COMMENT	Describes the meaning of the element and usage precautions.	Optional

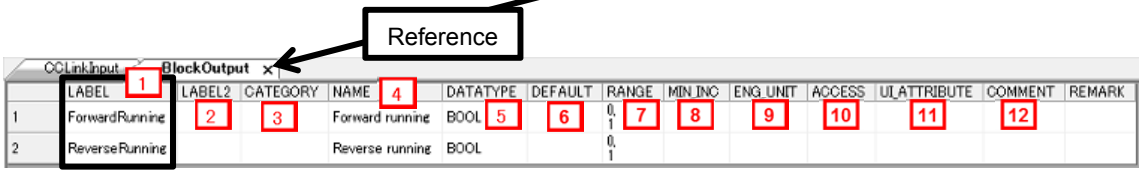
(2) CSP+ Descriptions

Parameters are referred to in the following order.
COMM_IF_INPUT (CCLinkOutput) → BLOCK_OUTPUT (BlockInput)

The following figure shows the display example of the BLOCK_OUTPUT part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool.



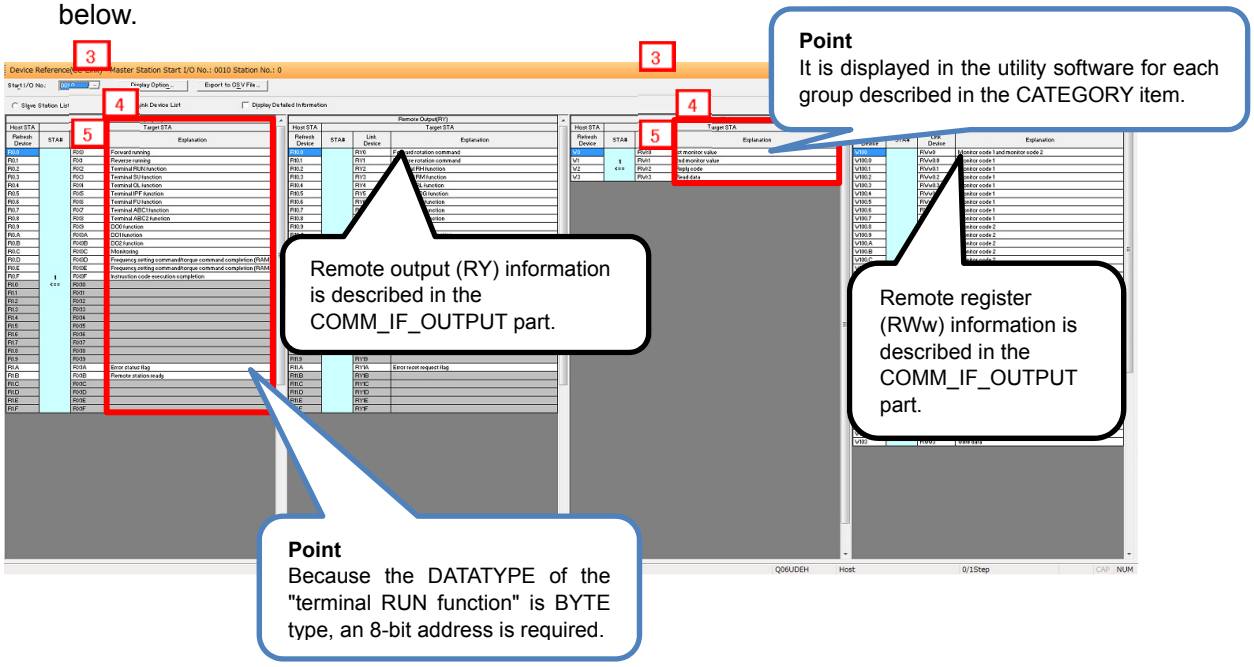
COMM_IF_INPUT part



BLOCK_OUTPUT part

(3) Utility Software - (Parameter Processing Screen of the Slave Station)

The descriptions in CSP+ for the FR-A740-90K are displayed on the utility software as shown below.



(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

Table 5.3-2 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 5.3-2 Elements Not Being Used on the Utility Software Screen (BLOCK_OUTPUT)

No.	Element	Application	Required/ Optional
1	LABEL	Used as an identifier.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
6	DEFAULT	Used to set the default.	Optional
7	RANGE	Used to check the setting range of the item. An error is output when the value is out of range.	Optional
8	MIN_INC	Numerical values in which the user input value is multiplied by the value described here are used during internal processing.	Optional
9	ENG_UNIT	Displays the engineering value described here as an explanation of the item.	Optional
10	ACCESS	Used to identify the access information of the target item: "Readable", "Writable", "Readable and Writable", "Auto refreshable", or "Inaccessible". For details on the description of the element, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 4.3.1.1. ACCESS conventions	Optional
11	UI_ATTRIBUTE	For future support	Optional
12	COMMENT	Reference information. Displayed in the creation support tool.	Optional

5.4 BLOCK_PARAMETER Part

The BLOCK_PARAMETER part describes the information related to the parameters used by the control functions of the target module.
The elements configuring the BLOCK_PARAMETER part are defined based on the communication functions of the target module.

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.4.4 BLOCK_PARAMETER part

1) Table 5.4-1 lists the elements configuring the BLOCK_PARAMETER part.

Table 5.4-1 List of Elements Configuring the BLOCK_PARAMETER Part

No.	Element	Description	Required/ Optional
1	LABEL	Describes the label for identifying the element.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3	CATEGORY	Describes the category for grouping the element.	Optional
4	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Required
5	DATATYPE	Describes the data type of the element.	Required
6	DEFAULT	Describes the default to be set for the element.	Optional
7	RANGE	Describes the setting range of the element. Options can be described by using the ENUM part. *8	Optional
8	MIN_INC	Describes the minimum increment applied to the value of the element along with ENG_UNIT.	Optional
9	ENG_UNIT	Describes the engineering unit applied to the value of the element along with MIN_INC.	Optional
10	ACCESS	Describes the access attribute of the element.	Required
11	WRITE_ORDER	Describes the order in which the element is to be written into the module.	Optional
12	UI_ATTRIBUTE	Describes the display method when the element is to be displayed on the utility software.	Optional
13	COMMENT	Describes the meaning of the element and usage precautions.	Optional

*8

ENUM part

The ENUM part (option list) describes the information related to options of values and return values to be set to the element. To set options for the element using a list box or to display the meaning of each value of the element when they are read on the utility software, refer to the ENUM part.
When referring to the ENUM part from the element in the COMM_IF section, describe the ENUM part in the same COMM_IF section.
The elements configuring the ENUM part are defined based on the functions of the target module.
The structure of each element of the ENUM part, in other words, the items to be described in the element, is the same.

Table 5.4-2 List of Elements Defined in the ENUM Part

No.	Element	Description	Required/ Optional
1'	LABEL	Describes the label for identifying the element.	Required
2'	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3'	CATEGORY	Describes the category for grouping the element.	Optional
4'	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Required
5'	CODE	Describes the value for identifying the element. Cross-checked with the value indicated by the element of the reference source to select matching elements.	Required
6'	COMMENT	Describes the default to be set for the element.	Optional

2) Reference specifications of the BLOCK_PARAMETER part

The reference specifications of the parts related to the BLOCK_COMMAND part and between the communication services are described here.

The reference to the elements of the METHOD part and the elements of the COMM_IF_PARAMETER part which carries out the settings and execution using the elements referred to is described.

The reference to the BLOCK_PARAMETER part cannot be described directly from the METHOD part. In the example of Figure 5.4-1, "Parameter Write" and "Parameter Read" are described as a METHOD to write and read parameters 1, 2, ..., of the control function.

Then, the reference from each METHOD part to the BLOCK_PARAMETER part is described via the COMM_IF_PARAMETER part.

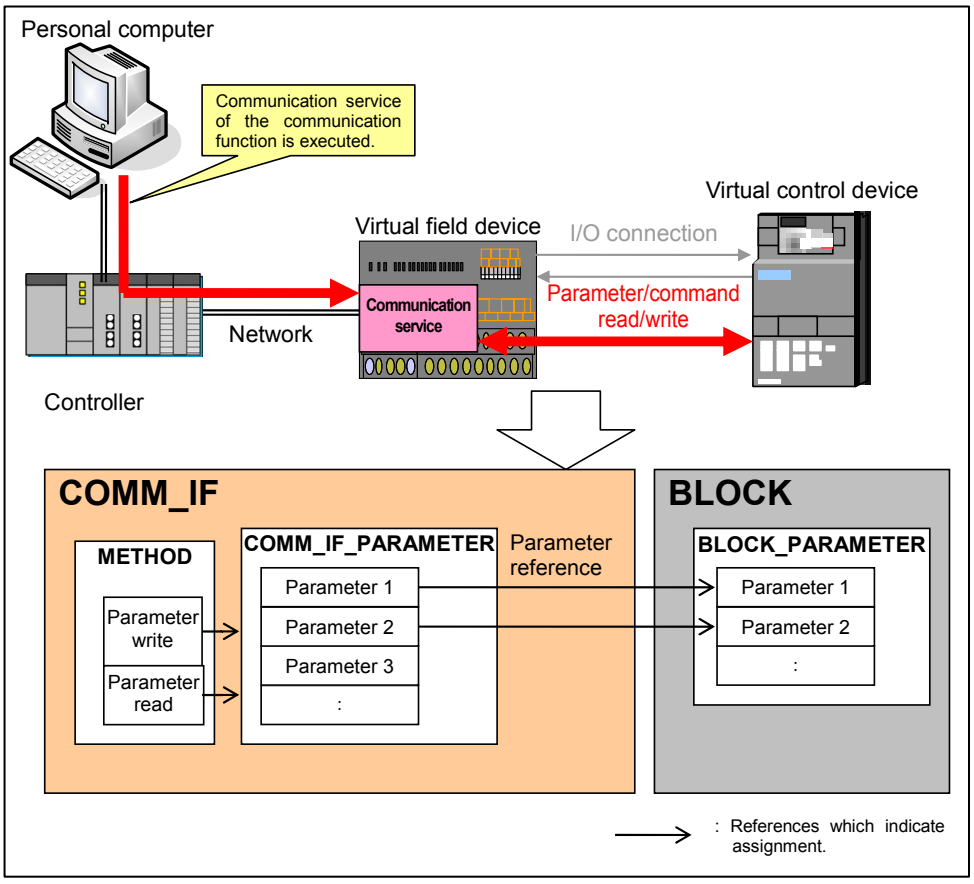
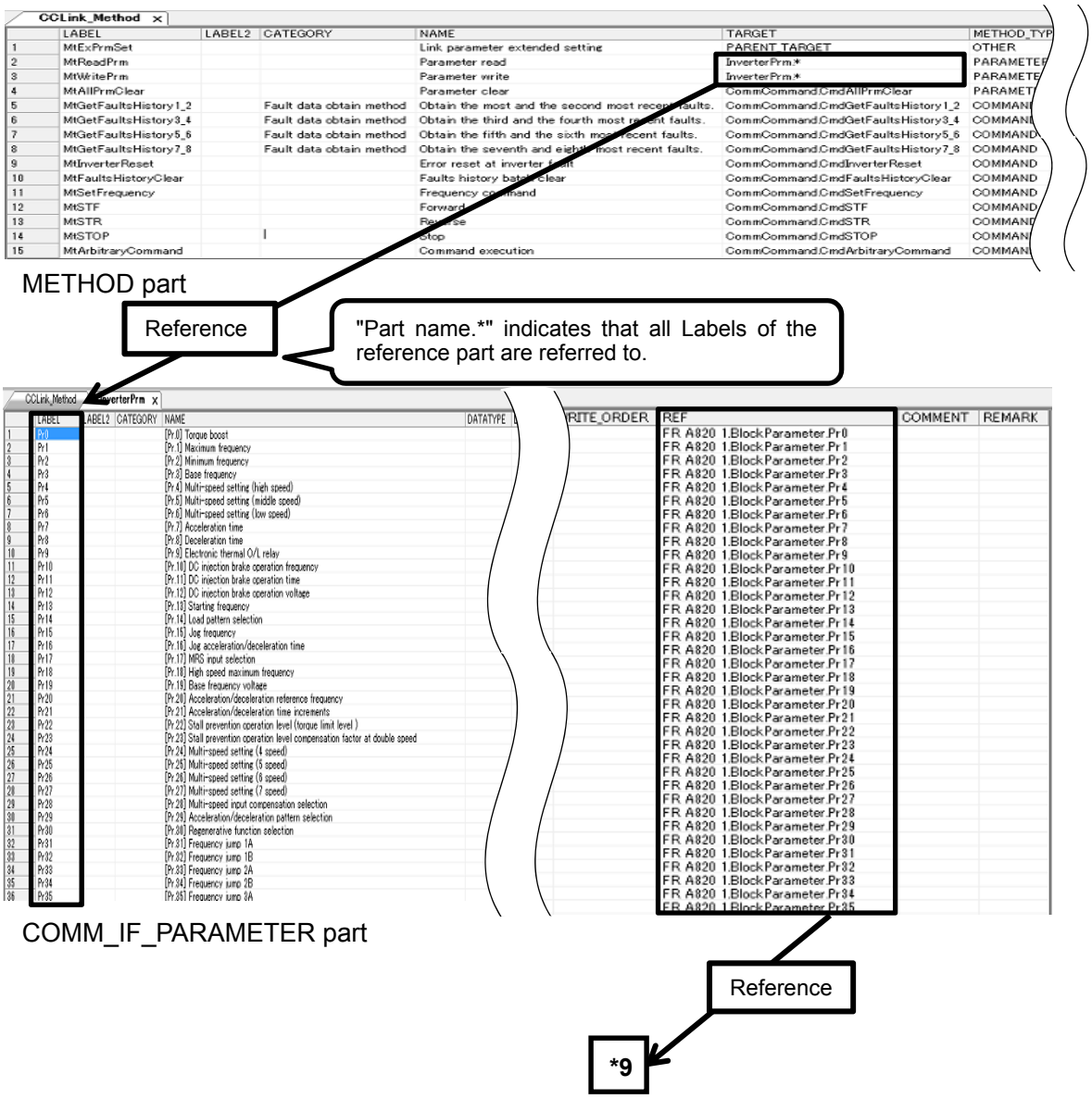


Figure 5.4-1 Reference Specifications Example of the BLOCK_PARAMETER Part

(2) CSP+ Descriptions

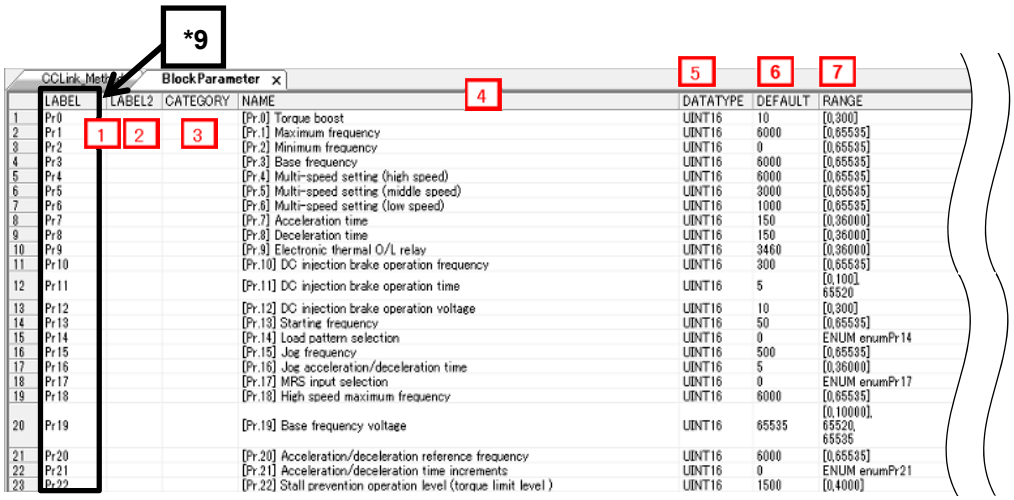
Parameters are referred to in the following order.
METHOD part (CCLinkMethod) → COMM_IF_PARAMETER part (InverterPrm) → BLOCK_PARAMETER part (BlockParameter)

The following figure shows the display example of the BLOCK_PARAMETER part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool.



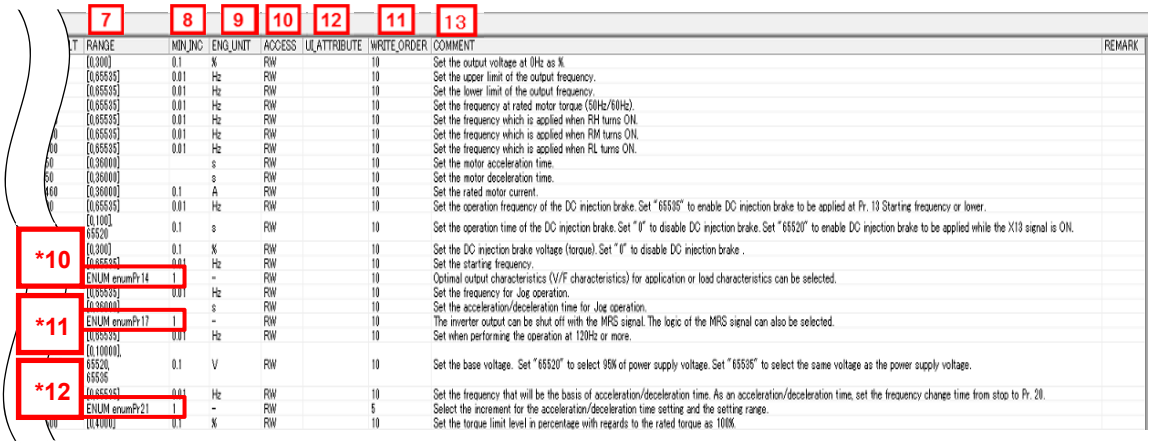
	LABEL	LABEL2	CATEGORY	NAME	TARGET	METHOD_TYP
1	MtExPrmSet			Link parameter extended setting	PARENT_TARGET	OTHER
2	MtReadPrm			Parameter read	InverterPrm.*	PARAMETE
3	MtWritePrm			Parameter write	InverterPrm.*	PARAMETE
4	MtAllPrmClear			Parameter clear	CommCommand.CmdAllPrmClear	PARAMET
5	MtGetFaultsHistory1_2		Fault data obtain method	Obtain the most and the second most recent faults.	CommCommand.CmdGetFaultsHistory1_2	COMMAN
6	MtGetFaultsHistory3_4		Fault data obtain method	Obtain the third and the fourth most recent faults.	CommCommand.CmdGetFaultsHistory3_4	COMMAN
7	MtGetFaultsHistory5_6		Fault data obtain method	Obtain the fifth and the sixth most recent faults.	CommCommand.CmdGetFaultsHistory5_6	COMMAN
8	MtGetFaultsHistory7_8		Fault data obtain method	Obtain the seventh and eighth most recent faults.	CommCommand.CmdGetFaultsHistory7_8	COMMAND
9	MtInverterReset			Error reset at inverter fault	CommCommand.CmdInverterReset	COMMAND
10	MtFaultsHistoryClear			Faults history batch clear	CommCommand.CmdFaultsHistoryClear	COMMAND
11	MtSetFrequency			Frequency command	CommCommand.CmdSetFrequency	COMMAND
12	MtSTF			Forward	CommCommand.CmdSTF	COMMAND
13	MtSTR			Reverse	CommCommand.CmdSTR	COMMAN
14	MtSTOP			Stop	CommCommand.CmdSTOP	COMMAN
15	MtArbitraryCommand			Command execution	CommCommand.CmdArbitraryCommand	COMMAN

	LABEL	LABEL2	CATEGORY	NAME	DATATYPE	RITE_ORDER	REF	COMMENT	REMARK
1	Pr0			[Pr.0] Torque boost			FR A820 1.BlockParameter.Pr0		
2	Pr1			[Pr.1] Maximum frequency			FR A820 1.BlockParameter.Pr1		
3	Pr2			[Pr.2] Minimum frequency			FR A820 1.BlockParameter.Pr2		
4	Pr3			[Pr.3] Base frequency			FR A820 1.BlockParameter.Pr3		
5	Pr4			[Pr.4] Multi-speed setting (high speed)			FR A820 1.BlockParameter.Pr4		
6	Pr5			[Pr.5] Multi-speed setting (middle speed)			FR A820 1.BlockParameter.Pr5		
7	Pr6			[Pr.6] Multi-speed setting (low speed)			FR A820 1.BlockParameter.Pr6		
8	Pr7			[Pr.7] Acceleration time			FR A820 1.BlockParameter.Pr7		
9	Pr8			[Pr.8] Deceleration time			FR A820 1.BlockParameter.Pr8		
10	Pr9			[Pr.9] Electronic thermal O/L relay			FR A820 1.BlockParameter.Pr9		
11	Pr10			[Pr.10] DC injection brake operation frequency			FR A820 1.BlockParameter.Pr10		
12	Pr11			[Pr.11] DC injection brake operation time			FR A820 1.BlockParameter.Pr11		
13	Pr12			[Pr.12] DC injection brake operation voltage			FR A820 1.BlockParameter.Pr12		
14	Pr13			[Pr.13] Starting frequency			FR A820 1.BlockParameter.Pr13		
15	Pr14			[Pr.14] Load pattern selection			FR A820 1.BlockParameter.Pr14		
16	Pr15			[Pr.15] Jog frequency			FR A820 1.BlockParameter.Pr15		
17	Pr16			[Pr.16] Jog acceleration/deceleration time			FR A820 1.BlockParameter.Pr16		
18	Pr17			[Pr.17] MRS input selection			FR A820 1.BlockParameter.Pr17		
19	Pr18			[Pr.18] High speed maximum frequency			FR A820 1.BlockParameter.Pr18		
20	Pr19			[Pr.19] Base frequency voltage			FR A820 1.BlockParameter.Pr19		
21	Pr20			[Pr.20] Acceleration/deceleration reference frequency			FR A820 1.BlockParameter.Pr20		
22	Pr21			[Pr.21] Acceleration/deceleration time increments			FR A820 1.BlockParameter.Pr21		
23	Pr22			[Pr.22] Stall prevention operation level (torque limit level)			FR A820 1.BlockParameter.Pr22		
24	Pr23			[Pr.23] Stall prevention operation level compensation factor at double speed			FR A820 1.BlockParameter.Pr23		
25	Pr24			[Pr.24] Multi-speed setting (4 speed)			FR A820 1.BlockParameter.Pr24		
26	Pr25			[Pr.25] Multi-speed setting (5 speed)			FR A820 1.BlockParameter.Pr25		
27	Pr26			[Pr.26] Multi-speed setting (6 speed)			FR A820 1.BlockParameter.Pr26		
28	Pr27			[Pr.27] Multi-speed setting (7 speed)			FR A820 1.BlockParameter.Pr27		
29	Pr28			[Pr.28] Multi-speed input compensation selection			FR A820 1.BlockParameter.Pr28		
30	Pr29			[Pr.29] Acceleration/deceleration pattern selection			FR A820 1.BlockParameter.Pr29		
31	Pr30			[Pr.30] Regenerative function selection			FR A820 1.BlockParameter.Pr30		
32	Pr31			[Pr.31] Frequency jump 1A			FR A820 1.BlockParameter.Pr31		
33	Pr32			[Pr.32] Frequency jump 1B			FR A820 1.BlockParameter.Pr32		
34	Pr33			[Pr.33] Frequency jump 2A			FR A820 1.BlockParameter.Pr33		
35	Pr34			[Pr.34] Frequency jump 2B			FR A820 1.BlockParameter.Pr34		
36	Pr35			[Pr.35] Frequency jump 3A			FR A820 1.BlockParameter.Pr35		



	LABEL	LABEL2	CATEGORY	NAME	DATATYPE	DEFAULT	RANGE
1	Pr.0			[Pr.0] Torque boost	UINT16	10	[0,300]
2	Pr.1			[Pr.1] Maximum frequency	UINT16	6000	[0,65535]
3	Pr.2			[Pr.2] Minimum frequency	UINT16	0	[0,65535]
4	Pr.3			[Pr.3] Base frequency	UINT16	6000	[0,65535]
5	Pr.4			[Pr.4] Multi-speed setting (high speed)	UINT16	6000	[0,65535]
6	Pr.5			[Pr.5] Multi-speed setting (middle speed)	UINT16	3000	[0,65535]
7	Pr.6			[Pr.6] Multi-speed setting (low speed)	UINT16	1000	[0,65535]
8	Pr.7			[Pr.7] Acceleration time	UINT16	150	[0,36000]
9	Pr.8			[Pr.8] Deceleration time	UINT16	150	[0,36000]
10	Pr.9			[Pr.9] Electronic thermal O/L relay	UINT16	3460	[0,36000]
11	Pr.10			[Pr.10] DC injection brake operation frequency	UINT16	300	[0,65535]
12	Pr.11			[Pr.11] DC injection brake operation time	UINT16	5	[0,100], 65520
13	Pr.12			[Pr.12] DC injection brake operation voltage	UINT16	10	[0,300]
14	Pr.13			[Pr.13] Starting frequency	UINT16	50	[0,65535]
15	Pr.14			[Pr.14] Load pattern selection	UINT16	0	ENUM enumPr.14
16	Pr.15			[Pr.15] Jog frequency	UINT16	500	[0,65535]
17	Pr.16			[Pr.16] Jog acceleration/deceleration time	UINT16	5	[0,36000]
18	Pr.17			[Pr.17] MRS input selection	UINT16	0	ENUM enumPr.17
19	Pr.18			[Pr.18] High speed maximum frequency	UINT16	6000	[0,65535]
20	Pr.19			[Pr.19] Base frequency voltage	UINT16	65535	[0,10000], 65520, 65535
21	Pr.20			[Pr.20] Acceleration/deceleration reference frequency	UINT16	6000	[0,65535]
22	Pr.21			[Pr.21] Acceleration/deceleration time increments	UINT16	0	ENUM enumPr.21
23	Pr.22			[Pr.22] Stall prevention operation level (torque limit level)	UINT16	1500	[0,4000]

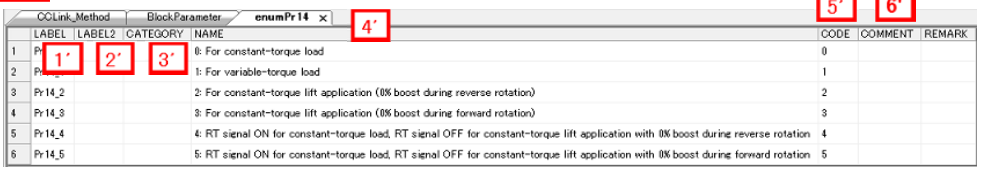
BLOCK_PARAMETER part (1/2)



T	RANGE	MIN_INC	ENG_UNIT	ACCESS	UI_ATTRIBUTE	WRITE_ORDER	COMMENT	REMARK
	[0,300]	0.1	%	RW		10	Set the output voltage at 0Hz as %.	
	[0,65535]	0.01	Hz	RW		10	Set the upper limit of the output frequency.	
	[0,65535]	0.01	Hz	RW		10	Set the lower limit of the output frequency.	
	[0,65535]	0.01	Hz	RW		10	Set the frequency at rated motor torque (50Hz/60Hz).	
	[0,65535]	0.01	Hz	RW		10	Set the frequency which is applied when RH turns ON.	
0	[0,65535]	0.01	Hz	RW		10	Set the frequency which is applied when RM turns ON.	
00	[0,65535]	0.01	Hz	RW		10	Set the frequency which is applied when RL turns ON.	
60	[0,36000]		s	RW		10	Set the motor acceleration time.	
60	[0,36000]		s	RW		10	Set the motor deceleration time.	
460	[0,36000]	0.1	A	RW		10	Set the rated motor current.	
0	[0,65535]	0.01	Hz	RW		10	Set the operation frequency of the DC injection brake. Set "65535" to enable DC injection brake to be applied at Pr. 13 Starting frequency or lower.	
	[0,100], 65520	0.1	s	RW		10	Set the operation time of the DC injection brake. Set "0" to disable DC injection brake. Set "65520" to enable DC injection brake to be applied while the X13 signal is ON.	
	[0,300]	0.1	%	RW		10	Set the DC injection brake voltage (torque). Set "0" to disable DC injection brake .	
	[0,65535]	0.01	Hz	RW		10	Set the starting frequency.	
	ENUM enumPr.14	1	-	RW		10	Optimal output characteristics (V/F characteristics) for application or load characteristics can be selected.	
	[0,65535]	0.01	Hz	RW		10	Set the frequency for Jog operation.	
	[0,36000]		s	RW		10	Set the acceleration/deceleration time for Jog operation.	
	ENUM enumPr.17	1	-	RW		10	The inverter output can be shut off with the MRS signal. The logic of the MRS signal can also be selected.	
	[0,65535]	0.01	Hz	RW		10	Set when performing the operation at 120Hz or more.	
	[0,10000], 65520, 65535	0.1	V	RW		10	Set the base voltage. Set "65520" to select 95% of power supply voltage. Set "65535" to select the same voltage as the power supply voltage.	
	[0,65535]	0.01	Hz	RW		10	Set the frequency that will be the basis of acceleration/deceleration time. As an acceleration/deceleration time, set the frequency change time from stop to Pr. 20.	
	ENUM enumPr.21	1	-	RW		5	Select the increment for the acceleration/deceleration time setting and the setting range.	
00	[0,4000]	0.1	%	RW		10	Set the torque limit level in percentage with regards to the rated torque as 100%.	

BLOCK_PARAMETER part (2/2)

*10



	LABEL	LABEL2	CATEGORY	NAME	CODE	COMMENT	REMARK
1	Pr			0: For constant-torque load	0		
2	Pr			1: For variable-torque load	1		
3	Pr14_2			2: For constant-torque lift application (0% boost during reverse rotation)	2		
4	Pr14_3			3: For constant-torque lift application (0% boost during forward rotation)	3		
5	Pr14_4			4: RT signal ON for constant-torque load, RT signal OFF for constant-torque lift application with 0% boost during reverse rotation	4		
6	Pr14_5			5: RT signal ON for constant-torque load, RT signal OFF for constant-torque lift application with 0% boost during forward rotation	5		

*11

enumPr17

	LABEL	LABEL2	CATEGORY	NAME	CODE	COMMENT	REMARK
1	Pr17_0			0: Normally open input	0		
2	Pr17_2			2: Normally closed input (NC input specification)	2		
3	Pr17_4			4: External terminal with normally closed input (NC input specification), communication with normally open input	4		

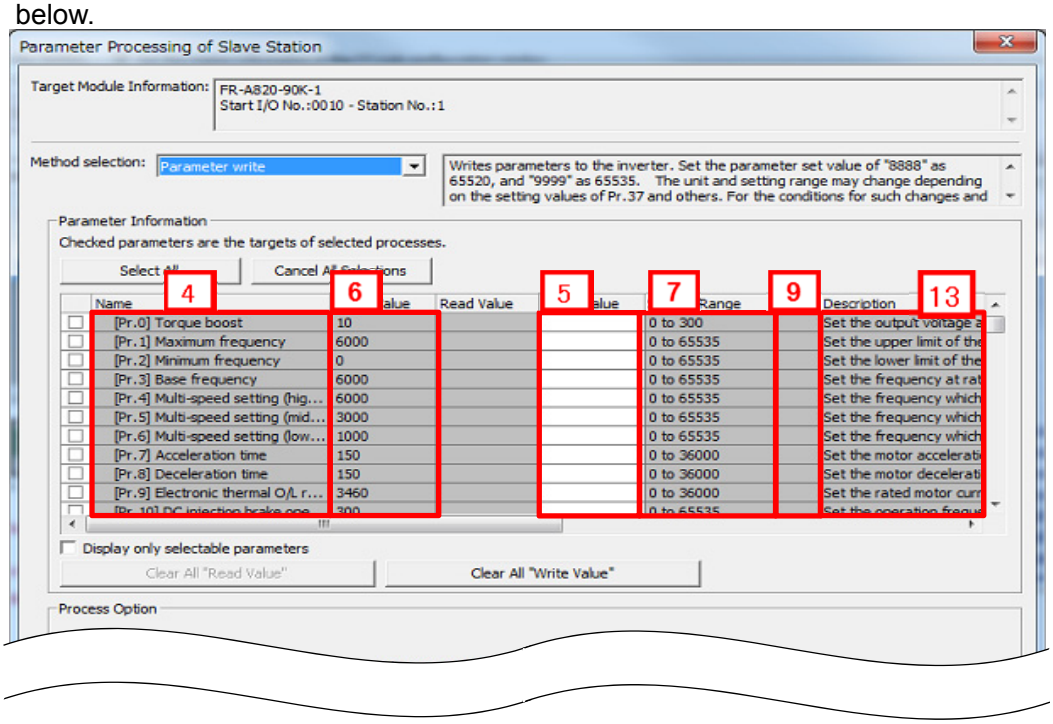
*12

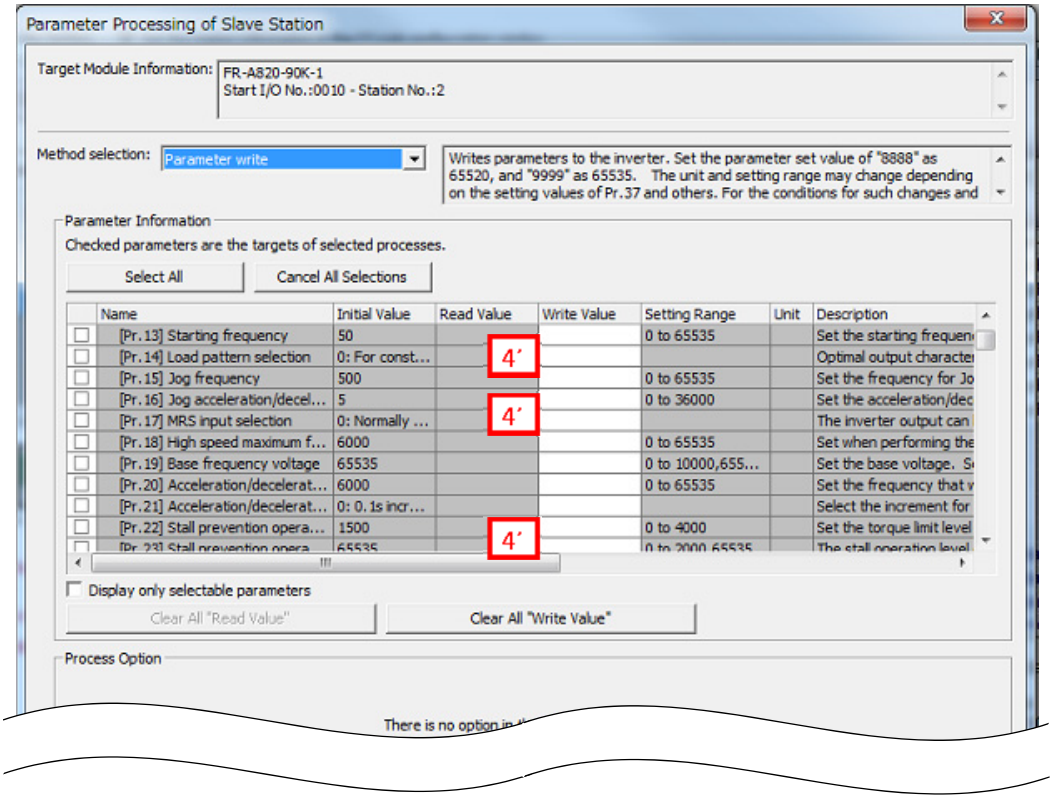
enumPr21

	LABEL	LABEL2	CATEGORY	NAME	CODE	COMMENT	REMARK
1	Pr21 0			0: 0.1s increments, 0 to 3600s setting range	0		
2	Pr21 1			1: 0.01s increments, 0 to 360s setting range	1		

(3) Utility Software - (Parameter Processing Screen of the Slave Station)

The descriptions in CSP+ for the FR-A740-90K are displayed on the utility software as shown below.





(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

Table 5.4-3 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 5.4-3 Elements Not Being Used on the Utility Software Screen (BLOCK_PARAMETER, ENUM)

No.	Element	Application	Required/ Optional
1 1′	LABEL	Used as an identifier.	Required
2 2′	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3 3′	CATEGORY	Reference information. Displayed in the creation support tool.	Optional
8	MIN_INC	Numerical values in which the user input value is multiplied by the value described here are used during internal processing.	Optional
10	ACCESS	Used to identify the access information of the target item: "Readable", "Writable", "Readable and Writable", "Auto refreshable", or "Inaccessible". For details on the description of the element, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 4.3.1.1. ACCESS conventions	Required
11	WRITE_ORDER	Used as sequence information when writing parameters to the actual device. (Values are written in ascending order.)	Optional
12	UI_ATTRIBUTE	For future support	Optional
5′	CODE	Used to identify the selected value.	Required
6′	COMMENT	Reference information. Displayed in the creation support tool.	Optional

5.5 BLOCK_COMMAND Part

The BLOCK_COMMAND part describes the information related to the commands executed by the control functions of the target module (example: reset, parameter batch clear, data acquisition when an error occurs).
The elements configuring the BLOCK_COMMAND part are defined based on the functions of the target module.

(1) CC-Link Family System Profile Specification BAP-C2008-001 - 5.4.5 BLOCK_COMMAND part

1) Table 5.5-1 lists the elements configuring the BLOCK_COMMAND part.

Table 5.5-1 List of Elements Configuring the BLOCK_COMMAND Part

No.	Element	Description	Required/ Optional
1	LABEL	Describes the label for identifying the element.	Required
2	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3	CATEGORY	Describes the category for grouping the element.	Optional
4	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Required
5	ARGUMENT	Describes the label of the COMMAND_ARGUMENT part for indicating the argument to be used by the element.	Required
6	COMMENT	Describes the meaning of the element and usage precautions. *13	Optional

*13

COMMAND_ARGUMENT part

The COMMAND_ARGUMENT part (command argument list) describes the information related to command arguments.

Table 5.5-2 List of Elements Defined in the COMMAND_ARGUMENT Part

No.	Element	Description	Required/ Optional
1'	LABEL	Describes the label for identifying the element.	Required
2'	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3'	CATEGORY	Describes the category for grouping the element.	Optional
4'	NAME	Describes the name of the element. This item is used when displaying the name or contents on the utility software.	Required
5'	DATATYPE	Describes the data type of the element.	Required
6'	DEFAULT	Describes the default to be set for the element.	Optional
7'	RANGE	Describes the setting range of the element.	Optional
8'	MIN_INC	Describes the minimum increment applied to the value of the element in the command argument list along with ENG_UNIT.	Optional
9'	ENG_UNIT	Describes the engineering unit applied to the value of the element in the command argument list along with MIN_INC.	Optional
10'	ACCESS	Describes the access attribute of the element.	Required
11'	ASSIGN	Describes the address and code to be assigned to the element.	Optional
12'	REF	Describes the reference to be referred to by the element. Use of this element is prohibited under the current specifications.	Optional
13'	COMMENT	Describes the meaning of the element and usage precautions.	Optional

2) Reference specifications of the BLOCK_COMMAND part

The reference specifications of the parts related to the BLOCK_COMMAND part and between the communication services are described here.

The reference to the elements of the METHOD part and the elements of the COMM_IF_COMMAND part which carries out the settings and execution using the elements referred to is described. The reference to the BLOCK_COMMAND part cannot be described directly from the METHOD part.

In the example of Figure 5.5-1, "Parameter Write" and "Parameter Read" are described as a METHOD to write and read parameters 1, 2, ..., of the control function.

Then, the reference from each METHOD part to the BLOCK_COMMAND part is described via the COMM_IF_COMMAND part.

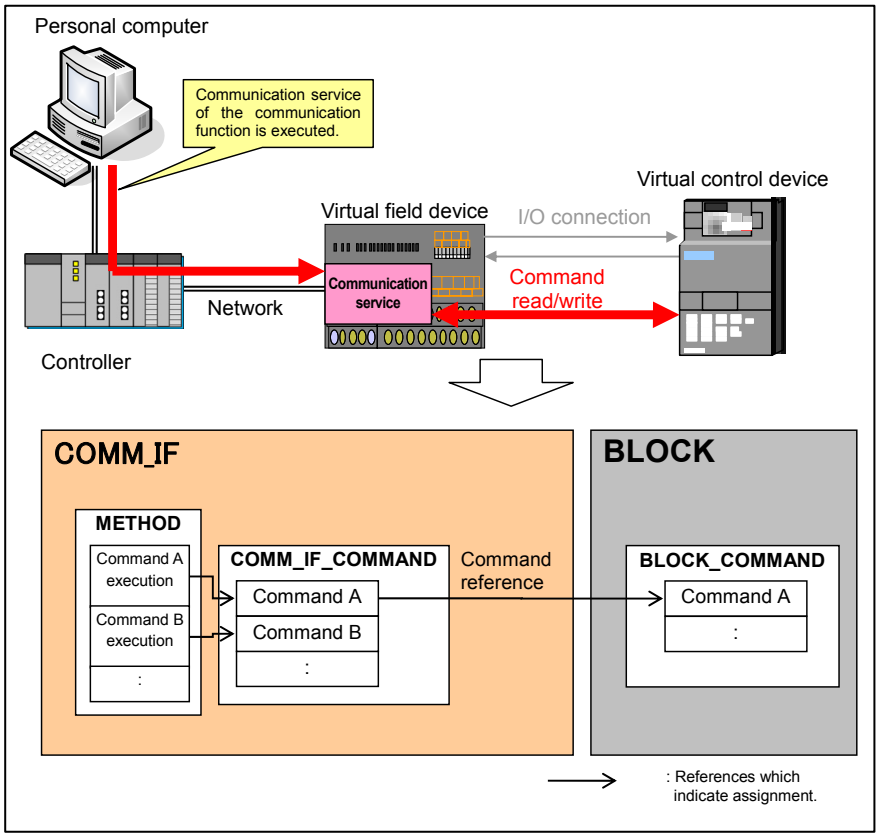
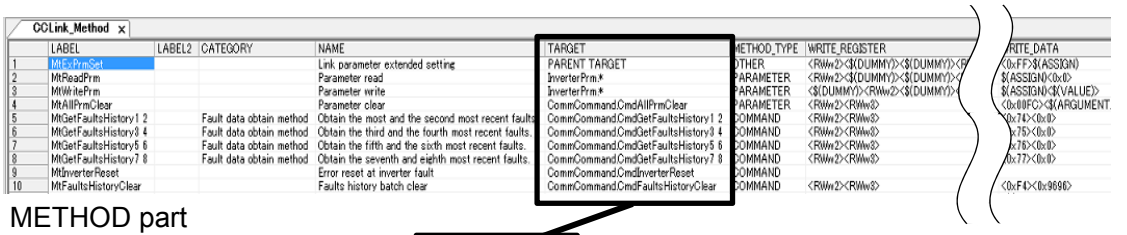


Figure 5.5-1 Reference Specifications Example of the BLOCK_COMMAND Part

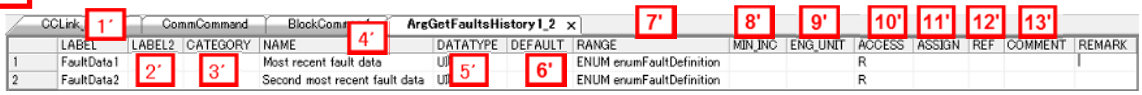
(2) CSP+ Descriptions

Parameters are referred to in the following order.
METHOD part (CCLinkMethod) → COMM_IF_COMMAND part (CommCommand) → BLOCK_COMMAND part (BlockCommand)

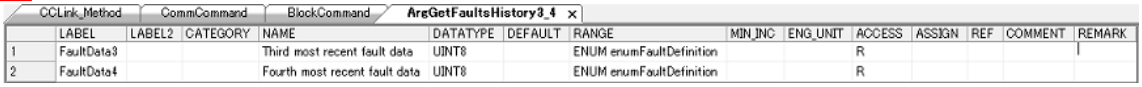
The following figure shows the display example of the BLOCK_COMMAND part of CSP+ for an inverter (FR-A740-90K) on the CSP+ creation support tool.



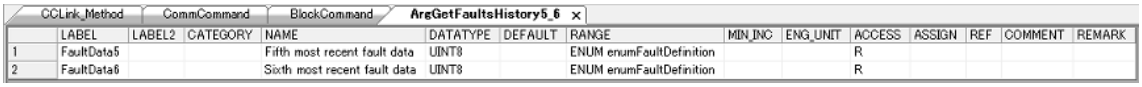
*14



*15

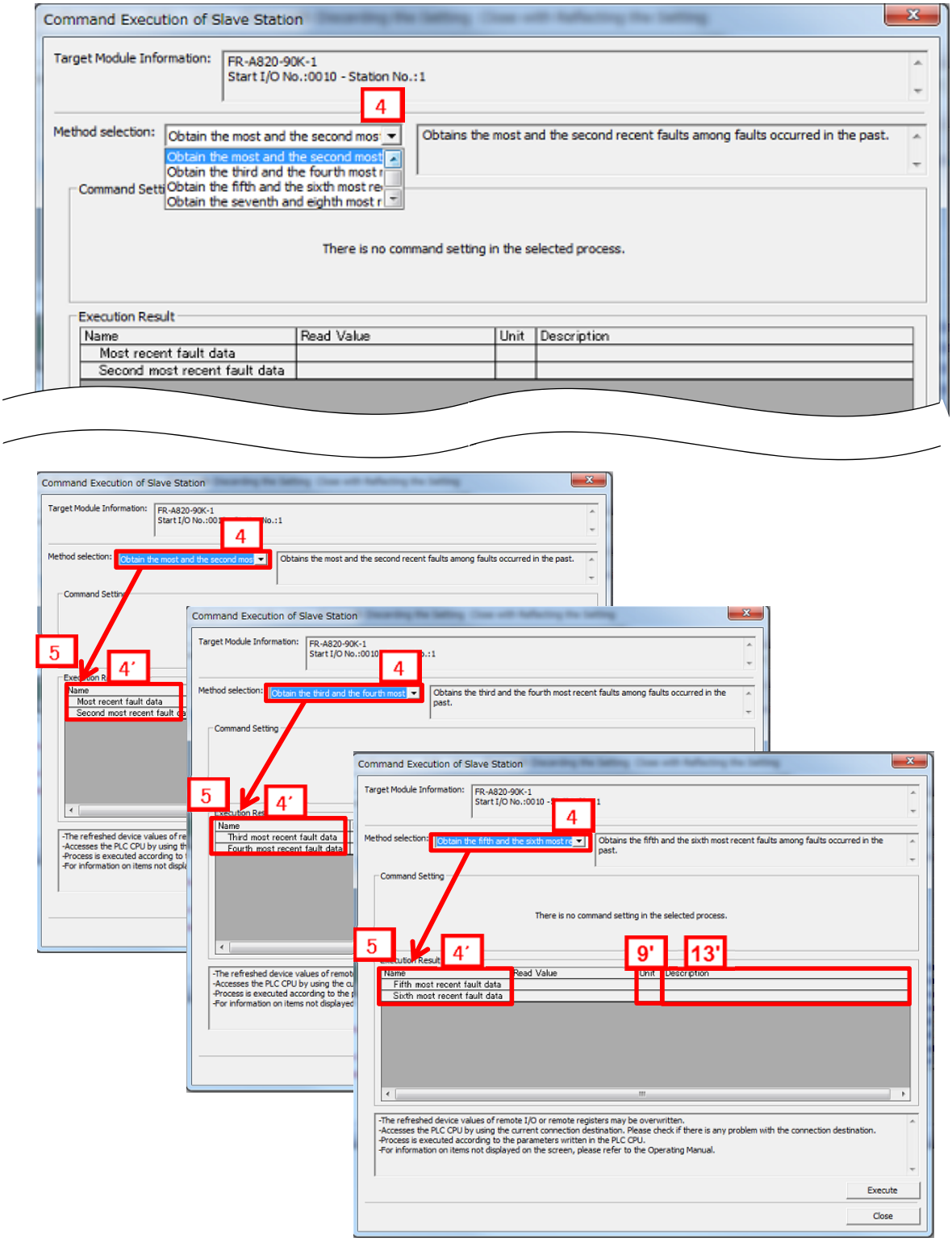


*16



(3) Utility Software - (Parameter Processing Screen of the Slave Station)

The descriptions in CSP+ for the FR-A740-90K are displayed on the utility software as shown below.



(4) Elements Not Being Used on the Screen Despite Being Described in the CSP+ Specification

Table 5.5-3 lists the elements not being used on the screen despite being described in the CSP+ Specification.

Table 5.5-3 Elements Not Being Used on the Utility Software Screen (BLOCK_COMMAND, COMMAND_ARGUMENT)

No.	Element	Application	Required/ Optional
1 1′	LABEL	Used as an identifier.	Required
2 2′	LABEL2	Describes the label for identifying the element. (This item is used when the utility software supports other languages.)	Optional
3 3′	CATEGORY	Reference information. Displayed in the creation support tool.	Optional
6	COMMENT	Reference information. Displayed in the creation support tool.	Optional
8′	MIN_INC	Numerical values in which the user input value is multiplied by the value described here are used during internal processing.	Optional
10′	ACCESS	Used to identify the access information of the target item: "Readable", "Writable", "Readable and Writable", "Auto refreshable", or "Inaccessible". For details on the description of the element, refer to the following. CC-Link Family System Profile Specification BAP-C2008-001 - 4.3.1.1. ACCESS conventions	Required
11′	ASSING	Used to analyze the address and code assigned to the element.	Optional
12′	REF	Used to identify the reference relationship.	Optional

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Prepared in Sep. 2016