HITACHI

Technical Guide

Replacing the S10mini or S10V With the S10VE

S10VE

SEE-2-001 (B)

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S10VE

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Revision History

Revision No.	History (revision details)	Issue date	Remarks
A	New edition	Oct. 2019	
B	The three-slot mounting base (HSC-1730) was added.	Feb. 2020	

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Preface

This manual describes the recommended products and procedures for replacing S10mini-series or S10V-series equipment with S10VE-series equipment. However, this manual does not provide specifications or usage precautions specific to individual modules. When performing the actual replacement, make sure that you thoroughly read the specifications, safety precautions, applicable conditions, warranty and service conditions, and other necessary information in the device's manual before and after replacement. Adequately verify operation before operating the equipment.

Note that the information in this manual might be subject to change without notice.

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1. Overview

1.1 Overview of replacement

This manual explains how to replace S10V-series or S10mini-series equipment with S10VE-series equipment, and describes the relevant procedures and precautions.

Hereafter in this manual, *S10V series* is abbreviated to *S10V*, *S10mini series* to *S10mini*, and *S10VE series* to *S10VE*.

- This manual describes the recommended products for replacement and replacement procedures, but does not provide all the specifications for individual modules. When planning a replacement, always see the manual for the individual module you are using.
- The equipment to be replaced (S10V or S10mini) and the S10VE do not have the exact same operation timing. During replacement, adequately verify operation on the actual machine.
- There is no guarantee that all S10V optional modules can be replaced. Optional modules not supported by the S10VE cannot be replaced. In addition, arithmetic functions or handlers supported by optional modules of S10V are not supported by the S10VE.

1.2 List of S10VE hardware and software packages

1.2.1 List of S10VE hardware

Table 1-1 lists the S10VE hardware.

(1) Mount base, power supply, CPU, and optional modules

Table 1-1 List of S10VE hardware

No.	Name	Model	Description
1	Mount base	HSC-1770	Power supply + RI/O-IF + CPU + I/O × 7 slots
		HSC-1730	Power supply + RI/O-IF + CPU + I/O × 3 slots
2	Power supply module	LQV410	Input voltage: 100 to 120 V AC / 100 to 110 V DC Power consumption: 144 V A when using 100 to 120 V AC : 132 W when using 100 to 110 V DC Output voltage: 5 V DC Output current: Up to 10 A
3	CPU module	LQP600	Ladder subprogram capacity: 512 k steps Basic instruction execution time: 9.4 ns Ethernet × 2 channels built in
4	RI/O-IF module	LQE950	Number of RI/O ports: 2 CPU STOP/RUN contact input RI/O STOP contact input PCs OK contact output
5	ET.NET module	LQE260-E	Transmission rate: 10 Mbps, 100 Mbps 10BASE-T, 100BASE-TX Protocol: TCP/IP, UDP/IP
6	OD.RING module	LQE510-E	Optical duplexed-ring system Maximum distance between stations: 4 km
7	FL.NET module	LQE702-E	FL-net Ver.3.01 Transfer speed: 100 Mbps 100BASE-TX
8	J.NET module	LQE540-E	Master module based on OPCN-1 Transmission speed: 1 Mbps (240 m) to 125 kbps (1 km)
9	D.NET (2-channel) module	LQE770-E	Form of communication: Select from master, slave, and peer Communication power supply: Self-feeding Transfer speed: 125 kbps / 250 kbps / 500 kbps

1.2.2 List of S10VE software packages

Table 1-2 lists the software packages that can be used with the S10VE.

Table 1-2 List of S10VE software packages

No.	Name	Model	Purpose
1	LADDER DIAGRAM SYSTEM/S10VE	S-7898-02	Ladder programming
2	HI-FLOW SYSTEM/S10VE	S-7898-03	HI-FLOW programming
3	CPMS/S10VE	S-7898-05	Operating system for real-time control
4	BACKUP RESTORE SYSTEM/S10VE	S-7898-09	PCs batch-backup tool
5	RPDP/S10VE	S-7898-10	C-mode program development environment
6	NXACP/S10VE	S-7898-11	Autonomous distributed online package
7	NXTOOLS SYSTEM/S10VE	S-7898-13	NXTOOLS parameter setup tool
8	J.NET SYSTEM/S10VE	S-7898-27	LQE540-E parameter setup tool
9	OD.RING SYSTEM/S10VE	S-7898-28	LQE510-E parameter setup tool
10	FL.NET SYSTEM/S10VE	S-7898-30	LQE702-E parameter setup tool
11	D.NET SYSTEM/S10VE	S-7898-31	LQE770-E parameter setup tool
12	Windows-version SuperH RISC engine C/C++ compiler	S-7350-22P	C-mode program compiler
13	BASE SYSTEM/S10VE	S-7898-38	LQP600 basic setup tool
14	BASE SET/S10VE	S-7898-50	Program product that bundles setup tools for mandatory program products and optional modules
15	RCTLNET/S10VE	S-7898-60	Provides network fault analysis commands

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2. Replacing the S10V With the S10VE

2.1 Changing the S10V hardware configuration

To replace the S10V with the S10VE, you need to replace the hardware with alternate hardware. For details on the compatibility of alternate hardware, see *Table 2-2 List of compatibilities between the S10V and S10VE*.

(1) Remote I/O

If you are using remote I/O, you need an I/F (interface) module. I/F modules can be connected with HSC-1000 and HSC-2100 remote I/O units without the need for any further procedures.

(2) Reduction in optional slots (from eight to seven slots)

The S10VE does not feature optional slot 0, thus reducing the number of optional slots to seven. If an I/O module is installed in slot 0 of the S10V CPU unit, that module cannot be transferred to the new hardware as is. To transfer the I/O module, you need to either add an HSC-1000 unit, install the I/O module installed in slot 0 on the HSC-1000 unit, and connect via remote I/O (see Figure 2-2), or change the I/O address. Because you cannot install eight optional modules, revise your system configuration, and ensure that no more than seven optional modules are installed.

■ If an I/O module is not installed in slot 0 of the S10V CPU unit:
- Replace the CPU unit with the S10VE-model hardware.
- Connect the remote I/O to the I/F module.

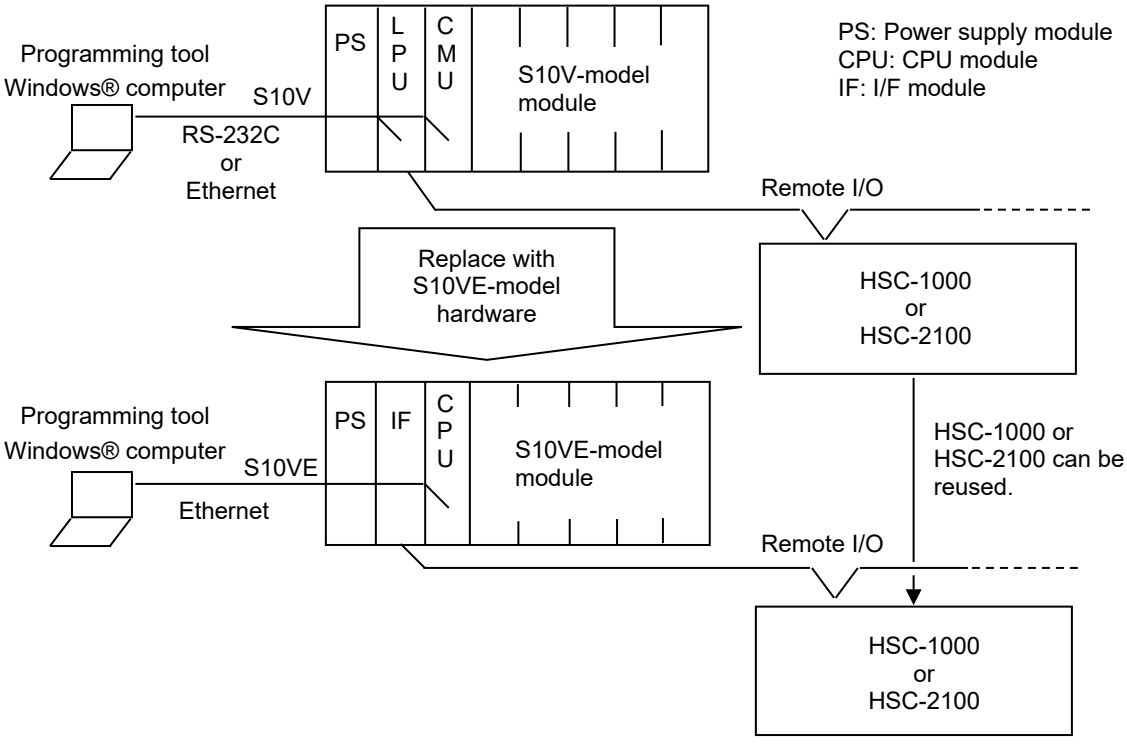


Figure 2-1 Hardware configurations of the S10V and S10VE (with no I/O module installed in slot 0)

■ If an I/O module is installed in slot 0 of the S10V CPU unit:

- Replace the CPU unit with the S10VE-model hardware.
- Install the I/O module of the CPU unit in the HSC-1000 unit, and connect via remote I/O.
- Connect the remote I/O to the I/F module.

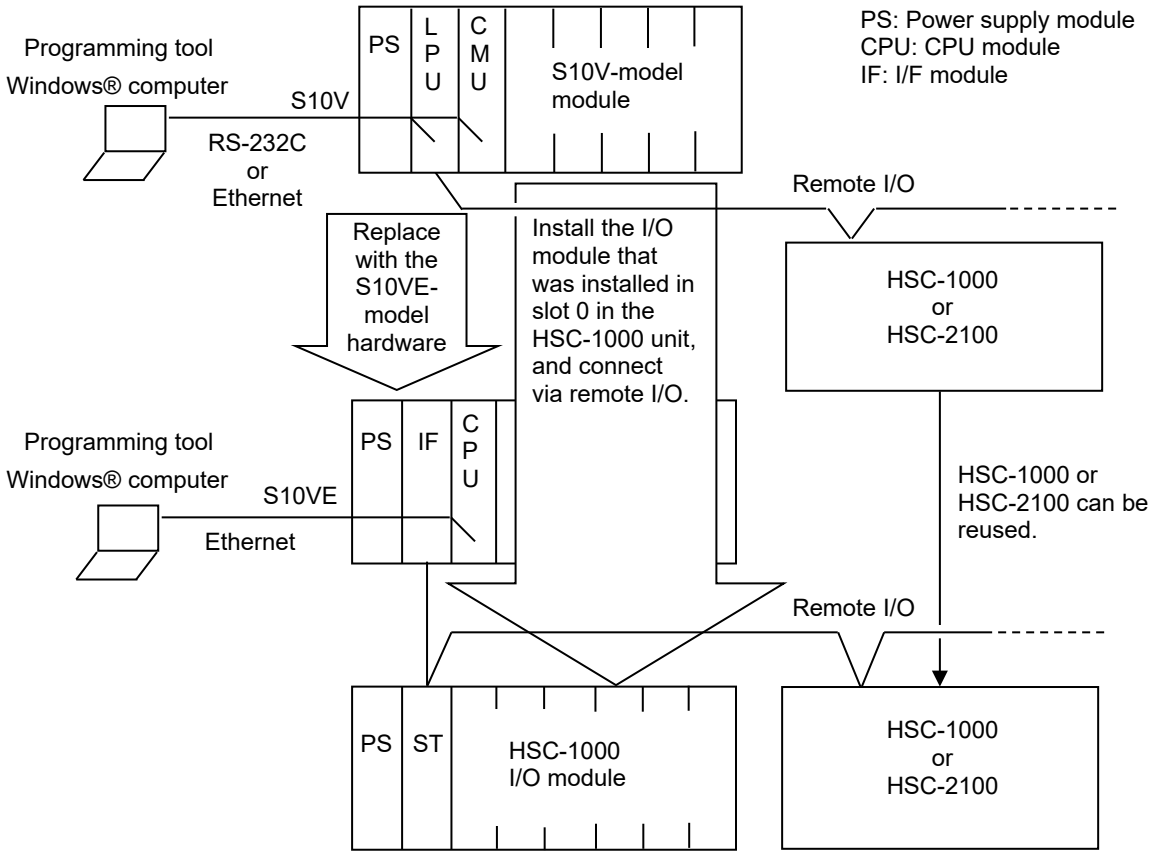


Figure 2-2 Hardware configurations of the S10V and S10VE (with an I/O module installed in slot 0)

(3) Physical transfer

The following shows information relating to the physical transfer from the S10V to the S10VE:

(a) Panel mount dimensions

The panel mount dimensions for the S10VE mount base are the same as for the S10V.

(b) Depth dimension

The depth dimension for the S10VE is up to 55 mm larger than for the S10V. Confirm that there is no interference with the in-panel structure.

(c) Wiring

For details, see Table 2-1. As shown in the preceding (b), the depth dimension is larger, so check the extra length and bend radius of the existing wiring.

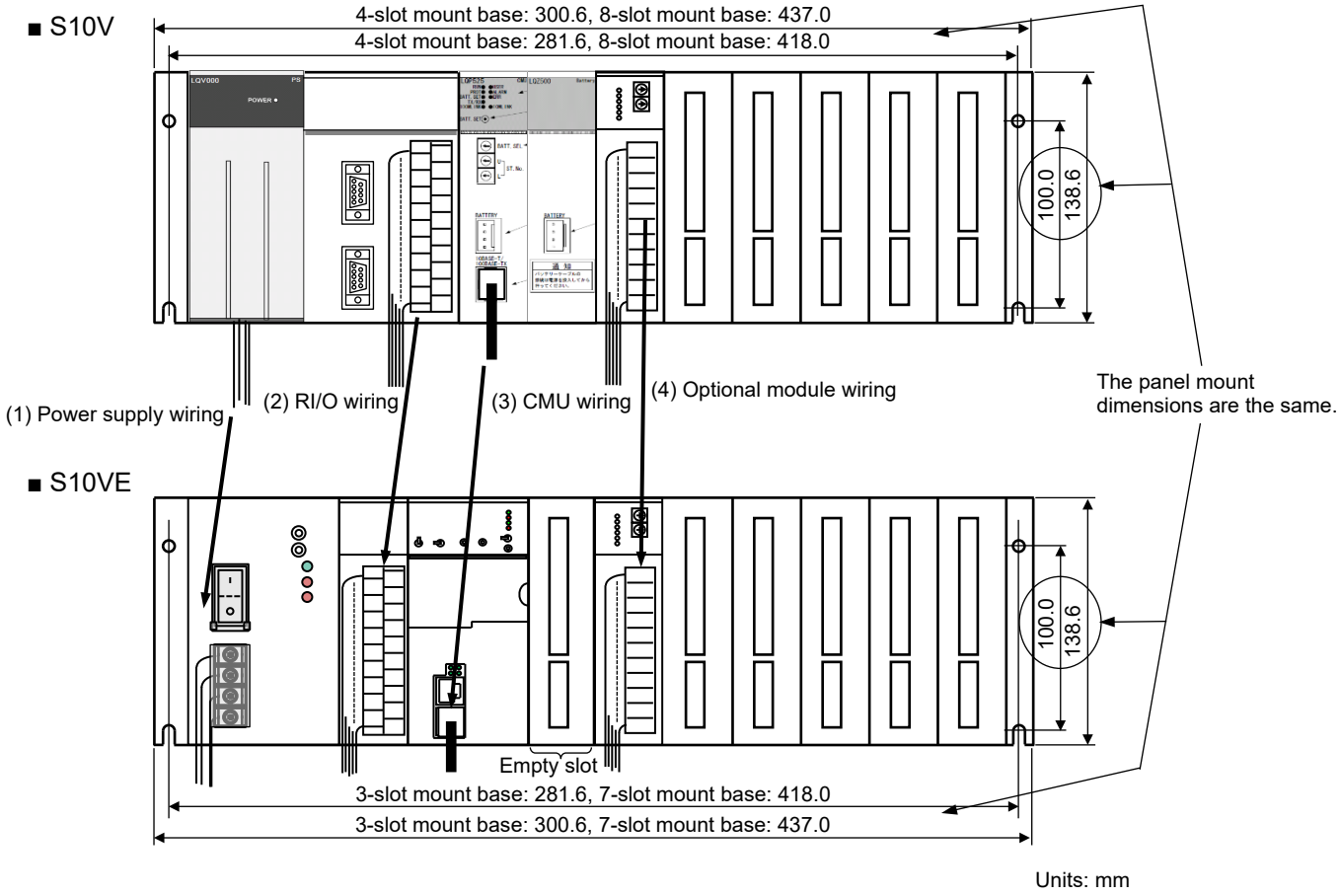


Figure 2-3 Front view of the S10V and S10VE

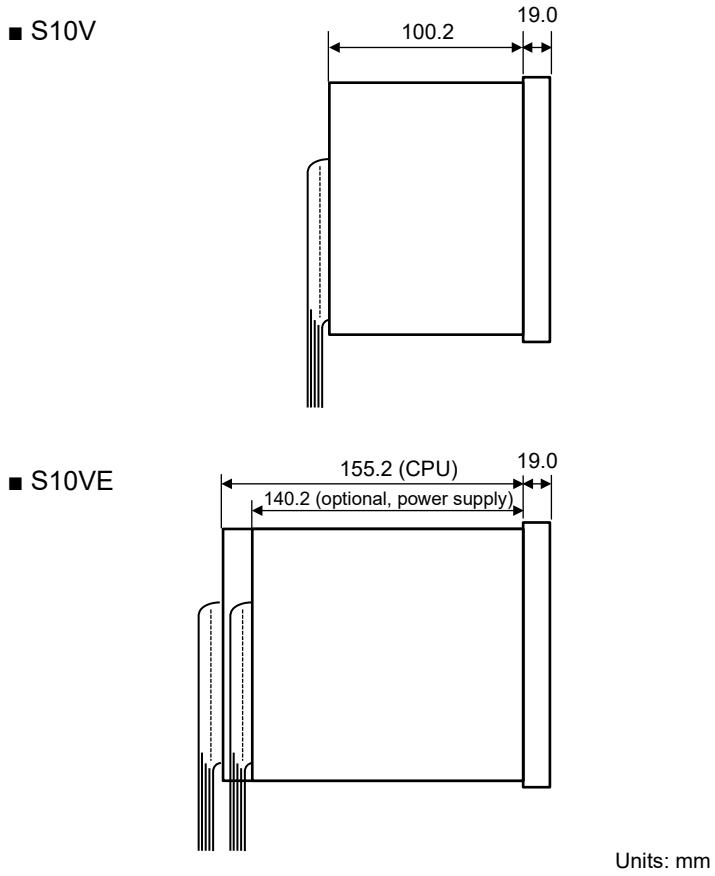


Figure 2-4 Side view of the S10V and S10VE

Table 2-1 Wiring transfer work

No.	Item	Transfer work
(1)	Power supply wiring	Loosen the terminal block screws of the S10V power supply module and remove the wiring. Use the terminal block screws to fix the S10VE power supply module in place. Also, change the ground wiring according to *7.4 Ground wiring* in the *S10VE User's Manual General Description* (manual number SEE-1-001).
(2)	RI/O wiring	Detach the terminal block from the S10V LPU module, and attach the terminal block to the S10VE RI/O-IF. All terminal blocks share the same pin arrangement.
(3)	CMU wiring	Detach the communication cable from the S10V CMU module, and insert the communication cable into the communication port of the S10VE CPU module.
(4)	Optional module wiring	Transfer the wiring of each optional module. As shown in Figure 2-3, you can install an empty slot to reduce the amount of wiring to transfer.

(d) Installing units

Install units on the cubicle after ensuring that the ambient temperature around the unit is 55°C or less (that is, each module's air intake temperature is 55°C or less), as shown in Figure 2-5.

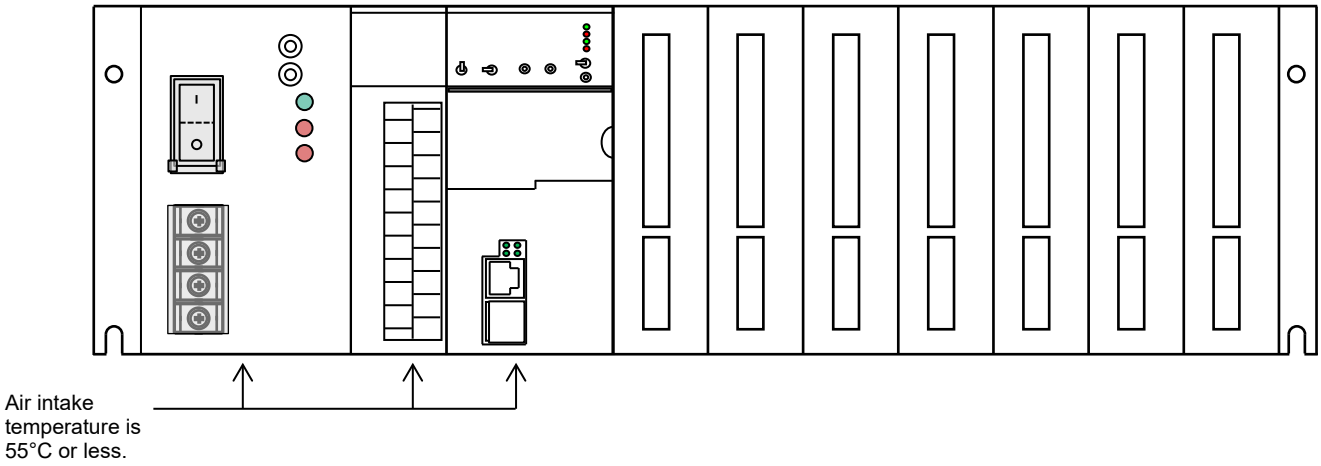


Figure 2-5 Installing units in the S10VE

- Precautions regarding unit installation

  When installing units, note the following precautions:

  - Because the panel mount dimensions are the same as for the S10V, you can change from the S10V to the S10VE simply by replacing units. However, because the depth dimension for the S10VE is 55 mm larger than for the S10V, you need to confirm that there is no interference, for example with the door of the unit's storage panel.
  - Cables used with the S10V (such as the power supply cable, RI/O cable, and Ethernet cable) can be used with the S10VE as is. However, because the depth dimension for the S10VE is larger, you need to perform re-cabling.
  - Before performing cabling, always turn off the switch at the AC/DC power source (MCCB (such as FFB)) to prevent electric shocks during cabling.
  - Do not install S10V optional modules. These are not guaranteed to work as optional modules for the S10VE.
  - The S10VE CPU module, which performs an equivalent function to the S10V LPU+CMU+ET.NET module configuration, also has an equivalent current consumption and heat dissipation. For the S10VE, the interval between unit installations is decided by the temperature of the air intake side of the module. Therefore, confirm that each module's air intake temperature is 55°C or less, as shown in Figure 2-5.
  - When performing wiring, keep high-voltage and low-voltage cables separate (see Figure 2-6).
  - Connect the protective grounding terminal of the power supply module (⏚) to the grounding point. Connect the FG terminals of the RI/O-IF module and optional modules with the FG terminals of the adjacent modules and mount base in a daisy chain, and then connect the end of the daisy chain to the FG terminal of the power supply module.

    Also, keep each grounding wire as short as possible (see Figure 2-6).

- Keep the factory-issued connector caps on any unused slots or unused Ethernet line connectors on the mount base.

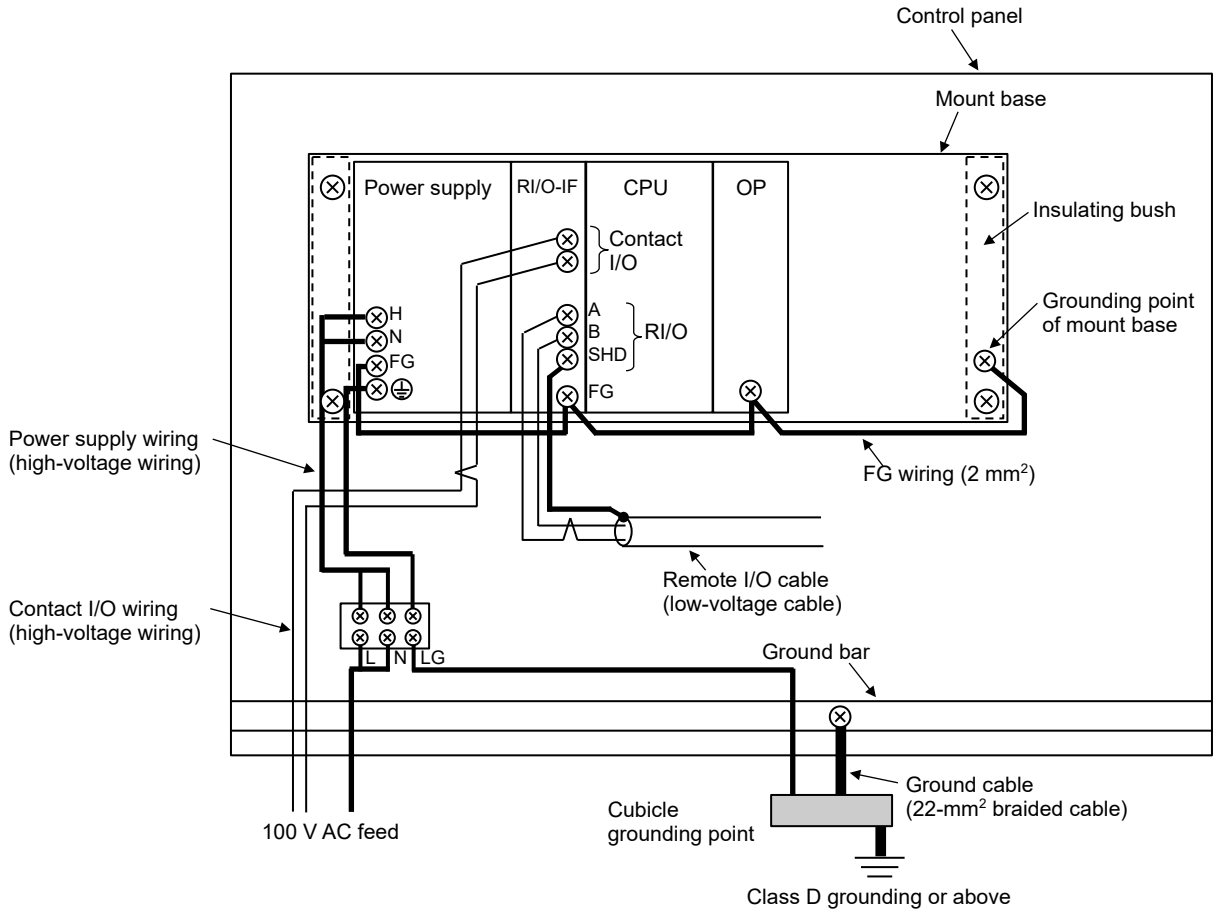


Figure 2-6 Example power supply module and ground wiring

2.2 Hardware compatibility between the S10V and S10VE

Table 2-2 shows the compatibility of hardware between the S10V and S10VE.

Table 2-2 List of compatibilities between the S10V and S10VE (1/2)

No.	Product name	S10V model	S10VE model	Compatibility					Description
				Function	User programs			Settings	
					Ladder	HI-FLOW	C		
1	LPU + CMU	LQP510/ 511/512 + LQP520 /525/527	LQP600	Y	Y	Y	Y	Y	
2	I/F module	—	LQE950	Y	—	—	—	Y	This must be installed when using remote I/O with the I/F module for remote I/O connection.
3	4-slot mount base	HSC-1540	HSC-1730	Y	—	—	—	—	The number of I/O slots has been reduced to three.
4	8-slot mount base	HSC-1580	HSC-1770	Y	—	—	—	—	The number of I/O slots has been reduced to seven.
5	Power supply (100 V AC input)	LQV000	LQV410	Y	—	—	—	—	
6	Power supply (100 V AC input)	LQV010	LQV410	Y	—	—	—	—	
7	Power supply (100 V DC input)	LQV100	LQV410	Y	—	—	—	—	
8	FL.NET (Ver. 2)	LQE502	LQE702-E	Y	—	—	N	Y	(1) For 10BASE-T connections: - Connect with LQE702-E, placing a repeater in between. - Replace the cable with a UTP cable of category 5e or above. (2) For 10BASE-5 connections: - Connect with LQE702-E, placing a 5/T conversion repeater in between. (3) For the S10VE, some PI/O memory addresses have been changed, and there is no extended memory, so user programs must be changed. Handlers cannot be transferred because they are not supported. (For details, see section 2.3.2.5.)
9	FL.NET (Ver. 2)	LQE702	LQE702-E	Y	—	—	N	Y	(1) Cables can be used as is. (2) For the S10VE, some PI/O memory addresses have been changed, and there is no extended memory, so user programs must be changed. Handlers cannot be transferred because they are not supported. (For details, see section 2.3.2.5.)
10	OD.RING (4 km)	LQE510	LQE510-E	Y	—	—	—	Y	For the S10VE, some PI/O memory addresses have been changed, and there is no extended memory, so user programs must be changed. (For details, see section 2.3.2.2.)

Y: Compatible or partially compatible (requires transfer work); N: Not compatible; —: Comparison not applicable

Table 2-2 List of compatibilities between the S10V and S10VE (2/2)

No.	Product name	S10V model	S10VE model	Compatibility					Description
				Function	User programs			Settings	
					Ladder	HI-FLOW	C		
11	ET.NET	LQE520	LQE260-E	Y	—	—	Y	Y	(1) For 10BASE-T connections: Replace the cable with a UTP cable of category 5e or above. (2) For 10BASE-5 connections: Connect with LQE260-E, placing a 5/T conversion repeater in between. (3) Communication functions (socket handlers) have been changed to CPMS macro instructions, so user programs must be changed. (For details, see section 2.3.2.3.)
12	ET.NET	LQE720	LQE260-E	Y	—	—	Y	Y	(1) Replace the cable with a UTP cable of category 5e or higher. (2) Communication functions (socket handlers) have been changed to CPMS macro instructions, so user programs must be changed. (For details, see section 2.3.2.3.)
13	J.NET	LQE540	LQE540-E	Y	—	—	N	Y	(1) Cables can be used as is, but re-wiring must be performed on the terminal block. (2) Parameters must be reconfigured by using a setting tool. For the S10VE, some PI/O memory addresses have been changed, so user programs might have to be changed. Handlers cannot be transferred because they are not supported. (For details, see section 2.3.2.4.)
14	D.NET	LQE570 LQE575	LQE770-E	Y	—	—	—	Y	(1) Cables can be used as is. (2) Parameters must be reconfigured by using a setting tool. For the S10VE, some PI/O memory addresses have been changed, and there is no extended memory, so user programs might have to be changed. (For details, see section 2.3.2.6.)
15	D.NET (2-channel)	LQE770 LQE775	LQE770-E	Y	—	—	—	Y	(1) Cables can be used as is. (2) Parameters must be reconfigured by using a setting tool. For the S10VE, some PI/O memory addresses have been changed, and there is no extended memory, so user programs might have to be changed. (For details, see section 2.3.2.6.)

Y: Compatible or partially compatible (requires transfer work); N: Not compatible; —: Comparison not applicable

2.3 Software compatibility between the S10V and S10VE

2.3.1 Software comparison list

(1) List of user program compatibilities

Table 2-3 lists the user program compatibilities between the S10V and S10VE.

Table 2-3 List of user program compatibilities between the S10V and S10VE

No.	Language type	Compatibility	Differences	Transfer work
1	Ladder chart	Y	- The S10VE does not support system extension arithmetic functions. - In the S10VE, if ladder programs use NE0 to NFF, the area size must be defined in advance. The default size is 8,192 bytes.	Perform conversion by using LADDER DIAGRAM SYSTEM/S10VE.
2	HI-FLOW	Y	- The language specifications are compatible. - The S10VE does not support applied instructions for Ethernet communication. - The S10VE does not support motion control instructions.	Perform conversion by using HI-FLOW SYSTEM/S10VE.
3	C language	Y	- The S10VE does not support handlers of J.NET modules or FL.NET modules. - In the S10VE, the socket handlers of ET.NET modules have been changed from link addresses to macros, and module and channel parameters have been added.	- If addresses are written as absolute addresses in the program, they must be changed. - Recompile the code.

Y: Compatible or partially compatible (requires transfer work); N: Not compatible; —: Comparison not applicable

(2) Correspondence table for programming software

■ Windows-version software packages for the S10V

Table 2-4 shows which software packages for the S10VE correspond to those for the S10V.

Note that the Windows-version software package for the S10VE differs from that for the S10V, and does not work on computers running a 32-bit version of Windows. You need a computer running a 64-bit version of Windows.

Table 2-4 Correspondences between software packages for the S10V and S10VE (1/2)

No.	S10V		Corresponding products for S10VE		Description
	Name	Model	Name	Model	
1	S10V ladder chart system	S-7895-02, S-7895-01, S-7895-50, S-7895-51, S-7895-52, S-7895-72	LADDER DIAGRAM SYSTEM/S10VE	S-7898-02, S-7898-50	
2	S10V HI-FLOW system	S-7895-03, S-7895-01, S-7895-50, S-7895-51, S-7895-52, S-7895-72	HI-FLOW SYSTEM/ S10VE	S-7898-03	
3	—	—	CPMS/S10VE	S-7898-05	In the S10VE, CPMS (the OS for the LPU and CMU) performs downloads not from built-in ROM, but from BASE SYSTEM/S10VE.
4	S10V batch saving and loading system	S-7895-09, S-7895-50, S-7895-51, S-7895-52, S-7895-72	BACKUP RESTORE SYSTEM/S10VE	S-7898-09, S-7898-50	
5	RPDP/S10V system	S-7895-10, S-7895-52, S-7895-63, S-7895-72	RPDP/S10VE	S-7898-10	
6	NX/ACP-S10V system	S-7895-11, S-7895-64	NXACP/S10VE	S-7898-11	
7	NX/Ladder-S10V system	S-7895-12, S-7895-65	—	—	In the S10VE, this system is integrated with NXTOOLS SYSTEM/S10VE.
8	NX/Tools-S10V system	S-7895-13	NXTOOLS SYSTEM/ S10VE	S-7898-13	
9	NX/HOST-S10V system	S-7895-14, S-7895-66	—	—	In the S10VE, this system is integrated with NXTOOLS SYSTEM/S10VE.
10	S10V J.NET system	S-7895-27, S-7895-50, S-7895-51, S-7895-52, S-7895-72	J.NET SYSTEM/ S10VE	S-7898-27, S-7898-50	

—: No products are supported by the S10VE.

Table 2-4 Correspondences between software packages for the S10V and S10VE (2/2)

No.	S10V		Corresponding products for S10VE		Description
	Name	Model	Name	Model	
11	S10V OD.RING/ SD.LINK system	S-7895-28, S-7895-50, S-7895-51, S-7895-52, S-7895-72	OD.RING SYSTEM/ S10VE	S-7898-28, S-7898-50	The S10VE does not support SD.LINK.
12	S10V ET.NET system	S-7895-29, S-7895-50, S-7895-51, S-7895-52, S-7895-72	BASE SYSTEM/ S10VE	S-7898-38, S-7898-50	In the S10VE, the network configuration function has been consolidated with BASE SYSTEM/S10VE.
13	S10V FL.NET system	S-7895-30, S-7895-50, S-7895-51, S-7895-52, S-7895-72	FL.NET SYSTEM/ S10VE	S-7898-30, S-7898-50	
14	S10V D.NET system	S-7895-31, S-7895-50, S-7895-51, S-7895-52, S-7895-72	D.NET SYSTEM/ S10VE	S-7898-31, S-7898-50	
15	S10V base system	S-7895-38, S-7895-50, S-7895-51, S-7895-52, S-7895-72	BASE SYSTEM/ S10VE	S-7898-38, S-7898-50	
16	SuperH RISC engine C/C++ compiler	S-7350-21P (P-J02900W001) S-7350-22P	SuperH RISC engine C/C++ compiler	S-7350-22P	The compiler has been changed.

—: There is no corresponding product in the S10VE.

2.3.2 Transferring individual modules

2.3.2.1 CPU module

(1) Module to be used

The following table shows the languages supported by the S10V and S10VE, and the module needed for each language:

No.	Language	S10V	Transfer to S10VE	Description
1	Ladder language only	LPU module	Y	The S10VE uses the CPU module.
2	HI-FLOW	CMU module	Y	The S10VE uses the CPU module.
3	C language	CMU module	Y	The S10VE uses the CPU module.

Y: Supported

(2) PCs edition settings (configuration by using the tool)

As shown in the following table, the PCs edition settings are different for the S10V and S10VE (in the S10VE, the *Number of ladder RUN delays* and *Optical adapter connection* settings have been added). The converter function of LADDER DIAGRAM SYSTEM/S10VE does not automatically transfer some of the PCs edition settings, so such settings must be entered manually. Area size must be specified before performing ladder conversion.

■ Changing capacity

List of settings and their support for capacity-change transfer

No.	Setting	S10V	Transfer to S10VE	Description
1	PCs-No.	0000 to 9998	N	In the S10VE, *PCs-No.* is set when creating a project. This setting cannot be changed by using a ladder tool.
2	Point-change timer (points)	0 to 2048	Y	
3	Point-change one-shot timer (points)	0 to 256	Y	
4	Point-change counter (points)	Fixed to 256	Y	
5	10-msec timer (T000 to T00F)	Used / Unused	Y	
6	Sequence cycle duration (ms)	1 to 999	Y	
7	Remote I/O point setting (points)	64 / 128 / 256 / 512 / 1,024 / 2,048	Y (Value shown on the left + 1,536)	
8	Ladder WDT timeout value (ms)	50 to 10000	Y	
9	Operation mode when resetting the N coil master	Normal / 0 output	Y	
10	PI/O installation	Installed / Uninstalled	Y	
11	Partition	FIX/FREE	Y	
12	Output HOLD	HOLD/RESET	Y	
13	Number of slot points	16 / 32 / 64 / 128	Y	
14	Area size (ladder programs)	Allocations can be made within the entire capacity (ladder programs + I/O comments + user arithmetic functions), 409,600 bytes.	Y	In the S10VE, the size of ladder programs from NE0 to NFF must be set individually.
15	Area size (I/O comments)		Y	In the S10VE, the I/O comment storage area is specified within a dedicated range of 0 to 2,097,152 bytes.
16	Area size (user arithmetic functions)		Y	In the S10VE, the user arithmetic function storage area is specified within a dedicated range of 0 to 2,097,152 bytes.
17	RI/O operation mode	Ladders not synchronized / Ladders synchronized	Y	

Y: Supported; N: Not supported

■ Analog counter

In the S10VE, the analog counter settings have not been changed, but different notation is used for module names. The conversion function of LADDER DIAGRAM SYSTEM/S10VE converts module names automatically during automatic transfer of analog counter settings.

List of corresponding analog counter module names between the S10V and S10VE

No.	Module name	
	S10V	S10VE
1	PAF300, LQA000/100/310/810, LWA400/430	4-channel AI (12-bit)
2	PAF301, LQA200, LWA421/422/423	4-channel AI (12-bit)
3	PAF309, LWA401/404	4-channel AI (12-bit)
4	PAF320, LWA402	4-channel AI (12-bit)
5	PAF329, LWA403	4-channel AI (12-bit)
6	PAN300B, LQA500, LWA450	4-channel AO (12-bit)
7	PAN301B, LQA600/610, LWA460	4-channel AO (12-bit)
8	PAN309	4-channel AO (12-bit)
9	PAN320B	4-channel AO (12-bit)
10	PAN329	4-channel AO (12-bit)
11	PTF300, LQC000 (MODE 2), LWC401/402	PCT (MODE 2)
12	PTF320, LQC000 (MODE 1), LWC400	PCT (MODE 1)
13	LQA050/150 (MODE 2)	8-channel AI (12-bit) (MODE 2)
14	LQA050/150 (MODE 4) (channels 0 to 3)	8-channel AI (12-bit) (MODE 4) (channels 0 to 3)
15	LQA050/150 (MODE 4) (channels 4 to 7)	8-channel AI (12-bit) (MODE 4) (channels 4 to 7)
16	LWA435	4-channel AI (14-bit)

(3) UFET (user arithmetic functions, editions, and tables) (configuration by using the tool)

The conversion function of LADDER DIAGRAM SYSTEM/S10VE does not automatically transfer UFET, so such settings must be entered manually.

Note that some specifications for user arithmetic functions differ between the S10V and S10VE.

For details, see *2.8.1 Overview of user arithmetic functions*.

(4) Ethernet communication settings

The conversion function of LADDER DIAGRAM SYSTEM/S10VE transfers Ethernet communication settings automatically. While the S10V CMU module and ET.NET module each had one Ethernet communication line, the S10VE CPU module and ET.NET module each have two Ethernet communication lines.

As a result, the post-conversion device name differs between the S10V and S10VE (see the following table).

Note that HI-FLOW SYSTEM/S10VE does not support Ethernet communication settings.

No.	Device name	
	S10V	S10VE
1	CMU	CPU (ET1)
2	ET.NET (main)	ET.NET (main) (CH1)
3	ET.NET (sub)	ET.NET (sub) (CH1)

(5) Arithmetic functions

Arithmetic functions for Ethernet communication instructions are compatible between the S10V CMU module and S10VE CPU module, and the S10V and S10VE ET.NET modules.

List of CPU module arithmetic functions and their support for transfer

No.	Function	S10V (name)	Transfer to S10VE
1	Open TCP connection (client)	TOP	Y
2	Open TCP connection (server)	TPOP	Y
3	Close TCP connection	TCLO	Y
4	Receive TCP	TRCV	Y
5	Send TCP	TSND	Y
6	Open UDP	UOP	Y
7	Close UDP	UCLO	Y
8	Receive UDP	URCV	Y
9	Send UDP	USND	Y

Y: Supported

(6) Battery backup of the CMU module

The S10V CMU module allowed memory to be backed up by connecting the battery even during power outages, but the S10VE memory does not allow battery backup.

As an alternative, the S10VE features built-in nonvolatile memory, MRAM (1 MB). Please change any programs that access data requiring backup during a power outage so that MRAM is used instead.

For MRAM addresses, see *4.1.2 S10VE memory map*.

2.3.2.2 OD.RING module

(1) Parameters (configuration by using the tool)

Reconfigure parameters by using OD.RING SYSTEM/S10VE (S-7898-28).

List of OD.RING module parameters and their support for transfer

No.	Setting	S10V	Transfer to S10VE	Description
1	Bit data forwarding address	XW000 to XWFF0 YW000 to YWFF0 JW000 to JWFF0 QW000 to QWFF0 GW000 to GWFF0 RW000 to RWFF0 EW400 to EWFF0 MW000 to MWFF0 LBW0000 to LBWFFF0	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0
2	Word data forwarding address	FW000 to FWBFF XW000 to XWFF0 YW000 to YWFF0 JW000 to JWFF0 QW000 to QWFF0 GW000 to GWFF0 RW000 to RWFF0 EW400 to EWFF0 MW000 to MWFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0
3	RAS table forwarding address			

Y: Supported

(2) Setting transfer areas when different devices coexist on the same network

When there is an S10mini device on the same network, and extended memory is used as the transfer area for the OD.RING module, if you simply add an S10VE device and perform transfer as usual, the transfer will not reach the correct address on the S10VE device. To correct this, the S10V- and S10VE-side settings allow S10mini extended memory addresses to be mapped to the S10V extended register, allowing transfer between these addresses.

For details, see *4.5.13 Transfer area settings for combination of S10mini and S10V or S10VE* in the *S10VE User's Manual Option OD.RING (LQE510-E)* (manual number SEE-1-101).

2.3.2.3 ET.NET module

(1) Parameters (configuration by using the tool)

Reconfigure the parameters by using the network configuration function of BASE SYSTEM/S10VE (S-7898-38).

List of ET.NET module parameters and their support for transfer

No.	Setting	S10V	Transfer to S10VE
1	IP address setting	Setting required	Y
2	Subnet mask	Setting required	Y
3	Broadcast setting	Setting required	Y
4	Comments	Optional	N
5	Routing information setting	Setting required	Y

Y: Supported; N: Not supported

(2) Arithmetic functions

Arithmetic functions for Ethernet communication instructions are compatible between the S10V and S10VE.

List of ET.NET module arithmetic functions and their support for transfer

No.	Function	S10V (name)	Transfer to S10VE
1	Open TCP connection (client)	TOP	Y
2	Open TCP connection (server)	TPOP	Y
3	Close TCP connection	TCLO	Y
4	Receive TCP	TRCV	Y
5	Send TCP	TSND	Y
6	Open UDP	UOP	Y
7	Close UDP	UCLO	Y
8	Receive UDP	URCV	Y
9	Send UDP	USND	Y

Y: Supported

(3) Socket handlers

In the S10VE, the method of calling socket handlers has been changed from link address specification to macro instruction. The socket handler functions themselves are the same as for the S10V.

List of ET.NET module socket handlers

No.	Function	S10V (name)	Transfer to S10VE	Description
1	Actively open TCP	`tcp_open()`	Y	
2	Passively open TCP	`tcp_popen()`	Y	
3	Accept TCP connection request	`tcp_accept()`	Y	
4	Close TCP connection	`tcp_close()`	Y	
5	Abort TCP connection	`tcp_abort()`	Y	
6	Read TCP socket information	`tcp_getaddr()`	Y	
7	Read TCP connection state	`tcp_stat()`	Y	
8	Send TCP data	`tcp_send()`	Y	
9	Receive TCP data	`tcp_receive()`	Y	
10	Open UDP	`udp_open()`	Y	
11	Close UDP	`udp_close()`	Y	
12	Send UDP data	`udp_send()`	Y	
13	Receive UDP data	`udp_receive()`	Y	
14	Read routing information	`route_list()`	Y	
15	Delete routing information	`route_del()`	Y	
16	Register routing information	`route_add()`	Y	
17	Read ARP information	`arp_list()`	Y	
18	Delete ARP information	`arp_del()`	Y	
19	Register ARP information	`arp_add()`	Y	
20	Read current local station information	`getconfig()`	Y	The host name and physical address cannot be acquired.

Y: Supported

(4) Precautions on transferring C-mode programs of socket handlers

The S10V and S10VE have different methods of calling socket handlers, so programs must be modified accordingly. For how to use S10VE socket handlers, see *1.6 ET.NET Socket Handler* in *PART 2* in the *S10VE Software Manual CPMS General Description and Macro Specifications* (manual number SEE-3-201).

2.3.2.4 JEMA (OPCN-1) Netmaster J.NET module

(1) Parameters (configuration by using the tool)

Reconfigure the parameters by using J.NET SYSTEM/S10VE (S-7898-27).

List of settings (1/2)

No.	Setting			S10V	Transfer to S10VE	Description
1	Editing system information	NET1 refresh cycle setting		3 to 3000 ms	Y	
2		NET2 refresh cycle setting				
3		NET1 status table address setting		X000 to XFFF Y000 to YF80 J000 to JF80 Q000 to QFFF G000 to GFFF R000 to RFFF E400 to EFFF M000 to MFFF	Y	In the S10VE, the following register ranges have been extended: X0000 to XFFFF Y0000 to YFFFF Q0000 to QFFFF E0400 to EFFFF M0000 to MFFFF
4		NET2 status table address setting				
5	Editing NET1 information Editing NET2 information	ID selection		0x01 to 0x1F	Y	
6		Station number setting		0x01 to 0x7F	Y	
7		Station type setting		AUTO I/O I/O+DR/DW DR/DW J.STATION (EXTENDED) J.STATION (STANDARD)	Y	
8		Refresh cycle setting		0 to 65535	Y	
9		I/O area setting	I/O byte setting	0x01 to 0x100	Y	
10			I/O address setting	FW000 to FWBFF XW000 to XWFF0 YW000 to YWFF0 JW000 to JWFF0 QW000 to QWFF0 GW000 to GWFF0 RW000 to RWFF0 EW400 to EWFF0 MW000 to MWFF0	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0
11		Transfer area setting	Transfer byte setting	0x01 to 0x80	Y	
12			Forwarding address setting	0x00 to 0xFF	Y	

Y: Supported

(Continued on the next page)

List of settings (2/2)

No.	Setting			S10V	Transfer to S10VE	Description
13	Editing NET1 information Editing NET2 information	Slot setting	Slot number	0x00 to 0xF	Y	
14			I/O type setting	DI DO AI AO S10 AI (4-channel) S10 AO (4-channel) S10 PCT (pulse counter)	Y	
15			Transfer bytes	0x01 to 0x100	Y	
16			Forwarding addresses	FW000 to FWBFF XW000 to XWFF0 YW000 to YWFF0 JW000 to JWFF0 QW000 to QWFF0 GW000 to GWFF0 RW000 to RWFF0 EW400 to EWFF0 MW000 to MWFF0	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0

Y: Supported

List of LGB table settings (1/2)

No.	Setting	Setting value	S10V	Transfer to S10VE
1	Protocol type	Unused	Can be set	N
		Non-procedural (RS-232C)		
2	Transmission frame	ST+7DT+EP+2SP	Can be set	N
		ST+7DT+OP+2SP		
		ST+7DT+EP+1SP		
		ST+7DT+OP+1SP		
		ST+7DT+2SP		
		ST+7DT+1SP		
		ST+8DT+EP+2SP		
		ST+8DT+OP+2SP		
		ST+8DT+EP+1SP		
		ST+8DT+OP+1SP		
		ST+8DT+2SP		
		ST+8DT+1SP		
3	Transmission speed (BAUD RATE)	150 (bps)	Can be set	N
		300 (bps)		
		600 (bps)		
		1200 (bps)		
		2400 (bps)		
		4800 (bps)		
		9600 (bps)		
		19200 (bps)		

Y: Supported; N: Not supported

(Continued on the next page)

List of LGB table settings (2/2)

No.	Setting	Setting value	S10V	Transfer to S10VE
4	Data conversion mode	ASCII	Can be set	N
		Binary		
5	Idling detection time	00001 to 32767 (*10 ms)	Can be set	N
6	Start code	No start code	Can be set	N
		1 start code		
		2 start codes		
		3 start codes		
		4 start codes		
7	End code	No start code	Can be set	N
		1 start code		
		2 start codes		
		3 start codes		
		4 start codes		
8	Block check character	No BCC	Can be set	N
		Horizontal even-number parity check		
		Horizontal odd-number parity check		
9	Transmission delay time	No data transmission delay	Can be set	N
		00001 to 32767 (*10 ms)		
10	Transmission suspend / resume code	No suspend or resume codes	Can be set	N
		1 suspend code, 1 resume code		
		1 suspend code, 2 resume codes		
		2 suspend codes, 1 resume code		
		2 suspend codes, 2 resume codes		
11	Transmission suspension monitoring time period	No suspension monitoring for text transmissions	Can be set	N
		00001 to 32767 (*10 ms)		
12	Output signal control	No control	Can be set	N
		RS and ER control provided		
13	Input signal check	No checks	Can be set	N
		CS, DR, and CD checks provided		
14	Reception task number	No reception task registered	Can be set	N
		001 to 255 (task number)		
15	Reception task initiation factor	Unused	Can be set	N
		01 to 32 (initiation factor)		

Y: Supported; N: Not supported

(2) Arithmetic functions

The S10VE does not support arithmetic functions. Arithmetic functions cannot be replaced.

List of J.NET arithmetic functions and their support for transfer

No.	Function	S10V (name)	Transfer to S10VE
1	Request service	JCMD	N
2	Check service	JRSP	N
3	Send data	JSND	N
4	Receive data	JRCV	N

Y: Supported; N: Not supported

(3) C-mode subroutines

The S10VE does not support C-mode subroutines. C-mode subroutines cannot be replaced.

List of J.NET C-mode subroutines and their support for transfer

No.	Function	S10V (name)	Transfer to S10VE
1	Request service	J_CMD	N
2	Check service	J_RSP	N
3	Send data	J_SND	N
4	Receive data	J_RCV	N

Y: Supported; N: Not supported

2.3.2.5 FL.NET module

(1) FL-net protocol version

The FL-net protocol comes in two versions, Ver. 1.00 and Ver. 2.00, which are incompatible with each other. Therefore, a device using Ver. 1.00 cannot be connected with a device using Ver. 2.00. FL.NET modules also support different protocol versions depending on the model, so transfer to a module that uses the same protocol version as the old module. The following shows the supported FL-net protocol version for each model.

List of FL-net protocol versions and their support for transfer

No.	FL-net protocol version	S10V	Transfer to S10VE	Description
1	Ver. 1.00	LQE500	N	The S10VE does not support Ver. 1.00.
2	Ver. 2.00	LQE502	Y	

Y: Supported; N: Not supported

(2) Parameters (configuration by using the tool)

Reconfigure the parameters by using FL.NET SYSTEM/S10VE (S-7898-30).

List of settings (1/2)

No.	Setting		S10V	Transfer to S10VE	Description
1	Local node information	Node number	1 to 254	Y	
2		Area 1 address	0 to 0x1FF	Y	
3		Area 1 number of words	0 to 0x200	Y	
4		Area 2 address	0 to 0x1FFF	Y	
5		Area 2 number of words	0 to 0x2000	Y	
6		Minimum allowable frame interval	0 to 50	Y	
7		Node name	Within 10 halfwidth alphanumeric characters	Y	
8		Node number (PCs allocation)	#1	Y	
9		Area 1 address (PCs allocation)		Y	
10		Area 2 address (PCs allocation)		Y	
11		FA link state (PCs allocation)		Y	
12		Local node state (PCs allocation)		Y	
13		Transparent reception initiation task	0 to 255	N	These cannot be set because transparent message reception is not supported.
14		Transparent reception initiation factor	0 to 32	N	
15		Transparent reception flag area	#1	N	
16		IP address	Classes A to C	Y	The S10VE supports class C only.
17		Subnet mask	255.0.0.0 to 255.255.255.0	N	In the S10VE, this is fixed to 255.255.255.0.

Y: Supported; N: Not supported

List of settings (2/2)

No.	Setting		S10V	Transfer to S10VE	Description
18	Other node information	Area 1 address (PCs allocation)	#1	Y	
19		Area 1 number of words	0 to 0x200	Y	
20		Area 2 address (PCs allocation)	#1	Y	
21		Area 2 number of words	0 to 0x2000	Y	
22		FA link state (PCs allocation)		Y	
23		Upper layer state (PCs allocation)		Y	

Y: Supported; N: Not supported

#1: The following shows the address ranges that can be set.

List of address ranges that can be set

S10V	S10VE
XW000 to XWFF0	XW0000 to XWFFF0
YW000 to YWFF0	YW0000 to YWFFF0
JW000 to JWFF0	JW000 to JWFF0
QW000 to QWFF0	QW0000 to QWFFF0
GW000 to GWFF0	GW000 to GWFF0
RW000 to RWFF0	RW000 to RWFF0
EW400 to EWFF0	EW0400 to EWFFF0
MW000 to MWFF0	MW0000 to MWFFF0
DW000 to DWFFF	DW000 to DWFFF
FW000 to FWBFF	FW000 to FWBFF

(3) Arithmetic functions

The S10VE does not support arithmetic functions. Arithmetic functions cannot be replaced.

List of FL.NET arithmetic functions and their support for transfer

No.	Function	S10V (name)	Transfer to S10VE
1	Message send request (main)	FLCM	N
2	Message send request (sub)	FLCS	N

Y: Supported; N: Not supported

(4) C-mode subroutines

The S10VE does not support C-mode subroutines. C-mode subroutines cannot be replaced.

List of FL.NET C-mode subroutines and their support for transfer

No.	Function	S10V (name)	Transfer to S10VE
1	Issue word block read request	`wordrd()`	N
2	Issue word block write request	`wordwt()`	N
3	Issue network parameter read request	`parard()`	N
4	Issue network parameter write request	`parawt()`	N
5	Issue stop request	`reqstop()`	N
6	Issue run request	`reqrun()`	N
7	Issue read communication log data request	`logrd()`	N
8	Issue clear communication log data request	`logclr()`	N
9	Issue message reply request	`mesret()`	N
10	Specified task control request (transparency support developed by Hitachi)	`reqmacro()`	N
11	Transparent message receive request (transparency support developed by Hitachi)	`toukaread()`	N
12	Transparent message send request (transparency support developed by Hitachi)	`toukasend()`	N
13	Common memory offset function request	`comoffset()`	N

Y: Supported; N: Not supported

2.3.2.6 D.NET module

(1) Parameters

Reconfigure the parameters by using D.NET SYSTEM/S10VE (S-7898-31).

List of settings for master and peer modes (1/3)

No.	Setting		S10V	Transfer to S10VE	Description
1	Enable channels		Enabled, Disabled	Y	
2	Node address		0 to 63	Y	
3	Transfer speed		125 kbps 250 kbps 500 kbps	Y	
4	Peer refresh time		3 to 1000 ms	Y	
5	Master / slave refresh time		3 to 1000 ms	Y	
6	Slave timeout detection register		XW000 to XWFC0 YW000 to YWFC0 JW000 to JWFC0 QW000 to QWFC0 GW000 to GWFC0 RW000 to RWFC0 EW400 to EWFC0 MW000 to MWFC0 LBW0000 to LBWFFC0	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFC0 YW0000 to YWFFC0 QW0000 to QWFFC0 EW0400 to EWFFC0 MW0000 to MWFFC0
7	PCs OK signal link setting		Enabled, Disabled	N	
8	Station parameter settings	Communication type	Unused Peer send Peer receive Poll Bit Strobe send Bit Strobe receive	Y	
9		MACID	0x00 to 0x3F	Y	
10		Message ID	0x0 to 0xF	Y	
11		Input address	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0

Y: Supported

(Continued on the next page)

List of settings for master and peer modes (2/3)

No.	Setting		S10V	Transfer to S10VE	Description
12	Station parameter settings	Output address	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 SW000 to SWBF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 SW0000 to SWBFF0
13		Number of I/O bytes	0x00 to 0x100 (peer send / receive, Poll), 0 or 8 (Bit Strobe send), 0 to 8 (Bit Strobe receive)	Y	
14		Bit / byte endian conversion mode	Enabled, Disabled	Y	
15		Connection timeout monitoring	24 to 60000 ms	Y	
16		Collection of D.Station status information	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0

Y: Supported

(Continued on the next page)

List of settings for master and peer modes (3/3)

No.	Setting		S10V	Transfer to S10VE	Description
17	D.Station data format conversion settings	Module	Unused AI (with or without sign extension) AO pulse counter (with or without sign extension)	Y	
18		I/O addresses	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0
19		Number of I/O bytes	0x01 to 0x40	Y	
20		Allocated data areas	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0

Y: Supported

List of settings for slave mode

No.	Setting		S10V	Transfer to S10VE	Description
1	Enable channels		Enabled, Disabled	Y	
2	Node address		0 to 63	Y	
3	Transfer speed		125 kbps 250 kbps 500 kbps	Y	
4	Station parameter settings	Communication type	Unused Poll	Y	
5		I/O addresses	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0
6		Number of I/O bytes	0x000 to 0x100	Y	
7		Bit / byte endian conversion mode	Enabled, Disabled	Y	
8	Collection parameters for RI/O timeout information	RI/O timeout information addresses	YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF	Y	In the S10VE, the following register ranges have been extended: YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0
9		Station number	0x00 to 0x7F	Y	

Y: Supported

2.3.3 Transferring NXTOOLS parameters

(1) Parameters

Reconfigure the parameters by using NXTOOLS SYSTEM/S10VE (S-7898-13).

List of NXTOOLS parameter settings (1/2)

No.	Setting			S10V	Transfer to S10VE	Description
1	Local DF settings	Local	DF number	1 to 255	Y	In the S10VE, start by configuring the ET1 / local DF settings.
2			Node name	Within 9 ASCII characters	Y	
3			Logical node number	1 to 255	Y	
4			Alive message timeout period (seconds)	1 to 43200	Y	
5			Alive message send cycle (seconds)	1 to 3600	Y	
6			Alive message destination port number	1 to 65535	Y	
7			Local port number for sending	1 to 65535	Y	
8			Sending MCG number	0 to 255	Y	
9		TCD settings	TCD number	0 to 59999	Y	
10			Number of sent bytes	0 to 1408	Y	
11			Sending address	XW000 to FF0 JW000 to FF0 YW000 to FF0 QW000 to FF0 GW000 to FF0 RW000 to FF0 MW000 to FF0 FW000 to BFC DW000 to FFF LBW0000 to FFF0 LWW0000 to FFFF LXW0000 to 3FFF 4B2000 to 4CAFFE 414400 to 42D3FE 1000000 to /10FFFFE	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 MW0000 to MWFFF0
12			During-send register	J000 to JFFF Y000 to YFFF Q000 to QFFF G000 to GFFF R000 to RFFF M000 to MFFF LB0000 to LBFFFF	Y	In the S10VE, the following register ranges have been extended: Y0000 to YFFFF Q0000 to QFFFF M0000 to MFFFF
13			Number of received bytes	0 to 1408	Y	
14			Receive completion register	J000 to JFFF Y000 to YFFF Q000 to QFFF G000 to GFFF R000 to RFFF M000 to MFFF LB0000 to LBFFFF	Y	In the S10VE, the following register ranges have been extended: Y0000 to YFFFF Q0000 to QFFFF M0000 to MFFFF

Y: Supported

List of NXTOOLS parameter settings (2/2)

No.	Setting				S10V	Transfer to S10VE	Description
15	Remote DF settings	Remote	DF number		1 to 255	Y	In the S10VE, start by configuring the ET1 / remote DF settings.
16			Remote destination LAN network address		Network address (classes A, B, and C)	Y	
17			Remote destination LAN network mask		Subnet mask	Y	
18			Sending MCG number		0 to 255	Y	
19			Sending port number		1 to 65535	Y	
20		TCD settings	TCD number		0 to 59999	Y	
21			Number of sent bytes		0 to 1408	Y	
22			Sending addresses		XW000 to FF0 JW000 to FF0 YW000 to FF0 QW000 to FF0 GW000 to FF0 RW000 to FF0 MW000 to FF0 FW000 to BFC DW000 to FFF LBW0000 to FFF0 LWW0000 to FFFF LXW0000 to 3FFF 4B2000 to 4CAFFE 414400 to 42D3FE 1000000 to /10FFFFE	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 MW0000 to MWFFF0
23			During-send register		J000 to JFFF Y000 to YFFF Q000 to QFFF G000 to GFFF R000 to RFFF M000 to MFFF LB0000 to LBFFFF	Y	In the S10VE, the following register ranges have been extended: Y0000 to YFFFF Q0000 to QFFFF M0000 to MFFFF
24	Number of retries / Receive wait time settings		Number of retries	Unlimited	Enabled, Disabled	Y	
25				None	Enabled, Disabled	Y	
26				Specified number	1 to 2147483647	Y	

Y: Supported

2.4 Replacement procedure

2.4.1 Overall procedure

When replacing the S10V with the S10VE, perform the following procedures.

Procedure number	Workflow	Description	Reference location
1	Start ↓ Check hardware configuration	Check the modules installed in the system to be replaced.	—
2	↓ Check compatibility of installed modules	Check the compatibility of the installed modules. Sometimes, there are no compatible modules, so consider the post-transfer system configuration.	*2.2 Hardware compatibility between the S10V and S10VE*
3	↓ Save programs from the S10V	Use a programming tool to save the following programs from the S10V (actual machine): - Ladder programs - HI-FLOW programs Do not save any settings for optional modules.	*2.4.2 Saving programs from the S10V*
4	↓ Replace hardware	Attach the S10VE CPU unit and I/O unit to the control panel, and perform wiring for the remote I/O, power supply module, and external I/O. Also perform wiring for optional modules.	—
5	↓ Convert, modify, and change programs (ladder / HI-FLOW / C language)	Use the S10VE software package to convert the files saved in procedure 3 to be used with the S10VE. Modify or change the PI/O addresses and similar information for the converted files. Modify or change the C-language source programs, and compile them.	*2.4.3 Program transfer procedure*
6	↓ Load programs	Load the modified or changed programs in the S10VE.	—
7	↓ Reconfigure optional module setting parameters	Optional module setting parameters cannot be transferred automatically, so reconfigure the parameters by using each optional module's setup tool.	*2.3.2 Transferring individual modules*
8	↓ Operation verification ↓ End	Verify that operations run correctly in the S10VE. The S10V and S10VE do not have the exact same operation timing, so adequately verify operation before running your equipment.	—

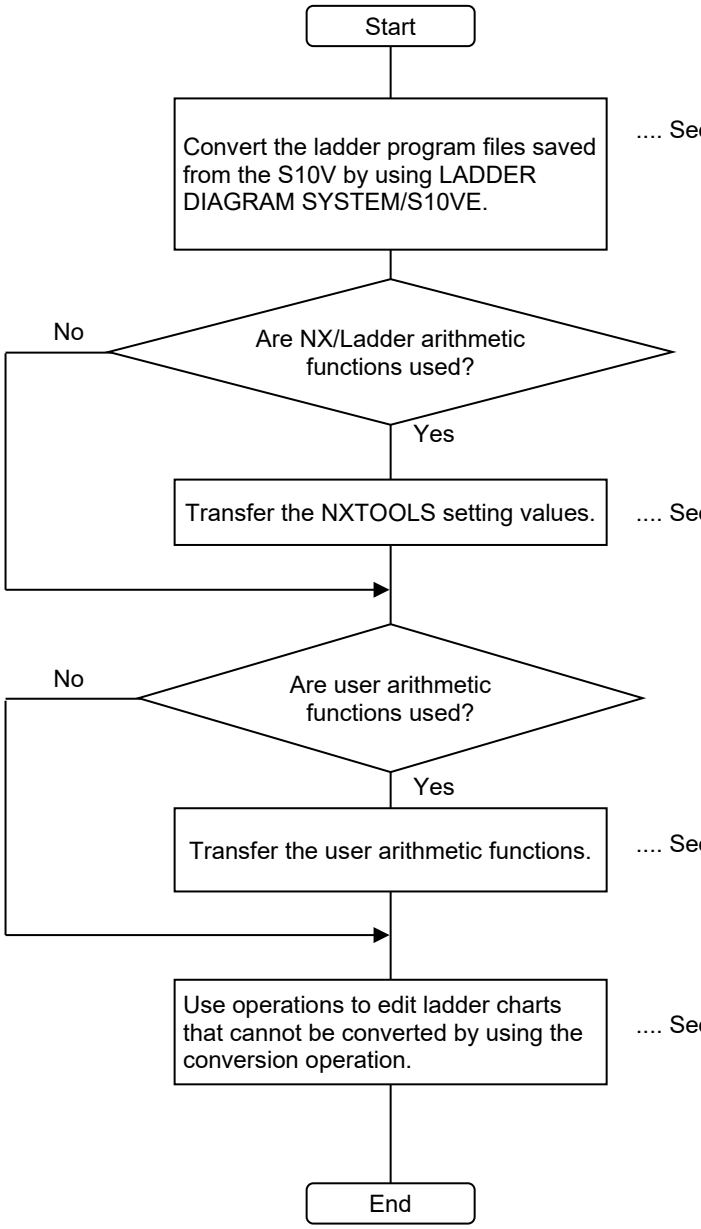
2.4.2 Saving programs from the S10V

Receive programs from the S10V (actual machine) and save them as files.

No.	Language type	Save method	Required software
1	Ladder	(1) Use the ladder chart system to receive programs from the actual machine. (2) Save the programs received using the ladder chart system to files. Save to the file type `Instruction file` (`*.vcm`).	- S10V ladder chart system (model: S-7895-02)
2	HI-FLOW	(1) Use the HI-FLOW system to receive programs from the actual machine. (2) In the **Build** menu of the HI-FLOW system, select **Rebuild**. The source files are created in the `temps` folder.	- S10V HI-FLOW system (S-7895-03)

2.4.3 Program transfer procedure

(1) Ladder program transfer procedure



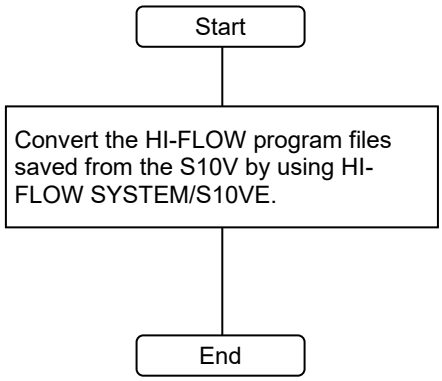
.... See *2.5 Conversion by using the ladder chart system*.

.... See *2.10 Transferring NXTOOLS setting values*.

.... See *2.8 User arithmetic functions*.

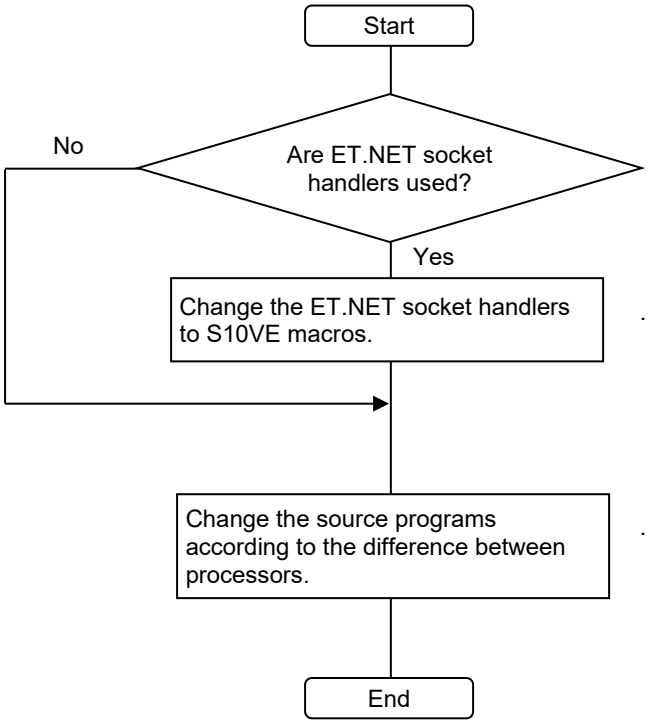
.... See *2.5 Conversion by using the ladder chart system.*

(2) HI-FLOW program transfer procedure



.... See *2.6 Conversion by using the HI-FLOW system*.

(3) C-language program transfer procedure



.... See *2.7 Transferring C-language programs*.

.... See *2.7 Transferring C-language programs*.

2.5 Conversion by using the ladder chart system

2.5.1 Ladder program conversion procedure

For the procedure for converting S10V ladder programs to S10VE ladder programs, see *4.7.16 Conversion* in the *S10VE Software Manual Operation Ladder Diagram System for Windows®* (manual number SEE-3-131).

2.5.2 Precautions regarding transfer

The S10VE has improved processing performance compared to the S10V. This reduces the processing time of ladder programs, which might cause changes in timing. Before running your equipment after transfer, adequately verify its operation.

2.6 Conversion by using the HI-FLOW system

2.6.1 Conversion operation procedure for HI-FLOW programs

To convert S10V HI-FLOW programs to S10VE HI-FLOW programs, see either *4.7.9 Converting the S10V files* or *4.15.2 Converting the S10V files* in the *S10VE Software Manual Operation HI-FLOW for Windows®* (manual number SEE-3-132).

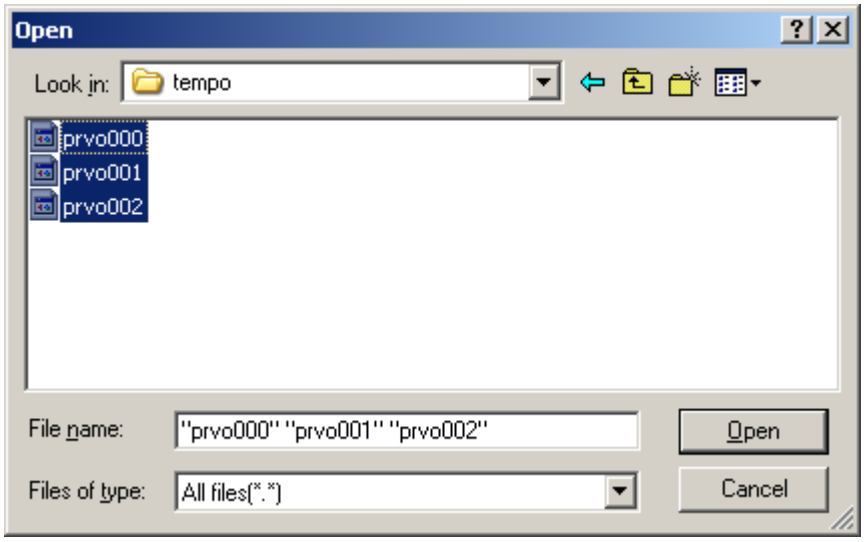
2.6.2 Source file creation procedure

If there are no source files in the folder where HI-FLOW programs created in the S10V are stored (there is no `temps` folder), create the source files according to the following procedure. If there are source files in the storage folder, you do not need to follow this procedure.

(1) Start the S10V HI-FLOW system.

(2) From the **Utilities** menu, select **Converter**.

(3) A file selection window appears (see the following figure).



(4) HI-FLOW programs created in the S10V have object files stored under the name `prvo`*XXX* (where *XXX* is the HI-FLOW process number) in the `tempo` folder in the HI-FLOW program storage folder. Select the object files of the processes whose source files you want to create. (Normally, all files are selected.)

(5) Click the **Open** button. The file selection window disappears. The selected process is loaded, and the HI-FLOW process sheet appears.

(6) In the **Build** menu, select **Rebuild**. The loaded process is compiled.

Source files are created for the S10V HI-FLOW programs.

2.6.3 Precautions regarding operation

- The conversion function does not apply to system edition information or system bit assignment information. If such information has been changed from the defaults, reconfigure it by using HI-FLOW SYSTEM/S10VE. For the procedures for configuring system edition information and system bit assignment information, see *4.7.4 Editing the operating environment of PCs* and *4.7.7 Laying out the system bits* in the *S10VE Software Manual Operation HI-FLOW for Windows®* (manual number SEE-3-132).
- The S10VE allocates a wider range for the User area range in the system edition information than the S10V does. Therefore, there is no need to change the default information.
  The S10V allocates a standard area of 4 MB (for the system: 0.5 MB, for users: 3.5 MB).
  The S10VE allocates a standard area of 8 MB (for the system: 0.5 MB, for users: 7.5 MB).
- The conversion function does not apply to PI/O comments. Transfer PI/O comments according to the procedure shown in *2.6.4 Transferring PI/O comments*.

2.6.4 Transferring PI/O comments

Transfer PI/O comments by performing the following procedure:

(1) In the S10V HI-FLOW system, go to the **Edit** menu and select **PI/O comments**. The Edit PI/O Comments window appears.
  Click the **Save** button. Specify a file name and save the PI/O comments to a file.

(2) In HI-FLOW SYSTEM/S10VE, go to the **Edit** menu and select **PI/O comments**. The Edit PI/O Comments window appears.
  Click the **Load** button. Specify the file name you used to save the file in step (1). The PI/O comments are loaded.

(3) In the Edit PI/O Comments window, click the **Close** button.

(4) For how to apply the loaded PI/O comments to HI-FLOW programs, see *4.3.6 Commenting* in the *S10VE Software Manual Operation HI-FLOW for Windows®* (manual number SEE-3-132).

2.6.5 Precautions regarding transfer

- Modifying access that specifies an absolute address
  If access is performed by specifying an absolute address, addresses might need to be modified according to the differences in memory mapping between the S10V and S10VE.

  Access by specifying an absolute address cannot be modified by using the conversion function. HI-FLOW programs must be modified by the user.

2.7 Transferring C-language programs

2.7.1 Modifying access that specifies an absolute address

If the C-language program uses global (GLB) variables, use the GLB name specified by using the `svdfs` command, not the absolute address. For details, see the *S10VE Software Manual Operation RPDP for Windows®* (manual number SEE-3-133).

2.7.2 Alignment

Alignment refers to boundary addresses where data is placed. To improve speed, the S10V and S10VE adopt an SH microcomputer using an RISC processor.

For the S10V and S10VE:

The S10V and S10VE adopt natural alignment. 1-byte data (char) must be placed at a byte boundary, 2-byte data (short) must be placed at a word boundary, and 4-byte data (long, int) must be placed at a long-word boundary. Odd addresses are accessed in units of 2 or 4 bytes. Alternatively, when an address not on a long-word boundary is accessed in units of 4 bytes, a program error (Data Alignment Error) occurs.

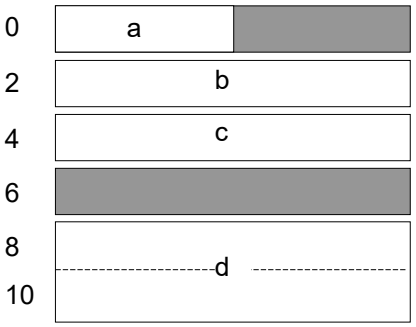
(1) Precautions regarding data structures

If the coding uses data structures, placement in the memory might differ according to differences in alignment. For example, if the coding uses the following kind of data structure, the S10V and S10VE place data structures in the memory as shown in the following figure. Because this placement is performed automatically by the compiler, this difference is not usually a problem, but if you are particular about the placement of data structures in the memory, you will need to make modifications.

Example placement of a data structure in the memory:

```
struct {
    char a;
    short b;
    short c;
    short dummy1;
    long d;
};
```

For the S10V and S10VE:



2.7.3 Differences between CPMS macros

Table 2-5 shows the differences between CPMS macros.

Legend for *Support* field:

Y: Supported; N: Not supported

Legend for the *Comparison between S10V and S10VE macro instructions* field:

C: Compatible (basically the same); U: Upward compatible; —: Not applicable;

P: The parameters are not compatible. See the manual and make the appropriate modifications;

N: See the following manuals, and modify the arguments and other relevant information.

Reference manual: S10VE Software Manual CPMS General Description and Macro Specifications (manual number SEE-3-201)

S10VE Software Manual Operation RPDP for Windows® (manual number SEE-3-133)

Table 2-5 List of CPMS macro comparisons (1/3)

Classification	Macro name	General function	Support		Comparison between S10V and S10VE macro instructions				
			S10V	S10VE	Functions	Parameters	Return codes	Parameter checks	Description
Task management	rleas	Reset task start inhibition state	Y	Y	C	C	C	C	
	queue	Start task	Y	Y	C	C	C	C	
	exit	Exit local task	Y	Y	C	C	C	C	
	abort	Abort task and set the start inhibition state	Y	Y	C	C	C	C	
	wait	Set local task to *Waiting for an event to occur* state	Y	Y	C	C	C	C	
	post	Reset wait state	Y	Y	C	C	C	C	
	susp	Suppress task execution temporarily	Y	Y	C	C	C	C	
	rsum	Reset suppression using susp	Y	Y	C	C	C	C	
	asusp	Suppress execution of all tasks other than the local task	Y	Y	C	C	C	C	
	arsum	Reset suppression using asusp	Y	Y	C	C	C	C	
	chap	Change task priority level	Y	Y	C	C	C	C	
	sfact	Set task initiation factor	Y	Y	C	C	C	C	
	gfact	Load task initiation factor	Y	Y	C	C	C	C	
Memory management	wrtmem	Write to write-protected area	Y	Y	U	C	C	C	Access area extended
	chkbmem	Perform access check on bus memory	Y	Y	C	C	C	C	
	chktaer	Check whether a target abort has occurred	Y	Y	C	C	C	C	
	uspchk	Check capacity of stack in use	Y	N	—	—	—	—	Substitute with the svdebug -sp command
	mvmem	Transfer data to specified area	Y	N	—	—	—	—	Substitute with memcpy
	memcpy	Transfer data to specified area	—	Y	—	—	—	—	
	MRAMmemcpy	Transfer data to specified area (for MRAM only)	—	Y	—	—	—	—	

Table 2-5 List of CPMS macro comparisons (2/3)

Classification	Macro name	General function	Support		Comparison between S10V and S10VE macro instructions				
			S10V	S10VE	Functions	Parameters	Return codes	Parameter checks	Description
Timer management	timer	Start task at specified time or for specified period	Y	Y	C	C	C	C	
	ctime	Clear information registered by timer	Y	Y	C	C	C	C	
	delay	Suspend local task execution for specified period	Y	Y	C	C	C	C	
	stime	Set current time	Y	Y	C	P	C	C	The fourth argument week is not supported.
	gtime	Load current time	Y	Y	C	P	C	C	The fourth argument week is not supported.
	wake	Start task at specified time	Y	N	—	—	—	—	Substitute this with timed start using the timer macro.
	cwake	Clear information registered by wake	Y	N	—	—	—	—	Substitute this with the ctime macro.
Shared resource management	rserv	Reserve shared resource	Y	Y	C	C	C	C	
	prsrv	Batch-reserve shared resource	Y	Y	C	C	C	C	
	free	Release shared resource	Y	Y	C	C	C	C	
	pfree	Batch-release shared resource	Y	Y	C	C	C	C	
	wdtset	Control WDT start or stop	Y	Y	C	C	C	C	
	getsysinfo	Get system state	Y	Y	C	C	C	C	
	gettaskinfo	Get task state	Y	Y	C	C	C	C	
	gtkmem	Read CPMS management table	Y	Y	C	C	C	C	
	usrdhp	Write DHP record	Y	Y	C	C	C	C	
	usrel	Write user error log	Y	Y	C	C	C	C	
	save_env	Save task execution environment	Y	Y	C	C	C	C	
	resume_env	Recover task execution environment	Y	Y	C	C	C	C	
	gettimebase	Read time base	Y	Y	C	C	C	C	
System services	TimebaseToSecs	Convert time base value to seconds or nanoseconds	Y	Y	C	C	C	C	
	atmswap	Atomic operation library	Y	Y	C	C	C	C	
	atmand	Atomic operation library	Y	Y	C	C	C	C	
	atmor	Atomic operation library	Y	Y	C	C	C	C	
	atmxor	Atomic operation library	Y	Y	C	C	C	C	
	atmadd	Atomic operation library	Y	Y	C	C	C	C	
	atmtas	Atomic operation library	Y	Y	C	C	C	C	
	atmcas	Atomic operation library	Y	Y	C	C	C	C	

Table 2-5 List of CPMS macro comparisons (3/3)

Classification	Macro name	General function	Support		Comparison between S10V and S10VE macro instructions				
			S10V	S10VE	Functions	Parameters	Return codes	Parameter checks	Description
System service	ldrstpstat	Load ladder STOP state	—	Y	—	—	—	—	
	ldrstpctl	Control ladder RUN/STOP	—	Y	—	—	—	—	
	ldrsimustat	Load ladder simulation state	—	Y	—	—	—	—	
	usrdispctl	Control indicator display	—	Y	—	—	—	—	
	prog_start	Start subtask	—	Y	—	—	—	—	
	prog_switch	Switch subtask	—	Y	—	—	—	—	
	prog_exit	Exit subtask	—	Y	—	—	—	—	
	prog_call	Switch stack and call subroutine	—	Y	—	—	—	—	

2.7.4 Transferring ET.NET socket handlers

In the S10VE ET.NET module, the number of Ethernet channels has been changed to two. In addition, socket handlers have been changed to macro instructions. The following shows the procedure for changing programs. Use this procedure to change your applications while paying attention to the differences from the socket handler specification.

2.7.4.1 Settings and their differences

(1) Parameters (configuration by using the tool)

The settings of the ET.NET modules are the same. However, because one module has two channels, you need to configure each channel separately.

No.	Setting	S10V ET.NET (LQE520 / LQE720)	S10VE ET.NET (LQE260-E)
1	IP address	Setting required	Y
2	Subnet mask	Setting required	Y
3	Broadcast address	Setting required	Y
4	Routing information	Setting required when using router	Y

Y: Supported

(2) Socket handlers

Because socket handlers have been changed to macro instructions, link addresses no longer need to be specified, but the functions are the same. In addition, modules and channels can now be specified in the input parameters.

Table 2-6 Correspondences between socket handlers and socket library functions (1/2)

No.	Function	S10V	S10VE	Remarks
1	Actively open TCP	`tcp_open()`	←	`keepalive` specification added
2	Passively open TCP	`tcp_popen()`	←	
3	Accept TCP connection request	`tcp_accept()`	←	`keepalive` specification added
4	Close TCP connection	`tcp_close()`	←	
5	Abort TCP connection	`tcp_abort()`	←	
6	Read current local station information	`getconfig()`	←	
7	Read TCP socket information	`tcp_getaddr()`	←	
8	Send TCP data	`tcp_send()`	←	

←: Ditto; —: Not applicable

Table 2-6 Correspondences between socket handlers and socket library functions (2/2)

No.	Function	S10V	S10VE	Remarks
9	Receive TCP data	`tcp_receive()`	←	
10	Open UDP	`udp_open()`	←	
11	Close UDP	`udp_close()`	←	
12	Send UDP data	`udp_send()`	←	
13	Receive UDP data	`udp_receive()`	←	
14	Read routing information	`route_list()`	←	
15	Delete routing information	`route_del()`	←	
16	Register routing information	`route_add()`	←	
17	Read ARP information	`arp_list()`	←	
18	Delete ARP information	`arp_del()`	←	
19	Register ARP information	`arp_add()`	←	
20	Socket close instruction when a task is aborted	—	`set_so_abort()`	Added to the S10VE

←: Ditto; —: Not applicable

Other differences are shown in Table 2-7.

Table 2-7 Differences between S10V ET.NET and S10VE ET.NET

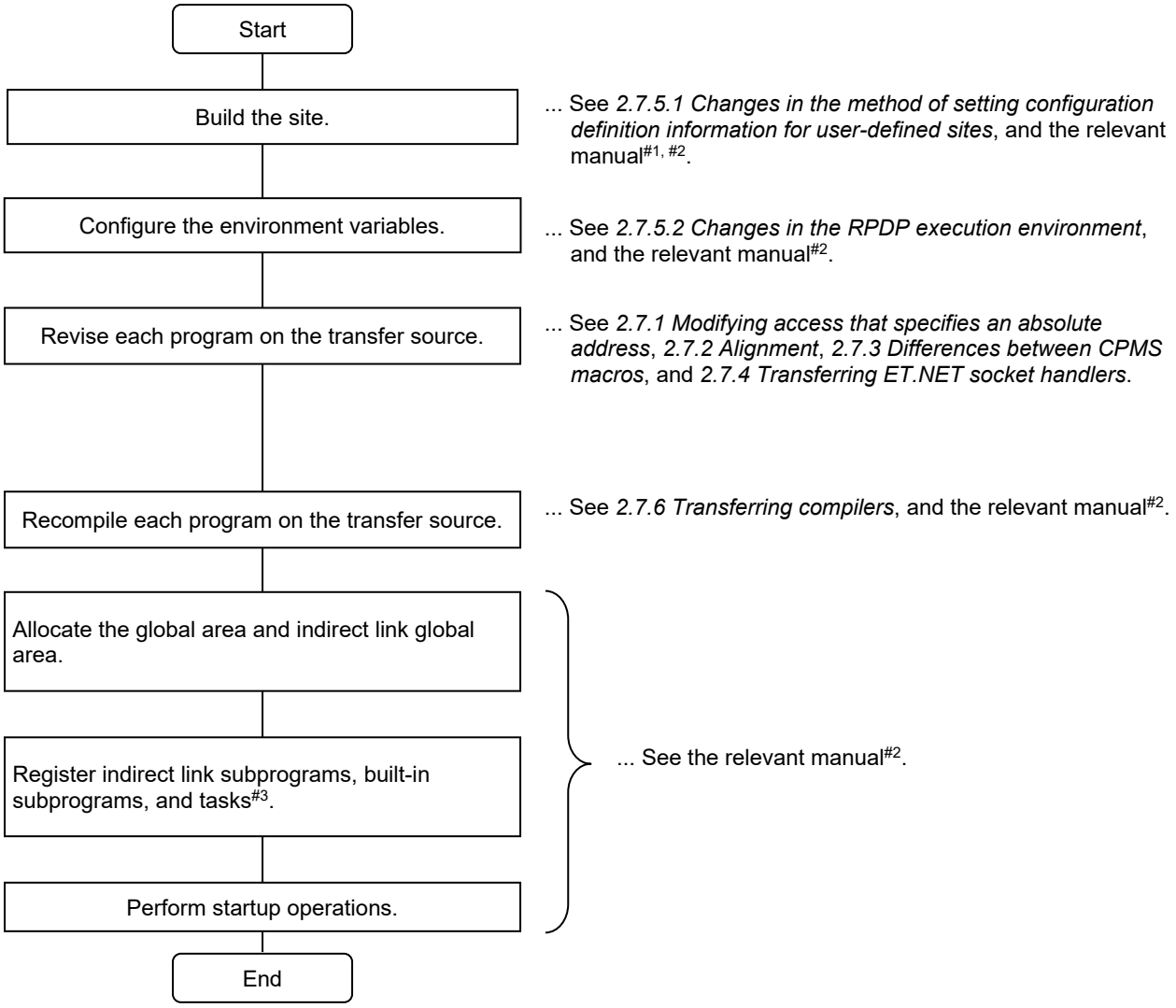
No.	Item	S10V ET.NET (LQE520 / LQE720)	S10VE ET.NET (LQE260-E)
1	Number of sockets per module	TCP/IP: 12 UDP/IP: 8	Total number of sockets for TCP/IP, UDP/IP, and the two channels: 96
2	Port number	0 to 9999: Reserved for the system 10000 to 65535: For users	←
3	Length of sent or received data per function	TCP/IP: 1 to 4096 UDP/IP: 1 to 1472	TCP/IP: 1 to 1460 UDP/IP: 1 to 1472
4	Floating socket open processing when aborting task	- Close task from another task - Reset or power-on reset CPU	You can specify to open floating sockets using the set_so_abort macro in advance.

←: Ditto

2.7.5 Transferring RPDP

Because there is no command for transferring a site created in the S10V to the S10VE, you need to rebuild the site from scratch in the S10VE. The method of building sites differs between the S10V and S10VE. For details, see the relevant manual[#1, #2].

Note that the name of a site created in the S10VE is uniquely determined based on the PCs number of the project being created. The following outlines the procedure for transferring RPDP:



#1: S10VE User's Manual General Description (manual number SEE-1-001)
#2: S10VE Software Manual Operation RPDP for Windows® (manual number SEE-3-133)
#3: Register user tasks on the CP side.

2.7.5.1 Changes in the method of setting configuration definition information for user-defined sites

The method of setting configuration definition information for a S10VE user-defined site differs from that for the S10V. Table 2-8 shows the changes in the method of setting configuration definition information for a user-defined site.

Table 2-8 Changes in the method of setting configuration definition information for user-defined sites

No.	Item	S10V	S10VE
1	Network definition information	This is defined when the user edits the desired network definition information in the `adapter.u` file.	This is defined when the user uses the BASE SYSTEM/S10VE network settings and connected PCs change function to edit the desired network definition information.
2	Processor definition information (memory information)	This is defined when the user edits the desired memory sizes in the `memory.u` file.	This is defined automatically when each memory size is fixed# upon creation of a C-mode project when a new BASE SYSTEM/S10VE project is created. Caution: Do not edit the `memory.u` file. Even if you do so, edits to values will not be reflected in the actual memory size.

#: Table 2-9 shows the memory sizes whose definitions are fixed upon creation of a C-mode project.

Table 2-9 Memory sizes with fixed definitions in a C-mode project

No.	Item	Size (MB)
1	Task GAREA size	12
2	Read-only GLB GAREA size	4
3	Read-write GLB GAREA size	17
4	Subprogram GAREA size	4

2.7.5.2 Changes in the RPDP execution environment

In accordance with the changes to the compiler, you need to create new environment variables necessary for compilation.

The default values of environment variables are set automatically when RPDP is installed. However, environment variables that had already been set when RPDP was installed are not overwritten, with the exceptions of PATH and HLNK_DIR.

To set common environment variables across the system, go to **Control Panel**, then **System**. From the **Environment** tab, set the system environment variables.

For the meanings of environment variables necessary for the operation of the `shc` compiler and details about the settings, see the manual for the `shc` compiler package.

Table 2-10 List of comparisons between the environment variables of RPDP execution environments

No.	Environment variable		Description
	S10V	S10VE	
1	RSSITE	RSSITE	Site name
2	RSUTYP	RSUTYP	User type
3	HLNK_DIR	HLNK_DIR	Library storage directory
4	SHC_INC	SHC_INC	Compiler include file storage directory
5	SHC_LIB	SHC_LIB	Compiler installation directory
6	SHC_TMP	SHC_TMP	Directory created by the compiler to store temporary files
7	SHCPU	SHCPU	CPU type specification
8	HLNK_TMP	HLNK_TMP	Directory created by the linkage editor to store temporary files
9	PATH	PATH	Sets the compiler and RPDP command storage directory

2.7.5.3 Comparison of commands provided by RPDP

Table 2-11 shows a comparison of commands provided by RPDP.

Table 2-11 Comparison of commands provided by RPDP (1/3)

No.	Classification	Command	Function overview			Support comparison	
						S10V	S10VE
1	System generation	svgen	Configure environment where site is built			Y	N
2		svconf	Register system definition information Specify IP address and memory size			Y	N
3		svshconf	Display system definition information			Y	N
4		svsitecp	Copy site			Y	N
5		svsitedel	Delete site			Y	N
6	Compilers and assemblers	shc	Cross-compiler			Y	Y
7		svdatagen	Generate loadable binary file of default-value data			N	Y
8	Programming commands	optlnk	Librarian (part of compiler package)			Y	Y
9		optlnk	Linker (part of compiler package)			Y	Y
10		makehce	make command			N	Y
11	Allocator	svdfa	Allocate partition area, generate backup file			Y	Y
12		svdla	Delete partition area, delete backup file			Y	Y
13		svdfs	Allocate secondary partition area			Y	Y
14		svdls	Delete secondary partition area			Y	Y
15		svdfv	Register VAL			Y	Y
16		svdlv	Delete VAL			Y	Y
17	Loader	svload	Store to resource backup file and register to management information			Y	Y
18		svdload	Delete from resource management information			Y	Y
19		svcomp	Compare with registered resource			Y	Y
20	Builder	svctask	Generate task			Y	Y
21		svdtask	Delete task			Y	Y
22		svbuild	Register indirect link subprogram			Y	Y
23			Register built-in subroutine			Y	Y
24		svdbuild	Delete indirect link subprogram			Y	Y
25			Delete built-in subprogram			Y	Y
26		svirglb	Register / delete IRGLB			Y	Y
27	Online debuggers	svdebug	Start / stop task	qu	Request task start	Y	Y
28				ab	Prohibit task start	Y	Y
29				re	Reset task start inhibition	Y	Y
30				ta	Display task state	Y	Y
31				su	Suppress task execution	Y	Y
32				rs	Reset suppression of task execution	Y	Y
33				tm	Task cyclic start	Y	Y
34				ct	Reset task cyclic start	Y	Y
35				sht	Display task cyclic start	Y	Y
36				si	Reset stack to default	Y	Y
37				sp	Display stack usage	Y	Y

Y: Supported; N: Not supported

Table 2-11 Comparison of commands provided by RPDP (2/3)

No.	Classification	Command	Function overview			Support comparison	
						S10V	S10VE
38	Online debuggers	svdebug	Print / patch memory	md	Display or change memory contents via address specification	Y	Y
39				sd	Display or change memory contents via name specification	Y	Y
40				bs	Set data to specified bit	Y	Y
41				bg	Display specified bit data	Y	Y
42				mcp	Copy memory contents	Y	Y
43				mmv	Move memory contents	Y	Y
44				mf	Set pattern value to memory	Y	Y
45			Break point	br	Set or display break point	Y	Y
46				stickybr	Display break point settings that were not reset by reset-start	N	Y
47				rb	Reset break point	Y	Y
48				rd	Display register	Y	Y
49				rr	Change register contents	Y	Y
50				go	Resume execution from break point	Y	Y
51			Display system error	el	Display error log	Y	Y
52				ss	Display system state	Y	Y
53			Set / display current time	st	Set current time	Y	Y
54				gt	Display current time	Y	Y
55			Upload / download, compare	ld	Download individual resource	Y	Y
56				sv	Back up individual resource	Y	Y
57				cm	Compare contents of backup file and PCs memory	Y	Y
58			Permit / inhibit DHP records	dr	Permit DHP records	Y	Y
59				ds	Inhibit DHP records	Y	Y
60			ADT	as	Set or display ADT	Y	N
61				ac	Reset ADT	Y	N
62			Ladder debug function	lbr	Set or display break point	N	Y
63				lrb	Reset break point	N	Y
64				lrd	Display register	N	Y
65				lrr	Rewrite register	N	Y
66				lgo	Resume execution from break point	N	Y
67				s	Execute step	N	Y
68			Other	svdhp	Display DHP	Y	Y
69				svadm	Display name of resource at address	Y	Y
70				ps	Start display of debug messages	Y	Y
71				pe	End display of debug messages	Y	Y
72				ver	Display CPMS version	Y	Y
73				help	Display list of subcommands	Y	Y
74				q	End debugger	Y	Y
75				!	Execute command on development machine when svdebug is executed	Y	Y

Y: Supported; N: Not supported

Table 2-11 Comparison of commands provided by RPDP (3/3)

No.	Classification	Command	Function overview	Support comparison	
				S10V	S10VE
76	Management tool	svmap	Display map information	Y	Y
77		svadm	Display name corresponding to address	Y	Y
78		svsitecntl	Control site state and display state	Y	Y
79	Startup	svrpl	Remote load	Y	Y
80		svcpuctl	Control remote state	Y	Y
81	Operation management	svcpunow	Display CPU load rate	Y	Y
82		svtimex	Display task utilization information	Y	Y
83	Error log, DHP display	svelog	Output error log information	Y	Y
84		svdhp	Display DHP trace information	Y	Y

Y: Supported; N: Not supported

2.7.6 Transferring compilers

The following shows the differences in versions between the compiler used in the S10V (versions V7 and V9) and the compiler used in the S10VE (version V9). For details about a compiler, see its attached manual.

2.7.6.1 Precautions regarding compiling

- Handling of floating-point numbers

  You can use `shc` to control the rounding and handling of denormalized numbers in floating-point numbers in the compiling options.

  However, be aware that each type of handling links a different standard library upon loading.

  Table 2-12 shows the options to control the handling and rounding of denormalized numbers and the corresponding standard library. (If a library is not specified upon loading, the loader links to `libsh4nbmdn.lib`.)

Table 2-12 Options for controlling the handling of floating-point numbers

	Specification	Option	Default
Handling of denormalized numbers	Handle as `0`	`-denormalization=off`	Handled as `0`
	Handle as denormalized number#	`-denormalization=on`	
Rounding of result values	Truncate digits exceeding the valid number	`-round=zero`	Truncated
	Round off digits exceeding the valid number	`-round=nearest`	

#: The S10V CPU module SH4 (SH7751) and the S10VE CPU module SH4A (SH7786) do not support denormalized numbers. Such numbers are handled as `0` during execution.

Table 2-13 Handling of floating-point numbers and the corresponding standard libraries

	-denormalization	-round	Default
Specified option	`off`	`zero`	`libsh4nbmzz.lib`
	`on`		—
	`off`	`nearest`	—
	`on`		`libsh4nbmdn.lib`

● Generate and save compile list (`shc`)

Generate and save compile lists in advance, because these are needed for purposes such as calculating the stack size used by tasks. To generate a compile list, specify the following option.

Specify the `-listfile` option before specifying the C source file to be compiled.

If the `-listfile` option is specified after specifying the C source file, the compile list only generates the last file.

■ Specify compile list generation

```
-listfile [ =list-file-name] -show=source,object
```

If a list file name is not specified, the list file is generated under the same file name as the source file name with the extension `.lst` added.

- `shc Δ-listfile Δtest1.c Δtest2.c` (and press the **Enter** key)

  The `listfile` option is valid for both `test1.c` and `test2.c`.

- `shc Δtest1.c Δtest2.c Δ-listfile` (and press the **Enter** key)

  The `listfile` option is only valid for `test2.c`.

w

2.7.6.2 Differences in shc version between V7 and V9

Table 2-14 shows a comparison of command-line options between the `shc` versions in V7 and V9.

Table 2-14 Version comparison of shc command-line options

No.	shc	Version		Meaning
		V7	V9	
1	-code=*machinecode*	Y	Y	Does not link; generates an object module.
2	-define=name -define=name=def	Y	Y	Defines `name`. Defines `name` in `def`.
3	-debug	Y	Y	Generates debug information.
4	-listfile Can be substituted with: -show=source,object	Y	Y	Inserts a source file row in the assembler source code.
5	ANSI standard by default	Y	Y	Compiles only programs conforming to ANSI Standard C.
6	-endian=*big*	Y	Y	Compiles in big-endian mode (The default is big-endian.).
7	-endian=little	Y	Y	Compiles in little-endian mode.
8	-sjis (Default)	Y	Y	Supports Japanese kanji characters (SHIFT-JIS); only specifiable when using K&R.
9	-show=length=n	Y	Y	Specifies the number of rows in the first page of the source list.
10	-listfile -listfile=filename	Y	Y	Displays the source list.
11	-include=dir	Y	Y	Adds a search directory for include files.
12	-optimize=0 -optimize=1 -optimize=Debug_only	Y	C	Sets the optimization level. `shc` V7 and V9: `optimize=0`: Not optimized; `optimize=1`: Optimized The optimization method can be selected by using `-speed`,`-nospeed`, and `-size`. `shc` V9: `optimize=Debug_only`: Completely suppresses optimization relating to per-statement deletion, and allows information on local variables to be referenced at any time.
	-speed -*nospeed* -size	Y	Y	
13	-preprocessor[=file]	Y	Y	Only executes the preprocessor, and stores the result in a `.p` file.
14	-code=asmcode	Y	Y	Generates assembler source code. Does not start the assembler or linker.

Legend for V7 and V9:
Y: Has a corresponding option
C: Changed in V9

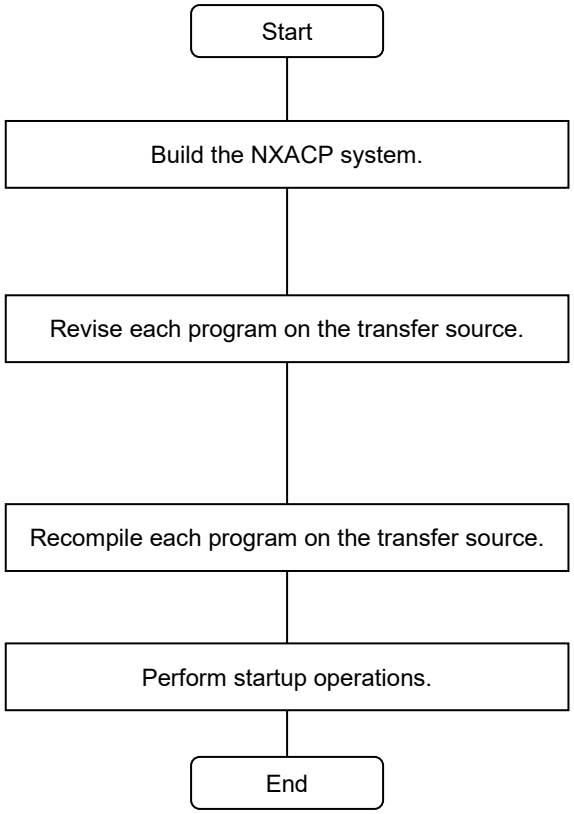
Table 2-15 lists the shc options.

Table 2-15 List of shc options

No.	Function	shc	Meaning
1	CPU type	-cpu=sh4	Generates SH-4 objects.
2	Output list file	-listfile=[filename]	Generates compile lists.
3	Output format of compile list (This specification is enabled when specified at the same time as the -listfile option.)	-show=source|*nosource* |*object*|noobject |*statistics*|nostatistics |include|*noinclude* |expansion|*noexpansion*	Presence or absence of source list Presence or absence of object list Presence or absence of statistics information Presence or absence of include-expanded list Presence or absence of macro-expanded list
4	Storage section of string data	-string=*const* |data	Outputs string to constant area section (C). Outputs to default data area section (D).
5	Sign or zero extension of return values	-rtnext -*nortnext*	Performs sign or zero extension on return values Does not perform sign or zero extension on return values
6	Handling of denormalized numbers	-denormalization=*off* |on	Handles denormalized numbers as 0. Handles denormalized numbers as denormalized numbers.
7	Rounding direction of floating-point numbers	-round=*zero* |nearest	Rounds using the Round to Zero method. Rounds using the Round to Nearest method.

2.7.7 Transferring NXACP

There is no command for transferring a site containing NXACP that was created in the S10V, to the S10VE. Therefore, in the S10VE, you need to rebuild the site containing NXACP from scratch. The method of building sites containing NXACP differs from that in the S10V. For details, see the relevant manual[#1, #2, #3].



... See *2.7.5.1 Changes in the method of setting configuration definition information for user-defined sites* and the relevant manual[#1, #2, #3].

... See *2.7.1 Modifying access that specifies an absolute address*, *2.7.2 Alignment*, *2.7.3 Differences between CPMS macros*, *2.7.4 Transferring ET.NET socket handlers*, and *2.7.7.3 Transferring NXACP programs*.

... See *2.7.6 Transferring compilers* and the relevant manual[#2].

... See the relevant manual[#2, #3].

#1: S10VE User's Manual General Description (manual number SEE-1-001)
#2: S10VE Software Manual Operation RPDP for Windows® (manual number SEE-3-133)
#3: S10VE Software Manual Operation NXACP For Windows® (manual number SEE-3-134)

2.7.7.1 Comparison of commands provided by NXACP

Table 2-16 shows a comparison of commands provided by NXACP. For parameter specifications and usage methods for S10VE commands, see the *S10VE Software Manual Operation NXACP For Windows®* (manual number SEE-3-134).

Table 2-16 Comparison of commands provided by NXACP

No.	Command	Function overview	Support comparison	
			S10V	S10VE
1	`dfnnxsv`	Build system	Y	Y
2	`confnxsv`	Compile configuration information	Y	Y
3	`tblldnxsv`	Load configuration information	Y	Y
4	`insnxsv`	Load the NXACP main program	Y	Y

Y: Supported; N: Not supported

2.7.7.2 NXACP resource allocations

Tables 2-17 to 2-20 show a comparison of resource allocations used by NXACP.

Table 2-17 Comparison of resources (tasks) used by NXACP

No.	Task name	Task number	Level	Comparison of resources in use	
				S10V	S10VE
1	nx_memac	209	7	R	Y
2	nx_cycsnd	210	7	N	Y
3	nx_cycsnd	211	7	Y	R
4	(reserve)	212	—	R	R
5	nx_operation	213	4	R	Y
6	nx_operation	214	4	Y	N
7	nx_snd1	214	6	N	Y
8	nx_snd2	215	6	R	Y
9	nx_snd3	216	6	R	Y
10	nx_snd1	217	6	Y	N
11	nx_snd4	217	6	N	Y
12	nx_snd2	218	6	Y	N
13	nx_snd5	218	6	N	Y
14	nx_snd3	219	6	Y	N
15	nx_snd6	219	6	N	Y
16	nx_ltim	220	17	Y	N
17	nx_htim	220	5	N	Y
18	nx_htim	221	5	Y	N
19	nx_ltim	221	17	N	Y
20	nx_upexe	222	6	N	Y
21	nx_purcv	223	6	R	Y
22	(reserve)	224	—	R	R

Y: Used; N: Unused; R: Reserved resource

Table 2-18 Comparison of resources (IRSUB) used by NXACP

No.	IRSUB name	IRSUB number	Comparison of resources in use	
			S10V	S10VE
1	nx_init	301	Y	Y
2	nx_quit	302	Y	Y
3	nx_put	303	Y	Y
4	nx_get	304	Y	Y
5	nx_dfup	305	Y	Y
6	nx_dfdwn	306	Y	Y
7	nx_init_tm	307	Y	Y
8	nx_ctl_tm	308	Y	Y
9	nx_get_tm	309	Y	Y
10	nx_write_tm	310	Y	Y
11	nx_read_tm	311	Y	Y
12	nx_trc	312	Y	Y
13	nx_cdoff	313	Y	Y
14	nx_cdon	314	Y	Y
15	nx_puni	315	Y	Y
16	(reserve)	316 to 332	R	R

Y: Used; R: Reserved resource

Table 2-19 Comparison of resources (IRGLB) used by NXACP

No.	IRGLB name	IRGLB number	Comparison of resources in use	
			S10V	S10VE
1	(reserve)	301 to 314	R	R

R: Reserved resource

Table 2-20 Comparison of resources (ULSUB) used by NXACP

No.	ULSUB name	ULSUB number	Comparison of resources in use	
			S10V	S10VE
1	(reserve)	NXS	R	R
2	nx_ins	INS	Y	Y
3	nx_exs	EXS	Y	Y
4	nx_abs	ABS	Y	Y
5	nx_ctl	MODES	Y	Y

Y: Used; R: Reserved resource

2.7.7.3 Transferring NXACP programs

Table 2-21 shows the differences between NXACP macros.

Legend for the *Support* field:

Y: Supported; N: Not supported

Legend for the *Comparison between S10V and S10VE macro instructions* field:

C: Compatible (basically the same); U: Upward compatible; —: Not applicable;

P: The parameters are not compatible. See the manual and make the appropriate modifications;

N: See the following manual, and modify the arguments and similar information.

Reference manual: S10VE Software Manual Operation NXACP For Windows® (manual number SEE-3-134)

Table 2-21 List of NXACP macro comparisons

Classification	Macro name	General function	Support		Comparison between S10V and S10VE macro instructions			
			S10V	S10VE	Function	Parameters	Return codes	Parameter checks
Operation macros	nx_init	Initialize NX	U	U	C	C	P	C
	nx_dfup	Start up DF	U	U	C	C	C	C
	nx_dfdwn	Stop DF	U	U	C	C	C	C
	nx_quit	Stop NX	U	U	C	C	C	C
Multicast communication macros	nx_put	Send message	U	U	C	C	C	C
	nx_get	Receive message	U	U	C	C	C	C
Common memory macros	nx_init_tm	Reset transfer memory to default	U	U	C	C	C	C
	nx_ctl_tm	Control transfer memory	U	U	C	C	C	C
	nx_get_tm	Get transfer memory information	U	U	C	C	C	C
	nx_write_tm	Write to transfer memory	U	U	C	C	C	C
	nx_read_tm	Read transfer memory	U	U	C	C	C	C

2.8 User arithmetic functions

2.8.1 Overview of user arithmetic functions

■ Difference in handling of user-original user arithmetic functions

No.	Item		S10V	S10VE
1	Used area		Assign part of the ladder program area (SEQ-RAM). For the assignment method, see No. 4.	Use the area specific to user arithmetic functions.
2	Registration method		Perform registration under **UFET** of the **Utilities** menu of the ladder chart system.	
3	Maximum number of registrations		128	
4	Other limits, etc.		You need to define part of the SEQ-RAM as an area for user arithmetic functions in advance, by going to the **Utilities** menu of the ladder chart system, then **PCs Edition**, and then **Change Capacity**.	You need to define the area for user arithmetic functions in advance, by going to the **Utilities** menu of the ladder chart system, then **PCs Edition**, and then **Change Capacity**.
5	PI/O memory map		The memory map of the LPU built-in SH processor is different from usual. (See section 2.8.2.)	Same as usual memory maps (See section 4.1.2.)
6	Supported characters		Alphabetic uppercase characters, numeric characters, symbols	Uppercase alphabetic characters, numeric characters (except for the first character), and underscores (_)
7	Number of parameters		1	4
8	Parameter data type	WORD	N	Y
9		LONG	Y	Y
10		FLOAT	N	Y
11	Parameter data category	Register	N	Y
12		Numerical value	Y	Y

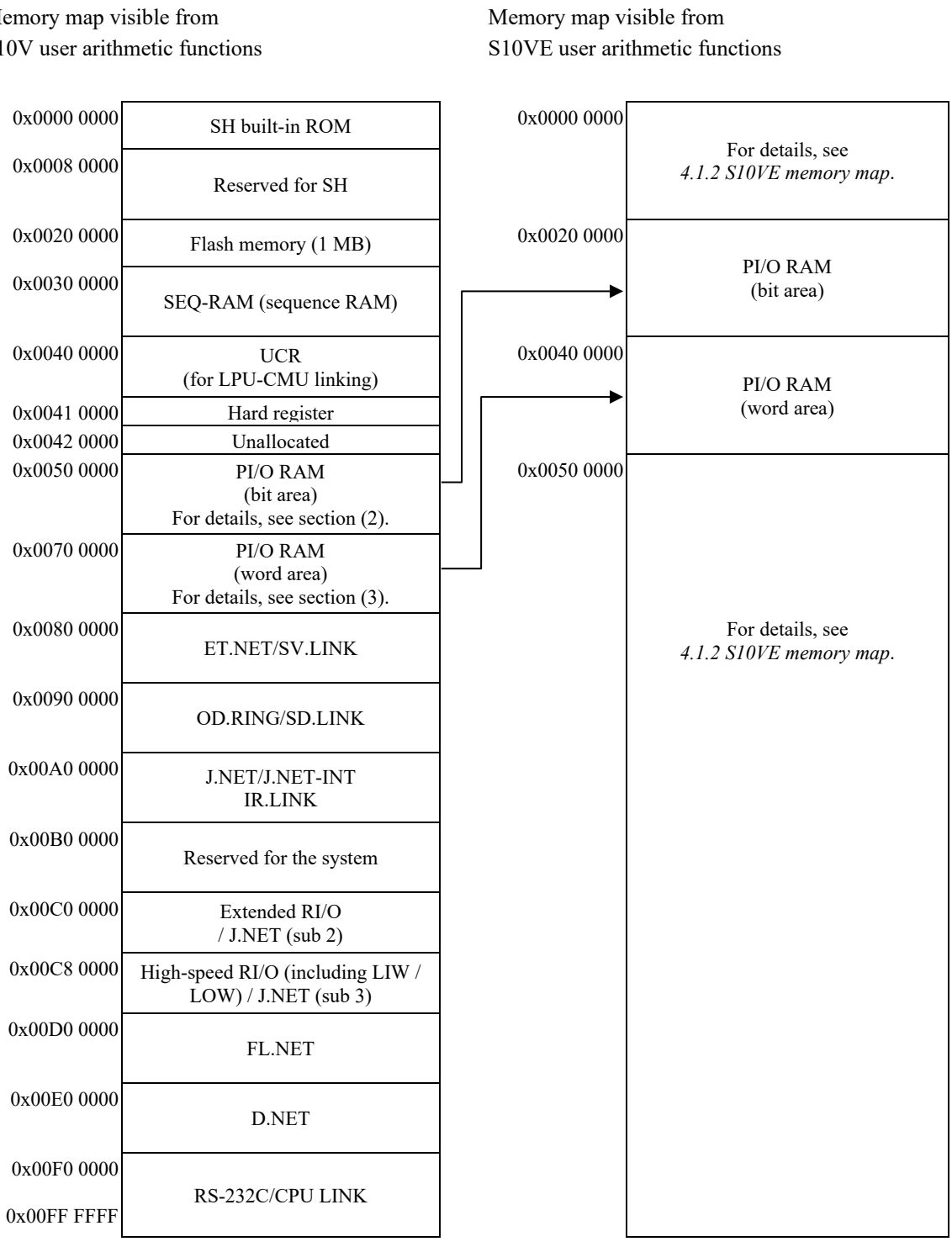
Y: Supported; N: Not supported

2.8.2 Addresses accessed from S10VE user arithmetic functions

The memory map visible from S10V user arithmetic functions (see *LPU unit address map* in *4.1.1 S10V memory map*) differs from the S10VE memory map.

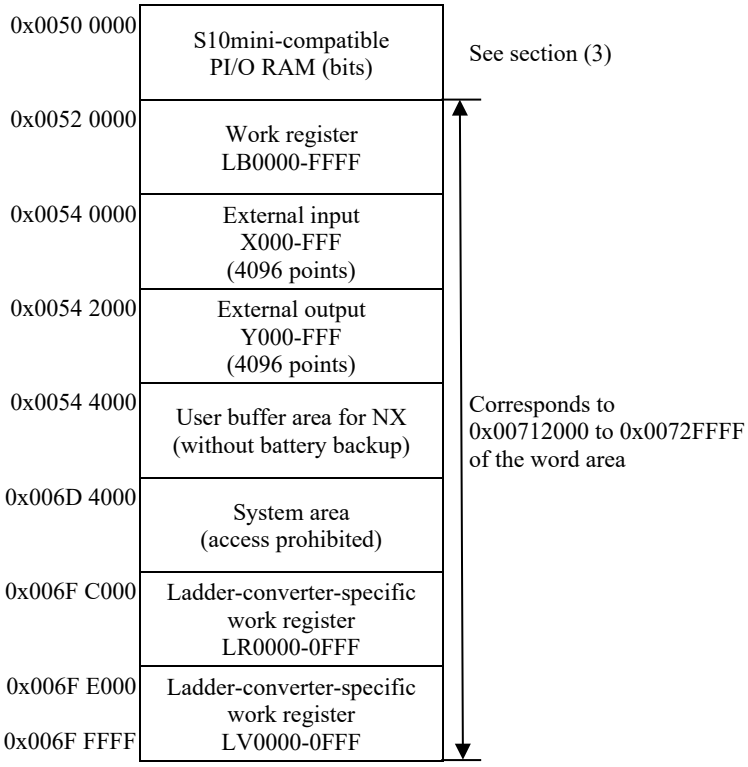
When transferring S10V user arithmetic functions, modify the address according to the S10VE memory map (see section 4.1.2).

(1) Overall map



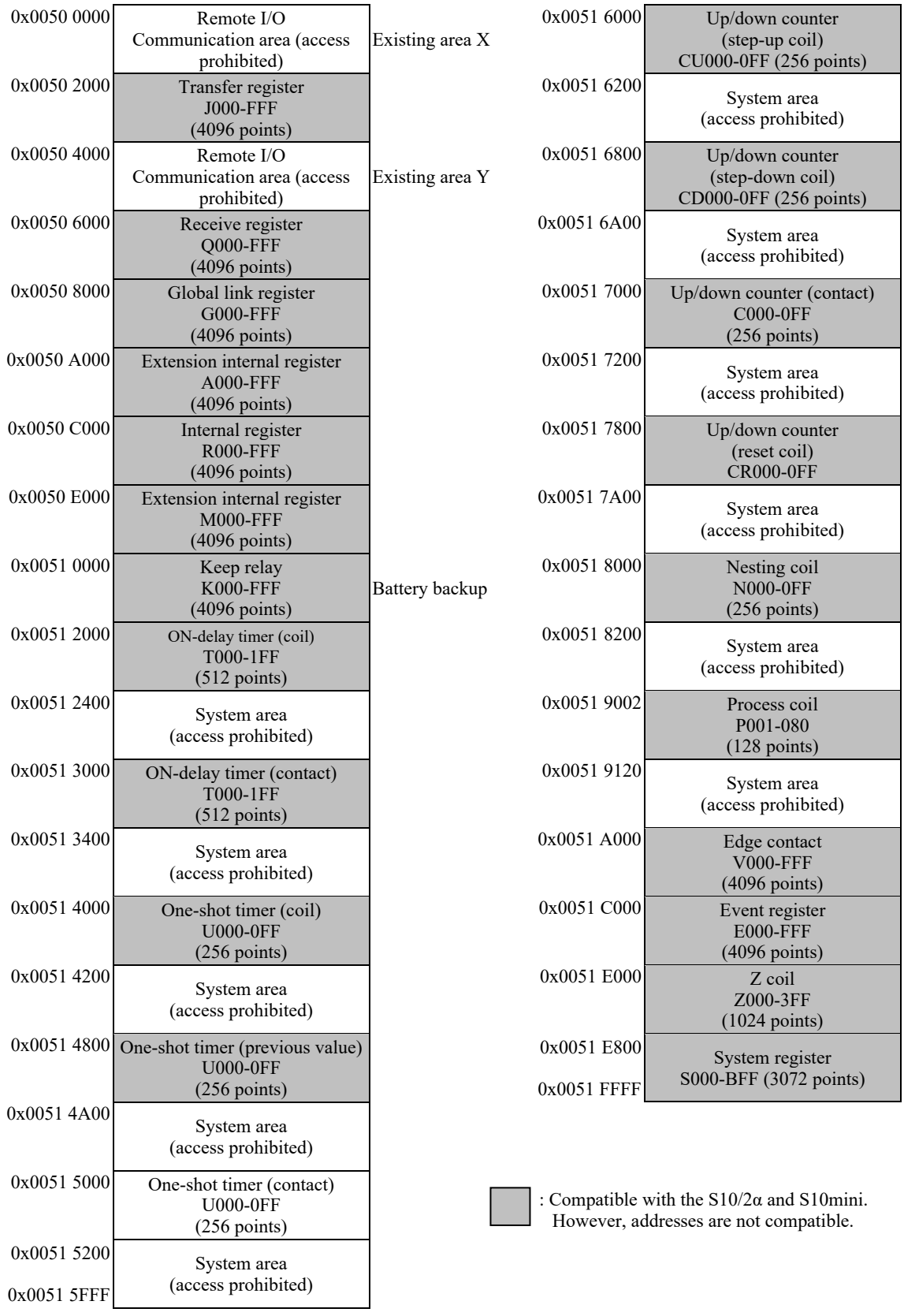
(2) PI/O RAM (bit area)

Memory map visible from S10V user arithmetic functions



(3) S10mini-compatible PI/O RAM (bit area)

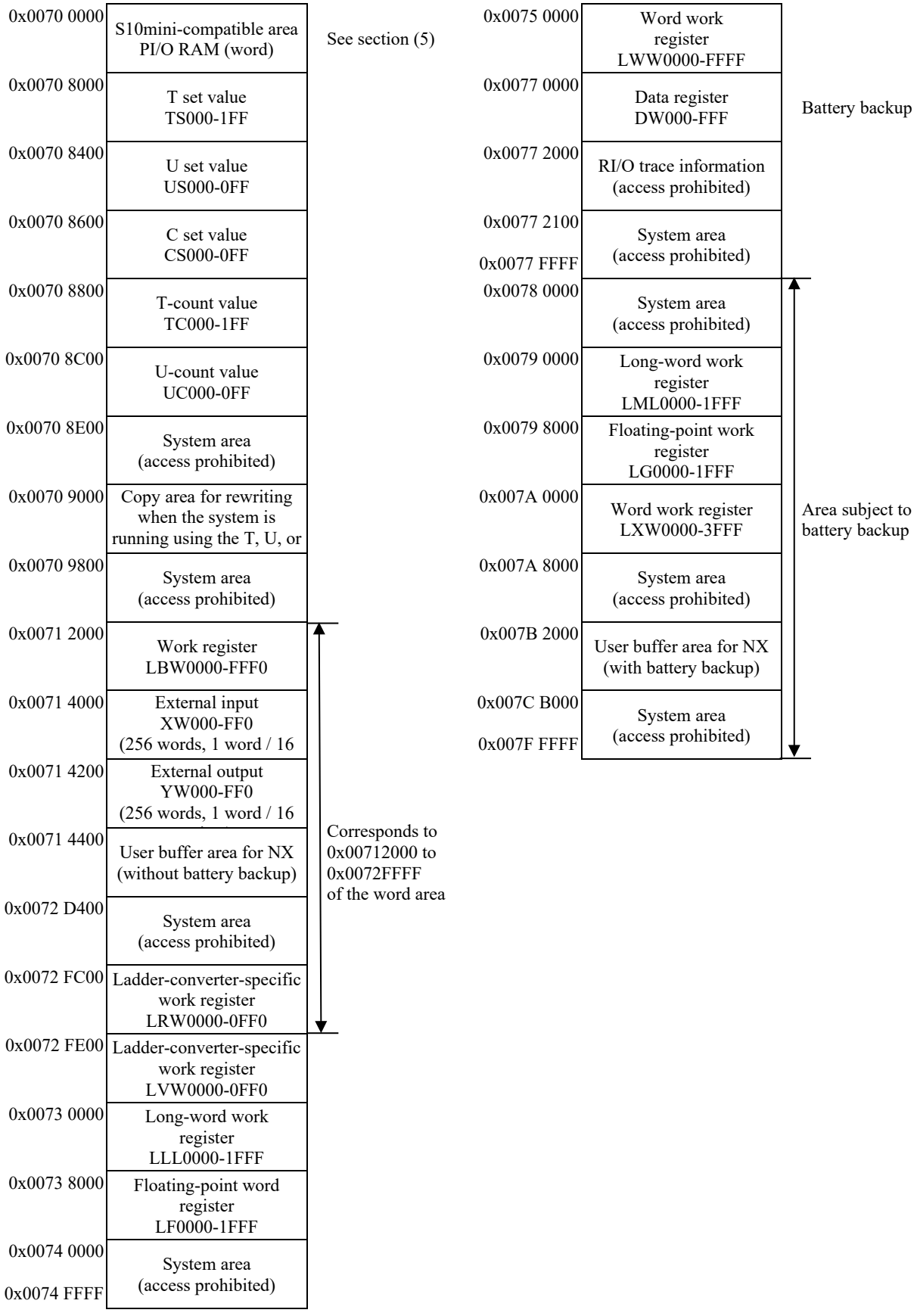
Memory map visible from S10V user arithmetic functions



For the S10V, areas X and Y have been changed to 0x0054 0000 to 0x 0054 3FFF.

(4) PI/O RAM (word area)

Memory map visible from S10V user arithmetic functions



(5) S10mini-compatible PI/O RAM (word area)

Memory map visible from S10V user arithmetic functions

0x0070 0000	Remote I/O Communication area (access prohibited)	Existing area X
0x0070 0200	Transfer register JW000-FF0 (256 words, 1 word / 16	
0x0070 0400	Remote I/O Communication area (access prohibited)	Existing area Y
0x0070 0600	Receive register QW000-FF0 (256 words, 1 word / 16	
0x0070 0800	Global link register GW000-FF0 (256 words, 1 word / 16	
0x0070 0A00	Extension internal register AW000-FF0 (256 words, 1 word / 16	
0x0070 0C00	Internal register RW000-FF0 (256 words, 1 word / 16	
0x0070 0E00	Extension internal register MW000-FF0 (256 words, 1 word / 16	
0x0070 1000	Keep relay KW000-FF0 (256 words, 1 word / 16	Battery backup
0x0070 1200	System area (access prohibited)	
0x0070 1300	ON-delay timer (contact) TW000-1F0 (32 words, 1 word / 16	
0x0070 1340	System area (access prohibited)	
0x0070 1500	One-shot timer (contact) UW000-0F0 (16 words, 1 word / 16	
0x0070 1520	System area (access prohibited)	
0x0070 16FE		

0x0070 1700	Up/down counter (contact) CW000-0F0 (16 words, 1 word / 16	Battery backup
0x0070 1720	System area (access prohibited)	
0x0070 1800	Nesting coil NW000-0F0 (16 words, 1 word / 16	
0x0070 1820	System area (access prohibited)	
0x0070 1900	Process coil PW000-080 (9 words, 1 word / 16	
0x0070 1912	System area (access prohibited)	
0x0070 1A00	Edge contact VW000-FF0 (256 words, 1 word / 16	
0x0070 1C00	Event register EW000-FF0 (256 words, 1 word / 16	
0x0070 1E00	Z coil ZW000-3F0 (64 words, 1 word / 16	
0x0070 1E80	System register SW000-BF0 (192 words, 1 word / 16	
0x0070 2000	Work register FW000-BFF (3072 points, 1 word /	
0x0070 3800	Long-word register BD000-1FE (511 points, 2 words /	
0x0070 3FFC	System area (access prohibited)	
0x0070 7FFF		

: Compatible with the S10/2α and S10mini.
However, addresses are not compatible.

For the S10V, areas X and Y have been changed to 0x0071 4000 to 0x0071 43FF.

2.8.3 Precautions regarding long-word access to PI/O areas

During long-word access to a PI/O area, if an optional module is accessing the same area, be aware that data simultaneity between high-order and low-order words is not guaranteed.

2.9 Optional modules

2.9.1 Range of settings that can be configured by using the tool

Configure the setting information of optional modules by using the S10VE setup tool, using the same values as for the S10V. For settings and setting procedures, see the manual of each optional module as well as sections 2.3.2.2 to 2.3.2.6 of this manual.

- S10VE User's Manual Option OD.RING (LQE510-E)
  (manual number SEE-1-101)
- S10VE User's Manual Option J.NET (LQE540-E)
  (manual number SEE-1-102)
- S10VE User's Manual Option D.NET (LQE770-E)
  (manual number SEE-1-103)
- S10VE User's Manual Option FL.NET (LQE702-E)
  (manual number SEE-1-104)
- S10VE User's Manual Option ET.NET (LQE260-E)
  (manual number SEE-1-105)

2.9.2 Link addresses of C-mode handlers

For C-mode handlers, the S10VE supports only socket handlers. Do not use link addresses, and change to using macro calls.

2.10 Transferring NXTOOLS setting values

2.10.1 Transferring system programs

The following table shows a comparison of the types of system programs used by NXTOOLS SYSTEM/S10VE.

If the S10V NX/Tools-S10V system uses system program type 4 or 5, use the matching type 4 or 5 in NXTOOLS SYSTEM/S10VE.

No.	Type	Number of local DFs in use	Number of remote DFs in use	Maximum number of TCDs	Support comparison	
					S10V	S10VE
1	4	1	0	96	Y	Y
2	5	1	1	96	Y	Y
3	6	2	2	96	N	Y

Y: Supported; N: Not supported

The following table shows the differences in the main communication specifications of system programs.

No.	Item		Support comparison	
			S10V	S10VE
1	Network	CMU	Y	N
2		CPU(ET1)	N	Y
3		CPU(ET2)	N	Y
4	Communication protocol		UDP/IP	UDP/IP
5	Message size		1408	1408

Y: Supported; N: Not supported

Configure the setting information of NXTOOLS SYSTEM/S10VE by using the S10VE setup tool, using the same settings as for the S10V. For settings and setting procedures, see the following manual and section 2.3.3 of this manual:

- S10VE Software Manual Operation NXTOOLS SYSTEM For Windows®
  (manual number SEE-3-137)

2.10.2 Comparison of resources used by system programs

Tables 2-22 to 2-27 show a comparison of resource allocations used by system programs.

Table 2-22 Comparison of resources (tasks) used by NXTOOLS

No.	Task name	Task number	Level	Resource use comparison	
				S10V	S10VE
1	acp_init	103	4	Y	Y
2	tk_acp	104	4	Y	Y
3	mgt	105	4	Y	Y
4	tk_acpo	106	4	Y	Y
5	nx_memac	209	7	Y	Y
6	nx_cycsnd	210	7	N	Y
6	nx_cycsnd	211	7	Y	N
7	nx_operation	213	4	N	Y
8	nx_operation	214	4	Y	N
9	nx_snd1	214	6	N	Y
10	nx_snd2	215	6	N	Y
11	nx_snd3	216	6	N	Y
12	nx_snd1	217	6	Y	N
13	nx_snd4	217	6	N	Y
14	nx_snd2	218	6	Y	N
15	nx_snd5	218	6	N	Y
16	nx_snd3	219	6	Y	N
17	nx_snd6	219	6	N	Y
18	nx_ltim	220	17	Y	N
19	nx_htim	220	5	N	Y
20	nx_htim	221	5	Y	N
21	nx_ltim	221	17	N	Y
22	nx_upexe	222	6	N	Y
23	nx_purcv	223	6	N	Y

Y: Used; N: Unused

Table 2-23 Comparison of resources (IRSUB) used by NXTOOLS

No.	IRSUB name	IRSUB number	Resource use comparison	
			S10V	S10VE
1	nx_init	301	Y	Y
2	nx_quit	302	Y	Y
3	nx_put	303	Y	Y
4	nx_get	304	Y	Y
5	nx_dfup	305	Y	Y
6	nx_dfdwn	306	Y	Y
7	nx_init_tm	307	Y	Y
8	nx_ctl_tm	308	Y	Y
9	nx_get_tm	309	Y	Y
10	nx_write_tm	310	Y	Y
11	nx_read_tm	311	Y	Y
12	nx_trc	312	Y	Y
13	nx_cdoff	313	Y	Y
14	nx_cdon	314	Y	Y
15	nx_puni	315	Y	Y

Y: Used; N: Unused

Table 2-24 Comparison of resources (IRGLB) used by NXTOOLS

No.	IRGLB name	IRGLB number	Resource use comparison	
			S10V	S10VE
1	nx_com	301	Y	Y
2	dfcb	302	Y	Y
3	nxbuf	303	Y	Y
4	tcbcb	304	Y	Y
5	nxtrc	305	Y	Y
6	nxpubuf	313	N	Y

Y: Used; N: Unused

Table 2-25 Comparison of resources (ULSUB) used by NXTOOLS

No.	ULSUB name	ULSUB number	Resource use comparison	
			S10V	S10VE
1	nx_ins	INS	Y	Y
2	nx_exs	EXS	Y	Y
3	nx_abs	ABS	Y	Y
4	nx_ctl	MODES	Y	Y

Y: Used; N: Unused

Table 2-26 Comparison of resources (GLB) used by NXTOOLS

No.	Item	Resource use comparison			
		S10V		S10VE	
		Used?	Size	Used?	Size
1	GLBW space (type 4)	Y	0x00063000	Y	0x00068000
2	GLBW space (type 5)	Y	0x000BE000	Y	0x000C3000
3	GLBW space (type 6)	N	N	Y	0x00177000

Y: Used; N: Unused

Table 2-27 Comparison of resources (registers) used by NXTOOLS

No.	Register	Range	Resource use comparison	
			S10V	S10VE
1	FW register	FWBFD to FWBFF	Y	Y

Y: Used; N: Unused

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3. Replacing the S10mini With the S10VE

3.1 Changing the S10mini hardware configuration

To replace the S10mini with the S10VE, you need to replace the hardware with alternate hardware. For the compatibility of alternate hardware, see *Table 3-1 List of compatibilities between the S10mini and S10VE*.

(1) Remote I/O

If you are using remote I/O, you need an I/F module. I/F modules can be connected with HSC-1000 and HSC-2100 remote I/O units without the need for any further procedures.

(2) Reduction in optional slots (from eight to seven slots)

The S10VE does not feature optional slot 0, thus reducing the number of optional slots to seven. If an I/O module is installed in slot 0 of the S10mini CPU, that module cannot be transferred to the new hardware as is. To transfer the I/O module, you need to either add an HSC-1000 unit, install the I/O module installed in slot 0 on the HSC-1000 unit, and connect via remote I/O (see Figure 3-2), or change the I/O address. Because you cannot install eight optional modules, revise your system configuration and ensure that no more than seven optional modules are installed.

■ If an I/O module is not installed in slot 0 of the S10mini CPU unit:

- Replace the CPU unit with the S10VE-model hardware.
- Connect the remote I/O to the I/F module.

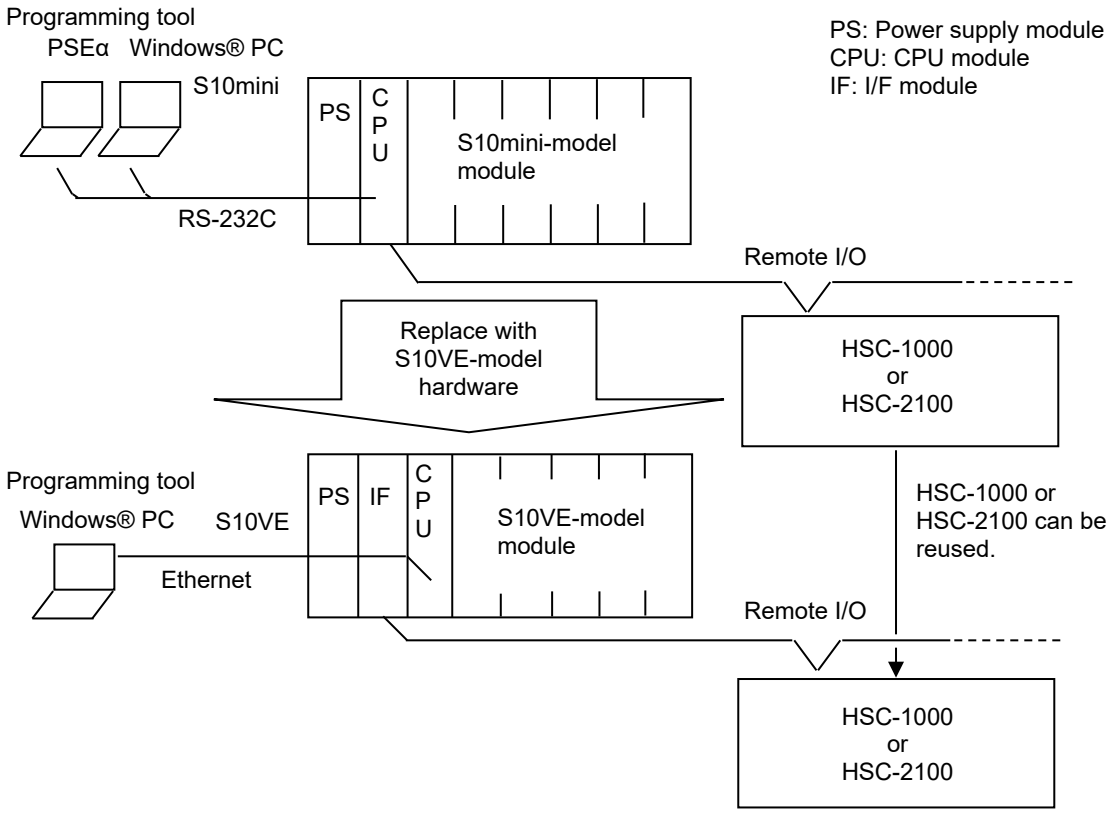


Figure 3-1 Hardware configurations of the S10mini and S10VE (with no I/O module installed in slot 0)

■ If an I/O module is installed in slot 0 of the S10mini CPU unit:

- Replace the CPU unit with the S10VE-model hardware.
- Install the I/O module of the CPU unit in the HSC-1000 unit, and connect via remote I/O.
- Connect the remote I/O to the I/F module.

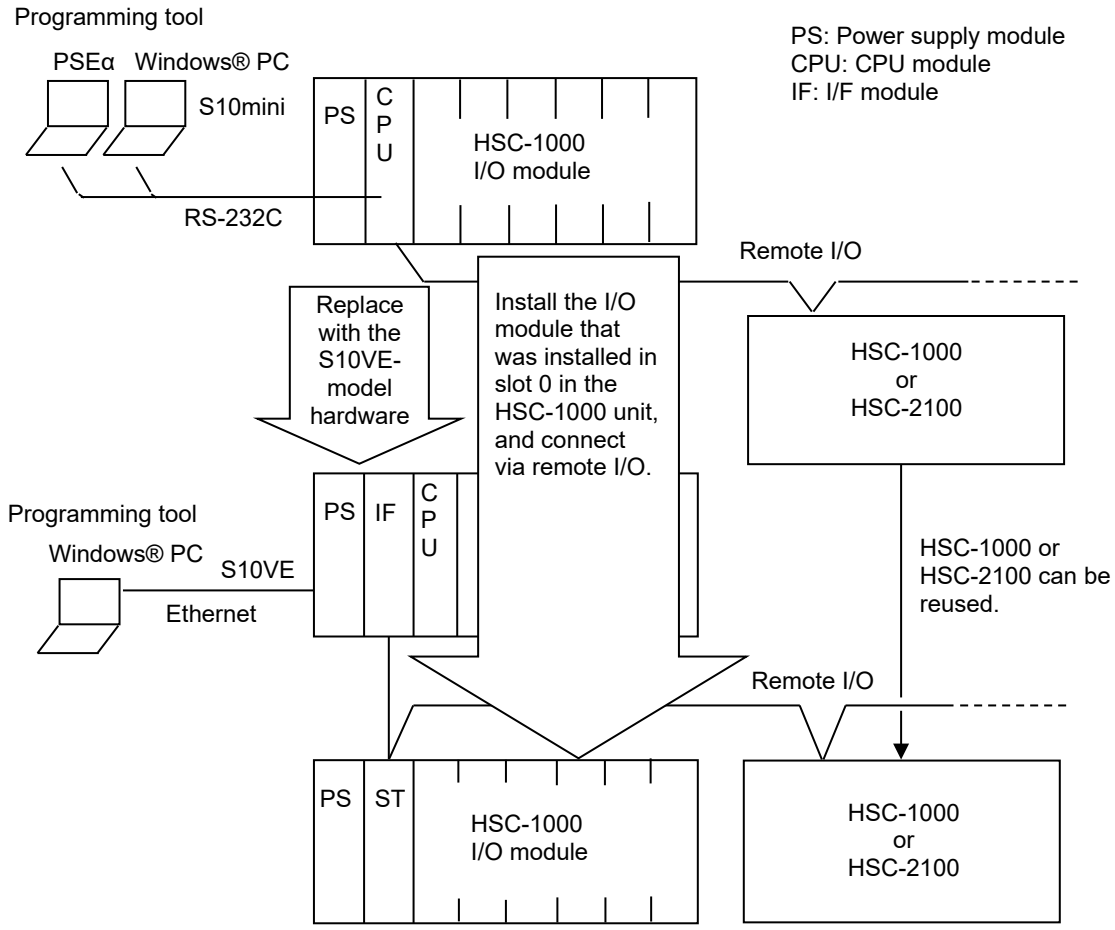


Figure 3-2 Hardware configurations of the S10mini and S10VE (with an I/O module installed in slot 0)

(3) Physical transfer

The following show information relating to the physical transfer from the S10mini to the S10VE:

(a) Panel mount dimensions

The panel mount dimensions for the S10VE mount base are the same as for the S10mini.

(b) Depth dimension

The depth dimension for the S10VE is up to 55 mm larger than for the S10mini. Confirm that there is no interference with the in-panel structure.

(c) Wiring

For details, see Table 3-1. As shown in the preceding (b), the depth dimension is larger, so check the extra length and bend radius of the existing wiring.

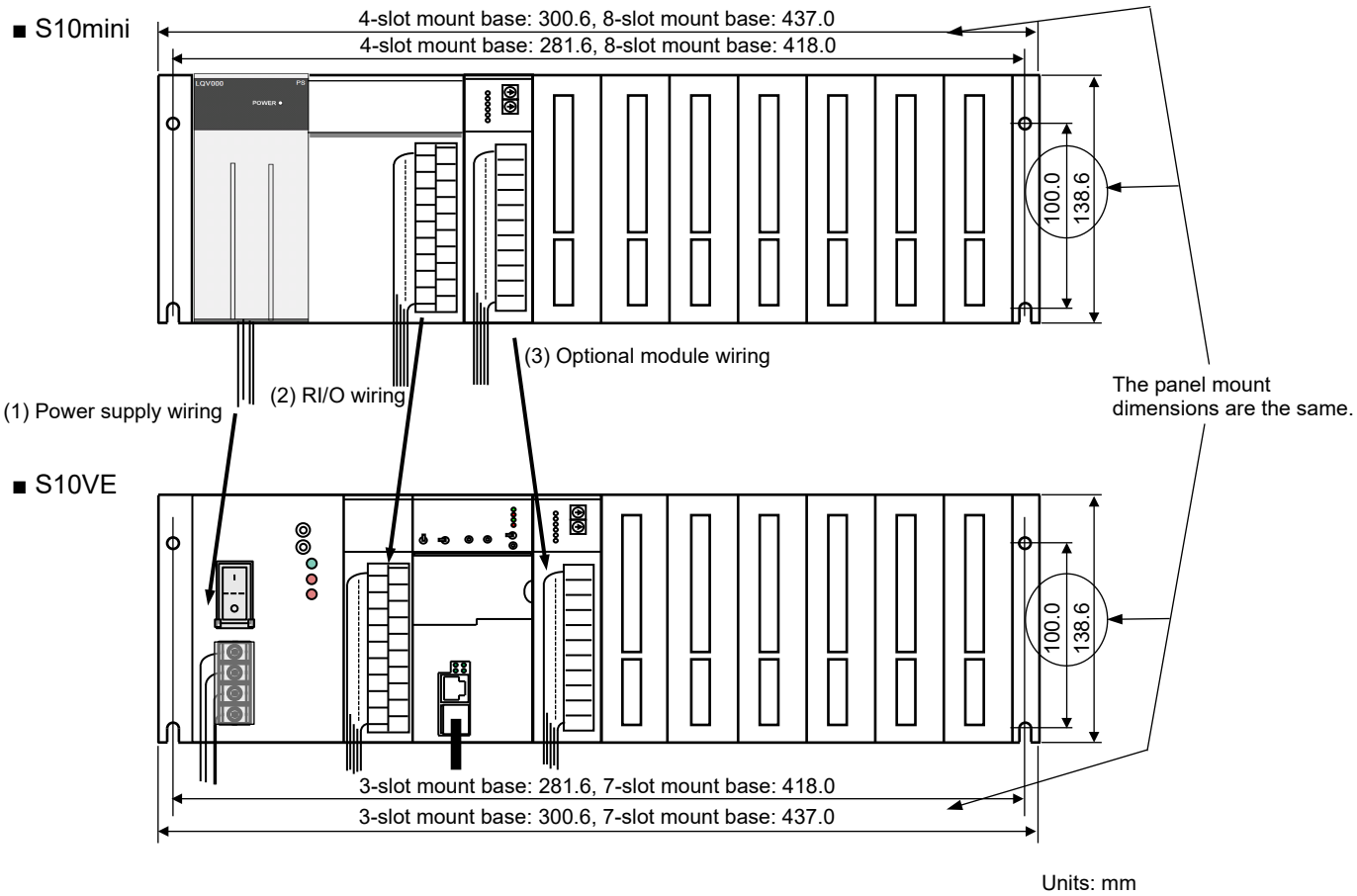


Figure 3-3 Front view of the S10mini and S10VE

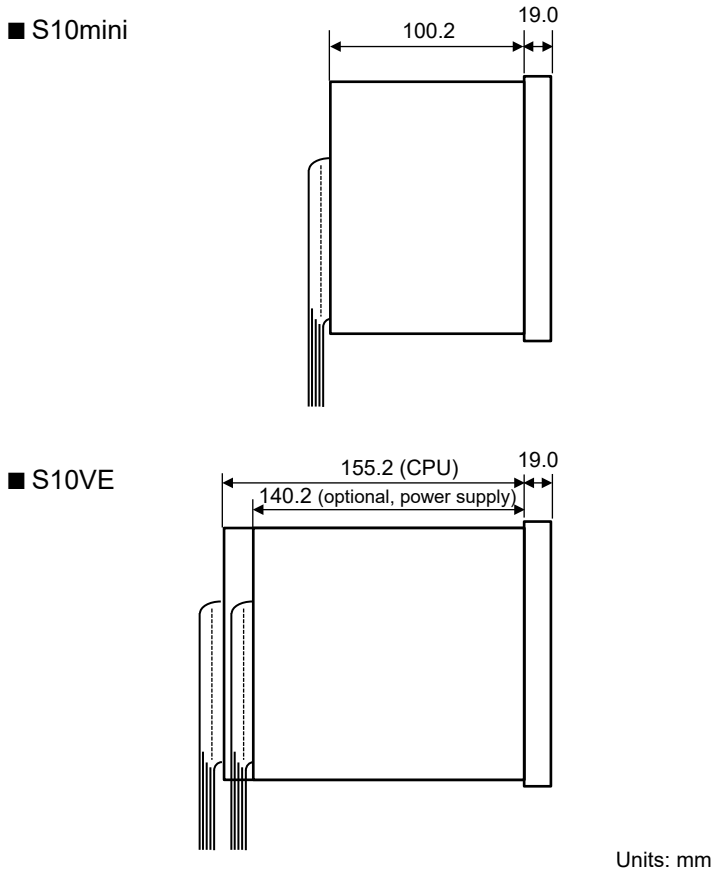


Figure 3-4 Side view of the S10mini and S10VE

Table 3-1 Wiring transfer work

No.	Item	Transfer work
(1)	Power supply wiring	Loosen the terminal block screws of the S10mini power supply module and remove the wiring. Use the terminal block screws to fix the S10VE power supply module in place. Also, change the ground wiring according to *7.4 Ground wiring* in the *S10VE User's Manual General Description* (manual number SEE-1-001).
(2)	RI/O wiring	Loosen the terminal block screws of the S10mini CPU and remove the wiring. Use the S10VE RI/O-IF module's terminal block screws to fix the RI/O-IF module in place.
(3)	Optional module wiring	Transfer the wiring of each optional module.

(d) Installing units

Install units on the cubicle after ensuring that the ambient temperature around the unit is 55°C or less (that is, each module's air intake temperature is 55°C or less), as shown in Figure 3-5.

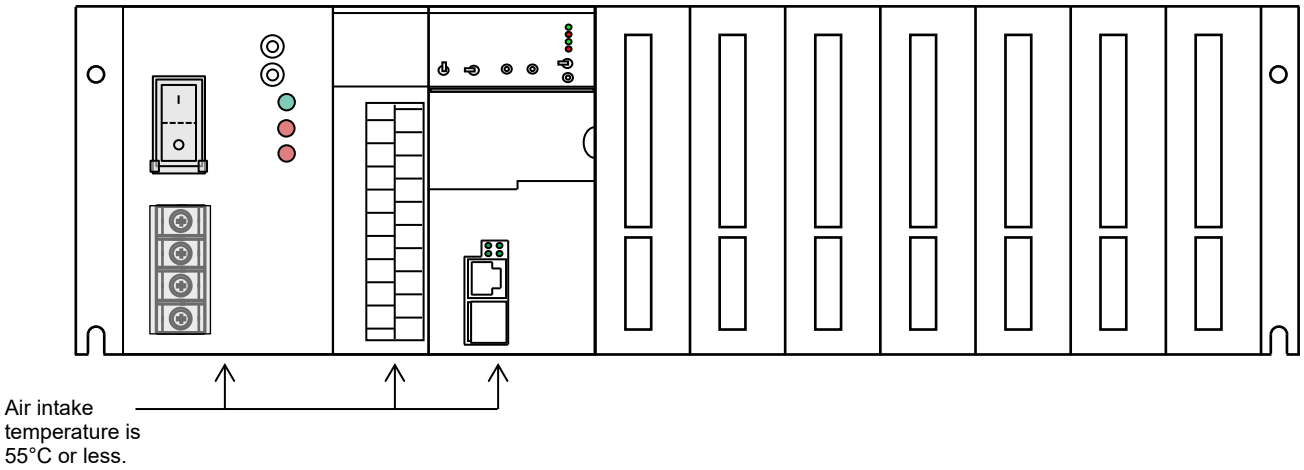


Figure 3-5 Installing units in the S10VE

- Precautions regarding unit installation

  When installing units, note the following precautions:

  - Because the panel mount dimensions are the same as for the S10mini, you can change from the S10mini to the S10VE simply by replacing units. However, because the depth dimension for the S10VE is 55 mm larger than for the S10mini, you need to confirm that there is no interference, for example with the door of the unit's storage panel.
  - Cables used with the S10mini (such as the power supply cable, RI/O cable, and Ethernet cable) can be used with the S10VE as is. However, because the depth dimension for the S10VE is larger, you need to perform re-cabling.
  - Before performing cabling, always turn off the switch at the AC/DC power source (MCCB (such as FFB)) to prevent electric shocks during cabling.
  - Do not install S10mini optional modules. These are not guaranteed to work as optional modules for S10VE.
  - The S10VE CPU module, which performs an equivalent function to the S10mini CPU+ET.NET module configuration, also has an equivalent current consumption and heat dissipation. For the S10VE, the interval between unit installations is decided by the temperature of the air intake side of the module. Therefore, confirm that each module's air intake temperature is 55°C or less, as shown in Figure 3-5.
  - When performing wiring, keep high-voltage and low-voltage cables separate (see Figure 3-6).
  - Connect the protective grounding terminal of the power supply module (⏚) to the grounding point. Connect the FG terminals of the RI/O-IF module and optional modules with the FG terminals of the adjacent modules and mount base in a daisy chain, and then connect the end of the daisy chain to the FG terminal of the power supply module.

    Also, keep each grounding wire as short as possible (see Figure 3-6).

- Keep the factory-issued connector caps on any unused slots or unused Ethernet line connectors on the mount base.

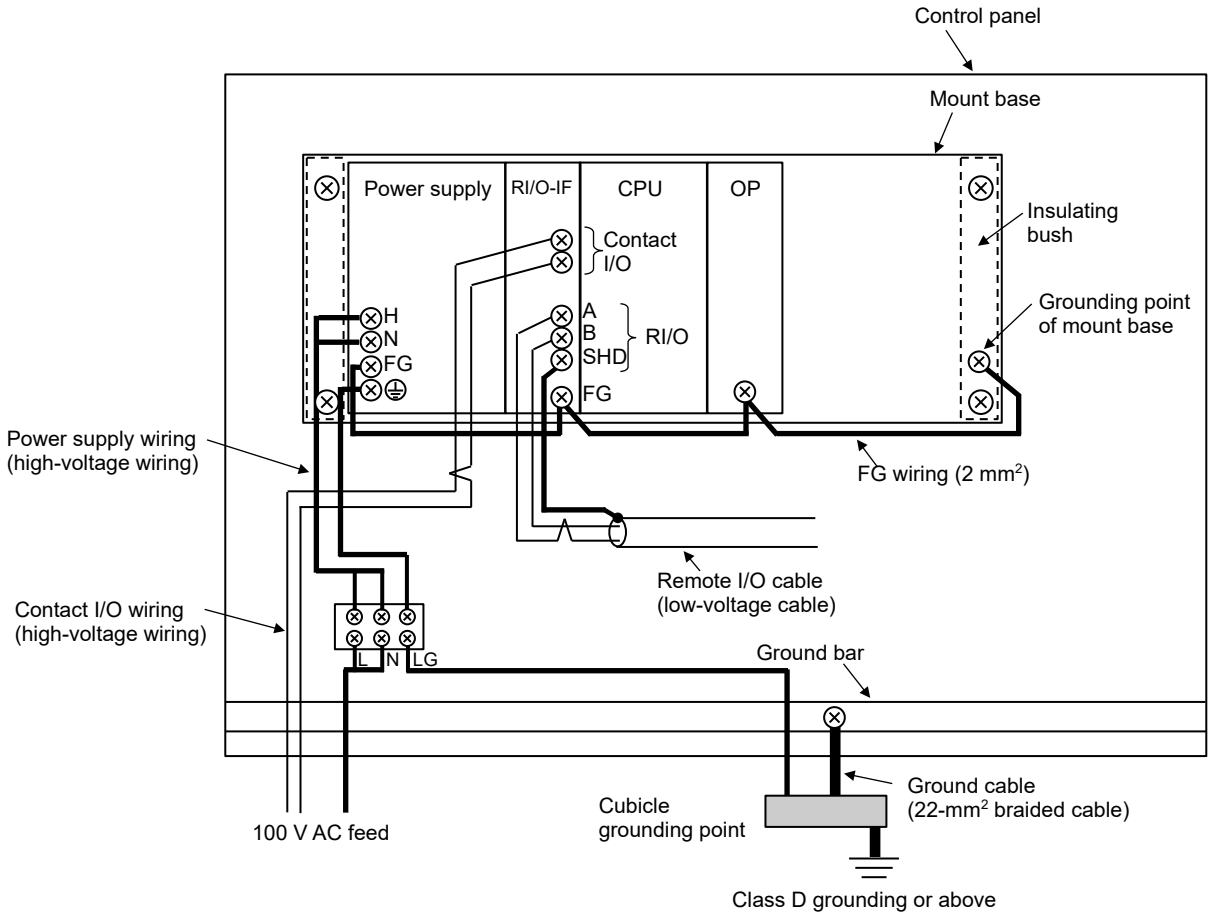


Figure 3-6 Example power supply module and ground wiring

3.2 Hardware compatibility between the S10mini and S10VE

Table 3-1 shows the compatibility of hardware between the S10mini and S10VE.

Table 3-2 List of compatibilities between the S10mini and S10VE (1/2)

No.	Product name	S10mini model	S10VE model	Compatibility					Description
				Function	User programs			Settings	
					Ladder	HI-FLOW	C		
1	CPU (model S)	LQP000	LQP600	Y	Y	Y	Y	Y	
2	CPU (model H)	LQP010							
3	CPU (model F)	LQP011							
4	CPU (model D)	LQP120							
5	CPU (model L)	LQP800	LQP600	Y	Y	–	–	Y	
6	CPU (model M)	LQP850	LQP600	Y	Y	–	–	Y	
7	I/F module	–	LQE950	Y	–	–	–	Y	This must be installed when using remote I/O with the I/F module for remote I/O connection.
8	2-slot mount base	HSC-1020	None	–	–	–	–	–	Use either HSC-1770 or HSC-1730.
9	4-slot mount base	HSC-1040	HSC-1730	Y	–	–	–	–	The number of I/O slots has been reduced to three.
10	8-slot mount base	HSC-1080	HSC-1770	Y	–	–	–	–	The number of I/O slots has been reduced to seven.
11	Power supply (100 V AC input)	LQV000	LQV410	Y	–	–	–	–	
12	Power supply (100 V AC input)	LQV010	LQV410	Y	–	–	–	–	
13	Power supply (24 V DC input)	LQV020	None	–	–	–	–	–	
14	Power supply (100 V DC input)	LQV100	LQV410	Y	–	–	–	–	
15	FL.NET (Ver. 2)	LQE502	LQE702-E	Y	–	–	N	Y	(1) For 10BASE-T connections: - Connect with LQE702-E, placing a repeater in between. - Replace the cable with a UTP cable of category 5e or above. (2) For 10BASE-5 connections: - Connect with LQE702-E, placing a 5/T conversion repeater in between. (3) For the S10VE, some PI/O memory addresses have been changed, and there is no extended memory, so user programs must be changed. Handlers cannot be transferred because they are not supported. (For details, see section 3.3.2.5.)
16	OD.RING (4 km)	LQE010 LQE510	LQE510-E	Y	–	–	–	Y	For the S10VE, some PI/O memory addresses have been changed, and there is no extended memory, so user programs must be changed. (For details, see section 3.3.2.2.)

Y: Compatible or partially compatible (requires transfer work); N: Not compatible; −: Comparison not applicable

Table 3-2 List of compatibilities between the S10mini and S10VE (2/2)

No.	Product name	S10mini model	S10VE model	Compatibility					Description
				Function	User programs			Settings	
					Ladder	HI-FLOW	C		
17	ET.NET	LQE020 LQE520	LQE260-E	Y	−	−	Y	Y	(1) For 10BASE-T connections: Replace the cable with a UTP cable of category 5e or above. (2) For 10BASE-5 connections: Connect with LQE260-E, placing a 5/T conversion repeater in between. (3) Communication functions (socket handlers) have been changed to CPMS macro instructions, so user programs must be changed. (For details, see section 3.3.2.3.)
18	ET.NET	LQE720	LQE260-E	Y	−	−	Y	Y	(1) Replace the cable with a UTP cable of category 5e or higher. (2) Communication functions (socket handlers) have been changed to CPMS macro instructions, so user programs must be changed. (For details, see section 3.3.2.3.)
19	J.NET	LQE040 LQE540	LQE540-E	Y	−	−	N	Y	(1) Cables can be used as is, but re-wiring must be performed on the terminal block. (2) Parameters must be reconfigured by using a setting tool. For the S10VE, some PI/O memory addresses have been changed, so user programs might have to be changed. Handlers cannot be transferred because they are not supported. (For details, see section 3.3.2.4.)
20	D.NET	LQE070 LQE170 LQE570 LQE175 LQE575	LQE770-E	Y	−	−	−	Y	(1) Cables can be used as is. (2) Parameters must be reconfigured by using a setting tool. For the S10VE, some PI/O memory addresses have been changed, and there is no extended memory, so user programs might have to be changed. (For details, see section 3.3.2.6.)
21	Extended memory	LQM000	LQP600	Y	−	Y	Y	Y	Extended memory addresses must be assigned, for example to the S10VE's extended register.

Y: Compatible or partially compatible (requires transfer work); N: Not compatible; −: Comparison not applicable

3.3 Software compatibility between the S10mini and S10VE

3.3.1 Software comparison list

(1) List of user program compatibilities

Table 3-3 lists the user program compatibilities between the S10mini and S10VE.

Table 3-3 List of user program compatibilities between the S10mini and S10VE

No.	Language type	Compatibility	Differences	Transfer work
1	Ladder chart	Y	- The S10mini supports right-downward ladders, and the S10VE supports horizontal ladders. - The S10VE does not support arithmetic functions of optional modules. - The S10VE has new functions (Ethernet communication and S10VE comparison instructions) not found in the S10mini. - In the S10VE, if ladder programs use NE0 to NFF, the area size must be defined in advance. The default size is 8,192 bytes.	After performing conversion by using the S10V ladder chart system, perform conversion by using the S10VE ladder chart system.
2	HI-FLOW	Y	- The language specifications are compatible. - The S10VE has new functions (S10VE comparison instructions) not found in the S10mini.	Perform conversion by using HI-FLOW SYSTEM/S10VE.
3	C language	Y	- The S10mini uses the 68K compiler, and the S10VE uses the SH compiler. - Object files compiled by the S10mini cannot be used. - The S10VE does not support handlers of J.NET modules or FL.NET modules. - In the S10VE, the socket handlers of ET.NET modules have been changed from link addresses to macros, and module and channel parameters have been added.	Change source programs for the S10mini to source programs for the S10VE (for how to do this, see section 3.7), and compile them by using the SH compiler. For details about RPDP/S10VE, see the *S10VE Software Manual Operation RPDP for Windows®* (manual number SEE-3-133).

Y: Compatible or partially compatible (requires transfer work)

(2) Correspondence table for programming software

■ Windows-version software packages for the S10mini

Table 3-4 shows which software packages for the S10VE correspond to those for the S10mini.

Table 3-4 Correspondences between software packages for the S10mini and S10VE

No.	S10mini		Corresponding products for S10VE		Remarks
	Name	Model	Name	Model	
1	S10Tools system	S-7890-01	−	−	Set containing No. 2 and 3 of this table
2	Ladder chart system	S-7890-02	LADDER DIAGRAM SYSTEM/S10VE	S-7898-02, S-7898-50	
3	HI-FLOW system	S-7890-03	HI-FLOW SYSTEM/S10VE	S-7898-03	
4	CPMSE loading system	S-7890-05	CPMS/S10VE	S-7898-05	In the S10VE, this has been changed to download from BASE SYSTEM/S10VE.
5	CPMSE debugger system	S-7890-07	−	−	
6	Batch saving and loading system	S-7890-09	BACKUP RESTORE SYSTEM/S10VE	S-7898-09, S-7898-50	
7	RPDP/S10 system	S-7891-10	RPDP/S10VE	S-7898-10	
8	NX/ACP-S10	S-7891-11	NXACP/S10VE	S-7898-11	
9	NX/Ladder	S-7891-12	−	−	In the S10VE, this system is integrated with NXTOOLS SYSTEM/S10VE.
10	NX/Tools-S10 system	S-7890-13	NXTOOLS SYSTEM/ S10VE	S-7898-13	
11	NX/HOST-S10	S-7890-14	−	−	In the S10VE, this system is integrated with NXTOOLS SYSTEM/S10VE.
12	Ladder chart comment converter system	S-7890-19	−	−	In the S10VE, this system is integrated with LADDER DIAGRAM SYSTEM/S10VE.
13	System for linking CPUs	S-7890-22	−	−	
14	4-channel analog pulse counter	S-7890-23	LADDER DIAGRAM SYSTEM/S10VE	S-7898-02, S-7898-50	In the S10VE, this system is integrated with LADDER DIAGRAM SYSTEM/S10VE.
15	System for linking external equipment	S-7890-24	−	−	
16	J.NET system	S-7890-27	J.NET SYSTEM/S10VE	S-7898-27, S-7898-50	
17	OD.RING/SD.LINK system	S-7890-28	OD.RING SYSTEM/S10VE	S-7898-28, S-7898-50	
18	ET.NET system	S-7890-29	−	−	In the S10VE, the network configuration function has been consolidated with BASE SYSTEM/S10VE.
19	FL.NET system	S-7890-30	FL.NET SYSTEM/S10VE	S-7898-30, S-7898-50	
20	D.NET system	S-7890-31	D.NET SYSTEM/S10VE	S-7898-31, S-7898-50	
21	IR.LINK system	S-7890-36	−	−	
22	−	−	BASE SYSTEM/S10VE	S-7898-38, S-7898-50	
23	Cross-C compiler	MCP68K	SuperH RISC engine C/C++ compiler	S-7350-22P	The compiler has been changed.

−: There is no corresponding product in the S10VE.

3.3.2 Transferring individual modules

3.3.2.1 CPU module

(1) Module to be used

The following table gives comparisons showing which model to use with each language:

No.	Language	S10mini	Transfer to S10VE
1	Ladder language only	CPU module	Y
2	HI-FLOW	CPU module	Y
3	C-mode program	CPU module	Y

Y: Transfer supported

(2) Switch settings for the S10mini CPU module

In the S10mini CPU module, the settings in the following table were set by using a switch, but in the S10VE, some of these settings can now be set by using tools. Changes to the settings are shown in the following table:

No.	Setting	S10mini	Transfer to S10VE	Description
1	Toggle RUN / STOP	Toggle switch	Y	In the S10VE, RUN / STOP can be toggled by using either the toggle switch or BASE SYSTEM/S10VE (S-7898-38).
2	Toggle SIMU.RUN	Toggle switch	Y	In the S10VE, this setting is toggled by using BASE SYSTEM/S10VE (S-7898-38).
3	Toggle protection ON / OFF	Toggle switch	Y	In the S10VE, this setting is toggled by using BASE SYSTEM/S10VE (S-7898-38).
4	Reset	Push switch	Y	In the S10VE, this setting is reset by using the CPU RUN/STOP switch to change STOP to RUN. Alternatively, this setting can be reset by using BASE SYSTEM/S10VE (S-7898-38).

Y: Transfer supported

(3) PCs edition settings

As shown in the following table, the PCs edition settings are different for the S10mini and S10VE. The converter function of LADDER DIAGRAM SYSTEM/S10VE does not automatically transfer some of the PCs edition settings, so such settings must be entered manually. Area size must be specified before performing ladder conversion. (For details, see the *S10VE Software Manual Operation Ladder Diagram System for Windows®* (manual number SEE-3-131).)

■ PCs edition (1/2)

No.	Setting	S10mini	Transfer to S10VE	Description
1	PCs-No.	0000 to 9998	Y	
2	Point-change timer (points)	0 to 512	Y	In the S10VE, 0 to 2,048 can be set.
3	Point-change one-shot timer (points)	0 to 256	Y	
4	Point-change counter (points)	0 to 256	Y (fixed to 256)	In the S10VE, this setting is fixed to 256.
5	Send area for linking CPUs	000 to FFF (However, 1,024 points per module)	−	The S10VE does not support linking of CPUs.
6	Operation mode for linking CPUs	Clear / Hold		
7	Send area for linking sub-CPUs	000 to FFF (However, 1,024 points per module)		
8	Operation mode for linking sub-CPUs	Clear / Hold		
9	S-MODE fence address	Up to 0x07FFF8	Y	In the S10VE, the sizes of ladder programs from NE0 to NFF must be set individually. Set this in setting No. 20 shown in this table.
10	10-msec timer (T000 to T00F)	Used / Unused	Y	
11	Register external stop input number	Unused	−	
12	Sequence cycle duration (ms)	10 to 999	Y	In the S10VE, 1 to 999 can be set.
13	Remote I/O point setting (points)	512/1,024 / 1,536/2,048	Y	In the S10VE, the number of points can be set to 64, 128, 256, 512, 1,024, 1,536, or 2,048.
14	Ladder WDT timeout value (ms)	Unused / 20 to 1,706	(Y only for 50 to 1,706)	In the S10VE, 50 to 10,000 can be set.
15	Operation mode when resetting N coil master	No function	−	You can set either *Normal* or *0 output*.
16	PI/O installation	Jumper pin setting	Y	In the S10VE, these can be set in the ladder chart system. Please configure these settings in the ladder chart system.
17	Partition	Jumper pin setting	Y	
18	Output HOLD	Jumper pin setting	Y	
19	Number of slot points	Jumper pin setting	Y	

Y: Supported; —: Not supported (setting added in the S10VE)

■ PCs edition (2/2)

No.	Setting	S10mini	Transfer to S10VE	Description
20	Area size (ladder programs)	No function	The ladder program area can be set in the range of 0 to 2,097,152 bytes.	In the S10VE, the size of ladder programs from N00 to NDF and NE0 to NFF must be set individually. (There is a default setting.)
21	Area size (I/O comments)		–	In the S10VE, the I/O comment storage area can be specified within a dedicated range of 0 to 2,097,152 bytes.
22	Area size (user arithmetic functions)		–	In the S10VE, the user arithmetic function storage area is specified within a dedicated range of 0 to 2,097,152 bytes.
23	RI/O operation mode		–	In the S10VE, you can set either *Ladders not synchronized* or *Ladders synchronized*.
20	Number of ladder RUN delays		–	In the S10VE, you can either set *Ladder RUN disabled* or specify a value from 0 to 2,000.
21	Optical adapter connections		–	In the S10VE, you can set either *Do not connect* or *Connect*.

Y: Supported; — Not supported (setting added in the S10VE)

■ Analog counter

In the S10VE, the analog counter settings have not been changed, but different notation is used for module names. The conversion function of LADDER DIAGRAM SYSTEM/S10VE converts module names automatically during automatic transfer of analog counter settings.

List of corresponding analog counter module names between the S10mini and S10VE

No.	Module name	
	S10mini	S10VE
1	PAF300, LQA000/100/310/810, LWA400/430	4-channel AI (12-bit)
2	PAF301, LQA200, LWA421/422/423	4-channel AI (12-bit)
3	PAF309, LWA401/404	4-channel AI (12-bit)
4	PAF320, LWA402	4-channel AI (12-bit)
5	PAF329, LWA403	4-channel AI (12-bit)
6	PAN300B, LQA500, LWA450	4-channel AO (12-bit)
7	PAN301B, LQA600/610, LWA460	4-channel AO (12-bit)
8	PAN309	4-channel AO (12-bit)
9	PAN320B	4-channel AO (12-bit)
10	PAN329	4-channel AO (12-bit)
11	PTF300, LQC000 (MODE 2), LWC401/402	PCT (MODE 2)
12	PTF320, LQC000 (MODE 1), LWC400	PCT (MODE 1)
13	LQA050/150 (MODE 2)	8-channel AI (12-bit) (MODE 2)
14	LQA050/150 (MODE 4) (channels 0 to 3)	8-channel AI (12-bit) (MODE 4) (channels 0 to 3)
15	LQA050/150 (MODE 4) (channels 4 to 7)	8-channel AI (12-bit) (MODE 4) (channels 4 to 7)
16	LWA435	4-channel AI (14-bit)

(4) UFET (user arithmetic functions, editions, and tables)

The conversion function of LADDER DIAGRAM SYSTEM/S10VE does not automatically transfer UFET settings. Therefore, perform compilation after changing the target user arithmetic function to be used with the S10VE, and then register the UFET settings to the user arithmetic function.

In the S10VE, UFET registration has been extended. The following table shows the changes:

No.	Item	S10mini	Transfer to S10VE	Description
1	Number of registrations	16 cases	Y	In the S10VE, 128 cases can be registered. To register a case, you need to allocate an area for user arithmetic functions by going to the **Utilities** menu of LADDER DIAGRAM SYSTEM/S10VE (S-7898-02), then **PCs Edition**, and then **Change capacity**.

Y: Supported

Set UFET according to the addresses for user arithmetic functions registered in the S10VE. For details, see *4.7.12 Registering user arithmetic functions* in the *S10VE Software Manual Operation Ladder Diagram System for Windows®* (manual number SEE-3-131).

(5) PRET (program edition table)

In the S10VE, PRET has been deleted. For the task registration and deletion function, use RPDP/S10VE (S-7898-10).

(6) Battery backup of the extended memory module

The S10mini extended memory module allowed memory to be backed up by using the CPU module battery even during power outages, but the S10VE memory does not allow battery backup.

As an alternative, the S10VE features built-in nonvolatile memory, MRAM (1 MB). Please change any programs that access data requiring backup during a power outage so that MRAM is used instead.

For MRAM addresses, see *4.1.2 S10VE memory map*.

3.3.2.2 OD.RING module

(1) Parameters (configuration by using the tool)

Reconfigure parameters by using OD.RING SYSTEM/S10VE (S-7898-28).

No.	Setting	S10mini	Transfer to S10VE	Description
1	Bit data forwarding address	XW000 to XWFF0 YW000 to YWFF0 JW000 to JWFF0 QW000 to QWFF0 GW000 to GWFF0 RW000 to RWFF0 EW400 to EWFF0 MW000 to MWFF0	Y	In the S10VE, the following register ranges have been extended: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0
2	Word data forwarding address	FW000 to FWBFF XW000 to XWFF0 YW000 to YWFF0 JW000 to JWFF0 QW000 to QWFF0 GW000 to GWFF0 RW000 to RWFF0 EW400 to EWFF0 MW000 to MWFF0 0x100000 to 0x4FFFFE	Y	Assign the S10mini extended memory area 0x100000 to 0x4FFFFE to an added extended register such as the following: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF
3	RAS table forwarding address			

Y: Supported

(2) Setting transfer areas when S10mini, S10V, and S10VE devices coexist on the same network

In an S10mini network where the OD.RING module transfer area is set to extended memory, if you add an S10VE device to the network and perform transfer as usual, the transfer will not reach the correct address on the S10VE device. To correct this, the S10VE-side settings allow S10mini extended memory addresses to be mapped to the S10VE extended register, allowing transfer between these addresses.

For details, see *4.5.13 Transfer area settings for combination of S10mini and S10V or S10VE* in the *S10VE User's Manual Option OD.RING (LQE510-E)* (manual number SEE-1-001).

3.3.2.3 ET.NET module

(1) Parameters (configuration by using the tool)

Reconfigure the parameters by using BASE SYSTEM/S10VE (S-7898-38).

No.	Setting	S10mini	Transfer to S10VE	Description
1	IP address setting	Setting required	Y	Setting required
2	Subnet mask	Setting required	Y	Setting required
3	Broadcast setting	−	Y	Setting required
4	Routing information setting	Setting required	Y	Setting required

Y: Supported

(2) Socket handlers

In the S10VE, the method of calling socket handlers has been changed from link address specification to macro instruction. The socket handler functions themselves are the same as for the S10mini.

List of ET.NET module socket handlers

No.	Function	S10mini (name)	Transfer to S10VE	Description
1	Actively open TCP	`tcp_open()`	Y	
2	Passively open TCP	`tcp_popen()`	Y	
3	Accept TCP connection request	`tcp_accept()`	Y	
4	Close TCP connection	`tcp_close()`	Y	
5	Abort TCP connection	`tcp_abort()`	Y	
6	Read TCP socket information	`tcp_getaddr()`	Y	
7	Read TCP connection state	`tcp_stat()`	Y	
8	Send TCP data	`tcp_send()`	Y	
9	Receive TCP data	`tcp_receive()`	Y	
10	Open UDP	`udp_open()`	Y	
11	Close UDP	`udp_close()`	Y	
12	Send UDP data	`udp_send()`	Y	
13	Receive UDP data	`udp_receive()`	Y	
14	Read routing information	`route_list()`	Y	
15	Delete routing information	`route_del()`	Y	
16	Register routing information	`route_add()`	Y	
17	Read ARP information	`arp_list()`	Y	
18	Delete ARP information	`arp_del()`	Y	
19	Register ARP information	`arp_add()`	Y	
20	Read current local station information	`getconfig()`	Y	The host name and physical address cannot be acquired.

Y: Supported

(3) Precautions on transferring C-mode programs of socket handlers

The S10mini and S10VE have different methods of calling socket handlers, so programs must be modified accordingly. For how to use S10VE socket handlers, see *1.6 ET.NET Socket Handler* in *PART 2* in the *S10VE Software Manual CPMS General Description and Macro Specifications* (manual number SEE-3-201).

3.3.2.4 JEMA (OPCN-1) Netmaster J.NET module

(1) Parameters

Reconfigure the parameters by using J.NET SYSTEM/S10VE (S-7895-27).

List of settings (1/2)

No.	Setting			S10mini	Transfer to S10VE	Description
1	Editing system information	NET1 refresh cycle setting		3 to 3000 ms	Y	
2		NET2 refresh cycle setting				
3		NET1 status table address setting		X000 to XFFF Y000 to YFFF J000 to JFFF Q000 to QFFF G000 to GFFF R000 to RFFF E400 to EFFF M000 to MFFF	Y	In the S10VE, the following register ranges have been extended: X0000 to XFFFF Y0000 to YFFFF Q0000 to QFFFF E0400 to EFFFF M0000 to MFFFF LB0000 to LBFFFF
4		NET2 status table address setting				
5	Editing NET1 information Editing NET2 information	ID selection		0x01 to 0x1F	Y	
6		Station number setting		0x01 to 0x7F	Y	
7		Station type setting		AUTO I/O I/O+DR/DW DR/DW J.STATION (EXTENDED) J.STATION (STANDARD)	Y	
8		Refresh cycle setting		0 to 65535	Y	
9		I/O area setting	I/O word setting	0x01 to 0x80 (words)	Y	In the S10VE, 0x01 to 0x100 (bytes) can be set.
10			I/O address setting	FW000 to FWBFF XW000 to XWFF0 YW000 to YWFF0 JW000 to JWFF0 QW000 to QWFF0 GW000 to GWFF0 RW000 to RWFF0 EW400 to EWFF0 MW000 to MWFF0 0x100000 to 0x4FFFFF	Y	Change the S10mini extended memory 0x100000 to 0x4FFFFF to the following extended registers in the S10VE: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF
11		Transfer area setting	Transfer word setting	0x01 to 0x40 (words)	Y	In the S10VE, 0x01 to 0x80 (bytes) can be set.
12			Forwarding address setting	0x00 to 0xFF	Y	

Y: Supported

(Continued on the next page)

List of settings (2/2)

No.	Setting			S10mini	Transfer to S10VE	Description
13	Editing NET1 information Editing NET2 information	Slot setting	Slot number	0x00 to 0xF	Y	
14			I/O type	DI DO AI AO S10 AI (4-channel) S10 AO (4-channel) S10 PCT (pulse counter)	Y	
15			Number of transfer words	0x01 to 0x80 (words)	Y	In the S10VE, 0x01 to 0x100 (bytes) can be set.
16			Forwarding addresses	FW000 to FWBFF XW000 to XWFF0 YW000 to YWFF0 JW000 to JWFF0 QW000 to QWFF0 GW000 to GWFF0 RW000 to RWFF0 EW400 to EWFF0 MW000 to MWFF0 0x100000 to 0x4FFFFF	Y	Change the S10mini extended memory 0x100000 to 0x4FFFFF to the following extended registers in the S10VE: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF

Y: Supported

List of LGB table settings (1/2)

No.	Setting	Setting value	S10mini	Transfer to S10VE
1	Protocol type	Unused	Can be set	N
		Non-procedural (RS-232C)		
2	Transmission frame	ST+7DT+EP+2SP	Can be set	N
		ST+7DT+OP+2SP		
		ST+7DT+EP+1SP		
		ST+7DT+OP+1SP		
		ST+7DT+2SP		
		ST+7DT+1SP		
		ST+8DT+EP+2SP		
		ST+8DT+OP+2SP		
		ST+8DT+EP+1SP		
		ST+8DT+OP+1SP		
		ST+8DT+2SP		
		ST+8DT+1SP		

Y: Supported; N: Not supported

(Continued on the next page)

List of LGB table settings (2/2)

No.	Setting	Setting value	S10mini	Transfer to S10VE
3	Transmission speed (BAUD RATE)	150 (bps)	Can be set	N
		300 (bps)		
		600 (bps)		
		1200 (bps)		
		2400 (bps)		
		4800 (bps)		
		9600 (bps)		
		19200 (bps)		
4	Data conversion mode	ASCII	Can be set	N
		Binary		
5	Idling detection time	00001 to 32767 (*10 ms)	Can be set	N
6	Start code	No start code	Can be set	N
		1 start code		
		2 start codes		
		3 start codes		
		4 start codes		
7	End code	No start code	Can be set	N
		1 start code		
		2 start codes		
		3 start codes		
		4 start codes		
8	Block check character	No BCC	Can be set	N
		Even-number parity check		
		Odd-number parity check		
9	Transmission delay time	No data transmission delay	Can be set	N
		00001 to 32767 (*10 ms)		
10	Transmission suspend / resume code	No suspend or resume codes	Can be set	N
		1 suspend code, 1 resume code		
		1 suspend code, 2 resume codes		
		2 suspend codes, 1 resume code		
		2 suspend codes, 2 resume codes		
11	Transmission suspension monitoring time period	No suspension monitoring for text transmissions	Can be set	N
		00001 to 32767 (*10 ms)		
12	Output signal control	No control	Can be set	N
		RS and ER control provided		
13	Input signal check	No checks	Can be set	N
		CS, DR, and CD checks provided		
14	Reception task number	No reception task registered	Can be set	N
		001 to 127 (task number)		
15	Reception task initiation factor	Unused	Can be set	N
		01 to 16 (initiation factor)		

Y: Supported; N: Not supported

(2) Arithmetic functions

The S10VE does not support arithmetic functions. Arithmetic functions cannot be replaced.

List of J.NET arithmetic functions and their support for transfer

No.	Function	S10mini (name)	Transfer to S10VE
1	Request service	JCMD	N
2	Check service	JRSP	N
3	Send data	JSND	N
4	Receive data	JRCV	N

Y: Supported; N: Not supported

(3) C-mode subroutines

The S10VE does not support C-mode subroutines. C-mode subroutines cannot be replaced.

List of J.NET C-mode subroutines and their support for transfer

No.	Function	S10mini (name)	Transfer to S10VE
1	Request service	J_CMD	N
2	Check service	J_RSP	N
3	Send data	J_SND	N
4	Receive data	J_RCV	N

Y: Supported; N: Not supported

3.3.2.5 FL.NET module

(1) FL-net protocol version

The FL-net protocol comes in two versions, Ver. 1.00 and Ver. 2.00, which are incompatible with each other. Therefore, a device using Ver. 1.00 cannot be connected with a device using Ver. 2.00. FL.NET modules also support different protocol versions depending on the model, so transfer to a module that uses the same protocol version as the old module. The following shows the supported FL-net protocol version for each model.

List of FL-net protocol versions and their support for transfer

No.	FL-net protocol version	S10mini	Transfer to S10VE	Description
1	Ver. 1.00	LQE000, LQE500	N	The S10VE does not support Ver. 1.00.
2	Ver. 2.00	LQE502	Y	Can be transferred using LQE702

Y: Supported; −: Not supported

(2) Parameters (configuration by using the tool)

Reconfigure the parameters by using FL.NET SYSTEM/S10VE (S-7898-30).

List of settings (1/2)

No.	Setting		S10mini	Transfer to S10VE	Description
1	Local node information	Node number	1 to 254	Y	
2		Area 1 address	0 to 0x1FF	Y	
3		Area 1 number of words	0 to 0x200	Y	
4		Area 2 address	0 to 0x1FFF	Y	
5		Area 2 number of words	0 to 0x2000	Y	
6		Minimum allowable frame interval	0 to 50	Y	
7		Node name	Within 10 halfwidth alphanumeric characters	Y	
8		Node number (PCs allocation)	#1	Y	
9		Area 1 address (PCs allocation)		Y	
10		Area 2 address (PCs allocation)		Y	
11		FA link state (PCs allocation)		Y	
12		Local node state (PCs allocation)		Y	
13		Transparent reception initiation task	0 to 255	—	These cannot be set because transparent message reception is not supported.
14		Transparent reception initiation factor	0 to 32	−	
15		Transparent reception flag area	#1	−	
16		IP address		Y	
17		Subnet mask		−	In the S10VE, this is fixed to 255.255.255.0.

Y: Supported; −: Not supported

List of settings (2/2)

No.	Setting		S10mini	Transfer to S10VE	Description
18	Other node information	Area 1 address (PCs allocation)	#1	Y	
19		Area 1 number of words	0 to 0x200	Y	
20		Area 2 address (PCs allocation)	#1	Y	
21		Area 2 number of words	0 to 0x2000	Y	
22		FA link state (PCs allocation)	#1	Y	
23		Upper layer state (PCs allocation)		Y	

Y: Supported; —: Not supported

#1: The following shows the address ranges that can be set.

List of address ranges that can be set

S10mini	S10VE
XW000 to XWFF0	XW0000 to XWFFF0
YW000 to YWFF0	YW0000 to YWFFF0
JW000 to JWFF0	JW000 to JWFF0
QW000 to QWFF0	QW0000 to QWFFF0
GW000 to GWFF0	GW000 to GWFF0
RW000 to RWFF0	RW000 to RWFF0
EW400 to EWFF0	EW0400 to EWFFF0
MW000 to MWFF0	MW0000 to MWFFF0
DW000 to DWFFF	DW000 to DWFFF
FW000 to FWBFF	FW000 to FWBFF
0x100000 to 0x4FFFFE	LBW0000 to LBWFFF0
	LWW0000 to LWWFFFF
	LXW0000 to LXW3FFF

(3) Arithmetic functions

The S10VE does not support arithmetic functions. Arithmetic functions cannot be replaced.

List of FL.NET arithmetic functions and their support for transfer

No.	Function	S10mini (name)	Transfer to S10VE
1	Message send request (main)	FLCM	N
2	Message send request (sub)	FLCS	N

Y: Supported; N: Not supported

(4) C-mode subroutines

The S10VE does not support C-mode subroutines. C-mode subroutines cannot be replaced.

List of FL.NET C-mode subroutines and their support for transfer

No.	Function	S10mini (name)	Transfer to S10VE
1	Issue word block read request	`wordrd()`	N
2	Issue word block write request	`wordwt()`	N
3	Issue network parameter read request	`parard()`	N
4	Issue network parameter write request	`parawt()`	N
5	Issue stop request	`reqstop()`	N
6	Issue run request	`reqrun()`	N
7	Issue read communication log data request	`logrd()`	N
8	Issue clear communication log data request	`logclr()`	N
9	Issue message reply request	`mesret()`	N
10	Specified task control request (transparency support developed by Hitachi)	`reqmacro()`	N
11	Transparent message receive request (transparency support developed by Hitachi)	`toukaread()`	N
12	Transparent message send request (transparency support developed by Hitachi)	`toukasend()`	N
13	Common memory offset function request	`comoffset()`	N

Y: Supported; N: Not supported

3.3.2.6 D.NET module

(1) Parameters

Reconfigure the parameters by using D.NET SYSTEM/S10VE (S-7898-31).

List of settings (1/2)

No.	Setting		S10mini	Transfer to S10VE	Description
1	Peer refresh time		3 to 1000 ms	Y	
2	Master / slave refresh time		3 to 1000 ms	Y	
3	Slave timeout detection register		XW000 to XWFC0 YW000 to YWFC0 JW000 to JWFC0 QW000 to QWFC0 GW000 to GWFC0 RW000 to RWFC0 EW400 to EWFC0 MW000 to MWFC0	Y	In the S10VE, the following register ranges can also be used: XW0000 to XWFFC0 YW0000 to YWFFC0 QW0000 to QWFFC0 EW0400 to EWFFC0 MW0000 to MWFFC0 LBW0000 to LBWFFC0
4	PCs OK signal link setting		Enabled, Disabled	Y	
5	Station parameter settings	Communication type	Peer send, Peer receive Poll Bit Strobe send Bit Strobe receive	Y	
6		MACID	0x00 to 0x3F	Y	
7		Message ID	0x0 to 0xF	Y	
8		Input address	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 0x100000 to 0x4FFFFE	Y	Change the S10mini extended memory 0x100000 to 0x4FFFFF to the following extended registers in the S10VE: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF
9		Output address	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 0x100000 to 0x4FFFFE	Y	Change the S10mini extended memory 0x100000 to 0x4FFFFF to the following extended registers in the S10VE: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF

Y: Supported

(Continued on the next page)

List of settings (2/2)

No.	Setting		S10mini	Transfer to S10VE	Description
10	Station parameter settings	Number of I/O bytes	0x00 to 0x100 (peer send / receive, Poll), 0 or 8 (Bit Strobe send), 0 to 8 (Bit Strobe receive)	Y	
11		Bit / byte endian conversion mode	Enabled, Disabled	Y	
12		Connection timeout monitoring	24 to 60000 ms	Y	In the S10VE, this can be changed to a setting of your choice.
13		Collection of D.Station status information	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 0x100000 to 0x4FFFFE	Y	Change the S10mini extended memory 0x100000 to 0x4FFFFF to the following extended registers in the S10VE: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF
14	D.Station data format conversion settings	Module	AI (with or without sign extension) AO pulse counter (with or without sign extension)	Y	
15		I/O addresses	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 0x100000 to 0x4FFFFE	Y	Change the S10mini extended memory 0x100000 to 0x4FFFFF to the following extended registers in the S10VE: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF
16		Number of I/O bytes	0x01 to 0x40	Y	
17		Allocated data areas	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 0x100000 to 0x4FFFFE	Y	Change the S10mini extended memory 0x100000 to 0x4FFFFF to the following extended registers in the S10VE: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF

Y: Supported

List of settings for slave mode

No.	Setting		S10mini	Transfer to S10VE	Description
1	Enable channels		Enabled, Disabled	Y	
2	Node address		0 to 63	Y	
3	Transfer speed		125 kbps 250 kbps 500 kbps	Y	
4	Station parameter settings	Communication type	Unused Poll	Y	
5		I/O addresses	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 0x100000 to 0x4FFFFE	Y	Change the S10mini extended memory 0x100000 to 0x4FFFFF to the following extended registers in the S10VE: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF
6		Number of I/O bytes	0x000 to 0x100	Y	
7		Bit / byte endian conversion mode	Enabled, Disabled	Y	
8	Collection parameters for RI/O timeout information	RI/O timeout information addresses	XW000 to XWFF0 YW000 to YWFF0 RW000 to RWFF0 MW000 to MWFF0 GW000 to GWFF0 EW400 to EWFF0 FW000 to FWBFF DW000 to DWFFF JW000 to JWFF0 QW000 to QWFF0 0x100000 to 0x4FFFFE	Y	Change the S10mini extended memory 0x100000 to 0x4FFFFF to the following extended registers in the S10VE: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 EW0400 to EWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF
9		Station number	0x00 to 0x7F	Y	

Y: Supported

3.3.3 Transferring NXTOOLS parameters

(1) Parameters

Reconfigure the parameters by using NXTOOLS SYSTEM/S10VE (S-7898-13).

List of NXTOOLS parameter settings (1/2)

No.	Setting			S10mini	Transfer to S10VE	Description
1	Main / local DF settings, Sub / local DF settings	Local	DF number	1 to 255	Y	In the S10VE, set this from either the ET1 / local DF settings or the ET2 / local DF settings.
2			Node name	Within 9 ASCII characters	Y	
3			Logical node number	1 to 255	Y	
4			Alive message timeout period (seconds)	1 to 43200	Y	
5			Alive message send cycle (seconds)	1 to 3600	Y	
6			Alive message destination port number	1 to 65535	Y	
7			Local port number for sending	1 to 65535	Y	
8			Sending MCG number	0 to 255	Y	
9		TCD settings	TCD number	0 to 59999	Y	
10			Number of sent bytes	0 to 1408	Y	
11			Sending address	XW000 to FF0 JW000 to FF0 YW000 to FF0 QW000 to FF0 GW000 to FF0 RW000 to FF0 MW000 to FF0 FW000 to BFC DW000 to FFF 0x100000 to 0x4FFFFE	Y	Assign the S10mini extended memory area 0x100000 to 0x4FFFFE to an added extended register such as the following: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF
12			During-send register	J000 to JFFF Y000 to YFFF Q000 to QFFF G000 to GFFF R000 to RFFF M000 to MFFF	Y	In the S10VE, the following register ranges have been extended: Y0000 to YFFFF Q0000 to QFFFF M0000 to MFFFF
13			Number of received bytes	0 to 1408	Y	
14			Receive completion register	J000 to JFFF Y000 to YFFF Q000 to QFFF G000 to GFFF R000 to RFFF M000 to MFFF	Y	In the S10VE, the following register ranges have been extended: Y0000 to YFFFF Q0000 to QFFFF M0000 to MFFFF

Y: Supported; N: Not supported

List of NXTOOLS parameter settings (2/2)

No.	Setting				S10mini	Transfer to S10VE	Description
15	Main / remote DF settings, Sub / remote DF settings	Remote	DF number		1 to 255	Y	In the S10VE, set this from either the ET1 / remote DF settings or the ET2 / remote DF settings.
16			Remote destination LAN network address		Network address (classes A, B, and C)	Y	
17			Remote destination LAN network mask		Subnet mask	Y	
18			Remote destination LAN gateway address		Gateway address	Y	In the S10VE, register routes from the BASE SYSTEM/S10VE network settings.
19			Sending MCG number		0 to 255	Y	
20			Sending port number		1 to 65535	Y	
21		TCD settings	TCD number		0 to 59999	Y	
22			Number of sent bytes		0 to 1408	Y	
23			Sending addresses		XW000 to FF0 JW000 to FF0 YW000 to FF0 QW000 to FF0 GW000 to FF0 RW000 to FF0 MW000 to FF0 FW000 to BFC DW000 to FFF 0x100000 to 0x4FFFFE	Y	Assign the S10mini extended memory area 0x100000 to 0x4FFFFE to an added extended register such as the following: XW0000 to XWFFF0 YW0000 to YWFFF0 QW0000 to QWFFF0 MW0000 to MWFFF0 LBW0000 to LBWFFF0 LWW0000 to LWWFFFF LXW0000 to LXW3FFF
24			During-send register		J000 to JFFF Y000 to YFFF Q000 to QFFF G000 to GFFF R000 to RFFF M000 to MFFF	Y	In the S10VE, the following register ranges have been extended: Y0000 to YFFFF Q0000 to QFFFF M0000 to MFFFF
25	Number of retries / Receive wait time settings		Number of retries	Unlimited	Enabled, Disabled	Y	
26				None	Enabled, Disabled	Y	
27				Specified number	1 to 2147483647	Y	

Y: Supported; N: Not supported

3.4 Replacement procedure

3.4.1 Overall procedure

When replacing the S10mini with the S10VE, perform the following procedures.

Procedure number	Workflow	Description	Reference location
1	Start Check hardware configuration	Check the modules installed in the system to be replaced.	−
2	Check compatibility of installed modules	Check the compatibility of the installed modules. Sometimes, there are no compatible modules, so consider the post-transfer system configuration.	*3.2 Hardware compatibility between the S10mini and S10VE*
3	Save programs from the S10mini	Use a programming tool to save the following programs from the S10mini (actual machine): - Ladder program - HI-FLOW program Do not save any settings for optional modules.	*3.4.2 Saving programs from the S10mini*
4	Replace hardware	Attach the S10VE CPU unit and I/O unit to the control panel, and perform wiring for the I/O, power supply module, and external I/O. Also perform wiring for optional modules.	−
5	Convert, modify, and change programs (ladder / HI-FLOW / C language)	Use the S10V and S10VE software packages to convert the files saved in procedure 3 to the S10VE. Modify or change the PI/O addresses and similar information for the converted files. Modify or change the C-language source programs, and compile them.	*3.4.3 Program transfer procedure*
6	Load programs	Load the modified or changed programs in the S10VE.	−
7	Reconfigure optional module setting parameters	Optional module setting parameters cannot be transferred automatically, so reconfigure the parameters by using each optional module's setup tool.	*3.3.2 Transferring individual modules*
8	Operation verification End	Verify that operations run correctly in the S10VE. The S10mini and S10VE do not have the exact same operation timing, so adequately verify operation before running your equipment.	—

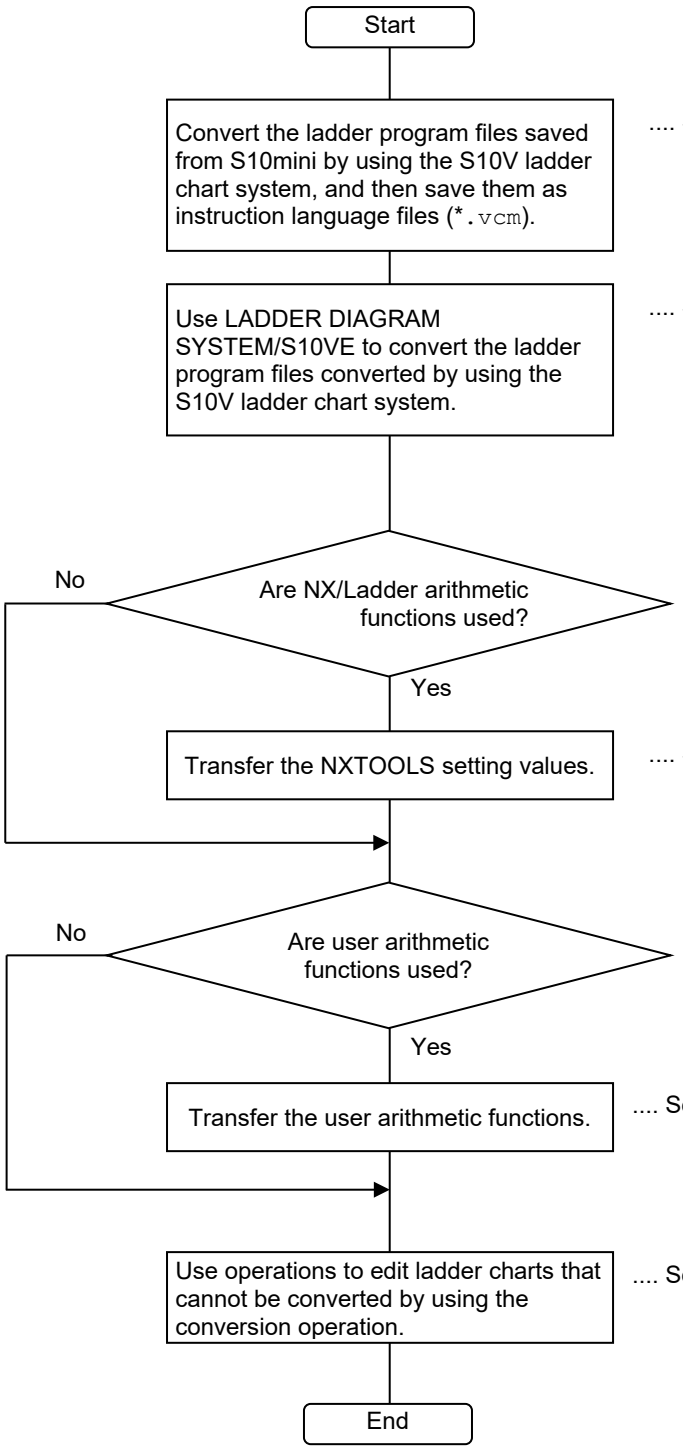
3.4.2 Saving programs from the S10mini

Receive programs from the S10mini (actual machine) and save them as files. However, the save method differs depending on the programming tool that was used in the S10mini.

No.	Language type	Program tool to be used	Save method	Required software
1	Ladder	PSEα (HPC-6000-05/20)	(1) Load ladder programs to the actual machine from PSEα. (2) Use the Windows-version ladder chart system to save programs from the actual machine as PSE files.	■ PSEα version - LADDER SYSTEM Model: S10A-35SFD Model: N25-35SFD - Compact PMS SYS Model: S102A-35CPMS ■ Windows version - Ladder chart system Model: S-7890-02
2		Windows PC	(1) Use the Windows-version ladder chart system to receive programs from the actual machine. (2) Use the Windows-version ladder chart system to save the programs to a Windows computer as PSE files.	■ Windows version - Ladder chart system Model: S-7890-02
3	HI-FLOW	PSEα (HPC-6000-05/20)	HI-FLOW programs created with PSEα cannot be transferred because they are not compatible with S10VE HI-FLOW programs. Use HI-FLOW SYSTEM/S10VE to re-program such programs.	■ PSEα version - HI-FLOW SYS Model: S102A-35HFLS
4		Windows PC	(1) Use the Windows-version HI-FLOW system to receive programs from the actual machine. (2) Use the Windows-version HI-FLOW system to save the programs to a Windows computer.	■ Windows version - HI-FLOW system Model: S-7890-03

3.4.3 Program transfer procedure

(1) Ladder program transfer procedure



.... See *3.5 Conversion by using the ladder chart system*.

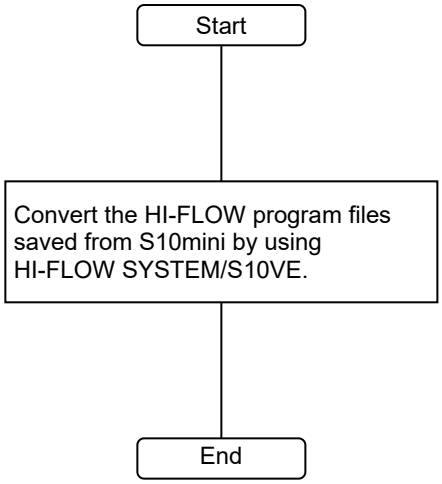
.... See *3.5 Conversion by using the ladder chart system*.

.... See *3.11 Transferring NXTOOLS setting values*.

.... See *3.8 User arithmetic functions*.

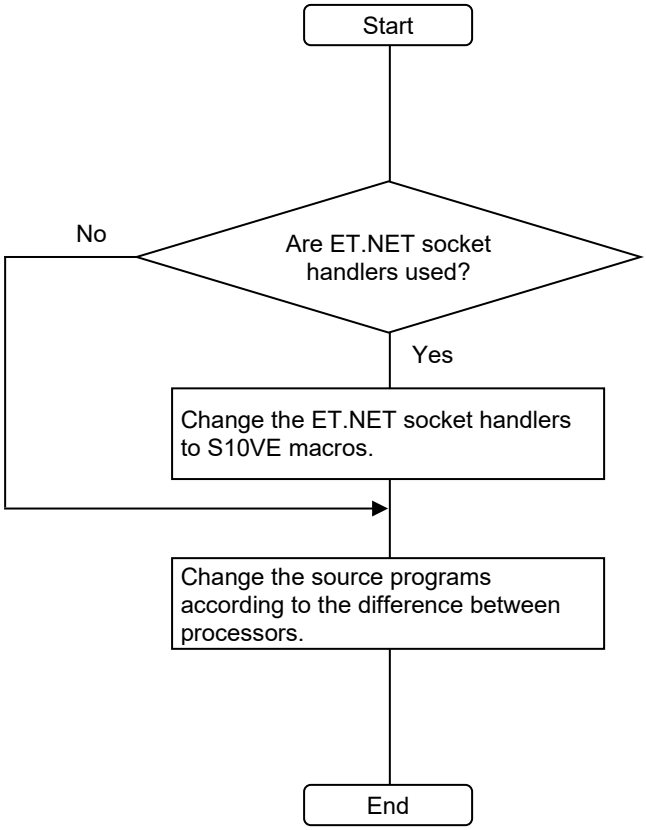
.... See *3.5 Conversion by using the ladder chart system*.

(2) HI-FLOW program transfer procedure



.... See *3.6 Transferring HI-FLOW programs*.

(3) C-language program transfer procedure



.... See *3.7 Transferring C-language programs*.

.... See *3.7 Transferring C-language programs*.

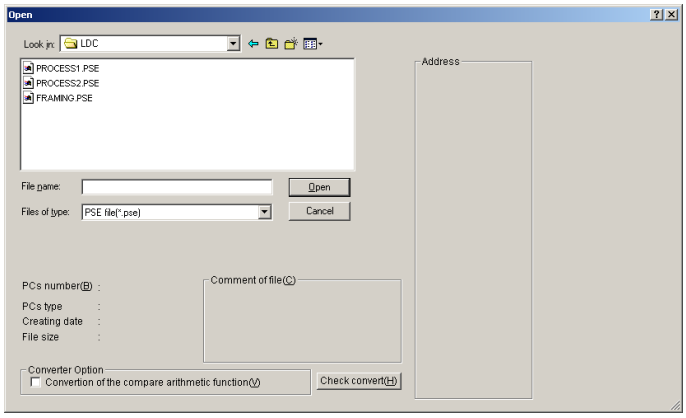
3.5 Conversion by using the ladder chart system

3.5.1 Ladder program conversion procedure (from S10mini to S10V)

This section shows how to convert an S10mini ladder chart to an S10V ladder chart. The S10V uses the horizontal ladder notation format. The function for converting right-downward ladders used in the S10mini to horizontal ladder programs is called a *converter*. You can use the conversion function supported by the S10V ladder chart system to convert right-downward ladder programs created in the S10mini series to S10V horizontal ladder programs.

(1) From the **Utilities** menu, select **Converter**.

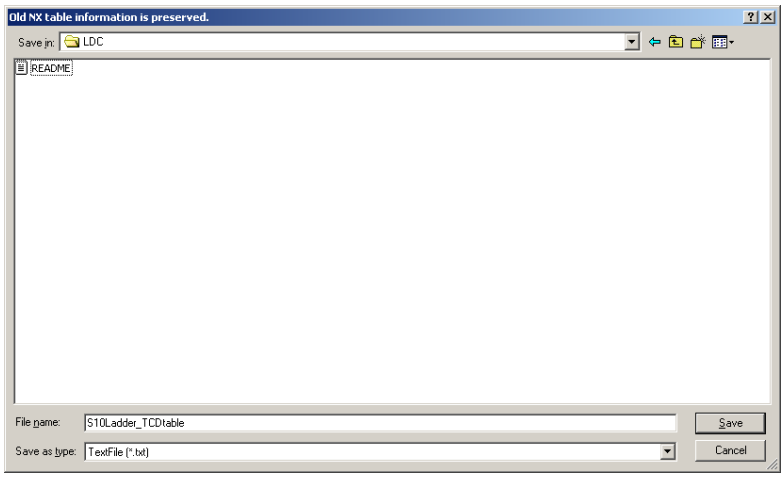
(2) The Open window appears (see the following figure).



(3) In the Open window, select the right-downward ladder program file (with the file extension `pse` or `wld`) you want to convert to a horizontal ladder program.

(4) Click the **Open** button. The Open window disappears, and the selected right-downward ladder program is converted. The resulting horizontal ladder program appears in the ladder sheet.

(5) If NX/Ladder-S10 version 02-00 or earlier is used to successfully convert a ladder program containing an NX arithmetic function, the dialog box shown in the following figure appears. If you wish to use the old NX table information file to set parameters in NXTOOLS SYSTEM/S10VE, select **Save**. The old NX table information is saved (preserved).



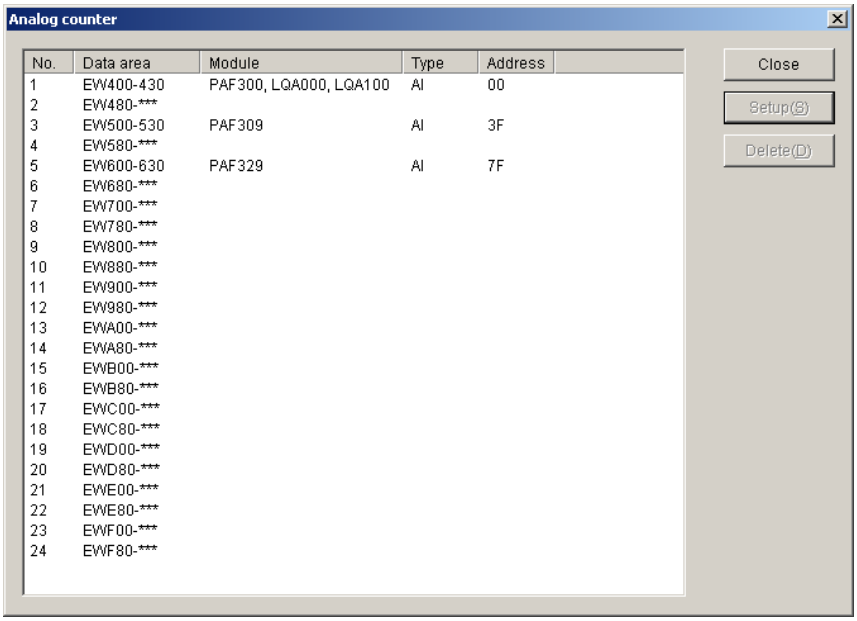
(6) Compile the converted horizontal ladder program.
To do so, from the **Utilities** menu, select **Batch Compile**.

(7) If compilation does not complete successfully, address the error according to the error message displayed in the output window.

(8) If compilation completes successfully, save the file under the file extension `vcm`.

3.5.2 Precautions regarding operation

- The conversion result (error number and error description) is displayed in the output window.
- If an error occurs, double-click the error message displayed in the output window to jump to the location (circuit) of the error.
- In addition to circuit conversion (from right-downward to horizontal), conversion functions apply information shared in common between the S10VE and S10mini (such as PCs edition information, user arithmetic functions, CPU linkage module information, analog counter information, TUC setting values, and PIO-RAM areas (such as DW or FW registers)). However, the S10V-to-S10VE conversion function applies only analog counter information and TUC setting values, so other information such as PCs edition information must be set separately after S10VE ladder chart conversion.
- User arithmetic functions must be re-registered by creating programs in the S10VE.
- If a ladder program contains analog counter settings, each setting's information is converted.
  The converted settings can be checked by using the following method:
  - Analog counter settings
    From the **Utilities** menu, click **PCs edition** and then **Analog counter**. In the Analog counter window that appears, confirm that there are no differences between the settings pre- and post-conversion.



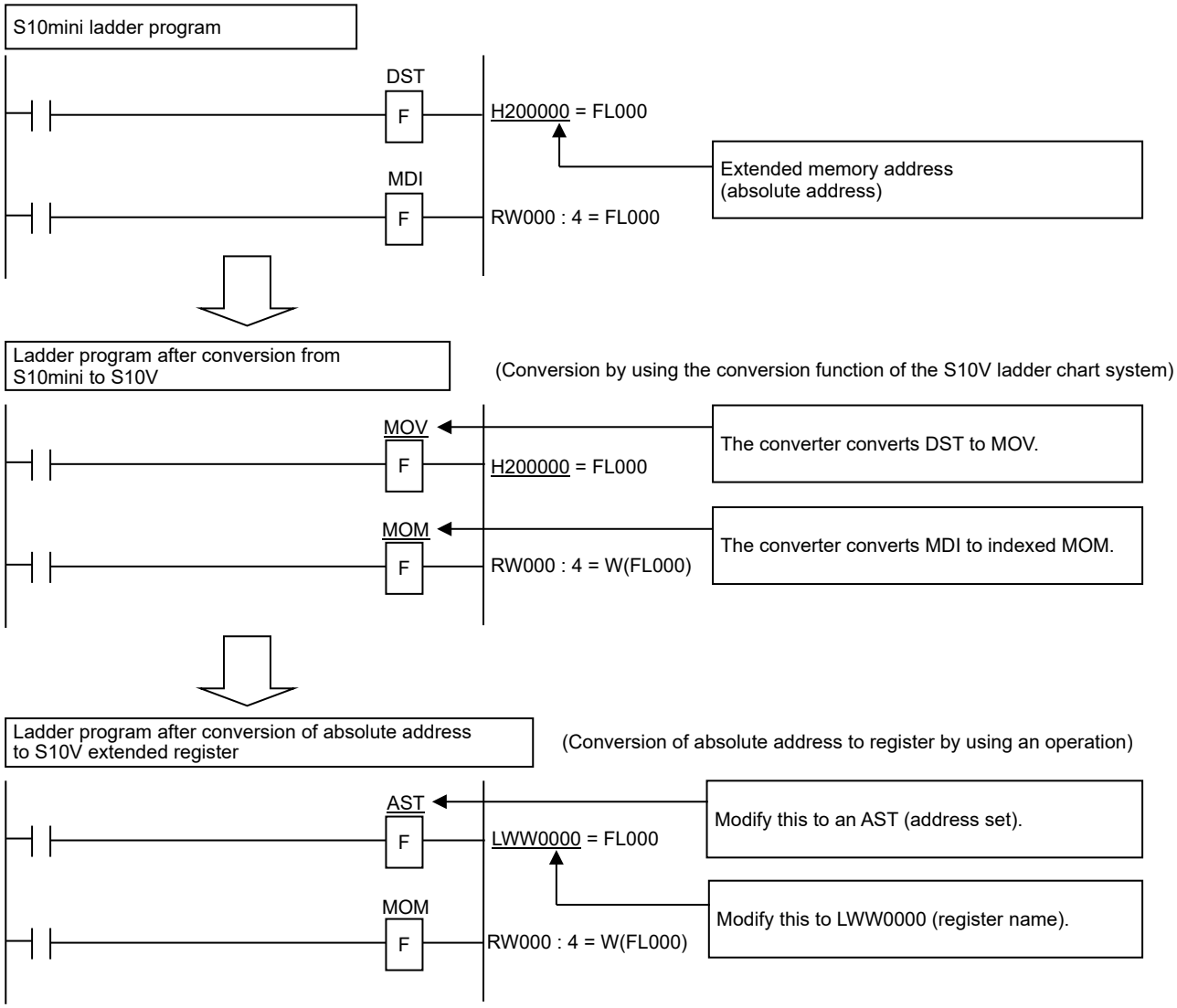
3.5.3 Precautions regarding transfer

- If addresses have been specified as immediate values by using an arithmetic function, any addresses with no corresponding address in the S10V are not converted. After converting the ladder programs to horizontal ladder programs, modify such addresses as required. In particular, if extended memory was used in the

S10mini, there is no corresponding address space in the S10V and the S10VE, so such addresses must be modified.

- If an S10mini ladder program uses absolute addresses (extended memory addresses) as PI/O addresses, such addresses are not converted by the ladder conversion function. Because the S10V does not have extended memory, modify converted ladder programs' extended memory addresses to extended registers in the S10V such as LWW.

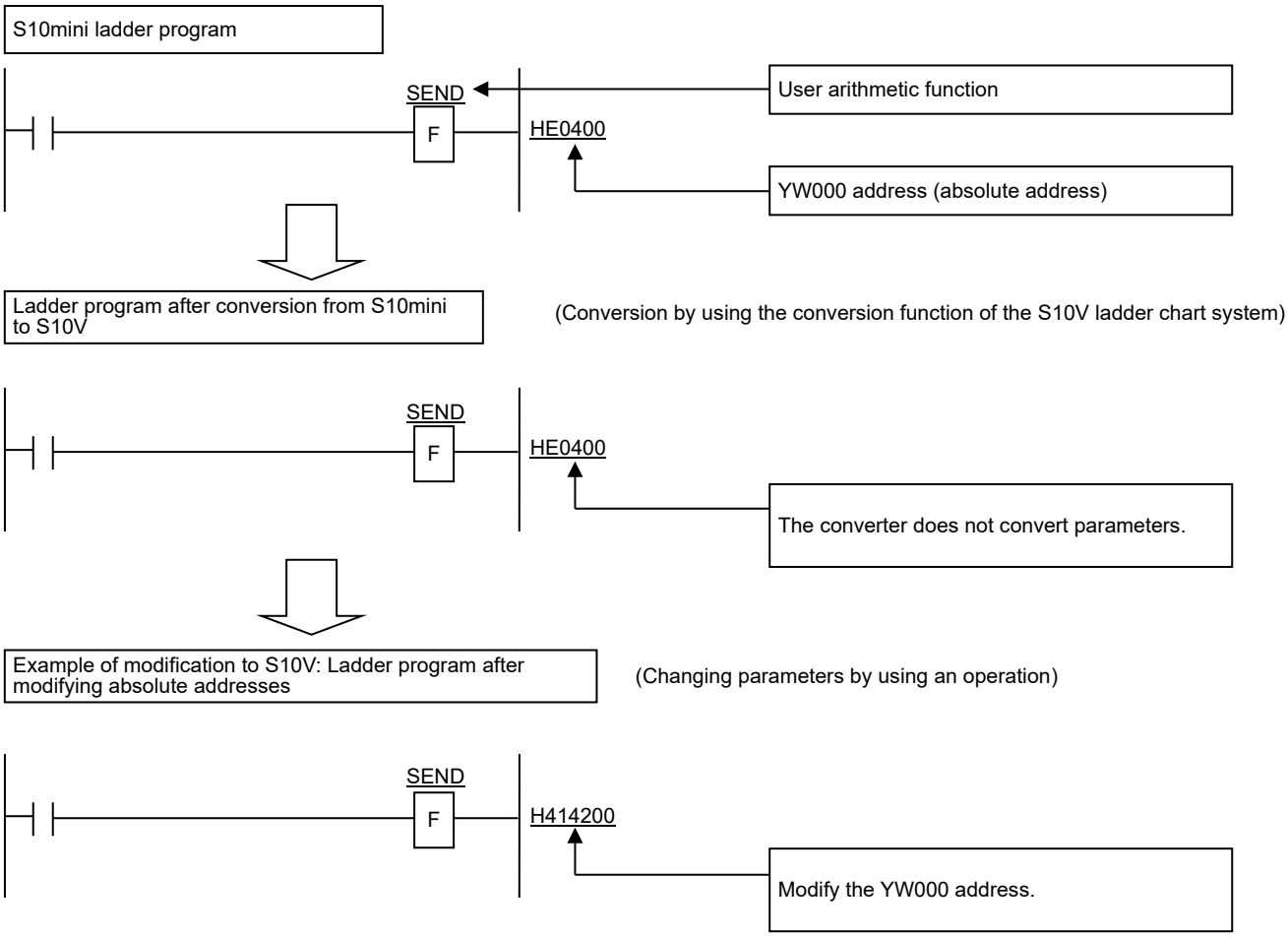
Example of modifying a program using an absolute address (changing the address 0x200000 to LWW000):



- In the S10mini, if register addresses are specified as absolute addresses in the user arithmetic function parameters, the ladder conversion function does not convert the addresses. Modify the parameters to S10V addresses.

Example of modifying a program where registers are specified in the user arithmetic function parameters:

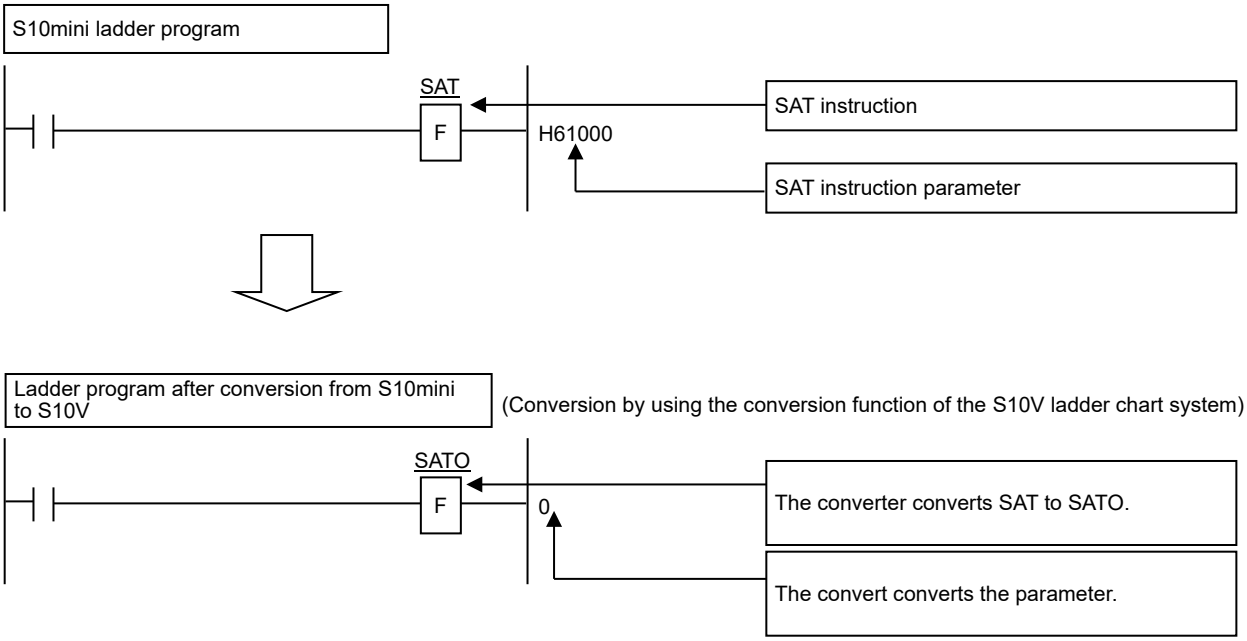
- If YW000 is specified in the parameters:



- Resetting NX to default (SAT) (changing instruction names and parameters)

  The interface specification for NX has changed in NX/Ladder-S10 Ver-Rev number 02-00 onward. Therefore, if an SAT instruction parameter is in an address format that begins with H, that parameter is deemed to use a specification earlier than NX/Ladder-S10 Ver-Rev number 02-00 during conversion to SATO, and the parameter is converted to 0.

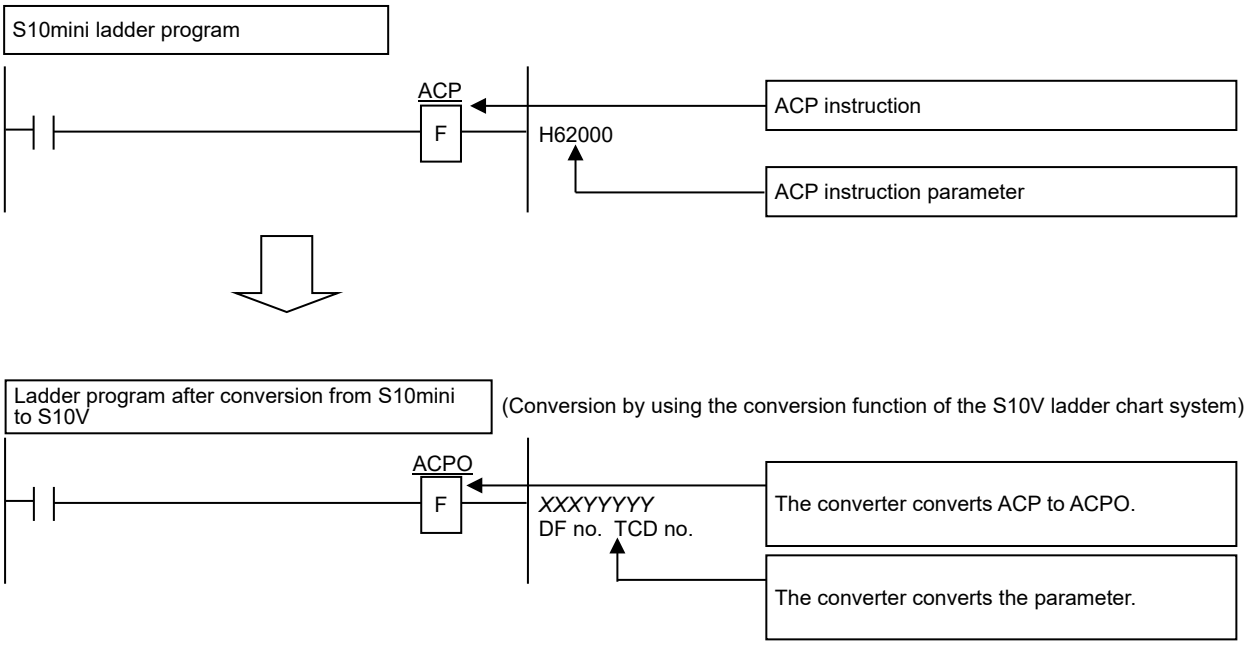
  However, automatic conversion is not performed in the following cases:
  - The parameter specification is NX/Ladder-S10 version 02-00 onward (the parameter is not in an address format that begins with H).
  - An address destination specified in the parameter is not saved in the ladder program.
  - Data is not registered correctly in the destination parameter information specified in the parameter.



- NX data transmission (ACP) (changing instruction names and parameters)

  The interface specification for NX has changed in NX/Ladder-S10 Ver-Rev number 02-00 onward. Therefore, if an ACP instruction parameter is in an address format that begins with H, that parameter is deemed to use a specification earlier than NX/Ladder-S10 Ver-Rev number 02-00 during conversion to ACPO, and the parameter is converted to the format *DF-number+TCD-number*.

  However, automatic conversion is not performed in the following cases:
  - The parameter specification is NX/Ladder-S10 version 02-00 onward (the parameter is not in an address format that begins with H).
  - An address destination specified in the parameter is not saved in the ladder program.
  - Data is not registered correctly in the destination parameter information specified in the parameter.



3.5.4 Ladder program conversion procedure (from S10V to S10VE)

For the procedure for converting S10V ladder programs to S10VE ladder programs, see *4.7.16 Conversion* in *S10VE Software Manual Operation Ladder Diagram System for Windows*® (manual number SEE-3-131).

3.6 Conversion by using the HI-FLOW system

3.6.1 Conversion procedure for HI-FLOW programs (from S10mini to S10VE)

To convert S10mini HI-FLOW programs to S10VE HI-FLOW programs, see either *4.7.9 Converting the S10V files* or *4.15.2 Converting the S10V files* in the *S10VE Software Manual Operation HI-FLOW for Windows®* (manual number SEE-3-132), and follow the procedure for converting HI-FLOW programs by loading the source.

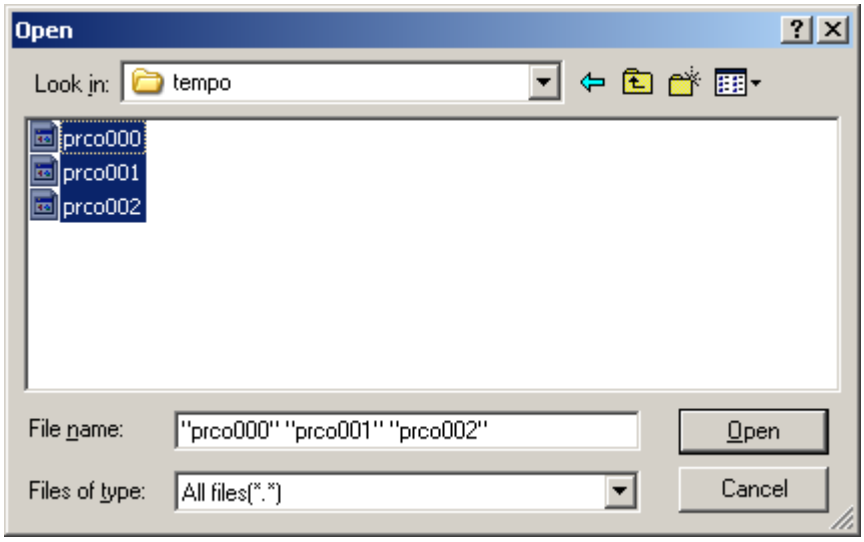
3.6.2 Source file creation procedure

If there are no source files in the folder where HI-FLOW programs created in the S10mini series are stored, create the source files according to the following procedure. If there are source files in the storage folder, you do not need to follow this procedure.

(1) Start the S10mini HI-FLOW system.

(2) From the **Utilities** menu, select **Converter**.

(3) A window for selecting files appears (see the following figure).



(4) HI-FLOW programs created in the S10mini have object files stored under the name `prco`*XXX* (where *XXX* is the HI-FLOW process number) in the `tempo` folder in the HI-FLOW program storage folder. Select the object files of the processes whose source files you want to create. (Normally, all files are selected.)

(5) Click the **Open** button. The window for selecting files disappears. The selected processes are loaded and displayed in the HI-FLOW Process Sheets window.

(6) In the **Build** menu, select **Rebuild**. The loaded processes are compiled.

Source files are created for the S10mini HI-FLOW programs.

3.6.3 Precautions regarding operation

- The conversion function does not apply to system edition information or system bit assignment information. If such information has been changed from the defaults, reconfigure it by using HI-FLOW SYSTEM/S10VE. For the procedures for configuring system edition information and system bit assignment information, see *4.7.4 Editing the operating environment of PCs* and *4.7.7 Laying out the system bits* in the *S10VE Software Manual Operation HI-FLOW for Windows®* (manual number SEE-3-132).
- The S10mini allocates the extended memory of the storage area for HI-FLOW user programs for the User area range in the system edition information. However, the S10VE allocates a standard area of 8 MB (for the system: 0.5 MB, for users: 7.5 MB), which is already sufficient. Therefore, there is no need to change the default allocation.
- The conversion function does not apply to PI/O comments. Transfer PI/O comments according to the procedure shown in *3.6.4 Transferring PI/O comments*.

3.6.4 Transferring PI/O comments

Transfer PI/O comments by performing the following procedure:

(1) In the S10mini HI-FLOW system, go to the **Edit** menu and select **PI/O comments**. The Edit PI/O Comments window appears.
Click the **Save** button. Specify a file name and save the PI/O comments to a file.

(2) In HI-FLOW SYSTEM/S10VE, go to the **Edit** menu and select **PI/O comments**. The Edit PI/O Comments window appears.
Click the **Load** button. Specify the file name you used to save the file in step (1). The PI/O comments are loaded.

3.6.5 Precautions regarding transfer

- Modifying access that specifies an absolute address
  If access is performed by specifying an absolute address, addresses might need to be modified according to the differences in memory mapping between the S10mini and S10VE. In particular, if extended memory was accessed in the S10mini, the addresses must be modified to use a different area instead.
- Changing the FIFO table configuration for FIFO write (PSH) and FIFO read (POP) applied instructions
  As with ladders, the FIFO table configuration has been changed since the S10mini.

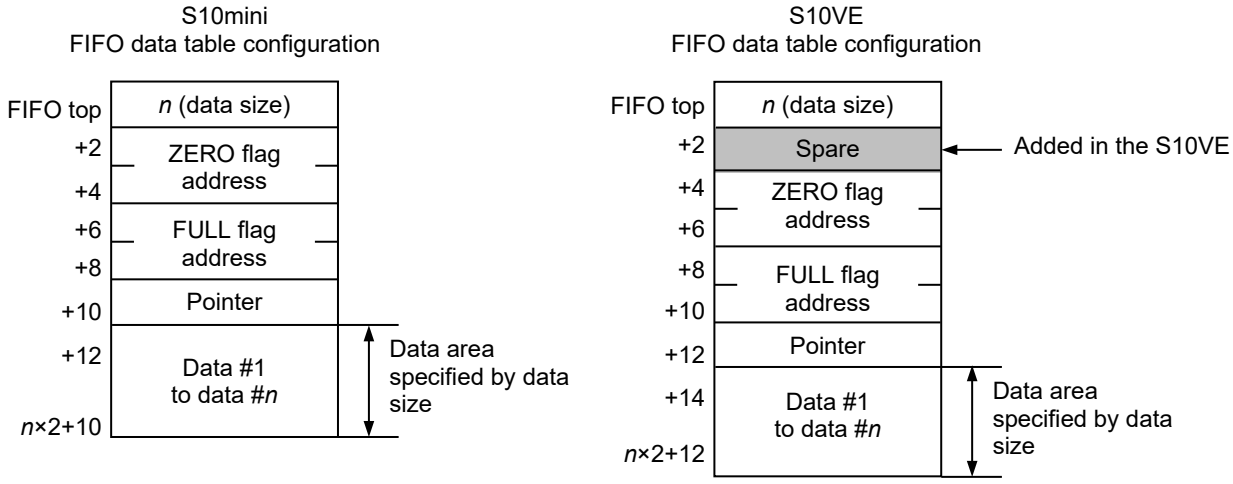


Figure 3-7 FIFO data table configuration (S10mini and S10VE)

The conversion function cannot be used to modify access by specifying an absolute address, or to change the FIFO table configuration for FIFO write (PSH) or FIFO read (POP) applied instructions. HI-FLOW programs must be modified by the user.

3.7 Transferring C-language programs

3.7.1 Modifying access that specifies an absolute address

As shown in *4.1.2 S10VE memory map*, the S10VE has a different memory map to the S10mini. If access is performed by specifying an absolute address, it must be modified.

The S10VE supports registers compatible with the S10mini. However, if any of the following addresses are accessed by specifying an absolute address in the S10mini, modifications must be made.

No.	Area	S10mini addresses	S10VE addresses
1	X register (bits)	0x0A0000 to 0x0A1FFF	0x240000 to 0x241FFF 0x700000 to 0x701FFF
2	Y register (bits)	0x0A4000 to 0x0A5FFF	0x242000 to 0x243FFF 0x720000 to 0x721FFF
3	XW register (words)	0x0E0000 to 0x0E01FF	0x414000 to 0x4141FF 0x441000 to 0x4411FF
4	YW register (words)	0x0E0400 to 0x0E05FF	0x414200 to 0x4143FF 0x443000 to 0x4431FF
5	Extended memory	0x100000 to 0x4FFFF	There are no corresponding addresses. In the S10VE, these must be changed to an extended PI/O area or global (GLB) area.

The following table shows the extended PI/O areas in the S10VE:

No.	Area	S10VE addresses	Remarks
1	LB register (bits)	0x220000 to 0x23FFFF	
2	X register (bits)	0x700000 to 0x71FFFF	
3	Y register (bits)	0x720000 to 0x73FFFF	
4	Q register (bits)	0x740000 to 0x75FFFF	
5	M register (bits)	0x760000 to 0x77FFFF	
6	E register (bits)	0x780000 to 0x79FFFF	
7	S register (bits)	0x7A0800 to 0x7B87FF	
8	LBW register (words)	0x412000 to 0x413FFF	
9	XW register (words)	0x441000 to 0x442FFF	
10	YW register (words)	0x443000 to 0x444FFF	
11	QW register (words)	0x445000 to 0x446FFF	
12	MW register (words)	0x447000 to 0x448FFF	
13	EW register (words)	0x449000 to 0x44AFFF	
14	SW register (words)	0x44B080 to 0x44D07F	
15	LWW register (words)	0x450000 to 0x46FFFF	
16	LLL register (long words)	0x430000 to 0x437FFF	
17	LF register (long words)	0x438000 to 0x43FFFF	
18	LML register (long words)	0x490000 to 0x497FFF	Backed up
19	LG register (long words)	0x498000 to 0x49FFFF	Backed up
20	LXW register (words)	0x4A0000 to 0x4A7FFF	Backed up

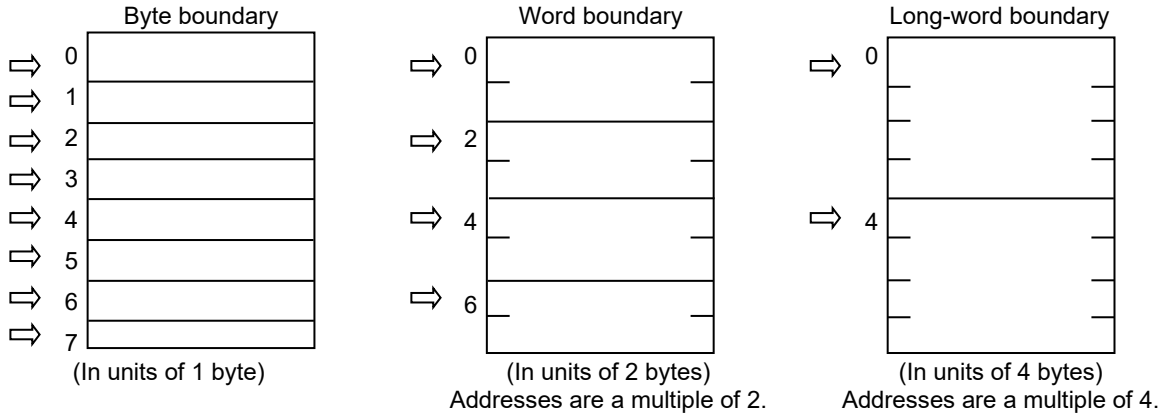
The following table shows the global areas (GLB):

No.	Area	Description	Corresponding S10VE addresses
1	GLBR	Read-only GLB	0x40000000 to 0x403FFFFF (4 MB) However, the user can only use 3 MB.
2	GLBW	Read/write GLB	0x50000000 to 0x507FFFFF (8 MB) However, the user can only use 7 MB.

If the C-language program uses global (GLB) variables, use the GLB name specified by using the `svdfs` command, not the absolute address. For details, see the *S10VE Software Manual Operation RPDP for Windows®* (manual number SEE-3-133).

3.7.2 Differences in alignment

Alignment refers to boundary addresses where data is placed. The S10mini used a 68000-series processor as its C-mode processor, but the S10VE uses a RISC processor SH microcomputer for higher processing speed. Differences in processors result in differences in alignment as shown in the following figure. As a result, you need to modify programs according to how their memory is accessed and how their data structures were coded.



S10mini:

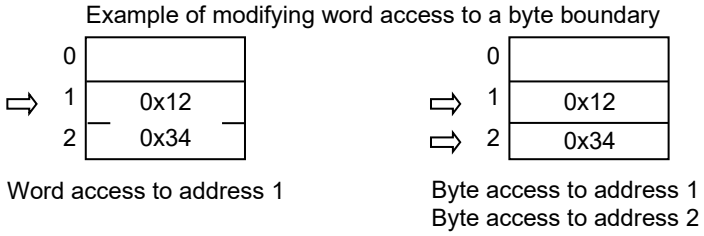
There are no restrictions due to alignment. 1-byte data (char) is placed on a byte boundary. 2-byte data (short) and 4-byte data (long, int) can be placed on both a byte boundary and a word boundary.

S10VE:

The S10VE adopts natural alignment. 1-byte data (char) is placed on a byte boundary. 2-byte data (short) must be placed on a word boundary, and 4-byte data (long, int) must be placed on a long-word boundary. Odd addresses are accessed in units of 2 bytes or 4 bytes. Alternatively, when an address not on a long-word boundary is accessed in units of 4 bytes, a program error (Data Alignment Error) occurs.

(1) Modifying access in units of 2 bytes to addresses not on a word boundary

When changing programs that accessed addresses not on a word boundary in units of 2 bytes (word) in the S10mini to work with the S10VE, you need to either change the accessed addresses or modify the programs. To modify such programs, divide each access into two 1-byte (char) accesses. The following shows an example of modifying a 2-byte (word) access into two 1-byte (char) accesses.



Before modification:

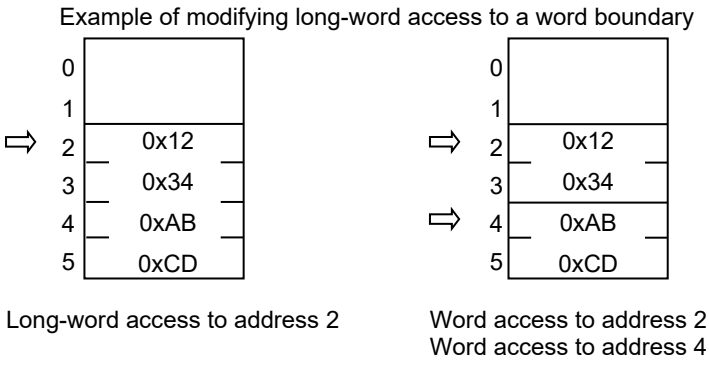
```
*(short *)0xE0101 = 0x1234;
```

After modification:

```
*(char *)0xE0101 = 0x12;
*(char *)0xE0102 = 0x34;
```

(2) Modifying access in units of 4 bytes to addresses not on a long-word boundary

Similarly, when changing programs accessed addresses not on a long-word boundary in units of 4 bytes (long, int) in the S10mini to work with the S10VE, you need to either change the accessed addresses or modify the programs. To modify such programs, divide each access into two 2-byte (short) accesses. The following shows an example of modifying a 4-byte (long, int) access into two 2-byte (short) accesses:



Before modification:

```
*(long *)0xE0102 = 0x1234abcd;
```

After modification:

```
*(short *)0xE0102 = 0x1234;
*(short *)0xE0104 = 0xabcd;
```

(3) Precautions regarding data structures

If the coding uses data structures, placement in the memory might differ according to differences in alignment. For example, if the coding uses the following kind of data structure, the S10mini and S10VE place data structures in the memory differently as shown in the following figure. Because this placement is performed automatically by the compiler, this difference is not usually a problem, but if you are particular about the placement of data structures in the memory, you will need to make modifications.

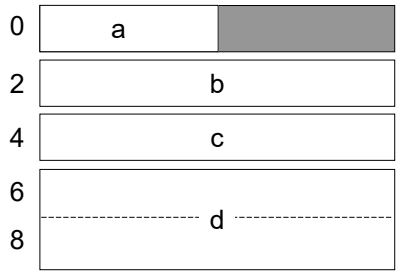
Example placement of a data structure in the memory:

```
struct  {
    char  a;
    short  b;
    short  c;
    long  d;
};
```

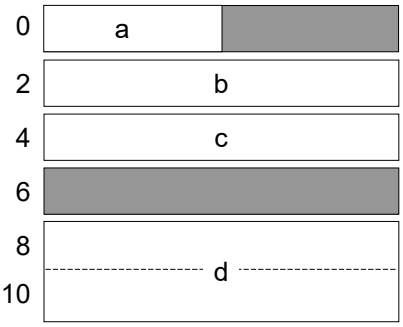
→

```
struct {
    char a;
    short b;
    short c;
    short dummy1;
    long d;
};
```

For S10mini:



For S10VE:



3.7.3 Task memory protection

Although the S10mini allowed tasks to write to any area, the S10VE has enhanced memory protection against tasks to prevent damage to task text sections or OS areas. If a task accesses a protected area, a program error occurs in the task. Table 3-5 shows differences in task protection from the S10mni.

Table 3-5 List of differences in task protection

Area	Task protection	
	S10mini	S10VE
Local task text	Read/write	Read only
Local task data	Read/write	Read only
Local task BSS	Read/write	Read/write
Local task stack	Read/write	Read/write
Other task text	Read/write	Read only
Other task data	Read/write	Read only
Other task BSS	Read/write	Read only
Other task stack	Read/write	Read only
OS area	Read/write	Read only
PI/O memory	Read/write	Read/write
HI-FLOW space	Read/write	Read/write
NX user buffer	Read/write	Read/write
GLBR (read-only GLB)	Read/write	Read only
GLBRW (read/write GLB)	Read/write	Read/write
IRSUB	Read/write	Read only

For example, in the S10mini, local task data areas allowed read-write permissions, but in the S10VE, the data area is read-only. If a task attempts to rewrite a variable assigned to the data area, a program error occurs, so programs must be modified accordingly.

As shown in the following example, when an external variable is declared, if a default value is set, the variable is assigned to the data area. If a default value is not set, the variable is assigned to the BSS area.

Example of coding assigned to the data area:

```
int abc = 1;
   :
main() {
   :
}
```

The external variable `abc` is set to the default value, so it is assigned to the data area.

Example coding assigned to the BSS area:

```
int abc;
    :
main() {
     :
}
```

The external variable `abc` does not have a default value set, so it is assigned to the BSS area.

If a task attempts to rewrite a variable assigned to the data area, a program error occurs, so you need to make the following kinds of modifications.

Example coding modification, assigning a variable rewritten by a task to the BSS area instead of the data area:

■ Before modification:

```
int abc = 1;
    :
main() {
    :
  abc = 2;
}
```

■ After modification:

```
int abc;
    :
main() {
  abc = 1;
    :
  abc = 2;
}
```

3.7.4 Differences between CPMS macros

Table 3-6 shows the differences between CPMS macros.

Legend for *Support* field:

Y: Supported; N: Not supported

Legend for the *Comparison between S10mini and S10VE macro instructions* field:

C: Compatible (basically the same); U: Upward compatible; —: Not applicable;

R: The return codes are not compatible. See the manual and make the appropriate modifications;

N: See the following manual, and modify the arguments and other relevant information.

Reference manual: S10VE Software Manual CPMS General Description and Macro Specifications (manual number SEE-3-201)

Table 3-6 List of CPMS macro comparisons (1/3)

Classification	Macro name	General function	Support		Comparison between S10mini and S10VE macro instructions				
			S10mini	S10VE	Functions	Parameters	Return codes	Parameter checks	Description
Task management	rleas	Reset task start inhibition state	Y	Y	C	C	R	U	In the S10mini, the only return code is 0.
	queue	Start task	Y	Y	C	C	U	U	
	exit	Exit local task	–	Y	–	–	–	–	
	abort	Abort task and set the start inhibition state	Y	Y	C	C	R	U	In the S10mini, the only return code is 0.
	wait	Set local task to *Waiting for an event to occur* state	–	Y	–	–	–	–	
	post	Reset wait state	–	Y	–	–	–	–	
	asusp	Suppress execution of all tasks other than the local task	–	Y	–	–	–	–	
	arsum	Reset suppression using asusp	–	Y	–	–	–	–	
	chap	Change task priority level	Y	Y	C	C	R	U	The meaning when RC ≠ 0 and the parameter check range are different.
	gfact	Load task initiation factor	Y	Y	C	C	C	U	fact(S10VE;32 S10mini;16)
	sfact	Set task initiation factor	Y	Y	C	C	R	U	The meaning when RC ≠ 0 and the parameter check range are different.
	susp	Temporarily suppress task execution	–	Y	–	–	–	–	
	rsum	Reset suppression using susp	–	Y	–	–	–	–	
	chmod	Change information in local task status register	Y	N	N	N	N	N	Not supported in the S10VE
Timer management	timer	Start task at specified time or for specified period	Y	Y	U	N	R	R	More parameters than the S10mini
	ctime	Clear information registered by timer	Y	Y	C	C	C	R	Only the parameter check range is different.
	stime	Set current time	Y	Y	C	N	R	N	The parameter structure is different.
	gtime	Load current time	Y	Y	C	N	R	N	

Table 3-6 List of CPMS macro comparisons (2/3)

Classification	Macro name	General function	Support		Comparison between S10mini and S10VE macro instructions				
			S10mini	S10VE	Functions	Parameters	Return codes	Parameter checks	Description
Timer management	delay	Suspend local task execution for specified period	Y	Y	C	C	R	C	The meaning is different when RC ≠ 0.
	wake	Start task at specified time	Y	N	–	–	–	–	Not supported in the S10VE. This can be substituted with timed start using the timer macro.
	cwake	Clear information registered by wake	Y	N	–	–	–	–	Not supported in the S10VE. This can be substituted with the ctime macro.
Memory management	wrtmem	Write to write-protected area	–	Y	–	–	–	–	
	chkbmem	Perform access check on bus memory	–	Y	–	–	–	–	
	chktaer	Check whether a target abort has occurred	–	Y	–	–	–	–	
	uspchk	Check capacity of stack in use	Y	N	–	–	–	–	Not supported in the S10VE. This can be substituted with the svdebug -sp command.
	mvmem	Transfer data to specified area	Y	N	–	–	–	–	Substitute this with memcpy.
	memcpy	Transfer data to specified area	–	Y	–	–	–	–	
	MRAMmemcpy	Transfer data to specified area (for MRAM only)	–	Y	–	–	–	–	
Shared resource management	rserv	Reserve shared resource	Y	Y	C	N	R	C	The meaning is different when RC ≠ 0. The number of resources that can be reserved or released is still 32.
	free	Release shared resource	Y	Y	C	N	R	C	
	prsrv	Reserve shared resource	–	Y	–	–	–	–	
	pfree	Release shared resource	–	Y	–	–	–	–	
System services	wdtset	Control WDT start or stop	–	Y	–	–	–	–	
	getsysinfo	Get system state	–	Y	–	–	–	–	
	gettaskinfo	Get task state	–	Y	–	–	–	–	
	gtkmem	Read CPMS management table	–	Y	–	–	–	–	
	usrdhp	Write DHP record	–	Y	–	–	–	–	
	usrel	Write user error log	–	Y	–	–	–	–	
	save_env	Save task execution environment	–	Y	–	–	–	–	
	resume_env	Recover task execution environment	–	Y	–	–	–	–	
	gettimebase	Read time base	–	Y	–	–	–	–	
	TimebaseToSecs	Convert time base value to seconds or nanoseconds	–	Y	–	–	–	–	

Table 3-6 List of CPMS macro comparisons (3/3)

Classification	Macro name	General function	Support		Comparison between S10mini and S10VE macro instructions				
			S10mini	S10VE	Functions	Parameters	Return code	Parameter checks	Description
System services	atmswap	Atomic operation library	−	Y	−	−	−	−	
	atmand	Atomic operation library	−	Y	−	−	−	−	
	atmor	Atomic operation library	−	Y	−	−	−	−	
	atmxor	Atomic operation library	−	Y	−	−	−	−	
	atmadd	Atomic operation library	−	Y	−	−	−	−	
	atmtas	Atomic operation library	−	Y	−	−	−	−	
	atmcas	Atomic operation library	−	Y	−	−	−	−	
	ldrstpstat	Load ladder STOP state	−	Y	−	−	−	−	
	ldrstpctl	Control ladder RUN/STOP	−	Y	−	−	−	−	
	ldrsimustat	Load ladder simulation state	−	Y	−	−	−	—	
	usrdispctl	Control indicator display	−	Y	−	−	−	−	
	prog_start	Start subtask	−	Y	−	−	−	−	
	prog_switch	Switch subtask	−	Y	−	—	−	−	
	prog_exit	Exist subtask	−	Y	−	−	−	−	
	prog_call	Switch stack and call subroutine	−	Y	−	−	−	−	

3.7.5 Transferring ET.NET socket handlers

In the S10VE ET.NET module, the number of Ethernet channels has been changed to two. In addition, socket handlers have been changed to macro instructions. The following shows the procedure for changing programs. Use this procedure to change your applications while paying attention to the differences from the socket handler specification.

3.7.5.1 Settings and their differences

(1) Parameters (configuration by using the tool)

The settings of the ET.NET modules are the same. However, because one module has two channels, you need to configure each channel separately.

No.	Setting	ET.NET (LQE020/LQE520)	ET.NET (LQE260-E)
1	IP address	Setting required	Y
2	Subnet mask	Setting required	Y
3	Broadcast address	Setting required	Y
4	Routing information	Setting required when using router	Y

Y: Supported

(2) Socket handlers

Because socket handlers have been changed to macro instructions, link addresses no longer need to be specified, but the functions are the same. In addition, modules and channels can now be specified in the input parameters.

Table 3-7 Correspondences between socket handlers and socket library functions (1/2)

No.	Function	ET.NET (LQE020/LQE520)	ET.NET (LQE260-E)	Remarks
1	Actively open TCP	`tcp_open()`	←	`keepalive` specification added
2	Passively open TCP	`tcp_popen()`	←	
3	Accept TCP connection request	`tcp_accept()`	←	`keepalive` specification added
4	Close TCP connection	`tcp_close()`	←	
5	Abort TCP connection	`tcp_abort()`	←	
6	Read current local station information	`getconfig()`	←	
7	Read TCP socket information	`tcp_getaddr()`	←	
8	Send TCP data	`tcp_send()`	←	

←: Ditto; −: Not applicable

Table 3-7 Correspondences between socket handlers and socket library functions (2/2)

No.	Function	ET.NET (LQE020/LQE520)	ET.NET (LQE260-E)	Remarks
9	Receive TCP data	`tcp_receive()`	←	
10	Open UDP	`udp_open()`	←	
11	Close UDP	`udp_close()`	←	
12	Send UDP data	`udp_send()`	←	
13	Receive UDP data	`udp_receive()`	←	
14	Read routing information	`route_list()`	←	
15	Delete routing information	`route_del()`	←	
16	Register routing information	`route_add()`	←	
17	Read ARP information	`arp_list()`	←	
18	Delete ARP information	`arp_del()`	←	
19	Register ARP information	`arp_add()`	←	
20	Socket close instruction when a task is aborted	−	`set_so_abort()`	Added to the S10VE

←: Ditto; −: Not applicable

Other differences are shown in Table 3-8.

Table 3-8 Differences between S10mini ET.NET and S10VE ET.NET

No.	Item	ET.NET (LQE020/LQE520)	ET.NET (LQE260-E)
1	Number of sockets per module	TCP/IP: 12 UDP/IP: 8	Total number of sockets for TCP/IP, UDP/IP, and the two channels: 96
2	Port number	0 to 9999: Reserved for the system 10000 to 65535: For users	←
3	Length of sent or received data per function	TCP/IP: 1 to 4096 UDP/IP: 1 to 1472	TCP/IP: 1 to 1460 UDP/IP: 1 to 1472
4	Floating socket open processing when aborting task	- Close task from another task - Reset or power-on reset CPU	You can specify to open floating sockets using the `set_so_abort` macro in advance.

←: Ditto

3.7.6 Transferring RPDP

To use the C language in the S10VE, you need to use RPDP. The following shows the differences in RPDP/S10VE from the S10mini RPDP/S10.

3.7.6.1 Changes in the RPDP execution environment

In accordance with changes to the compiler, you need to set new environment variables necessary for compilation.

The default values of environment variables are set automatically when RPDP is installed. However, environment variables that had already been set when RPDP was installed are not overwritten, with the exceptions of PATH and HLNK_DIR.

To set common environment variables across the system, go to **Control Panel**, then **System**. From the **Environment** tab, set the system environment variables.

For the meanings of environment variables necessary for the operation of the `shc` compiler and details about the settings, see the manual for the `shc` compiler package.

Table 3-9 List of comparisons between the environment variables of RPDP execution environments

No.	S10mini environment variable	S10VE environment variable	Description
1	RSSDIR	–	Specifies a directory for storing site information
2	RSSITE	RSSITE	Site name
3	RSUTYP	RSUTYP	User type
4	FX_LIB_DIR	HLNK_DIR	Library storage directory
5	MRI_68K_INC	SHC_INC	Compiler include file storage directory
6	MRI_68K_LIB	–	Compiler library storage directory
7	MRI_68K_BIN	SHC_LIB	Compiler installation directory
8	MRI_68K_TMP	SHC_TMP	Directory created by the compiler to store temporary files
9	DOS16M	–	Compiler memory specification
10	RPDPS_10	SHCPU	CPU type specification
11	LM_LICENSE	–	Compiler license storage directory
12	–	HLNK_TMP	Directory created by the linkage editor to store temporary files
13	PATH	PATH	Sets the compiler and RPDP command storage directory

3.7.6.2 Comparison of commands provided by RPDP

Table 3-10 shows a comparison of commands provided by RPDP.

Table 3-10 Comparison of commands provide by RPDP (1/3)

No.	Classification	Command	Function overview			Support comparison	
						S10VE	S10mini
1	System generation	–	Configure environment where site is built Register system definition information Specify IP address and memory size			N#	Y (sgen)
2		svshconf	Display system definition information			N	Y (ssi)
3		svsitecp	Copy site			N	Y (sgen)
4		svsitedel	Delete site			N	Y (sgen)
5	Compilers and assemblers	shc	Cross-compiler			Y	Y (mcc68k)
6		svdatagen	Generate loadable binary file of default-value data			Y	N
7	Programming commands	optlnk	Librarian			Y	Y (lib68k)
8		optlnk	Linker			Y	Y (lnk68k)
9		makehce	make command			Y	N
10	Allocator	svdfa	Allocate partition area, generate backup file			Y	Y (sdfa)
11		svdla	Delete partition area, delete backup file			Y	Y (sdla)
12		svdfs	Allocate secondary partition area			Y	Y (sdfs)
13		svdls	Delete secondary partition area			Y	Y (sdls)
14		svdfv	Register VAL			Y	Y (sdfv)
15		svdlv	Delete VAL			Y	Y (sdlv)
16	Loader	svload	Store to resource backup file and register to management information			Y	Y (sload)
17		svdload	Delete from resource management information			Y	Y (sdload)
18		svcomp	Compare with registered resource			Y	Y (scomp)
19	Builder	svctask	Generate task			Y	Y (sctask)
20		svdtask	Delete task			Y	Y (sdtask)
21		svbuild	Register indirect link subprogram			Y	Y (sirbld)
22			Register built-in subroutine			Y	Y (sbuild)
23		svdbuild	Delete indirect link subprogram			Y	Y (sirbld)
24			Delete built-in subprogram			Y	Y (sdbuild)
25		svirglb	Register / delete IRGLB			Y	Y (sirbld)
26	Online debuggers	svdebug	Start / stop task	qu	Request task start	Y	Y (qu)
27				ab	Prohibit task start	Y	Y (ab)
28				re	Reset task start inhibition	Y	Y (re)
29				ta	Display task state	Y	Y (ta)
30				su	Suppress task execution	Y	N
31				rs	Reset suppression of task execution	Y	N
32				tm	Task cyclic start	Y	Y (tm)
33				ct	Reset task cyclic start	Y	Y (ct)
34				sht	Display task cyclic start	Y	N
35				si	Reset stack to default	Y	N
36				sp	Display stack usage	Y	N

Y: Supported; N: Not supported

#: Not supported because BASE SYSTEM/S10VE is used to build sites and set system definitions.

Table 3-10 Comparison of commands provided by RPDP (2/3)

No.	Classification	Command	Function overview			Support comparison	
						S10VE	S10mini
37	Online debugger	svdebug	Print / patch memory	md	Display or change memory contents via address specification	Y	Y (md)
38				sd	Display or change memory contents via name specification	Y	Y (sd)
39				bs	Set data to specified bit	Y	N
40				bg	Display specified bit data	Y	N
41				mcp	Copy memory contents	Y	N
42				mmv	Move memory contents	Y	N
43				mf	Set pattern value to memory	Y	N
44			Break point	br	Set or display break point	Y	Y (br)
45				stickybr	Display break point settings that were not reset by reset-start	Y	N
46				rb	Reset break point	Y	Y (rb)
47				rd	Display register	Y	Y (rd)
48				rr	Change register contents	Y	Y (rr)
49				go	Resume execution from break point	Y	Y (go)
50			Display system error	el	Display error log	Y	Y (el)
51				ss	Display system state	Y	Y (ss)
52			Set / display current time	st	Set current time	Y	Y (st)
53				gt	Display current time	Y	Y (gt)
54			Upload / download, compare	ld	Download individual resource	Y	Y (ld)
55				sv	Back up individual resource	Y	Y (sv)
56				cm	Compare contents of backup file and PCs memory	Y	Y (cm)
57			Permit / inhibit DHP records	dr	Permit DHP records	Y	Y (dr)
58				ds	Inhibit DHP records	Y	Y (ds)
59			ADT	as	Set or display ADT	Y	N
60				ac	Reset ADT	Y	N
61			Ladder debug function	lbr	Set or display break point	Y	N
62				lrb	Reset break point	Y	N
63				lrd	Display register	Y	N
64				lrr	Rewrite register	Y	N
65				lgo	Resume execution from break point	Y	N
66				s	Execute step	Y	N
67			Other	svdhp	Display DHP	Y	Y (sdhp)
68				svadm	Display name of resource at address	Y	Y (sadm)
69				ps	Start display of debug messages	Y	N
70				pe	End display of debug messages	Y	N
71				ver	Display CPMS version	Y	Y (ver)
72				help	Display list of subcommands	Y	Y (help)
73				q	End debugger	Y	Y (q)
74				!	Execute command on development machine when svdebug is executed	Y	Y (!)

Y: Supported; N: Not supported

Table 3-10 Comparison of commands provided by RPDP (3/3)

No.	Classification	Command	Function overview	Support comparison	
				S10VE	S10mini
75	Management tool	svmap	Display map information	Y	Y (smap)
76		svadm	Display name corresponding to address	Y	Y (sadm)
77		svsitecntl	Control site state and display state	Y	N
78	Startup	svrpl	Remote load	Y	Y (srpl)
79		svcpuctl	Control remote state	Y	N
80	Operation management	svcpunow	Display CPU load rate	Y	N
81		svtimex	Display task utilization information	Y	N
82	Error log, DHP display	svelog	Output error log information	Y	Y (el of sdebug)
83		svdhp	Display DHP trace information	Y	Y (sdhp)

Y: Supported; N: Not supported

3.7.7 Transferring compilers

The following shows precautions on the differences in versions between the compiler used in the S10mini and the compiler used in the S10VE. For details about a compiler, see its attached manual.

3.7.7.1 Precautions regarding compiling

- Handling of floating-point numbers

  You can use `shc` to control the rounding and handling of denormalized numbers in floating-point numbers in the compiling options.

  However, be aware that each type of handling links a different standard library upon loading.

  Table 3-11 shows the options to control the handling and rounding of denormalized numbers and the corresponding standard library. (If a library is not specified upon loading, the loader links to `libsh4nbmdn.lib`.)

Table 3-11 Options for controlling the handling of floating-point numbers

	Specification	Option	Default
Handling of denormalized numbers	Handle as `0`	`-denormalization=off`	Handled as `0`
	Handle as denormalized number#	`-denormalization=on`	
Rounding of result values	Truncate digits exceeding the valid number.	`-round=zero`	Truncated
	Round off digits exceeding the valid number.	`-round=nearest`	

#: The S10VE CPU module SH4A (SH7786) does not support denormalized numbers. Such numbers are handled as `0` during execution.

Table 3-12 Handling of floating-point numbers and the corresponding standard libraries

	-denormalization	-round	Default
Specified option	`off`	`zero`	`libsh4nbmzz.lib`
	`on`		–
	`off`	`nearest`	–
	`on`		`libsh4nbmdn.lib`

- Generate and save compile list (`shc`)

  Generate and save compile lists in advance, because these are needed for purposes such as calculating the stack size used by tasks. To generate a compile list, specify the following option.

  Specify the `-listfile` option before specifying the C source file to be compiled.

  If the `-listfile` option is specified after specifying the C source file, the compile list only generates the last file.

  ■ Specify compile list generation

  ```
  -listfile [ =list-file-name] -show=source,object
  ```

  If a list file name is not specified, the list file is generated under the same file name as the source file name with the extension `.lst` added.

- `shc Δ-listfile Δtest1.c Δ test2.c` (and press the **Enter** key)
  The `listfile` option is valid for both `test1.c` and `test2.c`.
- `shc Δtest1.c Δtest2.c Δ-listfile` (and press the **Enter** key)
  The `listfile` option is only valid for `test2.c`.

3.7.7.2 Differences between mcc68k and shc

Table 3-13 compares the command-line options for `mcc68k` and `shc`.

Table 3-13 Comparison of command-line options between mcc68k and shc

No.	mcc68k	shc	Meaning
1	`-c`	`-code=machinecode`	Does not link; generates an object module.
2	`-Dname` `-Dnaem=def`	`-define=name` `-define=name=def`	Defines `name`. Defines `name` in `def`.
3	`-E`	–	Does not compile; outputs the preprocessor result to standard output.
4	`-g`	`-debug`	Generates debug information.

5	–	`-listfile`
		Can be substituted with:
		`-show=source,object`
			Inserts a source file row in the assembler source.

6	ANSI standard by default	ANSI standard by default	Compiles only programs conforming to ANSI Standard C.
7	–	`-endian=big`	Compiles in big-endian mode (The default is big-endian.).
8	–	`-endian=little`	Compiles in little-endian mode.
9	–	`-sjis` (Default)	Supports Japanese kanji characters (SHIFT-JIS); only specifiable when using K&R.
10	–	`-show=length=n`	Specifies the number of rows in the first page of the source list.
11	–	`-listfile` `-listfile=filename`	Displays the source list.
12	`-Idir`	`-include=dir`	Adds a search directory for include files.

13	`-O`
	`-On`
		`-optimize=0`
		`-optimize=1`
		`-optimize=Debug_only`
			Sets the optimization level.
			`mcc68k`:
			`n=b,c,e,g,I,j,l,R,r,s,t`
			`shc9`:
			`optimize=0`: Not optimized; `optimize=1`: Optimized
			The optimization method can be selected by using `-speed`, `-nospeed`, and `-size`.
			`optimize=Debug_only`:
			Completely suppresses optimization relating to per-statement deletion, and allows information on local variables to be referenced at any time.

		`-speed`
		`-nospeed`
		`-size`	

14	`-P`	`-preprocessor[=file]`	`mcc68k`: Only executes the preprocessor, and stores the result in a `.i` file. `shc`: Only executes the preprocessor, and stores the result in a `.p` file.
15	`-S`	`-code=asmcode`	Generates an assembler source. Does not start the assembler or linker.
16	`-Uname`	–	Leaves `name` undefined.

Table 3-14 lists the shc options.

Table 3-14 List of shc options

No.	Function	shc	Meaning
1	CPU type	-cpu=sh4	Generates SH-4 objects.
2	Output list file	-listfile=[filename]	Generates compile lists.
3	Output format of compile list (This specification is enabled when specified at the same time as the -listfile option.)	-show=source|*nosource* |*object*|noobject |*statistics*|nostatistics |include|*noinclude* |expansion|*noexpansion*	Presence or absence of source list Presence or absence of object list Presence or absence of statistics information Presence or absence of include-expanded list Presence or absence of macro-expanded list
4	Storage section of string data	-string=*const* |data	Outputs string to constant area section (C). Outputs to default data area section (D).
5	Sign or zero extension of return values	-rtnext -*nortnext*	Performs sign or zero extension on return values. Does not perform sign or zero extension on return values.
6	Handling of denormalized numbers	-denormalization=*off* |on	Handles denormalized numbers as 0. Handles denormalized numbers as denormalized numbers.
7	Rounding direction of floating-point numbers	-round=*zero* |nearest	Rounds using the Round to Zero method Rounds using the Round to Nearest method

3.7.7.3 Differences in language specifications

Table 3-15 shows the differences in language specifications between `mcc68k` and `shc` and precautions on transfer. Table 3-15 only shows comparisons between items with different specifications. Extended functions particular to `mcc68k` and `shc` are also omitted. Note that programs using extended functions particular to `mcc68k` need to be revised.

Table 3-15 Comparisons between language specifications

No.	Compared item	mcc68k	shc	Meaning
1	Valid number of characters in identifier (external)	510 characters	8,189 characters	
2	Valid number of characters in identifier (internal)	512 characters	8,191 characters	
3	Alignment	2-byte alignment	Natural alignment However, double values are 4-byte aligned.	Modify programs that consider data structure size and placement as constants.

3.7.8 Transferring NXACP

3.7.8.1 Comparison of commands provided by NXACP

Table 3-16 shows a comparison of commands provided by NXACP. (For the S10VE command parameter specifications and how to use them, see the *S10VE Software Manual Operation NXACP For Windows®* (manual number SEE-3-134).)

Table 3-16 Comparison of commands provided by NXACP

No.	Function overview	Command	
		S10mini	S10VE
1	Build system	dfnnxs	dfnnxsv
2	Compile configuration information	confnxs	confnxsv
3	Load configuration information	tbllldnxs	tbllldnxsv
4	Load the NXACP main program	insnxs	insnxsv

3.7.8.2 NXACP resource allocations

Tables 3-17 to 3-20 show a comparison of resource allocations used by NXACP.

Table 3-17 Comparison of resources (tasks) used by NXACP

No.	Task name	Task number	Level	Comparison of resources in use	
				S10mini	S10VE
1	nx_timer	109	1	Y	N
2	nx_upexe	110	1	Y	N
3	nx_rcv1	111	1	Y	N
4	nx_rcv2	113	1	Y	N
5	nx_snd1	114	1	Y	N
6	nx_smd2	115	1	Y	N
7	nx_memac	209	7	N	Y
8	nx_cycsnd	210	7	N	Y
9	(reserve)	211 to 212	–	N	R
10	nx_operation	213	4	N	Y
11	nx_snd1	214	6	N	Y
12	nx_snd2	215	6	N	Y
13	nx_snd3	216	6	N	Y
14	nx_snd4	217	6	N	Y
15	nx_snd5	218	6	N	Y
16	nx_snd6	219	6	N	Y
17	nx_htim	220	5	N	Y
18	nx_ltim	221	17	N	Y
19	nx_upexe	222	6	N	Y
20	nx_purcv	223	6	N	Y
21	(reserve)	224	–	N	R

Y: Used; N: Unused; R: Reserved resource

Table 3-18 Comparison of resources (IRSUB) used by NXACP

No.	IRSUB name	IRSUB number	Comparison of resources in use	
			S10mini	S10VE
1	acpinit	2	Y	N
2	acpquit	3	Y	N
3	putran	4	Y	N
4	getran	5	Y	N
5	getmsg	6	Y	N
6	sdtimer	7	Y	N
7	stimer	8	Y	N
8	swake	9	Y	N
9	nx_abs	10	Y	N
10	nx_exs	11	Y	N
11	nx_init	301	N	Y
12	nx_quit	302	N	Y
13	nx_put	303	N	Y
14	nx_get	304	N	Y
15	nx_dfup	305	N	Y
16	nx_dfdwn	306	N	Y
17	nx_init_tm	307	N	Y
18	nx_ctl_tm	308	N	Y
19	nx_get_tm	309	N	Y
20	nx_write_tm	310	N	Y
21	nx_read_tm	311	N	Y
22	nx_trc	312	N	Y
23	nx_cdoff	313	N	Y
24	nx_cdon	314	N	Y
25	nx_puni	315	N	Y
26	(reserve)	316 to 332	N	R

Y: Used; N: Unused; R: Reserved resource

Table 3-19 Comparison of resources (IRGLB) used by NXACP

No.	IRGLB name	IRGLB number	Comparison of resources in use		Remarks
			S10mini	S10VE	
1	(reserve)	1 to 50	R	N	NXACP reserved resource
2	(reserve)	301 to 314	N	R	NXACP reserved resource

N: Unused; R: Reserved resource

Table 3-20 Comparison of resources (ULSUB) used by NXACP

No.	ULSUB name	ULSUB number	Comparison of resources in use	
			S10mini	S10VE
1	(reserve)	NXS	R	R
2	nx_ulexs	EXS	Y	N
3	nx_ulabs	ABS	Y	N
4	nx_ins	INS	N	Y
5	nx_exs	EXS	N	Y
6	nx_abs	ABS	N	Y
7	nx_ctl	MODES	N	Y

Y: Used; N: Unused; R: Reserved resource

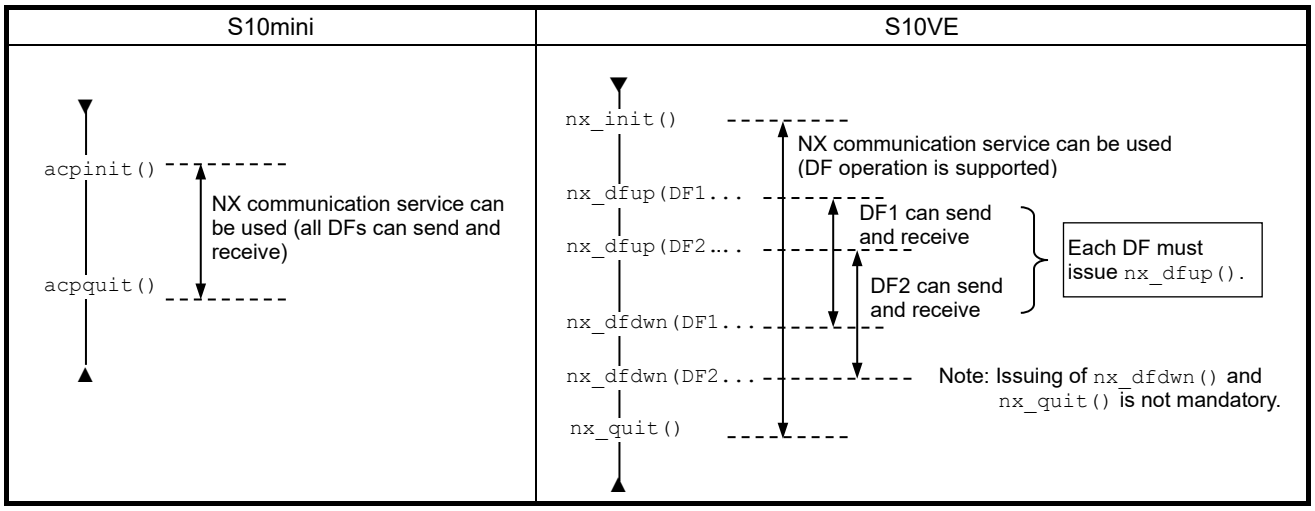
3.7.8.3 Transferring NXACP programs

When transferring user programs from the S10mini to the S10VE, macros used in the S10mini must be changed to those for S10VE (for the specifications of S10VE macro parameters and their method of use, see the *S10VE Software Manual Operation NXACP For Windows®* (manual number SEE-3-134).). Also, be aware that the method of using operation macros used when initializing the S10mini, and the processing when receiving messages both differ in the S10VE.

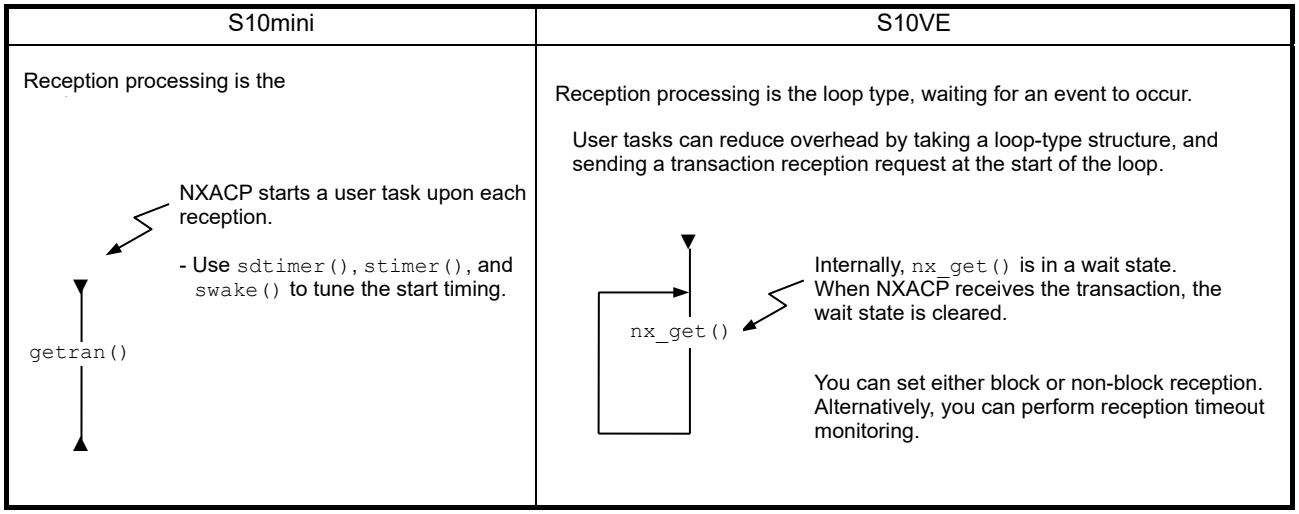
Table 3-21 List of NXACP macro comparisons

Division	Function overview	Macro name		Remarks
		S10mini	S10VE	
Operation macros	Initialize NX	`acpinit`	`nx_init`	
	Start up DF	—	`nx_dfup`	
	Stop DF	—	`nx_dfdwn`	
	Stop NX	`acpquit`	`nx_quit`	
Multicast communication macros	Send message	`putran`	`nx_put`	
	Receive message	`getran`	`nx_get`	
	Get message from resident buffer	`getmsg`	—	The S10VE does not support this macro because the S10VE does not have a resident buffer.
	Change duration-start parameter	`sdtimer`	—	The S10VE does not support these macros. Because message reception processing waits for an event to occur, these macros can be substituted with the CPMS macro (`timer` macro).
	Change cyclic-start parameter	`stimer`	—	
	Change timed-start parameter	`swake`	—	
Common memory macros	Reset transfer memory to default	—	`nx_init_tm`	
	Control transfer memory	—	`nx_ctl_tm`	
	Get transfer memory information	—	`nx_get_tm`	
	Write to transfer memory	—	`nx_write_tm`	
	Read transfer memory	—	`nx_read_tm`	

[How to use operation macros during initialization]



[Processing when sending and receiving messages]



If `sdtimer()`, `stimer()`, and `swake()` were used in the S10mini, these can be substituted in the S10VE by using the CPMS macro (`timer()`) either before or after the `nx_get()` processing.

3.8 User arithmetic functions

3.8.1 Overview of user arithmetic functions

In the S10mini, user-original user arithmetic functions and system arithmetic functions for optional modules were both registered in the registration table for user arithmetic functions. However, in the S10VE, the registration table for user arithmetic functions is for user arithmetic functions only, and the maximum number of registrations has been extended from 16 to 128. System arithmetic functions for optional modules are not supported.

■ Difference in handling of user-original user arithmetic functions

No.	Item	S10mini	S10VE
1	Used area	Assign part of the ladder program area (SEQ-RAM) or use extended memory.	Assign the area for user arithmetic functions. For how to assign the area, see No. 4.
2	Registration method	Perform registration under **UFET** of the **Utilities** menu of the ladder chart system.	
3	Maximum number of registrations	16 (including system arithmetic functions for optional modules)	128
4	Other limits, etc.	Registered information (UFET) is managed in common with system arithmetic functions for optional modules.	You need to define the size used by the area for user arithmetic functions in advance, by going to the **Utilities** menu of the ladder chart system, then **PCs Edition**, and then **Change Capacity**.
5	Supported characters	Uppercase alphabetic characters, numeric characters, and symbols	Uppercase alphabetic characters, numeric characters (except for the first character), and underscores (_)

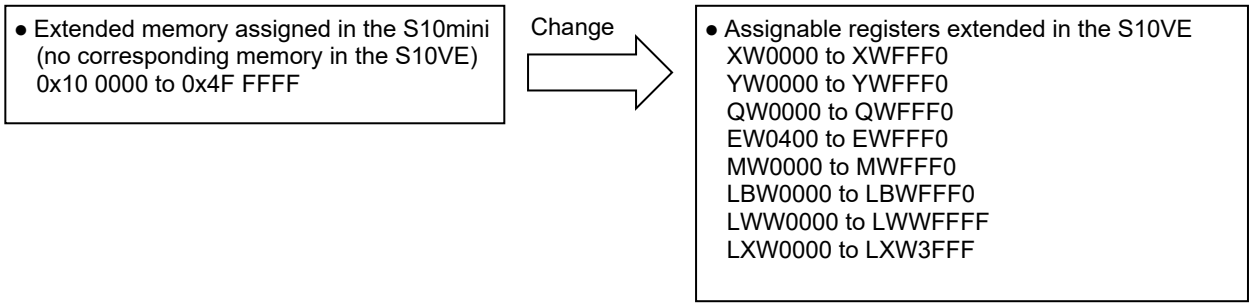
3.8.2 Precautions regarding long-word access to PI/O areas

During long-word access to a PI/O area, if an optional module is accessing the same area, be aware that data simultaneity between high-order and low-order words is not guaranteed.

3.9 Optional modules

3.9.1 Range of settings that can be configured by using the tool

Configure the setting information of optional modules by using the S10VE setup tool, using the same values as for the S10mini. When configuring the settings, if an extended memory area was specified in the S10mini, change it to an extended register area in the S10VE, because the S10VE does not feature extended memory. The following shows the modules where extended memory addresses can be specified (where extended memory addresses might be set).



If an extended memory address is specified as a data transfer area in any of the S10mini optional modules marked with a *Y* in the following table, after conversion to S10VE, revise the specification to a register area extended in the S10VE.

No.	Name of S10mini optional module	Specifiability of extended memory addresses as data transfer areas	Items that must be changed
1	ET.NET	—	–
2	OD.RING	Y	Assignments of word data and RAS tables
3	J.NET	Y	Assignments of transfer addresses
4	FL.NET	Y	Assignments of common memory area node numbers, FA link states, and local node states
5	D.NET	Y	Assignments of I/O addresses and D.Station status information storage addresses

Y: If extended memory is used in the S10mini, the setting must be changed.
—: Because extended memory is not assigned in the S10mini, the setting does not have to be changed.

For settings and setting procedures, see the manual of each optional module.

- S10VE User's Manual Option OD.RING (LQE510-E)
  (manual number SEE-1-001)
- S10VE User's Manual Option J.NET (LQE540-E)
  (manual number SEE-1-002)
- S10VE User's Manual Option D.NET (LQE770-E)
  (manual number SEE-1-003)
- S10VE User's Manual Option FL.NET (LQE702-E)
  (manual number SEE-1-004)

3.10 Method of data conversion between ladder or HI-FLOW and C-language programs

3.10.1 Method of data conversion between ladder or HI-FLOW and C-language programs

In the S10mini, data conversion between ladder or HI-FLOW programs and C-language programs was possible using GLB variables and the like in registers and C-language programs. However, in the S10VE, while data can be converted by using registers, GLB variables from ladder or HI-FLOW programs to C-language programs cannot be referenced directly.

As a result, modify your programs so that data conversion between ladder or HI-FLOW programs and C-language programs uses extended registers in the S10VE. For the addresses of each register, see *3.7.1 Modifying access that specifies an absolute address*.

■ Accessibility of memory space from S10mini programs

No.	Memory space	Ladder	HI-FLOW	C language
1	Register	Y	Y	Y
2	GLB (extended memory)	Y	Y	Y

Y: Can access memory space; N: Cannot access memory space

■ Accessibility of memory space from S10VE programs

No.	Memory space	Ladder	HI-FLOW	C language
1	Register	Y	Y	Y
2	GLB	N	N	Y

Y: Can access memory space; N: Cannot access memory space

3.11 Transferring NXTOOLS setting values

3.11.1 Transferring system programs

The following table shows a comparison of the system program types used by NXTOOLS SYSTEM/S10VE. In NXTOOLS SYSTEM/S10VE, only types 4, 5, and 6 are supported. Therefore, if the S10mini NX/Tools-S10 system uses system program type 1, 2, or 3, use type 4, 5, or 6 respectively in NXTOOLS SYSTEM/S10VE.

For the NXTOOLS SYSTEM/S10VE setting values when transferring system program type 1, 2, or 3 to type 4, 5, or 6 respectively, see *3.11.3 Range of settings that can be made by NXTOOLS SYSTEM*.

No.	Type	Number of local DFs in use	Number of remote DFs in use	Maximum number of TCDs	Support comparison		Remarks
					S10mini	S10VE	
1	1	1	0	32	Y	N	Use type 4.
2	2	1	1	32	Y	N	Use type 5.
3	3	2	2	32	Y	N	Use type 6.
4	4	1	0	96	Y	Y	
5	5	1	1	96	Y	Y	
6	6	2	2	96	Y	Y	

Y: Supported; N: Not supported

The following table shows the main differences in communication use in system programs:

No.	Item		Support comparison	
			S10mini	S10VE
1	Network	ET.NET(MAIN)	Y	N
2		ET.NET(SUB)	Y	N
3		CPU(ET1)	N	Y
4		CPU(ET2)	N	Y
5	Communication protocol		UDP/IP	UDP/IP
6	Message size		1408	1408

Y: Supported; N: Not supported

3.11.2 Comparison of resources used by system programs

Tables 3-22 to 3-28 compare the assignment of resources used by system programs.

Table 3-22 Comparison of resources (tasks) used by NXTOOLS

No.	Task name	Task number	Level	Resource use comparison	
				S10mini	S10VE
1	acp_init	103	3	Y	N
2			4	N	Y
3	tk_acp	104	3	Y	N
4			4	N	Y
5	mgt	105	3	Y	N
6			4	N	Y
7	tk_acpo	106	4	N	Y
8	nx_timer	109	1	Y	N
9	nx_upexe	110	1	Y	N
10	nx_rcv1	111	1	Y	N
11	nx_rcv2	113	1	Y	N
12	nx_snd1	114	1	Y	N
13	nx_snd2	115	1	Y	N
14	nx_memac	209	7	N	Y
15	nx_cycsnd	210	7	N	Y
16	nx_operation	213	4	N	Y
17	nx_snd1	214	6	N	Y
18	nx_snd2	215	6	N	Y
19	nx_snd3	216	6	N	Y
20	nx_snd4	217	6	N	Y
21	nx_snd5	218	6	N	Y
22	nx_snd6	219	6	N	Y
23	nx_htim	220	5	N	Y
24	nx_ltim	221	17	N	Y
25	nx_upexe	222	6	N	Y
26	nx_purcv	223	6	N	Y

Y: Used; N: Unused

Table 3-23 Comparison of resources (IRSUB) used by NXTOOLS

No.	IRSUB name	IRSUB number	Resource use comparison	
			S10mini	S10VE
1	acpinit	2	Y	N
2	acpquit	3	Y	N
3	putran	4	Y	N
4	getran	5	Y	N
5	getmsg	6	Y	N
6	sdtimer	7	Y	N
7	stimer	8	Y	N
8	swake	9	Y	N
9	nx_abs	10	Y	N
10	nx_exs	11	Y	N
11	nx_init	301	N	Y
12	nx_quit	302	N	Y
13	nx_put	303	N	Y
14	nx_get	304	N	Y
15	nx_dfup	305	N	Y
16	nx_dfdwn	306	N	Y
17	nx_init_tm	307	N	Y
18	nx_ctl_tm	308	N	Y
19	nx_get_tm	309	N	Y
20	nx_write_tm	310	N	Y
21	nx_read_tm	311	N	Y
22	nx_trc	312	N	Y
23	nx_cdoff	313	N	Y
24	nx_cdon	314	N	Y
25	nx_puni	315	N	Y

Y: Used; N: Unused

Table 3-24 Comparison of resources (IRGLB) used by NXTOOLS

No.	IRGLB name	IRGLB number	Resource use comparison		Remarks
			S10mini	S10VE	
1	nxldst	31	Y	N	Program B only
2	nx_com	301	N	Y	
3	dfcb	302	N	Y	
4	nxbuf	303	N	Y	
5	tcbcb	304	N	Y	
6	nxtrc	305	N	Y	
7	nxpubuf	313	N	Y	

Y: Used; N: Unused

Table 3-25 Comparison of resources (ULSUB) used by NXTOOLS

No.	ULSUB name	ULSUB number	Resource use comparison	
			S10mini	S10VE
1	nx_ulexs	EXS	Y	N
2	nx_ulabs	ABS	Y	N
3	nx_ins	INS	N	Y
4	nx_exs	EXS	N	Y
5	nx_abs	ABS	N	Y
6	nx_ctl	MODES	N	Y

Y: Used; N: Unused

Table 3-26 Comparison of resources (GLB) used by NXTOOLS

No.	Item	Size	Resource use comparison	
			S10mini	S10VE
1	Extended memory space (type 1)	0x3D800	Y	N
2	Extended memory space (type 2)	0x62E00	Y	N
3	Extended memory space (type 3)	0x80000	Y	N
4	Extended memory space (type 4)	0x64000	Y	N
5	Extended memory space (type 5)	0x6E800	Y	N
6	Extended memory space (type 6)	0x95800	Y	N
7	GLBW space (type 4)	0x00068000	N	Y
8	GLBW space (type 5)	0x000C3000	N	Y
9	GLBW space (type 6)	0x00177000	N	Y

Y: Used; N: Unused

Table 3-27 Comparison of resources (registers) used by NXTOOLS

No.	Register	Range	Resource use comparison		Remarks
			S10mini	S10VE	
1	FW register	FWBFD to FWBFF	Y	Y	
2	DW register	DWEF0 to DWEFF	Y	N	Program A only

Y: Used; N: Unused

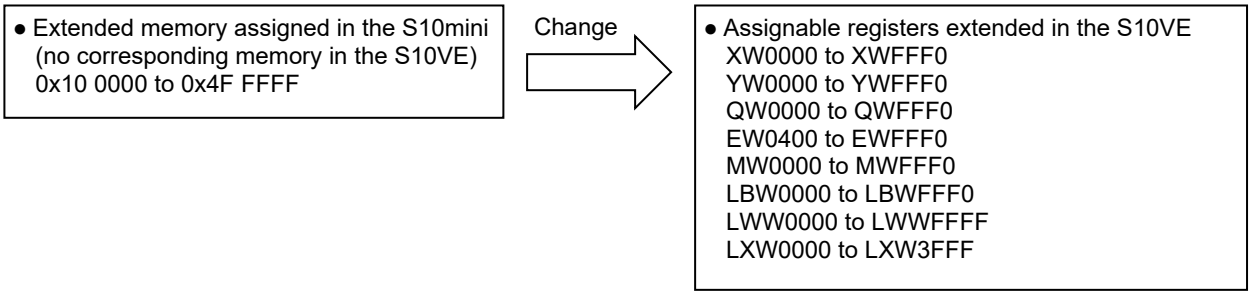
Table 3-28 Comparison of resources (user arithmetic functions) used by NXTOOLS

No.	Registration number	Resource use comparison	
		S10mini	S10VE
1	E	Y	N
2	F	Y	N

Y: Used; N: Unused

3.11.3 Range of settings that can be made by NXTOOLS SYSTEM

Reconfigure the setting information of NXTOOLS SYSTEM/S10VE using the information set in the S10mini NX/Tools-S10 system. When configuring the settings, if an extended memory area was specified in the S10mini, change it to an extended register area in the S10VE, because the S10VE does not feature extended memory. In addition, when setting configuration information using the old NX table information file, see *3.11.4 Setting configuration information using the old NX table information file*.



For settings and setting procedures, see the relevant manual or section 3.3.3 of this manual.

- S10VE Software Manual Operation NXTOOLS SYSTEM For Windows®
  (manual number SEE-3-137)

3.11.4 Setting configuration information using the old NX table information file

Start NXTOOLS SYSTEM/S10VE, and open the old NX table information file that was saved during conversion of the S10mini ladder programs. Configure the DF and TCD settings, and then write those setting values to the S10VE. For details, see *4.3 Starting up the system* or *5.2 Local DF settings* and *5.3 Remote DF settings* in the *S10VE Software Manual Operation NXTOOLS SYSTEM For Windows®* (manual number SEE-3-137).

However, the following setting information must be obtained on the user side:

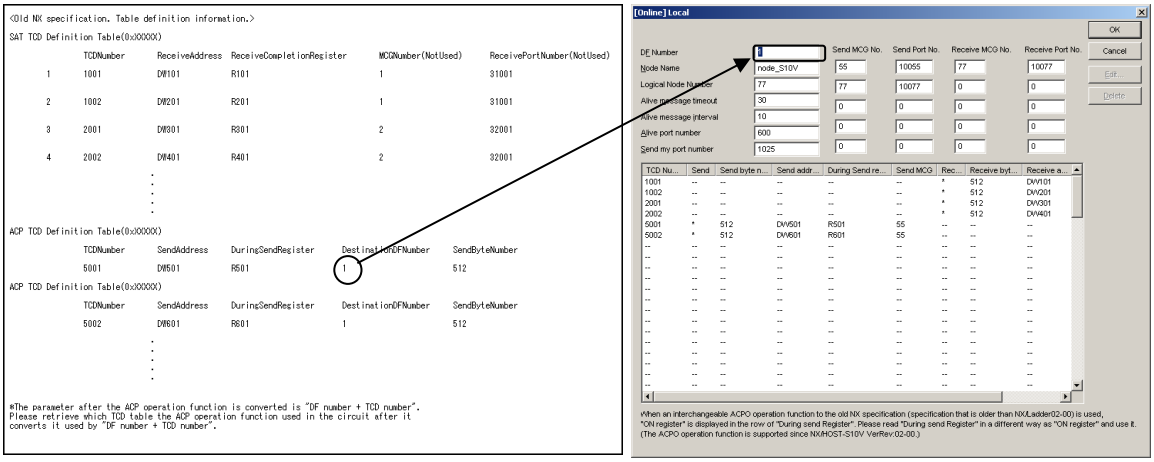
- Logical node number
- Alive message timeout period (seconds) / Alive message send cycle (seconds)
- Alive message destination port number
- Local port number for sending
- Sending MCG number / sending port number
- Number of received bytes

- **DF Number**, **Send MCG No.**, **Send Port No.**, **Receive MCG No.**, and **Receive Port No.** settings

  Set the destination DF number in the ACP TCD definition table in **DF Number**.

  Set **Send MCG No.**, **Send Port No.**, **Receive MCG No.**, and **Receive Port No.** to match those in the environment where the ladder programs were running before conversion.

  For details, see *5.2 Local DF settings* or *5.3 Remote DF settings* in the *S10VE Software Manual Operation NXTOOLS SYSTEM For Windows®* (manual number SEE-3-137).

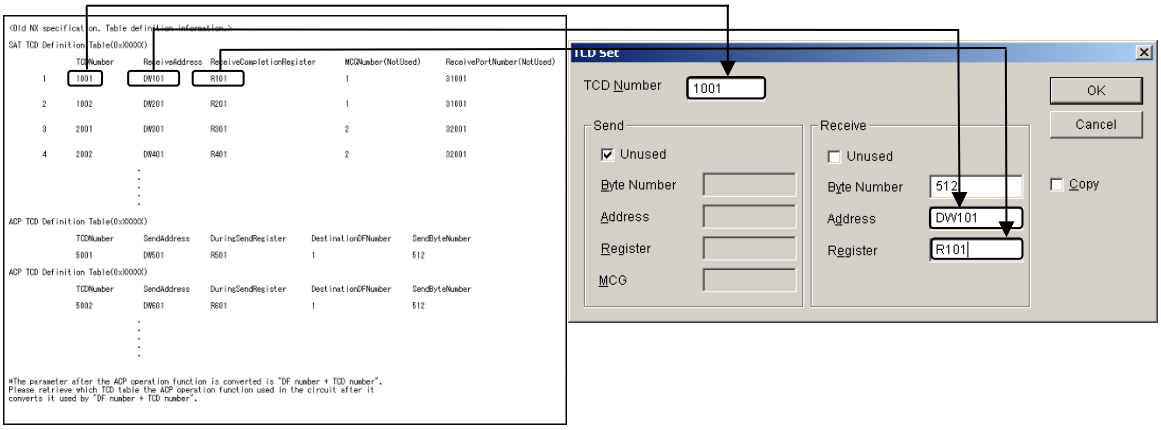


- Setting received TCD information

  Set the TCD number, receiving address, and receive completion register of the SAT TCD definition table for **TCD number**, receiving group **Address**, and **Register** in the TCD Set window.

  Set **Byte Number** to match the number of bytes in the environment where the ladder programs were running before conversion.

  For details, see *5.2 Local DF settings* in the *S10VE Software Manual Operation NXTOOLS SYSTEM For Windows®* (manual number SEE-3-137).

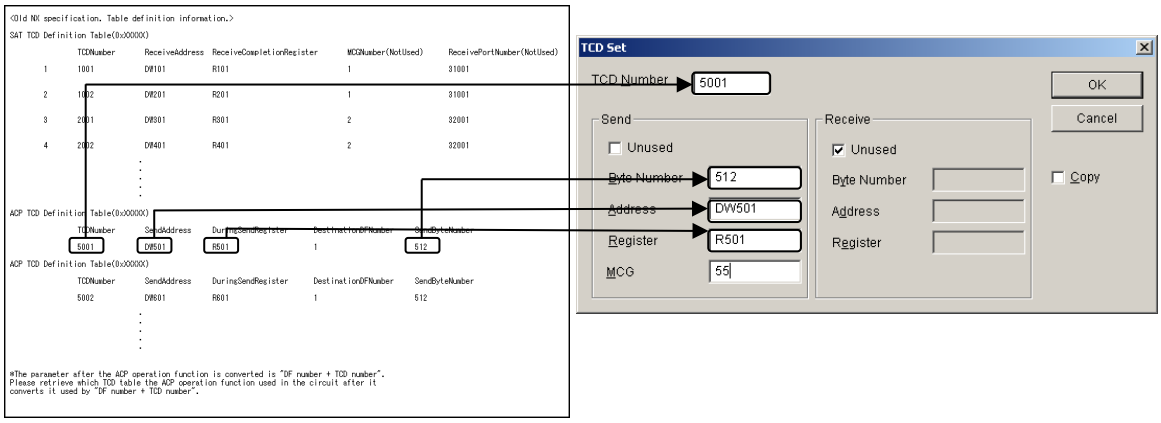


- Setting sent TCD information

  Set the TCD number, sending address, during-send register, and number of sent bytes of the ACP TCD definition table for **TCD Number**, number of bytes (**Byte Number**) for the sending group, **Address**, and **Register** in the TCD Set window.

  Set **MCG** to match the MCG in the environment where the ladder programs were running before conversion.

  For details, see *5.2 Local DF settings* or *5.3 Remote DF settings* in the *S10VE Software Manual Operation NXTOOLS SYSTEM For Windows®* (manual number SEE-3-137).



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4. Appendixes

4.1 Memory maps

4.1.1 S10V memory map

- LPU unit address map

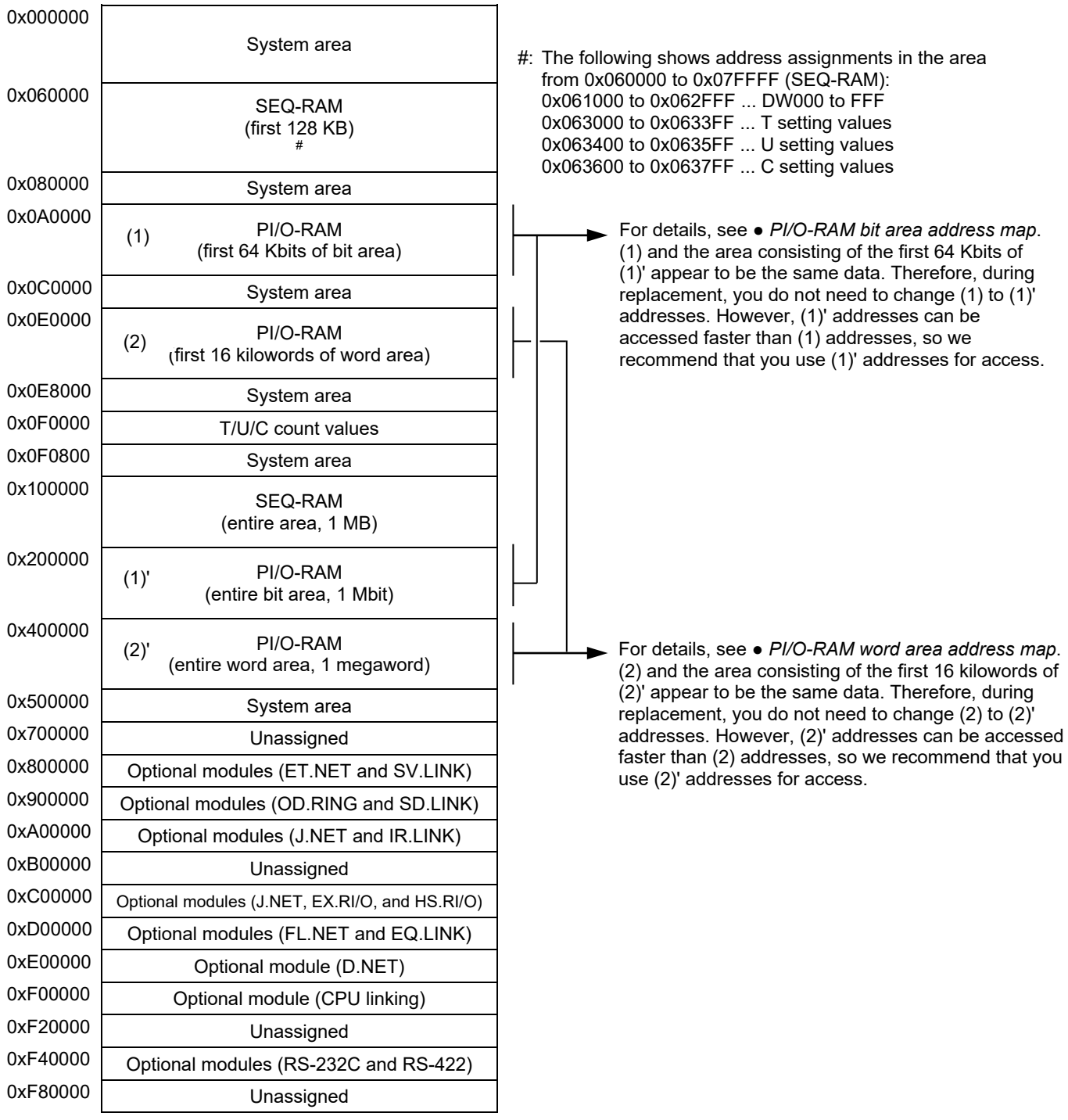


Figure 4-1 LPU unit address map

- PI/O-RAM bit area address map

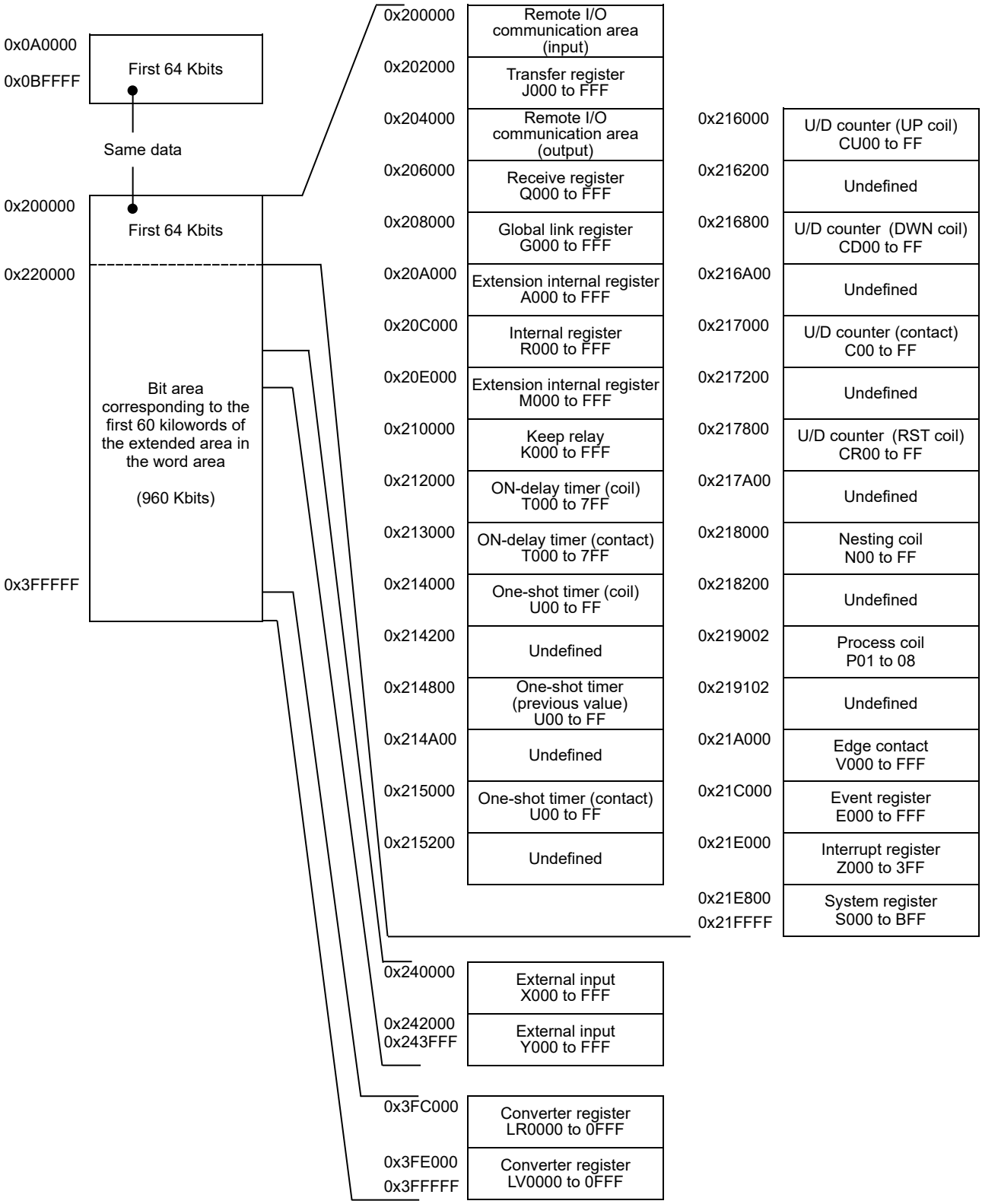


Figure 4-2 PI/O-RAM bit area address map

- PI/O-RAM word area address map

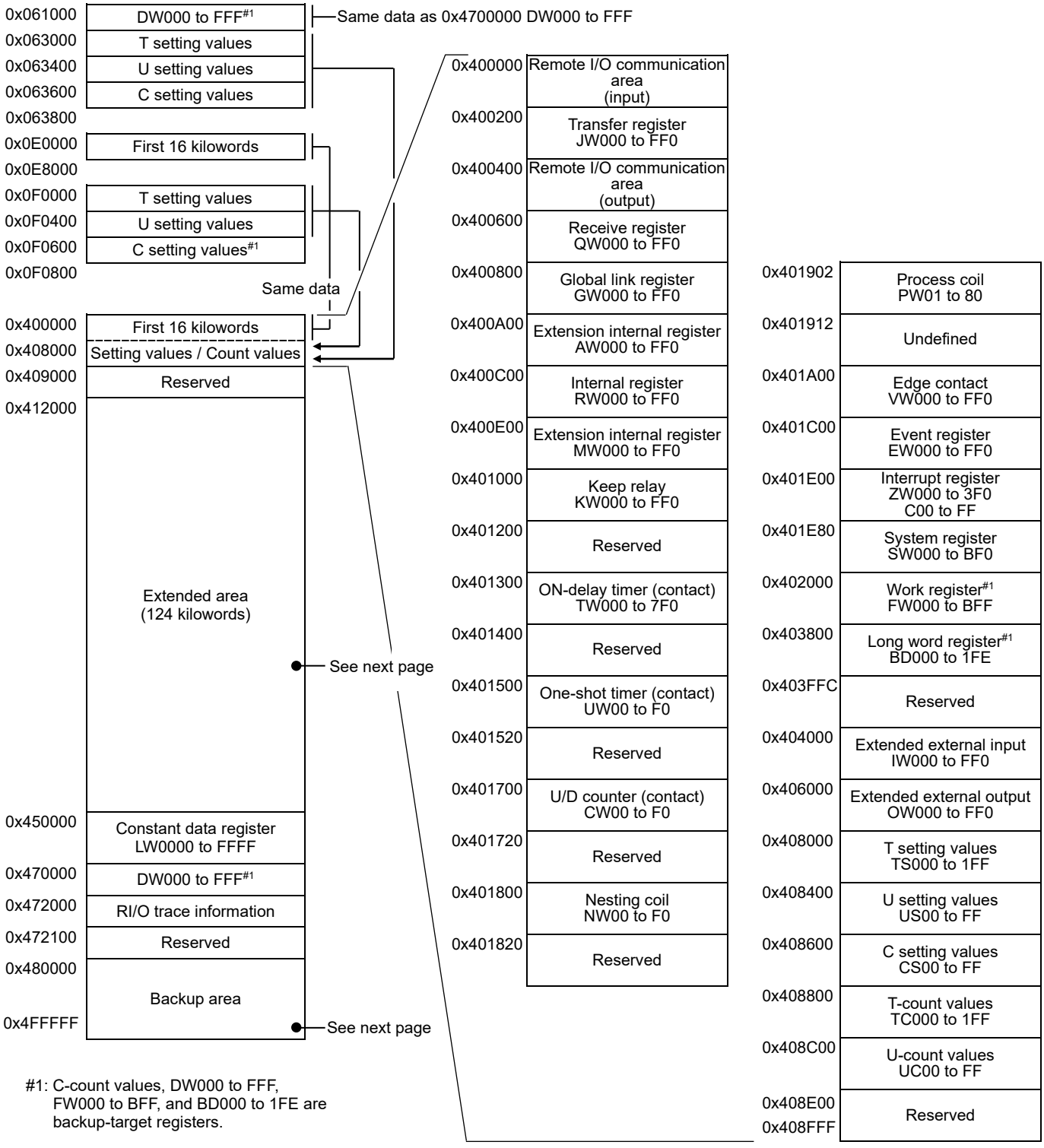


Figure 4-3 PI/O-RAM word area address map (1/2)

PI/O-RAM word area address map (continued)

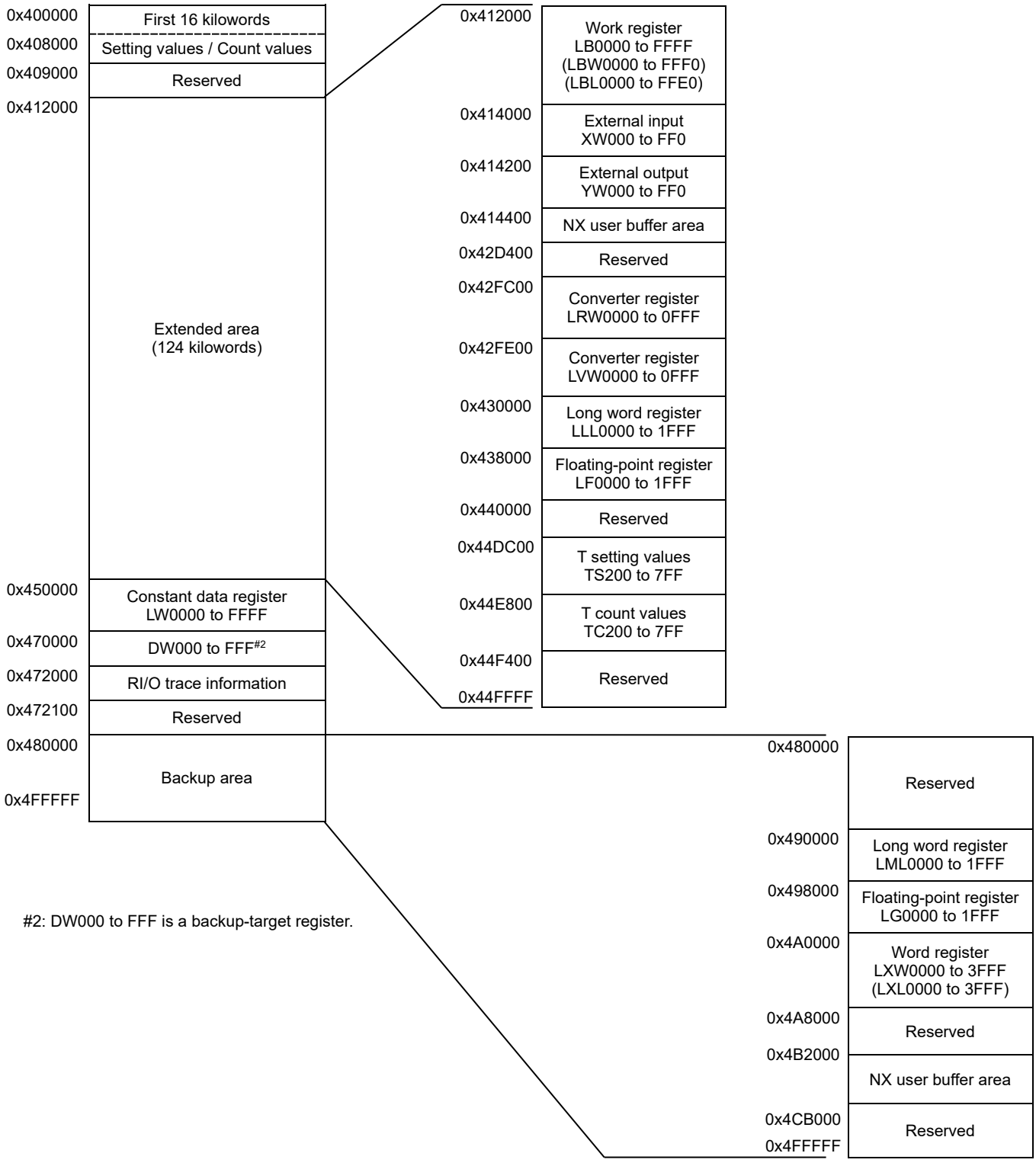


Figure 4-3 PI/O-RAM word area address map (2/2)

- CMU unit address map

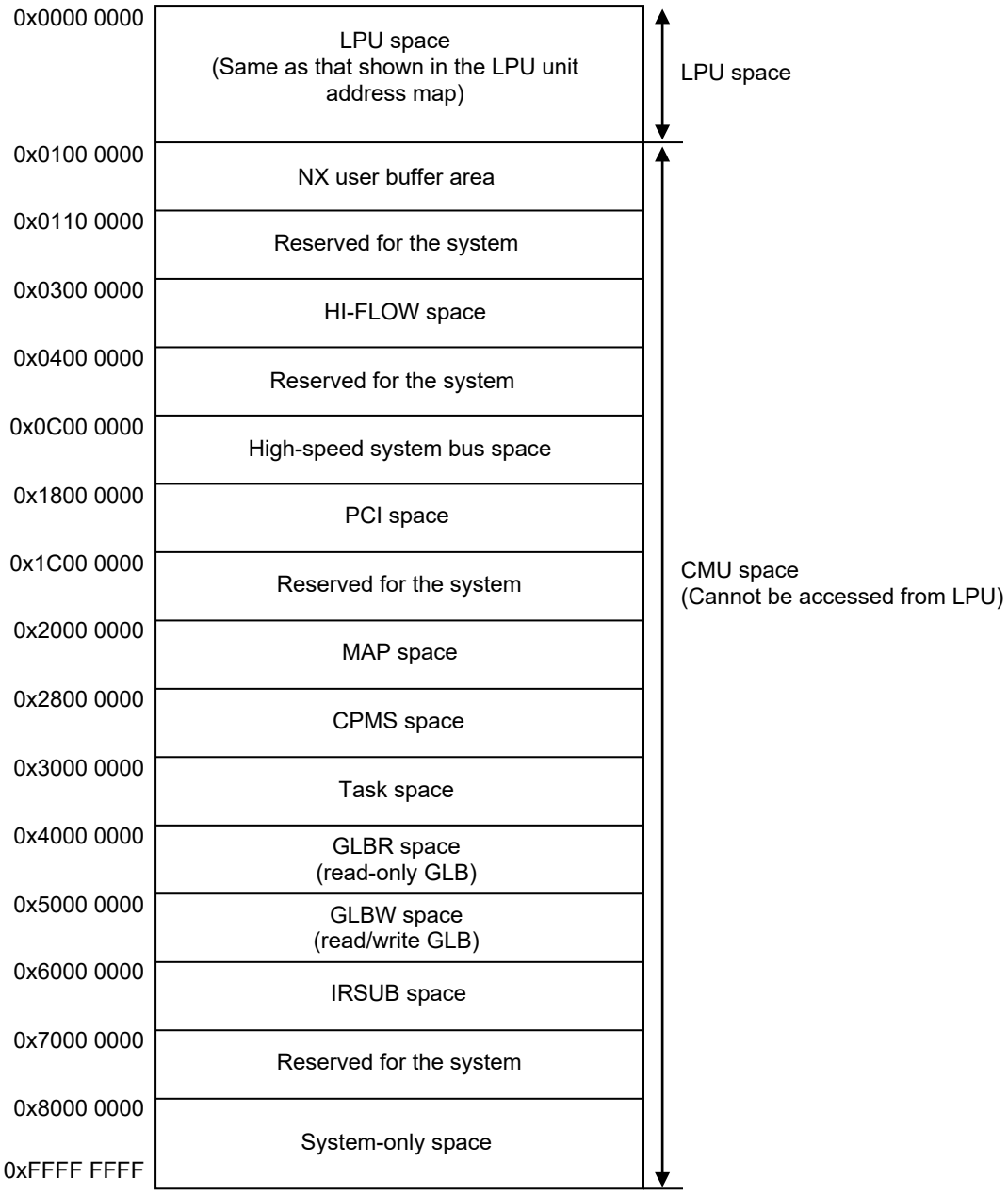


Figure 4-4 CMU unit address map

4.1.2 S10VE memory map

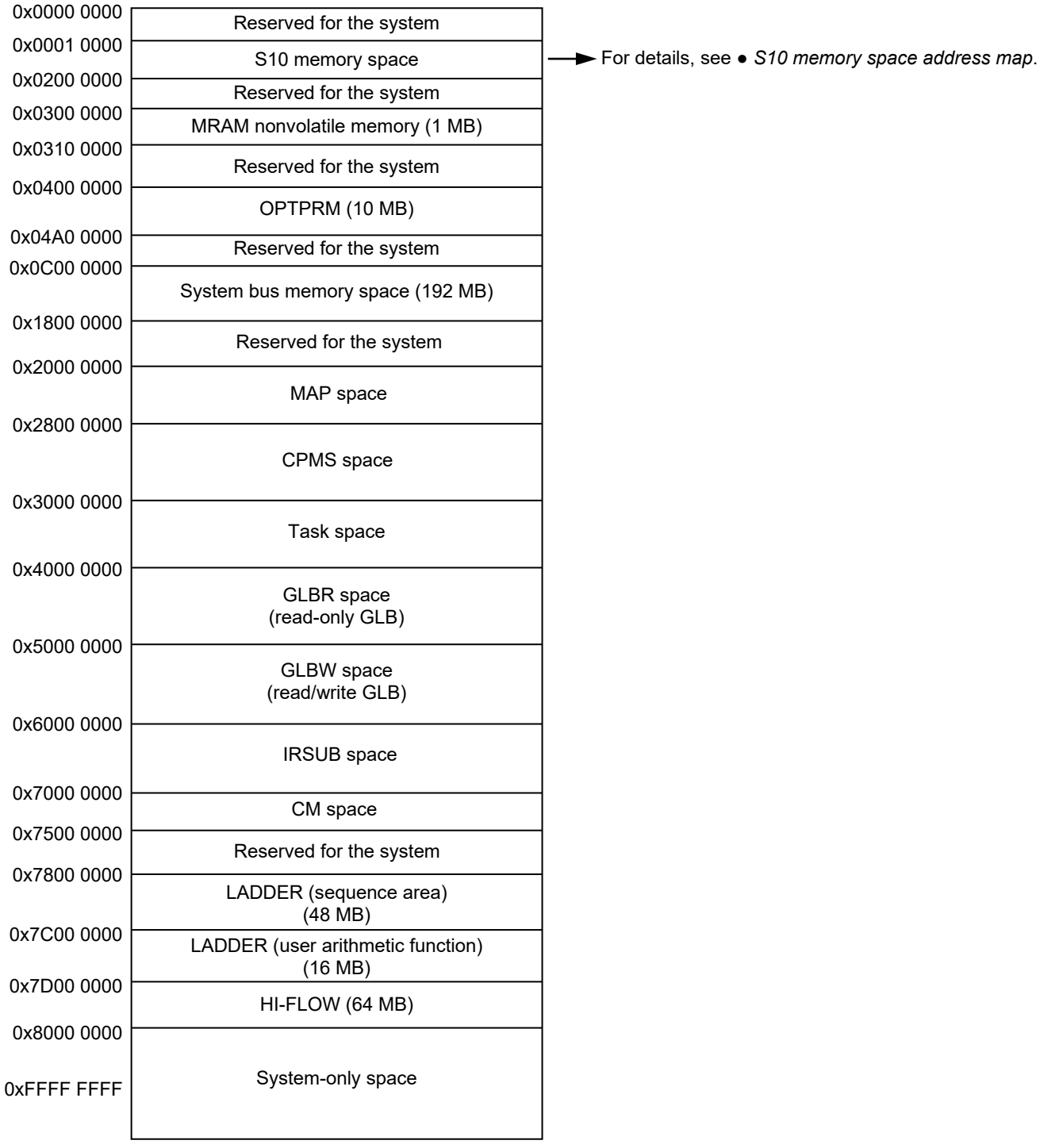


Figure 4-5 S10VE memory map

● S10 memory space address map

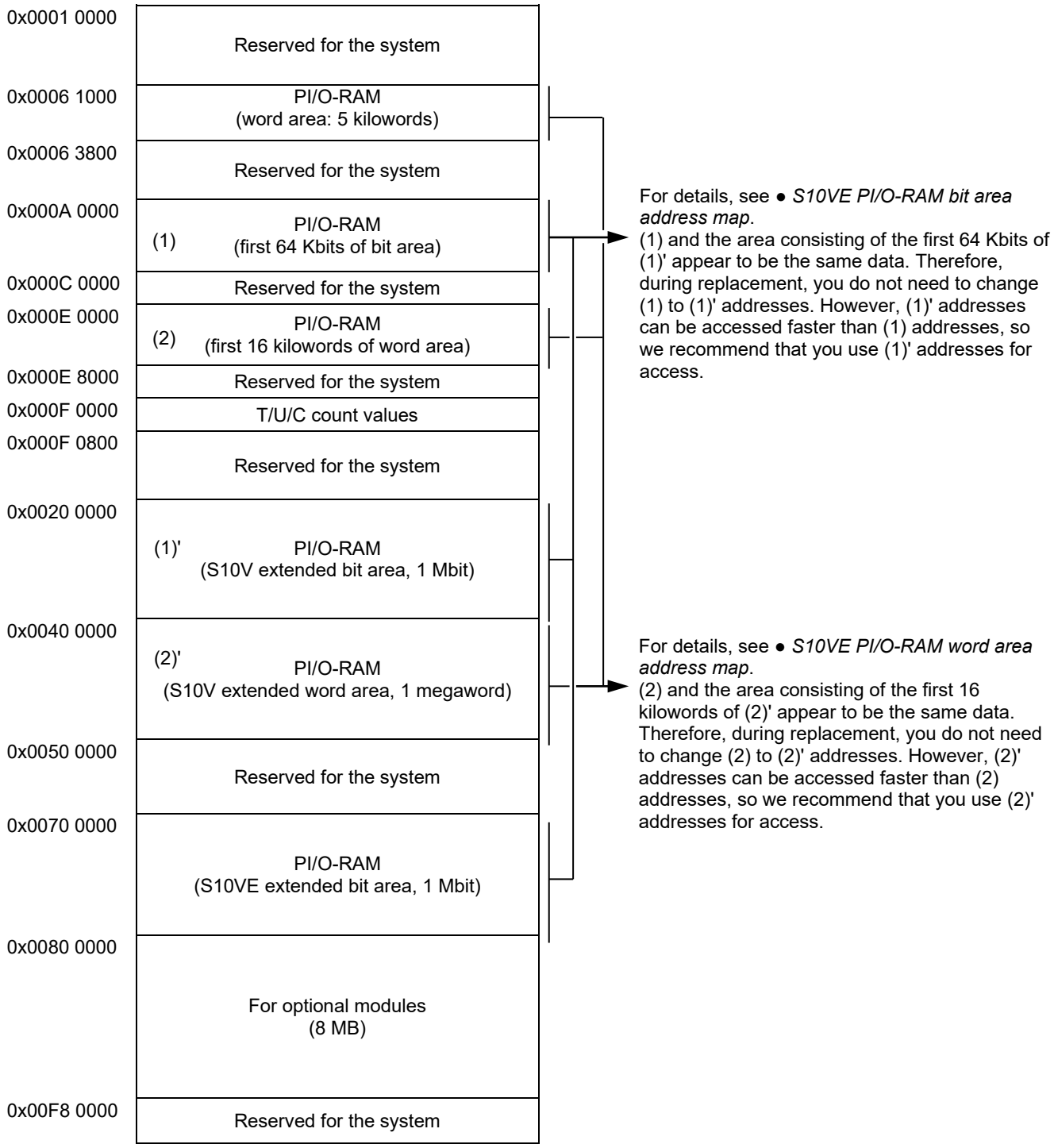


Figure 4-6 S10 memory space address map

- S10VE PI/O-RAM bit area address map

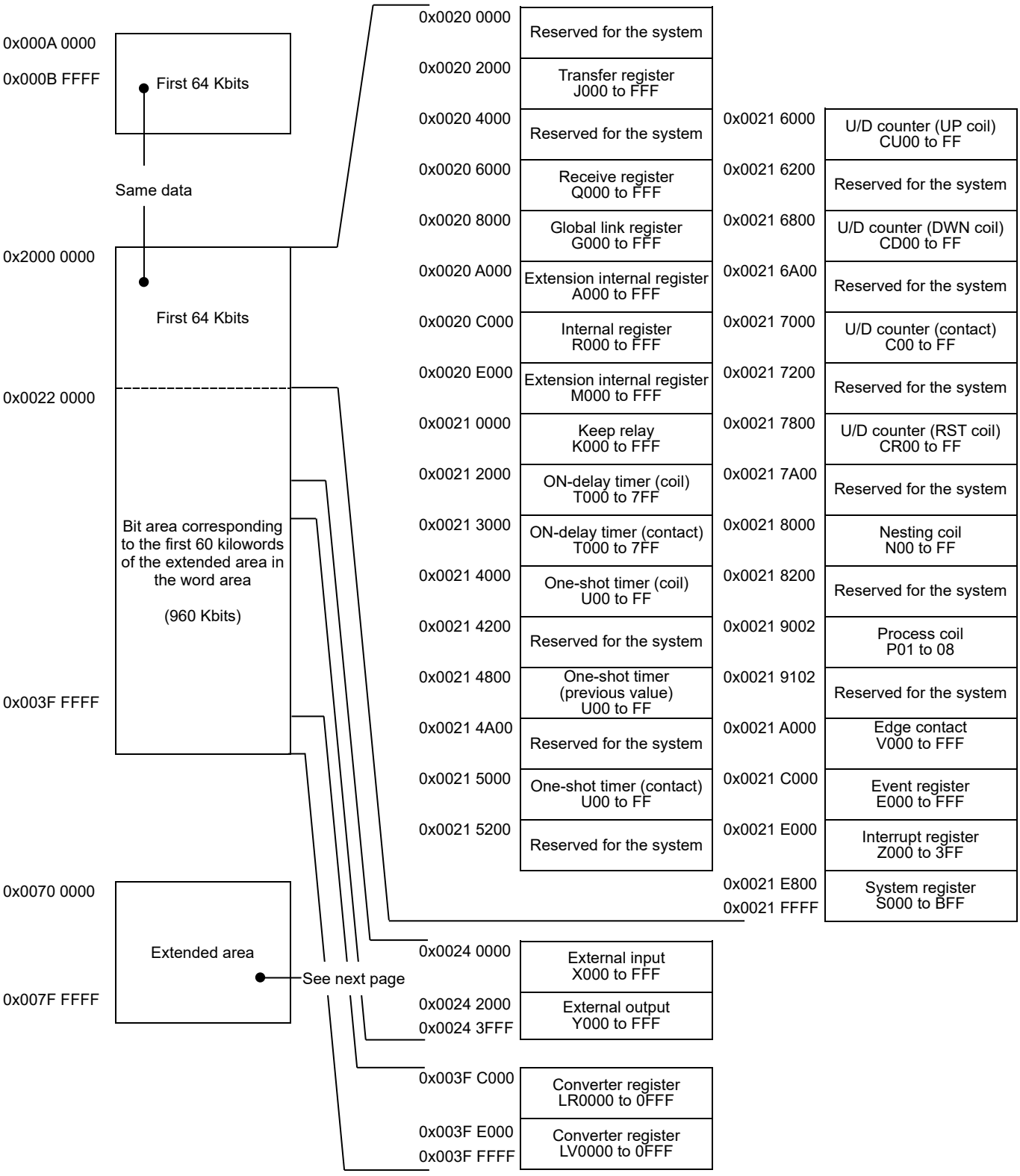


Figure 4-7 S10VE PI/O-RAM bit area address map (1/2)

S10VE PI/O-RAM bit area address map (continued)

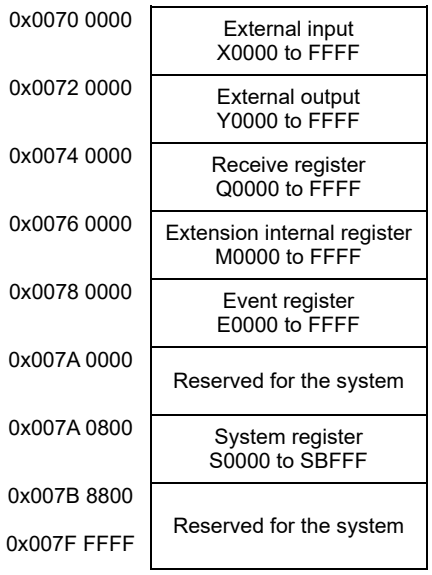


Figure 4-7 S10VE PI/O-RAM bit area address map (2/2)

- S10VE PI/O-RAM word area address map

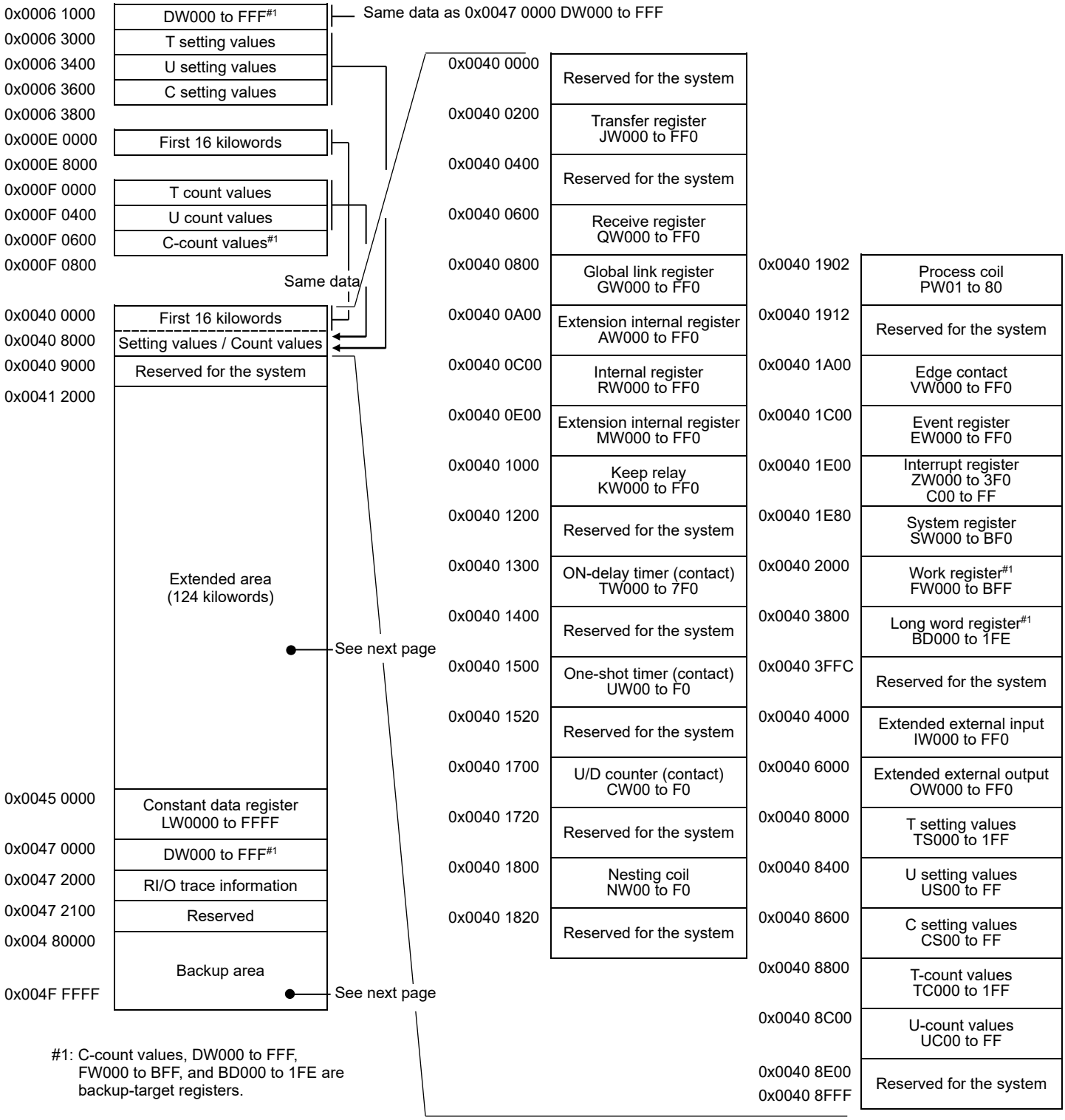
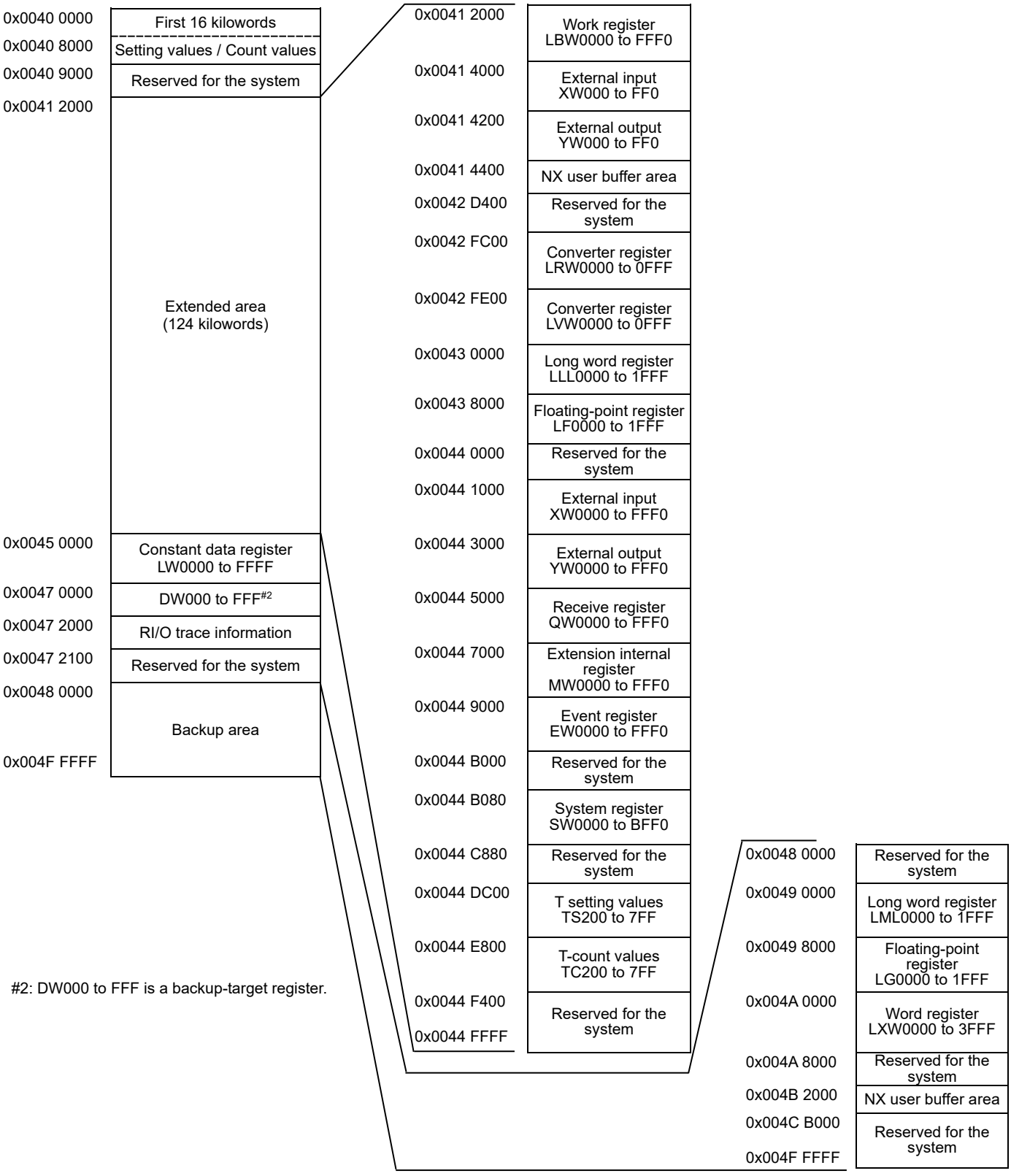


Figure 4-8 S10VE PI/O-RAM word area address map (1/2)

S10VE PI/O-RAM word area address map (continued)



#2: DW000 to FFF is a backup-target register.

Figure 4-8 S10VE PI/O-RAM word area address map (2/2)

- S10VE C-mode-related area address map

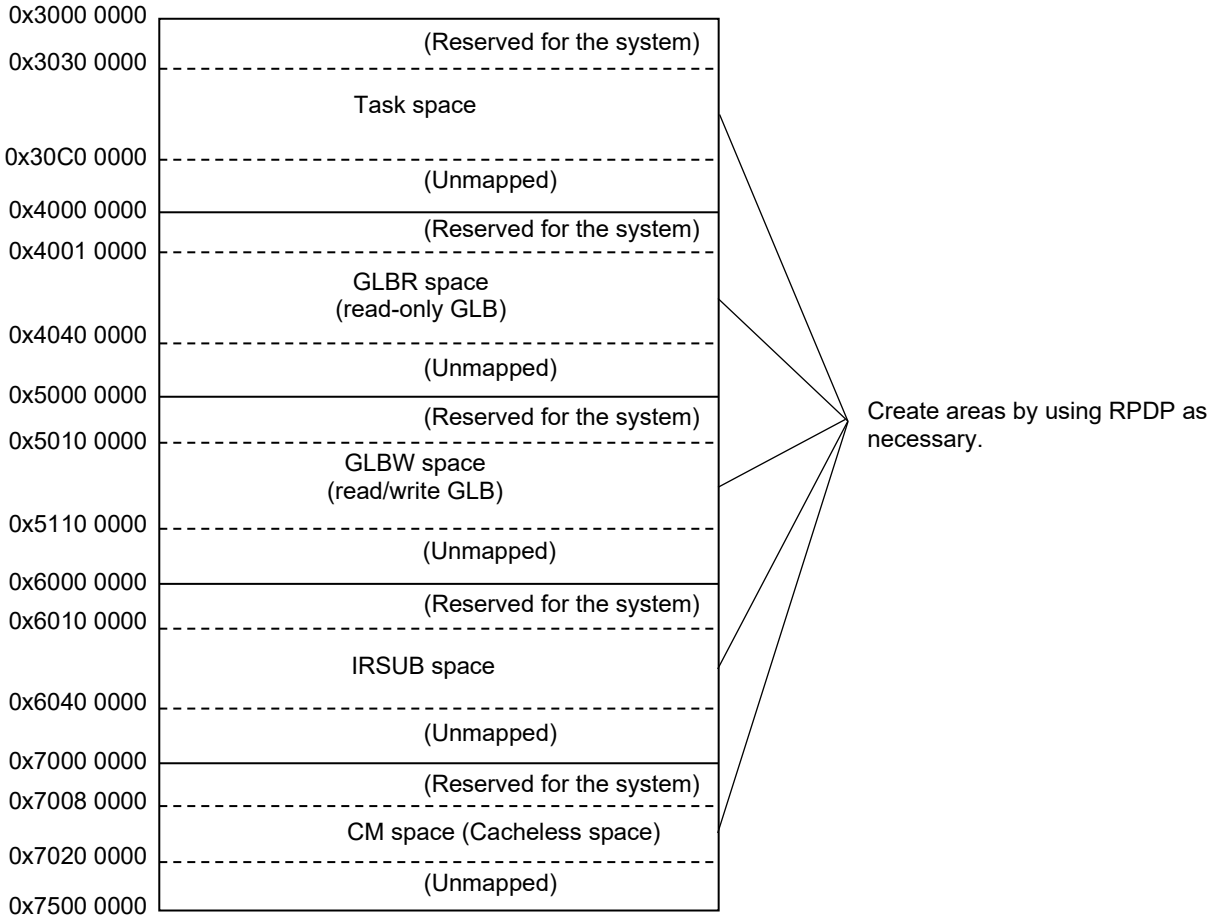


Figure 4-9 S10VE C-mode-related area address map

4.2 Differences between functions of software packages (tools)

The following shows the differences between the functions of each of the S10V and S10VE software packages (tools).

4.2.1 Ladder chart system

(1) Differences between functions of the S10V and S10VE

Table 4-1 shows whether there are differences between the functions of the S10V and S10VE.

Table 4-1 List of functions of S10V and S10VE ladder chart systems and their difference status (1/10)

No.	Function	Sub-function	Different?	Remarks
1	File	Create new ladder file	—	
2		Open existing ladder file	Y	#1
3		Close ladder file	—	
4		Save ladder file by overwriting	—	
5		Save ladder file under a new name	Y	#2
6	Edit ladder chart	Undo last operation while editing ladder chart	—	
7		Redo last operation undone while editing ladder chart	—	
8		Insert one step's worth of cells at desired position of ladder circuit	—	
9		Delete one step's worth of cells from desired position of ladder circuit	—	
10		Delete one step's worth of ladder symbols from ladder circuit	—	
11		Insert empty row at desired position of ladder circuit	—	
12		Delete row from desired position of ladder circuit	—	
13		Cut and save selected ladder circuit to clipboard	—	
14		Copy and save selected ladder circuit to clipboard	—	
15		Paste ladder circuit saved to clipboard	—	

A: Function added; Y: Different; —: Not different; X: Function deleted

#1: For details about the change, see *(2) Changes in file types that can be opened*.

#2: For details about the change, see *(3) Changes in file types that can be saved under a new name*.

Table 4-1 List of functions of S10V and S10VE ladder chart systems and their difference status (2/10)

No.	Function	Sub-function	Different?	Remarks
16	Edit ladder chart	Select entire ladder circuit of ladder sheet in active state	—	
17		Insert row comment at desired position of ladder circuit	—	
18		Edit row comment at desired position of ladder circuit	—	
19		Delete row comment from desired position of ladder circuit	—	
20		Search entire ladder chart currently being edited for locations using specified ladder symbol, and jump to location	—	
21		Search entire compiled ladder chart for specified ladder symbol, and display list of locations using that ladder symbol	—	
22		Search selected ladder chart file and HI-FLOW file for specified symbol, and display list of locations using that symbol	X	
23		Search entire compiled ladder chart for specified device type, and display list of usage statuses	—	
24		Search for device type in specified HI-FLOW program, and display list of usage statuses	X	
25		Search entire compiled ladder chart and specified HI-FLOW program for specified device type, and display list of usage statuses	X	
26		Batch-change register or arithmetic function assigned to symbol in selected ladder circuit	—	
27		Display list of TUC setting values or change setting value	—	
28		Replace with specified string in all N coils	—	
29		Copy specified N coil	—	
30		Delete specified N coil	—	
31		Display symbol properties	—	
32		Toggle display of symbol search window on key input	—	

A: Function added; Y: Different; −: Not different; X: Function deleted

Table 4-1 List of functions of S10V and S10VE ladder chart systems and their difference status (3/10)

No.	Function	Sub-function	Different?	Remarks
33	Display	Toggle display of project window	—	
34		Toggle display of tool bar	—	
35		Toggle display of status bar	—	
36		Toggle display of output window	—	
37		Toggle display of symbol bar	—	
38		Toggle display of mode bar	—	
39		Switch ladder circuit display size to 120%	—	
40		Switch ladder circuit display size to 110%	—	
41		Switch ladder circuit display size to 100% (actual size)	—	
42		Switch ladder circuit display size to 90%	—	
43		Switch ladder circuit display size to 80%	—	
44		When displaying ladder circuit monitor, display monitor values in decimal numbers	—	
45		When displaying ladder circuit monitor, display monitor values in hexadecimal numbers	—	

A: Function added; Y: Different; −: Not different; X: Function deleted

Table 4-1 List of functions of S10V and S10VE ladder chart systems and their difference status (4/10)

No.	Function	Sub-function	Different?	Remarks
46	Print	Configure common printing layout	—	
47		Configure printer	—	
48		Print specified ladder circuit	—	
49		Print PCs edition	—	
50		Print list of LPETs	—	
51		Print list of TUC setting values	—	
52		Print list of ladder circuit devices (registers) and whether they are used	—	
53		Print list of cross-reference results	—	
54		Print list of usage statuses of ladder circuit coils	Y	Change printing format
55		Print list of system extension arithmetic functions	—	
56		Print list of user arithmetic functions	—	
57		Print list of I/O comments	—	
58		Print list of analog counters	—	
59		Print list of Ethernet communication settings	—	

A: Function added; Y: Different; −: Not different; X: Function deleted

Table 4-1 List of functions of S10V and S10VE ladder chart systems and their difference status (5/10)

No.	Function	Sub-function	Different?	Remarks
60	Print preview	Display print preview of specified ladder circuit	—	
61		Display print preview of PCs edition	—	
62		Display print preview of list of LPETs	—	
63		Display print preview of list of TUC settings	—	
64		Display print preview of list of ladder circuit devices (registers) and whether they are used	—	
65		Display print preview of list of cross-reference results	—	
66		Display print preview of list of usage statuses of ladder circuit coils	Y	Change printing format
67		Display print preview of list of system extension arithmetic functions	—	
68		Display print preview of list of user arithmetic functions	—	
69		Display print preview of list of I/O comments	—	
70		Display print preview of list of analog counters	—	
71		Display print preview of list of Ethernet communication settings	—	

A: Function added; Y: Different; −: Not different; X: Function deleted

Table 4-1 List of functions of S10V and S10VE ladder chart systems and their difference status (6/10)

No.	Function	Sub-function	Different?	Remarks
72	Advanced settings for printing	Advanced settings for printing ladder circuits	—	
73		Advanced settings for printing coil references	—	
74		Advanced settings for printing a list of TUC setting values	—	
75		Advanced settings for printing a list of ladder circuit devices (registers) and whether they are used	—	
76		Advanced settings for list of I/O comments	—	
77		Advanced settings for printing a list of cross-reference results	—	
78	CSV output	Output PCs edition to CSV	—	
79		Output list of TUC setting values to CSV	—	
80		Output list of cross-reference results to CSV	—	
81		Output printed list of coil references to CSV	Y	Change CSV format
82		Output list of I/O comments to CSV	—	
83		Output list of analog counters to CSV	—	
84		Output list of Ethernet communication settings to CSV	—	

A: Function added; Y: Different; −: Not different; X: Function deleted

Table 4-1 List of functions of S10V and S10VE ladder chart systems and their difference status (7/10)

No.	Function	Sub-function	Different?	Remarks
85	Build	Select ignore or do not ignore illegal instruction code during compilation	—	
86		Toggle display of warning windows when long word access is included during compilation	X	
87		Toggle display of warning windows when LIW/LOW registers are included during compilation	X	The S10VE does not support HS.RIO.
88		Compile N coils currently being edited	—	
89		Compile all N coils	—	
90		Search for duplicate coils after compiling all N coils	—	
91		Search for duplicate coils	—	
92		Send compile instruction with priority on execution speed	X	
93	Switch communication state	Switch communication state to offline	—	
94		Switch communication state to online	—	
95		Switch communication state to online monitoring only	—	
96		Switch communication state to wait until online	—	
97	Online	Send to PCs of compiled ladder	—	
98		Have computer receive ladder sent to PCs	—	
99		Have computer receive ladder I/O comment sent to PCs	—	
100		Replace ladder symbol while running	—	
101		Monitor ladder circuit	—	
102		Replace contact or coil with specified register, and connect multiple ladder circuits into one ladder circuit	X	

A: Function added; Y: Different; −: Not different; X: Function deleted

Table 4-1 List of functions of S10V and S10VE ladder chart systems and their difference status (8/10)

No.	Function	Sub-function	Different?	Remarks
103	Utility	Customize keyboard assignment (shortcut key) of ladder symbol	—	
104		Configure system environment	—	
105		Change ladder tool and PCs communication type	Y	The S10VE does not support RS-232C communication.
106		Force-cancel ladder PCs occupation state	—	
107		Read from or write to PCs memory	Y	In the S10VE, compatible PI/O display has been added to the leading specification methods.
108		Save result of reading from or writing to PCs memory to file	—	
109		Time chart monitor	—	
110		Matrix monitor	—	
111		Numerical value monitor	—	
112		Sequence cycle monitor	—	
113		Display or change PCs edition	Y	#1
114		Display or change NE0 to NFF area size	A	
115		Register or delete analog or pulse counter control data	Y	In the S10VE, the following have been changed: - The number of registered cases has been changed from 24 to 64. - The assigned data area range has been changed from *EW400 to EWFF0* to *EW0400 to EW23F0*. - The module name notation has been changed.
116		Send, receive, or compare ladder chart file or S-code file	Y	The target file type has been changed from WSVL to WVEL.

A: Function added; Y: Different; —: Not different; X: Function deleted

#1: For details about the change, see *(4) Differences between PCs edition information of the S10V and S10VE*.

Table 4-1 List of functions of S10V and S10VE ladder chart systems and their difference status (9/10)

No.	Function	Sub-function	Different?	Remarks
117	Utility	Display list of, register, or delete user arithmetic functions	Y	For differences in user arithmetic functions between the S10V and S10VE, see *2.8.1 Overview of user arithmetic functions*.
118		Display list of LPET information	—	
119		Compare ladder circuits and output result	—	
120		Compare memory data and output result	—	
121		Convert S10mini ladder to S10V ladder (Convert right-downward ladder to horizontal ladder)	X	
122		Convert S10V ladder to S10VE ladder (Convert horizontal ladder to horizontal ladder)	A	
123		Register or delete parameter for Ethernet communication arithmetic function	—	
124		Send system program for Ethernet communication arithmetic function	X	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-1 List of functions of S10V and S10VE ladder chart systems and their difference status (10/10)

No.	Function	Sub-function	Different?	Remarks
125	Window	Display ladder sheets using partitioned display	—	
126		Display ladder sheets over each other	—	
127		Display ladder sheets in vertical sequence	—	
128		Display ladder sheets in horizontal sequence	—	
129		Align ladder sheet icons in row at bottom of window	—	
130		Close all currently open ladder sheets	—	
131	Comment	Reset I/O comment information to default	—	
132		Open existing I/O comment file	—	
133		Save current I/O comment file	—	
134		Save current I/O comment file under a new name	—	
135		Toggle display of I/O comment	—	
136		Switch comment display size (Normal (16 / 32 characters) / Small (32 characters))	—	
137		Toggle display of row comment	—	
138	Help	Display help file for ladder chart system	X	
139		Display version information window for ladder chart system	X	

A: Function added; Y: Different; —: Not different; X: Function deleted

(2) Changes in file types that can be opened

Table 4-2 shows the file types that can be opened.

Table 4-2 List of file types that can be opened

No.	File type	Extension	Supported?		Remarks
			S10V	S10VE	
1	WVEL	wvel	N	Y	File containing ladder program saved in binary format
2	WSVL	wsvl	Y	N	
3	Instruction file	vcm	Y	Y	File containing ladder program saved in instruction (character) format

Y: Supported; N: Not supported

(3) Changes in file types that can be saved under a new name

Table 4-3 shows the file types that can be saved under a new name.

Table 4-3 List of file types that can be saved under a new name

No.	File type	Extension	Supported?		Remarks
			S10V	S10VE	
1	WVEL	wvel	N	Y	File containing ladder program saved in binary format
2	WSVL	wsvl	Y	N	
3	Instruction file	vcm	Y	Y	File containing ladder program saved in instruction (character) format (with coordinates)
4		vcd	Y	Y	File containing ladder program saved in instruction (character) format (without coordinates)

Y: Supported; N: Not supported

(4) Differences between PCs edition information of the S10V and S10VE

Table 4-4 shows whether there are differences between the PCs edition setting information of the S10V and S10VE.

Table 4-4 List of S10V and S10VE PCs edition setting information items and their difference status (1/2)

No.	Item	Setting range	Different setting value?	Remarks
1	PCs number	0 to 9998	Y	In the S10VE, this can no longer be set.
2	Sequence cycle time	1 to 999 ms Default value: 30 ms	—	
3	Watchdog timer	50 to 10000 ms Default value: 2000 ms	—	
4	10 ms timer (T000 to T00F)	Unused / Used Default value: Unused	—	
5	Operation mode when N coil master is reset	Normal / 0 output Default value: Normal	—	
6	Change timer points	0 to 2048 Default value: 512	—	
7	Change one-shot points	0 to 256 Default value: 256	—	
8	Ladder area size	S10V: N00 to NFF: 258 to 102,400 bytes#1 Default value: 102,400 bytes S10VE: N00 to NFF: 258 to 2,097,056 bytes#2 Default values: N00 to NDF: 2,621,442 bytes NE0 to NFF: 8,192 bytes each	Y	In the S10VE, the ladder area sizes for NE0 to NFF can be changed individually.

A: Function added; Y: Different; —: Not different

#1: This is the maximum size when the area size for I/O comments and user arithmetic functions is set to 0 bytes (minimum value).

#2: This is the maximum size when the ladder area sizes for NE0 to NFF are set to 1 byte each (the minimum value).

Table 4-4 List of S10V and S10VE PCs edition setting information items and their difference status (2/2)

No.	Item	Setting range	Different setting value?	Remarks
9	I/O comment area size	S10V: 0 to[#3] bytes Default value: 0 bytes S10VE: 0 to 2,097,152 bytes Default value: 0 bytes	Y	
10	Area size for user arithmetic functions	S10V: 0 to[#4] bytes Default value: 0 bytes S10VE: 0 to 2,097,152 bytes Default value: 0 bytes	Y	
11	PI/O installation	Installed / Not installed Default value: Not installed	—	
12	Partitions	FREE / FIX Default value: FREE	—	
13	Output HOLD	RESET / HOLD Default value: RESET	—	
14	Slot points	16, 32, 64, 128 Default value: 16	—	
15	RI/O operation mode	Do not synchronize / Synchronize ladders Default value: Do not synchronize ladders	—	
16	Change RI/O points	S10V: 64, 128, 256, 512, 1024, 2048 Default value: 2048 S10VE: 64, 128, 256, 512, 1024, 1536, 2048 Default value: 2048	Y	
17	Ladder RUN Number of delays	0 to 2000 Default value: 0	A	This item has been added in the S10VE.
18	Connect optical adapter	Do not connect / Connect Default value: Do not connect	A	This item has been added in the S10VE.

A: Function added; Y: Different; —: Not different

#3: Because the S10V I/O comment area uses part of the ladder area, the maximum size that can be used depends on the sizes of the ladder and user arithmetic function areas.

#4: Because the S10V user arithmetic function area uses part of the ladder area, the maximum size that can be used depends on the sizes of the ladder and I/O comment areas.

4.2.2 HI-FLOW system

(1) Differences between functions of the S10V and S10VE

Tables 4-5 and 4-6 show whether there are differences between the functions of the S10V and S10VE.

Table 4-5 List of S10V and S10VE HI-FLOW process sheet functions and their difference status (1/5)

No.	Function	Sub-function	Different?	Remarks
1	File	Create new HI-FLOW process sheet	—	
2		Open existing HI-FLOW process sheet	Y	The following are the extensions for HI-FLOW process sheets: S10V: `hifv` S10VE: `hife`
3		Close HI-FLOW process sheet	—	
4		Save HI-FLOW process sheet by overwriting	—	
5		Save HI-FLOW process sheet under a new name	Y	See the *Remarks* column for No. 2.
6		Overwrite HI-FLOW process with information in selected HI-FLOW sheet file (with the extension `hip`)	—	
7		Compare currently open HI-FLOW process sheet with selected HI-FLOW process sheet	—	
8		Save data (FD)	—	
9		Load data (FD)	—	
10	Print	Print target HI-FLOW document	—	
11		Set target HI-FLOW document	—	
12		Configure HI-FLOW print page layout	—	
13		Configure printer	—	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-5 List of S10V and S10VE HI-FLOW process sheet functions and their difference status (2/5)

No.	Function	Sub-function	Different?	Remarks
14	Edit HI-FLOW process	Cut selected HI-FLOW process and save to clipboard	—	
15		Copy selected HI-FLOW process and save to clipboard	—	
16		Paste HI-FLOW process saved to clipboard	—	
17		Delete selected HI-FLOW process	—	
18		Select all HI-FLOW processes in HI-FLOW process sheet	—	
19		Search entire HI-FLOW sheet currently being edited for locations using the specified symbol, and jump to location	—	
20		In the entire HI-FLOW sheet currently being edited, replace a specified string with a different specified string	—	
21		In the entire HI-FLOW sheet currently being edited or a particular HI-FLOW sheet, replace a specified leading register with a different specified leading register at the specified number of points	—	
22		Search the entire compiled HI-FLOW for a specified register, and display a list of locations using that register	—	
23		Search selected ladder chart file and HI-FLOW file for a specified symbol, and display a list of locations using that symbol	X	
24		Search entire compiled HI-FLOW for a specified device type, and display a list of locations using that device type	—	
25		Search specified ladder program for a specified device type, and display a list of usage statuses	X	
26		Search entire compiled HI-FLOW and specified ladder program for a specified device type, and display a list of usage statuses	X	
27		Batch-generate comments corresponding to HI-FLOW symbol with PI/O comments	—	
28		Display or edit comments of entire HI-FLOW process	—	
29		Display or edit HI-FLOW sheet properties	—	
30		Edit specified PI/O comment, load PI/O comment file, save PI/O comment file	—	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-5 List of S10V and S10VE HI-FLOW process sheet functions and their difference status (3/5)

No.	Function	Sub-function	Different?	Remarks
31	Display	Toggle display of tool bar	—	
32		Toggle display of status bar	—	
33		Toggle display of debug bar	—	
34		Switch displayed HI-FLOW process icon	—	
35	Build	Compile all uncompiled processes	—	
36		Force-compile all processes	—	
37		Force-compile process selected in HI-FLOW process sheet	—	
38		Abort compilation	—	
39	Online	Switch to online mode and send all processes to PCs	—	
40		Switch to online mode and send specified process to PCs	—	
41		Switch to online mode and receive all processes from PCs	—	
42		Switch to online mode and receive specified process from PCs	—	
43		Switch to online mode	—	
44		Switch to offline mode	—	
45		Cancel HI-FLOW PCs occupation state	—	
46		Start / Stop HI-FLOW process monitor	—	
47		Trace-display operations of HI-FLOW processes between user-specified start or end conditions	—	
48		Measure time since the meeting of the start condition of a user-specified HI-FLOW program until the meeting of the end condition	—	
49		Set break point for HI-FLOW program	—	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-5 List of S10V and S10VE HI-FLOW process sheet functions and their difference status (4/5)

No.	Function	Sub-function	Different?	Remarks
50	Utility	Customize types of icons displayed in tool bar	—	
51		Customize HI-FLOW symbol display	Y	The S10VE does not support motion symbols.
52		Customize background color of HI-FLOW process sheet and HI-FLOW sheet	—	
53		Select paste mode (insert or overwrite)		
54		Convert S10mini HI-FLOW program to S10V HI-FLOW program	X	
55		Convert S10mini HI-FLOW program to S10VE HI-FLOW program	A	
56		Convert S10V HI-FLOW program to S10VE HI-FLOW	A	
57		Read from or write to PCs memory	Y	In the S10VE, compatible PI/O display has been added to the leading specification methods.
58		Save read result for PCs memory to file	—	
59		Change communication type for HI-FLOW tool and PCs	—	
60		Change PCs state	—	
61		Display or change system edition	Y	The S10VE does not have the following functions: - Set protection switch - Forward PI/O comment
62		Delete HI-FLOW process on PCs	—	
63		User changing the following information managed by the system: - Register displaying the control box result - Process state - Register for storing step state	—	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-5 List of S10V and S10VE HI-FLOW process sheet functions and their difference status (5/5)

No.	Function	Sub-function	Different?	Remarks
64	Utility	Display relationship between HI-FLOW processes	—	
65		Display capacity used by all processes	—	
66		Start from specified step of specified process	—	
67		Force-stop specified process	—	
68		Force-start specified process	—	
69		Force-reset specified process	—	
70		Clear PI/O output by specified process	—	
71		Delete registers unused by HI-FLOW program	X	
72		Cancel force-occupation of HI-FLOW tool and PCs	—	
73		Display list of position information of currently stopped processes of HI-FLOW program currently being executed on PCs	—	
74		Configure Ethernet communication for HI-FLOW process	X	
75	Motion	Configure necessary parameters for operating motion control instructions in HI-FLOW	X	
76		Display information about various motion parameters on the monitor	X	
77		Trace operation of motion parameters and display in graph	X	
78		Display trace information on errors that occurred in motion communication managed by communication task	X	
79		Display number of errors that occurred in motion communication managed by communication task	X	
80		Delete communication task numbers 206 to 208	X	
81	Window	Display HI-FLOW sheets over each other	—	
82		Display HI-FLOW sheets in a row	—	
83		Align HI-FLOW sheet icons in row at bottom of window	—	
84		Close all HI-FLOW sheets	–	
85	Help	Display HI-FLOW system help file	X	
86		Display HI-FLOW system version information	X	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-6 List of S10V and S10VE HI-FLOW sheet functions and their difference status (1/5)

No.	Function	Sub-function	Different?	Remarks
1	File	Create new HI-FLOW process sheet	—	
2		Open existing HI-FLOW process sheet	Y	The following are the extensions for HI-FLOW process sheets: S10V: `hifv` S10VE: `hife`
3		Close active-state HI-FLOW sheet	—	
4		Save HI-FLOW sheet by overwriting	—	
5		Discard all edits made after opening a HI-FLOW program, and restore the state when the HI-FLOW program was opened	—	
6	Print	Print active-state HI-FLOW sheet	—	
7		Configure print page layout	—	
8		Configure printer	—	
9	Print preview	Print preview active-state HI-FLOW sheet	—	
10	Edit HI-FLOW sheet	Undo last operation while editing HI-FLOW	—	
11		Redo last operation undone while editing HI-FLOW	—	
12		Cut and save selected HI-FLOW symbol to clipboard	—	
13		Copy and save selected HI-FLOW symbol to clipboard	—	
14		Paste HI-FLOW symbol saved to clipboard	—	
15		Delete selected HI-FLOW symbol	—	
16		Insert row at specified position	—	
17		Delete row at specified position	—	
18		Insert step at specified position	—	
19		Delete step at specified position	—	
20		Select all symbols in active-state HI-FLOW sheet	—	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-6 List of S10V and S10VE HI-FLOW sheet functions and their difference status (2/5)

No.	Function	Sub-function	Different?	Remarks
21	Edit HI-FLOW process	Repeat last operation	—	
22		Enter properties when placing symbol	—	
23		Search entire HI-FLOW sheet currently being edited for locations using specified symbol, and jump to location	—	
24		In the HI-FLOW sheet currently being edited, replace a specified string with a different specified string	—	
25		In the HI-FLOW sheet currently being edited, replace a specified leading register with a different specified leading register at the specified number of points	—	
26		In online mode, jump to desired step or execution point	—	
27		Search compiled HI-FLOW for specified register, and display list of locations using that register	—	
28		Search ladder chart file and HI-FLOW file for specified symbol, and display list of locations using that symbol	X	
29		Search compiled HI-FLOW for specified device type, and display list of locations using that device type	—	
30		Search specified ladder program for specified device type, and display list of usage statuses	X	
31		Search compiled HI-FLOW and specified ladder program for specified device type, and display list of usage statuses	X	
32		Batch-generate comments corresponding to HI-FLOW symbol as PI/O comments	—	
33		Display or edit HI-FLOW symbol properties	—	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-6 List of S10V and S10VE HI-FLOW sheet functions and their difference status (3/5)

No.	Function	Sub-function	Different?	Remarks
34	Display	Enlarged display of symbol in HI-FLOW sheet	—	
35		Reduced display of symbol in HI-FLOW sheet	—	
36		Display entire HI-FLOW sheet	—	
37		Display HI-FLOW sheet based on page width	—	
38		Configure enlargement or reduction scale	—	
39		Full-window display of HI-FLOW sheet	—	
40		Toggle display of tool bar	—	
41		Toggle display of status bar	—	
42		Toggle display of symbol bar	—	
43		Toggle display of debug bar	—	
44		Toggle display of edit bar	—	
45	Build	Compile active-state HI-FLOW sheet	—	
46	Online	Switch to online mode, and send HI-FLOW process of active-state HI-FLOW sheet to PCs	—	
47		Switch to online mode, and receive the same HI-FLOW process corresponding to the HI-FLOW process No. in the active-state HI-FLOW sheet from PCs	—	
48		Switch to online mode	—	
49		Cancel occupation of HI-FLOW tool and PCs	—	
50		Renew running step	—	
51		Renew running process	—	
52		Toggle display of confirmation dialog box when renewing step while running	—	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-6 List of S10V and S10VE HI-FLOW sheet functions and their difference status (4/5)

No.	Function	Sub-function	Different?	Remarks
53	Online	Start or stop HI-FLOW program state monitor	—	
54		Display on monitor or clear execution step of HI-FLOW program	—	
55		Display on monitor or clear HI-FLOW program execution point	—	
56		Display on monitor or clear I/O of HI-FLOW program	—	
57		Trace-display operations of HI-FLOW processes between user-specified start and end conditions	—	
58		Measure time since the meeting of the start condition of a user-specified HI-FLOW program until the meeting of the end condition	—	
59		Set break point for HI-FLOW program	—	
60		Move cursor to execution point of HI-FLOW program	—	
61	Utility	Customize symbol placement key (shortcut key)	—	
62		Convert S10mini HI-FLOW program to S10V HI-FLOW program (with one progress specified)	X	
63		Convert S10 mini HI-FLOW program to S10VE HI-FLOW program (with one progress specified)	A	
64		Convert S10V HI-FLOW program to S10VE HI-FLOW program (with one progress specified)	A	
65		Read from or write to PCs memory	Y	In the S10VE, compatible PI/O display has been added to the leading specification methods.
66		Save read result for PCs memory to file	—	
67		Change communication type for HI-FLOW tool and PCs	—	
68		Force-cancel HI-FLOW PCs occupation state	—	
69		Configure Ethernet communication for HI-FLOW system	X	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-6 List of S10V and S10VE HI-FLOW sheet functions and their difference status (5/5)

No.	Function	Sub-function	Different?	Remarks
70	Motion	Configure necessary parameters for operating motion control instructions in HI-FLOW	X	
71		Display information about various motion parameters on the monitor	X	
72		Trace operation of motion parameter, and display in graph	X	
73		Display trace information on errors that occurred in motion communication managed by communication task	X	
74		Display number of errors that occurred in motion communication managed by communication task	X	
75	Window	Display HI-FLOW sheets over each other	—	
76		Display HI-FLOW sheets in a row	—	
77		Align HI-FLOW sheet icons in row at bottom of window	—	
78		Close all HI-FLOW sheets	—	
79	Help	Display HI-FLOW system help file	X	
80		Display HI-FLOW system version information	X	

A: Function added; Y: Different; —: Not different; X: Function deleted

4.2.3 Basic system

(1) Differences between functions of the S10V and S10VE

Table 4-7 shows whether there are differences between the functions of the S10V and S10VE.

Table 4-7 List of basic system functions of the S10V and S10VE and their difference status (1/5)

No.	Function	Different?	Remarks
1	Switch LADDER RUN/STOP by using remote operation	—	
2	Switch PROTECT MODE ON/OFF by using remote operation	—	
3	Switch LADDER MODE NORM/SIMU by using remote operation	—	
4	Turn off ALARM LED by using a remote operation	X	
5	Turn off USER ERR LED by using a remote operation	X	
6	Reset by remote operation	—	
7	Restart by remote operation	A	
8	Configure network information of CPU module	Y	- In the S10V, this is the CMU module, not the CPU module. - In the S10VE, the Ethernet line has two channels.
9	Display PCs state	Y	In the S10V, the LPU module and CMU module each display the PCs state. There are also partial differences in the displayed items. For details, see the following manuals: - S10V User's Manual Basic Module (manual number SVE-1-100) - S10VE User's Manual General Description (manual number SEE-1-001)

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-7 List of basic system functions of the S10V and S10VE and their difference status (2/5)

No.	Function	Different?	Remarks
10	Display or clear display of current, maximum, and minimum values of sequence cycle	X	
11	Display or clear display of current, maximum, and minimum values of CPU load ratio	X	In the S10V, this is the CMU module. In the S10VE, this is the CPU module.
12	Display CPU load ratio in graph	A	In the S10V, this is the CMU module. In the S10VE, this is the CPU module.
13	CSV output of CPU load ratio	A	In the S10V, this is the CMU module. In the S10VE, this is the CPU module.
14	Display list of installed P.P.s and save to file	—	
15	Display list of version and revision numbers of installed modules and microprograms and save to file	—	
16	Display list of error logs	—	
17	Delete error logs by module	X	
18	Delete all error logs	—	
19	Save error log	—	
20	Display details of error log	—	
21	Display event register on monitor	—	
22	Clear backup memory	—	
23	Save memory information to file	X	
24	Read from and write to PCs memory	Y	In the S10VE, compatible PI/O display has been added to the leading specification methods.
25	Save PCs memory read or write result to file	—	
26	Change communication type connecting basic tool and PCs	Y	The S10VE does not support RS-232C communication.
27	Set PCs time	Y	In the S10VE, the time can be loaded from the computer and written to PCs as is.

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-7 List of basic system functions of the S10V and S10VE and their difference status (3/5)

No.	Function	Different?	Remarks
28	Display trace log of errors that occurred in ladder or HI-FLOW Ethernet communication	Y	The S10VE does not have HI-FLOW Ethernet communication.
29	Delete trace log of errors that occurred in ladder or HI-FLOW Ethernet communication	Y	The S10VE does not have HI-FLOW Ethernet communication.
30	Save to file a trace log of errors that occurred in ladder or HI-FLOW Ethernet communication	Y	The S10VE does not have HI-FLOW Ethernet communication.
31	Display trace log of errors that occurred in socket handler Ethernet communication	—	
32	Delete trace log of errors that occurred in socket handler Ethernet communication	—	
33	Save to file a trace log of errors that occurred in socket handler Ethernet communication	—	
34	Set DHP logging mode	—	
35	Display DHP trace information	—	
36	Save DHP trace information to file	—	
37	Display network information of CPU module and ET.NET module	—	In the S10V, this is the CMU module, not the CPU module.
38	Save network information of CPU module and ET.NET module to file	—	In the S10V, this is the CMU module, not the CPU module.
39	Display connection state of basic tool and PCs	Y	The S10VE does not have a function for displaying the online / offline state.
40	Toggle online / offline state of basic tool	X	
41	Display module battery information	X	The S10VE does not have a battery.
42	Display module error description file	X	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-7 List of basic system functions of the S10V and S10VE and their difference status (4/5)

No.	Function	Different?	Remarks
43	Display list of projects	A	
44	Create new project	A	
45	Open existing project	A	
46	Delete existing project	A	
47	Configure network information of ET.NET module	A	
48	Save network information of ET.NET module to file	A	
49	Load network information of ET.NET module from file	A	
50	CVS output of network information of ET.NET module	A	
51	Download CPMS	A	
52	Send parameter file of optional module to CPU module	A	
53	Save optional module parameters received from CPU module to file	A	
54	Delete optional module parameters registered to CPU module	A	
55	Compare optional module parameter file with optional module parameters registered to CPU module	A	
56	Start BACKUP RESTORE SYSTEM/S10VE (batch save)	A	
57	Start BACKUP RESTORE SYSTEM/S10VE (batch load)	A	
58	Start BACKUP RESTORE SYSTEM/S10VE (batch compare)	A	
59	Start LADDER DIAGRAM SYSTEM/S10VE	A	
60	Start HI-FLOW SYSTEM/S10VE	A	
61	Start D.NET SYSTEM/S10VE	A	
62	Start FL.NET SYSTEM/S10VE	A	
63	Start J.NET SYSTEM/S10VE	A	
64	Start OD.RING SYSTEM/S10VE	A	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-7 List of basic system functions of the S10V and S10VE and their difference status (5/5)

No.	Function	Different?	Remarks
66	Inhibit starting of specified task	A	In the S10V, this function was supported by the CPMS debugger system.
67	Display list of registered task states	A	In the S10V, this function was supported by the CPMS debugger system.
68	Reset task environment to default	A	In the S10V, this function was supported by the CPMS debugger system.
69	Save basic tool operation history	—	
70	Display basic system help file	X	
71	Display basic system version information	X	
72	Display error code descriptions for each module	X	

A: Function added; Y: Different; —: Not different; X: Function deleted

4.2.4 J.NET system

(1) Differences between functions of the S10V and S10VE

Table 4-8 shows whether there are differences between the functions of the S10V and S10VE.

Note that for both the S10V and S10VE, up to four J.NET modules (modules 0 to 3) can be installed per unit.

Table 4-8 List of J.NET system functions of the S10V and S10VE and their difference status (1/2)

No.	Function	Different?	Remarks
1	Edit J.NET module parameters	—	
2	Load J.NET module parameters from PCs in online mode	Y	In the S10VE, you can now select to load parameters from either the J.NET module or CPU module.
3	Write J.NET module parameters to PCs in online mode	Y	In the S10VE, parameters are now written to the CPU module, not the J.NET module.
4	Delete J.NET module parameters from PCs in online mode	A	
5	Save J.NET module parameters to file in online mode	X	
6	Save J.NET module parameters to file in offline mode	—	
7	Load J.NET module parameters from file in offline mode	—	
8	Print J.NET module parameters	X	
9	CSV output of J.NET module parameters	—	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-8 List of J.NET system functions of the S10V and S10VE and their difference status (2/2)

No.	Function	Different?	Remarks
10	Send J.NET module parameter file to PCs directly without going through the parameter setting window	X	The S10VE supports an equivalent function to BASE SYSTEM/S10VE.
11	Receive J.NET module parameters from PCs directly without going through the parameter setting window, and save to file	X	The S10VE supports an equivalent function to BASE SYSTEM/S10VE.
12	Compare J.NET module parameters with actual machine	X	The S10VE supports an equivalent function to BASE SYSTEM/S10VE.
13	Display J.NET module refresh cycle on monitor	—	
14	Display module errors of J.NET module	—	
15	Display station errors of J.NET module	—	
16	Toggle online / offline state of J.NET tool	—	
17	Display J.NET module installation state	A	
18	Display the presence or absence of J.NET module parameter settings	A	
19	Display connected PCs number during online mode	A	
20	Display selected parameter file's PCs number during offline mode	A	
21	Display communication type connecting J.NET tool and PCs	A	
22	Change communication type connecting J.NET tool and PCs	Y	The S10VE does not support RS-232C communication.
23	Display J.NET system help file	X	
24	Display J.NET system version information	X	

A: Function added; Y: Different; —: Not different; X: Function deleted

4.2.5 OD.RING system

(1) Differences between functions of the S10V and S10VE

Table 4-9 shows whether there are differences between the functions of the S10V and S10VE.

Note that for both the S10V and S10VE, up to two OD.RING modules (main and sub) can be installed per unit.

Table 4-9 List of OD.RING system functions of the S10V and S10VE and their difference status

No.	Function	Different?	Remarks
1	Edit OD.RING module parameters	—	
2	Load OD.RING module parameters from PCs	Y	In the S10VE, you can now select to load parameters from either the OD.RING module or CPU module.
3	Write OD.RING module parameters to PCs	Y	In the S10VE, parameters are now written to the CPU module, not the OD.RING module.
4	Delete OD.RING module parameters from PCs	A	
5	Save OD.RING module parameters to file	Y	In the S10V, this function is available during offline mode.
6	Read OD.RING module parameters from file	Y	In the S10V, this function is available during offline mode.
7	Print OD.RING module parameters	—	
8	CSV output of OD.RING module parameters	—	
9	Display OD.RING module error information	—	
10	Display OD.RING module status information on monitor	—	
11	Display OD.RING module RAS table information on monitor	—	
12	Toggle online / offline state of OD.RING tool	X	The S10VE does not have a function for displaying the online / offline state.
13	Change communication type connecting OD.RING tool and PCs	Y	The S10VE does not support RS-232C communication.
14	Display OD.RING system help file	X	
15	Display OD.RING system version information	X	

A: Function added; Y: Different; —: Not different; X: Function deleted

4.2.6 FL.NET system

(1) Differences between functions of the S10V and S10VE

Table 4-10 shows whether there are differences between the functions of the S10V and S10VE.

Note that for both the S10V and S10VE, up to two FL.NET modules (main and sub) can be installed per unit.

Table 4-10 List of FL.NET system functions of the S10V and S10VE and their difference status (1/2)

No.	Function	Different?	Remarks
1	Edit FL.NET module parameters	—	
2	Load FL.NET module parameters from PCs	Y	In the S10VE, you can now select to load parameters from either the FL.NET module or CPU module.
3	Write FL.NET module parameters to PCs	Y	In the S10VE, parameters are now written to the CPU module, not the FL.NET module.
4	Delete FL.NET module parameters from PCs	A	
5	Save FL.NET module parameters to file	Y	In the S10V, this function is available during offline mode.
6	Load FL.NET module parameter file	Y	In the S10V, this function is available during offline mode.
7	Print FL.NET module parameters	—	
8	CSV output of FL.NET module parameters	—	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-10 List of FL.NET system functions of the S10V and S10VE and their difference status (2/2)

No.	Function	Different?	Remarks
9	Send FL.NET module parameter file to PCs directly without going through the parameter setting window.	X	The S10VE supports an equivalent function to BASE SYSTEM/S10VE.
10	Receive FL.NET module parameters from PCs directly without going through the parameter setting window, and save to file	X	The S10VE supports an equivalent function to BASE SYSTEM/S10VE.
11	Display FL.NET module (local node) information on monitor	—	
12	Join local node's network	—	
13	Disconnect from local node's network	—	
14	Display information on other nodes on the network on monitor	—	
15	Display or edit data in areas 1 and 2 of the local node or other node	—	
16	Display the state upon joining the network, such as allowable refresh cycle time, on monitor	—	
17	Display FL.NET module log information on monitor	—	
18	Clear FL.NET module log information	—	
19	Toggle online / offline state of FL.NET tool	X	The S10VE does not have a function for displaying the online / offline state.
20	Change communication type connecting FL.NET tool and PCs	Y	The S10VE does not support RS-232C communication.
21	Display FL.NET system help file	X	
22	Display FL.NET system version information	X	

A: Function added; Y: Different; —: Not different; X: Function deleted

4.2.7 D.NET system

(1) Differences between functions of the S10V and S10VE

Table 4-11 shows whether there are differences between the functions of the S10V and S10VE.

Note that for both the S10V and S10VE, up to four D.NET modules (modules 0 to 3) can be installed per unit.

Table 4-11 List of D.NET system functions of the S10V and S10VE and their differences (1/3)

No.	Function	Different?	Remarks
1	Edit D.NET module parameters	—	
2	Edit parameters of slave device connected to D.NET module (operation mode = master) and register parameters to actual machine	X	
3	Load D.NET module parameters from PCs in online mode	Y	In the S10VE, you can now select to load parameters from either the D.NET module or CPU module.
4	Write D.NET module parameters to PCs in online mode	Y	In the S10VE, parameters are now written to the CPU module, not the D.NET module.
5	Save D.NET module parameters to file in online mode	X	
6	Save D.NET module parameters to file in offline mode	—	
7	Load D.NET module parameters from file in offline mode	—	
8	Print D.NET module parameters	X	
9	CSV output of D.NET module parameters	—	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-11 List of D.NET system functions of the S10V and S10VE and their difference status (2/3)

No.	Function	Different?	Remarks
10	Send D.NET module parameter file to PCs directly without going through the parameter setting window	X	The S10VE supports an equivalent function to BASE SYSTEM/S10VE.
11	Receive D.NET module parameters from PCs directly without going through the parameter setting window and save to file	X	The S10VE supports an equivalent function to BASE SYSTEM/S10VE.
12	Compare D.NET module parameter file with actual machine	X	The S10VE supports an equivalent function to BASE SYSTEM/S10VE.
13	Display non-hardware errors, such as network errors, that occurred in the D.NET module	—	
14	Display error information when D.NET module detects hardware error	—	
15	Display error information of slave device connected to D.NET module	—	
16	Display refresh cycle of peer transmission and master / slave communication	—	
17	Display DeviceNet serial number of D.NET module	—	
18	Toggle online / offline state of D.NET tool	—	
19	Change communication type connecting D.NET tool and PCs	Y	The S10VE does not support RS-232C communication.
20	Display D.NET module installation state	—	
21	Display the presence or absence of D.NET module parameter settings	A	
22	Display operation mode of D.NET module	—	
23	Display connected PCs number during online mode	A	
24	Display PCs number of selected parameter file during offline mode	A	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-11 List of D.NET system functions of the S10V and S10VE and their difference status (3/3)

No.	Function	Different?	Remarks
25	Display communication type connecting D.NET tool and PCs	A	
26	Change communication type connecting D.NET tool and PCs	Y	The S10VE does not support RS-232C communication.
27	Display D.NET system help file	X	
28	Display D.NET system version information	X	

A: Function added; Y: Different; −: Not different; X: Function deleted

4.2.8 Backup / restoration system

(1) Differences between functions of the S10V and S10VE

Table 4-12 shows whether there are differences between the functions of the S10V and S10VE.

Table 4-12 List of batch save / load system functions in the S10V and S10VE and their difference status

No.	Function	Different?	Remarks
1	Back up data or programs in PCs to file	Y	See Table 4-13.
2	Restore backed-up data or programs to PCs	Y	See Table 4-13.
3	Compare memory information of backup files	A	#1
4	Back up to multiple computers (up to 16)	X	
5	Restore to multiple computers (up to 16)	X	
6	Load user application	X	#2
7	Compare user application	X	#2
8	Display information of backed-up files in MCS window format	X	
9	Display OS operation state (RUN / STOP) and recover OS stop state	X	In the S10VE, this can be substituted with the display PCs state function of BASE SYSTEM/S10VE.
10	Display task operation inhibition state and cancel inhibition state	X	
11	Change communication type connecting backup / restoration system and PCs	Y	The S10VE does not support RS-232C communication.

A: Function added; Y: Different; —: Not different; X: Function deleted

#1: See *8.5.3 Backup save data comparison* in the *S10VE User's Manual General Description* (manual number SEE-1-001).

#2: In the S10VE, this can be substituted with the send or receive data function of LADDER DIAGRAM SYSTEM/S10VE. For details, see *4.7.11 Sending and receiving data* in the *S10VE Software Manual Operation Ladder Diagram System for Windows®*.

Table 4-13 shows differences in the details of the backup functions of the S10V and S10VE.
Also see the precautions in *8.5.5 Scope of backup, restoration, and comparison* in the *S10VE User's Manual General Description* (manual number SEE-1-001).

Table 4-13 List of differences in details of backup functions of the S10V and S10VE

No.	Function	Supported?		Remarks
		S10V	S10VE	
1	Execute in the ladder RUN state	Y	N	
2	Execute in the ladder STOP state	Y	N	
3	Execute in the CPU STOP state	Y	Y	
4	Save data from main memory	Y	N	
5	Save data from flash memory	Y	Y	
6	Save parameters from optional module itself	Y	—	In the S10VE, parameters are saved from the CPU module.
7	Display abort confirmation message for all tasks and abort all tasks	Y	N	
8	Change PCs number of backup file	Y	N	
9	Perform verify check on memory information of backup files after backup ends	N	Y	

Y: Supported; N: Not supported; —: Not applicable

Table 4-14 shows differences in the details of the restoration functions of the S10V and S10VE.
Also see the precautions in *8.5.5 Scope of backup, restoration, and comparison* in the *S10VE User's Manual General Description* (manual number SEE-1-001).

Table 4-14 List of differences in details of restoration functions of the S10V and S10VE

No.	Function	Supported?		Remarks
		S10V	S10VE	
1	Check target module in restoration information window	Y	N	In the S10VE, the check can be performed in the `Module.txt` file created during backup.
2	Check whether IP addresses stored in backup file have been rewritten	Y	N	In the S10VE, you can rewrite IP addresses with those from a backup file unconditionally.
3	Perform verify check on backup files and memory information after restoration ends	N	Y	
4	Perform restoration check on keep coil (KW000 to KWFF0) and measured counter values (CC000 to CC0FF)	Y	N	In the S10VE, restoration can be performed unconditionally.
5	Load parameters to optional module	Y	—	In the S10VE, loading of parameters to the optional module is performed by CPMS.
6	Load parameters to CPU module	—	Y	The S10V does not have an area for registering optional module parameters in the CPU (LPU) module.

Y: Supported; N: Not supported; —: Not applicable

4.2.9 RPDP system

(1) Differences between functions of the S10V and S10VE

For differences between the RPDP functions of the S10V and S10VE, see *2.7.5.3 Comparison of commands provided by RPDP*.

4.2.10 NXACP system

(1) Differences between functions of the S10V and S10VE

For differences between the NXACP functions of the S10V and S10VE, see *2.7.7.1 Comparison of commands provided by NXACP*.

4.2.11 NXTOOLS system

(1) Differences between functions of the S10V and S10VE

Table 4-15 shows whether there are differences between the functions of the S10V and S10VE.

Table 4-15 List of NXTOOLS system functions of the S10V and S10VE and their difference status (1/2)

No.	Online function		Different?	Remarks
1	Changed connected PCs	Ethernet	—	
2	Local DF (configure parameters)	Edit local DF parameters	Y	Type-6 local DF is supported.
		Edit TCD information	Y	The specifiable register range has been extended.
		Copy TCD information	-	
		Delete TCD information	—	
3	Remote DF (configure parameters)	Edit remote DF parameters	Y	Type-6 remote DF is supported.
		Edit TCD information	Y	The specifiable register range has been extended.
		Copy TCD information	—	
		Delete TCD information	—	
4	Forward system program	Forward system program	Y	Resources used by this program have been changed.
		Forward type-4 settings information (default)	Y	Resources used by this program have been changed.
		Forward type-5 settings information (default)	Y	Resources used by this program have been changed.
		Forward type-6 settings information (default)	A	
		Forward type-4 settings information (selected file)	Y	Resources used by this program have been changed.
		Forward type-5 settings information (selected file)	Y	Resources used by this program have been changed.
		Forward type-6 settings information (selected file)	A	
5	Save table information	Save type-4 file	Y	The file format has been changed.
		Save type-5 file	Y	The file format has been changed.
		Save type-6 file	A	
6	Set number of retries / receive wait time		—	
7	Register ladder instruction		A	

A: Function added; Y: Different; —: Not different; X: Function deleted

Table 4-15 List of NXTOOLS system functions of the S10V and S10VE and their difference status (2/2)

No.	Offline function		Different?	Remarks
8	Write parameter to PCs		Y	The write destination area has been changed.
9	Read parameter from PCs		Y	The read destination area has been changed.
10	MCS		X	
11	Print parameter		X	
12	Output parameter to CSV		Y	The file header contents have been changed.
13	Select file to be edited (create new file)	Create new type-4 file	Y	The file format has been changed.
		Create new type-5 file	Y	The file format has been changed.
		Create new type-6 file	A	
14	Select file to be edited (select file)	Select type-4 file	Y	The file format has been changed.
		Select type-5 file	Y	The file format has been changed.
		Select type-6 file	A	
15	Select file to be edited (save file)	Save type-4 file	Y	The file format has been changed.
		Save type-5 file	Y	The file format has been changed.
		Save type-6 file	A	
16	Edit table information Local DF	Edit local DF parameter	Y	Type-6 local DF is supported.
		Edit TCD information	Y	The specifiable register range has been extended.
		Copy TCD information	—	
		Delete TCD information	—	
17	Edit table information Remote DF	Edit remote DF parameter	Y	Type-6 remote DF is supported.
		Edit TCD information	Y	The specifiable register range has been extended.
		Copy TCD information	—	
		Delete TCD information	—	
18	Print parameter		X	
19	Output parameter to CSV		Y	The file header contents have been changed.

A: Function added; Y: Different; —: Not different; X: Function deleted

4.2.12 CPMS

(1) Differences between CPMS specifications in the S10V and S10VE

Table 4-16 shows differences in the CPMS specifications in the S10V and S10VE.

Table 4-16 List of differences between CPMS specifications in the S10V and S10VE

No.	Item		S10V	S10VE
1	Tasks	Maximum number	255	300
		Range of user task numbers	1 to 224	1 to 224
		Range of system task numbers	225 to 229	225 to 300
		Range of OS task numbers	230 to 255	—
		Initial start task startup factor(s)#1	1	1, 5, 6, 7
2	Task priorities	System	0 to 31	0 to 31
		User	4 to 27	4 to 27
3	Timers	Number of timers	320	512
		Destination of use	TIMER macro	TIMER macro
			DELAY macro	DELAY macro
			WAKE macro	WAKE macro
4	Number of managed resources	Maximum number of resources that can be acquired simultaneously	32	32
5	DHP buffer	Entire size	128 KB	128 KB
		Size of one case	12 to 36 bytes	12 to 32 bytes
6	Error log buffer	Entire size	32 KB	32 KB
		Size of one case	1 KB	1 KB
7	Built-in subroutines#2	Number of points	10	10
		Number of entries per point	4	4

#1: For differences between startup factors of initial start tasks, see *(2) Differences between startup factors of initial start tasks*.

#2: For differences between repertoires of built-in subroutines, see *(3) Differences between repertoires of built-in subroutines*.

(2) Differences between startup factors of initial start tasks

Table 4-17 shows differences between startup factors of initial start tasks in the S10V and S10VE.

Table 4-17 List of differences between startup factors of initial start tasks in the S10V and S10VE

No.	Item	Value	S10V	S10VE
1	IPL start	1	Y	Y
2	Reset high-speed restart	5	N	Y
3	Reset start	6	N	Y
4	FROM start	7	N	Y

Y: Supported; N: Not supported

(3) Differences between repertoires of built-in

Table 4-18 shows differences between repertoires of built-in subroutines in the S10V and S10VE.

Support for built-in subroutines No. 10 and No. 11 differs between the S10V and S10VE.

Table 4-18 List of differences between repertoires of built-in subroutines in the S10V and S10VE

No.	Name of built-in subroutine	S10V	S10VE	Remarks
1	CPES	Y	Y	
2	IES	Y	Y	In the S10VE, linking is also performed when an error occurs in an optional module.
3	EAS	Y	Y	
4	INS	Y	Y	
5	EXS	Y	Y	
6	ABS	Y	Y	
7	PCKS	Y	Y	
8	MODES	Y	Y	
9	WDTES	Y	Y	
10	ADTS	Y	N	
11	XEAS	N	Y	

Y: Supported; N: Not supported