

Appendix 8 Ladder Transfer Function

Up until now it has been necessary to debug the data by repeatedly disconnecting and reconnecting the two computer-PLC and V7-PLC cables when the V7 series is directly connected to a PLC equipped with only one CPU port. With the ladder transfer function, however, it is possible to write ladder programs or monitor the PLC memory using the V7 series without disconnecting and reconnecting the cables.

Applicable PLCs

The following PLC models support the ladder transfer function.

Manufacturer	Select PLC Type	CPU	Ladder Communication Program
Fuji Electric	SPB (N mode) and FLEX-PC CPU	Refer to page 8-1.	FlexCpu.lcm
Matsushita	MEWNET	Refer to page 15-1.	Mewnet.lcm
MITSUBISHI ELECTRIC	A series CPU ^{*1}	Refer to page 16-2.	LcMeIACp.lcm
	QnH (Q) series CPU	Q02(H), 06H	MeIQHCpQ.lcm
	Q00J/00/01 CPU	Q00J, 00, 01	
	QnH (Q) series link	Q00, Q01	MeIQnA.lcm
	FX series CPU	FX1/2, FX0N	MeIFx.lcm
	FX2N series CPU	FX2N/1N, FX2NC	
	FX1S series CPU	FX1S	
FX-3UC series CPU	FX-3UC		
OMRON	SYSMAC C	Refer to page 19-1.	Sysmac.lcm
	SYSMAC CS1/CJ1		
Yokogawa Electric	FA-M3	Refer to page 33-1.	Yokogawa.lcm
	FA-M3R		

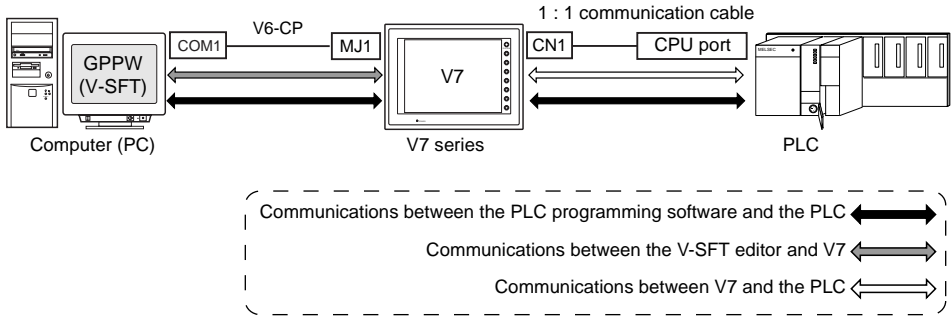
1 : n communication (multi-drop), multi-link communication, and multi-link 2 communication cannot be executed.

*1 V706 is available only with DU-01, the optional unit, because both MJ1 and MJ2 are necessary for this connection.

Connection

- Use Hakko Electronics' V6-CP cable when connecting the computer and the V7 series (MJ1/2). (Use Hakko Electronics's V6-CP-A cable when using MITSUBISHI ELECTRIC's A series CPU.)
- When connecting the V7 series (CN1) to the PLC, use a 1 : 1 communication cable as previously described.

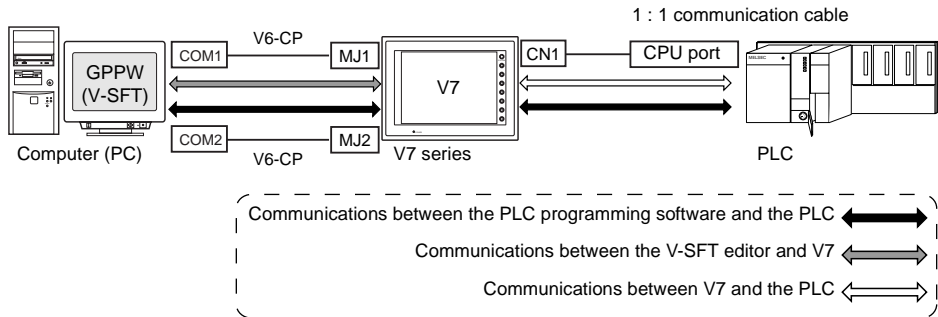
When the computer is equipped with one COM port:



It is not possible to transfer both V-SFT screen data and PLC programming software at the same time. Stop either transfer.

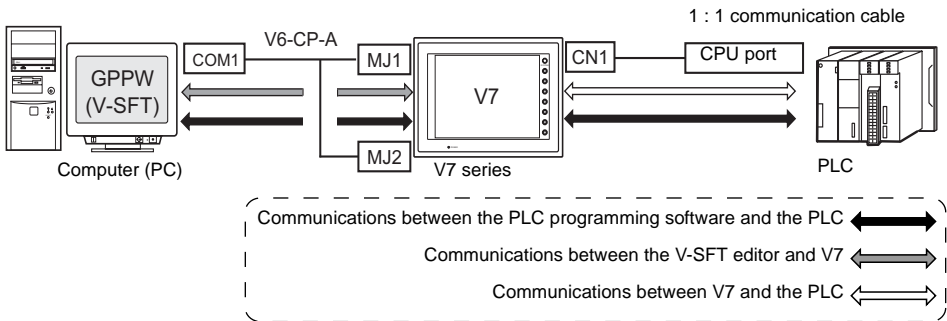
Screen data transfer from the V-SFT editor is carried out via MJ1. The use of MJ1 is recommended if executing both the ladder transfer function and screen data transfer is necessary. In this case, screen data transfer via the V6-CP cable is possible through the Main Menu screen displayed on the V7. For more information, refer to page App8-4.

When the computer is equipped with two COM ports and two V6-CP cables are used:



Different COM ports and V6-CP cables are used respectively for transferring the V-SFT editor data and the PLC programming software. However, it is not possible to transfer both at the same time.

When MITSUBISHI ELECTRIC's A series CPU is used:

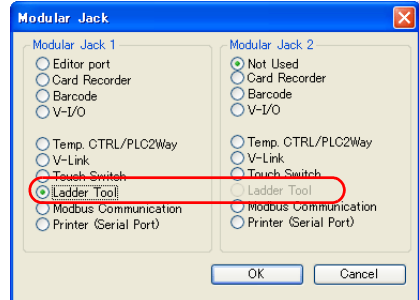


Setting

1. PLC type setting
Click [System Setting] → [PLC Communication] → [PLC Model]. Select a type adapted to the ladder transfer function (page App8-1) in the [PLC Select] dialog.

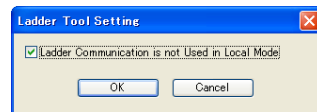
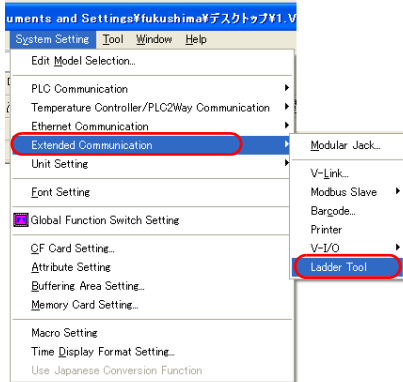
2. Modular jack setting
Click [System Setting] → [Extended Communication] → [Modular Jack]. Select [Ladder Tool] for [Modular Jack 1] or [Modular Jack 2] in the [Modular Jack] dialog.

* Use both MJ1 and MJ2 when MITSUBISHI ELECTRIC's A series CPU is connected.



3. Environment setting
Click [System Setting] → [Extended Communication] → [Ladder Tool]. The [Ladder communication is not used in Local mode.] option is relevant to the operation that will take place while the Main Menu screen is displayed.

- Unchecked: Transferring the V-SFT data or the PLC programming software is possible. Choose either transfer using the F2 switch.
- Checked: Transferring only the V-SFT data is possible. Transferring the PLC programming software is disabled.



Different V7 operations depending on item settings (“2” and “3” in the previous section)

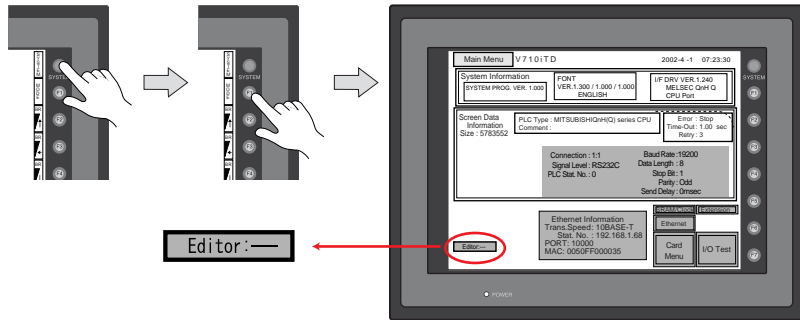
Depending on which items are selected in the [Modular Jack] dialog and the [Ladder Tool Setting] dialog, operations possible on the V7 (communication with the computer enabled/disabled) are determined.

V-SFT Setting			V7 Status			
Modular Jack		Ladder Tool Setting	RUN		Main Menu Screen	
MJ1	MJ2	Check	Ladder transfer	Transferring screen data MJ1 *1	Ladder transfer	Transferring screen data MJ1 *1
Editor port	Ladder tool	Unchecked	○	○	○	○
		Checked	○	○	×	○
Other than editor port and ladder tool		Unchecked	○	×	○	○
		Checked	○	×	×	○
Ladder tool	Other than ladder tool	Unchecked	○	×	△*2	△*2
		Checked	○	×	×	○

*1 Screen data transfer via LAN/USB is possible, irrespective of setting differences.

*2 Switching on the Main Menu screen

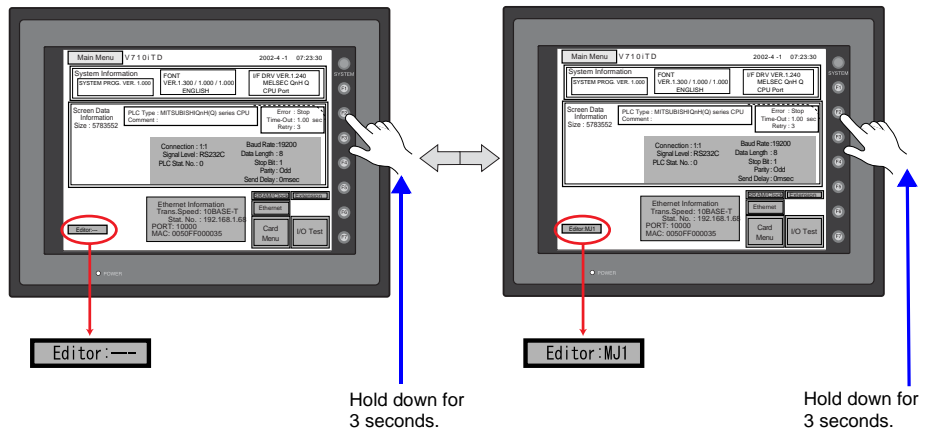
Press the SYSTEM and F1 switches. The Main Menu screen is displayed.



“Editor:---” appears, indicating the ladder transfer mode, in the lower left corner of the screen. At this time, screen data transfer via MJ1 is not possible as shown below.

Display	Ladder Transfer	Transferring Screen Data
		MJ1
Editor: ---	○	×
Editor: MJ1	×	○

Use the F2 switch to switch between “Editor:---” and “Editor:MJ1” displayed on the screen. Hold down the switch for 3 seconds or more.



- * Since V609E is not equipped with function switches, switching between “Editor:---” and “Editor:MJ1” on the Main Menu screen is not possible. Therefore, check [Ladder communication is not used in Local mode].

At this time, check the system program version and update it if the version is old before transferring the screen data. (adapted to V-SFT editor version 2.0.9.0 or later, V7 system program version 1.080 or later, and V6 system program version 1.570 or later)

Notes on Ladder Transfer Function

- On-line editing between the V-SFT editor and the V7 series is not possible. If attempted, communications between the PLC programming software and the PLC will not be performed correctly.
- Communicating statuses with the PLC programming software and the PLC during communications between the V-SFT editor and the V7 series

V-SFT	PLC Programming Software
Writing to V7	Communications disconnected (normal communications on completion of writing)
Reading from V7	Normal communications
Comparing with V7	Normal communications

- Baud rate setting
The [Baud Rate] setting in the [Comm. Parameter] dialog applies to the baud rate between the V series and the PLC. However, if communication with the PLC programming software (monitoring, etc.) starts by means of the ladder transfer function, the baud rate set on the software takes effect. The baud rate stays enabled until the V7 series is turned off and on again. Keeping this in mind, set the PLC programming software baud rate and the [Baud Rate] in the [Comm. Parameter] dialog to the same value.
- With [Ladder Tool] checked in the [Modular Jack] dialog, it is prohibited to register the devices to be monitored for V7-PLC communication even though the PLC programming software is not started. The screen display speed will decrease somewhat accordingly.
- Also, when the ladder program is transferred in the RUN mode of the V7 series, communications are synchronized; therefore, the performance of both the V7 series and the PLC programming software decreases.

Ladder Communication Program

If using the ladder communication function, the V series requires the ladder communication program. Normally when screen data is transferred, the program is also transferred. To transfer the ladder communication program only, follow the procedure described below.

1. Select [Ladder com. prg.] in the [Transfer] dialog, and click [PC->].
2. The dialog box below is displayed. Select the ladder communication program that corresponds to the PLC model (refer to page App8-1) and click the [Open] button. Program transfer to the V7 series starts.

