HYUNDAI
HEAVY INDUSTRIES CO.,LTD.

WARNING

INSTALLATION SHOULD ONLY BE PERFORMED BY QUALIFIED INSTALLATION PERSONNEL AND MUST CONFORM TO ALL NATIONAL AND LOCAL CODES

Hyundai Robot

Hi5 Controller Function Manual

HRFileServer

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Contents

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Contents

Figure Contents

Table Contents

1

Preface

1.1. About HRFileServer

HRFileServer is an Window PC software that supports remote file (mainly JOB) copying according to the LOADF/SAVEF statement in Hyundai Robot Hi5 controller.

Hi5 controller can store several job programs. You can make the filenames with JOB number ranging 0001~9999, and in each JOB maximum 9999 steps can be stored. But it does not mean that you can store 9999 X 9999 steps. Because there is limit[1] in file storage of Hi5 controller, as you store large sized job programs and pose files, the limit could be exceeded.

When there are so many large JOB programs that they cannot be stored together, you can make use of TP's built-in flash memory, USB memory mounted on TP, or external PC connected with Ethernet as an auxiliary storage. Massive amount of job programs or pose files can be stored in the auxiliary storage and loaded to Hi5 controller's main-board just in time they needed.

LOADF and SAVEF is robot language instruction executing automatic copying between auxiliary storage and main board. The following section explains the syntax and concept of the two instructions. When LOADF and SAVEF instructions executes, Hi5 main board send an event containing the command and parameters into the auxiliary storage. The auxiliary storage does the file copying between itself and Hi5 main board via Ethernet.

When you specify TP or USB as the source (or target) location, TP software copies the files, so other preparations are not needed. But, if you specify EXT(external PC), the Hi5 controller should be connected to the external PC via Ethernet, and in this PC, HRFileServer should be listening LOADF or SAVEF event and copying files.

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[1] Hi5 controller can store about 15,000 steps (max) in case of 6~8 axes configuration.

One HRFileServer can do file service for several Hi5 controllers in process. That is, you may install only one PC as a file server for several robots. (There is no software limit in maximum number of supporting robot.) And, simultaneous LOADF, SAVEF events from multiple robots can be processed.

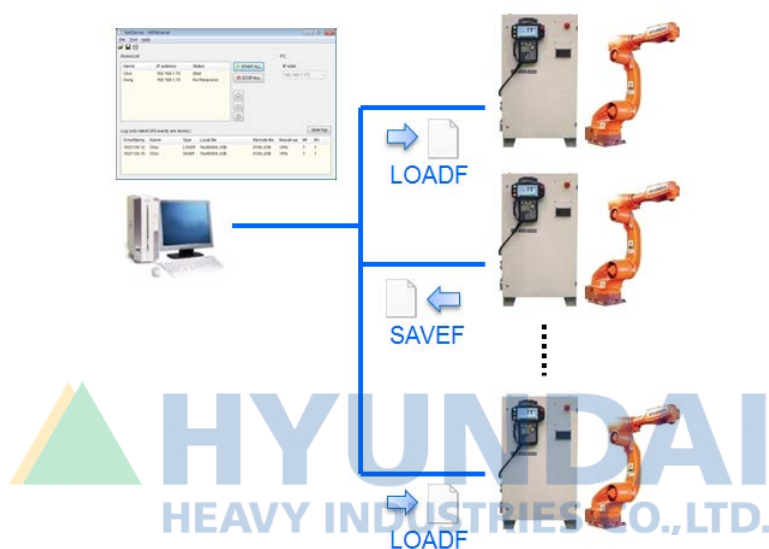| ⚠	**Caution: Don't connect more than one HRFileServer to a Hi5 controller.**

Figure 1.1 LOADF/SAVEF service for several robots

1.2. System requirements

Table 1-1 System requirements

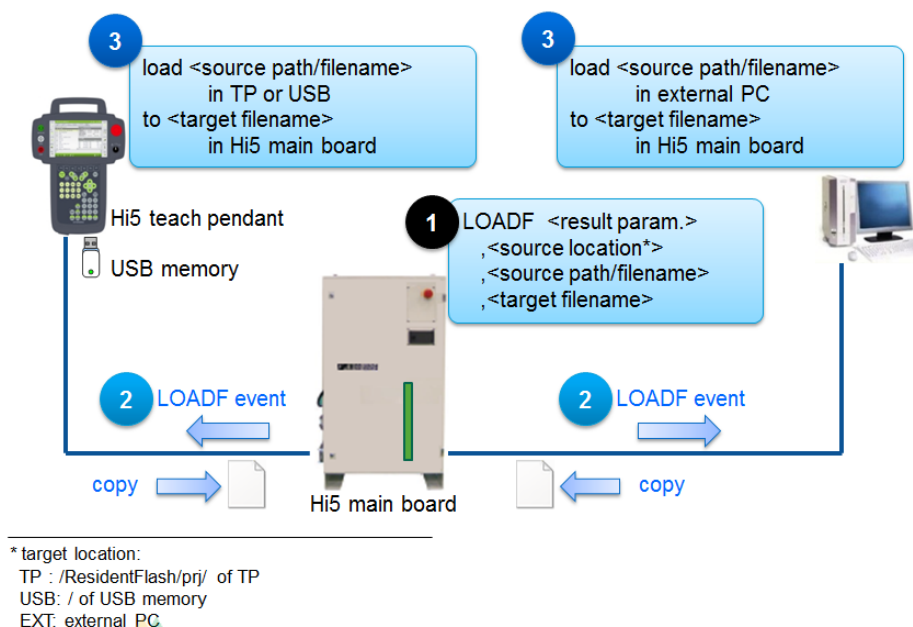| Supported OS	Windows XP, Vista, 7
Screen resolution	800 X 600 or higher
Communication protocol	Ethernet
Supported robot controller (software version)	Hi5 (V30.02-00 or later), Hi5p (every versions)

1.3. LOADF

Figure 1.2 LOADF's concept

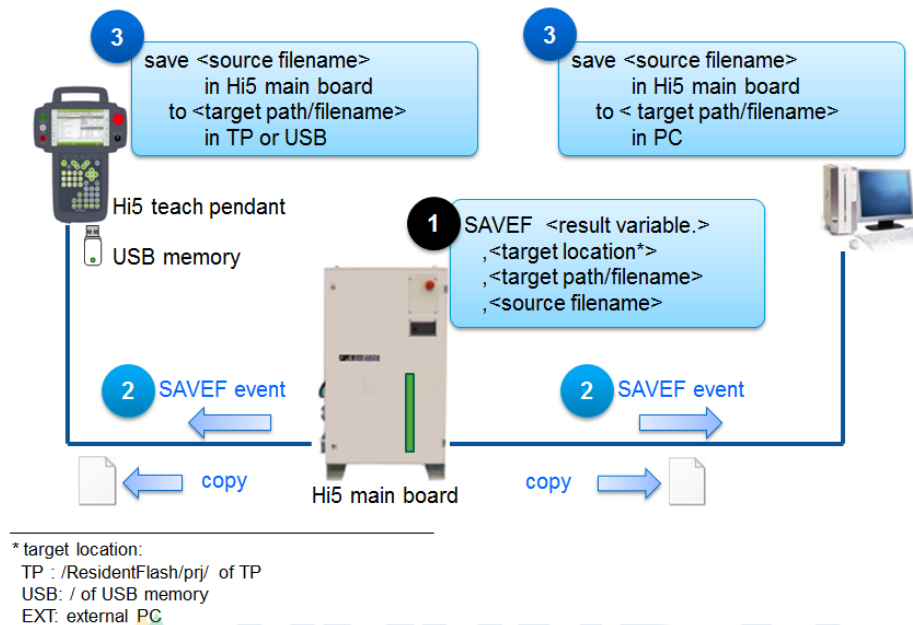| Explanation	This is the command to copy the controller file located in T/P flash memory, USB memory or external PC software to the main board. This is the function to store large scale step data in large supplementary memory device to open and play during the task.	
Syntax	LOADF <Result parameter>,<Original location>,<Original path file name>[,<Target file name>]	
Parameter	Result parameter	Result is saved after the execution. 1 : Success -1 : Failed to open original file -2 : Failed to open target file -3 : Failed to record target file -4 : Unsupported file type -5 : Target file is protected -6 : Cannot copy during playback -9 : Other error	
	Original location	TP : /Resident Flash/prj/ of teach pendant USB : / (root) of USB memory EXT : External PC	
	Original path file name	Path + File name of original file to copy	
	Target file name	If the target file name to copy to main board is omitted, apply the same file name as the original file name	
Example	LOADF V1%,TP,"L203/2500.JOB","0001.JOB" (Copy /Resident Flash/prj/L203/2500.JOB of T/P to 0001.JOB of main board)	

1.4. SAVEF

* target location:
  TP : /ResidentFlash/prj/ of TP
  USB: / of USB memory
  EXT: external PC

Figure 1.3 SAVEF's concept

Explanation	This is the command to copy the controller file located in main board to T/P flash memory, USB memory or external PC. This is the function to back up the task program edited on the main board in robot language command.		
Syntax	SAVEF <Result parameter>,<Target location>,< Target path file name >[,< Original file name >]		
Parameter	Result parameter	Result is saved after the execution. 1 : Success -1 : Failed to generate target file -2 : Failed to open original file -9 : Other error	
	Target location	TP : /Resident Flash/prj/ of teach pendant USB : / (root) of USB memory EXT : External PC	
	Target path file name	Path + File name of target file to be copied	
	Original file name	If the original file name to copy from the main board is omitted, apply the same file name as the target file name.	
Example	SAVEF V1%,USB,"L203/2500.JOB","0001.JOB" (Copy the 0001.JOB file of main board to /Resident Flash/prj/L203/2500.JOB of T/P)		

2

Installation and Execution

Execute the HRFileServer's install file. Clicking [Next >] button to proceed with the instructions. In Language Selection, check all languages you need.
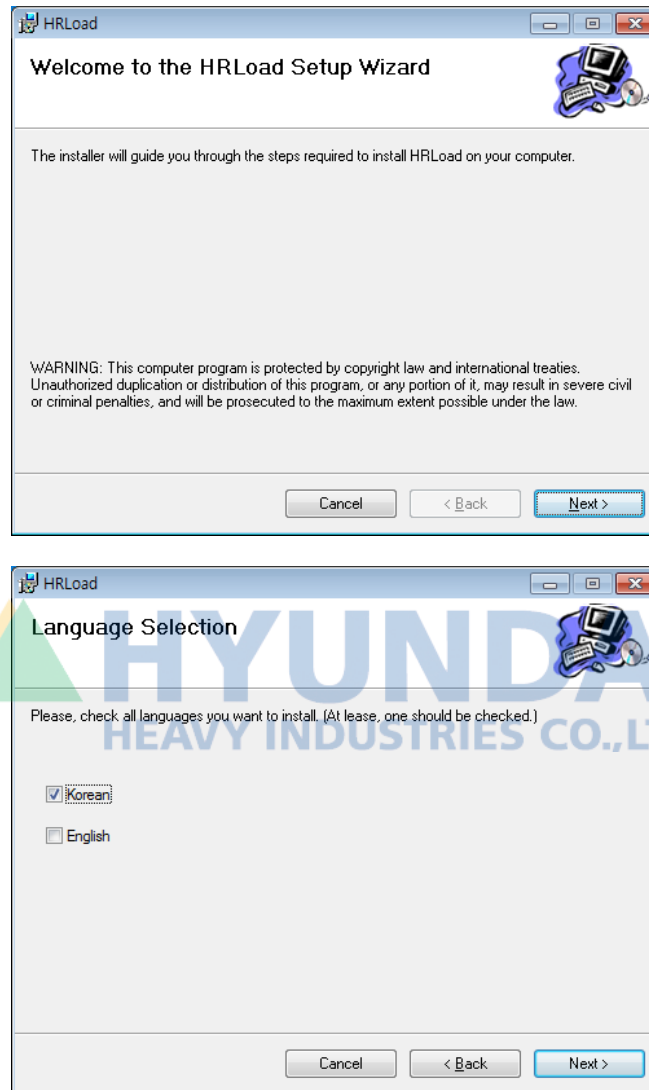

Figure 2.1 HRFileServer Install Wizard

When installation is completed, HRFileServer's icon is generated in wallpaper and START button. Double-click to start the HRFileServer.
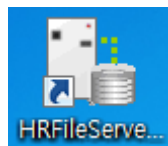

Figure 2.2 HRFileServer's icon

3

Using HRFileServer
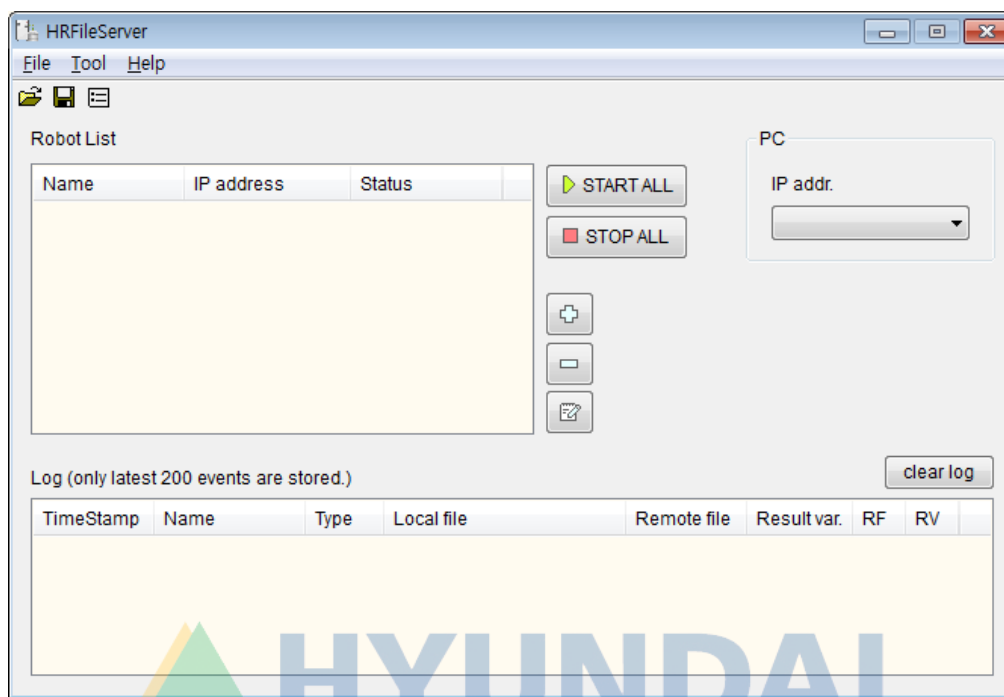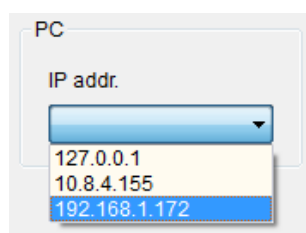
3.1. Setting and saving

Figure 3.1 HRFileServer dialog box

When you start the HRFileServer, the dialog box shows up as figure 3.1.

First, select the PC's IP address. You have to select the IP address of Ethernet adapter that belongs to the same network with Hi5 controllers. (When you connect to HRSpace3's virtual controller, select 127.0.0.1(localhost))

Second, click [ ] button to add the names of robot to be serviced and the IP addresses of the Hi5 controllers to the robot list.
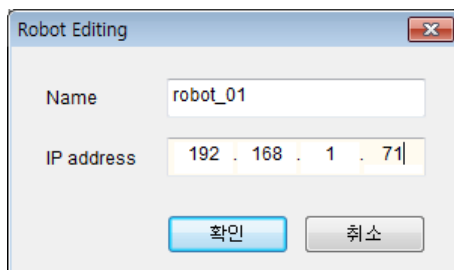
For deleting the list item use [ ] button, and for modifying use [ ] button.

Next, select the [Tool – Option] menu.

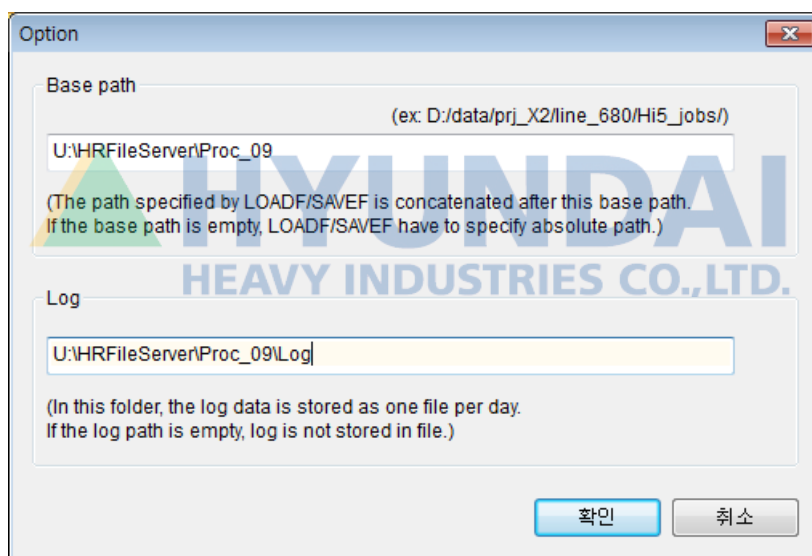Figure 3.2 Option dialog box

Base path is the front part of the PC-side path. The relative path used in LOADF, SAVEF is concatenated to this base path. (Detailed example is explained in the next section.)

Log is the path in which the file service log file is stored.
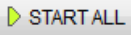When empty, the log file is not generated.
Now, save the settings as a project file using [File – Save] menu. (File extension name is ".hrfs")
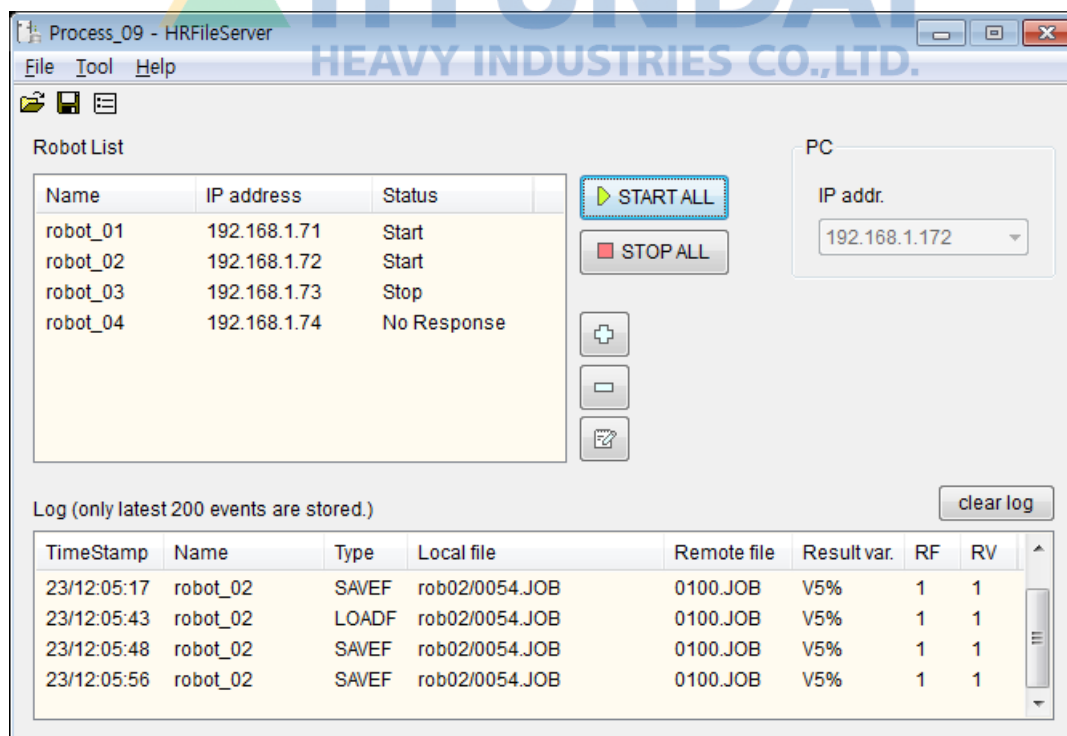
3.2. The start of service and LOADF/SAVEF

The meaning of status column in Robot List is as below;

Table 3-1 The meaning of status column

Status	Meaning
No Response	No ping response from the robot's IP address. Check out whether; 1) The robot controller is turned-on. 2) The IP address is correct. 3) The Ethernet cable is correctly connected.
Stop	File service is not started.
Start	File served is started. It is waiting LOADF, SAVEF events from the robot.

If it is 'No Response', you have to check it. If there is no robot in 'No Response' status, click
⏵ START ALL button to start the services. (If there is a robot stays in 'Stop', try turning off and on the Hi5 controller.)

For example, let's suppose that the base path in Tool - Option menu is specified as below;

U:/HRFileServer/Proc_09

If the LOADF statement is executed with below parameters in robot controller,

LOADF V5%,EXT,"rob02/0054.JOB","0010.JOB"

HRFileServer copies PC's source file to robot controller's target file as below;

Source(PC)	U:/HRFileServer/Proc_09/rob02/0054.JOB
Target(Robot controller)	0010.JOB

If the SAVEF statement is executed with below parameters in robot controller,

SAVEF V5%,EXT,"rob02/0054.JOB","0010.JOB"

HRFileServer copies robot controller's source file to PC's target file as below;

Source(Robot controller)	0010.JOB
Target(PC)	U:/HRFileServer/Proc_09/rob02/0054.JOB

(If this option is empty, the PC-side absolute path filename has to be specified in LOADF or SAVEF statement.)

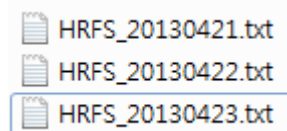Now, everything is all set. Start the robot process.

3.3. Service log

Whenever each robot execute LOADF or SAVEF statement, HRFileServer does the file copying service and record the service log in lower log-window. The meaning of each column of log-window is as below;

Table 3-2 The meaning of each column of log-window

Column	Description
TimeStamp	Date / Hour : Minute : Second
Name	The name of robot
Type	Command type : LOADF or SAVEF
Local file	The relative path / filename in service PC
Remote file	The filename in Hi5 controller
Result var.	The robot language variable in which the result of LOADF/SAVEF is stored.
RF	Result of file service
RV	The result of result variable setting service. 1: success -1: failure

This log is automatically stored in the log-file folder specified in option dialog box. All filenames are prefixed with "HRFS_", and year/month/day is attached with 8 numbers. That is, one file is generated per one day.

> HRFS_20130421.txt
> HRFS_20130422.txt
> HRFS_20130423.txt

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