FANUC Robotics	**R-30iA PaintTool V7.50-1 Site Specific Software Installation Procedure** **Company:** GM **Project No:** 122695 **Site:** Tech Center **Date:** 4/19/12

Addendum A – Software Load Procedure

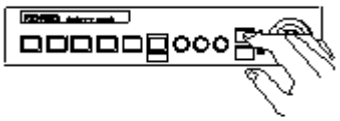
This document contains the site-specific information needed to install PaintTool software onto the R-30iA Robot Controllers. It is intended as a supplement to the FANUC Robotics SYSTEM R-30iA Controller Software Installation Manual Version 7.50-1, **MARFC75NS07091E_REV_A.**

Note: This software has been configured for use on the robots listed in this document and under no circumstances should it be used on any other robot controllers than those listed.

1 Setup Checklist

- The R-30iA controller is plugged in and is working properly.
- Enough system memory is available to install all application software.
- The teach pendant ON/OFF switch is OFF and the DEADMAN switch is released.
- You have the time to complete the load from memory card (this will take approximately 25 minutes).
- If you are updating controller software, you have backed up everything that you want to use on this controller.
- You have the R-30iA software memory card set containing the software you want to load.

2 Loading Software



1. If the controller is turned on, turn it off.
2. Insert the PCMCIA software load media into the slot located inside the robot controller.

3. Press and hold the F1 and F5 keys on the teach pendant. While holding these keys, turn the controller ON. Keep the keys depressed until the teach pendant displays a screen similar to the following BOOT MONITOR menu.

```
Base System Version V7.xxxx (FRNA)
Initializing file devices ... done.
******* BMON MENU *******
1.    Configuration Menu
2.    All software installation (MC:)
3.    INIT start
4.    Controller backup/restore
5.    Hardware diagnosis
6.    Maintenance
7.    All software installation (ETHERNET)
8.    All software installation (USB)
Select:
```

4. Record the Base System Version that is displayed on this screen. Select 2, All software installation (MC:) and press ENTER, you will see a screen similar to the following:

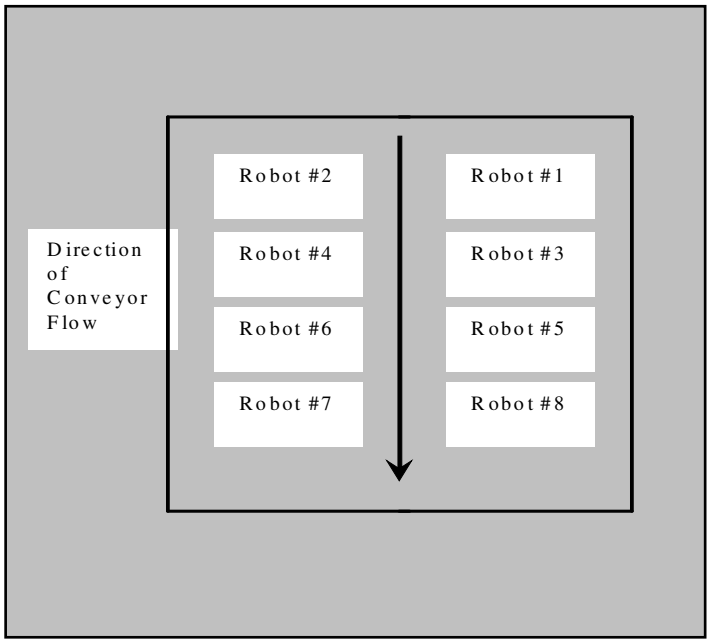
```
***** HARDWARE CONFIGURATION *****
FROM: 32Mb  DRAM: 32Mb  SRAM 2MB
Fbus Modules
SLOT  ID    FC   OP0
D0    2     1    MAIN CPU8
F2    0     1    PC104 WIDE MINI
 PROCEED? [Y=1/N=else]:_
```

5. Verify that the memory structure and currently installed hardware is correct. **To continue installing software**, type 1 and press ENTER. You will see a screen similar to the following.

```
 HARDWARE CONFIGURATION *****
**** All software installation ****
CAUTION:    This operation ERASES ALL of
            FROM and SRAM.
Insert PC card with system software
Are you READY? [Y=1/N=else]:_
```

6. When you are ready to begin loading software, type 1 and press ENTER

7. If different robot configurations exist, you will be prompted for the personality that you are loading, otherwise the software load will begin. Refer to the layout on the right for the appropriate configuration. Refer to the attached Project Software Configuration Checklist , for additional configuration information.



Multiple personalities are required at this site.

1. GM Tech. P2/H2
2. GM Tech. P4/D2/D4

8. Select the load personality you want and press ENTER, the software loading will start. You will have about a fifteen-minute wait while the software is loading.

IPC Configurations

9. If your configuration uses the IPC System, you will be prompted to select your IPC System type as follows:
Select 4-> Variable Ratio Metering Pump

```
***** ROBOT SETUP END *****

Select IPC System

1 -> Single Metering Pump
2 -> Fixed Ratio Metering Pump (1 motor)
3 -> Fixed Ratio Metering Pump (2 motors)
4 -> Variable Ratio Metering Pump

Enter Configuration Type: =>4
```

***Note**: If you select either Fixed Ratio Metering Pump as your IPC System type, you will also be prompted to enter the pump ratio for both the Resin(Pump #1) and Hardener(Pump #2) pumps*

10. If your configuration uses the IPC System, you will then be prompted to select your IPC Supply Monitoring type as follows:
Select 2-> Multiple Resin/Catalyst

```
***** ROBOT SETUP END *****

Select 2K Material

1 -> Simple (1 Resin/ 1 Catalyst)
2 -> Multiple Resin/Catalyst

Enter Supply Monitoring Type: => 2
```

11. If your configuration uses the IPC System, you will then be prompted to select your IPC Supply Monitoring type as follows:
Select 3-> Inlet Transducers

```
***** ROBOT SETUP END *****

Select Supply Monitoring

1 -> None
2 -> Flow Meters
3 -> Inlet Transducers

Enter Supply Monitoring Type: => 3
```

Waterborne Configurations

12. If your configuration uses the Integrated Canister waterborne system, you will then be prompted to select your waterborne system type:
Select 2->VersaBell

```
***** ROBOT SETUP END *****

Select Waterborne System

1 -> Honda EVB
2 -> VersaBell

Enter System Type: => 2
```

All VersaBell Configurations

13. If your configuration uses the VersaBell option, you will be prompted to select your Electrostatic Hardware type as follows:

```
***** ROBOT SETUP END *****

  Select Electrostatic Hardware

1 -> FRA Estats
2 -> ITW Estats
3 -> Honda Estats

Enter Hardware Type: => 2
```

All Configurations

14. When the software is finished loading, the following Controlled Start Menu will appear. This screen is used to setup PaintTool robot specific configuration; **except the Cell and Process I/O types cannot be setup until the sections, 3 Cell I/O Setup and 4 Process I/O Setup** have been completed!

```
PaintTool Setup            CONTROLLED START MENUS

1  F Number:                  F00000
2  Version :V7.50P/20  Project:
3  Engineer:FANUC      Date:
4  Controller No.: 1   SCC Side: Left
5  Zone Number:               Prime
6  Applicator Type:           VB Single
   I/O Configuration:         Enhanced
7  Cell I/O Hardware:         Memory
8  Process I/O Hardware:      Memory
9  No. of System Colors:      1
10 No. of Color Valves:       4
11 Enab Applic in Test Run    YES
12 Manual Functions in Teach  NO
13 Intrinsic Teach Pendant    YES
14 Use Preset per job/style   NO
15.No. of presets/color       40
16 No. of jobs/styles         1
17 No. of controllers         0
18 Standard Operator Panel    YES
19 Table Top Controller       NO
20 PDEROB ID                  0

Press FCTN then START (COLD) when done.
```

15. Enter the PaintTool robot specific configuration from the following table(s), if multiple paint zones exist, use the table for the paint zone that is being loaded:

Robot Specific Configuration

Personality	RC_1	RC_2
Controller Number	1	2
SCC Side	Right	Right
Zone Number	Prime	Prime
Applicator Type	VB Dual	VB Dual
No. of System Colors	30	30
No. of Color Valves	8	8
*Enab Applic in Test Run	YES	YES
*Manual Functions in Teach	YES	YES
Intrinsic Teach Pendant	NO	NO
*Use Preset per job/style	NO	NO
*No. of presets/color	40	40
*No. of jobs/styles	1	1
No. of controllers	2	2
Standard Operator Panel	YES	YES
*Table Top Controller	NO	NO
*PDEROB ID	0	0

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16. After the above Robot Specific Configuration is entered, press F2, SETUP to make these configuration data effective.

******* IMPORTANT *******

17. When the setup database is finished, it will display the message:

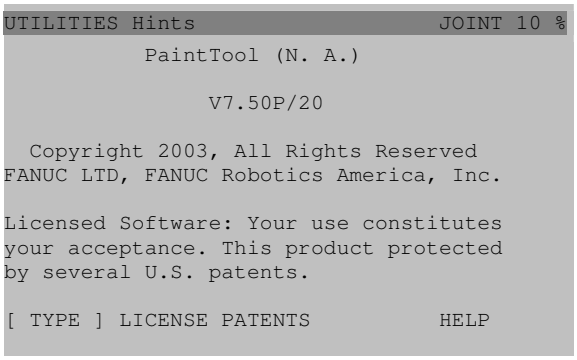
```
Press FCTN then START (COLD) when done.
```

Before the cold start, setup the Cell and Procecss I/O types, but do not press F2 to run setup again.

Robot Specific I/O Configuration

Personality	All
Cell I/O Hardware	EthernetIP
Process I/O Hardware	EIP-SMC No Rmt

18. Press the FCTN key on the Teach Pendant and then select, 1 START (COLD) from the FUNCTIONS menu. Software installation is complete when then controller re-starts from the Cold Start, a screen similar to the following appears:.



3 Cell I/O Setup

Certain Cell I/O interfaces must be configured before I/O assignments are performed; the following Cell I/O hardware types are supported:

1. Memory (internal use only)
2. Model A I/O
3. AB/Genius RIO (N/A w/ DualArm option)
4. CC-Link
5. ControlNet
6. DeviceNet
7. EGD I/O
8. EthernetIP
9. FANUC I/O Link
10. FIP I/O
11. Interbus-S
12. I/O Link II
12. Profibus
13. Robot I/O

1. Enter your Cell I/O Interface type and go to the section that corresponds to your Cell I/O Interface type

Cell I/O Interface	**Setup Section**	**Your Cell I/O Interface**
Memory	4	
Model A I/O	4	
AB/Genius RIO	4	
CC-Link	3.1	
ControlNet	4	
DeviceNet	4	
EGD I/O	3.2	
EthernetIP	3.3	X
FANUC I/O Link	4	
FIP I/O	4	
Interbus	4	
I/O Link II	4	
Profibus	3.4	
Robot I/O	4	

3.3 Setup EthernetIP I/O

Note: EthernetIP setup is automatic, please go to section, 4 Process I/O Setup.

4. Process I/O Setup

Certain Process I/O interfaces must be configured before I/O assignments can be performed, the following Process I/O hardware types are supported:

1. Memory (internal use only)
2. Model A I/O (R1 – 5 Slot)
3. Model A I/O (R2 – 5 Slot)
4. Model A I/O (R1 – 10 Slot)
5. DeviceNet
6. Profibus
7 EthernetIP
8. Robot I/O
9. SMC W/Rmt
10. SMC No Rmt

Note: ***The P-700iA uses both EthernetIP and Model A I/O (R1 – 5 Slot) hardware but you must select EthernetIP as the Process I/O type!***

1. Enter your Process I/O Interface type and go to the section that corresponds to your Cell I/O Interface type:

Process I/O Interface	Setup Section	Your Process I/O Interface
Memory	5	
Model A I/O (R1 – 5 Slot)	5	
Model A I/O (R2 – 5 Slot)	5	
Model A I/O (R1 – 10 Slot)	5	
DeviceNet	4.1	
Profibus	4.2	
EthernetIP	4.3	
Robot I/O	5	
SMC W/Rmt	5	Basecoat
SMC No Rmt	5	Clearcoat, Prime

4.3 P-700iA EthernetIP Configuration

The P-700iA EthernetIP Process I/O is automatically configured via a supplied GSE file from the FESTO Corporation, therefore, no additional setup is required; please continue with section 5, Configuring Cell and Process I/O.

5 Configuring Cell and Process I/O

Note: You must complete, **3 Cell I/O Setup and 4 Process I/O Setup**, before you can start this section!

1. If the controller is turned on, turn it off.

2. Press and hold the PREV and NEXT keys on the teach pendant. While holding these keys, turn the controller ON. Keep the keys depressed until the teach pendant displays a screen similar to the following.

```
System Version: V7.XXXX     02/02/2007

---------- CONFIGURATION MENU ----------

1. Hot start
2. Cold start
3. Controlled start
4. Maintenance

Select >
```

3. Select 3, Controlled start and press ENTER, a screen similar to the following will be displayed:

```
PaintTool Setup           CONTROLLED START MENUS

1  F Number:                F00000
2  Version :V7.50P/20  Project:
3  Engineer:FANUC      Date:
4  Controller No.: 1   SCC Side: Left
5  Zone Number:             Prime
6  Applicator Type:         VB Single
   I/O Configuration:       Enhanced
7  Cell I/O Hardware:       Memory
8  Process I/O Hardware:    Memory
9  No. of System Colors:    1
10 No. of Color Valves:     4
11 Enab Applic in Test Run  YES
12 Manual Functions in Teach NO
13 Intrinsic Teach Pendant  YES
14 Use Preset per job/style NO
15.No. of presets/color     40
16 No. of jobs/styles       1
17 No. of controllers       0
18 Standard Operator Panel  YES
19 Table Top Controller     NO
20 PDEROB ID                0

Press FCTN then START (COLD) when done.
```

4. Verify the PaintTool robot specific configuration that you setup earlier and select the Cell I/O and Process I/O hardware types from the following table(s), if multiple paint zones exist, use the table for the paint zone that is being loaded :

Robot Specific Configuration

Personality	RC_1	RC_2
Controller Number	1	2
SCC Side	Right	Right
Zone Number	Prime	Prime
Applicator Type	VB Dual	VB Dual
Cell I/O Hardware	EthernetIP	EthernetIP
Process I/O Hardware	EIP-SMC No Rmt	EIP-SMC No Rmt
No. of System Colors	30	30
No. of Color Valves	8	8
*Enab Applic in Test Run	YES	YES
*Manual Functions in Teach	YES	YES
Intrinsic Teach Pendant	NO	NO
*Use Preset per job/style	NO	NO
*No. of presets/color	40	40
*No. of jobs/styles	1	1
No. of controllers	2	2
Standard Operator Panel	YES	YES
*Table Top Controller	NO	NO
*PDEROB ID	0	0

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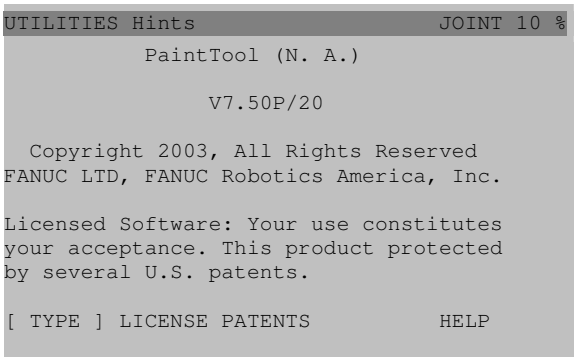
5. Press F2, SETUP to configure the Cell and Process I/O and verify there are no errors reported, if the following error is reported:

PNT1-130 Data Error (see FR:dterrors.ls)

use the FILE menu to view the errors in the R-30iA controller file, FR:\DTERRORS.LS, and correct the error and repeat Step 4. until the above error is not reported.

6. If this is a controller software reload, and the Robot System (SV), Application (VR) and Path Files (TP) have been backed up, they can be restored from either the GUI or memory card.

7. Press the FCTN key on the Teach Pendant and then select 1 START (COLD) from the FUNCTIONS menu. Software installation is complete when then controller re-starts from the Cold Start, a screen similar to the following should appear: (**see note below**)



Note: If any errors occur during setup or after the Cold Start, they must be corrected before attempting to operate the robot. Refer to SYSTEM R-30iA Controller PaintTool Setup and Operations Manual Version 7.50-1 Appendix A for a description of errors.

8. Before the robot is ready to be mastered, all the alarms will have to be cleared. Refer to the SYSTEM R-30iA Controller PaintTool Setup and Operations Manual Version 7.50-1, Appendix C.2 - RESETTING ALARMS AND PREPARING FOR MASTERING.