

# SYSTEM R-30iA™ Integrated PMC

## Robot Software Option

### Basic Description

The R-30iA Controller Integrated PMC (Programmable Machine Control) Software option provides the ability to execute a ladder logic program on an R-30iA Controller. PMC allows an R-30iA Controller to operate external devices via ladder logic programs, potentially eliminating the need for an external PLC or Soft PLC in small systems. With the PMC option, communication between the ladder program and the robot program is handled via shared memory. A PC-based off-line programming software option (called FAPT Ladder III) is available for developing ladder logic programs that run on the controller. FAPT Ladder III software provides a built-in file transfer utility to download ladder logic programs to an R-30iA Controller via a serial (RS-232) connection. FAPT also provides the ability to monitor ladder logic program execution on a PC via the same serial connection.

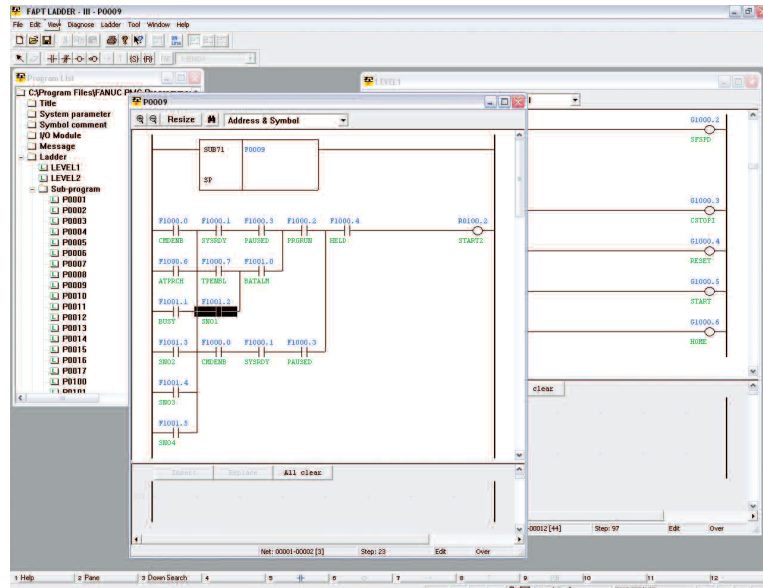
### Features and Benefits

#### ■ Built-in PMC Processor

The PMC processor comes built-in on the R-30iA Controller's CPU board. PMC has access to the entire robot I/O system (e.g. Model A, Model B, RDI/RDO, SOP, UOP, ABRIO, GENIUS, Devicenet, Profibus-DP and Controlnet) for ladder logic control and can eliminate the need for an additional cell controller enclosure for some small systems.

#### ■ Industry Standard Ladder Logic Functionality

The integrated PMC option supports standard ladder logic functionality such as contacts, coils and function blocks (e.g. move, rotate, timers, counters, arithmetic operations and logic instructions).



Windows compatible FAPT III Ladder Program

#### ■ Concurrent Ladder Logic Processing

The PMC processor is dedicated for ladder program execution and therefore has no impact on robot motion performance. The ladder program runs automatically after the controller is powered up and continues to run independent of the status of the robot motion program.

#### ■ FAPT III Off-line Ladder Programming and Monitoring

The FAPT (Factory Automation Programming Tool) Ladder III programming software option allows users to develop ladder logic programs on a PC. FAPT Ladder III runs on Windows® 95, 98, NT4.0 or 2000 operating systems. It includes:

- Monitoring of ladder sequence, signal status and PMC status
- Off-line editing
- Debugging ladder programs
- Saving and restoring PMC parameters
- Printing of ladder programs

#### ■ Streamlined Integration with TPP, KAREL® or application tools

The PMC ladder logic program can interface with robot motion programs through I/O and up to 12000 internal robot registers. I/O interfaces to application tool packages such as HandlingTool™, SpotTool™, ArcTool® and PaintTool™ can be customized using a PMC ladder program.

#### ■ Integrated PMC with Ladder Monitor on iPendant™

Included with the R-30iA Controller is the ability to display the PMC ladder as it executes. You can quickly view all levels and sub-programs of the loaded PMC Ladder, including:

- All Contacts, Coils, Nets, Branches, Function Blocks
- Values of Timers, Counter, Data Tables

Navigation is simple with graphical Zoom In/Out which allows you to see the level of detail you need. Also included is a powerful search function allowing you to find elements by Address and/or Symbol.

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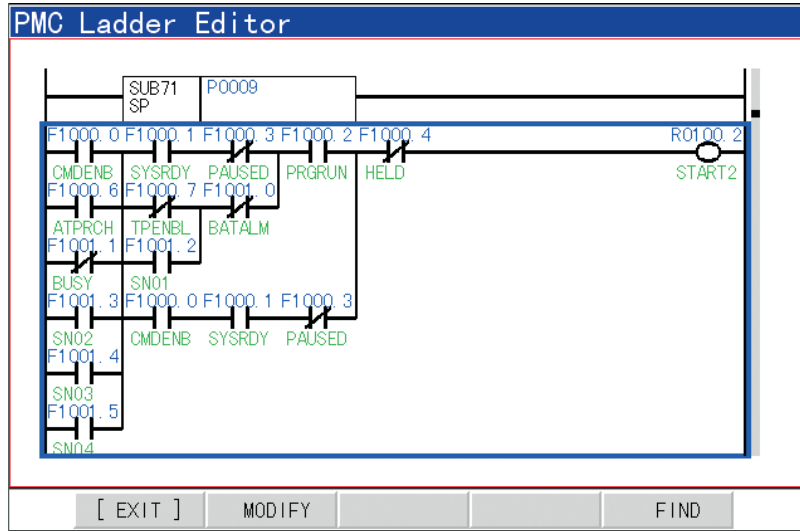
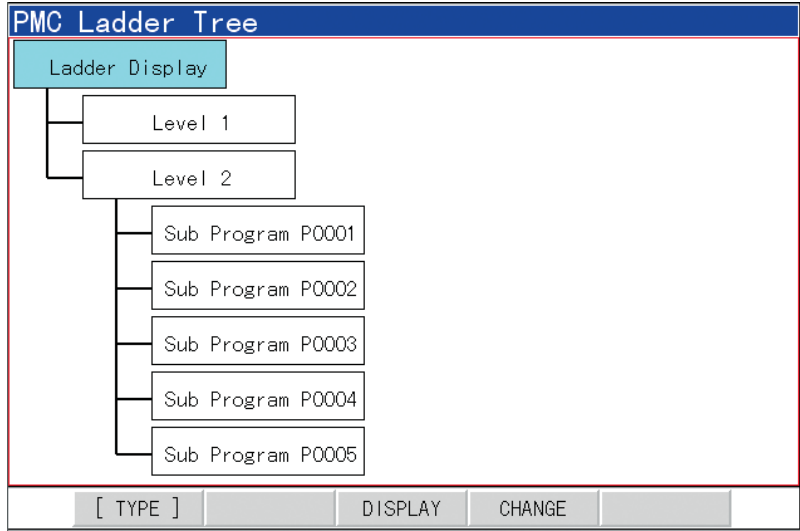
■ **PMC Ladder Modification**

Also available on the R-30iA Controller is the runtime modification of the ladder. This optional feature allows the changing of coils and contacts right from the *iPendant*, allowing simple changes to be made right at the robot without needing a PC.

**Minimum PC Requirements for FAPT Ladder III Software:**

- Pentium® w/133 MHz processor
- 32 MB RAM
- 20 MB free space on hard drive
- CD-ROM Drive
- Windows 95, 98, NT4.0 or 2000 operating system
- Standard RS-232 port (required for on-line monitoring and file transfer)
- Serial communication cable
- Standard 101 key IBM AT style Keyboard

PMC Specification	
Programming Language	Ladder
Processing time of basic commands	0.085µ sec/step
Program Size	
Maximum Number of Steps (Level 1, Level 2 and Sub Programs)	16,000 steps
Contacts, coils, etc.	3 – 5 steps
Function Blocks	1 step
Number of Commands:	
Basic commands	14
Function commands	52
Storage Locations:	
Internal Relay (R)	12000
Keep memory:	
Variable Timer (T)	40
Counter (C)	20
Keep relay (K)	160
Data table (D)	24000
Label (L)	9999
Fixed timer	100
Robot I/O Mapping for PMC:	
Discrete I/O	1024/1024
Group I/O	64/64
Analog I/O	64/64
Weld I/O	40/40
Device to save PMC program	Flash ROM



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