FANUC
R O B O T I C S

SOFTWARE OPTIONS

FANUC offers a range of application specific software options, among which:
1. Collision Guard
2. Payload ID
3. Collision Skip / Touch Skip
4. Soft Float
5. Coordinated Motion Package
6. Multi Robot Control
7. Integrated PMC
8. Ethernet IP
9. Line Tracking
10. Singularity Avoidance
11. KAREL
12. Hardware Options

1. COLLISION GUARD

Collision Guard provides a sensitive method to detect that the robot has collided with an object. It can detect a collision much quicker than a conventional collision detection function, thus greatly reducing possible damage to the tool and robot itself.
It also reduces downtime after collisions, hence improving the productivity of the robot. Collision Guard provides a highly sensitive method to detect whether a robot has collided with any object and to stop the robot immediately in such case.
Collision Guard can be enabled or disabled, and it is also possible to define the level of sensitivity of the collision detection function.

2. PAYLOAD ID

Manual setup of payload information is very complicated. With Payload Identification the robot swings the payload by moving its wrist axis and the payload information is set automatically.

The result of the Payload Identification can be used for the set-up of the Collision Guard.

3. COLLISION SKIP / TOUCH SKIP

With Collision Skip, the robot is able to detect when it touches an object and intelligently adapt its movement. The detection is accomplished only by the robot servo control. The robot reaction can be easily programmed using high speed skip

4. SOFT FLOAT

SoftFloat is used in processes to compensate for unexpected variances. Due to occurrences of these variances, SoftFloat allows the robot path to be changed according to the external force to achieve the desired result.

It is used in processes such as:
- Load machine tool
- Unload injection moulding machines

Two types of soft float exist: joint and Cartesian

- In Joint mode, flexibility is specified for individual axes or a combination of axes.
- In Cartesian mode, the softness is specified for Cartesian directions. In this mode, the robot will act like a spring in the specified direction.

5. COORDINATED MOTION PACKAGE

The coordinated motion function allows a robot to follow the movement of a positioner that is holding a work piece. The motion of the robot tool is controlled relative to the work piece on the positioner.

The relative speed defined in the program is maintained relative to the work piece as well as the tool angles. This is essential for such processes as Arc Welding in order to achieve best quality and faster programming.

6. MULTI ROBOT CONTROL

The Multi Robot Control aims at controlling up to 4 robots with a single controller. The robots can move synchronously or independently according to the robot program.
Thanks to this feature, the robots can be controlled with one Teach Pendant and share one emergency stop circuit.

7. INTEGRATED PMC

The Integrated PMC is a method of executing Ladder Logic on the robot controller. It can potentially eliminate the need for an external PLC or Soft PLC in small systems. FAPT LADDER III PC software is required to create Ladder Logic programs.
Integrated PMC is executed by the dedicated communication processor in the controller, and is completely independent from any robot motion and program.

It can access and control all available I/O. Timers, counters and internal registers are available. In addition to standard PLC operations (e.g. AND and OR), arithmetics, jumps and sub-programs are supported. It performs cyclical operations.

8. ETHERNET IP

The EtherNet/IP interface supports an I/O exchange with other EtherNet/IP enabled devices over an Ethernet network. EtherNet/IP is a communication system suitable for use in industrial environments. EtherNet/IP allows industrial devices to exchange time-critical application information. These devices include simple I/O devices such as sensors/actuators, as well as complex control devices such as robots, programmable logic controllers, welders, and process controllers.

There are 3 options of Ethernet IP:
- Adaptor: it connects the robot to supervisory PLC
- Scanner: it allows the robot to control remote I/O devices
- Router: for CIP routing to DeviceNet networks

9. LINE TRACKING

Line Tracking is a feature that enables a robot to:
- Work with pieces that are on a moving conveyor
- Treat a moving work piece as a stationary object

The option is used in conveyor applications, where the robot must perform tasks on moving work pieces without stopping the assembly line.

Line Tracking saves production time by allowing work pieces to continue to move on the conveyor, instead of requiring them to be removed from the conveyor and placed in a stationary fixture.

10. SINGULARITY AVOIDANCE

The Auto Singularity Avoidance option allows linear pass of singularity without path deviation.

11. KAREL

KAREL is an application development software package integrated into a FANUC Robot.

KAREL is a language similar to Pascal. It is a powerful tool to program and manage very complex applications. The built-in features of KAREL allow functions that are not supported by TPE.