



FANUC ROBOTICS SYSTEM R-30iA CONTROLLER USES ADVANCED TECHNOLOGY PACKAGED IN A PROVEN, RELIABLE AND EFFICIENT DESIGN. PROCESS CAPABILITY AND OPEN ARCHITECTURE FEATURES PROVIDE INTELLIGENCE TO IMPROVE APPLICATION AND MOTION PERFORMANCE WHILE SIMPLIFYING SYSTEM INTEGRATION. THE R-30iA CONTROLLER INCORPORATES FANUC ROBOTICS UNIQUE "PLUG-IN OPTIONS" CONCEPT, WHICH GIVES FLEXIBILITY FOR APPLICATION SPECIFIC CONFIGURATIONS WHILE MAINTAINING A COMMONALITY FOR ALL USERS OF THE SYSTEM.

» FEATURES AND BENEFITS

THE R-30iA CONTROLLER OFFERS ENHANCED VIBRATION CONTROL. THIS GREATLY REDUCES THE ROBOT'S ACCELERATION AND DECELERATION TIMES LEADING TO REDUCED CYCLE TIMES. THE CONTROLLER PROVIDES AN INTEGRATED 2D VISION SYSTEM TO SPEED-UP THE INSTALLATION OF VISION APPLICATIONS, THIS CAN BE EASILY UPGRADED TO PROVIDE A 3D VISION SYSTEM.

ADVANCED COMMUNICATION R-30iA

- Simple down- and upload of robot programs to server!
- Built-in Ethernet (100 BaseTX)
- FANUC I/O-link (Master)
- E-mail function as an option
- Fieldbus (option)
 - PROFIBUS
 - DEVICENET
 - CCLINK

ADVANCED I/O FEATURES

Input / Output (I/O) are electrical signals through which the robot can control grippers and other external tools. It is also needed for the communication with external machines (e.g. CNC machines) which the robot may load or unload.

- Available types of I/O
 - DI/DO (digital)
 - RI/RO at the robot arm (digital)
 - GI/GO (grouped digital I/O)
 - UI/UO (digital I/O for remote control by external PLC)
 - AI/AO (analog I/O)
 - WI/WO (arc welding I/O)
 - SI/SO (standard operation panel interface)
- I/O setup can be separately backed up and restored using PCMCIA memory card or USB¹⁾

EFFICIENT COOLING SYSTEM WITH SEPARATED AIR CIRCUIT

- Cooling by external air for maximum efficiency
 - Rear to rear air flow, saving floor space and possibility to have many controllers side by side
 - All components are IP 54 sealed, hence no filters necessary (reduced maintenance and cost reduction).
- Fully sealed internal air circuit
 - No external air coming into the component side
 - No dust can enter the controller and cause short circuits
 - Fans on the controller door and in the controller rack ensure optimum cooling of all components

EXTENDED AXES CONTROL R-30iA

The controller can manage up to 40 axes ¹⁾ that are using FANUC motors (divided in up to 5 groups; one group can control up to 9 axes), such as:

- 4 robot arms +
- 4 auxiliary axes groups (arc welding positioners, robot rails, servo hands, grippers...)

THERE ARE THREE TYPES OF MOTION CONTROL AVAILABLE:

- Extended auxiliary axes: for robot rails and simple tools (grippers)
- Nobot: for servo driven tools and other intelligent peripherals
- Positioner: for arc welding positioners, with coordinated motion between robot and positioner.

FOLLOWING OPTIONS ARE AVAILABLE AS EXTENSIONS OF THIS FEATURE:

- Aux Axis servo off: for safety design of manual in/out-feed stations
- Torque limit: in order to control the gripping force of servo grippers
- Servo hand change function: This allows the changing and disconnecting of servo hands and tools
- Continuous turn: for tools and positioners needing endless rotation
- Multi-motion for multiple groups
- Multi-robot control (dual / multiple arm) for more than one robot

FAST START-UP

R-30iA controller needs less than 1 minute to start (and even less with the basic software only).

In case of power failure:

- Robot program restarts much quicker than with any PC-based program (non-Windows operating system)
- The resume hotstart function allows restarting safely and continuing production after power failure: no need to re-do the whole movement.
- Unique resume tolerance check: in case of any program interruption, the robot automatically memorises its position before failure. When the program continues, it checks whether the robot has been moved outside of a preset tolerance. This avoids unexpected movements and collisions.
- Increased up-time (robot availability)

INTEGRATED INTELLIGENT VISION SOLUTION iRVISION²⁾

The controller provides integrated 2D vision to speed-up the installation of vision applications, which can easily be upgraded to:

- 2D VISION SHIFT
- 2D VISUAL LINE TRACKING
- 3DL VISION
- 3DL VISION BIN PICKING

(See chapter iRVision)

MINIMAL MAINTENANCE REQUIREMENTS

- Controller size allows quick access to all components
- Minimal number of components
- No air-filters
- Emergency stop and I/O connections facilitate fast component change
- Special quick-change design for the 6-axes servo amplifier
 - All cables attached have connectors, thus allowing an easy change
 - Quick exchange frame for the amplifier fixed with only 2 bolts
- All components can be changed without special tools
 - Low MTTR (Mean Time To Repair)
- Remote diagnostics features

POWERFUL PROGRAMMING FUNCTIONS

The controller runs with FANUC operating system, which brings strong advantages:

- Virus-free (not PC based)
- High data security in case of power loss
- Quick start-up of basic software
- Easy to use

The controller offers various programming possibilities:

- TPE (Teach pendant editor) which is the standard way of programming
 - Advanced offline programming options such as ROBOGUIDE (See chapter ROBOGUIDE)
 - Integrated PMC (optional)
 - KAREL (optional)
- (See chapter Software Options)

TPE is a block style interpreter language: allows fast and cost-efficient programming.

- Possibility to record up to 11 000 positions with basic memory configuration
- One key stroke on the teach pendant records one complete operation of the robot
- Standard operations (e.g. motion, arc start, arc end, logic...) can be selected and adapted to the application very easily
- TPE motion includes:
 - Joint, linear and circular motions
 - Remote TCP, coordinated motion and other functions in option

SAFETY CLASS 4

Safety Class 4 (EN 954-1) is offered with Dual Check Safety.

DCS consists of 2 I/O security channels running on 2 independent processors which mutually check each other. Dual Check Safety is the embedded safety conformed to European safety standards. Two processors monitor real position and velocity of servo motor for safety redundantly. The embedded safety provides conformance to the safety standards without any sacrifice on machine efficiency and cost.

Dual Check Safety in the robot has the following features:

- 2 channel safety inputs for FENCE, Emergency Stop, Servo Off
- 2 channel safety output for Emergency Stop
- Same safety inputs and outputs as R-J3iB and R-J3
- Safety cuts the servo motor power using magnetic contactors
- Safety classification according to EN 954-1 risk assessment class 4 (highest level as needed for manual press loading)

SERVO MONITORING - OVERLOAD, OVERHEAT AND COLLISION DETECTION

Continuous monitoring of the motor current by the servo control for enhanced predictive maintenance

- Overheat monitoring: the power dissipation and capacity of each motor is continuously monitored, as well as the robot duty cycle. In case of overheat, an alarm is issued and stops the robot.
- Collision detection (disturbance torque monitoring): the difference between real and expected motor current is monitored. Collisions and electrical / mechanical problems to the robot can be detected quickly before serious damages occur. Disturbance excess alarm warns the operator while the collision alarm stops the robot. Collision events are recorded to allow further analysis.
- Overload monitoring (OVC): the commanded torque is monitored and overload detected when the value gets too big.
- Position monitoring: the „following“ error of the servo control is constantly monitored. It triggers move error excess and stop error excess alarms.

VIBRATION CONTROL

Thanks to enhanced hardware and software capacities, the R-30iA controller offers much better robot vibration control. This greatly reduces the robot's acceleration and deceleration times, leading to reduced cycle times.

WIDE RANGE OF CONNECTIONS (USB²), PCMCIA INTERFACE...)

- The R-30iA controller has an USB interface in the front panel and a PCMCIA interface inside of the control cabinet
- 2 serial interface connections (RS232C, RS422) available
 - Printer Connect
 - Data Transfer (option)
 - Sensor interface (option)
 - CRT keyboard (option)
 - User specific data transfer using KAREL option

This allows fast and economical back-ups and restore of data and programs.

The FANUC iPendant is an intelligent teach pendant and is available as standard (except for PaintTool). Touch screen is available as option.

- Access via Ethernet to web sites
- Pendant view status of peripheral equipment and other robots' html web server pages (when available)
- Coloured, multi-windows display
- Customizable screen

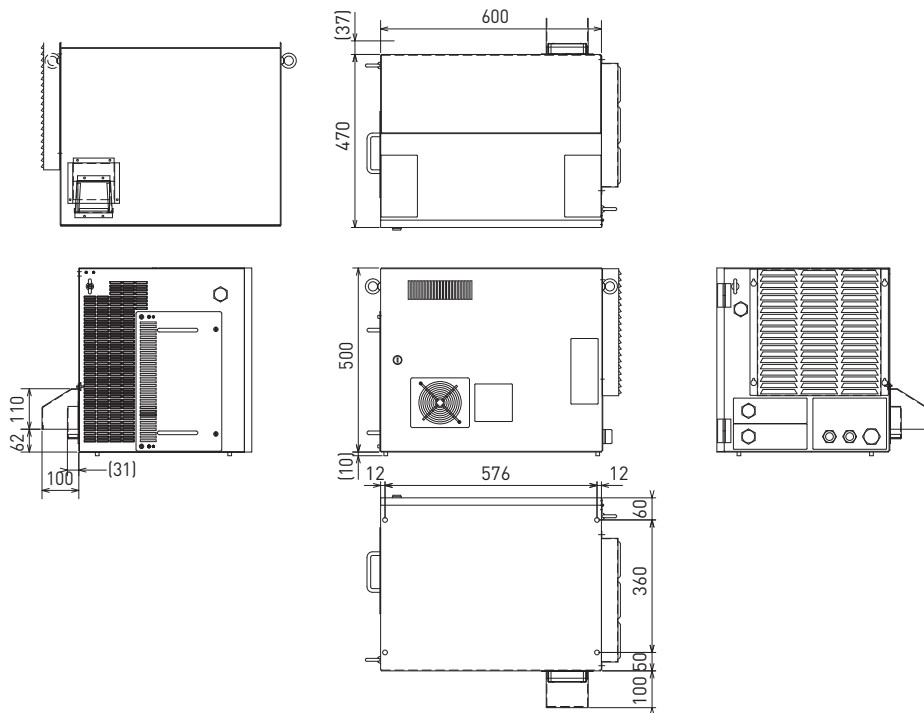
Easier work with the robot, enhanced productivity.

“B” (normal) and “A” (small) cabinets available

R-30iA Controller

External dimensions (A-cabinet)

all models approx. 120 kg, except M-410iB approx. 140 kg



R-30iA Controller

External dimensions (B-cabinet)

all models approx. 180 kg, except M-900iA, M410iB, R-2000iB/200T approx. 200 kg

