Robotics

IRC5

Industrial Robot Controller

Fifth generation robot controller

Based on more than four decades of robotics experience, the IRC5 sets a benchmark in the robotics industry. In addition to ABB's unique motion control it brings flexibility, safety, modularity, customer adapted user interface, multi robot control and PC tool support.

Safety

Operator safety is a central quality of the IRC5, fulfilling all relevant regulations with good measure, as certified by third-party inspections. Electronic position switches and SafeMove represent a new generation of safety, enabling more flexible cell safety concepts, e.g. involving collaboration between robot and operator.

Motion control

Based on advanced dynamic modelling, the IRC5 optimizes the performance of the robot for the physically shortest possible cycle time (QuickMove) and precise path accuracy (TrueMove). Together with a speed-independent path, predictable and high-performance behavior is delivered automatically, with no tuning required by the programmer. What you program is what you get.

Modularity

The IRC5 comes in different variants in order to provide a cost-effective solution for every need. The ability to stack modules on top of each other, put them side by side or distributed in the cell is a unique feature, leading to optimization of footprint and cell layout.

The compact variant comes with the IRC5 capabilities in a true compact format, able to control the lower end of the IRB range.

The panel-mounted version comes without a cabinet, enabling integration in any encapsulation for exceptional compactness or for special environmental requirements.

FlexPendant

The FlexPendant is characterized by its clean, color touch screen-based design and 3D joystick for intuitive interaction. Powerful customized application support enables loading of tailor-made applications, e.g. operator screens, thus eliminating the need for a separate operator HMI.

RAPID programming language

RAPID programming provides the perfect combination of simplicity, flexibility and power. It is a truly unlimited language with support for structured programs, shop floor language and advanced features. It also incorporates powerful support for many process applications.

Communication

The IRC5 supports the state-of-the-art field busses for I/O and is a well-behaved node in any plant network. Sensor interfaces, remote disk access and socket messaging are examples of the many powerful networking features.

Remote Service enabled

Remote monitoring of the robot is available through GSM or Ethernet. Advanced diagnostics allow fast investigation on failure as well as monitoring of the robot condition throughout the life cycle. Service packages include backup management, reporting and proactive maintenance activities.

RobotStudio

A powerful PC tool for working with IRC5 data on-line as well as off-line. In off-line mode, RobotStudio provides a perfect digital copy of the robot system together with strong programming and simulation features.

MultiMove

Control of up to four robots from one controller, with a compact drive module added for each additional robot. MultiMove opens up previously unthinkable operations, thanks to the perfect coordination of complex motion patterns.

IRC5

Specification

Control hardware:	Multi-processor system
	PCI bus
	Pentium® CPU
	Flash disk for mass memory
	Energy back-up power failure handling
	USB memory interface
Control software:	Object-oriented design
	High-level RAPID programming language
	Portable, open, expandable
	PC-DOS file format
	RobotWare software products
	Preloaded software, also available on DVD

Electrical Connections

Supply voltage:	3 phase 200-600 V, 50-60 Hz
	Integrated transformer or direct mains connection
	1 phase 220/230 V, 50-60 Hz (for Compact Controller only)

Physical	Size H x W x D	Weight
Single cabinet	970 x 725 x 710 mm	150 kg
Dual cabinet	1370 x 725 x 710 mm	180 kg
Control module	720 x 725 x 710 mm	50 kg
Drive module	720 x 725 x 710 mm	130 kg
Empty cabinet for customer equipment	- small 720 x 725 x 710 mm - large 970 x 725 x 710 mm	35 kg 42 kg
Panel Mounted *)		
Control module	375 x 498 x 271 mm	12 kg
Drive module small *1)	375 x 498 x 299 mm	24 kg
Drive module large *2)	658 x 498 x 425 mm	40 kg
Compact controller **)	258 x 450 x 580 mm	27.5 kg

*1) IRB 140, 340, 1600, 260

*2) IRB 2400, 2600, 4400, 4600, 6620, 6640, 6650, 7600, 660, 760

**) IRB 120, 140, 260, 360, 1410, 1600

Environment

Ambient temperature:	0-45°C (32-113°F) option 0-52°C (32-125°F)
Relative humidity:	Max. 95% non condensing
Level of protection:	IP 54 (cooling ducts IP 33)
	Panel Mounted and Compact IP 20
Fulfilment of regulations:	Machine directive 98/37/EC regulations
	Annex II B
	EN 60204-1:2006
	ISO 10218-1:2006
	ANSI/RIA R 15.06 - 1999
	UL 1740-1998

User Interfaces

Control panel:	On cabinet or remote
FlexPendant:	Weight 1 kg
	Graphical color touch screen
	Joystick
	Emergency stop
	Hot plug
	Support for right and left-handed operators
	USB Memory support

User Interfaces continued

Maintenance:	Status LEDs
	Diagnostic software
	Recovery procedures
	Logging with time stamp
	Remote Service enabled

Safety

Basic:	Safety and emergency stops
	2-channel safety circuits with supervision
	3-position enabling device
Electronic Position Switches:	5 safe outputs monitoring axis 1-7
SafeMove:	Supervision of stand-still, speed, position and orientation (robot and additional axes)
	8 safe inputs for function activation,
	8 safe monitoring outputs

Machine Interfaces

Inputs/outputs:	Up to 8192 signals
Digital:	24V DC or relay signals
Analogue:	2 x 0-10V , 3 x ± 10V, 1 x 4-20mA
Serial channel:	1 x RS 232/RS 422 with adapter
Network:	Ethernet(10/100 Mbits per second)
Two channels:	Service and LAN
Fieldbus Master:	DeviceNet™
	PROFINET
	PROFIBUS DP
	Ethernet/IP™
Fieldbus Slave:	DeviceNet™
	PROFINET
	PROFIBUS DP
	Ethernet/IP™
	Allen-Bradley Remote I/O
	CC-link
Conveyor encoder	Up to 6 channels
Integrated PLC	AC500

Sensor Interfaces

	Search stop with automatic program shift
	Seam/contour tracking
	Conveyor tracking
	Machine vision
	Force Control

Data and dimensions may be changed without notice.

Compact controller

Panel mounted controller