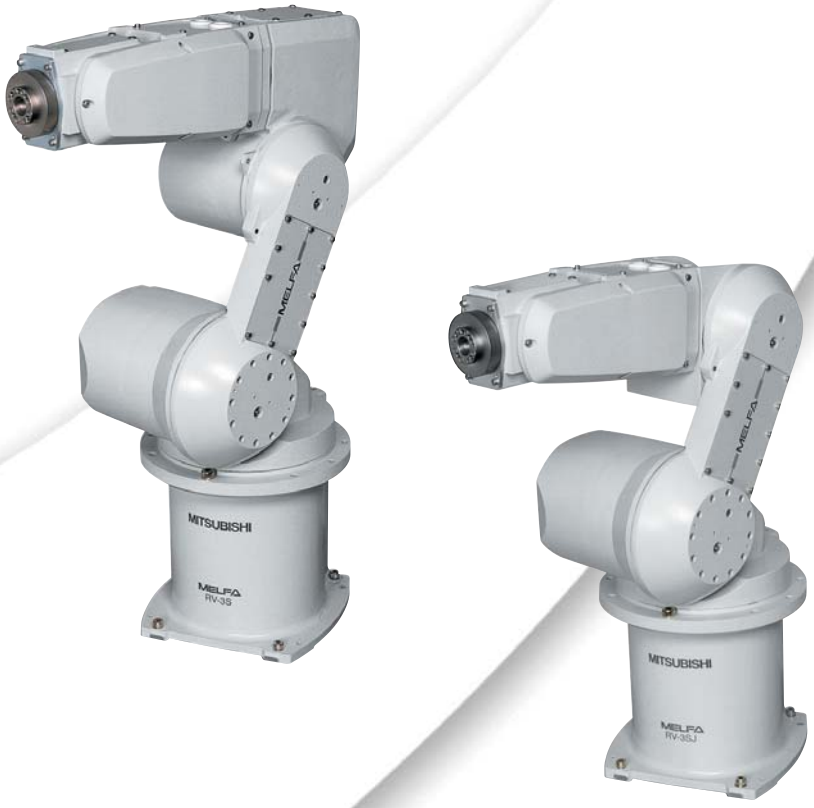
Product News
EBG 166-EN

MITSUBISHI ELECTRIC
FACTORY AUTOMATION

RV-3S

MELFA Industrial Robots

Fast, Compact and Easy to Use



SPEED UP — Reduce your cycle time with the fastest Mitsubishi robot in it's class

INTELLIGENT DESIGN — Brakes and absolute encoders on all axes mean you never loose position

ALL INCLUDED — No need to buy additional software functions as all are supplied with the robot as standard

MORE FLEXIBILITY — Move through the point of singularity

Robots from € 1.65/hr

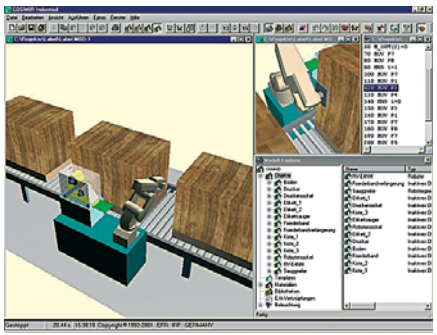
Robots in a production line

Robots can be a very cost effective way to achieve some automation tasks. The image of a robot as being an expensive luxury is far from the reality. When the cost of a robot is calculated over it's expected lifetime, typically 6 – 7 years in a general application, it can provide surprising results with costs as low as € 1.65/hr to purchase and operate.

Using Mitsubishi robots is easy

Programming a Mitsubishi robot arm, such as the RV-3S, is a lot easier than most people imagine. The programming language of the teach pendent is a simple sentence like structure with commands such a MOV being used to program the robot to move.

Alternatively, users can also benefit from our advanced programming and simulation software packages Cosirop and Cosimir. These two packages can allow a robot application to be built and simulated even before any hardware has been purchased.



Screenshot Cosimir software

Simple integration

The RV-3S series of robots have been designed to be very simple to integrate into an existing automation cell. Features such as the direct control over 32 local I/Os allows the robot to interact directly with sensors and actuators, speeding up and simplifying system building.

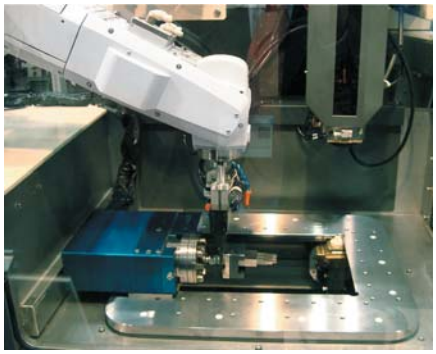
Communicating with other automation plant is an important area of any automation cell. The RV-3S series has been optimised with a choice of three major networking technologies: Ethernet, Profibus/DP and CC-Link.

For complex automation cells where movement is restricted, or there is a large distance between working points, the RV-3S robots can control up to eight additional axes to its standard robot arm configuration. Two of these axis can be interpolated allowing easy and efficient movement around obstructions. The other six axes can be used to control elements such as linear slides to move the robot between work stations.

Advanced design

The RV-3S series has many advanced design features giving users greater and more flexible automation solutions. For example, the IP65 rating means the robot can now not only be located at the machine or workstation but actually IN the machine! This can be of benefit in applications such as cutting machine tools where there can be a lot of cutting liquids.

All Mitsubishi robot controllers are shipped with the full control software as standard, this means that users do not need to buy any additional software modules for special tasks at a later date. In addition Mitsubishi MELFA robot programs are compatible making it easier to upgrade between robots should the need arise.



RV-3S inside an EDM

New features of the RV-3S series

■ Fastest in its class

RV-3S robots are up to 57 % faster than previous Mitsubishi robots in the same class. The maximum travel speed of 5.5 m/s can still be used with a positioning accuracy of ±0.02 mm making users cycle times faster without loosing accuracy.

■ Move through singularity

Typically robots will stop at an undefined point when the robot arm moves through the point of singularity. However, the new RV-3S series will continue its travel to its final position providing customers with trouble free operation.

■ Brakes in all axes

Many robots will have brakes fitted to the major axes but the RV-3S has brakes on all axes. This means the robot will maintain position, protecting the application, even during a power down or emergency situation.

Further more the robots absolute encoders mean that the real position is always known without having to redatum at a special location.

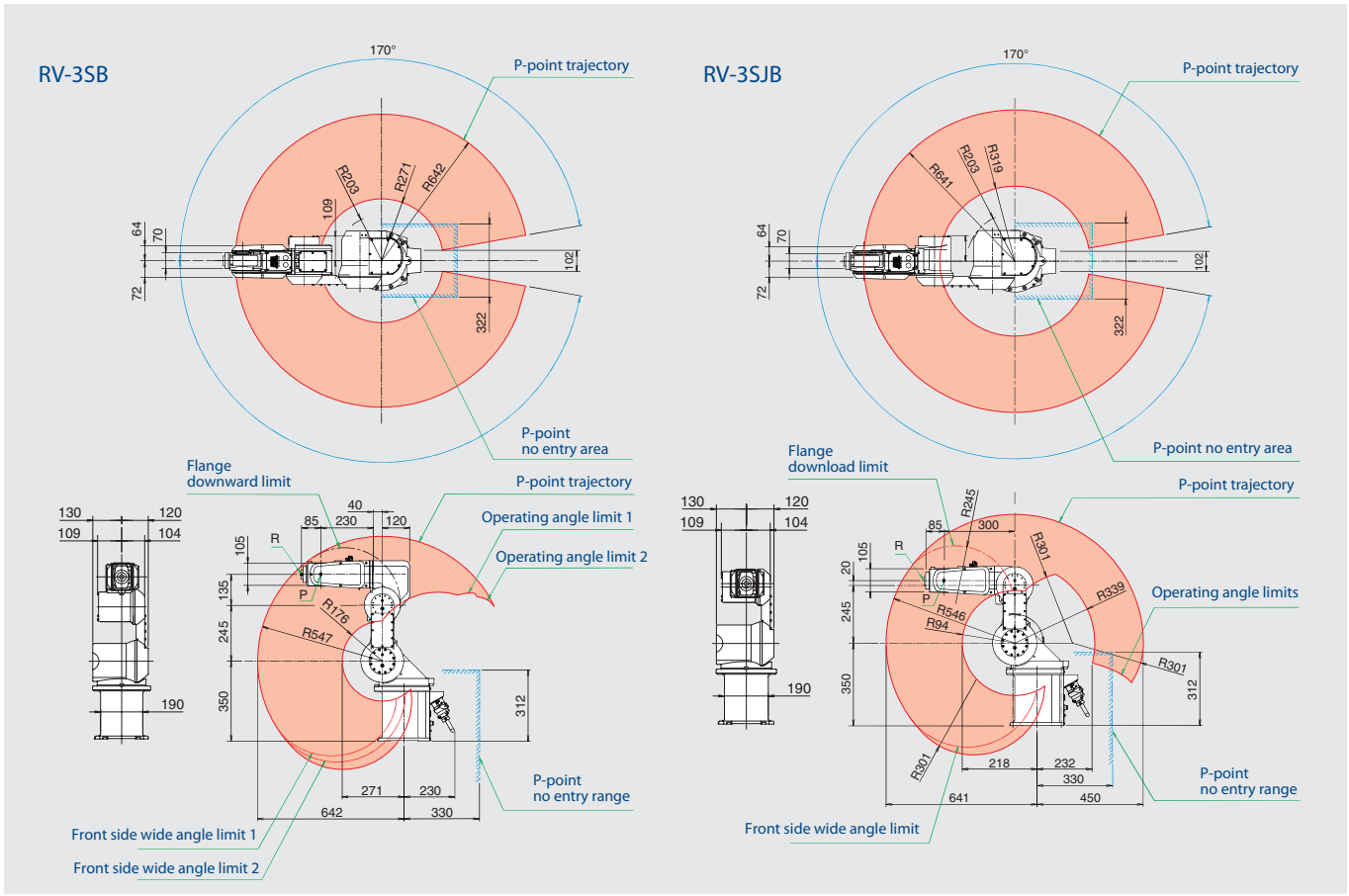
■ Operational tolerance

This feature allows the robot arm to be guided into a work piece by external forces, for example, if a hole in the work piece has a certain tolerance on position then the robot arm can allow the edges of the hole to guide the robot gripper into the exact location. This ensures 100 % accurate positioning even if the work piece varies.

■ Collision detection

This provides protection for the whole automation investment, sensing and reacting quickly when a crash has occurred.

Vertical articulated robots RV-3SB/RV-3SJB and controller CR2B



Robot arm outside dimension / movement range diagrams

Specifications ///

Robot		RV-3SB	RV-3SJB
Number of axes		6	5
Installation position		Floor mount, ceiling and wall hanging* possible	
Construction type		Vertical articulated robot	
Max./rated payload capacity (kg)		3.5 / 3	3.5 / 3
Position repeatability (mm)		±0.02	±0.02
Maximum composite speed (mm/s)		5,500	5,300
Controller		CR2B	CR2B
Operating range (degree)	waist (J1)	340	340
	shoulder (J2)	225	225
	elbow (J3)	191	237
	wrist twist (J4)	320	—
	wrist pitch (J5)	240	240
	wrist roll (J6)	720	720
Maximum speed (degree/s)	waist (J1)	250	250
	shoulder (J2)	187	187
	elbow (J3)	250	250
	wrist twist (J4)	412	—
	wrist pitch (J5)	412	412
	wrist roll (J6)	660	660
Tolerable moment (Nm)	wrist twist (J4)	5.83	—
	wrist pitch (J5)	5.84	5.84
	wrist roll (J6)	3.9	3.9
Tolerable inertia (kgm^2)	wrist twist (J4)	0.137	—
	wrist pitch (J5)	0.137	0.137
	wrist roll (J6)	0.047	0.047
Tool pneumatic pipes		ø6 x 2 (primary), ø4 x 8 (secondary as option)	
Pneumatic preassure supply (N/cm^2)		0.5 ±10 %	
Roboter weight (kg)		37	33
Protection		IP65 / class 10**	

Controller		CR2B
Control method		PTP and CP
Number of axes controlled		Up to 6 axes simultaneously
Processor (CPU)		64 Bit RISC + DSP
Control functions		Palletizing and multi-tasking, optimum acceleration/deceleration control, optimum override control, optimum path connection function, torque limit command, XYZ compliance control, collision detection function
Programming language		MELFA-Basic IV
Positioning teaching method		Teaching Box, MDI
Max. number of programs		88
Max. number of teaching points		2,500 per program
Max. number of program steps		5,000 per program
Number of inputs/outputs	general purpose	32 inputs/32 outputs (expandable up to 256 I/Os)
	dedicated	User defined
	for hand open/close	8 inputs/0 outputs (up to 8 hand output signals ca be optionally added)
Saftey functions		Emergency stop and door switch input
Interface/ extensions	RS-232C	1 (for a PC, etc.)
	RS-422	1 (for a teaching unit)
	slot for hand	1 (for a pneumatic hand interface)
	extension slot	3 (for extension options)
	memory	1 (for an optional memory cassette)
	I/O link	1 (for a parallel I/O unit)
Ambient conditions	temperature	0 – 40 °C
	humidity	45 – 85 % RH
Power supply		180 – 253 V AC; single phase
Power capacity		2.0 kVA
Dimensions (BxHxT in mm)		460 x 200 x 400
Weight		35 kg

* Wall hanging model with limited range in J1
** Special type

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