

Paese	Robot complessivi	Robot con 5 o più assi	% Percentuale
Stati Uniti	15.063	13.329	88,5
Germania	10.548	6.603	62,6
Italia	5.224	3.527	67,5
Francia	3.092	2.520	81,5
Spagna	2.112	1.957	92,7
Regno Unito	1.392	1.046	75,1
Svezia	622	512	82,3
Finlandia	435	342	78,6
Australia	383	312	81,6
Danimarca	253	188	74,3
Austria	350	183	52,4
Taiwan	747	107	14,3
Norvegia	57	49	86,0
Polonia	42	28	66,7
Subtotale	40.320	30.704	76,2
Giappone (tutti i tipi di robot)	35.609		
Corea, di cui produzione interna	2.426 1400	558	39,9
Altri Paesi	3.153		
Totale generale	81.508		

Tabella 4
Percentuale di robot industriali multiscopo con 5 o più assi rispetto al numero complessivo di robot multiscopo installati nel 1999. Fonti: Un/Ece e Ifr.

Nei prossimi 5-10 anni si svilupperà significativamente anche il settore dei servizi

Paese	1999
Giappone (tutti i tipi di robot)	280
Singapore	148
Corea	116
Germania	102
Svezia	69
Italia	67
Finlandia	51
Benelux	49
Stati Uniti	48
Francia	48
Svizzera	46
Austria	44
Spagna	41
Australia	25
Danimarca	24
Regno Unito	23
Norvegia	16

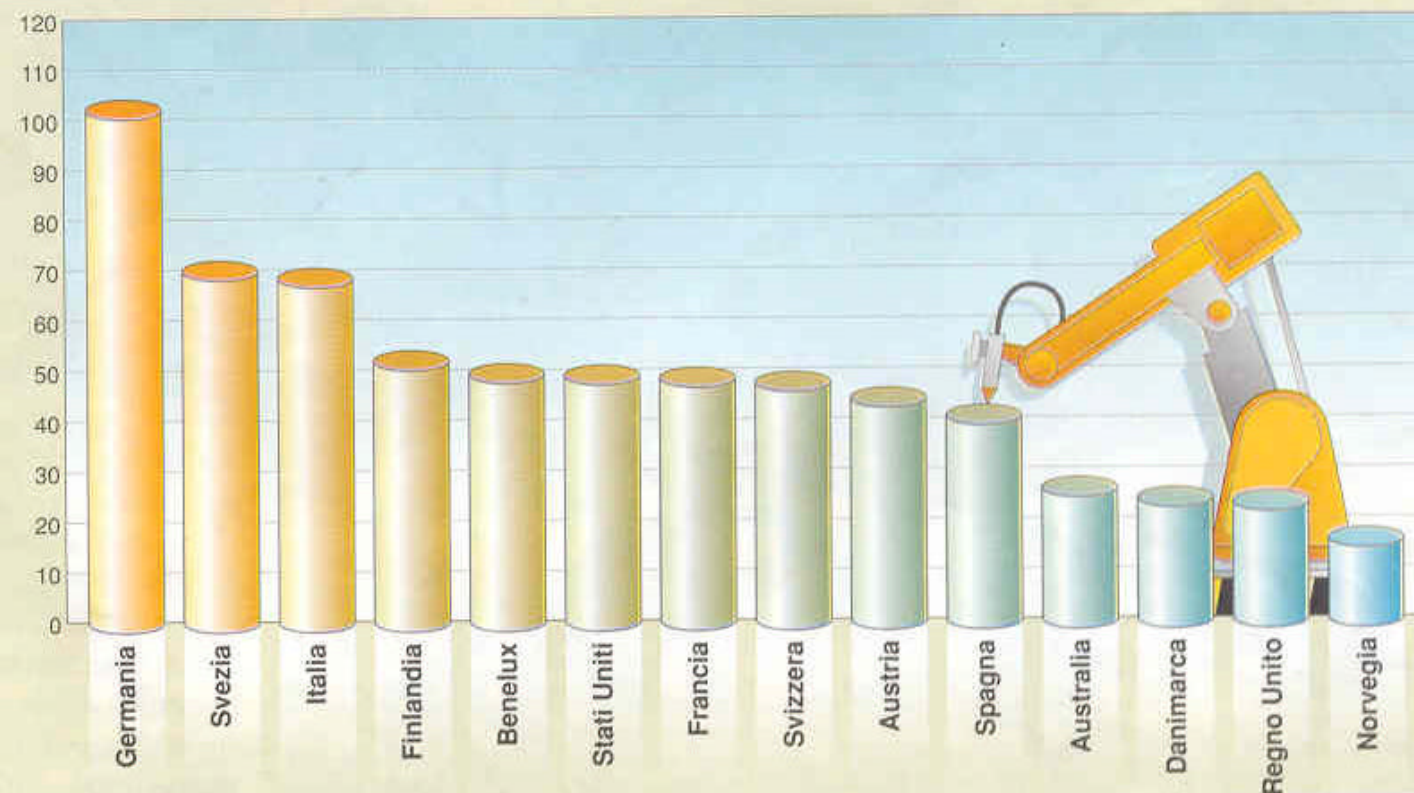


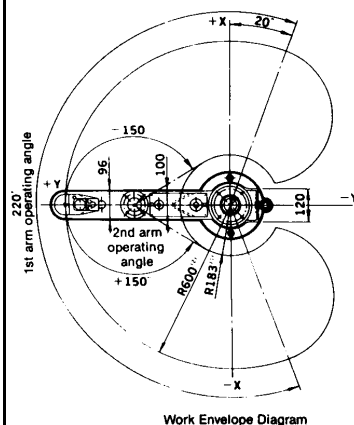
Tabella 5

Numero di robot in servizio per ogni 10.000 operati occupati nell'industria manifatturiera. Fonti: Un/Ece e Ifr.

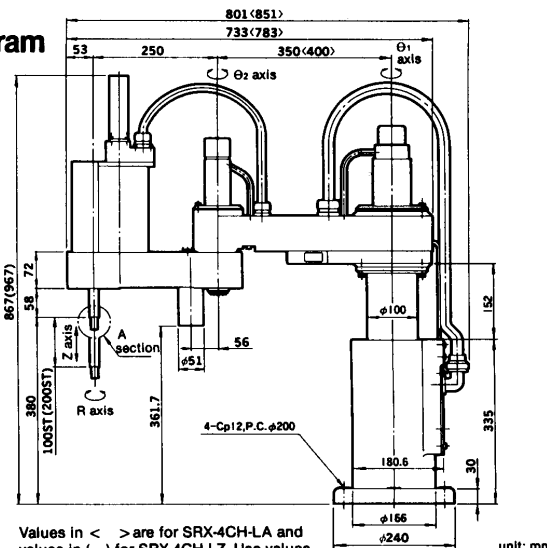
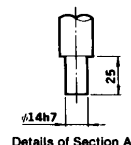
Milioni di \$, valuta corrente							
Paese	1994	1995	1996	1997	1998	1999	199/98 %
Giappone	1.826	2.487	2.251	2.242	2.166	2.366	9,2
Stati Uniti	688	898	934	1.100	1.028	1.210	17,7
Germania	398	577	741	557	597	539	-9,6
Corea	188	308	292	112	59	89	52,0
Italia	187	249	255	233	295	318	7,8
Regno Unito	67	54	85	109	73	86	17,7
Francia	99	116	111	98	99	183	84,7
Subtotale	3.453	4.690	4.669	4.450	4.317	4.792	11,0
Tutti gli altri Paesi	302	484	490	414	499	347	-30,5
Totale mondiale	3.755	5.173	5.159	4.864	4.816	5.139	6,7
Variazione %		37,8	-0,3	-5,7	-1,0	6,7	

Tabella 2
Valore dei robot industriali installati in alcuni Paesi, in milioni di dollari.
Fonti: Ece, Ifr e associazioni di robotica nazionali.

Work Envelope



Exterior Diagram



- (1) Use R222 for SRX-4CH-LA and SRX-4CH-LAZ.
(2) Use R650 for SRX-4CH-LA and SRX-4CH-LAZ.

Values in < > are for SRX-4CH-LA and values in () for SRX-4CH-LZ. Use values in < > and () for SRX-4CH-LAZ.

unit: mm

Main Specifications

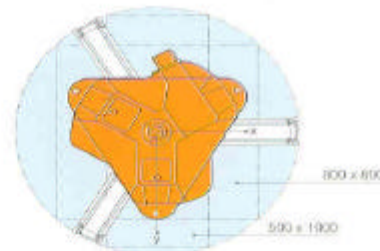
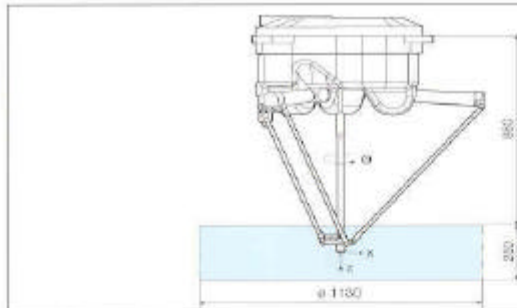
Variation		SRX-4CH < Standard >	SRX-4CH-LA < Long arm >	SRX-4CH-LZ < Long Z >	SRX-4CH-LAZ < Long arm Z >
Arm length	1st arm	350mm (13.78")	400mm (15.75")	350mm (13.78")	400mm (15.75")
	2nd arm	250mm (9.84")			
Work envelope	1st arm	220°			
	2nd arm	±150°			
	Z axis	100mm (3.94")		200mm (7.87")	
	R axis	±180°			
Payload (*1)		2 kg (4.4 lb) (high speed) < standard >, 3 kg (6.6 lb) (medium speed), 5 kg (11 lb) (low speed)			
Maximum speed	1st and 2nd arm combined	5.2m (204.72")/sec	4.8m (188.98")/sec	4.8m (188.98")/sec	4.0m (157.48")/sec
	Z axis	300mm/sec (11.81"/sec)			
	R axis	1080°/sec			
Cycle time (*2)		0.8 s range	0.9 s range	0.9 s range	1.0 s range
Positioning repeatability		X, Y, and Z axes: ±0.05 mm (±0.00197"); R axis: ±0.05°			
Main unit weight		60kg (132.3 lb)	65kg (143.3 lb)	70kg (157.2 lb)	

*1: The speed ratios are different for each variation.

*2: Standard mode (25 mm — 300 mm — 25 mm)

Controller Specifications (SRX-C32)

Drive	DC servo motor drive with software servo for all axes	External interface	RS232C (1ch)
Operation	PTP, CP, overlap motion (CP is optional.)	Communication function	RS422 (1 channel) centralized system control possible
Control axes	Simultaneous control of 2—4 axes	Program format	Programs written in LUNA robot language
Speed control	Speed setting: 100 steps from 1% to 100% (1%—100% override function)	Program device	IBM-PC/XT/AT or compatible computer (sold separately)
Interpolation functions	(Option) 3-dimensional linear interpolation and angular interpolation	Coordinate system setting	Coordinate system can be set at any position by the offset function.
CPU	16 bits (8086, 8087, 80186, 8 MHz)	Vision function	An optional vision board can be installed in the SRX-C32 for monitoring the part position, tilt, etc.
Peripheral equipment control	16 external inputs; 16 external outputs, built-in 24 VDC, 1.5 A (Amperes) power unit Can be expanded to 48 inputs and 48 outputs or more with PLC unit	P.L.C. function	Parallel control of overall robot system possible (option)
Data storage capacity	1600 points (16 type variable length partition possible)	External dimensions	430 (W) × 235 (H) × 455 (D) mm (16.93 × 9.25 × 17.92")
Teaching method	Teaching with a teaching pendant (sold separately) or off-line teaching.	Weight	29kg (63.9 lb)
		Power supply	AC100/120/200/208/220/240V ±10%, 50/60Hz, 1.5KVA



Technical data, IRB 340, FlexPicker

SPECIFICATIONS

	IRB 340	IRB 340r
Handling capacity	1 kg	1 kg
Number of axes	3	4
Integrated signal supply	12 poles 50 V, 250 mA	
Integrated air supply	Max 6 bar	
Memory/instructions		
Program memory	1.5 Mb	
Storage memory	0.5-5 Mb	
3.5" diskette drive	1,44 Mb	

PERFORMANCE

Positional repeatability	± 0.05 mm	
Absolute accuracy	± 0.5 mm	
Axis movements	IRB 340	IRB 340r
Working range: x, y, z	Cylinder Ø 1130 mm, H 250 mm (Rectangle to be defined within cylinder)	
Max. speed	Unlimited	
Axis Ø	10 m/s	
x, y, z	10 m/s	
Axis Ø	3600°/s	
Max. acceleration, 1 kg payload	100 m/s²	
x, y, z	100 m/s²	
Axis Ø	1200 rad/s²	
Max. torque	1 Nm	
Typical cycle time, 1 kg payload	0,4 s	

ELECTRICAL CONNECTIONS

Supply voltage	200-600 V, 50/60 Hz
Rated power, supply transformer	7,2 kVA
Power Consumption	
Average, typical cycle	1,5 kVA
With motors off	0,6 kVA
Electrical Safety	According to international standards

PHYSICAL

Dimensions	Robot incl. upper arms	960 x 1050
	Controller cabinet	H 960, W 800, D 640
Weight	Robot	130 kg
	Controller cabinet	240 kg

ENVIRONMENT

Ambient temperature	Robot	+5° C to +52° C
	Controller cabinet	+5° C to +52° C
Relative Humidity		Max. 95 %
Degree of protection	Robot	IP 65
	Controller cabinet	IP 54
Noise level		<70 dB(A)

Safety

Double circuits with supervision, emergency stops and safety functions, 3-position enabling device EMC/EMI shielded

Emission

USER INTERFACES

PickMaster	Robot configuration and programming through PickMaster
Operator's panel	In controller cabinet or external
Programming Unit	Portable with joystick and keypad
	Display: 16 lines x 40 characters
	Windows style communication
	Configurable Hot-Edit functions
	10 national languages on Teach Pendant
	3-position enabling device
	Emergency stop
	Circuit stop and Function stop

Languages:
Safety

MACHINE INTERFACES

Digital inputs/outputs	Up to 512, 24 V DC, 120 V AC
Analogue inputs/outputs	Up to 120, ± 10 V and ± 20 mA
Fieldbus	CAN, Allen Bradley PLC, Interbus-S, Profibus
Serial Channels	RS 232, RS 422
Network	Ethernet
Computer link	Robot Application Protocol, based on MMS
Process interfaces	Media to tool plate and signals to robot base

BASEWARE

BaseWare OS	Robot Operating System, Highly configurable
Option program	Advanced Functions, Advanced Motion, Communication etc.
RAPID	Powerful robot application programming language
QuickMove	Constant, high speed at complex paths
TrueMove	High accuracy of path, speed independent of path

PROCESSWARE

PickMaster	Built-in picking process know-how
PickWare	PickMaster interface

DESKWARE

ProgramMaker	Off-line program editing in Windows
ContgEdit	Easy configuration of robots
On-Line Documentation	All User documentation in Windows

FACTORYWARE

RobView	Robot status, control and file transfer on a PC
DDE-Server	Robot DDE communication for InTouch etc.
RobComm	Communication toolkit for VB, VC++ etc.
ScreenMaker	User defined programming unit displays

VISION SYSTEM

Cognex Vision	Software OMI, PatMax
	Hardware PCI 8100, PCI 8110

(Data and dimensions may be changed without notice.)

ABB