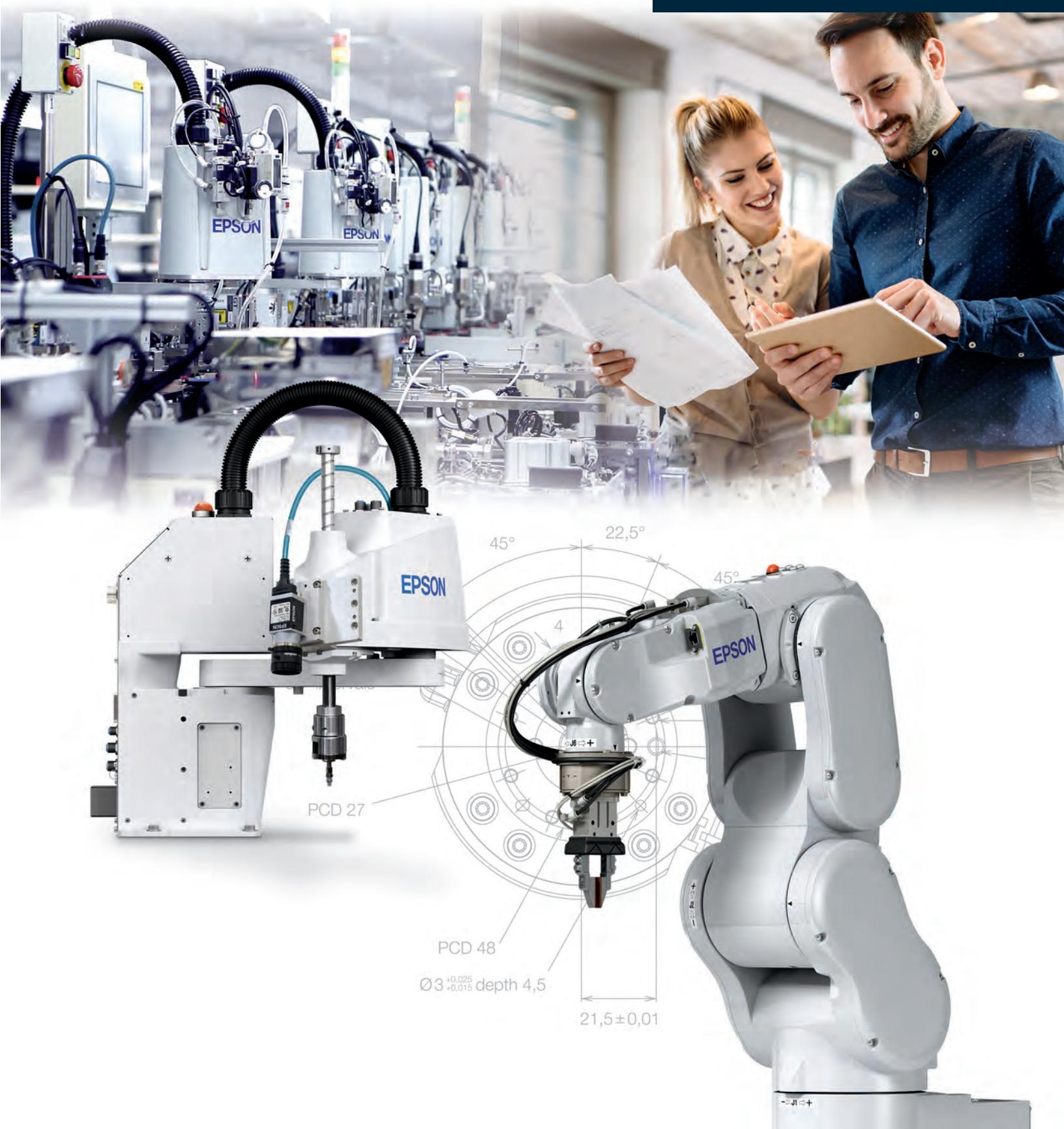




ROBOT SPECIFICATIONS 2020 CATALOG



Why Epson Robots?

As precision automation specialists, the Epson® Robots team has been building automation products for nearly four decades. An industry leader in small-parts-assembly applications, we've introduced many firsts. As a result, our innovative products are hard at work in thousands of manufacturing facilities throughout the world.

1 Leading Epson technology

- Epson is the #1 SCARA robot manufacturer in the world
- We introduced the world's first folding-arm 6-Axis robot
- Specialized integrated motion sensors help reduce vibration and increase performance

2 What you need, when you need it

- The Epson lineup features 6-Axis and SCARA robots with payloads up to 20 kg and a reach ranging from 175 to 1,480 mm
- We offer a wide range of fully integrated options including vision guidance, conveyor tracking, flexible parts feeding, force guidance and more

3 Intuitive programming software

- Epson RC+® software is extremely user-friendly, making automation setup fast and easy
- It includes time-saving features such as wizards, templates, smart tools and more

4 Reliability you can count on

- Dedicated to helping you find the best solution for your automation needs
- Epson robots are long-lasting and require little maintenance
- Over 100,000 robots sold worldwide

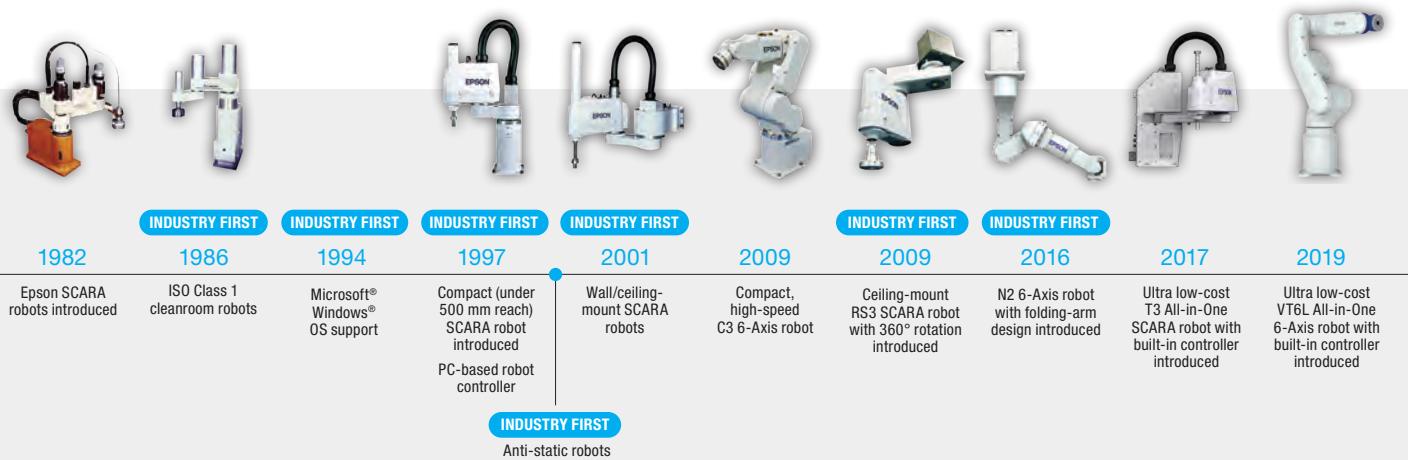


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VISIT www.epsonrobots.com





Meet Epson's Lineup of Award-winning SCARA and 6-Axis Robots

T-Series

Automate your factory without wasting time or money on complex slide-based solutions. These innovative All-in-One robots are available at an ultra low cost and offer fast, easy integration, taking less time to install than most automation solutions. With reach distances of 400 and 600 mm, they can handle payloads of 3 kg and 6 kg.

RS-Series

These zero-footprint robots are some of the most unique and flexible SCARA robots available in the market today. With reach distances of 350 and 550 mm, and payloads of 3 kg and 4 kg, they offer cycle times starting at 0.34 sec.

LSB-Series

The perfect solution for factories looking for maximum value without sacrificing performance, the LSB-Series offers fast, compact performers at a low cost. With reach distances ranging from 400 to 1,000 mm, and payloads from 3 kg to 20 kg, they feature cycle times starting at 0.38 sec.

G-Series

With more than 300 models available, high-performance G-Series robots are ideal for applications where fast cycle times and high precision are required. The Epson lineup offers reach distances ranging from 175 to 1,000 mm, and payloads from 1 kg to 20 kg, plus cycle times starting at 0.29 sec.

VT-Series

Offering next-level technology at an incredible price, VT-Series All-in-One 6-Axis robots ensure easy setup with a built-in controller. With a reach of 900 mm and payloads up to 6 kg, these robots are ideal for simple applications such as machine load/unload, packaging, assembly and more.

C4-Series

C4 robots offer excellent performance for the most demanding and complex tasks. Compact, yet powerful, they deliver high repeatability and fast cycle times with reach distances ranging from 600 to 900 mm and payloads up to 4 kg.

N-Series

Setting a new standard for 6-Axis robots, the N-Series includes a revolutionary folding-arm design for maximum motion efficiency. N-Series robots offer reach distances of 450 to 1,000 mm and payloads of 2.5 and 6 kg.

C8 / C12 -Series

C8 and C12 robots are ideal for demanding applications requiring 6-Axis dexterity. With both long reach and heavy payloads, they provide remarkable flexibility. In fact, these compact robots offer reach distances ranging from 700 to 1,400 mm and payloads up to 12 kg.

Industry Solutions

Epson Robots is a leading supplier to a wide variety of manufacturing industries including automotive, medical, electronics, consumer products, industrial and many more. Our customers range from large Fortune 100 companies to small manufacturing facilities.

- ⦿ **Automotive:** Brakes, clutch components, ignition systems, instrument panels, headlights, mirrors, locks, sensors and more
- ⦿ **Medical:** Contact lenses, glasses, dental instruments, dental implants, hearing aids, pacemakers, blood test systems and much more
- ⦿ **Electronics:** Chip handling and placement, encoder assembly, board and laser diode testing, wire bonding and more
- ⦿ **Consumer products:** Smartphones, tablets, speakers, jewelry, watches, cosmetics, printers and more



Global High-quality Support, When and Where It's Needed



At Epson, our reputation is built on the high quality of our products and services, and maintaining that quality is a worldwide priority. Our support network for robotic products includes nine regional centers, and we stand ready to meet the needs of customers in virtually every major market.

Applications

Epson robots are extremely versatile and provide a wide range of automation possibilities:

- ⦿ Assembly
- ⦿ Pick and place
- ⦿ Material handling
- ⦿ Packaging
- ⦿ Kitting/Tray loading
- ⦿ Machine tending
- ⦿ Screw driving
- ⦿ Dispensing
- ⦿ Palletizing
- ⦿ Lab automation
- ⦿ Inspection and testing
- ⦿ Finishing
- ⦿ Grinding

Why Epson SCARA Robots?



Epson's lineup of over 300 models gives users the power to choose the right robot for their application. It's just part of what makes us the #1 SCARA robot manufacturer in the world.

Hundreds of models available

- Sizes ranging from 175 to 1,000 mm in reach
- Payloads up to 20 kg
- Tabletop, wall and ceiling-mount options

Fast speeds

- Extraordinary cycle times to maximize parts per hour

Extreme precision

- Repeatability down to 5 microns

SCARA



T-Series All-in-One

T-Series All-in-One SCARA robots are the perfect alternative to complex slide-based solutions. These space-saving robots install in minutes. And, they include the same intuitive software and powerful features found in Epson's high-end robots.



LSB-Series

LSB-Series SCARA robots offer the high performance and great reliability that users have come to expect from Epson, but at a lower cost. LSB-Series SCARAs were created for factories looking for maximum value without giving up performance.



RS-Series

RS-Series robots are some of the most unique and flexible SCARA robots available in the market today. With the ability to cross back under, as well as reach behind themselves, RS-Series robots are able to utilize the entire workspace underneath the arm. As a result, there is no lost space in the center of the work envelope.



Epson is the #1 SCARA robot manufacturer in the world



G-Series

G-Series SCARA robots feature a high-rigidity arm design that delivers high speed, high precision and low vibration. G-Series SCARA robots offer a wide variety of sizes from 175 to 1,000 mm in reach, with up to 20 kg payloads.



T-Series All-in-One

The ultimate slide alternative

Epson T-Series All-in-One SCARA robots make automating your factory fast, easy and affordable. With features such as a built-in controller and an encoder with no battery required, they offer easy integration and take less time to install than most automation solutions.

T-SERIES SCARA ROBOTS

ALL
IN
ONE
BUILT-IN CONTROLLER



T3

All-in-One design,
full featured at an
ultra low cost



T6

Higher payload,
longer reach at an
ultra low cost



T-SERIES ALL-IN-ONE SPECIFICATIONS

| | T3 | T6 |
|----------------------------------|----------------|-----------|
| Arm length | Joints #1 – #2 | 400 mm |
| Repeatability | Joints #1 – #2 | ±0.020 mm |
| Payload | Rated | 1 kg |
| | Maximum | 3 kg |
| Standard cycle time ¹ | 0.54 sec | 0.49 sec |
| Installation environment | | Standard |
| Available controllers | | Built-in |

1 Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical).

T3

The ultimate slide alternative

- Arm length of 400 mm
- Easy to install
- Built-in controller
- Comes standard with 110 V and 220 V power
- No battery required for encoder



● SPECIFICATIONS

| | | T3-401 |
|---|---|-------------------------|
| Mounting type | | Tabletop |
| Arm length | Arm #1, #2 | 400 mm |
| Weight (cables not included) | | 16 kg |
| Repeatability | Joints #1, #2 | ±0.020 mm |
| | Joint #3 | ±0.020 mm |
| | Joint #4 | ±0.020 deg |
| Max. motion range | Joint #1 | ±132 deg |
| | Joint #2 | ±141 deg |
| | Joint #3 | 150 mm |
| | Joint #4 | ±360 deg |
| Payload | Rated | 1 kg |
| | Maximum | 3 kg |
| Standard cycle time ¹ | | 0.54 sec |
| Joint #4 allowable moment of inertia ² | Rated | 0.003 kg•m ² |
| | Maximum | 0.010 kg•m ² |
| Joint #3 downward force | | 83 N |
| Electric lines | Hand I/O: IN6/OUT4 (D-Sub 15-Pin) / User I/O: IN18/OUT12 | |
| Pneumatic lines | Φ6 mm × 2, Φ4 mm × 1 | |
| Installation environment | Standard | |
| Available controllers | Built-in | |
| Safety standards | CE Mark: EMC Directive, Machinery Directive, RoHS Directive ANSI/RIA R15.06-2012 NFPA 79 (2007 Edition) | |

T6

Longer reach, higher payload,
the ultimate slide alternative

- Arm length of 600 mm
- Easy to install
- Built-in controller
- Comes standard with 110 V and 220 V power
- No battery required for encoder



● SPECIFICATIONS

| | | T6-602 |
|---|---|-------------------------|
| Mounting type | | Tabletop |
| Arm length | Arm #1, #2 | 600 mm |
| Weight (cables not included) | | 22 kg |
| Repeatability | Joints #1, #2 | ±0.040 mm |
| | Joint #3 | ±0.020 mm |
| | Joint #4 | ±0.020 deg |
| Max. motion range | Joint #1 | ±132 deg |
| | Joint #2 | ±150 deg |
| | Joint #3 | 200 mm |
| | Joint #4 | ±360 deg |
| Payload | Rated | 2 kg |
| | Maximum | 6 kg |
| Standard cycle time ¹ | | 0.49 sec |
| Joint #4 allowable moment of inertia ² | Rated | 0.010 kg•m ² |
| | Maximum | 0.080 kg•m ² |
| Joint #3 downward force | | 83 N |
| Electric lines | Hand I/O: IN6/OUT4 (D-Sub 15-Pin) / User I/O: IN18/OUT12 | |
| Pneumatic lines | Φ6 mm × 2, Φ4 mm × 1 | |
| Installation environment | Standard | |
| Available controllers | Built-in | |
| Safety standards | CE Mark: EMC Directive, Machinery Directive, RoHS Directive ANSI/RIA R15.06-2012 NFPA 79 (2007 Edition) | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 1 kg payload (path coordinates optimized for maximum speed).² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 2 kg payload (path coordinates optimized for maximum speed).² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.



LSB-Series

These fast, compact, low-cost solutions are ideal for factories looking for maximum value, without sacrificing performance. With payloads ranging from 3 kg to 20 kg and cycle times starting at 0.38 seconds, LSB-Series SCARA robots offer a variety of opportunities for manufacturers searching for a reduced-cost, high performance automation solution with great reliability.

LSB-SERIES SCARA ROBOTS



LS3-B

Fast, compact
and low cost



LS6-B

Great performance
at an affordable
price



LS10-B

Powerful
performance and
a large payload at
an affordable value



LS20-B

Remarkable value with long
reach, high performance
and heavy payload

LSB-SERIES SPECIFICATIONS

| | | LS3-B | LS6-B | LS10-B | LS20-B |
|----------------------------------|----------------|------------------------------|------------------------|-----------------------------|-----------------|
| Arm length | | 400 mm | 500 / 600 / 700 mm | 600 / 700 / 800 mm | 800 / 1,000 mm |
| Repeatability | Joints #1 – #2 | ±0.010 mm | ±0.020 mm | ±0.020 / ±0.020 / ±0.025 mm | ±0.025 mm |
| Payload | Rated | 1 kg | 2 kg | 5 kg | 10 kg |
| | Maximum | 3 kg | 6 kg | 10 kg | 20 kg |
| Standard cycle time ¹ | | 0.42 sec | 0.38 / 0.39 / 0.42 sec | 0.39 / 0.41 / 0.44 sec | 0.39 / 0.43 sec |
| Installation environments | | Standard / Cleanroom (ISO 4) | | | |
| Available controllers | | RC90-B | | | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical).

LS3-B

Fast, compact and low cost

- Arm length of 400 mm
- Small footprint
- Built-in camera cable
- ISO 4 Cleanroom models available



LS6-B

Low cost and high performance

- Arm lengths of 500, 600 and 700 mm
- Built-in camera cable
- Fast cycle throughput
- ISO 4 Cleanroom models available



● SPECIFICATIONS

| | | LS3-B401 |
|---|----------------|---|
| Mounting type | | Tabletop |
| Arm length | Arm #1, #2 | 400 mm |
| Weight (cables not included) | | 14 kg |
| Repeatability | Joints #1, #2 | ±0.010 mm |
| | Joint #3 | ±0.010 mm |
| | Joint #4 | ±0.010 deg |
| Max. motion range | Joint #1 | ±132 deg |
| | Joint #2 | ±141 deg |
| | Joint #3 Std | 150 mm |
| | Joint #3 Clean | 120 mm |
| | Joint #4 | ±360 deg |
| Payload | Rated | 1 kg |
| | Maximum | 3 kg |
| Standard cycle time ¹ | | 0.42 sec |
| Joint #4 allowable moment of inertia ² | Rated | 0.005 kg•m ² |
| | Maximum | 0.050 kg•m ² |
| Joint #3 downward force | | 100 N |
| Electric lines | | 15 (15-Pin: D-Sub), 8 (8-Pin: RJ45) Cat5e |
| Pneumatic lines | | Φ4 mm × 1, Φ6 mm × 2 |
| Installation environments | | Standard / Cleanroom (ISO 4) |
| Available controllers | | RC90-B |
| Safety standards | | CE Mark: EMC Directive, Machinery Directive, RoHS Directive ANSI/RIA R15.06-2012 NFPA 79 (2007 Edition) |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 1 kg payload (path coordinates optimized for maximum speed).
² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.

● SPECIFICATIONS

| | | LS6-B50X | LS6-B60X | LS6-B70X |
|---|----------------|----------|---|----------|
| Mounting type | | | Tabletop | |
| Arm length | Arm #1, #2 | 500 mm | 600 mm | 700 mm |
| Weight (cables not included) | | 17 kg | 17 kg | 18 kg |
| Repeatability | Joints #1, #2 | | ±0.020 mm | |
| | Joint #3 | | ±0.010 mm | |
| | Joint #4 | | ±0.010 deg | |
| Max. motion range | Joint #1 | | ±132 deg | |
| | Joint #2 | | ±150 deg | |
| | Joint #3 Std | | 200 mm | |
| | Joint #3 Clean | | (170 mm) | |
| | Joint #4 | | ±360 deg | |
| Payload | Rated | | 2 kg | |
| | Maximum | | 6 kg | |
| Standard cycle time ¹ | | 0.38 sec | 0.39 sec | 0.42 sec |
| Joint #4 allowable moment of inertia ² | Rated | | 0.010 kg•m ² | |
| | Maximum | | 0.120 kg•m ² | |
| Joint #3 downward force | | | 100 N | |
| Electric lines | | | 15 (15-Pin: D-Sub), 8 (8-Pin: RJ45) Cat5e | |
| Pneumatic lines | | | Φ4 mm × 1, Φ6 mm × 2 | |
| Installation environment | | | Standard / Cleanroom (ISO 4) | |
| Available controllers | | | RC90-B | |
| Safety standards | | | CE Mark: EMC Directive, Machinery Directive, RoHS Directive ANSI/RIA R15.06-2012 NFPA 79 (2007 Edition) | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 2 kg payload (path coordinates optimized for maximum speed).
² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.

LS10-B

Powerful, fast and affordable

- Arm lengths of 600, 700 and 800 mm
- Built-in camera cable
- No battery required for encoder
- ISO 4 Cleanroom models available



LS20-B

Long reach, heavy payload – all at a great value

- Arm lengths of 800 and 1,000 mm
- Fast cycle times
- Built-in camera cable
- ISO 4 Cleanroom models available



● SPECIFICATIONS

| | LS10-B60X | LS10-B70X | LS10-B80X |
|---|-----------|---|-----------|
| Mounting type | | | |
| Arm length | 600 mm | 700 mm | 800 mm |
| Weight (cables not included) | 22 kg | 22 kg | 23 kg |
| Repeatability | | | |
| Joints #1, #2 | ±0.020 mm | ±0.020 mm | ±0.025 mm |
| Joint #3 | | ±0.010 mm | |
| Joint #4 | | ±0.010 deg | |
| Max. motion range | | | |
| Joint #1 | | ±132 deg | |
| Joint #2 | | ±150 deg | |
| Joint #3 Std | | 200 mm or 300 mm | |
| Joint #3 Clean | | 170 mm or 270 mm | |
| Joint #4 | | ±360 deg | |
| Payload | | | |
| Rated | | 5 kg | |
| Maximum | | 10 kg | |
| Standard cycle time ¹ | 0.39 sec | 0.41 sec | 0.44 sec |
| Joint #4 allowable moment of inertia² | | | |
| Rated | | 0.020 kg•m ² | |
| Maximum | | 0.300 kg•m ² | |
| Joint #3 downward force | | | |
| | | 200 N | |
| Electric lines | | | |
| | | 15 (15-Pin: D-Sub), 8 (8-Pin: RJ45) Cat5e | |
| Pneumatic lines | | | |
| | | Φ4 mm × 1, Φ6 mm × 2 | |
| Installation environments | | | |
| | | Standard / Cleanroom (ISO 4) | |
| Available controllers | | | |
| | | RC90-B | |
| Safety standards | | | |
| | | CE Mark: EMC Directive, Machinery Directive, RoHS Directive ANSI/RIA R15.06-2012 NFPA 79 (2007 Edition) | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 2 kg payload (path coordinates optimized for maximum speed).

² If the center of gravity is at the center of each arm. If the center of gravity is not at the center of each arm, set the eccentric quantity using the INERTIA command.

● SPECIFICATIONS

| | LS20-B80X | LS20-BA0X |
|---|-----------|---|
| Mounting type | | |
| Arm length | 800 mm | 1,000 mm |
| Weight (cables not included) | 48 kg | 51 kg |
| Repeatability | | |
| Joints #1, #2 | | ±0.025 mm |
| Joint #3 | | ±0.010 mm |
| Joint #4 | | ±0.010 deg |
| Max. motion range | | |
| Joint #1 | | ±132 deg |
| Joint #2 | | ±152 deg |
| Joint #3 Std | | 420 mm |
| Joint #3 Clean | | 390 mm |
| Joint #4 | | ±360 deg |
| Payload | | |
| Rated | | 10 kg |
| Maximum | | 20 kg |
| Standard cycle time ¹ | 0.39 sec | 0.43 sec |
| Joint #4 allowable moment of inertia² | | |
| Rated | | 0.050 kg•m ² |
| Maximum | | 1.000 kg•m ² |
| Joint #3 downward force | | |
| | | 250 N |
| Electric lines | | |
| | | 15 (15-Pin: D-Sub), 9 (9-Pin: D-Sub), 8 (8-Pin: RJ45) Cat5e |
| Pneumatic lines | | |
| | | Φ4 mm × 1, Φ6 mm × 2 |
| Installation environments | | |
| | | Standard / Cleanroom (ISO 4) |
| Available controllers | | |
| | | RC90-B |
| Safety standards | | |
| | | CE Mark: EMC Directive, Machinery Directive, RoHS Directive ANSI/RIA R15.06-2012 NFPA 79 (2007 Edition) |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 2 kg payload (path coordinates optimized for maximum speed).

² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.

RS-SERIES

SCARA ROBOTS



RS-Series

RS-Series SCARA robots are unique and highly flexible. Offering payloads of 3 kg or 4 kg and cycle times starting at 0.34 seconds, they have the ability to cross under, as well as reach behind themselves. RS-Series robots are able to utilize the entire workspace underneath the arm. As a result, there is no lost space in the center of the work envelope.



RS3

Compact SCARA
robot with unique
workspace design

RS4

High performance,
innovative workspace
design with longer
reach capabilities



RS-SERIES SPECIFICATIONS

| | RS3 | RS4 |
|----------------------------------|--------------------------------------|-----------|
| Arm length | 350 mm | 550 mm |
| Repeatability | Joints #1 – #2 ±0.010 mm | ±0.015 mm |
| Payload | Rated 1 kg | 1 kg |
| | Maximum 3 kg | 4 kg |
| Standard cycle time ¹ | 0.34 sec | 0.39 sec |
| Installation environment | Standard / Cleanroom (ISO 3) and ESD | |
| Available controllers | RC700A | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical).

RS3

Compact with unique workspace design

- Arm length of 350 mm
- Payloads up to 3 kg
- Maximum motion efficiency
- ISO 3 Cleanroom models available



RS4

High performance, innovative workspace design

- Arm length of 550 mm
- Payloads up to 4 kg
- Superior cycle times
- ISO 3 Cleanroom models available



● SPECIFICATIONS

| | | RS3-351 |
|---|---|--------------------------------------|
| Mounting type | | Ceiling |
| Arm length | Arm #1, #2 | 350 mm |
| Weight (cables not included) | | 17 kg |
| Repeatability | Joints #1, #2 | ±0.010 mm |
| | Joint #3 | ±0.010 mm |
| | Joint #4 | ±0.010 deg |
| Max. motion range | Joint #1 | ±225 deg |
| | Joint #2 | ±225 deg |
| | Joint #3 Std | 130 mm |
| | Joint #3 Clean | 100 mm |
| | Joint #4 | ±720 deg |
| Payload | Rated | 1 kg |
| | Maximum | 3 kg |
| Standard cycle time ¹ | | 0.34 sec |
| Joint #4 allowable moment of inertia ² | Rated | 0.005 kg•m ² |
| | Maximum | 0.050 kg•m ² |
| Joint #3 downward force | | 150 N |
| Electric lines | | 15-Pin (D-Sub) |
| Pneumatic lines | | Φ4 mm × 1, Φ6 mm × 2 |
| Installation environment | | Standard / Cleanroom (ISO 3) and ESD |
| Available controllers | | RC700A |
| Safety standards | CE Mark: EMC Directive, Machinery Directive, RoHS Directive UL1740 ANSI/RIA R15.06 NFPA 79 | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 1 kg payload (path coordinates optimized for maximum speed).

² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.

● SPECIFICATIONS

| | | RS4-551 |
|---|---|--------------------------------------|
| Mounting type | | Ceiling |
| Arm length | Arm #1, #2 | 550 mm |
| Weight (cables not included) | | 19 kg |
| Repeatability | Joints #1, #2 | ±0.015 mm |
| | Joint #3 | ±0.010 mm |
| | Joint #4 | ±0.010 deg |
| Max. motion range | Joint #1 | ±225 deg |
| | Joint #2 | ±225 deg |
| | Joint #3 Std | 130 mm |
| | Joint #3 Clean | 100 mm |
| | Joint #4 | ±720 deg |
| Payload | Rated | 1 kg |
| | Maximum | 4 kg |
| Standard cycle time ¹ | | 0.39 sec |
| Joint #4 allowable moment of inertia ² | Rated | 0.005 kg•m ² |
| | Maximum | 0.050 kg•m ² |
| Joint #3 downward force | | 150 N |
| Electric lines | | 15-Pin (D-Sub) |
| Pneumatic lines | | Φ4 mm × 1, Φ6 mm × 2 |
| Installation environments | | Standard / Cleanroom (ISO 3) and ESD |
| Available controllers | | RC700A |
| Safety standards | CE Mark: EMC Directive, Machinery Directive, RoHS Directive UL1740 ANSI/RIA R15.06 NFPA 79 | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 1 kg payload (path coordinates optimized for maximum speed).

² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.



G-Series

With a vast product lineup including reach options from 175 to 1,000 mm, G-Series robots are rich in features and performance. With payloads ranging from 1 kg to 20 kg and cycle times down to 0.29 seconds, G-Series robots offer the speed and overall performance for even the most difficult tasks. Featuring a unique high-rigidity arm design, which reduces vibration, these robots deliver fast speeds and high precision with no overshoot or ringing.

G-SERIES SCARA ROBOTS



G1

High performance,
high precision
mini SCARA robot

G3

Compact, fast
and powerful with
straight or unique
curved arms



G6

Ultra fast speeds
with extraordinary
motion range



G10

Provides high
speed at
heavy payloads



G20

Long reach and
high payloads with
strong J4 inertia

G-SERIES SPECIFICATIONS

| | | G1 | G3 | G6 | G10 | G20 |
|----------------------------------|----------------|---|------------------------|---|-----------------|-----------------|
| Arm length | | 175 / 225 mm | 250 / 300 / 350 mm | 450 / 550 / 650 mm | 650 / 850 mm | 850 / 1,000 mm |
| Repeatability | Joints #1 – #2 | ±0.005/ ±0.008 mm | ±0.008/ ±0.010 mm | ±0.015 mm | ±0.025 mm | ±0.025 mm |
| Payload | Rated | 0.5 kg | 1 kg | 3 kg | 5 kg | 10 kg |
| | Maximum | 1 kg | 3 kg | 6 kg | 10 kg | 20 kg |
| Standard cycle time ¹ | | 0.29 / 0.30 sec | 0.36 / 0.37 / 0.37 sec | 0.33 / 0.36 / 0.38 sec | 0.34 / 0.37 sec | 0.37 / 0.42 sec |
| Installation environment | | Standard / Cleanroom (ISO 3) and ESD | | Standard / Cleanroom (ISO 3) and ESD / Protected (IP54 and IP65) | | |
| Available controllers | | | | RC700A | | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical; G1: 100 mm horizontal, 25 mm vertical).

G1

Powerful mini SCARA

- High precision repeatabilities down to 0.005 mm
- Arm lengths of 175 and 225 mm
- Ultra compact, yet extremely powerful
- ISO 3 Cleanroom models available
- 3-axis models available



G3

Compact and ultra powerful

- Arm lengths of 250, 300 and 350 mm
- Handles payloads up to 3 kg
- Fast cycle times for increased productivity
- Available with straight or curved arm
- ISO 3 Cleanroom models available



● SPECIFICATIONS

| | | G1-171 | G1-221 | G1-171xZ | G1-221xZ |
|---|----------------|---|-----------|-----------|-----------|
| Number of axes | | 4-Axis | | 3-Axis | |
| Mounting type | | Tabletop | | Tabletop | |
| Arm length | Arm #1, #2 | 175 mm | 225 mm | 175 mm | 225 mm |
| Weight (cables not included) | | 8 kg | | 8 kg | |
| Repeatability | Joints #1, #2 | ±0.005 mm | ±0.008 mm | ±0.005 mm | ±0.008 mm |
| | Joint #3 | ±0.010 mm | | ±0.010 mm | |
| | Joint #4 | ±0.010 deg | | – | |
| | Joint #1 | ±125 deg | | ±125 deg | |
| Max. motion range | Joint #2 Std | ±140 deg | ±152 deg | ±135 deg | ±135 deg |
| | Joint #2 Clean | ±140 deg | ±149 deg | ±123 deg | ±132 deg |
| | Joint #3 Std | 100 mm | | 100 mm | |
| | Joint #3 Clean | 80 mm | | 80 mm | |
| | Joint #4 | ±360 deg | | – | |
| Payload | Rated | 0.5 kg | | 0.5 kg | |
| | Maximum | 1 kg | | 1.5 kg | |
| Standard cycle time ¹ | | 0.29 sec | 0.30 sec | 0.29 sec | 0.30 sec |
| Joint #4 allowable moment of inertia ² | Rated | 0.0003 kg•m ² | | – | |
| | Maximum | 0.0040 kg•m ² | | – | |
| Joint #3 downward force | | 50 N | | | |
| Electric lines | | 24 (9-Pin D-Sub, 15-Pin D-Sub) | | | |
| Pneumatic lines | | Ø4 mm × 1, Ø6 mm × 2 | | | |
| Installation environments | | Standard / Cleanroom (ISO 3) and ESD | | | |
| Available controllers | | RC700A | | | |
| Safety standards | | CE Mark: EMC Directive, Machinery Directive, RoHS Directive UL1740 ANSI/RIA R15.06 NFPA 79 | | | |

¹ Cycle time based on round-trip arch motion (100 mm horizontal, 25 mm vertical) with 0.5 kg payload (path coordinates optimized for maximum speed).

² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.

● SPECIFICATIONS

| | | G3-251 | G3-301 | G3-351 |
|---|---------------------------|-----------|--------------|---|
| Mounting type | | Tabletop | Tabletop | Multiple |
| Arm length | Arm #1, #2 | 250 mm | 300 mm | 350 mm |
| Weight (cables not included) | | | | 14 kg |
| Repeatability | Joints #1, #2 | ±0.008 mm | ±0.010 mm | |
| | Joint #3 | | ±0.010 mm | |
| | Joint #4 | | ±0.005 deg | |
| Max. motion range | Joint #1 | ±140 deg | ±140 deg | ±115 deg |
| | Joint #2 Std | ±141 deg | ±142 deg | ±135 deg |
| | Joint #2 Clean | ±137 deg | ±141 deg | ±135 deg |
| | Joint #1 Right hand | – | -125~150 deg | -110~165 deg |
| | Joint #1 Left hand | – | -150~125 deg | -165~110 deg |
| | Joint #2 Right hand Std | – | -135~150 deg | -120~165 deg |
| | Joint #2 Right hand Clean | – | -135~145 deg | -120~160 deg |
| | Joint #2 Left hand Std | – | -150~135 deg | -165~120 deg |
| | Joint #2 Left hand Clean | – | -145~135 deg | -160~120 deg |
| All models | Joint #3 Std | | | 150 mm |
| | Joint #3 Clean | | | 120 mm |
| | Joint #4 | | | ±360 deg |
| Payload | Rated | | | 1 kg |
| | Maximum | | | 3 kg |
| Standard cycle time ¹ | | 0.36 sec | 0.37 sec | |
| Joint #4 allowable moment of inertia ² | Rated | | | 0.005 kg•m ² |
| | Maximum | | | 0.050 kg•m ² |
| Joint #3 downward force | | | | 150 N |
| Electric lines | | | | 15-Pin (D-Sub) |
| Pneumatic lines | | | | Ø4 mm × 1, Ø6 mm × 2 |
| Installation environments | | | | Standard / Cleanroom (ISO 3) and ESD |
| Available controllers | | | | RC700A |
| Safety standards | | | | CE Mark: EMC Directive, Machinery Directive, RoHS Directive ANSI/RIA R15.06 UL1740 NFPA 79 |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 1 kg payload (path coordinates optimized for maximum speed).

² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.

G6

Compact, fast and powerful

- Arm lengths of 450, 550 and 650 mm
- High rigidity arm = ultra high speed
- Tabletop, wall- and ceiling-mount models available
- ISO 3 Cleanroom and IP65 Protected models available



● SPECIFICATIONS

| | G6-45x | | | G6-55x | | | G6-65x | | | | | | | | | | |
|---|---|---|----------|----------|----------|------------|----------|----------|------|--|--|--|--|--|--|--|--|
| Mounting type | Tabletop | Ceiling | Wall | Tabletop | Ceiling | Wall | Tabletop | Ceiling | Wall | | | | | | | | |
| Arm length | Arm #1, #2 | 450 mm | | 550 mm | | 650 mm | | | | | | | | | | | |
| Weight (cables not included) | | 27 kg | 29 kg | 27 kg | 29 kg | 28 kg | 28 kg | 29.5 kg | | | | | | | | | |
| Repeatability | Joints #1, #2 | ±0.015 mm | | | | | | | | | | | | | | | |
| | Joint #3 | ±0.010 mm | | | | | | | | | | | | | | | |
| | Joint #4 | ±0.005 deg | | | | | | | | | | | | | | | |
| Max. motion range | Joint #1 | ±152 deg | ±120 deg | ±105 deg | ±152 deg | ±135 deg | ±152 deg | ±148 deg | | | | | | | | | |
| | Joint #2 | Z: 0 ~ -270 mm ± 147.5 deg Z: -270 ~ -330 mm ± 145 deg | | ±130 deg | | ±147.5 deg | | | | | | | | | | | |
| | Joint #3 Std | 180 mm / 330 mm | | | | | | | | | | | | | | | |
| | Joint #3 Clean | 150 mm / 300 mm | | | | | | | | | | | | | | | |
| Payload | Joint #4 | ±360 deg | | | | | | | | | | | | | | | |
| | Rated | 3 kg | | | | | | | | | | | | | | | |
| | Maximum | 6 kg | | | | | | | | | | | | | | | |
| Standard cycle time ¹ | 0.33 sec | | | 0.36 sec | | 0.38 sec | | | | | | | | | | | |
| Joint #4 allowable moment of inertia ² | Rated | 0.010 kg•m ² | | | | | | | | | | | | | | | |
| | Maximum | 0.120 kg•m ² | | | | | | | | | | | | | | | |
| Joint #3 downward force | 150 N | | | | | | | | | | | | | | | | |
| Electric lines | 24 (9-Pin D-Sub, 15-Pin D-Sub) | | | | | | | | | | | | | | | | |
| Pneumatic lines | Φ4 mm × 2, Φ6 mm × 2 | | | | | | | | | | | | | | | | |
| Installation environments | Standard / Cleanroom (ISO 3) and ESD / Protected IP54 / IP65 | | | | | | | | | | | | | | | | |
| Available controllers | RC700A | | | | | | | | | | | | | | | | |
| Safety standards | CE Mark: EMC Directive, Machinery Directive, RoHS Directive UL1740 ANSI/RIA R15.06 NFPA 79 | | | | | | | | | | | | | | | | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 1 kg payload (path coordinates optimized for maximum speed).

² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.



G10



Long reach at high speeds

- Arm lengths of 650 and 850 mm
- Reduced residual vibration for faster accel/decel rates
- Tabletop, wall- and ceiling-mount models available
- ISO 3 Cleanroom and IP65 Protected models available

G20



Ultra long reach and heavy payload

- Arm lengths of 850 and 1,000 mm
- Unique design structure for high rigidity
- Tabletop, wall- and ceiling-mount models available
- ISO 3 Cleanroom and IP65 Protected models available

● SPECIFICATIONS

| | G10-65x | | | G10-85x | | |
|---|----------------|---|----------|---|----------|------|
| Mounting type | Tabletop | Ceiling | Wall | Tabletop | Ceiling | Wall |
| Arm length | Arm #1, #2 | 650 mm | | | 850 mm | |
| Weight (cables not included) | | 46 kg | 51 kg | 48 kg | 53 kg | |
| Repeatability | Joints #1, #2 | ±0.025 mm | | | | |
| | Joint #3 | ±0.010 mm | | | | |
| | Joint #4 | ±0.005 deg | | | | |
| Max. motion range | Joint #1 | ±152 deg | ±107 deg | ±152 deg | ±107 deg | |
| | Joint #2 | ±152.5 deg | ±130 deg | For Clean / Protected models ±152.5 deg below Z = -360 ~ -390 ±151 deg | | |
| | Joint #3 Std | 180 mm / 420 mm | | | | |
| | Joint #3 Clean | 150 mm / 390 mm | | | | |
| | Joint #4 | ±360 deg | | | | |
| Payload | Rated | 5 kg | | | | |
| | Maximum | 10 kg | | | | |
| Standard cycle time ¹ | | 0.34 sec | | 0.37 sec | | |
| Joint #4 allowable moment of inertia ² | Rated | 0.020 kg•m ² | | | | |
| | Maximum | 0.250 kg•m ² | | | | |
| Joint #3 downward force | | 250 N | | | | |
| Electric lines | | 24 (9-Pin D-Sub, 15-Pin D-Sub) | | | | |
| Pneumatic lines | | Φ4 mm × 2, Φ6 mm × 2 | | | | |
| Installation environment | | Standard / Cleanroom (ISO 3) and ESD / Protected IP54 / IP65 | | | | |
| Available controllers | | RC700A | | | | |
| Safety standards | | CE Mark: EMC Directive, Machinery Directive, RoHS Directive UL1740 ANSI/RIA R15.06 NFPA 79 | | | | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 2 kg payload (path coordinates optimized for maximum speed).

² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.

● SPECIFICATIONS

| | G20-85x | | | G20-A0x | | |
|---|----------------|---|----------|---|----------|------|
| Mounting type | Tabletop | Ceiling | Wall | Tabletop | Ceiling | Wall |
| Arm length | Arm #1, #2 | 850 mm | | | 1,000 mm | |
| Weight (cables not included) | | 48 kg | 53 kg | 50 kg | 55 kg | |
| Repeatability | Joints #1, #2 | ±0.025 mm | | | | |
| | Joint #3 | ±0.010 mm | | | | |
| | Joint #4 | ±0.005 deg | | | | |
| Max. motion range | Joint #1 | ±152 deg | ±107 deg | ±152 deg | ±107 deg | |
| | Joint #2 | ±152.5 deg | ±130 deg | For Clean / Protected models ±152.5 deg below Z = -360 ~ -390 ±151 deg | | |
| | Joint #3 Std | 180 mm / 420 mm | | | | |
| | Joint #3 Clean | 150 mm / 390 mm | | | | |
| | Joint #4 | ±360 deg | | | | |
| Payload | Rated | 10 kg | | | | |
| | Maximum | 20 kg | | | | |
| Standard cycle time ¹ | | 0.37 sec | | 0.42 sec | | |
| Joint #4 allowable moment of inertia ² | Rated | 0.050 kg•m ² | | | | |
| | Maximum | 0.450 kg•m ² | | | | |
| Joint #3 downward force | | 250 N | | | | |
| Electric lines | | 24 (9-Pin D-Sub, 15-Pin D-Sub) | | | | |
| Pneumatic lines | | Φ4 mm × 2, Φ6 mm × 2 | | | | |
| Installation environment | | Standard / Cleanroom (ISO 3) and ESD / Protected IP54 / IP65 | | | | |
| Available controllers | | RC700A | | | | |
| Safety standards | | CE Mark: EMC Directive, Machinery Directive, RoHS Directive UL1740 ANSI/RIA R15.06 NFPA 79 | | | | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 2 kg payload (path coordinates optimized for maximum speed).

² When payload center of gravity is aligned with Joint #4; if not aligned with Joint #4, set parameters using the INERTIA command.

6-AXIS

Why Epson 6-Axis Robots?



Epson's space-saving 6-Axis robots enable a remarkable range of motion to maximize application possibilities.

World's first folding-arm design

- Epson's innovative N-Series offers significant advantages in motion and workspace efficiency

Proven technology

- Epson 6-Axis robots utilize the same controls, software and motion technologies found in our industry-leading SCARA robots

SlimLine design

- Saves valuable factory floorspace and allows our robots to fit where other robots can't — without compromising power, speed or reach
- Compact wrist pitch enables our robots to access hard-to-reach places in confined spaces



**VT-Series
All-in-One**

The **VT-Series** All-in-One 6-Axis robots feature great performance at an ultra low price, offering many of the same features as Epson high-end robots. VT-Series robots include a built-in controller and simplified cabling, allowing fast, easy integration.



N-Series

The **N-Series** lineup features a revolutionary compact folding-arm design that maximizes motion efficiency for faster cycle times. Packed with unique technology, the N-Series significantly reduces workspace requirements when compared to typical 6-Axis robots.



C-Series

The **C-Series** 6-Axis robots provide great cycle times and a unique SlimLine design, backed by remarkable precision and motion range. These compact robots offer exceptional performance for even the most demanding and complex applications.



VT-Series All-in-One

With a built-in controller and simplified cabling, VT-Series All-in-One 6-Axis robots offer quick setup and installation. Featuring both 110 and 220 V power connections, they ensure easy integration in labs and industrial environments.

VT-SERIES 6-AXIS ROBOTS



VT6L

A feature-packed performer at a remarkably low cost



VT-SERIES ALL-IN-ONE SPECIFICATIONS

| | | VT6L |
|----------------------------------|----------------|-------------------------------------|
| Arm length | | 920 mm |
| Repeatability | Joints #1 – #6 | ±0.100 mm |
| Payload | Rated | 3 kg |
| | Maximum | 6 kg |
| Standard cycle time ¹ | | 0.60 sec |
| Installation environments | | Standard / Cleanroom (ISO 4) / IP67 |
| Available controllers | | Built-in |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical).



Full featured, ultra low cost

- Arm length of 900 mm
- Payloads up to 6 kg
- Built-in controller
- Comes standard with 110 V and 220 V power

● SPECIFICATIONS

| | | VT6-A901 (VT6L) |
|--|---|------------------------------------|
| Mounting type | | Tabletop / Ceiling / Wall Mount |
| Degree of freedom | | 6 |
| Max. motion range | P Point: through the center of J4 / J5 / J6 | 920 mm |
| Wrist flange surface | | 1000 mm |
| Weight (cables not included) | | 40 kg |
| Repeatability | Joints #1 – #6 | ±0.100 mm |
| Max. motion range | Joint #1 | ±170 deg / ±170 deg / ±30 deg |
| | Joint #2 | -160 deg~+65 deg (225 deg) |
| | Joint #3 | -51 deg~+190 deg (241 deg) |
| | Joint #4 | ±200 deg |
| | Joint #5 | ±125 deg |
| | Joint #6 | ±360 deg |
| Payload | Rated | 3 kg |
| | Maximum | 6 kg |
| Standard cycle time ¹ | | 0.60 sec |
| Allowable moment of inertia ² | Joint #4 | 0.300 kg•m ² |
| | Joint #5 | 0.300 kg•m ² |
| | Joint #6 | 0.100 kg•m ² |
| Standard I/O | | In 24 / Out 16 |
| Installation environments | | Standard / Cleanroom (ISO4) / IP67 |
| Available controllers | | Built-in |
| Safety standard | CE Mark: EMC Directive, Machinery Directive, RoHS Directive ANSI/RIA R15.06-2012 NFPA 79 (2007 Edition) | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 1 kg payload (path coordinates optimized for maximum speed).

² If the center of gravity is at the center of each arm. If the center of gravity is not at the center of each arm, set the eccentric quantity using the INERTIA command.





N-Series

The **N-Series offers revolutionary technology** that provides significant advantages for more efficient workspace utilization than typical 6-Axis robots. Packed with unique technology exclusive to Epson, N-Series robots set a new standard in 6-Axis technology with the world's first folding-arm design.

N-SERIES 6-AXIS ROBOTS



N2

World's first
folding-arm
design, ideal for
assembly and
parts handling



N6

Higher payloads
and longer reach
for load/unload
applications



N-SERIES SPECIFICATIONS

| | N2 | N6 |
|---------------------------|----------------------------|---------------------------------------|
| Arm length | 450 mm | 860 / 1,010 mm |
| Repeatability | Joints #1 – #2 ±0.02 mm | ±0.030 mm / ±0.040 mm |
| Payload | Rated 1 kg | 3 kg |
| | Maximum 2.5 kg | 6 kg |
| Installation environments | Standard | Standard / Cleanroom (ISO 5 with ESD) |
| Available controllers | RC700A | |

N2

Space-saving,
revolutionary design

- Arm length of 450 mm
- Payloads up to 2.5 kg
- World's first compact folding-arm design
- Reduces required workspace area vs. standard 6-Axis robots
- Maximizes motion efficiency for faster cycle times



N6

Long reach, revolutionary
design

- Arm lengths of 850 and 1,000 mm
- Payloads up to 6 kg
- World's first folding-arm design
- Ideal for confined spaces and load/unload applications



● SPECIFICATIONS

| N2-A450 | | | |
|--|---|-------------------------|--|
| Mounting type | Tabletop | Ceiling | |
| Degree of freedom | | 6 | |
| Max. motion range | P Point: through the center of J4 / J5 / J6 | 450 mm | |
| Wrist flange surface | | 507 mm | |
| Weight (cable not included) | | 19 kg | |
| Repeatability | Joints #1 – #6 | ±0.020 mm | |
| Max. motion range | Joint #1 | ±180 deg | |
| | Joint #2 | ±180 deg | |
| | Joint #3 | ±180 deg | |
| | Joint #4 | ±195 deg | |
| | Joint #5 | ±130 deg | |
| | Joint #6 | ±360 deg | |
| Payload | Rated | 1 kg | |
| | Maximum | 2.5 kg | |
| Allowable moment of inertia ¹ | Joint #4 | 0.200 kg•m ² | |
| | Joint #5 | 0.200 kg•m ² | |
| | Joint #6 | 0.080 kg•m ² | |
| Electric lines | 15 (15-Pin: D-Sub), 8 (8-Pin: RJ45) Cat5e | | |
| Pneumatic lines | Φ6 mm × 2 | | |
| Installation environments | Standard | | |
| Available controllers | RC700A | | |
| Safety standards | CE Mark: EMC Directive, Machinery Directive, RoHS Directive ANSI/RIA R15.06-2012 NFPA 79 (2007 Edition) | | |

¹ If the center of gravity is at the center of each arm. If the center of gravity is not at the center of each arm, set the eccentric quantity using the INERTIA command.

● SPECIFICATIONS

| N6-A85x | | | |
|--|---|-------------------------|------------|
| N6-A10x | | | |
| Mounting type | Ceiling | Tabletop/Ceiling | |
| Degree of freedom | 6 | 6 | |
| Max. motion range | P Point: through the center of J4 / J5 / J6 | 860 mm | 1,010 mm |
| Wrist flange surface | | 960 mm | 1,110 mm |
| Weight (cables not included) | | 64 kg | 69 kg |
| Repeatability | Joints #1 – #6 | ± 0.030 mm | ± 0.040 mm |
| Max. motion range | Joint #1 | ±180 deg | |
| | Joint #2 | ±180 deg | |
| | Joint #3 | ±180 deg | |
| | Joint #4 | ±200 deg | |
| | Joint #5 | ±125 deg | |
| | Joint #6 | ±360 deg | |
| Payload | Rated | 3 kg | 3 kg |
| | Maximum | 6 kg | 6 kg |
| Allowable moment of inertia ¹ | Joint #4 | 0.420 kg•m ² | |
| | Joint #5 | 0.420 kg•m ² | |
| | Joint #6 | 0.140 kg•m ² | |
| Electric lines | 15 (15-Pin: D-Sub), 8 (8-Pin: RJ45) Cat5e | | |
| Pneumatic lines | Φ6 mm × 2 | | |
| Installation environments | Standard | | |
| Available controllers | RC700A | | |
| Safety standards | CE Mark: EMC Directive, Machinery Directive, RoHS Directive ANSI/RIA R15.06-2012 NFPA 79 (2007 Edition) | | |

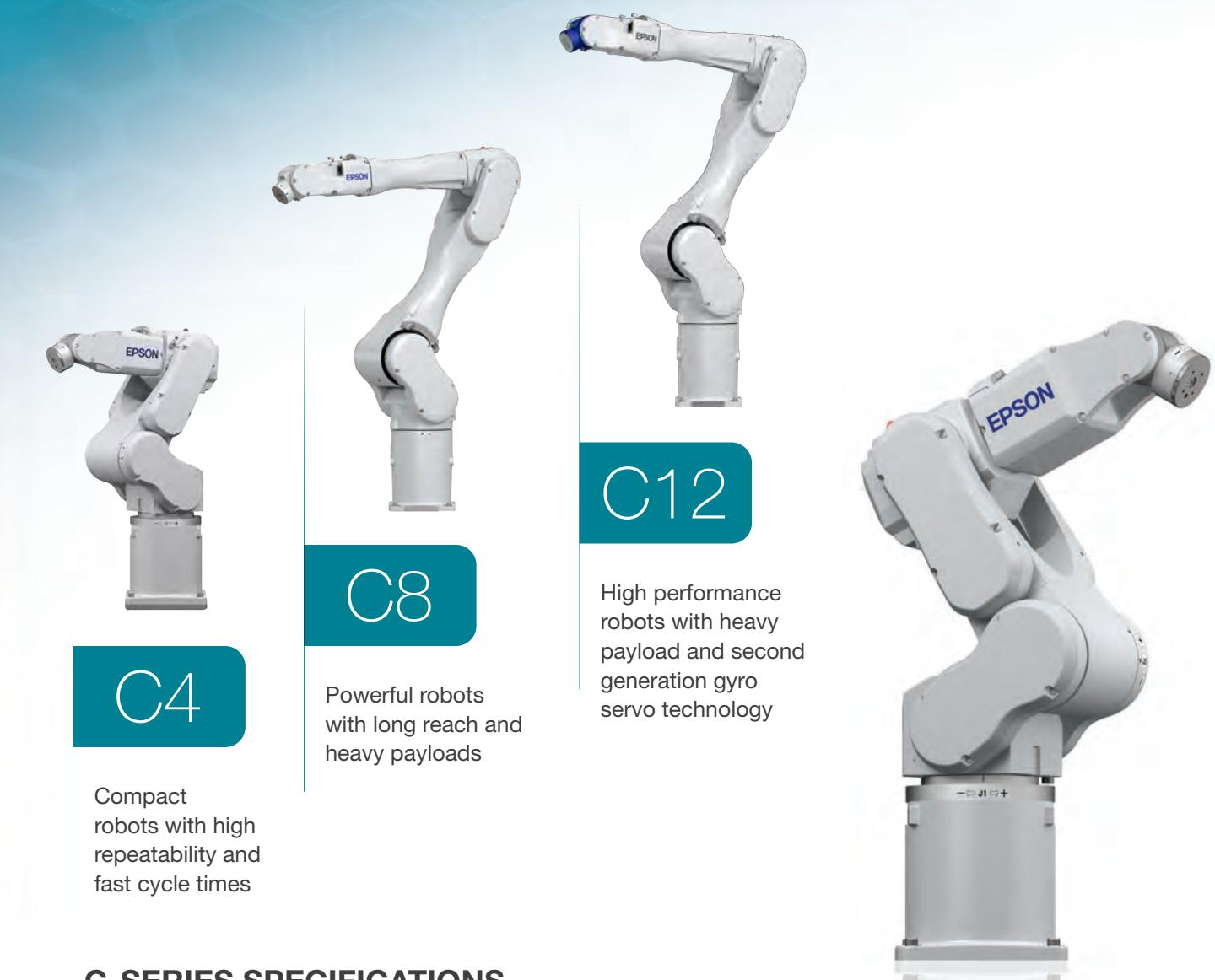
¹ If the center of gravity is at the center of each arm. If the center of gravity is not at the center of each arm, set the eccentric quantity using the INERTIA command.



C-Series

With exceptional flexibility and a slim, compact design, C-Series robots provide an innovative solution for 6-Axis applications. Their small footprint makes them ideal for factories that need to save space. And their long arms enable them to access hard-to-reach areas in the workplace.

C-SERIES 6-AXIS ROBOTS



C4

C8

C12

Compact
robots with high
repeatability and
fast cycle times

Powerful robots
with long reach and
heavy payloads

High performance
robots with heavy
payload and second
generation gyro
servo technology

C-SERIES SPECIFICATIONS

| | C4 | C8 | C12 |
|----------------------------------|--|--|---|
| Arm length | 600 / 900 mm | 711 / 901 / 1,400 mm | 1,400 mm |
| Repeatability | Joints #1 – #6 ±0.020 / ±0.030 mm | ±0.020 / ±0.030 / ±0.050 mm | ±0.50 mm |
| Payload | Rated 1 kg | 3 kg | 3 kg |
| | Maximum 4 kg (5 kg with arm downward positioning) | 8 kg | 12 kg |
| Standard cycle time ¹ | 0.37 / 0.47 sec | 0.31 / 0.35 / 0.53 sec | 0.50 sec |
| Installation environments | Standard / Cleanroom (ISO 3/ISO 4) and ESD | Standard / Cleanroom (ISO 3/ISO 4) and ESD / IP67 | Standard / Cleanroom (ISO 4) and ESD |
| Available controllers | RC700A | | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 1 kg payload (path coordinates optimized for maximum speed).

C4

High speed and exceptional flexibility

- Arm lengths of 600 and 900 mm
- Payloads up to 4 kg
- Slim design and compact wrist — fits in tight spaces
- ISO 3 Cleanroom models available



C8/C12

Long reach and heavy payload

- Arm lengths of 711, 901 and 1,400 mm
- Payloads up to 8 kg
- Slim design and compact wrist — fits in tight spaces
- ISO 3 (C8/C8L) and 4 (C8XL/C12XL) Cleanroom models available



● SPECIFICATIONS

| | C4-A601 (C4) | | C4-A901 (C4L) | |
|--|---|---|---------------|----------|
| Mounting type | Tabletop | Ceiling | Tabletop | Ceiling |
| Degree of freedom | | | 6 | |
| Max. motion range | P Point: through the center of J4 / J5 / J6 | 600 mm | 900 mm | |
| Wrist flange surface | | 665 mm | 965 mm | |
| Weight (cables not included) | | 27 kg | 29 kg | |
| Repeatability | Joints #1-#6 | ±0.020 mm | ±0.030 mm | |
| Max. motion range | Joint #1 | ±170 deg | | |
| | Joint #2 | -160 deg ~ +65 deg | | |
| | Joint #3 | -51 deg ~ +225 deg | | |
| | Joint #4 | ±200 deg | | |
| | Joint #5 | ±135 deg | | |
| | Joint #6 | ±360 deg | | |
| Payload | Rated | 1 kg | | |
| | Maximum | 4 kg | | |
| Standard cycle time ¹ | | 0.37 sec | | 0.47 sec |
| Allowable moment of inertia ² | Joint #4 | 0.150 kg•m ² | | |
| | Joint #5 | 0.150 kg•m ² | | |
| | Joint #6 | 0.100 kg•m ² | | |
| Electric lines | | 9-Pin (D-Sub) | | |
| Pneumatic lines | | Φ4 mm x 4 | | |
| Installation environment | | Standard / Cleanroom (ISO 3) and ESD | | |
| Available controllers | | RC700A | | |
| Safety standard | | CE Mark: EMC Directive, Machinery Directive, RoHS Directive UL1740 ANSI/RIA R15.06 NFPA 79 | | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 1 kg payload (path coordinates optimized for maximum speed).

² If the center of gravity is at the center of each arm. If the center of gravity is not at the center of each arm, set the eccentric quantity using the INERTIA command.

● SPECIFICATIONS

| | C8-A701 (C8) | C8-A901 (C8L) | C8-A1401 (C8XL) | C12XL-A1401 (C12XL) |
|--|---|---|------------------|---------------------|
| Mounting type | Tabletop / Ceiling / Wall Mount | | | Tabletop |
| Degree of freedom | | | 6 | |
| Max. motion range | P Point: through the center of J4 / J5 / J6 | 711 mm | 901 mm | 1,400 mm |
| Wrist flange surface | | 791 mm | 981 mm | 1,480 mm |
| Weight (cables not included) | | 49 kg (IP:53 kg) | 52 kg (IP:56 kg) | 62 kg (IP:66 kg) |
| Repeatability | Joints #1-#6 | ±0.02 mm | ±0.03 mm | ±0.05 mm |
| Max. motion range | Joint #1 | ±240 deg | | |
| | Joint #2 | -158 deg ~ +65 deg | | |
| | Joint #3 | -61 deg ~ +202 deg | | |
| | Joint #4 | ±200 deg | | |
| | Joint #5 | ±135 deg | | |
| | Joint #6 | ±360 deg | | |
| Payload | Rated | 3 kg | | |
| | Maximum | 8 kg | | |
| Standard cycle time ¹ | | 0.31 sec | 0.35 sec | 0.53 sec |
| Allowable moment of inertia ² | Joint #4 | 0.470 kg•m ² | | |
| | Joint #5 | 0.470 kg•m ² | | |
| | Joint #6 | 0.150 kg•m ² | | |
| Electric lines | | 15-Pin (D-Sub), 8-Pin (RJ45), 6-Pin (for Force Sensor) | | |
| Pneumatic lines | | Φ6 mm x 2 | | |
| Installation environment | | Standard / Cleanroom ³ and ESD / IP67 | | |
| Available controllers | | RC700A | | |
| Safety standard | | CE Mark: EMC Directive, Machinery Directive, RoHS Directive UL1740 ANSI/RIA R15.06 NFPA 79 | | |
| | | CE Mark: EMC Directive, Machinery Directive, RoHS Directive UL1740 ANSI/RIA R15.06 NFPA 79 | | |

¹ Cycle time based on round-trip arch motion (300 mm horizontal, 25 mm vertical) with 1 kg payload (path coordinates optimized for maximum speed).

² If the center of gravity is at the center of each arm. If the center of gravity is not at the center of each arm, set the eccentric quantity using the INERTIA command.

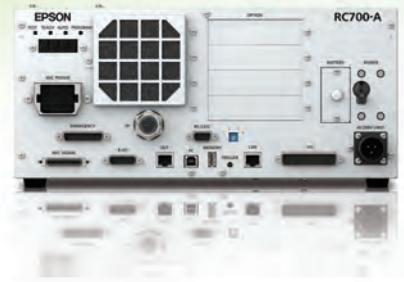
³ C8 and C8L comply with ISO Class 3 (ISO14644-1) cleanroom standards, and C8XL complies with ISO Class 4 (ISO14644-1) cleanroom standards.

Robot Controllers

Compact and intuitive. Epson controllers make automation configuration easy. Designed for use with both SCARA and 6-Axis robots, Epson's lineup provides advanced servo control for smooth motion and precise positioning. With integrated options available such as Vision Guidance, Force Guidance, Conveyor Tracking and more, Epson controllers provide true solution-based expandability.



CONTROLLERS



RC700A

Powerful feature set with ultra fast processing

All-in-One

Space-saving design with built-in controllers at an ultra low price

Advanced controllers to meet your automation needs

- **Powerful performance, compact design**
 - built for space-constrained environments; able to support everything from simple to high-end robots
- **Supports both SCARA and 6-Axis robots**
 - simplifies the lineup with common platforms
- **Full lineup of both SCARA and 6-Axis controllers**
 - choose the one best suited for your application
- **Easy to configure/setup** — front access (RC700A and RC90B); intuitive panel; consolidated controls, all on one side, for easy changeouts
- **Advanced servo control system** — enables the robot to quickly perform smooth, precise motions
- **Slots for optional components** — supports a wide variety of fully integrated options

ROBOT CONTROLLERS



All-in-One

Space-saving design,
ultra low cost

- Supports T-Series SCARA and VT-Series 6-Axis robots
- Comes standard with 110 V and 220 V power
- Use as standalone, PLC slave or with a PC
- Wide variety of integrated options including Vision Guide, IntelliFlex Feeding System, .Net connectivity, Ethernet/IP, DeviceNet, Profibus and more



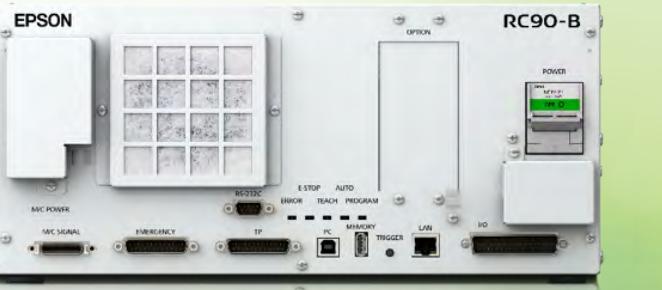
● SYSTEM CAPABILITIES



RC90B

Great performance at an affordable price

- Supports LSB-Series SCARA robots
- Use as standalone, PLC slave or with a PC
- Wide variety of integrated options including Vision Guide, Force Guide, IntelliFlex Feeding System, .Net connectivity, Ethernet/IP, DeviceNet, Profibus, Expansion I/O, Conveyor Tracking and more



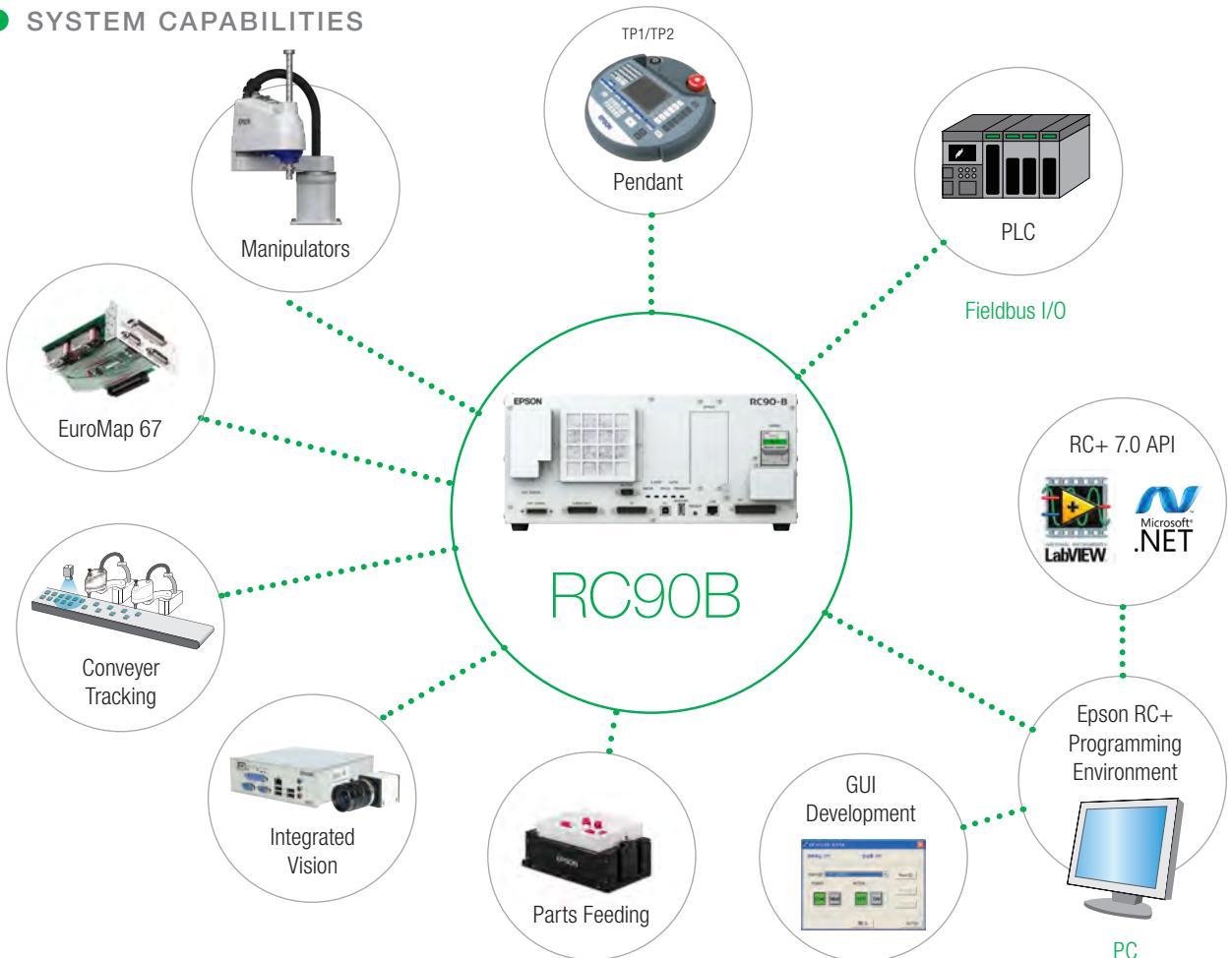
RC700A

Powerful performance with ultra fast processing

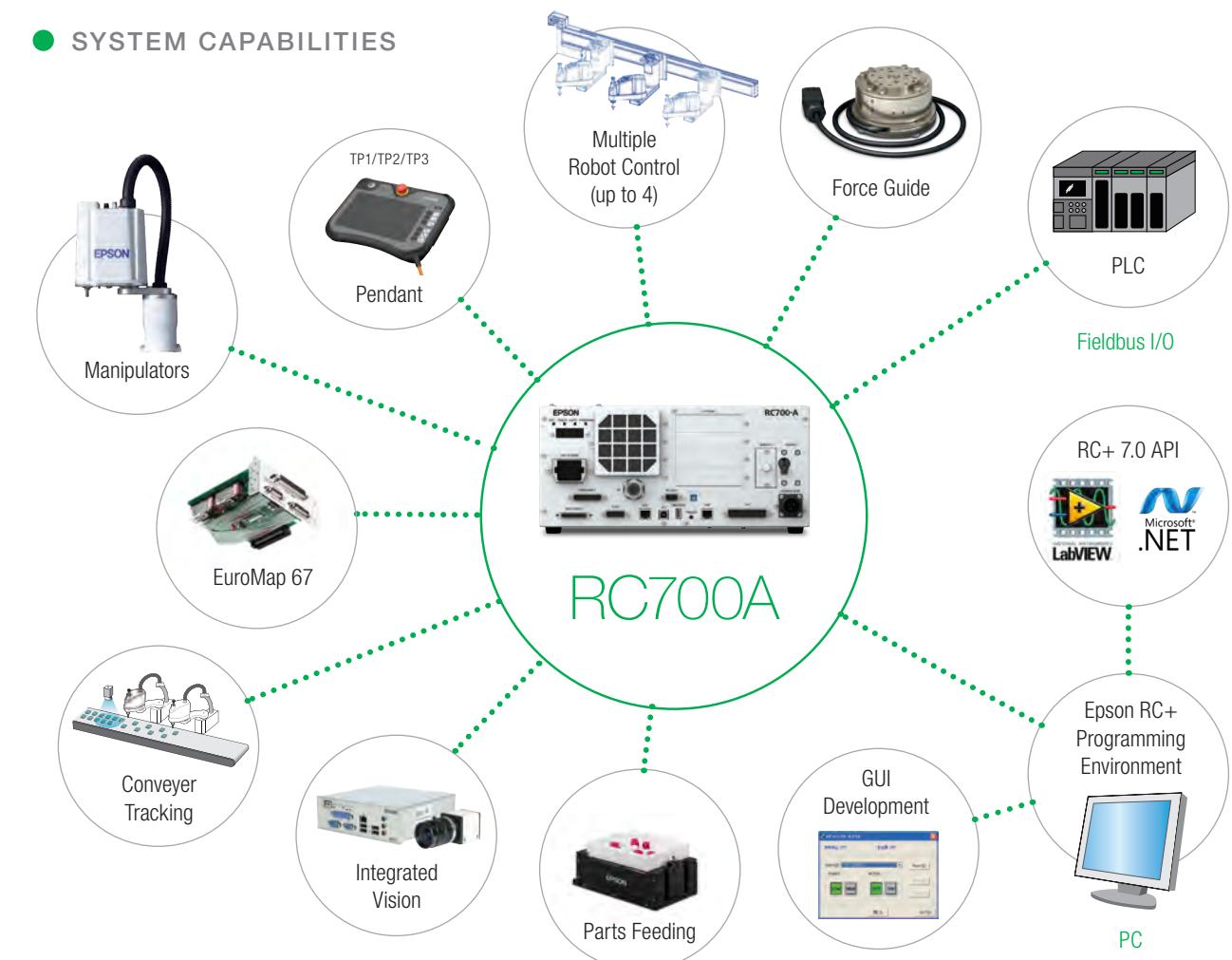
- Supports G and RS-Series SCARA and C and N-Series 6-Axis robots.
- Use as standalone, PLC slave or with a PC, as well as Modules
- Wide variety of integrated options including Vision Guide, Force Guide, IntelliFlex Feeding System, .Net connectivity, Ethernet/IP, DeviceNet, Profibus, Expansion I/O, Conveyor Tracking and more



● SYSTEM CAPABILITIES



● SYSTEM CAPABILITIES



● SPECIFICATIONS

| Model | All-in-One | |
|--|--|---|
| Robot manipulator control | Programming language and robot control software | Epson RC+ 7.0 (a multitasking robot OS) |
| | Joint control | Up to six (6) joints simultaneous control, Software AC servo control |
| | Speed control | PTP motion: Programmable in the range of 1 to 100% CP motion: Programmable (Actual value to be manually entered) |
| | Acceleration/ deceleration control | PTP motion: Programmable in the range of 1 to 100%; Automatic CP motion: Programmable (Actual value to be manually entered) |
| | Number of manipulators | 1 |
| Positioning control | PTP (Point-To-Point) / CP (Continuous Path) | |
| | Maximum object size: 8 MB Point data area: 1,000 points (per file) Backup variable area: Max. 400 KB (Includes the memory area for the management table) Approx. 4,000 variables (Depends on the size of array variables) | |
| External input / output signals (standard) | Standard I/O | VT-Series: Input: 24 / Output: 16 T-Series: In: 18 / Out: 12 / Hand: In: 6 / Out: 4 Including 8 inputs, 8 outputs with remote function assigned. Assignment change allowed |
| | Standard I/O drive unit | — |
| Communication interface (standard) | Ethernet | 1 channel |
| | USB | 1 port |
| Option boards (special slot) | I/O | — |
| | Analog I/O | — |
| | EuroMap 67 | — |
| | RS-232C | — |
| | Fieldbus I/O slave | PROFINET PROFIBUS-DP DeviceNet CC-Link EtherNet/IP EtherCAT Maximum of 1 board allowed |
| | Pulse generator | — |
| | Fieldbus I/O master | PROFIBUS-DP DeviceNet EtherNet/IP — |
| Safety features | Emergency stop switch / Safety door input / Low power mode / Dynamic brake / Encoder cable disconnection error detection / Motor overload detection / Irregular motor torque (out-of-control Manipulator) detection / Motor speed error detection / Positioning overflow - servo error - detection / Speed overflow - servo error - detection / CPU irregularity detection / Memory check-sum error detection / Overheat detection at the Motor Driver Module / Relay welding detection / Over-voltage detection / AC power supply voltage reduction detection / Temperature error detection / Fan error detection | |
| | AC 110 V to AC 220 V / Single phase 50/60 Hz | |
| Power source | Varies per robot model | |
| Weight | Varies per robot model | |

| RC90B | RC700A |
|--|--|
| Epson RC+ 7.0 (a multitasking robot OS) | Epson RC+ 7.0 (a multitasking robot OS) |
| Up to four (4) joints simultaneous control, Software AC servo control | Up to six (6) joints simultaneous control, Software AC servo control |
| PTP motion: Programmable in the range of 1 to 100% CP motion: Programmable (Actual value to be manually entered) | PTP motion: Programmable in the range of 1 to 100% CP motion: Programmable (Actual value to be manually entered) |
| PTP motion: Programmable in the range of 1 to 100%; Automatic CP motion: Programmable (Actual value to be manually entered) | PTP motion: Programmable in the range of 1 to 100%; Automatic CP motion: Programmable (Actual value to be manually entered) |
| 1 | 4 |
| PTP (Point-To-Point) / CP (Continuous Path) | PTP (Point-To-Point) / CP (Continuous Path) |
| Maximum object size: 8 MB Point data area: 1,000 points (per file) Backup variable area: Max. 400 KB (Includes the memory area for the management table) Approx. 4,000 variables (Depends on the size of array variables) | Maximum object size: 8 MB Point data area: 1,000 points (per file) Backup variable area: Max. 400 KB (Includes the memory area for the management table) Approx. 4,000 variables (Depends on the size of array variables) |
| Input: 24 Output: 16 Including 8 inputs, 8 outputs with remote function assigned. Assignment change allowed | Input: 24 Output: 16 Including 8 inputs, 8 outputs with remote function assigned. Assignment change allowed |
| — | Input: 24 Output: 16 Per drive unit |
| 1 channel | 1 channel |
| 1 port | 1 port |
| Input: 24 per board Output: 16 per board Maximum of 2 boards allowed | Input: 24 per board Output: 16 per board Maximum of 4 boards allowed |
| 1 channel | 1 channel |
| Input: 15 / Output: 16 | Input: 15 / Output: 16 |
| 2 channels/board Maximum of 2 boards allowed | 2 channels/board Maximum of 2 boards allowed |
| 1 channel/board PROFINET PROFIBUS-DP DeviceNet CC-Link EtherNet/IP EtherCAT Maximum of 1 board allowed | 1 channel/board PROFINET PROFIBUS-DP DeviceNet CC-Link EtherNet/IP EtherCAT Maximum of 1 board allowed |
| 4 axes/board Maximum of 2 boards allowed | 4 axes/board Maximum of 4 boards allowed |
| 1 channel/board PROFIBUS-DP DeviceNet EtherNet/IP Maximum of 1 board allowed | 1 channel/board PROFIBUS-DP DeviceNet EtherNet/IP Maximum of 1 board allowed |
| Emergency stop switch / Safety door input / Low power mode / Dynamic brake / Encoder cable disconnection error detection / Motor overload detection / Irregular motor torque (out-of-control Manipulator) detection / Motor speed error detection / Positioning overflow - servo error - detection / Speed overflow - servo error - detection / CPU irregularity detection / Memory check-sum error detection / Overheat detection at the Motor Driver Module / Relay welding detection / Over-voltage detection / AC power supply voltage reduction detection / Temperature error detection / Fan error detection | Emergency stop switch / Safety door input / Low power mode / Dynamic brake / Encoder cable disconnection error detection / Motor overload detection / Irregular motor torque (out-of-control Manipulator) detection / Motor speed error detection / Positioning overflow - servo error - detection / Speed overflow - servo error - detection / CPU irregularity detection / Memory check-sum error detection / Overheat detection at the Motor Driver Module / Relay welding detection / Over-voltage detection / AC power supply voltage reduction detection / Temperature error detection / Fan error detection |
| AC 200 V to AC 240 V / Single phase 50/60 Hz | AC 200 V to AC 240 V / Single phase 50/60 Hz |
| 7.5 kg | 11 kg |

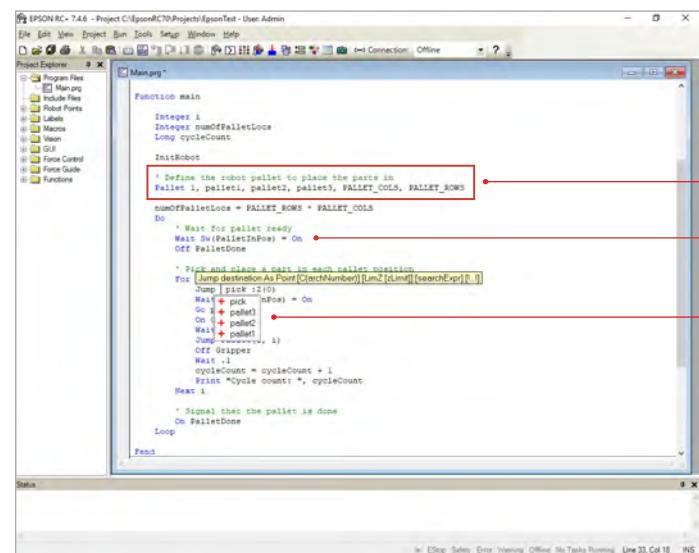
Epson RC+ Development Software

Epson RC+ Development Software offers the ultimate selection of powerful, ease-of-use features, reducing the time needed to develop automated robot solutions. This advanced software includes fully integrated options such as Vision Guidance, Force Guidance, Conveyor Tracking, Parts Feeding and more. Intuitive by design, Epson RC+ includes many time-saving features such as wizards, templates, smart tools and more — allowing users to get their systems up and running quickly.

EDITOR

Auto-assist makes editing easier than ever

Epson RC+ includes powerful editing capabilities to minimize mistakes and streamline program development. In addition to basics such as cut, copy and paste, it also includes syntax assist, auto-indent, color-based command usage, comment blocks, indent/outdent, find/replace and more.



- **Color-based editor** where keywords are blue, parameters in black, comments in green and incorrect syntax in red.

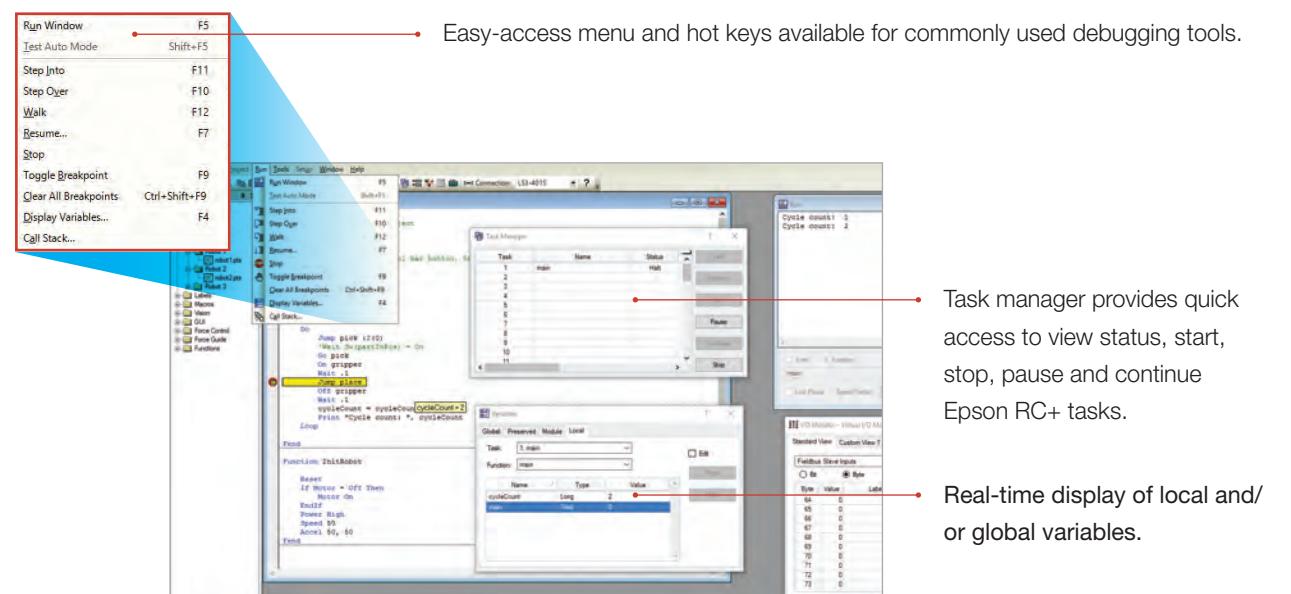
- **Automatic indenting of code** contained in a function block for easy readability.

- **Syntax Assist** helps users type or select the proper syntax for commands and their associated parameters.

INTEGRATED DEBUGGER

Easily identify issues in record time

The integrated debugger offers many clever ways to check the status of your program or identify issues you may find while running it. The Epson debugger allows you to check specified variables, view the value of those variables in real time, set break points, perform a single-step execution, or jump over certain steps. You can also step into a function to view more details.



- Easy-access menu and hot keys available for commonly used debugging tools.

- Task manager provides quick access to view status, start, stop, pause and continue Epson RC+ tasks.

- Real-time display of local and/or global variables.

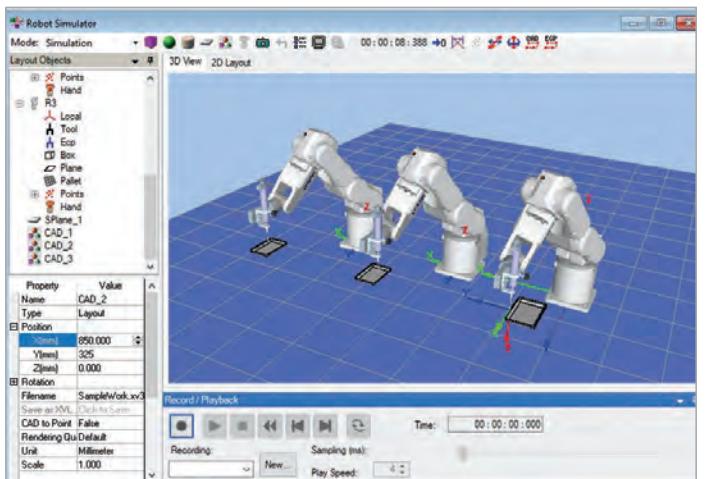
All-inclusive development environment

- Projects
- Operator window
- Robot manager
- Task manager
- Run window
- Wizards
- Jog and teach window
- I/O monitor
- Offline development
- Project explorer
- Toolbar customization
- 3D simulator

3D SIMULATOR

Build and fine-tune your application before hardware setup

Take automation development to the next level with a virtual test run. Epson's workcell simulator means you can program your workcell, even before your hardware has arrived. See a 3D simulation of your application in action – in real time. You can even add additional components that may be a part of the workcell, such as a table, feeder or various types of guarding. Add a tool to the robot's arm and implement your program to examine the efficiency of the application.



Need to examine how multiple robots might affect productivity? Give it a test run with a detailed, simulated workcell.

Full-featured simulator supports up to three robots and peripherals such as guarding, tools, parts and more.

Cycle-time Calculation

- Calculate cycle time based on real application execution.

Offline Application Checking

- Program can be created and debugged from standalone PCs.
- Debugged programs can be rolled out directly to plant floor workcells.

Machine Vision Simulation

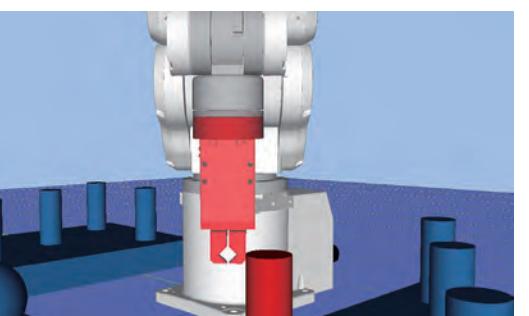
- Machine vision image processing input can also be used within simulations.

Record and Playback Functions

- Recording and playback functions make it easy to include still images and movies in presentations.

Clearance Checking

- Choosing the right robot is easy because you can check all necessary workcell and peripheral equipment.



Vision Guide simulation supported with Epson RC+ 7.0

SPEL+ ROBOT LANGUAGE

Epson's SPEL+ is a powerful yet easy-to-learn-and-use programming language for robot automation applications. With 500+ commands and statements, including motion functions, I/O control, variables and data types, program control and more, SPEL+ can be used for both complex and simple applications.

Example Program

```
Function main
  Motor On
  Power High
  Speed 100
  Accel 100, 100
  *turn motor power on
  *Power mode set high
  *Speed 100%
  *Acceleration/Deceleration 100%

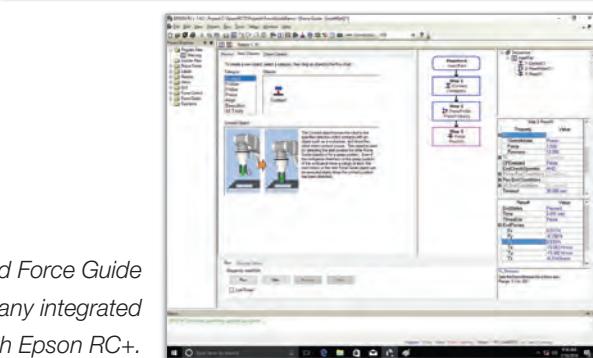
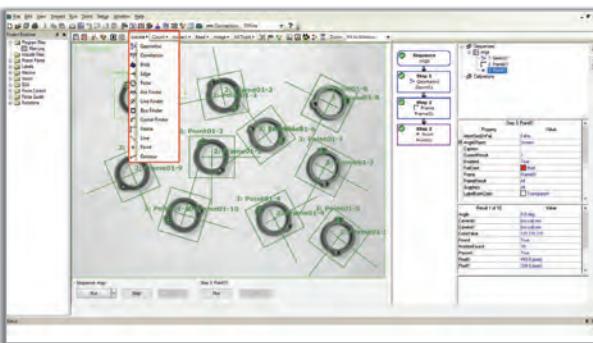
  If Sw(partok) = On Then
    Jump goodparts
  Else
    Jump badparts
  Endif

  Fend
  *Checking if good part
  *move arm to goodpart pile
  *move arm to bad part pile
```

INTEGRATED ENVIRONMENT

One source, one comprehensive solution

Epson software offers easy integration of Epson robots with various automation options, including Vision Guide, Force Guide, IntelliFlex Parts Feeding, Conveyor Tracking and more. Built as a comprehensive solution for any given application, it provides seamless integration, allowing all components to interface with one another in a single environment.



Vision Guide and Force Guide are just two of the many integrated options available with Epson RC+.

Integrated Solutions

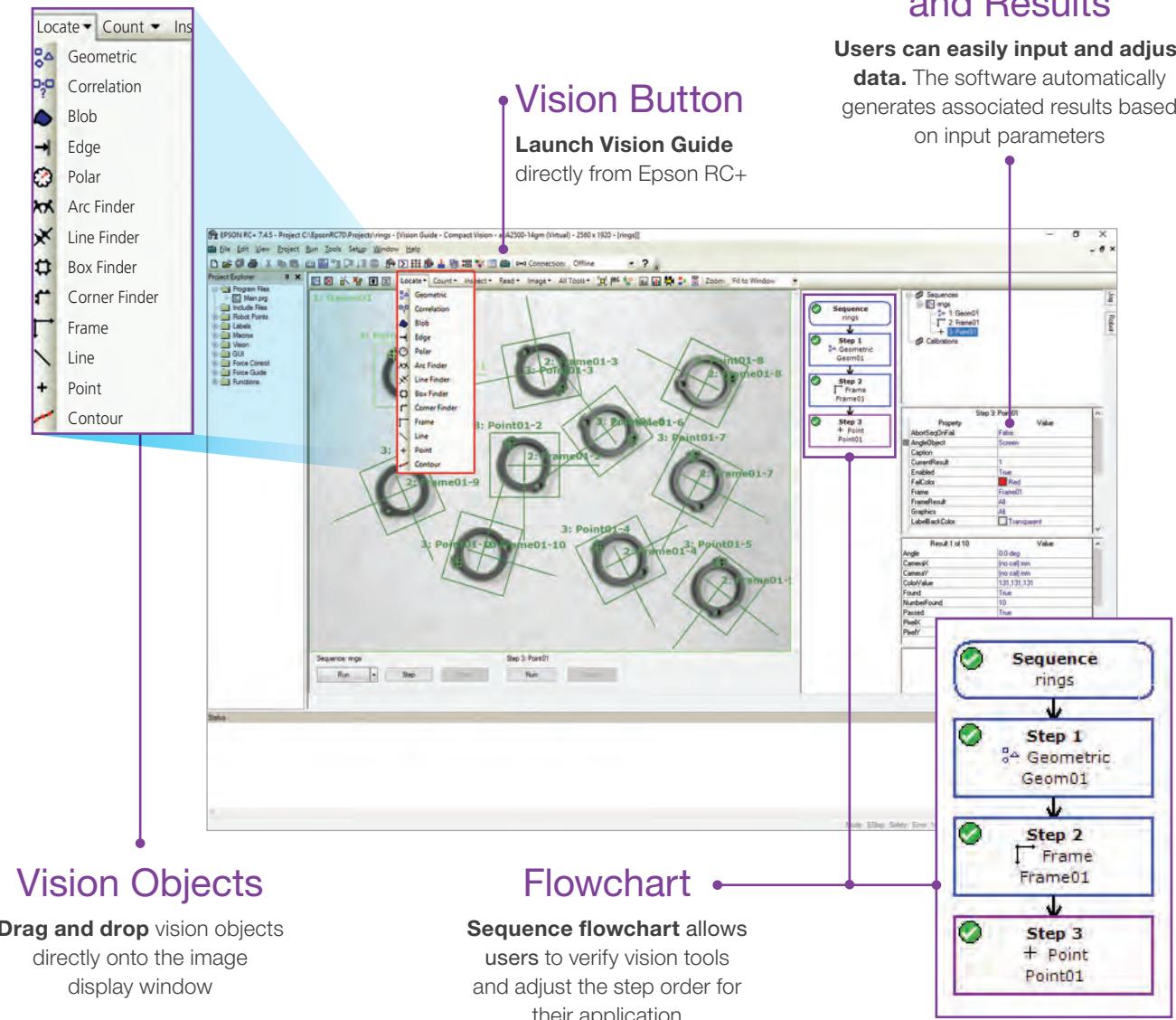
Enhance your robot automation solution with integrated options such as Vision Guide, Force Guide, IntelliFlex Parts Feeding and more. These powerful solutions make it easy to quickly build various applications without having to worry about peripheral communication setups and development from multiple environments. Instead, you can focus on maximizing the efficiency of your application.



VISION GUIDE

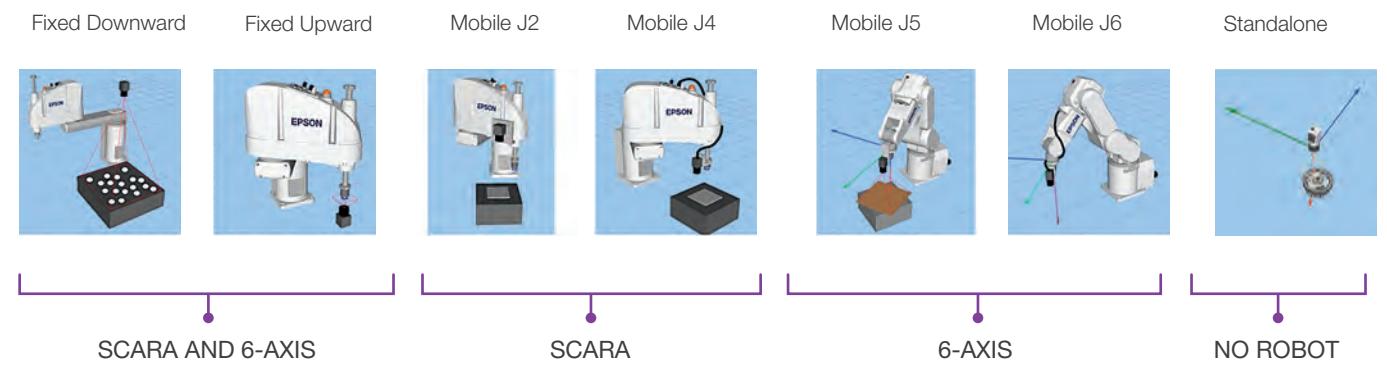
Vision guidance made easy

Epson Vision Guide makes precision robotic guidance easy to use. Fully integrated within the Epson RC+ development environment for easy configuration and calibration, this intuitive solution features a point-and-click interface that makes it simple for users of all levels. It also features wizards and auto calibration methods, plus a combination robot/vision simulator for rapid offline testing. With a common software environment for both robots and vision guidance, Epson Vision Guide allows for fast development and simplified maintenance. An efficient and versatile solution, it also includes tools for inspection, gauging, barcode reading and much more.



True robot geometry-based calibration

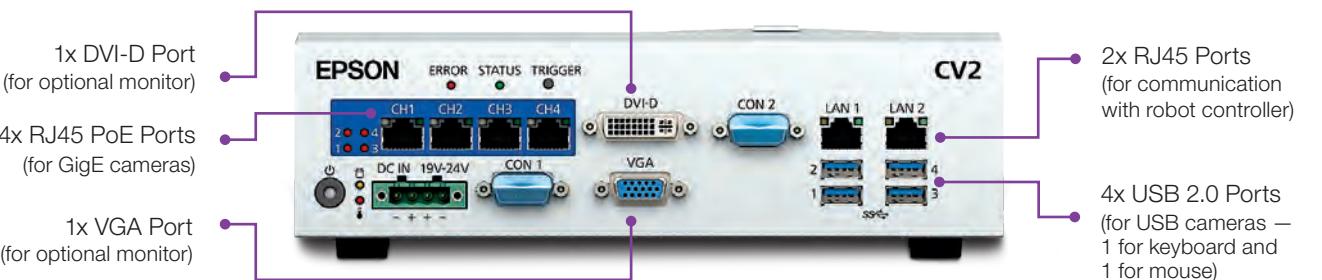
Unlike common mapping-based calibration, Epson Vision Guide uses a powerful geometric-based calibration solution to improve the precision of camera-to-robot-coordinate system translation. Reduce calibration time and improve consistency with the integrated calibration wizard and easy step-by-step instructions. Multiple calibrations for both 6-Axis and SCARA robots, including fixed-downward, fixed-upward and those with mobile-joint-mounted cameras, are supported.



Versatile tool set

| | | | | |
|---|---|---|---|---|
| Geometric | Blob | Correlation | Edge | ImageOp |
| Finds a model based on geometric features. Used for determining position and orientation. | Computes geometric, topological and other image features. Used for determining presence/absence, size, positioning and orientation. | Measures quality compared to previously trained features for alignment, inspection, position and orientation. | Locates edges by identifying changes in grey value from dark to light or light to dark. | Performs morphology, convolution, flip, binarize, rotate and more for a region of interest. |
| Polar | OCR | CodeReader | ColorMatch | LineFinder |
| Uses correlation of a rotational area to determine object orientation. | Optical Character Recognition is used to recognize character strings in an image. | Reads bar or two-dimensional codes, including data matrix and others. | Detects user-defined colors. | Determines the location of a line in an image. |
| LineInspector | ArcFinder | Arclnspctor | DefectFinder | Frame |
| Identifies deviations on a linear path between two points. | Determines the radius and center point of an arc or major/minor axes and the angle of an ellipse. | Determines abnormalities in the arc of a circle/ellipse. | Compares a template image to an input image to identify defects. | Provides dynamic position reference for other vision objects. |
| Line | Point | BoxFinder | CornerFinder | Contour |
| Defines a line between two objects. | Defines reference positions for other objects. | Determines the center of an object. | Identifies the intersection position of two lines that form a corner. | Generates a contour based on the external shape of an object. |

Full-featured, integrated solution



SPECIFICATIONS

| System | CV2SA | CV2HA | PV1 |
|--|--|---|-----|
| Robot controller | RC700A, RC90, RC90B, T-Series, VT-Series | | |
| Cameras supported (Epson cameras only) | GigE: Mono (0.3 MP, 1.3 MP, 2 MP, 5 MP, 10 MP and 20 MP) and Color (2 MP, 5 MP, 10 MP and 20 MP) USB: Mono (0.3 MP, 1.3 MP and 5 MP) and Color (1.3 MP, 5 MP) | | |
| Vision tools | | | |
| Quantity of connectable cameras | Up to 6 cameras (2 USB and 4 GigE cameras) | Up to 8 GigE cameras | |
| Image processing speed | Standard type | High-speed type | N/A |
| Safety standard | CE, UL, KC | | N/A |
| Dimensions W x D x H (excluding rubber feet) | 232 mm x 175 mm x 70 mm | | N/A |
| Operating temperature and humidity | 5~40 deg C, 20~80% (non-condensing) | | N/A |
| Direction of installation | Horizontal or Vertical | | N/A |
| Power source voltage | DC 19 ~ 24 V | | N/A |
| Rated electric current | 11.57 A (at 19 V DC) ~ 9.16 A (at 24 V DC) | | N/A |
| Weight | 2.1 kg | | N/A |
| Interface (connection) | Ethernet (for communication with Robot Controller) | RJ45: 4 ports (1000Mbps). Power over Ethernet (PoE) supported. Can connect to HUB or Switch. | |
| | Ethernet (for GigE camera) | RJ45: 4 ports (1000Mbps). Power Over Ethernet (PoE) supported. | |
| | USB | USB 2.0: 4 ports (for USB Camera, USB Memory, Mouse, Keyboard) | |
| | Monitor connection | VGA: 1 port, DVI-D: 1 port (SXGA fixed) The 2 ports display the same output (mirror display) | |
| | CON1, CON2 | Not available | |
| CV2 standard accessories | | Mounting plates (1 set), Power supply connector (1 pc), Connector cap for CON (2 pcs) | N/A |

The smarter parts singulation solution

Powered by Epson robots, IntelliFlex Software, and Vision Guide, the IntelliFlex Feeding System delivers a simplistic feeding solution to accommodate a wide variety of parts. Integrated with Epson RC+ Development Software, the IntelliFlex Feeding System offers easy setup and configuration. Its point-and-click interface helps reduce the typical development time required for advanced applications. With two feeder sizes available (the IntelliFlex 240 and 530), the system can accommodate part sizes ranging from 5 to 150 mm. The IntelliFlex system also offers intelligent auto-tuning for fast setup and flexible parts changeover. And, multi-axis vibration technology provides optimized parts control and singulation.



IntelliFlex 240 – Ideal
for part size, 5 – 40 mm



Point-and-click setup and configuration

Fully integrated with the Epson RC+ Development Software, the IntelliFlex Feeding System makes setup and configuration easier than ever. Its point-and-click interface helps reduce the typical development time required for advanced applications, often taking it from weeks down to days.

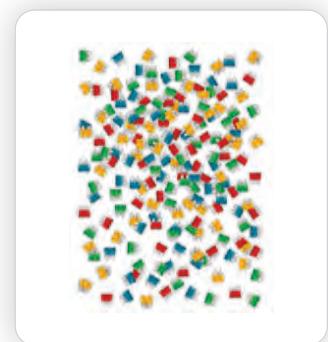
EPSON SYSTEM SETUP

- 1. Vision Programming**
 - Built-in robot-to-vision calibration and point-and-click programming
- 2. Parts Tuning**
 - Automatic parts tuning with vision feeder integration
- 3. Parts Control Adjustment**
 - Configuration wizard for defining part separation pickup area and more

TYPICAL SYSTEM SETUP

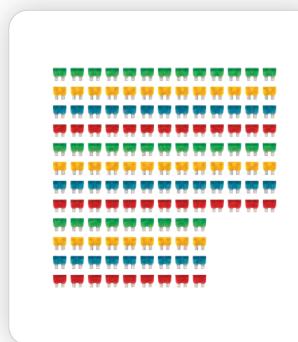
- 1. Feeder Communications**
 - Low-level protocol using feeder command set
- 2. Feeder Tuning**
 - Getting parts to move properly
- 3. Vision Setup and Calibration**
 - Calibrating vision system to robot
- 4. Vision Programming**
 - Finding parts reliably
- 5. System Programming**
 - Robot + Feeder + Vision coordination
- 6. Optimization**
 - Fine-tuning and performance optimization

Turn this ...



With multi-axis vibration technology, designed to optimize parts control

Into this ...



With this.

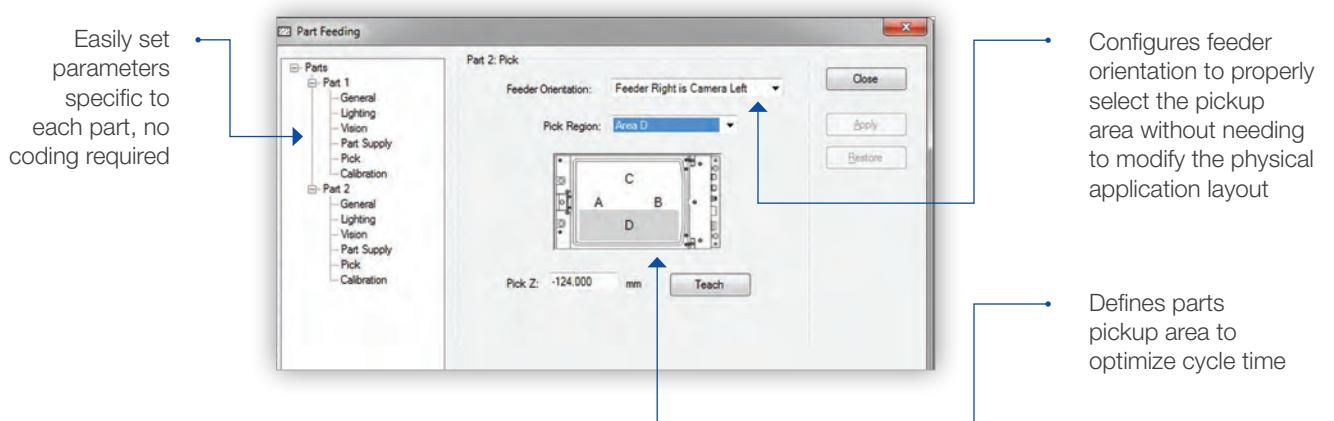


IntelliFlex Feeding System

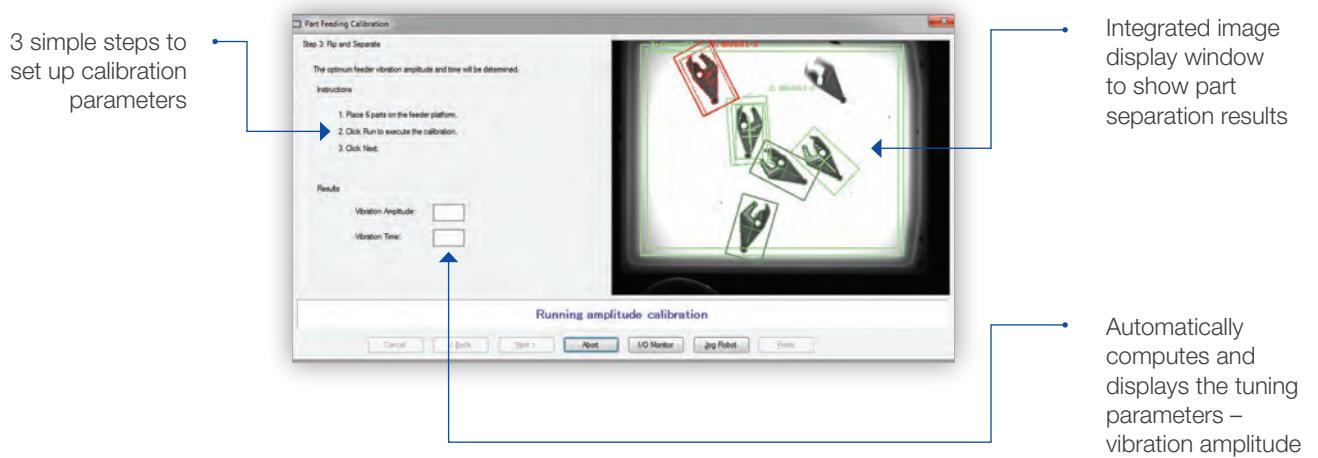
Precision parts calibration with smart auto-tuning

Epson RC+ Development Software also features an intuitive wizard to guide users through customized calibration. Step by step, this wizard automatically determines the exact values needed for optimum tuning and calibration.

Part pickup regions maximize parts throughput



Parts calibration (tuning) wizard reduces tuning time



● SPECIFICATIONS

| Model Name | IntelliFlex 240 | IntelliFlex 530 |
|-------------------------------------|--|--|
| Model No. | RIF 240 | RIF 530 |
| Part size dimensions | 5 - 40 mm | 30 - 150 mm |
| Communication | Ethernet (TCP/IP) | |
| Power supply | 24 V/8 A | 24 V/20 A |
| Vibration platform (length x width) | 195 x 150 mm | 427 x 371 mm |
| Footprint (length x width x height) | 300 x 171 x 132 mm | 600 x 372 x 320 mm |
| Compatible robots | G-Series/LS-Series/RS-Series/T-Series/C-Series/N-Series/VT-Series | |
| Compatible vision systems | Vision Guide CV2 and PV1 | |
| What's in the box | Flexible feeder, Vibration plate, IntelliFlex software, 5 M power cable, and RJ45 CAT5e cable | |
| Integrated backlight LED options | Red/White/Blue/Green/Infrared | |
| Tray configuration options | Black/Anti-Rolling/ESD (Anti-Static)/Anti-Stick | Black/Anti-Rolling/Black Anti-Stick |
| Hopper options | 2 Liters and 3 Liters | 15 Liters |
| Support | Customer Service (562) 290-5920 Applications Support (562) 290-5930 Sales Inquiries (562) 290-5997 | service@robots.epson.com applications@robots.epson.com info@robots.epson.com |

Intuitive robot force guidance for high-precision performance

Powered by proprietary Epson Quartz Technology, Epson Force Guide enables Epson robots to detect six axes of force with precision down to 0.1 N. Driven by real-time servo system integration, Force Guide delivers fast, tactile feedback to guide robots for high-precision parts placement. Easy to set up, Force Guide features a point-and-click interface with pre-configured solutions and built-in objects, reducing the development time for precision applications.



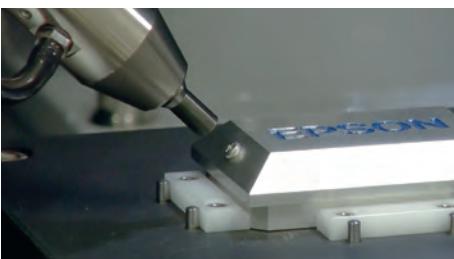
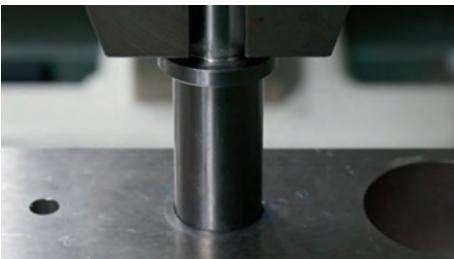
Advantage Epson

Drawing on our global expertise in robotic solutions, Epson created Force Guide as a tool to achieve higher productivity in automated manufacturing processes. Epson Force Guide features proprietary Quartz Technology which provides remarkable rigidity and powerful performance, allowing customers to complete automation tasks that were previously not possible.

- **Epson Quartz Technology**
- **High rigidity**
- **Powerful performance**

Force Guide applications

Force and torque sensors are an increasingly significant component for material testing, assembly, development, and quality assurance. Because of their accuracy, versatility and reliability, they are being used by more and more companies around the world. Epson Force Guide provides a wide range of automation possibilities:



Parts and connector insertion

With Epson Force Guide, parts and connector insertion can be easily automated, for everything from pin-in-socket insertion to high-precision valve assembly. Epson sensors detect misalignment. And, because of high sensitivity, the part or connector is easily inserted, damage free.

Screw driving

Thanks to real-time force/torque feedback, the smallest of screws can be easily tightened, even when there is deviation in angle or location. By detecting the force, the robot can successfully execute the task, while preventing any stripping of the threads.

Delicate parts handling

Because of its tight integration with the servo system, Epson Force Guide makes it easy to handle glass and other delicate materials. Our quartz-based sensors allow for soft placement in applications that would otherwise result in breakage of glass or other fragile materials.

Grinding/polishing

Deburring and grinding of parts to accurately remove excess flash is possible with Epson Force Guide, despite deviations in casting or dimensions. The tool remains on its path, due to real-time force feedback. Similarly, polishing can be automated so as to keep the tool pressing with constant and precise force to the part.

Gear meshing

On assembly operations, Epson Force Guide provides the robot with the tools and data necessary to align and match the faces of various components, including multiple gears.

Force Guide tools

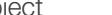
Pre-configured force guidance object tools provide a simple method for creating robot force-based motions and applications.

- 

1 CONTACT
Find the object



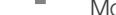
2 ALIGN
Align the object, as needed



3 PROBE
Find the holes or steps needed



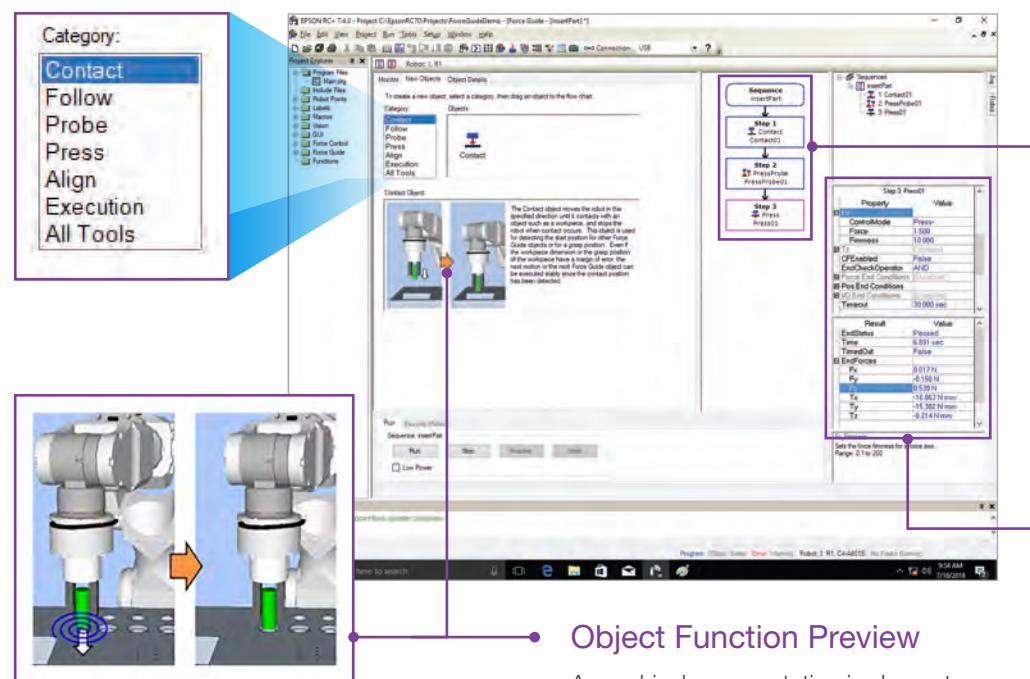
4 FOLLOW
Move the robot based on the force detected



5 PRESS
Continue to apply the necessary force to the object to complete placement of the part

Intuitive interface

Fully integrated in the Epson RC+ development environment, Epson Force Guide applications can be created and tested in an easy-to-use point-and-click fashion.



Force Guide Sequence

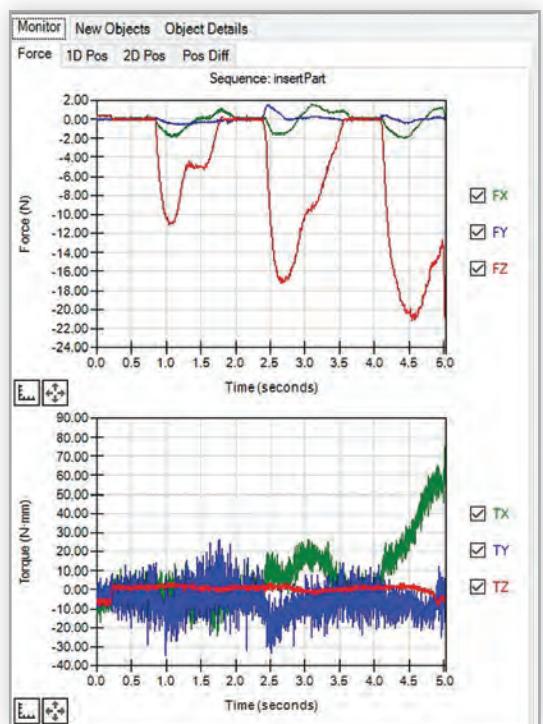
The Force Guide sequence flowchart provides a simple drag-and-drop mechanism for defining the force guidance operational flow (ordering of steps). This reduces the amount of programming required for Force Guide applications.

- Object Properties and Results

Users can input and adjust force and torque data. The software automatically generates associated results based on input parameters.

Object Function Preview

A graphical representation is shown to illustrate the robot motions associated with specific Force Guide tools.



Real-time Force Guide monitoring

Epson Force Guide provides real-time graphical representations of both force and torque, allowing users to see and adjust force guidance based on object parameters. Epson Force Guide also provides visual feedback and records and displays data logs to ensure operational reliability.

● SPECIFICATIONS

| Model No. | S250N | S250L | S250P | SH250LH | S250H | S2503 | | S2506 | S25010 | | |
|--|--|---|--------------------------|-------------------------------|------------|------------|----------|------------|------------|--|--|
| Compatible robots ¹ | C4-Series | C8-Series (Standard and Clean/ ESD) | C8-Series (Protected) | N6 | N2 | RS-Series | G3 | G6 | G10 G20 | | |
| Cabling routing | External | Internal | Internal | Internal | Internal | Internal | External | Internal | Internal | | |
| Dimensions (diameter x height) | 80 x 49 mm | 88 x 49 mm | 88 x 66 mm | 85 x 48 mm | 80 x 49 mm | 80 x 52 mm | | 80 x 52 mm | 80 x 52 mm | | |
| Weight ² | 460 g | 520 g | 680 g | 460 g | 460 g | 620 g | | 620 g | 640 g | | |
| Compatible robot controller ³ | RC700A | | | | | | | | | | |
| Measured degrees of freedom | 6-axis: 3 force components (Fx, Fy, Fz) and 3 torque components (Tx, Ty, Tz) | | | | | | | | | | |
| Rated load | Force (Fx, Fy, Fz) | 250 N | | | | | | | | | |
| | Torque (Tx, Ty, Tz) | 18 Nm | | | | | | | | | |
| Maximum allowable static load | Force (Fx, Fy, Fz) | 1,000 N | | | | | | | | | |
| | Torque (Tx, Ty, Tz) | 36 Nm | | | | | | | | | |
| Measured resolution ⁴ | Force (Fx, Fy, Fz) | ± 0.1 N or less (5 sec, 25 °C) | | | | | | | | | |
| | Torque (Tx, Ty, Tz) | ± 0.003 Nm or less (5 sec, 25 °C) | | | | | | | | | |
| Measurement accuracy ⁵ | ± 5 % RO or less | | | | | | | | | | |
| Operating environment | Temperature | - 10 ~ 40 °C | | | | | | | | | |
| | Humidity | 10% to 80% relative humidity, no condensation | | | | | | | | | |
| Protection class | IP20 | IP20 | IP67 | IP20 | IP20 | IP20 | IP20 | IP20 | IP20 | | |
| What's in the box | Force Sensor, Force Control Board, Cables | | | | | | | | | | |
| Safety standards | CE Mark, EMC Directive, KC Mark | | | | | | | | | | |
| Support | Customer Service | (562) 290-5920 | | service@robots.epson.com | | | | | | | |
| | Applications Support | (562) 290-5930 | | applications@robots.epson.com | | | | | | | |
| | Sales Inquiries | (562) 290-5997 | | info@robots.epson.com | | | | | | | |

1 Robots not supported: G1 | S-Series T-Series EZ Modules

² Weight includes force sensor and mounting flange; does not include control board and cables.

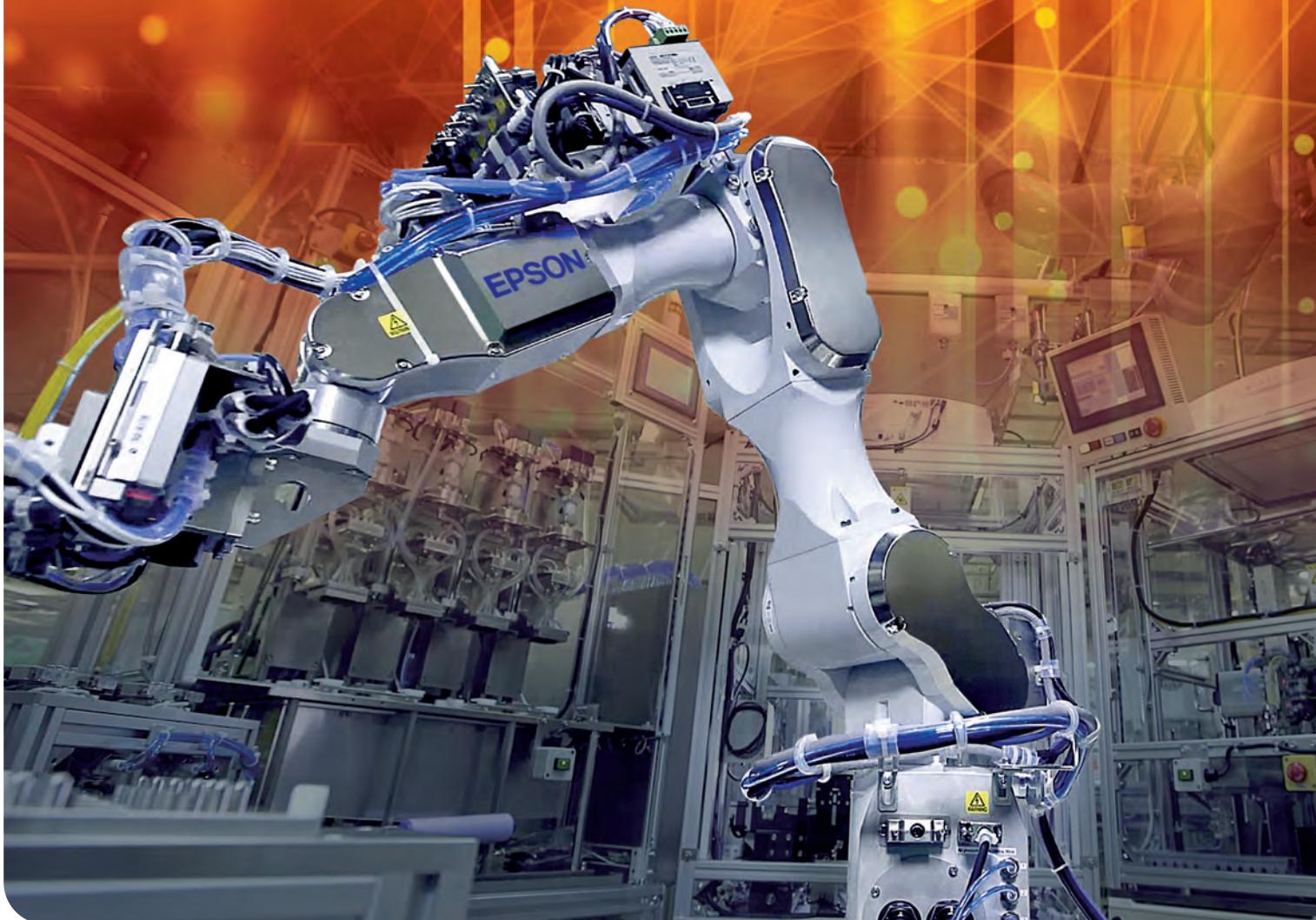
2 Weight includes force sensor and mounting flange,
3 Controllers not supported: RC90B and All-in-One

4 The measurement resolution including the noise level and time drift (25 °C), when the measurement time is 5 seconds.

5 The measurement accuracy when the measurement time is 6 minutes.

Options

From Vision Guide and Force Guide to GUI Builders, teach pendants, conveyor tracking and fieldbus I/O, Epson offers the options you need to enhance your robot system.



SPECIFICATIONS

Controller Options

| | All-In-One | RC90B | RC700A |
|----------------------------------|------------|-------|--------|
| Teach pendant (TP2) | ● | ● | ● |
| Teach pendant (TP3) | ● | — | ● |
| Conveyor tracking | — | ● | ● |
| PG cards (external axis control) | — | ● | ● |
| Emergency stop switch | ● | ● | ● |
| RS-232C cards | — | ● | ● |
| I/O Expansion cards | — | ● | ● |
| Fieldbus I/O (slave) | ● | ● | ● |
| Fieldbus I/O (master) | ● | ● | ● |
| I/O cable kit | — | ● | ● |
| Analog I/O | — | ● | ● |
| EuroMap 67 | — | ● | ● |
| Force Guide | — | — | ● |
| Parts Feeding | ● | ● | ● |

Software Options

| | All-In-One | RC90B | RC700A |
|--------------------|------------|-------|--------|
| Vision Guide (7.0) | ● | ● | ● |
| RC+ 7.0 API | ● | ● | ● |
| ECP | ● | ● | ● |
| GUI Builder 7.0 | ● | ● | ● |
| OCR | ● | ● | ● |

Robot Manipulator Options

| | T3/T6 | LS3B/ LS6B/ LS10B/ LS20B | RS3/ RS4 | G1 | G6 | G10/ G20 | N2/N6 | C4 | C8/VT6L | C12XL |
|----------------------------|-------|-----------------------------------|-------------|----|----|-------------|-------|----|---------|-------|
| External wiring units | — | — | — | — | ● | ● | — | — | —/● | — |
| Tool adapters / ISO flange | ● | ● | ● | ● | ● | ● | ● | — | ● | ● |
| Brake release units | — | — | — | — | — | — | ● | ● | ●/— | ● |
| Power and signal cables | — | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Camera mounting bracket | ● | ● | ● | — | ● | ● | ● | ● | ● | ● |
| External drive units | — | — | ● | ● | ● | ● | —/● | ● | ● | — |

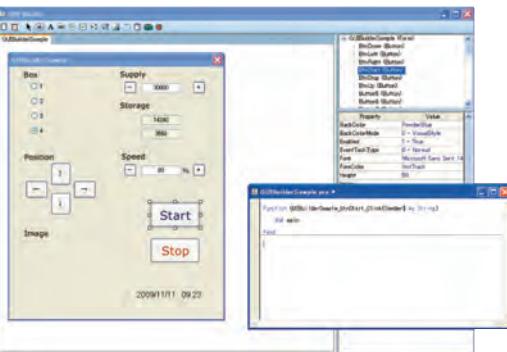
GUI Builder

COMPATIBLE CONTROLLERS

RC700A RC90B All-In-One

Easily create a Graphical User Interface for operators

- Fully integrated within Epson RC+ to reduce overall development time
- Create GUIs without Visual Studio or other third-party software tools
- Create and debug GUI forms from your Epson RC+ Project
- Form and Control Events are executed as SPEL+ tasks
- Perfect for novices and experts alike
- Works with RC700A, RC90B and All-in-One controllers



The GUI Builder Window

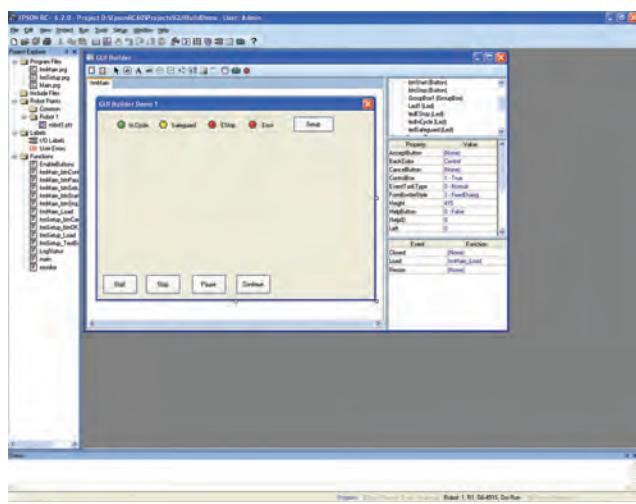
GUI Builder has 5 main areas of use for creating and modifying user GUIs. These include: Toolbar Buttons, Design Area, Forms Explorer, Property Grid and Events Grid.

GUI Builder area definitions

● DESIGN AREA

Where forms are displayed at design time.

Each opened form is displayed on its own tab. You can easily switch between forms by clicking on the tab or double-clicking the form in the Forms Explorer.



Steps to use GUI Builder

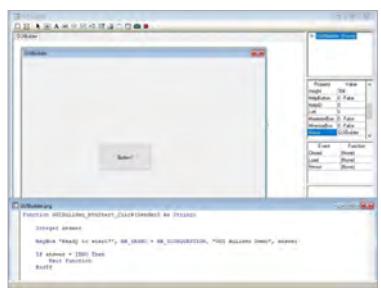
STEP 1

Create a new form and click the Button control from the GUI Builder toolbar and drag it to the form.



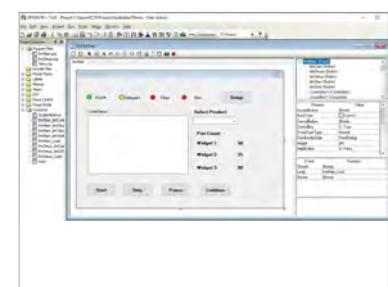
STEP 2

Double-click the button and the Code Editor will appear. Add the SPEL+ code you want to execute when the button is clicked from your application.



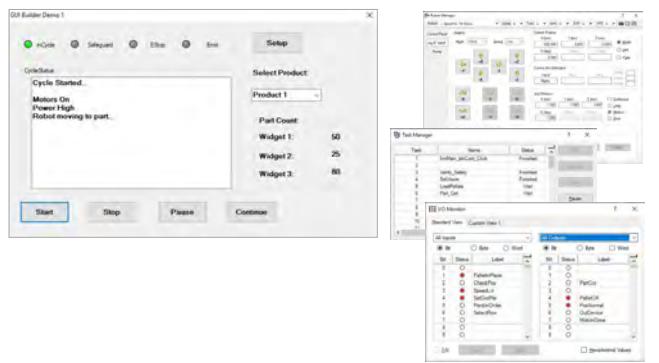
STEP 3

Add more graphic components on your form and associated SPEL+ codes as required for your application.



STEP 4

Run the application from the Epson RC+ Run window or set it up to have the GUI come up automatically. You can also bring up RC+ dialogs like the I/O monitor shown here.



● TOOLBAR BUTTONS

Contains the various controls to be put on a

GUI Builder form. Many of the common controls are supported such as Button, Label,Textbox, Radio Button, Checkbox, etc. However, there are also some controls unique to Epson that help reduce development time for items routinely needed for robot systems. Some of these unique controls include the Video Box Control (to display the Vision Guide Image) and the LED control (to interface with the Epson Robot I/O).

● FORMS EXPLORER

A tree that contains each form for the current

project and its associated controls. When a new form or control is created, it is added to the tree. Double-clicking on a form opens the form in its own tab in the design area.

● PROPERTY GRID

Used to display and edit forms and control

properties. When you select a form or control, the associated properties are displayed in the grid. You can edit the values for properties, thus changing the characteristics of the specific control.

● EVENTS GRID

Used to display and change events for the associated form or control. Each event has a user function (written in SPEL+ code) that is called when the event occurs. This gives the user complete flexibility to program what happens when specific events occur.

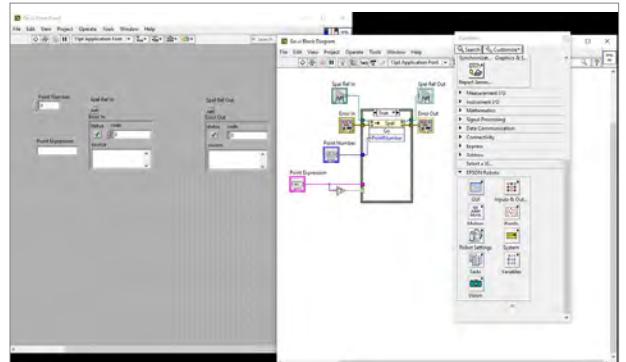
RC+ 7.0 API

COMPATIBLE CONTROLLERS

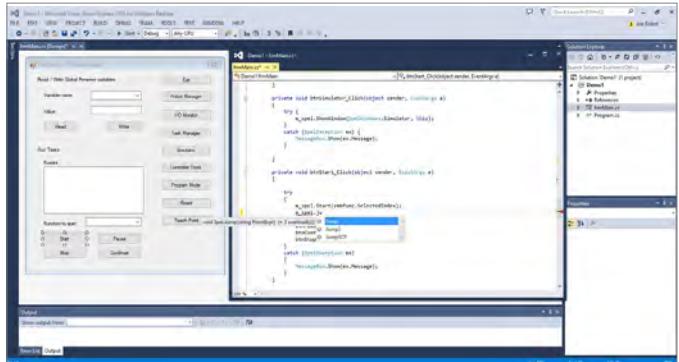
RC700A RC90B All-In-One

Program and execute robot applications in a familiar MS Windows OS environment

- Robots can be controlled using Visual Basic®, Visual C++®, Visual C#®, LabVIEW™ and other third-party programming languages
- Robot status and variable values can be captured
- Vision Guide integration for easy image display on user GUIs
- Third-party .NET interface and database design tools can also be used for program development
- The following Epson RC+ windows and dialogs can be called from within a .NET application:
 - Robot Manager
 - I/O Monitor
 - Task Manager
 - Maintenance Dialog
 - Simulator
 - Force Monitor



LabVIEW



Visual C®

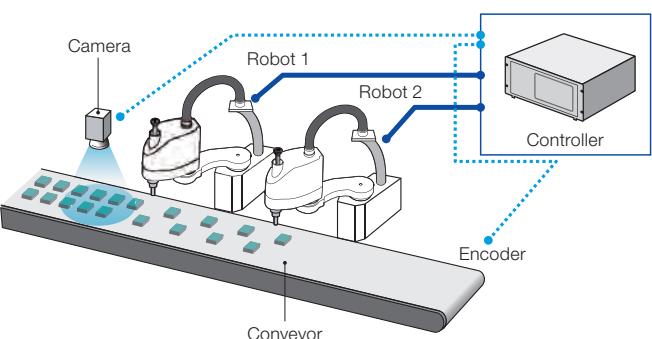
Conveyor Tracking

COMPATIBLE CONTROLLERS

RC700A RC90B

Precision tracking for high-productivity pick-and-place operation

- Supports vision- or sensor-based conveyor tracking
- Vision Guide software detects moving parts for pick-and-place handling
- Multi-conveyor, multi-tool setups are supported
- Automate manual kitting/packaging tasks and help maintain productivity with continuous conveyor operation; ideal for product assembly



Fieldbus I/O (Master)

COMPATIBLE CONTROLLERS

RC700A RC90B All-In-One

Bidirectional high-speed peripheral connectivity

- Support for DeviceNet®, PROFIBUS®, and Ethernet/IP® networked peripherals (1,024-point I/O)



Fieldbus I/O (Slave)

COMPATIBLE CONTROLLERS

RC700A RC90B All-In-One

High-speed peripheral connectivity

- Support for DeviceNet, PROFIBUS, CC-Link®, Ethernet/IP, EtherCat and PROFINET® networked peripherals (256-point I/O)

Teach Pendant TP2

COMPATIBLE CONTROLLERS

RC700A RC90B All-In-One

Easy-to-use pendant

- Universal design ensures ease of use for both right-handed and left-handed operators



Teach Pendant TP3

COMPATIBLE CONTROLLERS

RC700A All-In-One

Powerful pendant for both teaching and robot operation

- 10" color touchscreen panel
- 1280 x 800 high-definition screen resolution
- User-friendly GUI
- Ability to make robot parameter changes
- High-speed test mode
- IP65-rated enclosure is sealed against oil and dust for reliable operation in adverse conditions
- Shock-resistant construction helps protect unit from impact damage
- Universal design ensures ease of use for both right-handed and left-handed operators



OPTIONS

OPTIONS

Camera Mounting Bracket

Easily mount cameras to robot arm

COMPATIBLE ROBOT MANIPULATORS

| | | | | | |
|-------|-------|-----|-----|------|------|
| G3 | G6 | G10 | G20 | LS3B | LS6B |
| LS10B | LS20B | RS3 | RS4 | T3 | T6 |
| N2 | N6 | C4 | C8 | C12 | VT6L |

Bracket design varies according to robot; please specify model when ordering.



OCR

Optical Character Recognition (OCR) of text on parts and labels

- For use with optional Vision Guide system
- Enables you to specify the font, font size, and number of characters of text that you want to read from an image
- A font creation function lets you create SEMI fonts and user-defined fonts from imaged characters or ASCII conversion files

COMPATIBLE CONTROLLERS

| | | |
|--------|-------|------------|
| RC700A | RC90B | All-In-One |
|--------|-------|------------|

PG Motion System

COMPATIBLE CONTROLLERS

| | |
|--------|-------|
| RC700A | RC90B |
|--------|-------|

Control peripheral devices for fully integrated process automation*

- Epson RC+ Software and pulse generator (PG) cards enable control of multiple third-party drives and motors
- PG robots and standard Epson RC+ system robots can be operated simultaneously, and controlled using the same commands
- PG cards can be used to control X/Y tables, slides, rotary tables, and a wide range of other production/inspection line peripherals
- Each PG card has 4 channels, and can support from 1 to 4 robots; up to 4 cards can be installed on the RC700A

*Drivers and motors for third-party devices not included

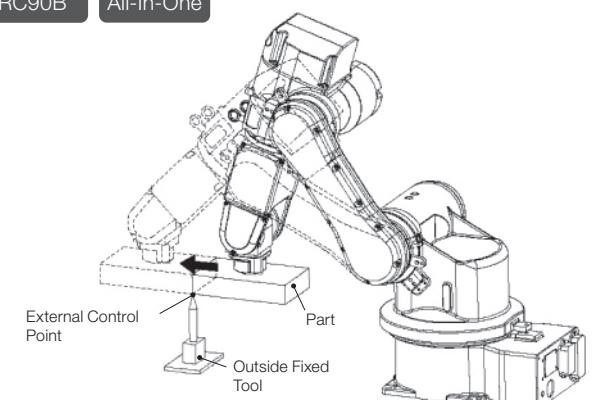
ECP

COMPATIBLE CONTROLLERS

| | | |
|--------|-------|------------|
| RC700A | RC90B | All-In-One |
|--------|-------|------------|

External Control Point (ECP) operation for precise positioning

- For processes requiring the workpiece to be moved against a fixed tool, external control points can be used to ensure precise positioning
- Up to 16 external control points can be set



RC700A DU Drive Unit

Control multiple robots with a single RC700A controller

COMPATIBLE ROBOT MANIPULATORS

| | | | | | |
|-----|----|----|-----|-----|-----|
| G1 | G3 | G6 | G10 | G20 | RS3 |
| RS4 | N6 | C4 | C8 | | |



Emergency Stop Switch

Helps prevent injuries and damage

- Immediately stops robot operation in emergency situations
- Included with all robots

COMPATIBLE CONTROLLERS

| | | |
|--------|-------|------------|
| RC700A | RC90B | All-In-One |
|--------|-------|------------|



I/O Cable Kit

Cables and connectors for easy connectivity with no soldering required

- A wide range of I/O cables and connectors are available

COMPATIBLE CONTROLLERS

| | |
|--------|-------|
| RC700A | RC90B |
|--------|-------|



RS-232C Cards

Expanded Serial port connectivity

- 2-Port RS232C cards to connect to Serial interface devices

COMPATIBLE CONTROLLERS

| | |
|--------|-------|
| RC700A | RC90B |
|--------|-------|



I/O Expansion Cards

Expanded input/output flexibility

- 24 inputs/16 outputs per board

COMPATIBLE CONTROLLERS

| | |
|--------|-------|
| RC700A | RC90B |
|--------|-------|



OPTIONS

External Wiring Units

Simplifies wiring when mounting end-effector options

- Enables easy, on-site connection of external wiring by users
- Ideal for connecting Vision Guide system camera cables or other wiring

COMPATIBLE ROBOT MANIPULATORS

G6 G10 G20 VT6L



Tool Adapters/ ISO Flanges

Enhances handling/processing versatility and simplifies end-effector changes

COMPATIBLE ROBOT MANIPULATORS

G1 G3 G6 G10 G20 LS3B
LS6B LS10B LS20B RS3 RS4 T3
T6 N2 N6 C4L C8 C8L
C8XL C12XL VT6L

Brake Release Units

Release brakes so robot arm can be moved by hand when power is off

COMPATIBLE ROBOT MANIPULATORS

N2 N6 C4 C8 C12

Euromap 67 Interface

Epson solution complies with Euromap 67, the standard for connection between injection molding and robots

COMPATIBLE ROBOT MANIPULATORS

G1 G3 G6 G10 G20 LS3B
LS6B LS10B LS20B RS3 RS4 N2
N6 C4 C4L C8 C8L C8XL
C12XL



Training

Epson offers programming, maintenance and robotics Vision Guide classes.

You can find class availability, locations and registration information at epson.com/robottraining

Contact Information

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