

EPSON PROSIX 6-AXIS ROBOTS



**OUR 6-AXIS ROBOTS ARE
FREE TO MOVE**

INCREASED FLEXIBILITY FOR COMPLEX HANDLING

EPSON[®]
EXCEED YOUR VISION

ABOUT EPSON

6-AXIS ROBOT

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Epson, a subsidiary of Seiko Corporation, launched the first robots in the 1980ies. Those were used for precise and fast assembly of Seiko watches. Soon Epson industrial robots and controllers started to conquer markets all over the world. Today, Epson Factory Automation is one of the leading companies producing high-quality robot systems with branches on all five continents.

- In-house Research and Development department for automation processes
- 1984 first freely available Epson SCARA robot in Japan
- One of the world's most comprehensive SCARA model ranges
- 1997 first PC-based controller
- Inventor of the Spider: a unique SCARA robot with 450° envelope



EPSON ROBOT SYSTEMS — TO SPEED UP YOUR PRODUCTION RUN

Our robots palletise, saw, mill, drill, grind, mount, move and assemble. They work precisely and at breathtaking speed in these and many other applications — often up to 24 hours a day.

As one of the pioneers in robotics we know exactly what the main feature of the combination of kinematics and intelligent control must be apart from speed and precision: Reliability! That is because the standstill of an installation resulting in a loss of production is expensive, very expensive. Therefore to us, innovation means more than just up-to-date robot technology. Every day, our development engineers strive to make our robot systems even more economical, flexible and reliable — under all conditions.

Integrated automation

We offer you a flexibly expandable range of products with different integrated components. Among these are a great number of SCARA robots and 6-axis robots for diverse applications as well as controllers and software. Everything engages perfectly and is easy to operate.

SERVICE AND SUPPORT

Our service and support program helps you to tap the full potential of your Epson robot systems.

Feasibility studies

Instead of theoretical simulations we offer cycle time tests with real robots. There are many ways in which you benefit from those studies. Prior to your investment you are provided with optimal robot configuration and installation site as well as precise cycle times. That is how you get maximum planning and project security.

Pre-sales support

How can a robot system be efficiently integrated into an installation? How can cycle times be optimised? How can the robot program be integrated into external software? Our application engineers advise you during planning as well as during implementation.

Training

Whether you need introductory seminars, or programming, maintenance or operator trainings — our experts share their knowledge with you and your employees.

After-sales support

Hotline service, repair service on site, inspection and individual maintenance concepts as well as spare part packages tailored to your needs are only some examples of how we do everything to have your production running non-stop.

Central spare part stocking

All spare parts are rapidly delivered from our central warehouse in Meerbusch, Germany.

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MAXIMUM MOBILITY IN THE SMALLEST SPACE

To tap the full potential of your installation, there is one thing you cannot do without: Robots that are fast, precise and reliable. Epson robots stand for reliability to set the standards. In every respect. All models. Just like the extremely reliable SCARA and cartesian robots, Epson ProSix 6-axis robots also combine those features. Thanks to their spherical work envelope, they are perfectly suitable for spatial applications such as complex parts handling or assembling. And they require surprisingly little space.

Compact, free, flexible

Due to the high number of degrees of freedom, Epson ProSix 6-axis robots provide for maximum flexibility and smoothly manage complex operations. Small production cell? No problem. Our engineers have optimised the kinematics-envelope ratio.

The result is a particularly slim robot design with integrated media feed-through. The small interference contours also reduce the risk of collision if several robots work inside the same cell — that means an increase in safety, reliability, flexibility and efficiency.

Since the elbow radius is smaller and the swivel range bigger, the innovative joint geometry, which was exclusively developed by Epson, proves extremely advantageous in confined envelopes. Or, to put it simply: more performance per area.

The Epson philosophy: Simpler is better is more economical

You are not going to find any expensive stand-alone solutions at Epson. We rely on a conclusive control concept and 6-axis programming that guarantee you maximum flexibility. That is why both Epson controllers — the RC180 slave controller and the Windows-based RC620 master controller — can be used with all Epson robots.

Thanks to a modular design, a reduced number of assemblies and the use of some identical components we also use for our SCARA robots, Epson ProSix 6-axis robots are particularly robust and easy to maintain.

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EPSON PROSIX SERIES — JUST THE RIGHT TYPE FOR YOUR APPLICATION

Epson ProSix 6-axis robots convince through high-speed, precise travel. Standard cycle times of up to 0.37 seconds at repeatabilities of ± 0.02 mm ensure a high throughput and increase economic viability.



 **Epson ProSix C3 —**
small loads
short reach

Reach: 600 mm
Payload: 3 (5*) kg

 **Epson ProSix S5 —**
heavy loads
medium reach

Reach: 706 mm
Payload: 5 (7*) kg

 **Epson ProSix S5L —**
heavy loads
long reach

Reach: 895 mm
Payload: 5 (7*) kg

*Possible under special conditions (see manual).

6 SYSTEMATIC SOLUTIONS WITH A FUTURE

Epson ProSix 6-axis robots are made for complex handling and assembling workpieces. Thanks to the compact design and Epson joint geometry, they are particularly easily manoeuvred and feel completely at home even in confined envelopes.

Loading and unloading machines

Loading and unloading of conveyors, pallet systems, plastic injection moulding machines or metal foundry machines are just some of the tasks in this field which Epson ProSix 6-axis robots perform precisely and reliably. Typical work cells can be converted into fully automatic production cells, such as the complete, automated process for plastic injection moulding machines with removal, cooling and deburring in just one operation cycle.

Assembling and equipping

Manual activities during assembly and equipping are not only inefficient, but also fault-prone. Another aspect is the naturally limited moveability of the human arm. Epson ProSix 6-axis robots feature maximum freedom of movement, an angle of rotation of $\pm 135^\circ$ of joint #5 and the capability to flip over of joint #3. Apart from that, even the smallest parts can be precisely assembled. Process continuity and reproducibility allow a high savings potential while at the same time improving quality.

Epson ProSix 6-axis robots are just the perfect solution for:

- loading and unloading machines
- assembling and equipping
- packaging and palletising
- testing, measuring and inspecting
- most diverse automation applications
- handling tools and workpieces
- cutting, grinding, deburring, polishing (with different IP codes)



Packaging and palletising

Up-to-date packagings ask for a high degree of flexibility of the packaging lines. That is to ensure ever shorter product changeover times and high process reliability. Epson 6-axis robots have it all under control. They package and palletise even highly sensitive parts. With Conveyor Tracking, the robot can place parts on moving conveyors or pick them up from there. In that process, the objects are detected by a camera or sensor.

Testing, measuring and inspecting

Quality inspections, test runs prior to series production, data measurement — they all require precise detection. With Epson robots in combination with a high-performance integrated vision system, those tasks can even be performed with high clock rates. That way, an Epson 6-axis robot can place a part on a storage place and rotate joint #6 in front of the Epson Vision System so that the camera can detect all relevant surfaces. If the predefined parameters of the product deviate from the tolerance values, the product is recognised as defective and sorted out.

Cleanroom and IP versions

The perfect robot for every environment: Epson ProSix 6-axis robots are available as cleanroom versions and also with different IP codes.

Individual service

Please feel free to contact us so we can find the ideal solution for your application, conduct feasibility studies and efficiently integrate the robot system into your installation. Our application engineers advise you during planning and implementation.



THE EPSON CONCEPT: TO TAKE IT ONE STEP FURTHER

We optimise every detail to improve the performance and at the same time reduce the robot volume. Compact, powerful, absolutely reliable. That is the Epson robot philosophy which is more than just an empty promise. Try it!

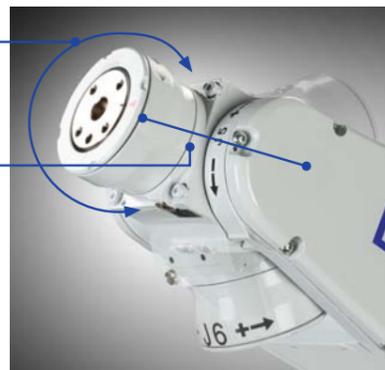
Optimal joint geometry



Thanks to the improved joint geometry, joint #5 has an angle of rotation of $\pm 135^\circ$ and has thus a considerably greater freedom of movement

The elbow radius, that is the distance from the pivotal point of joint #5 to the flange for the hand, is smaller — for maximum moveability, even in confined envelopes.

Joint #3 is considerably smaller — which is space-saving.



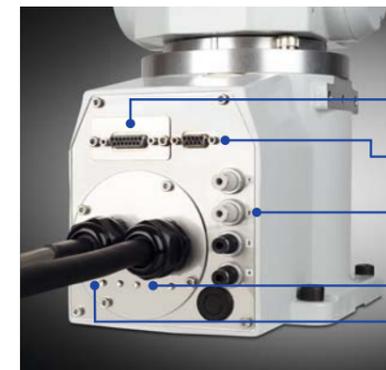
More flexibility thanks to the capability to flip over of joint #3
The capability to flip over of joint #3 not only helps to flexibly design production cells making full use of the envelope, but also reduces cycle times.



Less interference contours

If more than one robot works in a confined space, the risk of collision increases. That is why all models of the Epson ProSix 6-axis robot series have considerably less interference contours — thanks to the slim design on the one hand and the integrated media feed-through on the other. The advantages: maximum reliability of the installation and low maintenance costs.

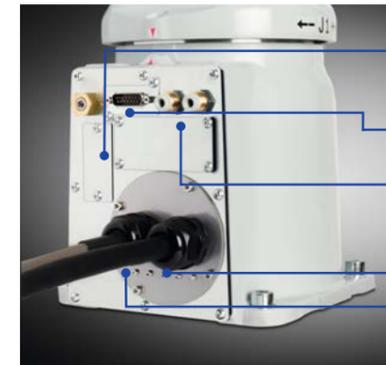
Connections on the Epson ProSix C3 6-axis robot



- Motor function indicator lamp
- Connection for brake release unit
- Connection for user wiring (9-pin D-Sub connector)
- Four connections for compressed-air supply with pressure plug (2 x \varnothing 4 mm and 2 x \varnothing 6 mm)
- Power cable
- Signal cable



Connections on the Epson ProSix S5 and S5L 6-axis robots



- Motor function indicator lamp
- Connection option for brake release unit (option)
- Connection for user wiring (15-pin D-Sub connector)
- Two connections for compressed-air supply with pressure plugs (2 x \varnothing 6 mm)
- Power cable
- Signal cable

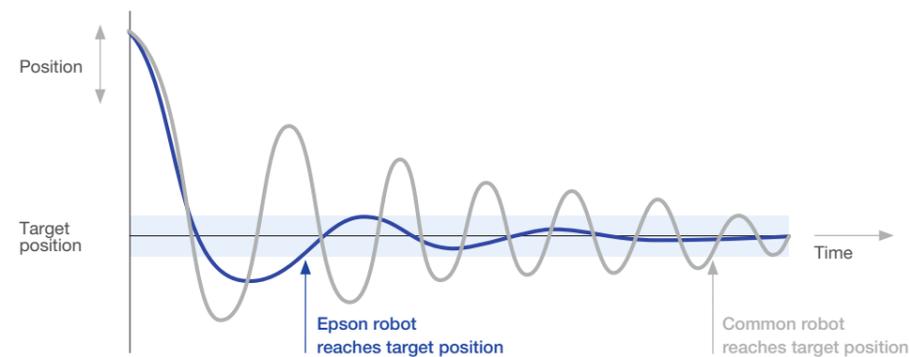


BECAUSE QUALITY IS THE BEST REMEDY

Like all Epson robot systems, Epson ProSix 6-axis robots also feature a series of advantages. High-quality components ensure longevity and high availability. The design also focuses on reliability — starting from well-established design principles to easy accessibility of all components.

We get to the point fast: Smart Motion

Smart Motion is the revolutionary motor management by Epson used in all Epson robot systems. At low vibration, Epson robots reach the end position much faster and much more precisely. Optimum positioning, short cycle times and increased path accuracy — be on the economical side with Smart Motion!



Epson robot
Common robot
End position controller

As a result of overshooting, common motor controllers lead to increased deviations. The result: imprecise positioning, poor interpolation and longer process times. Epson Smart Motion, however, minimises overshooting. Epson robots are more precise and product-conserving and get to the point faster — even if cycle times are extreme.

Economical and future-oriented complete solution

All important components are Epson components. They are developed in our research centres and produced in our quality-certified production facilities. Hardware and software match perfectly.

Epson RC+ simulation software

With the Epson simulation software you can even in the run-up plan your robot cell true to the original and simulate different layouts, concepts and robot tasks fast and easily. Thus you save valuable time and costs in all phases — from design to integration and operation to maintenance.

FLEXIBLE CONTROLLER CONCEPT

Central controller or compact slave controller — Epson ProSix 6-axis robots can be optimally controlled with the Epson controllers and smoothly integrated into your production processes. It all depends on what you need for your application.

Epson RC180 — the most compact, most lightweight and fastest controller of its performance class on the market

With its compact dimensions, the Epson RC180 is incredibly small. The controller was mainly developed to be operated as a stand-alone slave.

Epson RC620 — the powerful master controller for up to 20 axes

This controller has it all under control: robots, conveyors and other peripheral equipment. Due to its open Windows-based system design, it offers endless possibilities and is easy to operate. The RC620 supports Conveyor Tracking as well as most diverse system bus protocols and interface expansions. For even more demanding system resources, there is the Epson RC620+.

For robots with eye contact

The high-performance integrated vision systems reliably detect and position parts — even in case of manufacturing deviations, part changes or varying light conditions. Epson Smart Vision: That is perfectly matching software and hardware.



Epson Smart Camera

Epson Smart Cameras have an integrated Machine Vision processor and are therefore separated from the robot controller. They can be used as stand-alone cameras or in a network of several cameras.



TP1

Monitoring, operation and parametrisation at the portable TP1 Teach Pendant



Epson RC180

The slave controller — compact, smart and powerful



Epson RC620

The master for several kinematics and complex installation control



OP1

OP1 Operator Pendant for operation and visualisation tasks even in complex installations

Epson controllers brochure in PDF at:
www.epson.de/robots

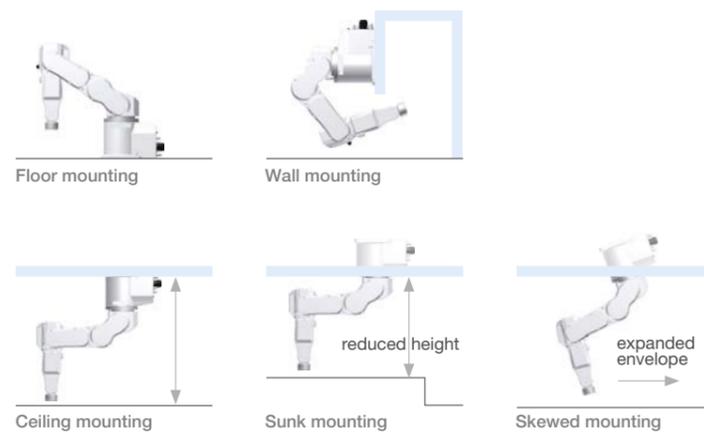
Specifications

	EPSON PROSIX C3
DESIGN	vertical articulated arm
PAYLOAD	(kg) 3/5*
REACH	(mm) P point 600, 665 max.
REPEATABILITY	(mm) +/-0.02
ADMISSIBLE MOMENT OF INERTIA	(kgm ²) J4 0.15 (kgm ²) J5 0.15 (kgm ²) J6 0.1
USER WIRING	electrical 1 x D-Sub 9-pin pneumatic 4 x tubes (2 x Ø 4 mm and 2 x Ø 6 mm)
WEIGHT	(kg) 27
CONTROLLER	RC180 / RC620 / RC620+
MANIPULATOR MODEL	mounting option floor / wall / ceiling (also skewed or sunk) cleanroom and ESD ISO3

*Possible under special conditions (see manual).

Mounting

The Epson ProSix C3 6-axis robot can be mounted as required for the application. Apart from floor, wall and ceiling mounting, sunk and skewed mounting are also possible. Since there is no base and the cable duct is hidden, the work envelope is optimally used.

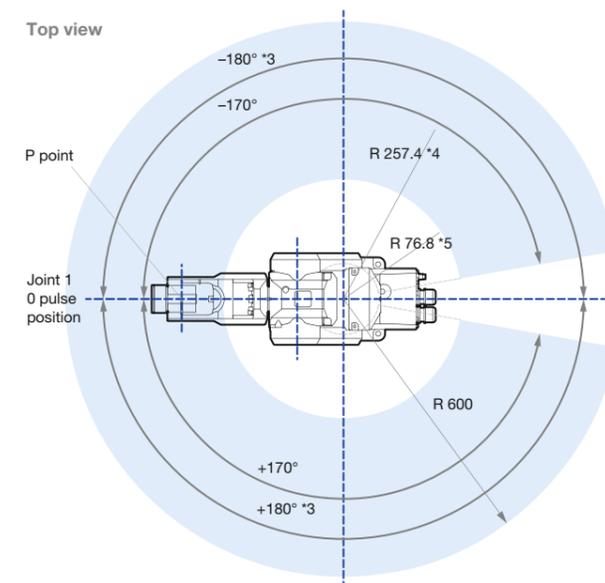
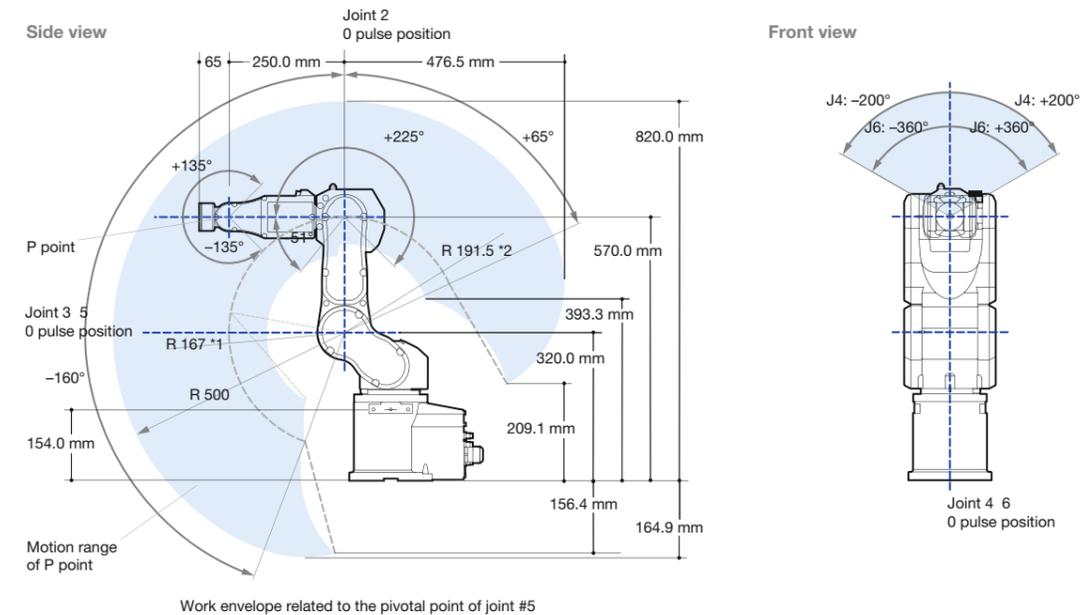


Scope of delivery

- Epson robot and controller
- 1 Epson RC+ program CD including simulation software
- 2 sets of mounting brackets for the robot controller (RC180)
- 1 set of 3 m power and signal cable
- 1 emergency stop connector
- 1 connector for standard I/O
- 1 set of connectors for user wiring
- 2 sets of air connections (4 x straight and 4 x 90° angled each)
- 1 back-up disc of the robot controller (RC180)
- 1 USB programming cable (RC180)
- Manuals on CD
- 1 installation/safety manual
- 1 mouse and 1 keyboard (RC620)

Manipulator options

- Longer power and signal cables (5 m/10 m/20 m)
- Brake release unit
- Mounting bracket



This and further information as well as CAD data are provided at: www.epson.de/robots

TECHNICAL DATA

EPSON PROSIX S5

Specifications

	EPSON PROSIX S5
PAYLOAD	vertical articulated arm
TRAGLAST	(kg) 5/7*
REACH	(mm) P point 706, 786 max.
REPEATABILITY	(mm) +/-0.02
ADMISSIBLE MOMENT OF INERTIA	(kgm ²) J4 0.3
	(kgm ²) J5 0.3
	(kgm ²) J6 0.1
USER WIRING	electrical 1 x D-Sub 15-pin pneumatic 2 x tubes (Ø) 6 mm
WEIGHT	(kg) 36
CONTROLLER	RC180 / RC620 / RC620+
MANIPULATOR MODEL	mounting option floor / wall / ceiling cleanroom ISO4 IP class IP65

*Possible under special conditions (see manual).

Mounting

Floor, wall or ceiling — you can mount Epson ProSix S5 6-axis robots on all three.



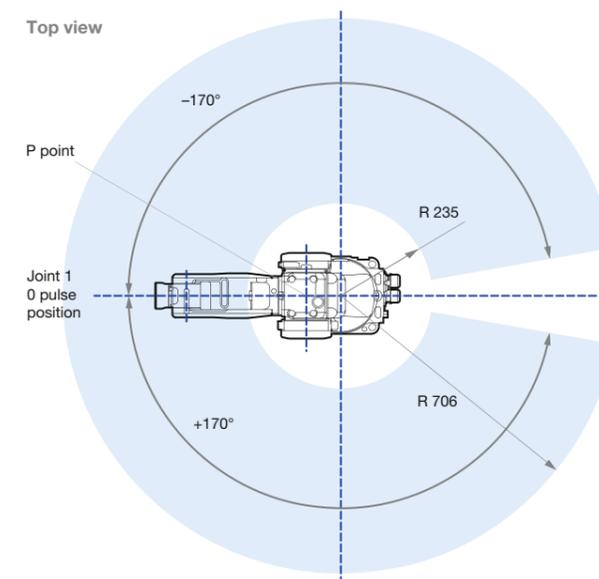
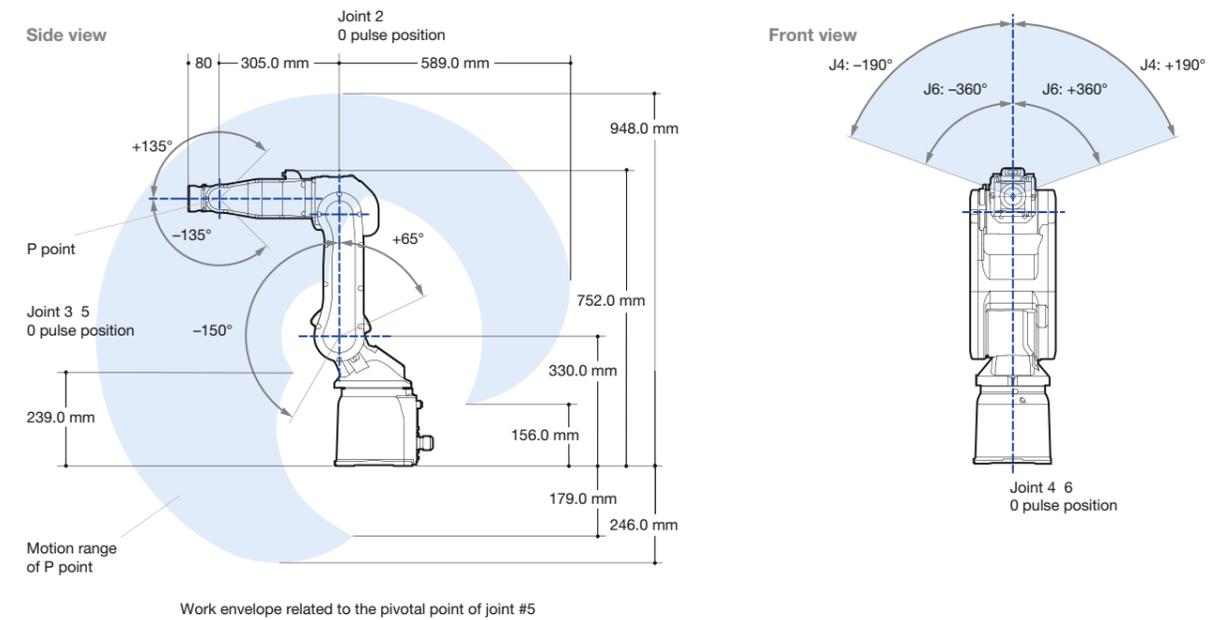
Scope of delivery

- Epson robot and controller
- 1 Epson RC+ program CD including simulation software
- 2 sets of mounting brackets for the robot controller (RC180)
- 1 set of 3 m power and signal cable
- 1 emergency stop connector
- 1 connector for standard I/O
- 1 set of connectors for user wiring
- 1 set of air connections (2 x straight and 2 x 90° angled each)
- 1 back-up disc of the robot controller (RC180)
- 1 USB programming cable (RC180)
- Manuals on CD
- 1 installation/safety manual
- 1 mouse and 1 keyboard (RC620)

Manipulator options

- Longer power and signal cables (5 m/10 m/20 m)
- Brake release unit

EPSON PROSIX S5



This and further information as well as CAD data are provided at: www.epson.de/robots

Specifications

EPSON PROSIX S5L	
DESIGN	vertical articulated arm
PAYLOAD	(kg) 5/7*
REACH	(mm) P point 895, 975 max.
REPEATABILITY	(mm) +/-0.03
ADMISSIBLE MOMENT OF INERTIA	(kgm ²) J4 0.3
	(kgm ²) J5 0.3
	(kgm ²) J6 0.1
USER WIRING	electrical 1 x D-Sub 15-pin pneumatic 2 x tubes (Ø) 6 mm
WEIGHT	(kg) 38
CONTROLLER	RC180 / RC620 / RC620+
MANIPULATOR MODEL	mounting option floor / wall / ceiling cleanroom ISO4 IP class IP65

*Possible under special conditions (see manual).

Mounting

Floor, wall or ceiling — you can mount Epson ProSix S5L 6-axis robots on all three.

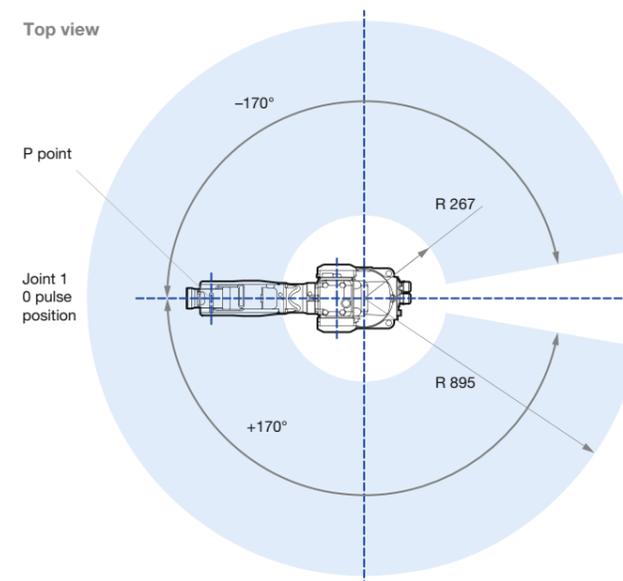
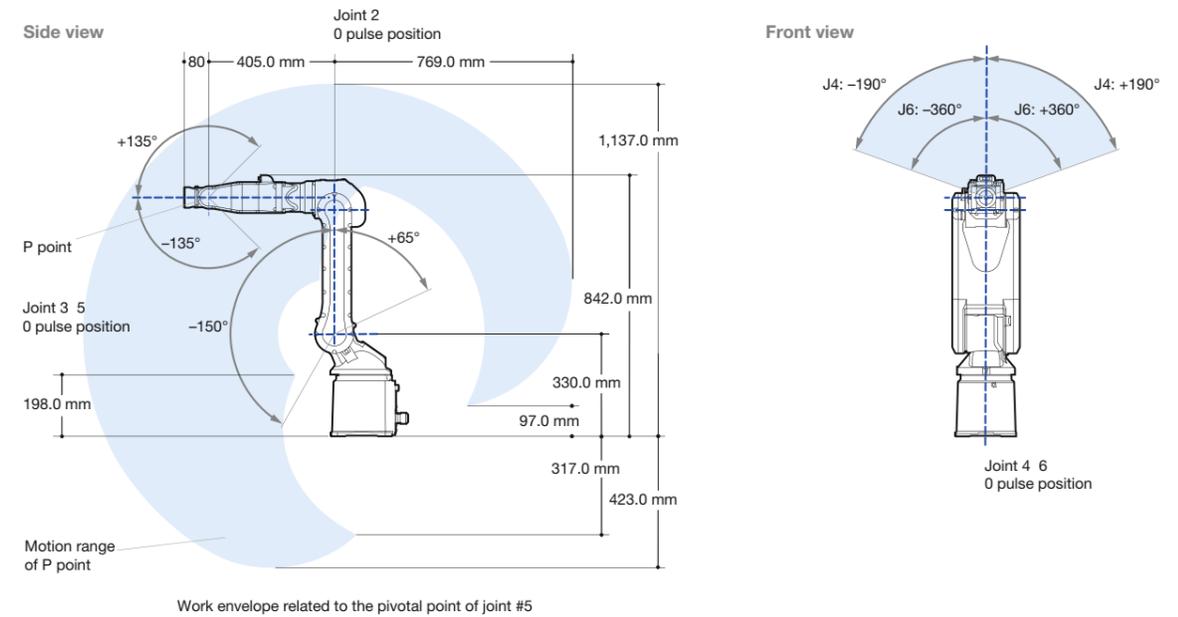


Scope of delivery

- Epson robot and controller
- 1 Epson RC+ program CD including simulation software
- 2 sets of mounting brackets for the robot controller (RC180)
- 1 set of 3 m power and signal cable
- 1 emergency stop connector
- 1 connector for standard I/O
- 1 set of connectors for user wiring
- 1 set of air connections (2 x straight and 2 x 90° angled each)
- 1 back-up disc of the robot controller (RC180)
- 1 USB programming cable (RC180)
- Manuals on CD
- 1 installation/safety manual
- 1 mouse and 1 keyboard (RC620)

Manipulator options

- Longer power and signal cables (5 m/10 m/20 m)
- Brake release unit



This and further information as well as CAD data are provided at: www.epson.de/robots

EFFICIENTLY USING RESOURCES

Saving resources is a holistic approach at Epson. Not only does it mean that we produce environmentally friendly, but that we also focus on sustainable quality. If strictly implemented, this also considerably increases efficiency, since we can reduce the operating and follow-up costs of our robots.

Size and weight are relevant to costs

Size and weight play an important role for the robot design. A slim design as well as minimised weight and power consumption lead to savings in operating costs, since it results in improved performance in minimum space. Dimension and design of the Epson automation solution are tailored to your application.

Optimum efficiency related to supplied power and payload

That is efficiency as required for economical production: Converting electric energy into kinetic energy so as to achieve high efficiency and short cycle times. Epson RC180 and RC620 controllers are extremely compact, consist of a smaller number of assemblies and feature low power loss. Thanks to that, the total energy consumption of the control system was reduced by almost 25 %.



Mass reduced by 26 %

Thanks to the reduction of the deadload of the Epson S5 6-axis robot by 13 kg, efficiency related to supplied power and payload was optimised to save effective operating costs.

Economical – also in the long run

All Epson ProSix 6-axis robots stand out for a particularly low power consumption. The combination of maximum reliability and reusability of the components results in a high added value.



THE GREEN WAY: ENVIRONMENT AND SUSTAINABILITY

Environmental protection has a long tradition at Epson and is an integral part of the company philosophy. It is our aim to reduce the environmental impact of our products – from the concept to recycling, from the choice of materials and components to transport to reuse.

Saving energy – and costs

Energy is money and a real economic factor. Consistently we strive to develop particularly reliable, failsafe products which consume less and less energy. Since 1995, Epson has implemented an environmental management system based on a holistic approach.

Environmental Vision 2050 – our goals

With our Environmental Vision 2050, we set an example. One of our main intentions is to reduce our CO₂ emissions during the complete life cycle of a product by 90 % by 2050. Moreover, we are going to introduce reuse and recycling for all of our products and are engaged in protecting biodiversity.

Sustainable and environmentally friendly

Within the framework of our sustainability initiative, we have committed ourselves to high ethical and ecological standards. The annual “Epson Sustainability Report” documents how we ensure and continuously improve the good environmental performance of our products and production processes.

Life cycle assessment

Since the year 2000, we have been registering the environmental impact of individual items of our manufacturing program. Life cycle assessment gives information about how much raw material and energy a product consumes within the course of its production, use and disposal and what emissions are generated.

Better Products for a Better Future™

EPSON PROSIX 6-AXIS ROBOTS



Epson Industry Solutions Center — that's where we find your solution!

Expertise concentrated on 500 m²: In cooperation with our partners, in our Meerbusch Industry Solutions Center we present solutions for the most diverse applications in industry. The fields include large format printing, retail solution and factory automation.

Factory automation: See all Epson robots in action. Our experts help you to set up, simulate and optimise your automation application in a workshop cell. The cell can be controlled and networked with all standard fieldbuses. In addition, we provide up-to-date peripheral equipment such as a Vision and Conveyor Tracking system.

You would like to arrange an appointment?
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