

SCORBOT-ER 4u Educational Robot

The SCORBOT-ER 4u robot is a versatile and reliable system for educational use. The SCORBOT-ER4u robot arm can be mounted on a tabletop, pedestal or linear slidebase.

The robot's speed and repeatability make it highly suited for both stand-alone operations and integrated use in automated workcell and FMS applications such as robotic welding, machine vision and CNC machine tending. The optional RoboCell 3D simulation software lets students design and control industrial workcells.



Standard Features

- Mechanical arm
- Controller-USB
- USB communication cable
- Software CD
- Plastic dust covers
- Documentation for all software and hardware components
- This system is certified for CE safety compliance.

Optional Accessories

- DC servo motor kit
- Gravity parts feeder
- Linear conveyor
- Linear slidebase for small robots
- MicroASRS
- Multi-purpose gripper adapters
- Rotary index table
- Teach Pendant for USB Controller
- Linear Table
- XY-Table
- Motor Kit

Applications (samples)

- ER4 u with Machine Tending (Milling/Turning/Laser Engraver)
- ER4 u with Assembly and/or Quality control

Specifications

Mechanical structure

Vertically articulated

Number of Axes

5 axes plus servo gripper

Axis Movement

Axis 1: Base rotation
Axis 2: Shoulder rotation
Axis 3: Elbow rotation
Axis 4: Wrist pitch
Axis 5: Wrist roll

Range

310°
158°
260°
260°
Unlimited (mechanically);
±570° (electrically)

Effective Speed

20°/sec
26.3°/sec
26.3°/sec
83°/sec

Maximum Operating Radius

610 mm (24")

End Effectors

DC servo gripper, with optical encoder, parallel finger motion; Measurement of object's size by means of Gripper sensor and software.

Maximum Gripper Opening

75 mm (3") without rubber pads
65 mm (2.6") with rubber pads

Homing

Fixed position on each axis found by means of micro switches

Feedback

Optical encoder on each axis

Actuators

12 VDC servo motors

Transmission

Gears, timing belts, lead screw

Maximum Payload

Default parameters 1Kg (2.2 lbs)
Reduce velocity increase
weight up to 2.5Kg (5.5 lbs)

Position Repeatability

±0.18 mm (0.007") at TCP (tip of gripper)

Weight

10.8 kg (23.8 lb)

Maximum Path Velocity

700 mm/sec (27.6"/sec)

Ambient Operating Temperature

2°-40°C (36°-104°F)

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Robot Arm Accessories

Part # 001710:	Teach Pendant
Part # 000609:	Grippers
Part # 001020:	Linear Slide base 1M
Part # 001021:	Linear Slide base 1.8M
Part # 001010:	Conveyor (31.7"lx4"w x4"h)
Part # 001009:	Rotary Table with pegboard design, 24V
Part # 001013:	X Positioning Table single axis
Part # 001014:	XY Positioning Table dual axis
Part # 001201:	Experiment Table
Part # 001209:	Sensors: Photoelectric sensor for Conveyor
Part # 001203:	Sensors: Photoelectric sensor for Rotary Table
Part # 21-0004-0000:	Assembly, Dual Axis Air Vise Mechanicals
Part # 025234:	Solenoid Valve (24V) for Pipe 3 mm
Part # 025217:	Parts Feeder: Pneumatic, for rectangular parts
Part # 025210:	Parts Feeder: Pneumatic, for round parts
Part # 010074:	Parts Feeder: Gravity operated feeder
Part # 001110:	Palletizing Rack
Part # 001249:	Workbench: Light duty extruded aluminum
Part # 001251:	Workbench: 59" Long
Part # 001250:	Workbench: 71" Long
Part # 001293:	Workbench with shelves: 59" Long
Part # 001284:	Workbench: Robot pedestal welded
Part # 001290:	Workbench: PC table

Ordering Information

Hardware

Scorbot-ER 4u Robotic Arm	000413
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Software

RoboCell virtual simulation control Single Seat License	700001
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Curriculum

Scorbot-ER 4u Fundamentals, Virtual	17-3046-0000
Scorbot-ER 4u Advanced, Virtual	17-3048-0000
Scorbot-ER 4u Materials Handling I, Lab includes: Content, robot, linear conveyor & accessories	17-8082-0000
Scorbot-ER 4u Materials Handling II, Virtual	17-8083-0000
Scorbot-ER 4u Automated Welding, Virtual	17-3001-0000
Scorbot-ER 4u Automated Welding includes: Content, robot, welding booth & accessories	16-8030-1000

Projects

Robotics Automation Project includes: Content, teacher supplement & hardware components	17-7018-001
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USB Controller

Dimensions

315(L)x223(W)x117(H) mm (12.4"x8.8"x4.6")

Weight

7 kg (15.4 lb)

Ambient Operating Temperature

0°C-55°C (32°F-131°F)

Type of Control

Real-time

PID (Proportional, Integral, Differential)

PWM (Pulse-Width Modulation)

Communications

USB connection to PC, Plug-and-Play without rebooting

Integrated RS232 port for Teach Pendant connection

Microcontroller

Full featured, NEC V853 RISC 32-bit microcontroller

Inputs

8 digital inputs PNP/NPN (High/Low) configurable, 0-24VDC max.

4 analog inputs (8-bit resolution): input voltage 0-10VDC

Outputs

8 digital outputs:

1 - 4: relays, 1.0A max.

5 - 8: sink/source configurable open collectors

Sink: 15VDC, 0.5A max. for each output

Source: 15VDC, 50mA max. for all outputs combined

2 analog outputs (8-bit resolution): output voltage 0-10VDC, 20mA max

LED Indicators

Main power, bicolor: green: power on communication with PC red: power on; no communication with PC flashing: power on; PC USB communications timeout Motors Power ON (green), Emergency (red) 8 digital inputs (green), 8 digital outputs (orange)

User Power Supply

12VDC 0.1A max.

Power Requirements

110/220VAC (+15%, -10%), 2A max, 50/60Hz

Internal Power Supplies

Servo: 24V (depending on input voltage & load)

Digital: 5V, +15V, -12V



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