

# SCORBOT-ER 9Pro Educational Robot

The SCORBOT-ER 9Pro offers advanced robotic path control, speed and accuracy in an affordable, industrial grade robot. With the new state of the art USB-PRO controller, the SCORBOT-ER9 Pro is provided with multi-tasking, real-time control and synchronization of up to 8 axes, 16 digital inputs, 16 digital outputs, 4 analog inputs and 2 analog outputs. The SCORBOT-ER 9Pro supports both stand-alone applications as well as sophisticated automated workcells.

The SCORBOT-ER 9Pro supports both stand-alone applications as well as sophisticated automated workcells. The robot is supported by RoboCell 3D graphic software that lets students design, create and control simulated industrial workcells. RoboCell is fully integrated with SCORBASE robotics programming and control software and provides dynamic simulation of the robot and workcell devices during visual program execution.



## Standard Features

- Mechanical arm
- USB-PRO Controller
- Software CD
- USB and power cables
- Documentation for all software and hardware components
- Certified for CE safety compliance.

## Optional Accessories

- Automatic tool changer for large robots
- DC servo gripper
- Gravity parts feeder
- Linear conveyor
- Linear slidebase for large robots
- Multi-purpose gripper attachment for large robots
- Pneumatic gripper
- Rotary index table
- Dual-axis pneumatic vise
- Teach Pendant for USB-PRO Controller
- Linear Table
- XY-Table
- Motor Kit

## Applications (samples)

- ER9 Pro with Machine Tending (Milling/Turning/Laser Engraver)
- ER9 Pro with Assembly and/or Quality control

## Specifications

### Mechanical structure

Vertically articulated  
Enclosed casting

### Number of Axes

5 rotational axes and gripper

### Axis Movement

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

### Range

276°  
153°  
214°  
202°  
737°

### Effective Speed

80°/sec  
69°/sec  
78°/sec  
103°/sec  
185°/sec

### Maximum Speed

140°/sec  
123°/sec  
140°/sec  
166°/sec  
300°/sec

### Speed

1.9 m/sec (74.8"/sec)

### Operating radius

691 mm (27.2") without gripper

### Homing

Optical switch and encoder index pulse on each axis

### Position Feedback

Incremental optical encoders with index pulse on each axis

### Actuators

24VDC servo motor on each axis

### Transmission

Harmonic drives and timing belts

### Maximum Payload

2kg (4.4 lbs) (Full speed)  
4kg (8lbs) (with reduced acceleration)

### Repeatability

± 0.05 mm (0.002")

### Weight

51 kg (112.5 lbs)

# SCORBOT-ER 9Pro Educational Robot

## USB-PRO Controller Specifications

### Dimensions

- 460x245x140mm (LxWxH) (18.1"x9.6"x5.5")

### Weight

- 7.5 kg (16.5 lbs)

### Ambient Operating Temperature

- 2° - 40°C (36° - 104°F)

### Type of Control

- Real-time; PID; PWM

### Communications

- USB type A cable connection to PC
- Plug and play without rebooting
- Integrated RS232 for teach pendant

### Microcontroller

- Microcontroller ARM7TDMI Processor; 32-bit RISC Architecture with 256 Kbytes of Internal High-speed Flash

### Inputs

- 16 digital inputs: 24V max., sink/source configurable
- 4 analog inputs(8-bit resolution): input voltage 0-10V

### Outputs

- 16 digital outputs: 24V max.; 4 relays; 12 open collector, sink/source configurable; 2 analog outputs: output voltage 0-10V

### LED Indicators

- Main power, power on, communicating with PC; Motor on; Digital Inputs / Digital Outputs; Emergency

### Control Parameters

- 160 parameters, many are user-accessible; Servo control PID; speed; velocity profile; axis position error; gripper operation; impact; limit protection; homing; Cartesian calculations.

### User Power Supply

- 12 VDC (1A) and 24 VDC (2A) terminals, for connection of remote switches, sensors, etc.

### Power Requirements

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

### Internal Power Supplies

- Servo: 24V (depending on input voltage & load)
- Digital: 5V, +15V, -12V

## Ordering Information

### Hardware

SCORBOT-ER 9Pro Robotic Arm	00-0430-0000
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### Software

RoboCell/SCORBASE USB Pro	63-7000-1800
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### Curriculum & Courseware Bundles

[See e-learning data sheet for details]

SCORBOT-ER 9Pro Fundamentals	77-3047-0000
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SCORBOT-ER 9Pro Advanced	77-3049-0000
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SCORBOT-ER 9Pro Materials Handling I	77-8094-0000
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SCORBOT-ER 9Pro Materials Handling II	77-8095-0000
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Robotics & Material Handling I, w/ER9 Pro, LAB	ROB-ER9-MAT
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### Robotics Accessories

End Effector Attachment for DC Servo Gripper	00-0616-0000
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DC Servo Gripper (ER 9Pro & ER 14Pro)	00-0613-0000
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Pneumatic Gripper for ER9-Pro	00-0633-0000
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Teach Pendant	00-1710-0000
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Conveyor	00-1010-0000
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Palletizing Rack	00-1110-0000
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Gravity Feeder w/ Part Present Switch	10-1007-4000
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Rotary Table	00-1009-0000
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Linear Positioning Table	00-1013-0000
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XY Positioning Table Dual axis, 24V	00-1014-0000
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Linear Slide Base 1.0M	00-1016-0000
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Linear Slide Base 1.8M	00-1017-0000
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Linear Slide Base 2.5M	00-1023-0000
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Linear Slide Base 3.0M	00-1024-0000
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Linear Slide Base Workbench	00-1293-0000
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Automatic Tool Changer (ATC)	ACC-ER9P-ATC
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### Hardware Bundles

#### SCORBOT-ER 9Pro, Introductory Package

ROB-ER9-INTRO

Includes

- SCORBOT-ER 9Pro (incl. USB-Pro Controller)
- Pneumatic Gripper for ER 9Pro
- Teach Pendant for USB/USB Pro Controllers
- Palletizing Rack (incl. Pins for creating Jigs)
- Gravity Feeder w/ Part Present Switch
- Robotic Software for Controller USB Pro
- License Key for RoboCell/SCORBASE USB Pro

#### SCORBOT-ER 9Pro, Standard Package

ROB-ER9-STND

Includes

- ROB-ER9-PACK Introductory package
- Conveyor Belt (24V)
- Photoelectric Sensor for Belt Conveyor
- Workbench 1500x800mm (slotted aluminum top)
- Adapter Mounting Plate for ER9/14Pro & HP3

#### SCORBOT-ER 9Pro, Advanced Package

ROB-ER9-ADV

Includes

- ROB-ER9-STND Standard package
- Rotary Index Table (24V)
- Photoelectric Sensor for Rotary Index Table
- Viewflex - Machine Vision (Stand 1000mm)
- Parts Bin
- Marked Aluminum Cylinder

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