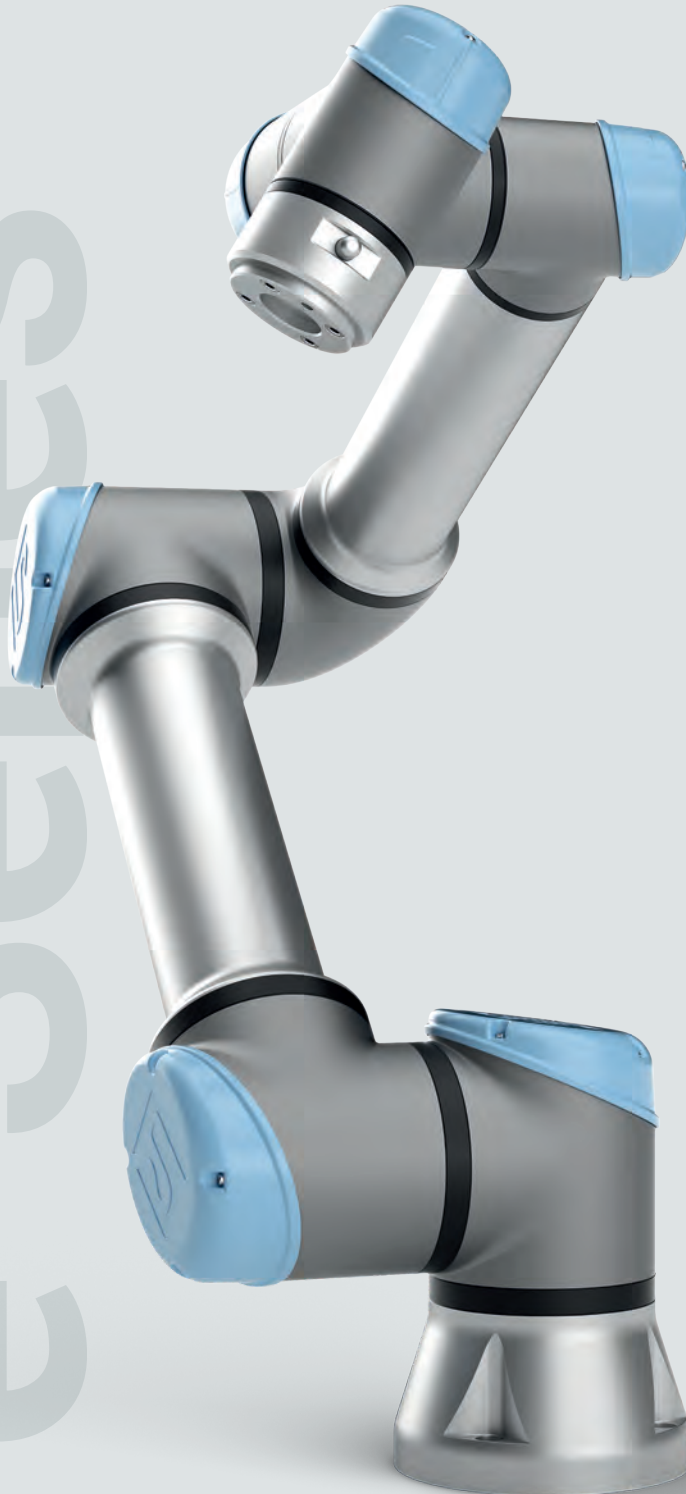# UNIVERSAL ROBOTS

Meet the World's #1 Collaborative Robot
The e-Series

e-Series

- PACKAGING AND PALLETIZING
- MACHINE TENDING
- INDUSTRIAL ASSEMBLY
- PICK AND PLACE
- INJECTION MOLDING
- GLUING, DISPENSING, WELDING
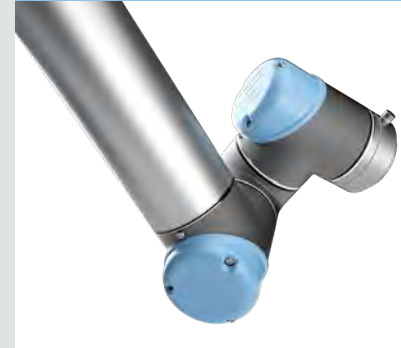
- CERTIFIED PLUG AND PLAY PRODUCTS WITH **UR+** ECOSYSTEM
- FREE ONLINE TRAINING PROGRAM

universal-robots.com

Supercharge Growth
with the e-Series

Get an edge over your competitors with
the e-Series' five key benefits

Easy Programming

87 minutes to turn anyone into a robot programmer.

- Integrated Force Torque Sensor
- User friendly Teach Pendant
- Intuitive 3D interface
- Drag-and-drop functions

Fast Set-Up

The e-Series takes less than 60 minutes to unpack, mount, and program after completion of UR Academy Training.

- Connects to a 110 VAC power outlet
- Intuitive user interface
- 20 industrial I/O connectors
- Ethernet connectivity
- Easy integration into almost any production set-up

Safe & Collaborative

Bridge the gap between man and machine.

- Customizable stopping times + stopping distance
- Collision detection
- 17 safety functions, all EN ISO 13849-1, Cat.3, PL d, certified by TÜV NORD
- ISO 10218-1 Cat 3, PLd, certified by TÜV NORD

Flexible

Infinite ways of deployment and task automation.

- Universal Robots+ offers plug and play cutting edge products
- Lightweight – easy to relocate
- Mounts in any orientation
- Ability to save programs and redeploy to new tasks

Fast Payback

34 days - our fastest recorded payback worldwide.

- Advanced collaborative robots - available to companies of any size
- Fully upgradable software platform for a lasting and worthy investment

Meet the e-Series family

UR10e

UR16e

UR5e

UR3e

3 kg | 6.6 lb	Payload
500 mm | 19.7 in	Reach

5 kg | 11 lb	Payload
850 mm | 33.5 in	Reach

16 kg | 35.3 lbs	Payload
900 mm | 35.4 in	Reach

12.5 kg | 27.5 lbs	Payload
1300 mm | 51.2 in	Reach

Control box

Features

IP classification	IP44
ISO 14644-1 Class Cleanroom	6
Ambient temperature range	0-50°C
I/O ports Digital in Digital out Analog in Analog out Quadrature Digital Inputs	16 16 2 2 4
I/O power supply	24V 2A
Communication	500 Hz Control frequency Modbus TCP PROFINET Ethernet/IP USB 2.0, USB 3.0
Power source	100-240VAC, 47-440Hz
Humidity	90%RH (non-condensing)

Physical

Control box size (WxHxD)	475 mm x 423 mm x 268 mm (18.7 in x 16.7 in x 10.6 in)
Weight	12 kg (26.5 lbs)
Materials	Powder coated steel

Teach pendant

Features

IP classification	IP54
Humidity	90%RH (non-condensing)
Display resolution	1280 x 800 pixels

Physical

Materials	Plastic, PP
Weight including 1m of TP cable	1.6 kg (3.5 lbs)
Cable length	4.5 m (177.17 in)

- Intuitive programming flow
- Light and responsive Teach Pendant
- Thin cable and wide screen
- Customizable stopping time and stopping distance

	UR3e	UR5e	UR10e	UR16e

Specifications

	UR3e	UR5e	UR10e	UR16e
Payload	3 kg (6.6 lbs)	5 kg (11 lbs)	12.5 kg (27.5 lbs)	16 kg (35.3 lbs)
Reach	500 mm (19.7 in)	850 mm (33.5 in)	1300 mm (51.2 in)	900 mm (35.4 in)
Degrees of freedom	6 rotating joints			
Programming	12 inch touchscreen with polyscope graphical user interface			

Performance

	UR3e	UR5e	UR10e	UR16e
Power, consumption, maximum average	300 W	570 W	615 W	585 W
Safety	17 configurable safety functions			
Certifications	EN ISO 13849-1, PLd Category 3, and EN ISO 10218-1			

Force Sensing, Tool Flange	Force, x-y-z	Torque, x-y-z	Force, x-y-z	Torque, x-y-z	Force, x-y-z	Torque, x-y-z	Force, x-y-z	Torque, x-y-z
Range	30.0 N	10.0 Nm	50.0 N	10.0 Nm	100.0 N	10.0 Nm	160.0 N	10.0 Nm
Precision	2.0 N	0.1 Nm	3.5 N	0.2 Nm	5.0 N	0.2 Nm	5.0 N	0.2 Nm
Accuracy	3.5 N	0.1 Nm	4.0 N	0.3 Nm	5.5 N	0.5 Nm	5.5 N	0.5 Nm

Movement

	UR3e	UR5e	UR10e	UR16e
Pose Repeatability per ISO 9283	± 0.03 mm	± 0.03 mm	± 0.05 mm	± 0.05 mm

Axis movement	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed
Base	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 120°/s	± 360°	± 120°/s
Shoulder	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 120°/s	± 360°	± 120°/s
Elbow	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 180°/s
Wrist 1	± 360°	± 360°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 180°/s
Wrist 2	± 360°	± 360°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 180°/s
Wrist 3	Infinite	± 360°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 180°/s

	UR3e	UR5e	UR10e	UR16e
Typical TCP speed	1 m/s (39.4 in/s)			

Features

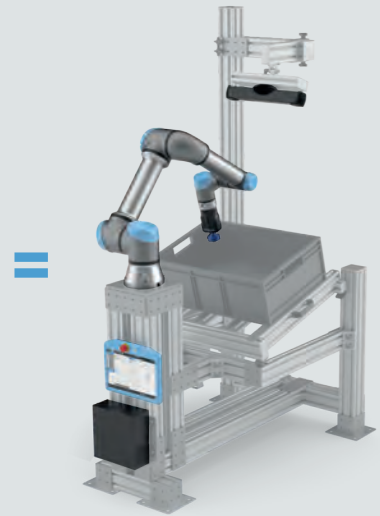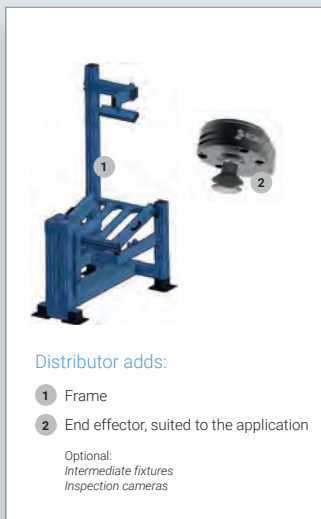|	UR3e	UR5e	UR10e	UR16e
IP classification	IP54			
ISO 14644-1 Class Clean-room	5			
Noise	Less than 60 dB(A)	Less than 65 dB(A)	Less than 65 dB(A)	Less than 65 dB(A)
Robot mounting	Any Orientation			
I/O ports Digital in Digital out Analog in	2 2 2			
Tool I/O Power Supply Voltage	12/24 V			
Tool I/O Power Supply	600 mA	1.5 A (Dual pin) 1 A (Single pin)	2 A (Dual pin) 1 A (Single pin)	2 A (Dual pin) 1 A (Single pin)

Physical

	UR3e	UR5e	UR10e	UR16e
Footprint	Ø 128 mm	Ø 149 mm	Ø 190 mm	Ø 190mm
Materials	Aluminium, Plastic, Steel			
Tool (end-effector) connector type	M8 | M8 8-pin			
Cable length robot arm	6 m (236 in)			
Weight including cable	11.2 kg (24.7 lbs)	20.6 kg (45.4 lbs)	33.5 kg (73.9 lbs)	33.1 kg (73 lbs)
Operating temperature range	0-50°C			
Humidity	90%RH (non-condensing)			

* The robot can work in a temperature range of 0-50°C at a high continuous joint speed, ambient temperature is reduced.

ActiNav
Next-Generation
Machine Loading

ActiNav

ActiNav Bin Picking Kit:

1. Autonomous Motion Module (AMM)
2. 3D Sensor (size M or L)
3. ActiNav User Interface (URCap)
4. Alignment marker
5. Cables, screws, brackets and documentation
6. e-Series Robot
   UR5e or UR10e

Distributor adds:

1. Frame
2. End effector, suited to the application

Optional:
Intermediate fixtures
Inspection cameras

The most efficient and flexible way to load machines is to pick parts directly out of the bins they're already in, but until now that was nearly impossible.

ActiNav combines intelligent vision, real-time autonomous motion control, and UR's world-leading cobots to deliver a game-changing machine loading system that's precise, consistent, intuitive and more agile than ever before.

With ActiNav, now you can plan, pick and place parts accurately, without collisions and without the need to stop – optimizing machine uptime and boosting productivity.

If you're looking for a machine loading solution that is flexible, simple to program and highly reliable, then ActiNav is for you.

Machine Tending

- CNC
- Milling
- Grinding
- Polishing
- Plastics
- Drilling/Tapping
- Welding
- Inspection Stations
- Test Stations

Supported Workflows

- Bin to machine
- Bin to flip/re-grip fixture to machine
- Bin to multi-slot fixture (palletizing)
- Bin to re-scan to fixture
- Bin to inspection camera to machine
- Bin to conveyor to machine

ActiNav Key

01 Autonomous Operation

Collision-free autonomous motion planning and precise real-time control

The ActiNav Autonomous Motion Module (AMM) synchronously handles vision processing, collision-free motion planning, and autonomous real-time robot control.

ActiNav Autonomous Motion enables:

- **Higher machine uptime with collision-free motion:** Means fewer operator interventions and system restarts. The system takes care of the motion autonomously.

- **Less refilling with deep bins:** Autonomous motion enables ActiNav to operate inside deep bins which hold more parts. Systems can run unattended longer and require less filling.

- **Accurate part placement:** The high-resolution sensor and CAD matching enable high accuracy picks. This is not pick and drop, this is accurate pick and part oriented placement.

Easy To Set Up 02

2 hours to complete the wizard 6-step guided system setup

- **Intuitive & prompt-based programming:** Complete the programming hassle free from the Universal Robots teach pendant. ActiNav does not require prior robot programming experience.

- **Easy system setup:** The initial setup can be completed within a couple of hours.

- **Easy training:** The six-step wizard guided process makes the set up process easy. ActiNav can also be easily trained in place in existing work cells.

03 Fast To Deploy

A complete program can be trained in only 6-12 lines of programming

Unlike conventional alternatives which require lengthy and complex integration, and programming efforts, the intuitive flow-based setup allows in-house resources to do the work in just six steps.

- **Scan to teach programming:** Attach the part to your end effector in the correct pose and present it to the scanner. Using scan to teach programming, the system scans and captures the relationship between the part ands the end effector.

- **Free spin pick:** Using the free spin pick, the system considers hundreds of pick combinations at the single trained pick point. A complete program can be trained in only six to twelve lines of programming.