

# Robot arm

## Technical specification

**UR3e**

**UR5e**

**UR10e**

**UR16e**

**UR20\***


### Specification

Payload	3 kg (6.6 lbs)	5 kg (11 lbs)	12.5 kg (27.5 lbs)	16 kg (35.3 lbs)	20 kg (44.1 lbs)
Reach	500 mm (19.7 in)	850 mm (33.5 in)	1300 mm (51.2 in)	900 mm (35.4 in)	1750 mm (68.9 in)
Degrees of freedom	< 6 rotating joints >			< 6 rotating joints >	
Programming	< 12 inch touchscreen with PolyScope graphical user interface >			< 12 inch touchscreen with PolyScope graphical user interface >	

### Performance

<b>Power consumption</b>					
Maximum power	300 W	570 W	615 W	585 W	750 W
Moderate operating settings	100 W	200 W	350 W	350 W	300 W
Operating temperature range	< Ambient temperature: 0-50 °C (32-122 °F) >			< Ambient temperature: 0-50 °C (32-122 °F) >	
Safety functions	< 17 configurable safety functions >			< 17 configurable safety functions >	
In compliance with	< EN ISO 13849-1 (PLd category 3) EN ISO 10218-1 >			< EN ISO 13849-1 (PLd category 3) EN ISO 10218-1 >	

<b>Force sensing, tool flange/torque sensor</b>	<b>Force, x-y-z</b>	<b>Torque, x-y-z</b>	<b>Force, x-y-z</b>	<b>Torque, x-y-z</b>	<b>Force, x-y-z</b>	<b>Torque, x-y-z</b>	<b>Force, x-y-z</b>	<b>Torque, x-y-z</b>	<b>Force, x-y-z</b>	<b>Torque, x-y-z</b>
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	200.0 N	20.0 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	5.5 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	0.1 N	1.0 Nm

### Movement

Typical TCP speed	1 m/s	1 m/s	1 m/s	1 m/s	2 m/s					
Pose repeatability per ISO 9283	± 0.03 mm	± 0.03 mm	± 0.05 mm	± 0.05 mm	± 0.1 mm					
<b>Axis Movement</b>	<b>Working range</b>	<b>Maximum speed</b>	<b>Working range</b>	<b>Maximum speed</b>	<b>Working range</b>	<b>Maximum speed</b>	<b>Working range</b>	<b>Maximum speed</b>	<b>Working range</b>	<b>Maximum speed</b>
Base	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 120°/s	± 360°	± 120°/s	± 360°	± 120°/s
Shoulder	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 120°/s	± 360°	± 120°/s	± 360°	± 120°/s
Elbow	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 150°/s
Wrist 1	± 360°	± 360°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 210°/s
Wrist 2	± 360°	± 360°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 210°/s
Wrist 3	Infinite	± 360°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 180°/s	± 360°	± 210°/s

### Features

IP classification	IP54 water protection	IP54 water protection	IP54 water protection	IP54 water protection	IP65 water protection	
	Cleanroom classification ISO 14644-1 classification of air cleanliness by particle concentration	Class 6 at 20 at max. speed and payload, Class 7 at 40% and 80% at max. speed and payload	Cleanroom classification ISO 14644-1 classification of air cleanliness by particle concentration	Class 4 at 20 at max. speed and payload, Class 5 at 40 and 80% at max. speed and payload	Cleanroom classification ISO 14644-1 classification of air cleanliness by particle concentration	Class 5 at 20 and 40 % at max. speed and payload, Class 6 at 80% at max. speed and payload
Noise	< 60 dB(A)	< 65 dB(A)	< 65 dB(A)	< 65 dB(A)	< 65 dB(A)	
Robot mounting	Any Orientation	Any Orientation	Any Orientation	Any Orientation	Any Orientation	
<b>I/O Ports</b>						
Digital in	2	2	2	2	2	
Digital out	2	2	2	2	2	
Analog in	2	2	2	2	2	
Tool I/O power supply voltage	12/24 V	12/24 V	12/24 V	12/24 V	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)	2 A (Dual pin) 1 A (Single pin)	

### Physical

Footprint	Ø 128 mm	Ø 149 mm	Ø 190 mm	Ø 190mm	Ø 245 mm
Materials	< Aluminium, Plastic, Steel >			< Aluminium, Plastic, Steel >	
Tool flange connector type	< M8   M8 8-pin (male), EN ISO-9409-1-50-4-M6 >			< M8   M8 8-pin (male), EN ISO-9409-1-50-4-M6 >	
Cable length (robot arm)	< 6 m (236 in) >			< 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)	64 kg (141.1 lbs)
Humidity	< ≤ 90% RH (non-condensing) >			< ≤ 90% RH (non-condensing) >	

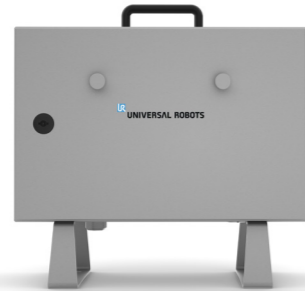


Industry standard communication protocols such as Modbus, PROFIsafe, and Ethernet/IP are included in all cobot models. Our open platform enables manufacturers to expand connections between cobots and machines without hidden costs.

UR's e-Series cobots are certified by TÜV NORD for ISO10218-1 and safety functions are rated as Cat.3 PLd according to ISO 13849-1. It is, however, crucial to perform a risk assessment to ensure all required safety measures are in place.

# Control box and teach pendant

## Technical specification



Control box	CB 5.2	CB 5.5*	OEM 5.2	OEM 5.5*
<b>Features</b>				
Robot types	UR3e, UR5e, UR10e, UR16e	UR3e, UR5e, UR10e, UR16e, UR20	UR3e, UR5e, UR10e, UR16e	UR3e, UR5e, UR10e, UR16e, UR20
Software compatibility	PolyScope 5 and below	All PolyScope versions	PolyScope 5 and below	All PolyScope versions
IP classification	IP44 water protection	IP44 water protection	IP20 water protection	IP20 water protection
ISO 14644-1 class cleanroom	6	6	6	6
Operating temperature range	0-50 °C (32-122 °F)	0-50 °C (32-122 °F)	0-50 °C (32-122 °F)	0-50 °C (32-122 °F)
<b>I/O Ports</b>				
Digital In	16	16	16	16
Digital Out	16	16	16	16
Analog In	2	2	2	2
Analog Out	2	2	2	2
Quadrature Digital Inputs	4	4	4	4
I/O power supply	24V, 2A	24V, 2A	24V, 2A	24V, 2A
Communication	500 Hz Control frequency Modbus TCP USB 2.0, USB 3.0 Ethernet/IP USB 2.0, USB 3.0 PROFINET ROS/ROS 2 driver (optional, m open source) Euromap-67 (optional) SPI AN-146 (optional) Injection Moulding Machine Interface (IMMI, optional)	500 Hz Control frequency Modbus TCP USB 2.0, USB 3.0 Ethernet/IP USB 2.0, USB 3.0 PROFINET ROS/ROS 2 driver (optional, m open source) Euromap-67 (optional) SPI AN-146 (optional) Injection Moulding Machine Interface (IMMI, optional)	500 Hz Control frequency Modbus TCP USB 2.0, USB 3.0 Ethernet/IP USB 2.0, USB 3.0 PROFINET ROS/ROS 2 driver (optional, m open source) Euromap-67 (optional) SPI AN-146 (optional) Injection Moulding Machine Interface (IMMI, optional)	500 Hz Control frequency Modbus TCP USB 2.0, USB 3.0 Ethernet/IP USB 2.0, USB 3.0 PROFINET ROS/ROS 2 driver (optional, m open source) Euromap-67 (optional) SPI AN-146 (optional) Injection Moulding Machine Interface (IMMI, optional)
RAM	2 GB	4 GB	2 GB	4 GB
Power Source	100-240 VAC, 47-440 Hz	100-240 VAC, 47-440 Hz	AC model: 100-240 VAC, 47-440 Hz DC model: 24 - 48 VDC	AC model: 100-240 VAC, 47-440 Hz DC model: 24 - 48 VDC
<b>Physical</b>				
Control box size (W x H x D)	460 mm x 449 mm x 254 mm (18.2 in x 17.6 in x 10 in)	460 mm x 449 mm x 254 mm (18.2 in x 17.6 in x 10 in)	451 mm x 168 mm x 150 mm (17.6 in x 6.6 in x 5.9 in)	451 mm x 168 mm x 150 mm (17.6 in x 6.6 in x 5.9 in)
Weight	12 kg (26.5 lbs)	12 kg (26.5 lbs)	AC model: 4.7 kg (10.4 lbs) DC model: 4.3 kg (9.5 lbs)	AC model: 4.7 kg (10.4 lbs) DC model: 4.3 kg (9.5 lbs)
Power supply output	UR3e: 600 W UR5e, UR10e, UR16e: 1500 W	UR3e: 600 W UR5e, UR10e, UR16e, UR20: 1500 W	UR3e: 600 W UR5e, UR10e, UR16e: 1500 W	UR3e: 600 W UR5e, UR10e, UR16e, UR20: 1500 W
Materials	Powdered coated steel	Powdered coated steel	Aluminium	Aluminium
Humidity	≤ 90% RH (non-condensing)	≤ 90% RH (non-condensing)	≤ 90% RH (non-condensing)	≤ 90% RH (non-condensing)

### Teach pendant

### Standard

### 3PE

#### Features

Robot types	e-Series (standard)	e-Series (optional), UR20 (standard)
IP classification	IP54 water protection	IP54 water protection
Incl. in certifications	EN ISO 10218-1 EN ISO 13849-1	EN ISO 10218-1 EN ISO 13849-1
Humidity	≤ 90% RH (non-condensing)	≤ 90% RH (non-condensing)
Display resolution	1280 x 800 pixels	1280 x 800 pixels
Freedrive	1 button	2 buttons to support for right and left handed operation

#### Physical

Materials	Plastic (PC/ASA)	Plastic (PC/ASA)
Teach pendant size	300 mm x 231 mm x 50 mm (11.8 in x 9.1 in x 1.97 in) <small>Updated November 2023</small>	300 mm x 231 mm x 50 mm (11.8 in x 9.1 in x 1.97 in)
Weight (incl. 1 m TP cable)	1.6 kg (3.5 lbs)	1.8 kg (3.961 lbs)
Cable length (Teach pendant)	4.5 m (177.17 in)	4.5 m (177.17 in)



### Cables

### Standard

### High-Flex

#### Features

Part Number	105865	1006541	106547	1006548
Material	PVC	PVC	PVC	PVC
Color	Black	Black	Blue	Blue
Length	6 m / 19.7 ft	12 m / 39.4 ft	6 m / 19.7 ft	12 m / 39.4 ft
Diameter (d)	12.1 mm / 0.48 in	12.1 mm / 0.48 in	13.4 mm / 0.53 in	13.4 mm / 0.53 in
Bend Radius	-	-	4 x d (static) 8 x d (dynamic)	4 x d (static) 8 x d (dynamic)
Bend Cycle	-	-	5 million	5 million