

# ZERTIFIKAT CERTIFICATE

Hiermit wird bescheinigt, dass die Firma / *This certifies, that the company*

**Universal Robots A/S**  
**Energivej 25**  
**DK-5260 Odense S**  
**Denmark**

berechtigt ist, das unten genannte Produkt mit dem abgebildeten Zeichen zu kennzeichnen.  
*is authorized to provide the product mentioned below with the mark as illustrated.*

Fertigungsstätte:  
*Manufacturing plant:*

**Universal Robots A/S**  
**Energivej 25**  
**DK-5260 Odense S**  
**Denmark**

Beschreibung des Produktes:  
*(Details s. Anlage 1)*  
*Description of product:*  
*(Details see Annex 1)*

**Universal Robots Safety System URSafety 3.1**  
*for UR10, UR5 and UR3 robots*



Geprüft nach:  
*Tested in accordance with:*

**EN ISO 13849-1:2008, PL d**

Registrier-Nr. / *Registration No.* 44 207 14097602  
Prüfbericht Nr. / *Test Report No.* 3515 4327  
Aktenzeichen / *File reference* 8000443298

Gültigkeit / *Validity*  
von / *from* 2015-06-02  
bis / *until* 2020-06-01



Zertifizierungsstelle der TÜV NORD CERT GmbH

Essen, 2015-06-02

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Bitte beachten Sie auch die umseitigen Hinweise  
*Please also pay attention to the information stated overleaf*

# ANLAGE ANNEX

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zum Zertifikat Registrier-Nr. / to Certificate Registration No. 44 207 14097602

<b>Allgemeine Angaben:</b> <i>General information:</i>	The system under test and certification is the URSafety 3.1, but not the entire UR10, UR5 and UR3 robots
<b>Typenbezeichnung:</b> <i>Type designation:</i>	Universal Robots Safety System URSafety 3.1 for UR10
<b>Gelenk:</b> <i>Joint:</i>	6 rotating joints (2 x joint size 4, 1 x joint size 3, 3 x joint size 2)
<b>Nennspannung:</b> <i>Nominal voltage:</i>	100-240 VAC, 50-60 Hz
<b>I/O Spannung:</b> <i>I/O power supply:</i>	24 V, 2 A in control box
<b>Umgebungstemperatur:</b> <i>Ambient temperature:</i>	0-50 °C
<b>Nutzlast des Roboters:</b> <i>Payload of the robot:</i>	10 kg
<b>Reichweite des Roboters:</b> <i>Reach of the robot:</i>	1300 mm
<b>Auslenkung der Gelenke:</b> <i>Joint range:</i>	±360° on all joints
<b>Max. Geschwindigkeit im Betrieb:</b> <i>Max. speed in normal operation:</i>	Joint: adjustable 120°/s or 180°/s Tool: approx. 1 m/s
<b>Schutzart:</b> <i>Protection class:</i>	Robot arm: IP 54 Control box and teach pendant: IP 20



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# ANLAGE ANNEX

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**Allgemeine Angaben:** The system under test and certification is the URSafety 3.1,  
*General information:* but not the entire UR10, UR5 and UR3 robots

**Typenbezeichnung:** Universal Robots Safety System URSafety 3.1 for UR10  
*Type designation:*

<b>Hardwareversion:</b>	<b>Safety Control Board:</b>	<b>Revision B</b>
<i>Hardware version:</i>	Joint size 2:	Revision D
	Joint size 3:	Revision I
	Joint size 4:	Revision E
	Screen board:	Revision D
	Current distributor	Revision F

<b>Softwareversion:</b>	<b>SCB µCA:</b>	<b>3.1.453</b>
<i>Software version:</i>	SCB µCB:	3.1.189
	Joint 0:	3.1.17195
	Joint 1:	3.1.17195
	Joint 2:	3.1.17195
	Joint 3:	3.1.17195
	Joint 4:	3.1.17195
	Joint 5:	3.1.17195
	Teach Pendant 1, 2:	3.1.17195
	Polyscope	3.1.17195

<b>Checksumme:</b>	<b>SCB µCA:</b>	<b>0x5C6D7EE1</b>
<i>Checksum:</i>	SCB µCB:	0xC447B415
	Joint 0:	0x65E67AB6
	Joint 1:	0x104412D1
	Joint 2:	0x90602481
	Joint 3:	0x79818E2A
	Joint 4:	0xB45885A0
	Joint 5:	0xB94F54BF
	Teach Pendant 1, 2:	0xBF02C153
	Polyscope	0x20439EA3



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<b>Typenbezeichnung:</b> <i>Type designation:</i>	Universal Robots Safety System URSafety 3.1 for UR5
<b>Gelenk:</b> <i>Joint:</i>	6 rotating joints (3 x joint size 3, 3 x joint size 1)
<b>Nennspannung:</b> <i>Nominal voltage:</i>	100-240 VAC, 50-60 Hz
<b>I/O Spannung:</b> <i>I/O power supply:</i>	24 V, 2 A in control box
<b>Umgebungstemperatur:</b> <i>Ambient temperature:</i>	0-50 °C
<b>Nutzlast des Roboters:</b> <i>Payload of the robot:</i>	5 kg
<b>Reichweite des Roboters:</b> <i>Reach of the robot:</i>	850 mm
<b>Auslenkung der Gelenke:</b> <i>Joint range:</i>	±360° on all joints
<b>Max. Geschwindigkeit im Betrieb:</b> <i>Max. speed in normal operation:</i>	Joint: 180°/s Tool: approx. 1 m/s
<b>Schutzart:</b> <i>Protection class:</i>	Robot arm: IP 54 Control box and teach pendant: IP 20



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**Allgemeine Angaben:** The system under test and certification is the URSafety 3.1,  
*General information:* but not the entire UR10, UR5 and UR3 robots

**Typenbezeichnung:** Universal Robots Safety System URSafety 3.1 for UR5  
*Type designation:*

<b>Hardwareversion:</b>	<b>Safety Control Board:</b>	<b>Revision B</b>
<i>Hardware version:</i>	Joint size 1:	Revision H
	Joint size 3:	Revision I
	Screen board:	Revision D
	Current distributor	Revision F

<b>Softwareversion:</b>	<b>SCB µCA:</b>	<b>3.1.453</b>
<i>Software version:</i>	<b>SCB µCB:</b>	<b>3.1.189</b>
	Joint 0:	3.1.17195
	Joint 1:	3.1.17195
	Joint 2:	3.1.17195
	Joint 3:	3.1.17195
	Joint 4:	3.1.17195
	Joint 5:	3.1.17195
	Teach Pendant 1, 2:	3.1.17195
	Polyscope	3.1.17195

<b>Checksumme:</b>	<b>SCB µCA:</b>	<b>0x5C6D7EE1</b>
<i>Checksum:</i>	<b>SCB µCB:</b>	<b>0xC447B415</b>
	Joint 0:	0xC0592E78
	Joint 1:	0xB3D67736
	Joint 2:	0x90602481
	Joint 3:	0x052D3334
	Joint 4:	0xC8F438BE
	Joint 5:	0xC5E3E9A1
	Teach Pendant 1, 2:	0xBF02C153
	Polyscope	0x20439EA3



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<b>Typenbezeichnung:</b> <i>Type designation:</i>	Universal Robots Safety System URSafety 3.1 for UR3
<b>Gelenk:</b> <i>Joint:</i>	6 rotating joints (2 x joint size 2, 1 x joint size 1, 3 x joint size 0)
<b>Nennspannung:</b> <i>Nominal voltage:</i>	100-240 VAC, 50-60 Hz
<b>I/O Spannung:</b> <i>I/O power supply:</i>	24 V, 1200 mA in control box
<b>Umgebungstemperatur:</b> <i>Ambient temperature:</i>	0-50 °C
<b>Nutzlast des Roboters:</b> <i>Payload of the robot:</i>	3 kg
<b>Reichweite des Roboters:</b> <i>Reach of the robot:</i>	500 mm
<b>Auslenkung der Gelenke:</b> <i>Joint range:</i>	±360° on joint 0-4, infinite on joint 5
<b>Max. Geschwindigkeit im Betrieb:</b> <i>Max. speed in normal operation:</i>	Joint 0-2: 120°/s Joint 3-5: 360°/s Tool: approx. 1 m/s
<b>Schutzart:</b> <i>Protection class:</i>	Robot arm: IP 54 Control box and teach pendant: IP 20



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*General information:* but not the entire UR10, UR5 and UR3 robots

**Typenbezeichnung:** Universal Robots Safety System URSafety 3.1 for UR3  
*Type designation:*

<b>Hardwareversion:</b>	<b>Safety Control Board:</b>	Revision B
<i>Hardware version:</i>	Joint size 0:	Revision B
	Joint size 1:	Revision H
	Joint size 2:	Revision D
	Screen board:	Revision D
	Current distributor	Revision F

<b>Softwareversion:</b>	<b>SCB µCA:</b>	3.1.453
<i>Software version:</i>	<b>SCB µCB:</b>	3.1.189
	Joint 0:	3.1.17195
	Joint 1:	3.1.17195
	Joint 2:	3.1.17195
	Joint 3:	3.1.17195
	Joint 4:	3.1.17195
	Joint 5:	3.1.17195
	Teach Pendant 1, 2:	3.1.17195
	Polyscope	3.1.17195

<b>Checksumme:</b>	<b>SCB µCA:</b>	0x5C6D7EE1
<i>Checksum:</i>	<b>SCB µCB:</b>	0xC447B415
	Joint 0:	0x5A2207FA
	Joint 1:	0x604580BB
	Joint 2:	0x4437C7DD
	Joint 3:	0x690B2679
	Joint 4:	0x55868F38
	Joint 5:	0x7E3BBED2
	Teach Pendant 1, 2:	0xBF02C153
	Polyscope	0x20439EA3



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# ANLAGE ANNEX

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<b>Allgemeine Angaben:</b> <i>General information:</i>	The system under test and certification is the URSafety 3.1, but not the entire UR10, UR5 and UR3 robots	
<b>Typenbezeichnung:</b> <i>Type designation:</i>	Universal Robots Safety System URSafety 3.1 for UR10, UR5 and UR3 robots	
<b>Geprüfte Sicherheitsfunktionen:</b> <i>Safety functions tested:</i>	Emergency Stop (Execution monitoring of the emergency stop)	Momentum Limit (Monitoring of the momentum limit)
	Safeguard Stop (Execution monitoring of the safeguard stop)	Power Limit (Monitoring of the power limit)
	Joint Position Limit (Monitoring of the joint position limit)	System Emergency Stop Output (Monitoring of the System Emergency Stop Output)
	Joint Speed Limit (Monitoring of the joint speed limit)	Robot Moving Digital Output (Monitoring of the Robot Moving Digital Output)
	Joint Torque Limit (Monitoring of the joint torque limit)	Robot Not Stopping Digital Output (Monitoring of the Robot Not Stopping Digital Output)
	TCP Pose Limit (Monitoring of the TCP pose limit)	Reduced Mode Digital Output (Monitoring of the Reduced Mode Digital Output)
	TCP Speed Limit (Monitoring of the TCP speed limit)	Not Reduced Mode Digital Output (Monitoring of the Not Reduced Mode Digital Output)
	TCP Force Limit (Monitoring of the TCP force limit)	



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*General information:*

The system under test and certification is the URSafety 3.1,  
but not the entire UR10, UR5 and UR3 robots

**Typenbezeichnung:**  
*Type designation:*

Universal Robots Safety System URSafety 3.1 for UR10, UR5 and UR3 robots

**Kategorie:**  
*Category:*

The system possesses a heterogeneous system architecture. Detailed information about the category acc. EN ISO 13849-1:2008 for each safety function can be found in the technical report (report No. 3515 4327, 2015-05-27).

**Wichtiger Sicherheitshinweis:**  
*Important safety notice:*

The robot is designed to be programmed/ integrated by users for specific collaborative applications. A risk assessment is therefore required for each installation of the robot. It is particularly important that all information in the user manual should be read with close attention and all the safety instructions in the user manual must be rigorously followed.

A handwritten signature in black ink, reading "F. Hegefeld".

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Essen, 2015-06-02

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Fax: +49 201 825-2860Datum  
07.03.2017**Supplement to the technical report No. 35142383: category of the URSafety 3.0 safety function  
“execution monitoring of the emergency stop”**

To whom it may concern,

regarding the emergency stop function of the Universal Robots safety system, the company Universal Robots A/S has provided TÜV NORD CERT GmbH with supplementary documentation in January 2017, where the conformity of the safety function “execution monitoring of the emergency stop” with EN ISO 13849-1:2008, Category 3 was further clarified.

The category assessment performed by TÜV NORD CERT GmbH on the URSafety 3.0 safety function “execution monitoring of the emergency stop” based on the original and supplementary documentation has shown that:

Based on the previous assessment results while taking into consideration that the robot power supply will be switched off redundantly no later than the specified reaction time after activation of the emergency stop, URSafety 3.0 safety function “execution monitoring of the emergency stop” fulfills the requirement of EN ISO 13849-1:2008, Category 3.

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Seite 1 von 2

Since the URSafety 3.0 has not undergone any modifications (hardware and software), no further validation is required. The information for user (description of safety function including reaction time) is not affect.

Best regards,



Sector Technology  
Department Safety Related Services  
Certification Body  
TÜV NORD CERT GmbH



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Dipl.-Volksw. Ulf Theike (Sprecher)  
Dipl.-Ing. Wolfgang Wielpütz

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