

Safety – The Standard We Set

Universal Robots – Safety Paper | v3.0 | March 2026

Executive Summary

In 2008, Universal Robots shipped the world's first commercially viable robot for collaborative applications – a UR5 – to a Danish plastics supplier. For the first time, a robot worked alongside humans on a factory floor without guards or barriers. That moment didn't just launch a product; it launched an entirely new market for automation.

Since then, we have set the standard for collaborative robot safety. Our robots are **certified by TÜV Rheinland** – a highly respected certification body globally – to comply with ISO 10218-1, the global safety standard for industrial robots. With over 100,000 cobots sold worldwide, we have more real-world human-robot collaboration experience than anyone.

This paper explains our safety heritage, current certification, what's changing with ISO 10218-1:2025, and how Universal Robots is leading the industry into the next era of robot application safety.

AT A GLANCE

2008

First cobot

100k⁺

Sold worldwide

PLd Cat 3

Dual-channel safety

**TÜV
Rheinland**

All functions certified

2027

ISO 10218-1:2025 target

KEY MESSAGES

- ✓ **Gold standard:** When you choose a Universal Robot, you are choosing the gold standard. We pioneered this market.
- ✓ **TÜV Rheinland certification = proof:** TÜV Rheinland certification is not a self-declaration – it is third-party verified proof from a highly respected certification body globally.
- ✓ **Fundamental safety always on:** The fundamental collaborative safety of UR robots cannot be disabled. Certain safety functions can be configured, deactivated, or muted within the parameters permitted by the standards.
- ✓ **Future-ready:** Your current UR investment – whether running PolyScope 5 or PolyScope X – is on a clear path to the latest safety standard.
- ✓ **Cybersecurity for safety:** Universal Robots has been investing in cybersecurity well ahead of the standard – IEC 62443-4-1 ML2 certified by TÜV Rheinland.
- ✓ **Proactive, not reactive:** Universal Robots targets TÜV Rheinland certification to ISO 10218-1:2025 by January 2027 – aligned with the EU Machinery Regulation.

CONTENTS

- | | | | |
|--|--|--------------------------|--------------------------------------|
| 1. We Pioneered Safe Collaboration | 2. Current Certification: ISO 10218-1:2011 | 3. Safety Architecture | 4. What's Changing: ISO 10218-1:2025 |
| 5. Practical Impact: What It Means for You | 6. Product Safety Compatibility | 7. Certification Roadmap | 8. FAQ, Glossary & Sources |

1. We Pioneered Safe Collaboration

Universal Robots didn't just enter the collaborative robot market – we **created** it. Safety is not an afterthought; it is the foundation upon which every product we build is designed.

2008 First cobot	100k+ Sold worldwide	PLd Cat 3 Dual-channel safety	TÜV Rheinland All functions certified	2027 ISO 10218-1:2025 target
2008 First cobot	100k+ Sold worldwide	PLd Cat 3 Dual-channel safety	TÜV Rheinland All functions certified	2027 ISO 10218-1:2025 target

THREE PILLARS OF UR SAFETY

Certified by Design Every UR robot is certified to ISO 10218-1 and ISO 13849-1 by TÜV Rheinland – one of the world's most demanding certification bodies. This is not a self-declaration; it is third-party verified proof.	Safe by Architecture The fundamental collaborative safety of UR robots cannot be disabled. Certain safety functions can be configured, deactivated, or muted within the parameters permitted by the standards. UR robots feature PLd Category 3 safety architecture, meaning a single fault cannot cause loss of safety. Dual-channel redundancy is built into the hardware.	Trusted by Experience With 100,000+ robots working alongside humans daily in factories worldwide, Universal Robots has more real-world human-robot collaboration experience than anyone. We actively contribute to the development of global safety standards through ISO TC299 WG3.
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THE BOTTOM LINE

When you choose a Universal Robot, you are choosing the gold standard. We pioneered this market, we hold rigorous third-party certifications, and we have more real-world human-robot collaboration experience than anyone. Safety isn't just a feature – it is our DNA.

2. Current Certification: ISO 10218-1:2011

THINK OF IT AS...

ISO 10218-1 is the global "rulebook" for robot safety. It sets the safety requirements that a robot must meet at the design stage. The robot manufacturer designs and builds to these requirements, and a third-party certification body like TÜV Rheinland verifies compliance through testing and assessment. The system integrator then ensures the complete robot application meets its own safety requirements under ISO 10218-2.

All current Universal Robots – both **e-Series** and **UR Series** – are certified to **ISO 10218-1:2011** (Edition 2) by **TÜV Rheinland**. This certification covers both **PolyScope 5** and **PolyScope X** software platforms. Safety functions are additionally certified to **ISO 13849-1:2015** (functional safety of control systems).

Key Regional Equivalents

- **Europe:** EN ISO 10218-1 – harmonized under the Machinery Directive
- **USA:** ANSI/RIA R15.06
- **Canada:** CAN/CSA Z434
- **Japan:** JIS B 8433-1
- **Korea:** KS B ISO 10218-1
- **UK:** BS EN ISO 10218-1
- **China:** GB 11291.1-2011

Key Companion Standards

- ISO 10218-1 normatively references approximately 20 standards. These are the most relevant for collaborative robot applications:
- **ISO 10218-2:** Robot system integration (for integrators)
 - **ISO 13849-1 & -2:** Safety-related control systems (SRP/CS)
 - **ISO/TS 15066:** Collaborative applications guidance (force/pressure limits)
 - **ISO 12100:** Risk assessment principles
 - **IEC 62443:** Cybersecurity for industrial automation

3. Safety Architecture

DUAL-CHANNEL SAFETY ARCHITECTURE

Every UR robot features a **PLd Category 3** safety architecture — a very high level of safety performance. Category 3 means **dual-channel architecture** where a single fault cannot lead to loss of the safety function. The fundamental collaborative safety cannot be disabled. Certain safety functions can be configured, deactivated, or muted within the parameters permitted by the standards, and all are **evaluated and certified by TÜV Rheinland**. Note: under ISO 10218-1:2025, individual safety functions will be assigned performance levels ranging from PLb to PLd per function.

COMPREHENSIVE SAFETY FUNCTIONS

UR robots provide a comprehensive set of safety functions — covering emergency and safeguard stops, joint position and speed limits, TCP and elbow speed/force limits, safety planes, momentum and power limits, stopping time and distance limits, safe home position, tool orientation limits, and configurable safety-rated I/Os. Payload mass and center-of-gravity are safety parameters used as boundaries within safety functions. All safety functions have been evaluated and certified to **PLd Category 3** by TÜV Rheinland. Key safety functions support **Normal and Reduced parameter sets** for flexible deployment. For the complete and up-to-date safety function specification, refer to the official [UR product manuals](#).

NORMAL & REDUCED PARAMETER SETS

Key safety functions support **two configurable parameter sets** — Normal and Reduced — selectable via the Reduced mode safety input. Combined with external safety devices (laser scanners, light curtains, safety PLCs), this enables both human-proximity and guarded applications from a single platform. Example: Normal mode limits for full-speed operation with guarding; Reduced mode limits for close-proximity human-robot interaction.

TECHNIQUES ENABLING COLLABORATIVE APPLICATIONS

CERTIFIED COLLABORATIVE TECHNIQUES (ISO 10218-1)

UR robots are certified for **Monitored Standstill** (§ 5.10.2) — robot holds position at standstill with monitoring as a safety function; and **Power and Force Limiting (PFL)** (§ 5.10.5) — certified force/torque limits are enforced, exceeding any parameter triggers a protective stop. Combined with external safeguards, they also support **Speed and Separation Monitoring (SSM)** (§ 5.10.4) applications. The application risk assessment determines which technique(s) are appropriate.

STOP CATEGORIES (PER IEC 60204-1)

Category	Description	Drive Power	Use Case
Stop Cat 0	Immediate power removal; uncontrolled stop	Removed immediately	Safety limits exceeded or faults detected
Stop Cat 1	Controlled stop, then power removal when stopped	Removed after stop	Emergency stop
Stop Cat 2	Stop without power removal; position held	Retained	Safeguard stop / protective stop

UR robots implement all three stop categories: Cat 0 for critical faults, Cat 1 for emergency stop, and Cat 2 for safeguard/protective stops. When any safety limit is exceeded or a fault is detected, the robot transitions to a safe state.

✓ ISO 10218-1:2011 – TÜV Rheinland Certified

✓ ISO 13849-1 PLd Cat 3 – TÜV Rheinland Certified

✓ PROFIsafe SIL 2 – Functional Safety Fieldbus

✓ 16 Configurable Safety-Rated I/Os – Dual Channel

4. What's Changing: ISO 10218-1:2025

ISO 10218-1:2025 (Edition 3, published February 2025) is the first major revision of the industrial robot safety standard since 2011. Developed over nine years by experts from more than 20 countries – including Universal Robots' own Safety Officer, who is widely recognized in this field – it significantly raises the bar for robot safety. Universal Robots is actively working to meet it.

THINK OF IT AS...

If ISO 10218-1:2011 was the foundation, the 2025 edition is the comprehensive renovation. The house is stronger, the safety systems are smarter, and for the first time, the building code also covers digital security. The core principles remain, but the requirements are more explicit, more testable, and more modern.

KEY CHANGES AT A GLANCE

ISO 10218-1:2011 (Current)

- 4 named safety functions
- Enabling device requirement context-dependent
- No cybersecurity requirements
- Local/Remote control paradigm
- Strict mode separation not explicitly required
- No dedicated hand-guided control requirements
- Functional safety expectations implicit
- No explicit payload monitoring requirement

ISO 10218-1:2025 (New)

- **15 named safety functions** explicitly defined with testable criteria
- **3PE mandatory** – the standard teach pendant is not permitted for use on robots certified to ISO 10218-1:2025
- **Mandatory security assessment**; cybersecurity measures where threats pose safety risks (clause 5.1.16)
- **Single point of control** – Direct/External with credentials (PLa)
- Strict **Automatic / Manual** modes only – mixed operation no longer possible
- **Hand-guided control** with own configurable speed limit
- **Start/restart interlock** prevents unintentional motion
- **Payload mass & center-of-gravity** defined as safety parameters to detect configuration errors

THE MAJOR NEW REQUIREMENTS EXPLAINED

1. Mandatory Three-Position Enabling Device (3PE)

All robots **shall** integrate a 3PE with the teach pendant. In manual mode, no motion is allowed unless the 3PE is held in the center position. The standard teach pendant is not permitted for use on robots certified to ISO 10218-1:2025 and will therefore not be supported on such products.

2. Single Point of Control

Only **one source** can control the robot at any time, enforced as a safety function. Replaces the local/remote paradigm with a **Direct Control** (teach pendant) vs. **External Control** (Robot API and controller ports) model with credential-based access.

3. Strict Automatic / Manual Modes

Robots will operate in either **Automatic** or **Manual** mode – the commonly used practice of combining manual and automatic operation without strict separation is **no longer permitted**. Mode switching requires deliberate action.

4. Hand-Guided Control (HGC)

ISO 10218-1:2025 defines HGC with its **own configurable speed limit** and a **hold-to-run** control device near the mechanical interface. A 3PE may be used as alternative if it addresses ergonomic risks of sustained actuation.

5. Cybersecurity for Safety

ISO 10218-1:2025 clause 5.1.16 mandates a security assessment. Where cyber threats pose safety risks, measures must be provided to prevent unauthorized access to hardware, software, and configuration data.

6. Expanded Safety Function Framework

The 2025 edition formally defines **15 named safety functions** (up from 4 in 2011) – including monitored standstill, stopping time/distance limiting, start/restart interlocking, and manual high-speed safety timer. Payload mass/CoG are safety parameters, not safety functions. Default performance levels range from PLb to PLd, assigned per function.

7. Start & Restart Interlock

Powering on the robot and resetting after a safety stop require a **safety-rated interlock mechanism** to prevent unintentional starting. This protects against unexpected motion during initialization and recovery.

8. Mechanical & Environmental

New requirements for **fatigue strength**, lifting provisions, stability, temperature/fire risk management, and hazardous substances. A complete lifecycle approach from transport to decommissioning.

WHY THIS MATTERS FOR YOU

ISO 10218-1:2025 is expected to be **harmonized under the EU Machinery Regulation (EU 2023/1230)**, which takes effect **January 20, 2027**. Compliance with a harmonized standard provides a **presumption of conformity** with the regulation. Universal Robots is targeting **TÜV Rheinland certification to ISO 10218-1:2025 by January 2027** – for both PolyScope 5 and PolyScope X – with software implementation completing by end 2026.

5. Practical Impact: What ISO 10218-1:2025 Means for You

The updated standard has real, tangible consequences for how robots are built, sold, and deployed. Here's what changes in practice.

THE 3PE TEACH PENDANT BECOMES STANDARD

Under ISO 10218-1:2025, a **Three-Position Enabling Device (3PE)** is mandatory for all robots. This means:

- When ISO 10218-1:2025 enters force, **all UR cobots will ship with the 3PE Teach Pendant**. The current standard teach pendant will be **phased out by Q1 2027** and available only as a spare part for installations based on ISO 10218-1:2011 hardware.
- New products certified to ISO 10218-1:2025** will only work with the 3PE Teach Pendant – the standard TP cannot be used. Existing installations certified under ISO 10218-1:2011 can upgrade to the new software and take advantage of new safety functions while continuing to use the standard TP, but this does **not** make them ISO 10218-1:2025 compliant.
- In manual mode, the safety system monitors the 3PE – **no motion** of the robot is allowed unless the 3PE is held in the center "active" position.
- Releasing** the 3PE (panic release) or **fully squeezing** it (panic squeeze) both trigger an immediate Category 2 safety stop.
- The UR 3PE Teach Pendant features **two 3PE switches** for ergonomic support of both left-handed and right-handed operation – only one needs to be pressed. **Plug-and-play** – no additional wiring or URcap required.

HOW THE 3PE WORKS

Three positions, one safety principle:

Position 1 (Released): Robot stopped – safety stop active.

Position 2 (Center/Hold): Motion enabled – robot can move.

Position 3 (Fully pressed): Robot stopped – safety stop active.

This ensures that **any reflexive reaction** – whether releasing in surprise or clenching in panic – results in a safe stop.

Freedrive: Double-click Position 2 (Center/Hold) enables Freedrive – the robot can be guided by hand while the 3PE is held in position 2.

The 3PE is a globally proven safety device used across industrial automation.

TRANSITION NOTICE

Existing installations certified under ISO 10218-1:2011 are not required to retrofit a 3PE. The mandate applies to **new products certified to ISO 10218-1:2025**. Existing installations can upgrade to the new software and use new safety functions with the standard TP, but will not be ISO 10218-1:2025 compliant.

The 3PE Teach Pendant is already available today for e-Series and UR Series robots running PolyScope 5.9.5+ or PolyScope X.

SINGLE POINT OF CONTROL – FROM LOCAL/REMOTE TO DIRECT/EXTERNAL

ISO 10218-1:2025 strengthens requirements for a **single, unambiguous point of control** – enforced as a safety-rated function (PLa). This replaces the current local/remote paradigm.

Direct Control (Teach Pendant)

The teach pendant holder has **full authority** over programming, teaching, and manual motion. When active, external interfaces **cannot initiate motion**.

External Control (Robot API)

External Control refers to control actions executed via the Robot API and its controller ports (Dashboard Server, Primary/Secondary Client, RTDE). Per ISO 10218-1:2025, explicit permission required; **teach pendant can always reclaim control**. Note: industrial fieldbuses and I/O are not classified as External Control.

Strict Mode Separation

The commonly used practice of combining manual and automatic operation without strict separation is **no longer permitted**. Robots will operate in either **Automatic** or **Manual** mode, with deliberate mode switching between them.

NEW: HAND-GUIDED CONTROL & ENHANCED MANUAL MODES

Hand-Guided Control (HGC)

New capability under ISO 10218-1:2025: HGC gets its **own configurable speed limit**. The primary control mechanism is **hold-to-run** near the mechanical interface; a 3PE may be used as alternative if it addresses ergonomic risks of sustained actuation.

Manual High-Speed Mode

ISO 10218-1:2025 introduces a formal **manual high-speed mode** via speed slider with a **safety-rated timer** that auto-resets after idle. Both safeguarded by the safety system. Applications using this mode have additional risk reduction requirements.

WHAT STAYS THE SAME

The **core safety principles** – power and force limiting, monitored standstill, software-based axis and space limiting, PLd Category 3 architecture – remain the foundation of ISO 10218-1:2025. UR's safety architecture **already aligns** with the updated standard. All existing interfaces remain available.

6. Product Safety Compatibility

SOFTWARE PLATFORM OVERVIEW

Platform	Current Safety Cert.	ISO 10218-1:2025	3PE Support	Status
PolyScope X	ISO 10218-1:2011 TÜV Rheinland certified	Target: Jan 2027 TÜV Rheinland certification	YES Native support	Future-Ready
PolyScope 5	ISO 10218-1:2011 TÜV Rheinland certified	Target: Jan 2027 TÜV Rheinland certification	YES From v5.9.5+	Certified
PolyScope 3	ISO 10218-1:2011 TÜV Rheinland (CB3)	No – EOL	No	Legacy (EOL 2022)

KEY TAKEAWAY

Both **PolyScope 5** and **PolyScope X** are currently ISO 10218-1:2011 certified and both will receive **ISO 10218-1:2025 TÜV Rheinland certification**. Your current UR investment — whether you're running PolyScope 5 or PolyScope X — is on a clear path to the latest safety standard.

HARDWARE PLATFORM COMPATIBILITY

Robots

- **UR Series (UR8Long/15/18/20/30):** Latest generation. Compatible with PolyScope X (with CB5.6) and PolyScope 5. Full ISO 10218-1:2025 certification path.
- **e-Series (UR3e/5e/7e/12e/16e):** Compatible with PolyScope X (with CB5.6) and PolyScope 5. Full ISO 10218-1:2025 certification path.
- **CB3 Series:** Legacy. Only compatible with CB3 control boxes and PolyScope 3. Not on 2025 certification path.

Control Boxes

- **CB5.6:** Latest generation. Ships with PolyScope X. Supports both PolyScope 5 and X. Required for PolyScope X.
- **CB5.5:** Standard for PolyScope 5. Drop-in upgradeable to CB5.6.
- **CB5.0–CB5.4:** Fully supported with PolyScope 5. With the latest software, these controllers provide the same safety functionality as CB5.5/CB5.6. Upgradeable to CB5.6 for PolyScope X compatibility.
- **CB3:** Legacy (EOL 2022). Incompatible with e-Series/UR Series.

CYBERSECURITY FOR SAFETY

ISO 10218-1:2025 clause 5.1.16 mandates a security assessment of the robot. Where the assessment identifies that a cyber threat can result in safety risks, cybersecurity measures must be provided. The EU Machinery Regulation also includes cybersecurity requirements for safety-related functions. Security is now inseparable from safety.

UR'S CYBERSECURITY POSTURE

IEC 62443-4-1 ML2 certified by TÜV Rheinland (December 2025) — secure development lifecycle. **IEC 62443-4-1 ML3** planned H2 2026. **IEC 62443-4-2 SL1** planned for PolyScope X by 2027 — product security certification. See our **Cybersecurity Fact Sheet** for full details.

HARDWARE SAFETY SPECIFICATIONS

IP Ratings

Component	IP Rating
e-Series robots	IP54
UR Series robots	IP65
3PE Teach Pendant	IP54
Control Box (CB5.x)	IP44

Key Specifications

- **Configurable Safety I/Os:** 16 safety-rated I/Os (8 inputs, 8 outputs) — dual-channel, configurable for safety functions
- **PROFIsafe:** Safety communication protocol over PROFINET — supported on all CB5 control boxes, certified SIL 2 per IEC 61784-3
- **UL 1740:** All UR Series (UR8L, UR15, UR18, UR20, UR30) certified — US standard for industrial robots
- **Cleanroom:** ISO 14644-1 Class 4 depending on robot model

QUALITY SYSTEM

Universal Robots holds quality system certifications approved by notified body **Bureau Veritas: ISO 9001** (#DK019348 — Quality management), **ISO 14001** (#DK019349 — Environmental management), and **ISO 45001** (#DK019350 — Occupational health & safety management).

7. Certification Roadmap

Universal Robots maintains a clear, proactive roadmap to ensure our products meet evolving safety and regulatory requirements — well ahead of enforcement deadlines.

WHEN	MILESTONE	STATUS
2014	CB3 series — first EN ISO 13849-1 certification	✓ CERTIFIED
2018	e-Series introduced and certified to ISO 10218-1:2011 by TÜV Nord	✓ CERTIFIED
2023	UR Series launched (first shipment: UR20) — certified to ISO 10218-1:2011 by TÜV Nord	✓ CERTIFIED
2024	Changed to TÜV Rheinland — all robots re-certified to ISO 10218-1:2011	✓ RE-CERTIFIED
2025	IEC 62443-4-1 ML2 — Teradyne Robotics cybersecurity process certified by TÜV Rheinland	✓ CERTIFIED
2027	ISO 10218-1:2025 — TÜV Rheinland certification for all products with PolyScope 5 & PolyScope X . Standard TP phased out for new certified products.	TÜV TARGET
Jan 20, 2027	EU Machinery Regulation (2023/1230) takes effect — Universal Robots ready with ISO 10218-1:2025 certification	EU DEADLINE
2027	IEC 62443-4-2 SL1 — PolyScope X product cybersecurity certification (CRA compliance)	TARGET
Dec 11, 2027	EU Cyber Resilience Act (CRA) enforcement — UR ready ahead of schedule	EU DEADLINE

UNIVERSAL ROBOTS' SAFETY COMMITMENT

- ✓ **TÜV Rheinland certified** — ISO 10218-1:2011 for all current UR robots (PolyScope 5 & PolyScope X)
- ✓ **ISO 10218-1:2025 target Jan 2027** — TÜV certification for all products with PolyScope 5 and PolyScope X, aligned with EU Machinery Regulation
- ✓ **3PE Teach Pendant already available** — plug-and-play upgrade for e-Series and UR Series (PolyScope 5.9.5+ / PolyScope X)
- ✓ **Hand-Guided Control (HGC)** — new capability being added for ISO 10218-1:2025 with dedicated safety-rated speed limits
- ✓ **Every safety function PLd Category 3** — evaluated and certified, configurable within certified parameters, trustworthy
- ✓ **Active contributor to global standards** — participating member of ISO TC299 WG3 (robot safety working group)
- ✓ **Cybersecurity process certified** — IEC 62443-4-1 ML2 by TÜV Rheinland (Dec 2025), ML3 planned H2 2026
- ✓ **Long-term support** — critical safety and functionality patches for up to 8 years after product End of Life

THE REGULATORY LANDSCAPE

EU Machinery Regulation

EU 2023/1230 replaces the Machinery Directive on **January 20, 2027**. ISO 10218-1:2025 is expected to be harmonized under this regulation. Robots designed to meet ISO 10218-1:2011 **formally cannot** be used in applications that must meet ISO 10218-2:2025. UR's certification provides a **presumption of conformity**.

EU Cyber Resilience Act

The **CRA (EU 2024/2847)** requires all products with digital elements to meet cybersecurity standards by **December 2027**. IEC 62443-4-2 SL1 planned for PolyScope X by 2027 — ahead of schedule.

Global Harmonization

ISO 10218-1:2025 is adopted worldwide. Certification to this standard — verified by TÜV Rheinland — provides compliance evidence for **EU, USA, Canada, Japan, Korea**, and other markets. One certification, global recognition.

8. Frequently Asked Questions

Q: Are current UR robots safe to use?

A: Absolutely. All current UR robots (e-Series and UR Series) are **TÜV Rheinland certified** to ISO 10218-1:2011. All safety functions are PLd Category 3 evaluated and certified. Certain safety functions can be configured, deactivated, or muted within the parameters permitted by the standards. The fundamental collaborative safety cannot be disabled.

Q: Do I need to replace my robot when ISO 10218-1:2025 takes effect?

A: No. Existing robots can continue to operate under their original certification. ISO 10218-1:2025 applies to **newly placed-on-market products**. Existing installations certified under ISO 10218-1:2011 can upgrade to the new software and take advantage of new safety functions while continuing to use the standard TP — but **this does not make them ISO 10218-1:2025 certified**.

Q: Will PolyScope 5 and PolyScope X both be certified to ISO 10218-1:2025?

A: Yes. Universal Robots is targeting **TÜV Rheinland certification to ISO 10218-1:2025** for both PolyScope 5 and PolyScope X by **January 2027**, aligned with the EU Machinery Regulation enforcement date.

Q: Why is a 3PE teach pendant now mandatory?

A: ISO 10218-1:2025 requires all robots to integrate a 3PE with their teach pendant. The 3PE is a proven safety mechanism: any reflexive reaction — releasing in surprise or clenching in panic — triggers an immediate safety stop. UR's 3PE Teach Pendant features two switches for ergonomic left- and right-handed use (only one needs to be pressed) and is plug-and-play from PolyScope 5.9.5+. **The standard teach pendant is not permitted for use on robots certified to ISO 10218-1:2025.**

Q: What does "single point of control" mean for my application?

A: It replaces the current local/remote control paradigm with **Direct Control** (teach pendant) and **External Control** (Robot API and controller ports). Only one source can command control actions at a time, enforced as a safety function. Industrial fieldbuses and other communication interfaces remain available alongside — mainly integrators will notice the difference.

Q: Will the standard teach pendant still be available?

A: The standard teach pendant will be **phased out by Q1 2027**. New robots will ship with the 3PE Teach Pendant only. The standard TP will remain available **only as a spare part** for installations based on ISO 10218-1:2011 hardware. It is **not permitted** for use on robots certified to ISO 10218-1:2025.

Q: What happens to the mixed mode of operation?

A: Under ISO 10218-1:2025, the commonly used practice of combining manual and automatic operation without strict separation is **no longer permitted**. Robots will operate in either **Automatic** or **Manual** mode. In Manual mode, the 3PE must be active for motion.

Q: How does UR compare to other cobot manufacturers on safety?

A: Universal Robots pioneered the cobot market in 2008 and holds **TÜV Rheinland certification**. Every safety function is PLd Category 3 certified. With 100,000+ units sold worldwide and active participation in ISO TC299 WG3, UR sets the benchmark that others follow.

Glossary

ISO 10218-1: Safety standard for industrial robots. Current: 2011. New: 2025.

Category 3: Dual-channel safety architecture — single fault cannot cause loss of safety.

PFL: Power and Force Limiting — forces safe for human contact per ISO/TS 15066.

Monitored Standstill: Robot holds position at standstill with safety monitoring (replaces "SRMS" in 2025 edition).

TÜV Rheinland: Leading third-party certification body. Founded Germany 1872.

CRA: Cyber Resilience Act (EU 2024/2847). Enforcement Dec 11, 2027.

PLd (Performance Level d): Reliability level under ISO 13849 for hazardous robot applications.

3PE: Three-Position Enabling Device. Motion only in center position.

SSM: Speed and Separation Monitoring — speed adapts to human distance.

HGC: Hand-Guided Control — moving robot by hand with own speed limit (2025).

EU Machinery Regulation: EU 2023/1230. Effective Jan 20, 2027. Replaces Machinery Directive.

Single Point of Control: Only one source can command motion (Direct or External).

¹ ISO 10218-1:2025, "Robotics — Safety requirements — Part 1: Industrial robots," ISO, February 2025.

² ISO 10218-1:2011, "Robots and robotic devices — Safety requirements — Part 1: Robots," ISO, 2011.

³ EU Regulation 2023/1230 on Machinery, European Parliament and Council, June 2023. Effective January 20, 2027.

⁴ EU Regulation 2024/2847 (Cyber Resilience Act), European Parliament and Council, 2024. Enforcement December 11, 2027.

Ready to Automate with Confidence?

Contact your Universal Robots representative to learn how you can automate safely with the industry's most trusted collaborative robots.