

Safe Robotics Area Protection

OPEN ACCESS FOR SAFE PRODUCTIVITY

Safety systems

SICK
Sensor Intelligence.



Increase productivity

Unite safety and productivity thanks to freely accessible robot applications: Due to the *Safe Robotics Area Protection*, the robots reduce their speed when approaching humans. This prevents unnecessary machine stops and enables the robots to restart automatically.



Stay flexible

Prepare yourself for changing requirements and future challenges with the option of customizing and expanding the modular safety systems from SICK.

SAFE PRODUCTIVITY FOR ROBOTICS APPLICATIONS

Safe Robotics Area Protection safety systems from SICK are the perfect solution for quick and easy protection of freely accessible robots. They offer a high level of both safety and productivity, with a focus on close and safe cooperation between humans and robots. *Safe Robotics Area Protection* offers the right system for any application and consists of exactly the components you need for simple and standard-compliant protection:

Hardware

Pre-selected and proven safety hardware.



Software/Logic

Intuitive software or configuration logic suitable for the controller.



Documentation

Among others, these include the safety laser scanner configuration file, operating instructions, wiring plan and SISTEMA file.



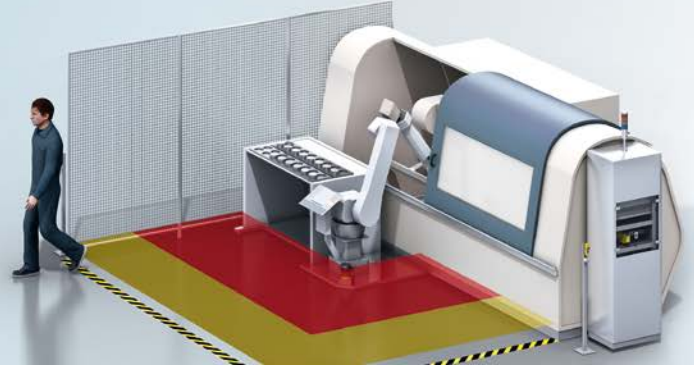
For more information: www.sick.com/Safe_Robotics_Area_Protection



Save time and money

Integrate the safety systems into your robot controller quickly and easily thanks to pre-selected safety hardware as well as safe, pre-configured and tested functional logic and detailed documentation.

sBot Speed



WITH SPEED REDUCTION FOR FEWER DOWNTIMES

Increase your productivity – the *sBot Speed* system variants individually adapt robot operation to the respective position of the worker. This reduces downtime and optimizes work processes.

Flexibility and safety are created through the combination of a safety laser scanner and the *Flexi Soft* safety controller or the robot controller. *sBot Speed* can be easily integrated into the most common robot controllers thanks to robot-specific settings and detailed documentation.

The *sBot Speed – URCap* system variant also allows the safety system to be configured and operated quickly and easily directly via the robot hardware (Universal Robots Teach Pendant).



Increase your machine availability with *sBot Speed*



High machine availability

Reduce downtime thanks to speed reduction and the option of automatic robot restart.



Flexible safety system

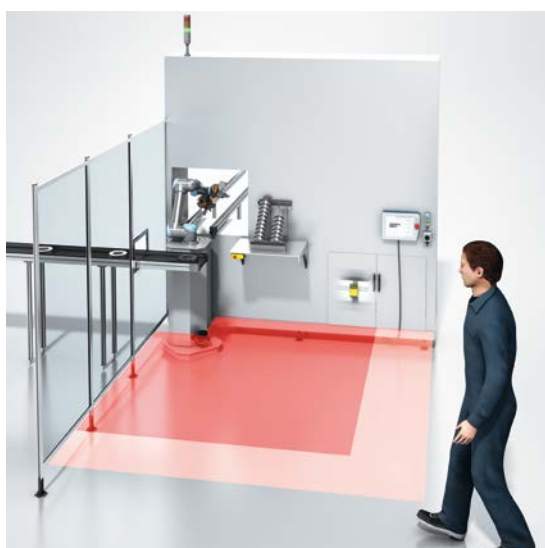
Optimally adapt the fields of the safety laser scanner to the application environment and implement additional safety functions into the safety controller at any time.

sBot Speed is available in robot manufacturer-specific and non-specific variants.



sBot Speed (non-specific)
sBot Speed – YA (Yaskawa)
sBot Speed – UR (Universal Robots)

All three variants allow reduction of robot speed with field set switchover and automatic restart.



sBot Speed – URe (Universal Robots)

Simultaneous protective field monitoring with automatic or manual restart for e-series robots from Universal Robots.



sBot Speed – URCap (Universal Robots)

Simultaneous protective field monitoring with automatic restart as well as simple and time-saving configuration of the *nanoScan3* safety laser scanner via the Teach Pendant of the e-series robots from Universal Robots.

sBot Speed CIP



MORE OPTIONS FOR CHALLENGING ROBOT APPLICATIONS

Expand your options for freely accessible robot applications with additional presence detection, as is required for palletizing systems, for example. The *sBot Speed CIP* system variants are available for both FANUC robots (*sBot Speed CIP – FA*) and KUKA robots (*sBot Speed CIP – KU*) and enable safe simultaneous monitoring of multiple protective fields.

These system variants combine the *microScan3 Core – EFI-pro* safety laser scanner with the *Flexi Soft* safety controller and the *EFI-pro gateway*. Thanks to EtherNet/IP™ CIP Safety™ and the robot-specific settings of

sBot Speed CIP, the system variants can be integrated into the robot controller quickly and safely. In addition, communication between safety system and robot controller is easy to set thanks to the pre-configured parameters.



Take advantage of easy integration thanks to CIP Safety™ and therefore great flexibility



EtherNet/IP™ CIP Safety™

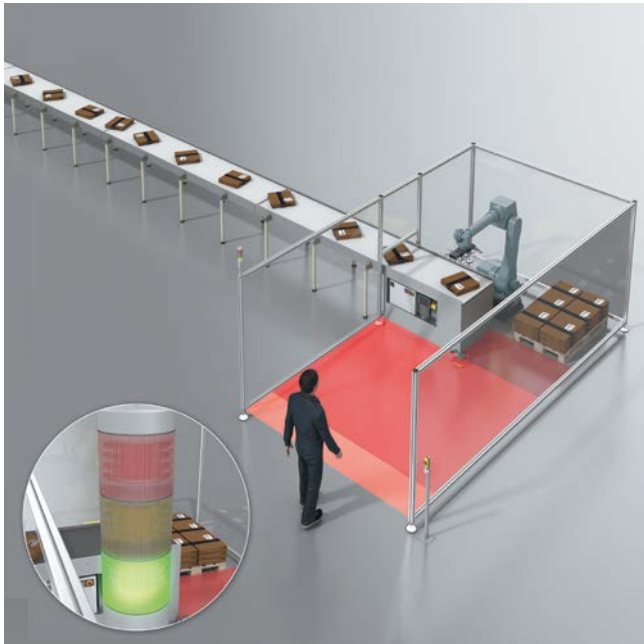
Benefit from optimal, safe robot integration, optional setting of additional functions, and reduced cabling requirements.



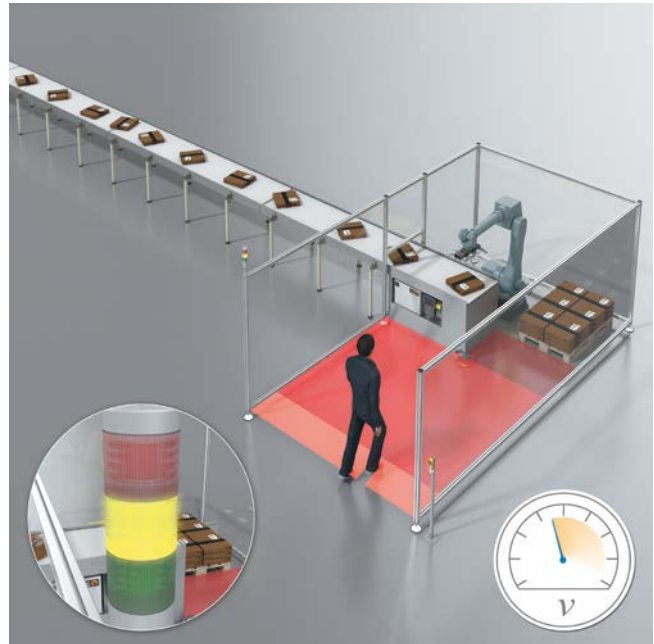
Simultaneous protective field monitoring

If someone can step behind the protected area in freely accessible robot applications, you can optimally protect these applications with *sBot Speed CIP*.

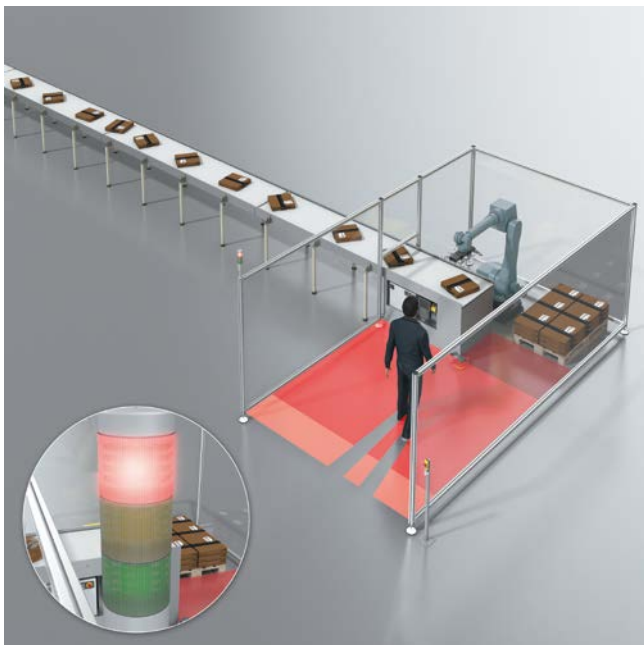
Principle of operation using the example of a palletizer system



1 The sBot Speed CIP works with various protective fields that simultaneously monitor the *microScan3 Core – EFI-pro* safety laser scanner. The minimum distance of each protective field is defined based on the robot speed.



2 If a worker enters protective field 1, the safety controller initiates a reduction of the robot speed.



3 The robot does not stop until the person enters the second defined protective field and therefore comes too close to the hazardous area.



4 As soon as the person leaves protective field 1, the robot automatically restarts after successful testing the safe sequence monitoring*. Manual restart of the robot is only required if the person does not correctly follow the expected exit sequence or enters protective field 3.

* Automatic restart may only be used if permitted in line with the risk assessment and all requirements for the use of this safety system are fulfilled.

sBot Stop



THE SIMPLE SOLUTION FOR IMMEDIATE AUTOMATIC RESTART AFTER A SAFE STOP

With *sBot Stop*, you can easily and quickly configure a safe machine stop – and with immediate automatic restart. This means you are on the safe side when it comes to productivity.

With the non-specific *sBot Stop* system variant, a compact machine design can be implemented with a minimum safety distance to the hazardous area. This is thanks to a combination of safety laser scanner, safety light curtain or multiple light beam safety device and a *Flexi Classic* safety controller. Safety functions are available as pre-configured, tested functional logic for the non-programmable *Flexi Classic* safety controller.

The functions can be selected quickly and easily using a rotary switch.

The *sBot Stop – URCap* system variant allows the safety system to be configured and operated quickly and easily directly via the robot hardware (Universal Robots Teach Pendant). This is because this variant combines the advantages of a safety laser scanner when protecting the hazardous area with those of the intuitive *sBot – URCap* software.



Take advantage of easy handling



Immense time savings

Configure the safety system quickly and easily using a rotary switch or intuitive software.



Simple and intuitive

Take advantage of the option of configuring the safety system directly via the robot hardware.

sBot Stop is available in robot manufacturer-specific and non-specific variants.



sBot Stop (non-specific)

Among the 11 different variants, you will find the exact right solution to ensure that your machine stops quickly and safely and restarts automatically.



sBot Stop – URcap (Universal Robots)

The sBot Stop – URcap system variant impresses with the quick and easy configuration and handling of the safety system: The *nanoScan3* safety laser scanner can be configured directly via the Teach Pendant of the e-series robots from Universal Robots.

SELECTION GUIDE

System variants		Robot type					Robot stopping process		Robot restart	
		Non-specific	Yaskawa	Universal Robots	FANUC	KUKA	With previous speed reduction	Immediate stop	Automatically	Manually
sBot Speed	sBot Speed (non-specific)	■					■		■	
	sBot Speed – YA		■				■		■	
	sBot Speed – UR			■			■		■	
	sBot Speed – URe			■			■		■	■ ¹⁾
	sBot Speed – URCap			■			■		■	
sBot Speed CIP	sBot Speed CIP – FA				■		■		■	■ ²⁾
	sBot Speed CIP – KU					■	■		■	■ ²⁾
sBot Stop	sBot Stop (non-specific)	■						■	■ ³⁾	■ ³⁾
	sBot Stop – URCap			■				■	■	

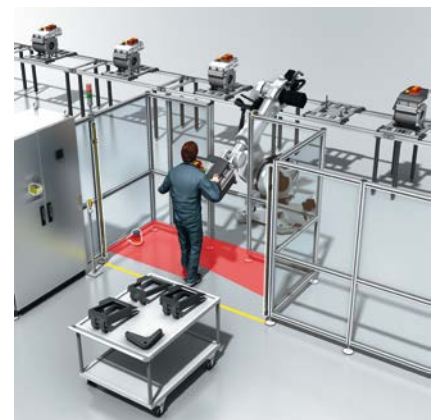
¹⁾ Manual reset can be configured.

²⁾ When entering the third protective field.

³⁾ Depending on the variant.

FIELDS OF APPLICATION

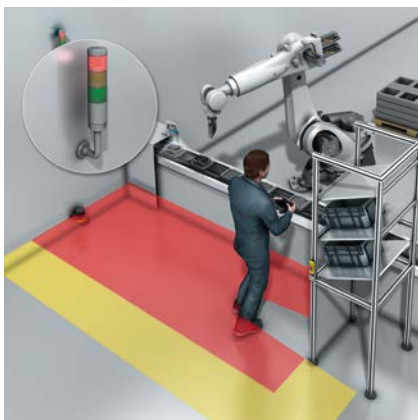
The area of application of the *Safe Robotics Area Protection* safety systems is constantly growing. As robot applications are now nearly indispensable as supplements and support for work processes in most branches of industry.



Automotive and parts suppliers

E.g. in the production of electric engines.

Interface for robot controller			Included opto-electronic protective devices		Type of safety controller			Special features of the safety system			Page
Discrete I/Os	Ethernet/IP™	Ethernet/IP™ CIP Safety™	Safety laser scanner	Safety light curtain or multiple light beam safety device	Programmable Flexi Soft safety controller	Robot controller	Non-programmable Flexi Classic safety controller	Presence detection	Little space required	Configuration directly via the robot hardware	
■			■		■						→ 13
■			■		■						→ 13
■			■		■						→ 13
■			■		■						→ 13
■	■		■			■				■	→ 13
		■	■		■			■			→ 23
		■	■		■			■			→ 23
■			■	■			■		■		→ 27
■	■		■			■				■	→ 27



Electronics

E.g. in quality control work stations.



Consumer goods

E.g. in packaging stations.



Mechanical engineering

E.g. in CNC machines.

OPEN ACCESS FOR SAFE PRODUCTIVITY



Product description

The Safe Robotics Area Protection safety systems from SICK are a starting point for safe human-robot interaction and enable cooperative and freely-accessible robot applications. The system comprises hardware as well as software or functional logic with tested safety functions. Not only generic but also manufacturer-specific variants are available, for example for Universal Robots,

FANUC, KUKA and Yaskawa. Thanks to the detailed documentation and robot-specific settings, these variants can be easily integrated into robot control systems and, in part, configured directly via the robot hardware. Safe Robotics Area Protection ensures less downtime, optimized work processes and therefore an increase in productivity.

At a glance

- Comprising hardware as well as software or functional logic with tested safety functions
- Generic and manufacturer-specific variants (Universal Robots, FANUC, KUKA, Yaskawa)
- Documentation with wiring diagram, SISTEMA file and operating instructions
- Automated robot restart possible
- Performance level (PL) d

Your benefits

- Free, safe access to cooperative robot applications for less downtime, optimal work processes and high productivity
- Highly flexible and future-proof solution thanks to easy tailoring of the systems to the specific robot application and production environment
- Time-saving configuration of the systems, in part directly via the robot hardware
- Detailed documentation, compliant with relevant standards
- Low costs as the system is easy to integrate into industrial robot controllers, thanks to generic or manufacturer-specific variants for Universal Robots, FANUC, KUKA and Yaskawa

Additional information

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sBot Speed CIP

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sBot Stop

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URCap Software

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→ www.sick.com/Safe_Robotics_Area_Protection

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



sBot Speed, sBot Speed – UR, sBot Speed – URe, sBot Speed – URCap, sBot Speed – YA

Detailed technical data

Features

	sBot Speed	sBot Speed – UR	sBot Speed – URe	sBot Speed – URCap	sBot Speed – YA
Robot controller	Generic	Universal Robots: UR3, UR5, UR10	Universal Robots: UR3e, UR5e, UR10e, UR16e		Yaskawa: DX200, YRC1000, YRC-1000micro
Stopping process of the robot	With speed reduction				
Robot restart	Automatic		Automatic or manual	Automatic	
Interfaces					
Communication interface	Discrete I/Os				
Configuration interface	–		Ethernet		–
Safe state in the event of a fault	The safety-related semiconductor outputs are in the OFF state.				
Safety laser scanner	microScan3 Core I/O / S300 Mini Remote (depending on type)	S300 Mini Remote	nanoScan3 Pro I/O / 2 x nanoScan3 Pro I/O (depending on type)	nanoScan3 Pro I/O	microScan3 Core I/O / nanoScan3 Core I/O (depending on type)
Protective field range	3 m / 5.5 m (depending on type)	3 m			3 m / 5.5 m (depending on type)
Safety task	Hazardous area protection				
Safety controller included	Flexi Soft (CPU1)	Flexi Soft (CPU1) / Flexi Soft (CPU3) (depending on type)	Flexi Soft (CPU0)		Flexi Soft (CPU0)
Safety controller type	Programmable			–	Programmable
Supply voltage V_s	24 V DC (16.8 V DC ... 28.8 V DC)				
Performance level	PL d (ISO 13849-1)				

Functions

	sBot Speed	sBot Speed - UR	sBot Speed - URe	sBot Speed - URCap	sBot Speed - YA
Emergency stop					
Shut down in the event of an emergency situation	✓			-	✓
Prevent unexpected restarting after an emergency stop	✓			-	✓
Initiate a safety stop					
Automated reset	✓		-	✓	✓ (depending on type)
Automated reset and restart with safe sequence monitoring	-		✓	-	✓ (depending on type)
Optional manual reset	-		✓	-	
Safety-rated monitored speed					
Trigger safety-rated monitored speed	✓				
Switch field sets	✓		-		✓
Operating mode					
Operating mode selection (implemented in robot control)	-		✓		
Enabling device - manual operating mode (implemented in robot control)	-		✓	✓	✓
Operating mode selection (implemented in safety system)	-	✓	-		
Enabling device - manual operating mode (implemented in safety system)	-	✓	-		

Ordering information

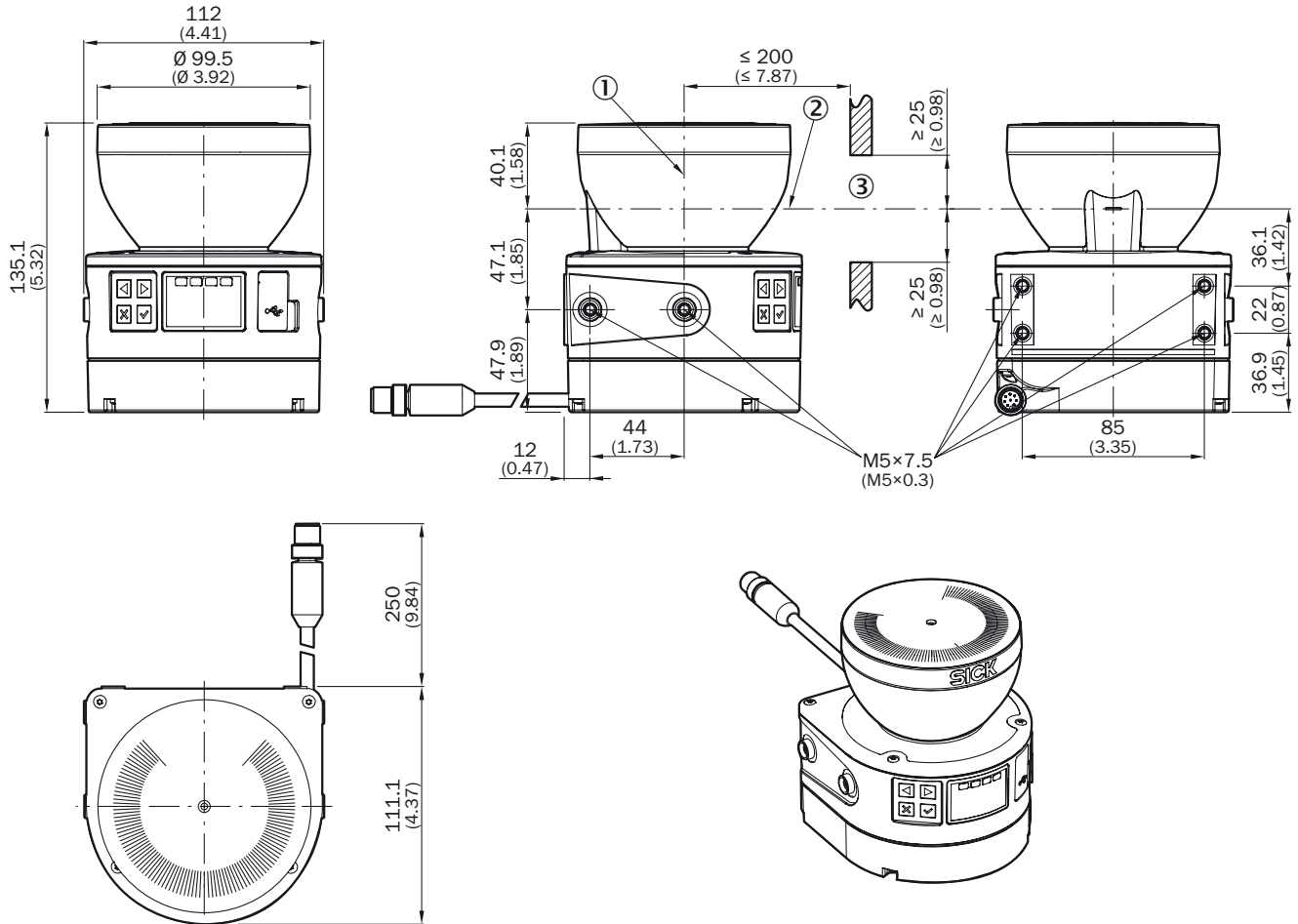
sBot Speed

- **Product type:** System (hardware and software)

Variant	Robot type	Robot restart	Safety controller included	Safety laser scanner included	Protective field range	Type	Part no.
sBot Speed	Generic	Automatic	Flexi Soft (CPU1)	microScan3 Core I/O	5.5 m	SAPPB2D-08X0039	1093376
				S300 Mini Remote	3 m	SAPPB2D-08X0040	1093377
sBot Speed - UR	Universal Robots: UR3, UR5, UR10	Automatic	Flexi Soft (CPU1)	S300 Mini Remote	3 m	SYS/BOT-URSP4020101S31	1117270
				Flexi Soft (CPU3)	S300 Mini Remote	3 m	SYS/BOT-URSP4020101S33
sBot Speed - URe	Universal Robots: UR3e, UR5e, UR10e, UR16e	Automatic or manual	Flexi Soft (CPU0)	nanoScan3 Pro I/O	3 m	SYS/BOT-URE00420101NS3	1117267
				2 x nanoScan3 Pro I/O	3 m	SYS/BOT-URE00420102NS3	1117268
sBot Speed - URCap	Universal Robots: UR3e, UR5e, UR10e, UR16e	Automatic	-	nanoScan3 Pro I/O	3 m	SYS/BOT-URSP4ESUA01NS3	1111885
sBot Speed - YA	Yaskawa: DX200, YRC1000, YRC1000micro	Automatic	Flexi Soft (CPU0)	microScan3 Core I/O	5.5 m	SYS/BOT-YASP4020101MS3	1117273
				nanoScan3 Core I/O	3 m	SYS/BOT-YASP4020101NS3	1117274

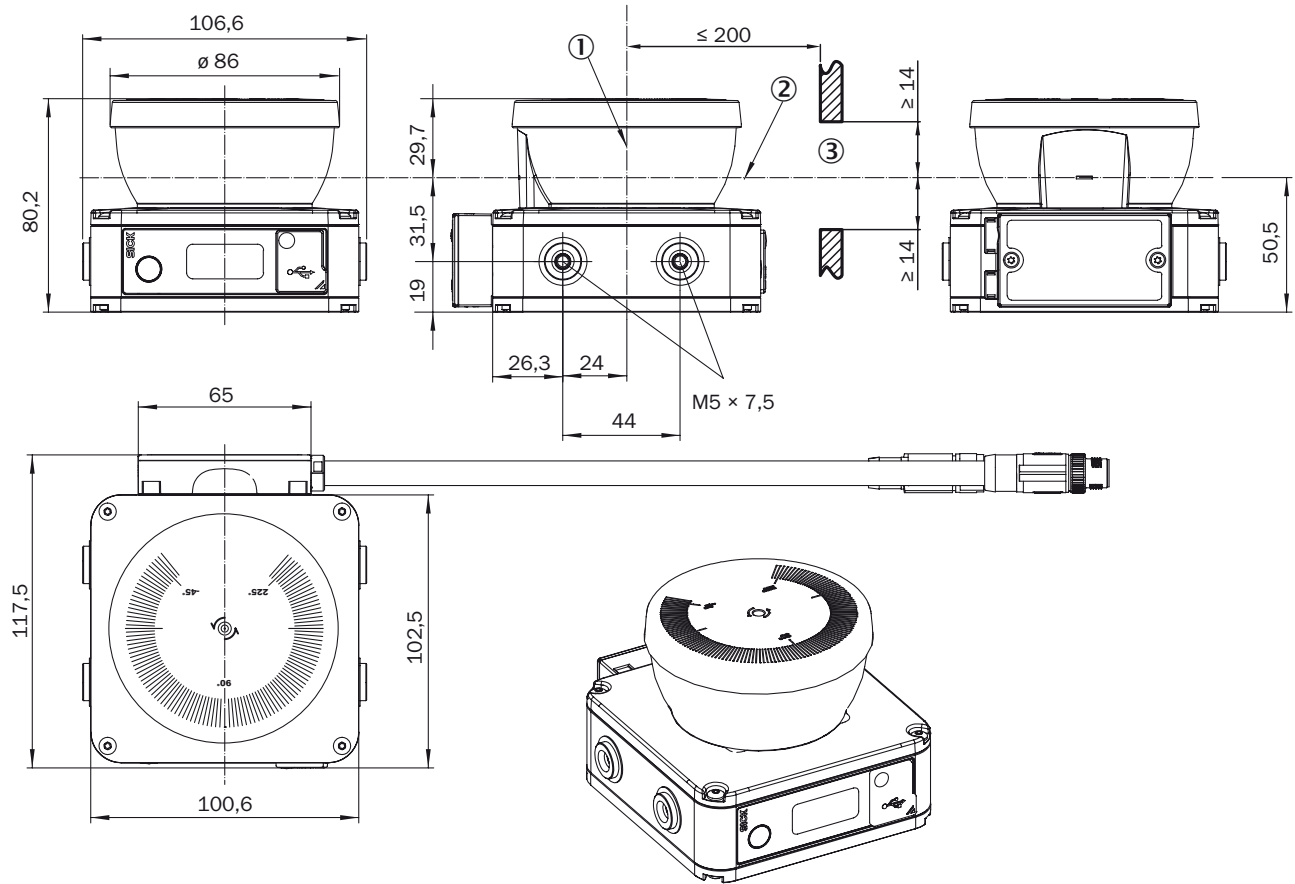
Dimensional drawings (Dimensions in mm (inch))

microScan3 Core I/O

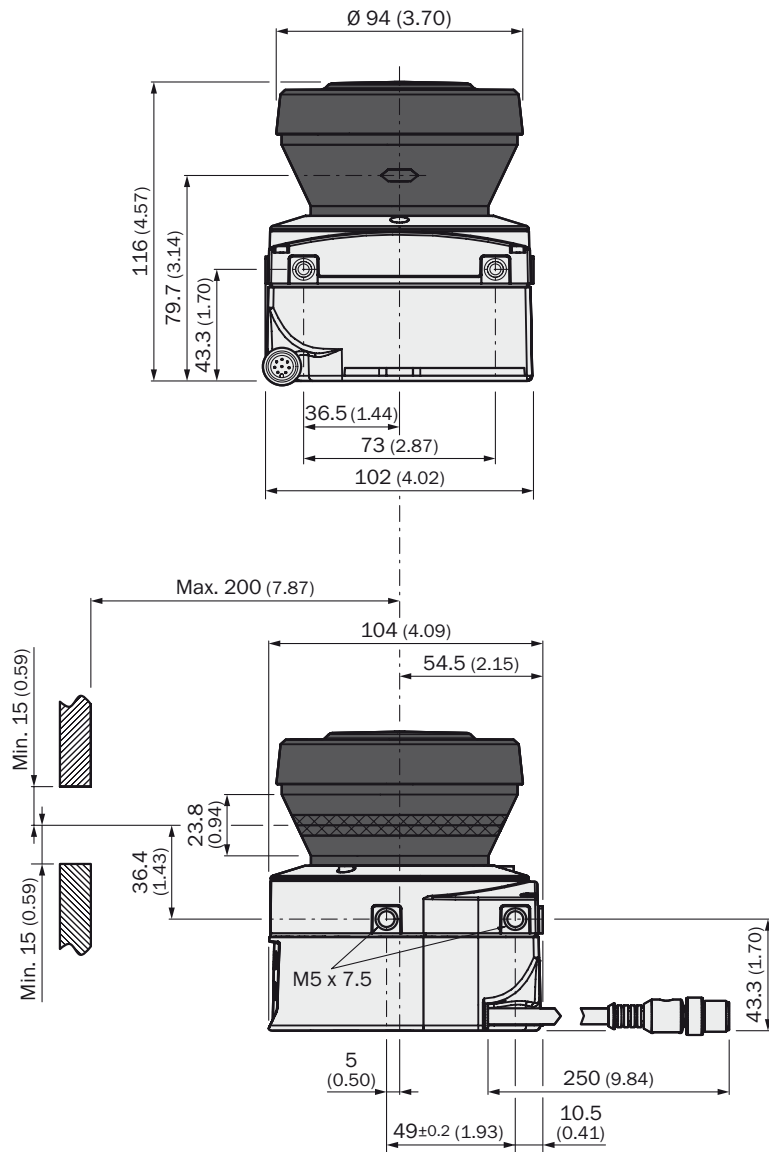


- ① Mirror axis of rotation
- ② Scan plane
- ③ Required viewing slit

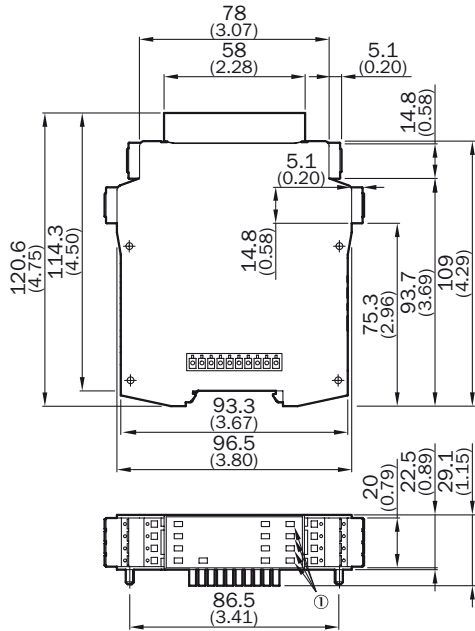
nanoScan3 Core I/O, nanoScan3 Pro I/O



S300 Mini Remote

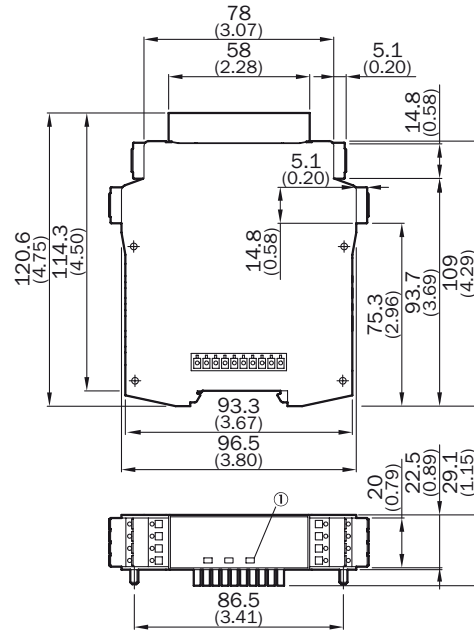


FX3-XTIO, FX3-XTDI



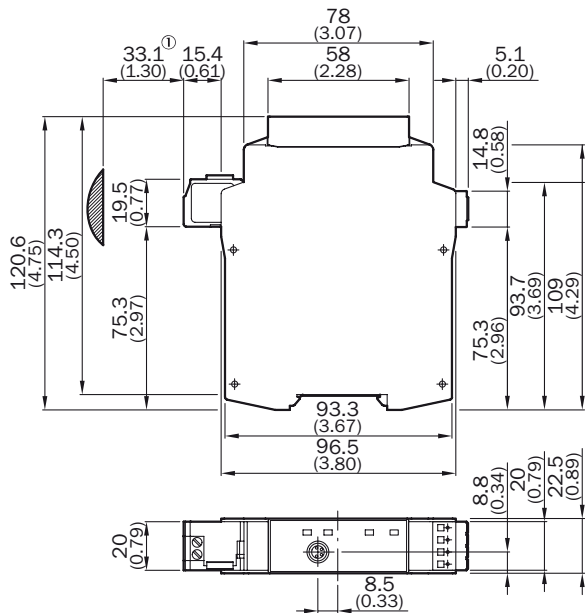
① Only valid for FX3-XTIO

UE410-2R04, UE410-4R04



① Only valid for UE410-4R04

FX3-CPU1, FX3-CPU2



① Approximate connector range

Accessories required for commissioning

The following accessories are required for commissioning but not included in the delivered safety system.




Description	Number	Usage	microScan3 Core I/O	S300 Mini Remote	nanoScan3 Pro I/O	2 x nanoScan3 Pro I/O	nanoScan3 Core I/O	Flexi Soft
Connecting cable, female connector, M12, 7-pin	1	For connecting S300 Mini Remote with Flexi Soft	-	●	-	-	-	-
Connecting cable, female connector, M12, 8-pin	1	For connecting microScan3 Core I/O with Flexi Soft	●	-	-	-	●	-
Connecting cable, female connector, M12, 17-pin	1 – 2 ¹⁾	For connecting nanoScan3 Pro I/O with Flexi Soft	-	-	●	●	-	-
Connection cable, USB-A, Mini-USB	1	For configuration of microScan3 Core I/O	●	-	-	-	-	-
Connection cable, USB-A, male connector, M8, 4-pin	1	For configuration of S300 Mini Remote or Flexi Soft	-	●	-	-	-	●
Connection cable, USB-A, Micro-USB	1 – 2 ¹⁾	For configuration of nanoScan3 Pro I/O or nanoScan3 Core I/O	-	-	●	●	●	-

¹⁾ Depending on whether one or two nanoScan3 Pro I/O are used.

Accessories





Mounting systems

Mounting brackets





Figure	Description	Packing unit	Type	Part no.	microScan3 Core I/O	S300 Mini Remote	nanoScan3 Pro I/O	2 x nanoScan3 Pro I/O	nanoScan3 Core I/O	Flexi Soft
	Mounting bracket with protection of optics hood, Stainless steel V2A (1.4301), powder-coated IGP-DURA face 5803A	1 piece	Mounting kit 1b	2074242	●	-	-	-	-	-
	Mounting bracket for rear mounting on wall or machine with protection of optics hood	1 piece	Mounting kit 1b	2034325	-	●	-	-	-	-
	Mounting bracket with optics cover protection	1 piece	Mounting kit 1b	2111768	-	-	●	●	●	-

Plug connectors and cables

Connecting cables

Figure	Connection type		Model	Conductor cross-section	Length of cable	Type	Part no.	microScan3	Core I/O	S300	Mini Remote	nanoScan3	Pro I/O	2 x nanoScan3	Pro I/O	nanoScan3	Core I/O	Flexi Soft
								●	-	●	-	●	-	●	-	●	-	
	Flying leads	PUR, halogen-free, unshielded	0.25 mm ²	5 m	DOL-1208G05MD25KM1	2079315	●	-	-	-	-	●	-					
				10 m	DOL-1208G10MD25KM1	2079316	●	-	-	-	●	-						
	Flying leads	Shielded	-	5 m	DOL-1SS2G5M0E15KM3	6042338	-	●	-	-	-	-	-					
				10 m	DOL-1SS2G10ME15KM3	6042340	-	●	-	-	-	-						
				15 m	DOL-1SS2G15ME15KM3	6042341	-	●	-	-	-	-						
				20 m	DOL-1SS2G20ME15KM3	6042342	-	●	-	-	-	-						
	Flying leads	PUR, halogen-free, unshielded	0.25 mm ²	10 m	YF2A18-100UA5XLEAX	2095654	-	-	●	●	-	-						
				15 m	YF2A18-150UA5XLEAX	2095679	-	-	●	●	-	-						
	Flying leads	TPE-U, shielded	-	5 m	YF2ASD-050XXXXLECX	2075220	-	-	●	●	-	-						
		PE-X, shielded	-	10 m	YF2ASD-100XXXXLECX	2070427	-	-	●	●	-	-						

Connection cables

Figure	Connection type		Model	Length of cable	Type	Part no.	●	-	●	-	●	-	●	-
							●	-	●	-	●	-	●	-
	Male connector, USB-A, straight	Male connector, USB-A, straight	PVC, unshielded	2 m	DSL-8U04G02M025KM1	6034574	-	●	-	-	-	-	●	
				10 m	DSL-8U04G10M025KM1	6034575	-	●	-	-	-	-	●	
	Male connector, USB-A	Male connector, Micro-B	Unshielded	2 m	USB cable	6036106	-	-	●	●	●	-		
	Male connector, USB-A, straight	Male connector, Mini-USB, straight	Shielded	3 m	Connection cable (male connector-male connector)	6042517	●	-	-	-	-	-		
	Male connector, M12, 4-pin, straight	Male connector, RJ45, 4-pin, straight	PUR, halogen-free, shielded	2 m	YM2D24-020PN1MRJA4	2106182	-	-	●	●	●	-		
				5 m	YM2D24-050PN1MRJA4	2106184	-	-	●	●	●	-		
				10 m	YM2D24-100PN1MRJA4	2106185	-	-	●	●	●	-		

Additional components required


The additionally needed components are not included in the scope of delivery. Further information on the requirements for the additionally needed components can be found in the operating instructions. Download → www.sick.com

	sBot Speed	sBot Speed – UR	sBot Speed – URe	sBot Speed – YA	sBot Speed – URCap
Emergency stop pushbutton	✓ ¹⁾ → Suitable emergency stop pushbuttons from SICK can be found in the following table				–
Reset pushbutton	✓ → Suitable reset pushbuttons from SICK can be found in the following table				–
Operating mode selector switch	✓ (has to be integrated in the robot pendant or in the robot controller)	✓ (external device required)	✓ (is integrated into the robot pendant or must be integrated into the robot controller)		
Three-position enabling device	✓ (has to be integrated in the robot pendant)	✓ (external device required)	✓ (has to be integrated in the robot controller)	✓ (is integrated into the robot pendant or must be integrated into the robot controller)	✓ (has to be integrated in the robot controller)



¹⁾ At least two emergency stop devices must be installed, e.g., emergency stop pushbuttons. Depending on the risk assessment, it may be necessary to install additional emergency stop pushbuttons.

Emergency stop pushbuttons and reset pushbuttons

Figure	Description	Items supplied	Type	Part no.						
					microScan3 Core I/O	S300 Mini Remote	nanoScan3 Pro I/O	2 x nanoScan3 Pro I/O	nanoScan3 Core I/O	
	ES21	Emergency stop pushbutton	Cable gland, 2 x M20	ES21-SA10E1	6036147	●	●	●	●	●
				ES21-SB10G1	6036492	●	●	●	●	●
	ES11	Emergency stop pushbutton	Male connector, M12, 4-pin	ES11-SA1A4	6051327	●	●	●	●	●
		Emergency stop pushbutton with reset pushbutton	Male connector, M12, 8-pin	ES11-SC4D8	6051329	●	●	–	–	●
	ER12	Reset pushbutton	Male connector, M12, 4-pin	ER12-SB3C4	6051330	●	●	–	–	●

Figure	Description	Items supplied		Type	Part no.	microScan3 Core I/O	S300 Mini Remote	nanoScan3 Pro I/O	2 x nanoScan3 Pro I/O	nanoScan3 Core I/O
	ER12	Dual pushbutton	Male connector, M12, 8-pin	ER12-SD5E8	6051321	-	-	●	●	-

Accessories for emergency stop pushbuttons and reset pushbuttons

Figure	Connection type		Conductor cross-section	Length of cable	Type	Part no.	ES11-SA1A4	ES11-SC4D8	ER12-SB3C4	ER12-SD5E8
	Female connector, M12, 4-pin, straight	Flying leads	0,34 mm ²	10 m	YF2A14-100VB3XLEAX	2096236	●	-	●	-
				15 m	YF2A14-150VB3XLEAX	2096237	●	-	●	-
	Female connector, M12, 8-pin, straight	Flying leads	0,25 mm ²	10 m	YF2A18-100UA5XLEAX	2095654	-	●	-	●
				15 m	YF2A18-150UA5XLEAX	2095679	-	●	-	●

sBot Speed CIP

Detailed technical data

Features

	sBot Speed CIP – KU	sBot Speed CIP – FA
Robot controller	KUKA: KR C4	FANUC: R-30iB Plus
Stopping process of the robot	With speed reduction	
Robot restart	Automatic	
Interfaces		
Communication interface	EtherNet/IP™ CIP Safety™	
Safe state in the event of a fault	The safety outputs via the network are logic 0.	
Safety laser scanner	microScan3 Core – EFI-pro	
Protective field range	5.5 m	
Safety task	Hazardous area protection	
Safety controller included	Flexi Soft	
Safety controller type	Programmable	
Supply voltage V_s	24 V DC (16.8 V DC ... 30 V DC)	
Performance level	PL d (ISO 13849-1)	

Functions

	sBot Speed CIP – KU	sBot Speed CIP – FA
Emergency stop		
Shut down in the event of an emergency situation	✓	
Prevent unexpected restarting after an emergency stop	✓	
Initiate a safety stop		
Automated reset and restart with safe sequence monitoring	✓	
Optional manual reset	✓	
Safety-rated monitored speed		
Trigger safety-rated monitored speed	✓	
Operating mode		
Operating mode selection (implemented in robot control)	✓	
Enabling device – manual operating mode (implemented in robot control)	✓	

Ordering information

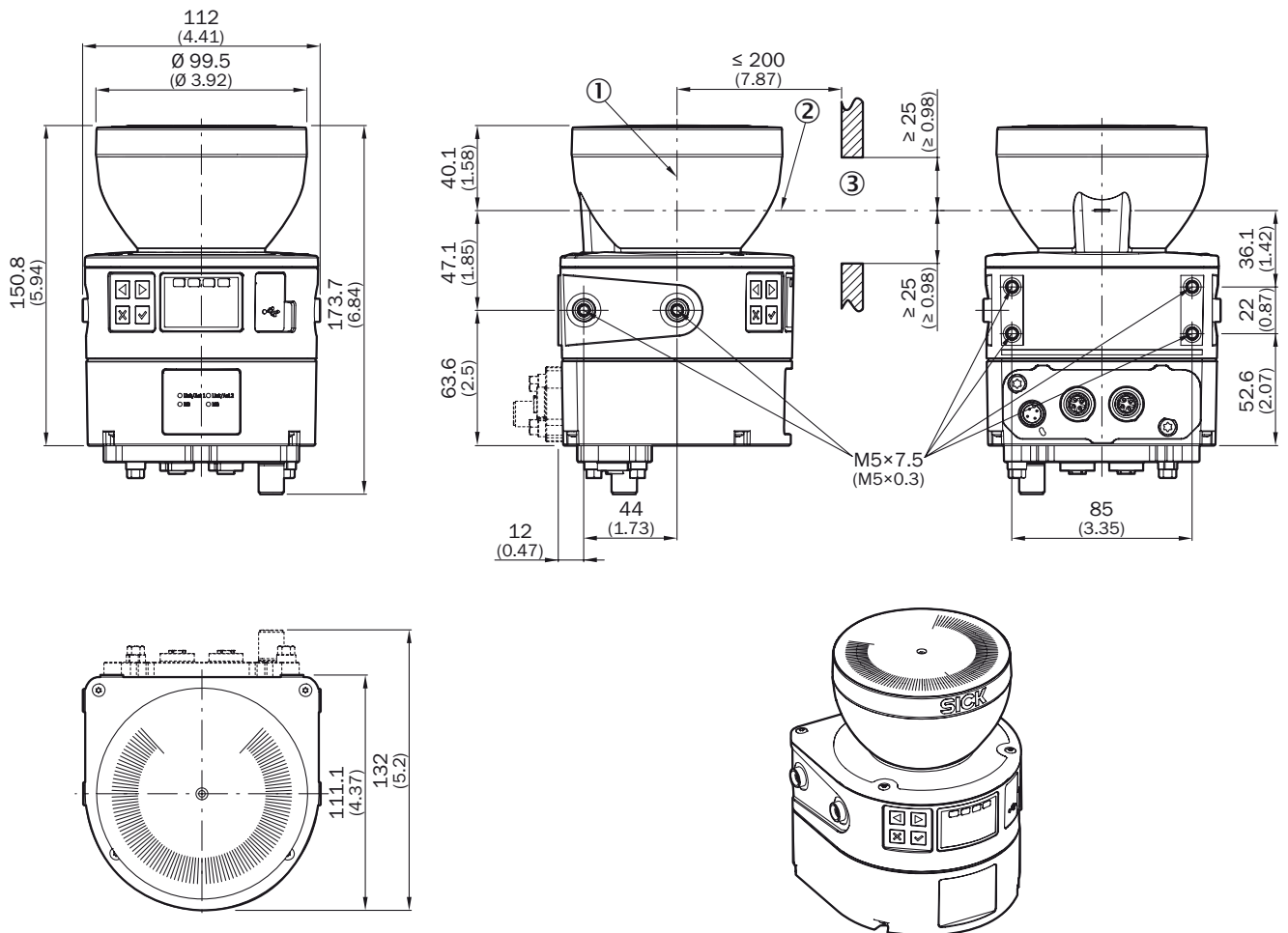
sBot Speed CIP

- **Note:** Hardware kit (part number: 1105347) and software (part number: 1614143 for FANUC or part number: 1614144 for KUKA) have to be ordered for the sBot Speed CIP.

Variant	Robot type	Safety controller included	Safety laser scanner included	Protective field range	Product type	Type	Part no.
sBot Speed CIP	FANUC: R-30iB Plus, KUKA: KR C4	Flexi Soft	microScan3 Core – EFI-pro	5.5 m	Hardware	Hardware Kit	1105347
sBot Speed CIP – KU	KUKA: KR C4	–	–	–	Software	SAPPC2D-08XS004	1614144
sBot Speed CIP – FA	FANUC: R-30iB Plus	–	–	–	Software	SAPPC2D-08XS002	1614143

Dimensional drawings (Dimensions in mm (inch))

microScan3 Core – EFI-pro



- ① Mirror axis of rotation
- ② Scan plane
- ③ Required viewing slit

Accessories required for commissioning

The following accessories are required for commissioning but not included in the delivered safety system.

Description	Number	Usage
Connecting cable, female connector, M12, 4-pin, flying leads	1	To supply voltage to the microScan3 Core – EFI-pro
Connection cable, USB-A, Mini-USB	1	For configuration of microScan3 Core – EFI-pro
Connection cable, male connector, M12, 4-pin, mail connector, RJ-45, 8-pin	1 – 2 ¹⁾	For connecting microScan3 Core – EFI-pro with Flexi Soft Gateway or/and robot controller


¹⁾ Dependent on the network structure

Accessories

Mounting systems

Mounting brackets and plates



Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket with protection of optics hood, Stainless steel V2A (1.4301), powder-coated IGP-DURA face 5803A	1 piece	Mounting kit 1b	2074242




Plug connectors and cables

Connecting cables

- **Model:** PUR, halogen-free, unshielded

Figure	Connection type		Conductor cross-section	Length of cable	Type	Part no.
	Female connector, M12, 4-pin, straight	Flying leads	0.75 mm ²	5 m	DOL-1204G05MC75KM0	2079291
				10 m	DOL-1204G10MC75KM0	2079292
				20 m	DOL-1204G20MC75KM0	2089703
	Female connector, M12, 4-pin, angled	Flying leads	0.75 mm ²	5 m	DOL-1204W05MC75KM0	2079294
				10 m	DOL-1204W10MC75KM0	2079295
				20 m	DOL-1204W20MC75KM0	2089704

Connection cables

Figure	Connection type		Model	Length of cable	Type	Part no.
	Male connector, USB-A, straight	Male connector, Mini-USB, straight	Shielded	3 m	Connection cable (male connector-male connector)	6042517
	Male connector, M12, 4-pin, straight	Male connector, RJ45, 4-pin, straight	PUR, halogen-free, shielded	2 m	YM2D24-020PN1MRJA4	2106182
				5 m	YM2D24-050PN1MRJA4	2106184
				10 m	YM2D24-100PN1MRJA4	2106185
	Male connector, M12, 4-pin, angled	Male connector, RJ45, 4-pin, straight	PUR, halogen-free, shielded	2 m	YN2D24-020PN1MRJA4	2106162
				5 m	YN2D24-050PN1MRJA4	2106163
				10 m	YN2D24-100PN1MRJA4	2106164






Additional components required

The additionally needed components are not included in the scope of delivery. Further information on the requirements for the additionally needed components can be found in the operating instructions. Download → www.sick.com



	sBot Speed – FA	sBot Speed CIP – KU
Emergency stop pushbutton	✓ ¹⁾ → Suitable emergency stop pushbuttons from SICK can be found in the following table	
Reset pushbutton	✓ → Suitable reset pushbuttons from SICK can be found in the following table	
Operating mode selector switch	✓ Is integrated into the robot pendant or must be integrated into the robot controller	
Three-position enabling device	✓ Is integrated into the robot pendant or must be integrated into the robot controller	

¹⁾ At least two emergency stop devices must be installed, e.g., emergency stop pushbuttons. Depending on the risk assessment, it may be necessary to install additional emergency stop pushbuttons.

Emergency stop pushbuttons and reset pushbuttons

Figure	Product family	Description	Connection type	Type	Part no.
	ES21	Emergency stop pushbutton	Cable gland, 2 x M20	ES21-SA10E1	6036147
				ES21-SB10G1	6036492
	ES11	Emergency stop pushbutton	Male connector, M12, 4-pin	ES11-SA1A4	6051327
		Emergency stop pushbutton with reset pushbutton	Male connector, M12, 8-pin	ES11-SC4D8	6051329
	ER12	Reset pushbutton	Male connector, M12, 4-pin	ER12-SB3C4	6051330

Accessories for emergency stop pushbuttons and reset pushbuttons

Figure	Connection type		Conductor cross-section	Length of cable	Type	Part no.	ES11-SA1A4		
							ES11-SA1A4	ES11-SC4D8	ER12-SB3C4
	Female connector, M12, 4-pin, straight	Flying leads	0,34 mm ²	10 m	YF2A14-100VB3XLEAX	2096236	●	-	●
				15 m	YF2A14-150VB3XLEAX	2096237	●	-	●
	Female connector, M12, 8-pin, straight	Flying leads	0,25 mm ²	10 m	YF2A18-100UA5XLEAX	2095654	-	●	-
				15 m	YF2A18-150UA5XLEAX	2095679	-	●	-

sBot Stop

Detailed technical data

Features

	sBot Stop – URCap	sBot Stop
Robot controller	Universal Robots: UR3e, UR5e, UR10e, UR16e	Generic
Stopping process of the robot	Stop only	
Robot restart	Automatic	Manual / automatic (depending on type)
Interfaces		
Communication interface	Discrete I/Os, Ethernet	Discrete I/Os
Safe state in the event of a fault	The safety-related semiconductor outputs are in the OFF state.	
Safety laser scanner	nanoScan3 Core I/O	S300 Mini Standard / microScan3 Core I/O / S3000 Standard (depending on type)
Protective field range	3 m	3 m / 5.5 m (depending on type)
Safety task	Hazardous area protection	
Safety sensors		
Primary protective device (access control)	–	Safety light curtain / Multiple light beam safety devices (depending on type)
Secondary protective device (presence detection)	Safety laser scanner	
Safety light curtain		deTec4 Core
Protective field height	–	1,200 mm / 1,500 mm (depending on type)
Resolution	–	30 mm
Scanning range	–	15 m
Multiple light beam safety devices		deTem4 Core
Number of beams	–	4
Beam separation	–	300 mm
Scanning range	–	17 m
Safety controller included		Flexi Classic
Safety controller type	–	Non programmable
Supply voltage V_s	–	24 V DC (16.8 V DC ... 28.8 V DC)
Performance level	PL d (ISO 13849-1)	

Functions

	sBot Stop – URCap	sBot Stop
Emergency stop		
Shut down in the event of an emergency situation	–	✓
Prevent unexpected restarting after an emergency stop	–	✓
Initiate a safety stop		
Automated reset	✓	✓ (depending on type)
Manual reset	–	✓ (depending on type)
Operating mode		
Operating mode selection (implemented in robot control)	✓	✓

Ordering information

sBot Stop – URCap

- **Variant:** sBot Stop – URCap
- **Robot type:** Universal Robots: UR3e, UR5e, UR10e, UR16e
- **Product type:** Hardware and software

Robot restart	Protective device	Type	Part no.
Automatic	Safety laser scanner nanoScan3 Core I/O Protective field range: 3 m	SYS/BOT-URST4ESUA01NS3	1111884

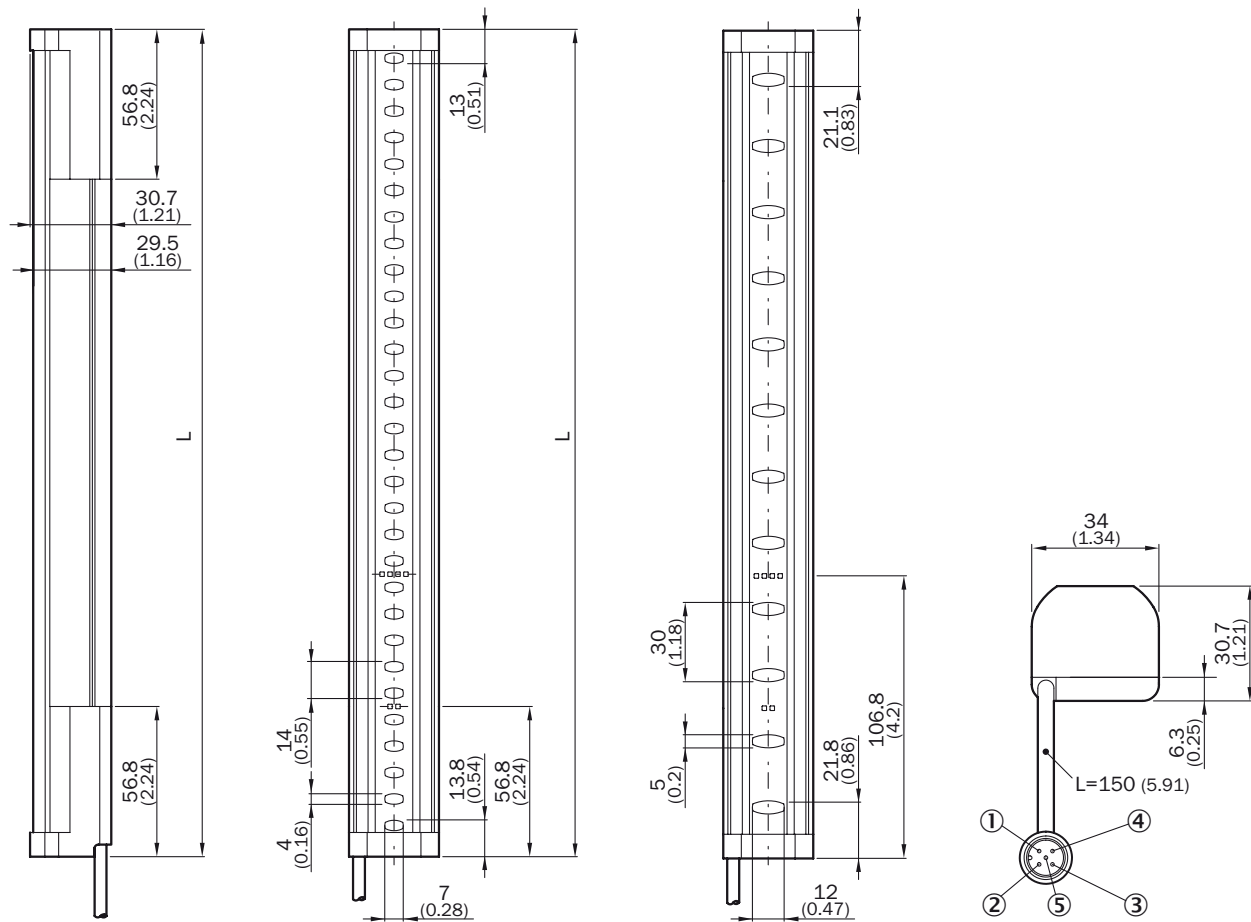
sBot Stop

- **Variant:** sBot Stop
- **Robot type:** generic
- **Product type:** Hardware and logic

Robot restart	Primary protective device (access control)	Secondary protective device (presence detection)	Type	Part no.
Automatic	Multiple light beam safety device deTem4 Core Number of beams: 4 Beam separation: 300 mm	Safety laser scanner S300 Mini Standard Protective field range: 3 m	SAPPB2D-08X0048	1097908
		Safety laser scanner microScan3 Core I/O Protective field range: 5.5 m	SAPPB2D-08X0050	1097911
	Safety light curtain deTec4 Core Protective field height: 1,500 mm Resolution: 30 mm	Safety laser scanner S300 Mini Standard Protective field range: 3 m	SAPPB2D-08X0047	1097907
		Safety laser scanner microScan3 Core I/O Protective field range: 5.5 m	SAPPB2D-08X0049	1097909
Manual	Multiple light beam safety device deTem4 Core Number of beams: 4 Beam separation: 300 mm	Safety laser scanner S300 Mini Standard Protective field range: 3 m	SAPPB2D-08X0044	1097904
		Safety laser scanner microScan3 Core I/O Protective field range: 5.5 m	SAPPB2D-08X0046	1097906
	Safety light curtain deTec4 Core Protective field height: 1,200 mm Resolution: 30 mm	Safety laser scanner S3000 Standard Protective field range: 5.5 m	SAPPB2D-08X0053	1098641
		Safety laser scanner microScan3 Core I/O Protective field range: 5.5 m	SAPPB2D-08X0051	1098639
	Safety light curtain deTec4 Core Protective field height: 1,500 mm Resolution: 30 mm	Safety laser scanner S300 Mini Standard Protective field range: 3 m	SAPPB2D-08X0043	1097902
		Safety laser scanner S3000 Standard Protective field range: 5.5 m	SAPPB2D-08X0052	1098640
	Safety laser scanner microScan3 Core I/O Protective field range: 5.5 m	SAPPB2D-08X0045	1097905	

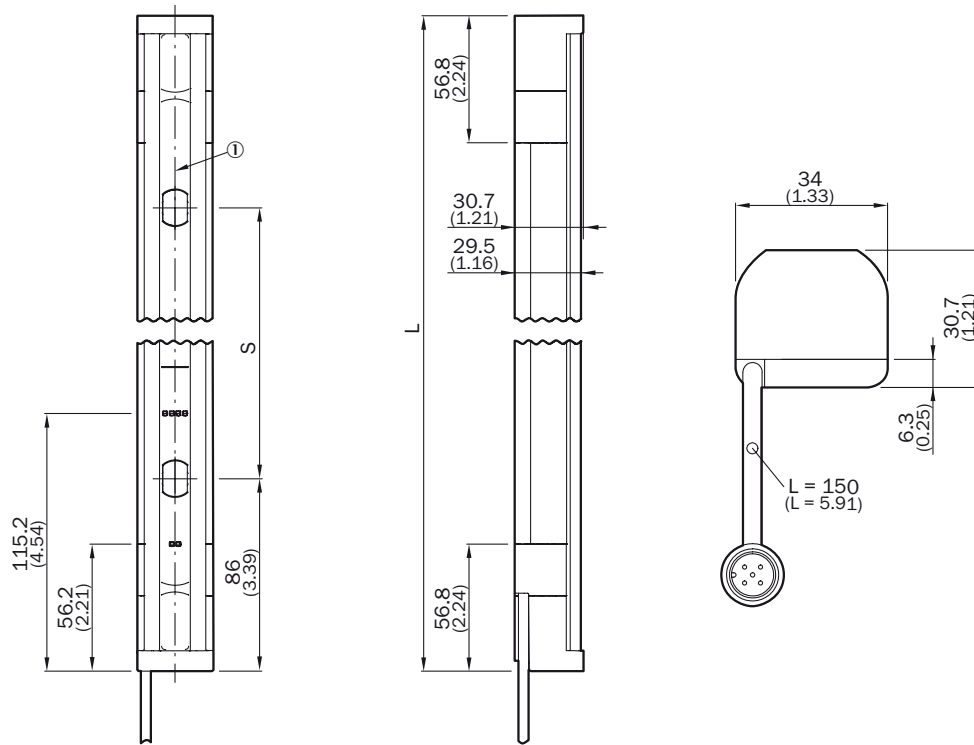
Dimensional drawings (Dimensions in mm (inch))

deTec4 Core



Protective field height	L
1,200 (47.24)	1,213 (47.76)
1,500 (59.06)	1,512 (59.53)

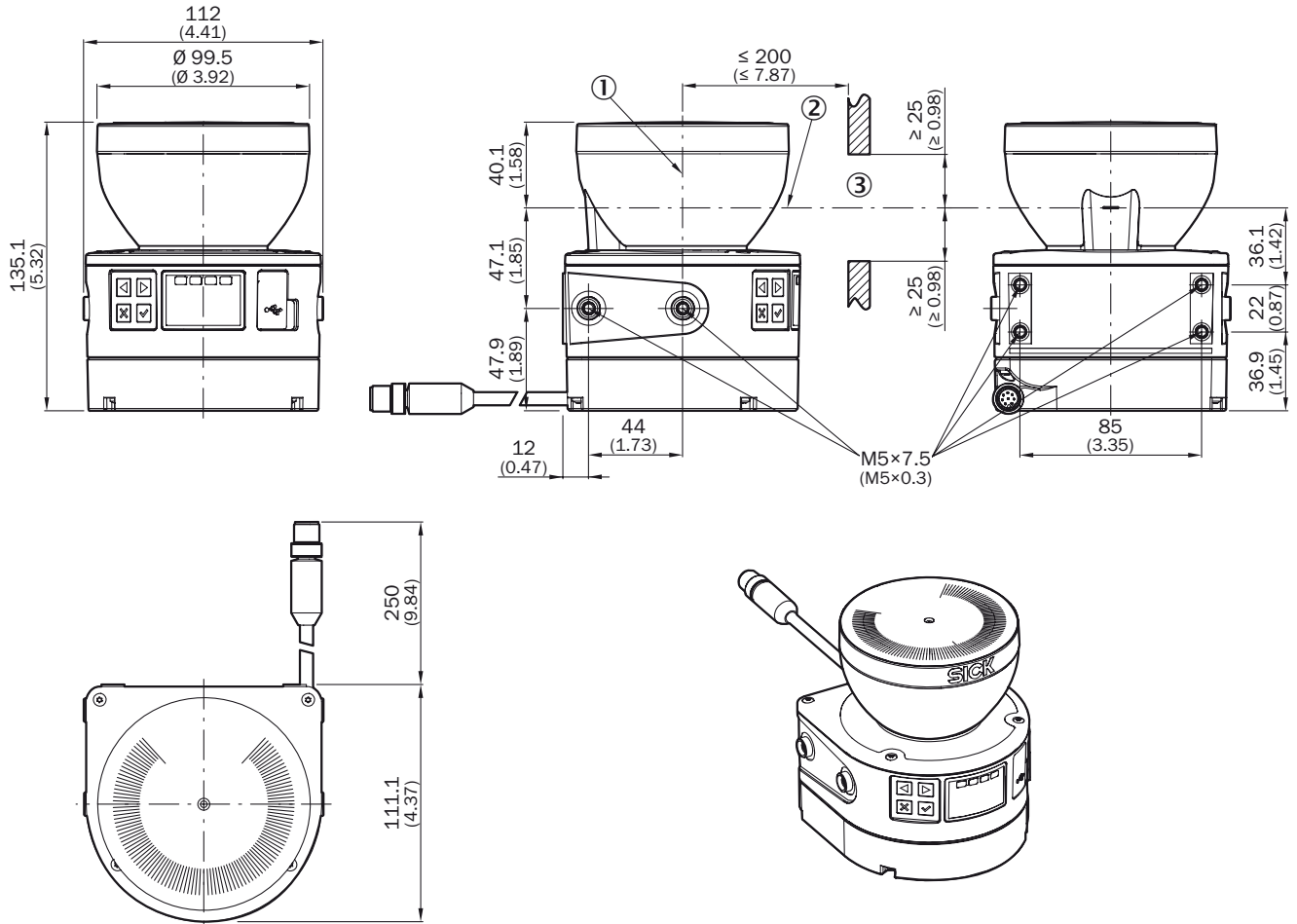
deTem4 Core



① Optical axis

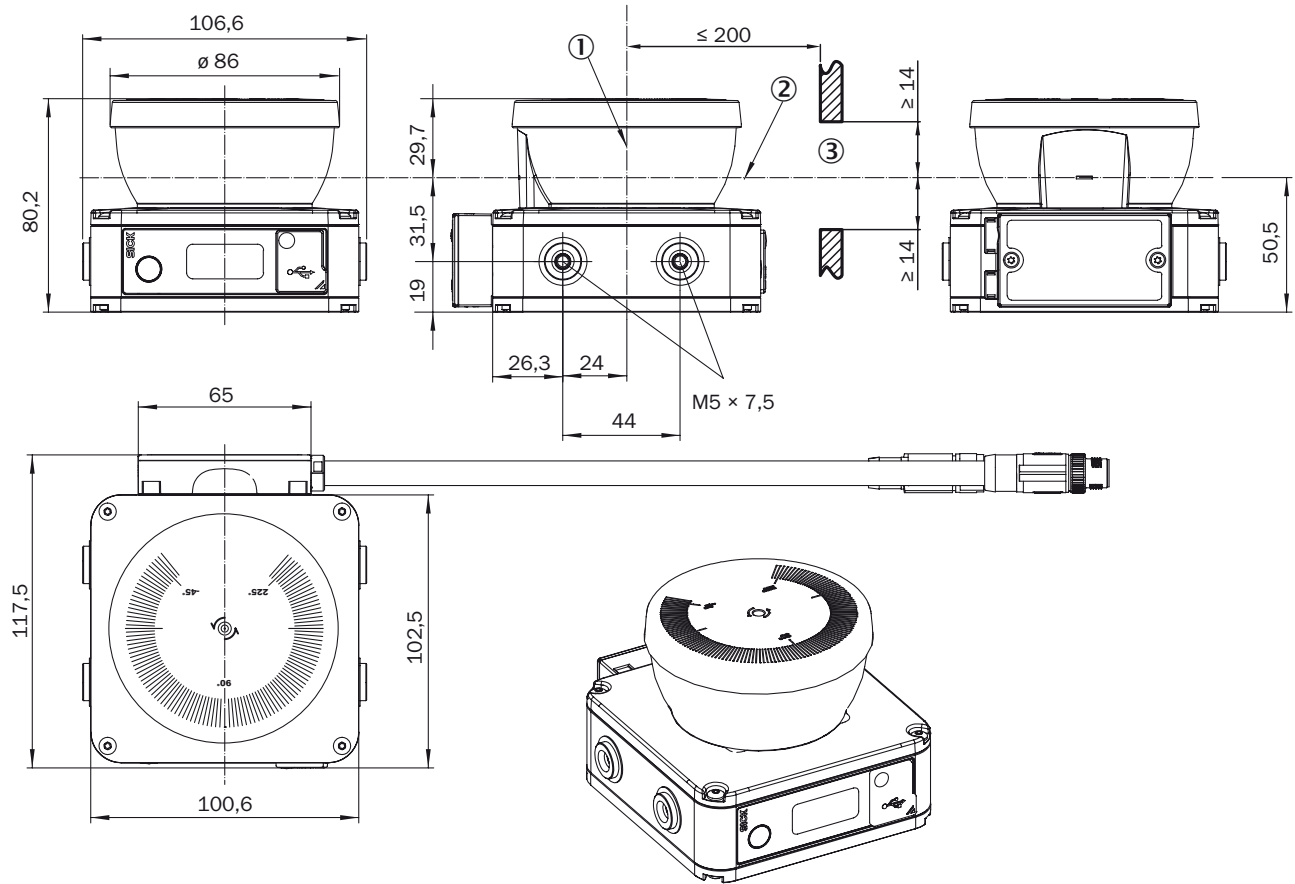
Number of beams	Beam separation S	Length L
4	300 (11.81)	1,072 (42.2)

microScan3 Core I/O

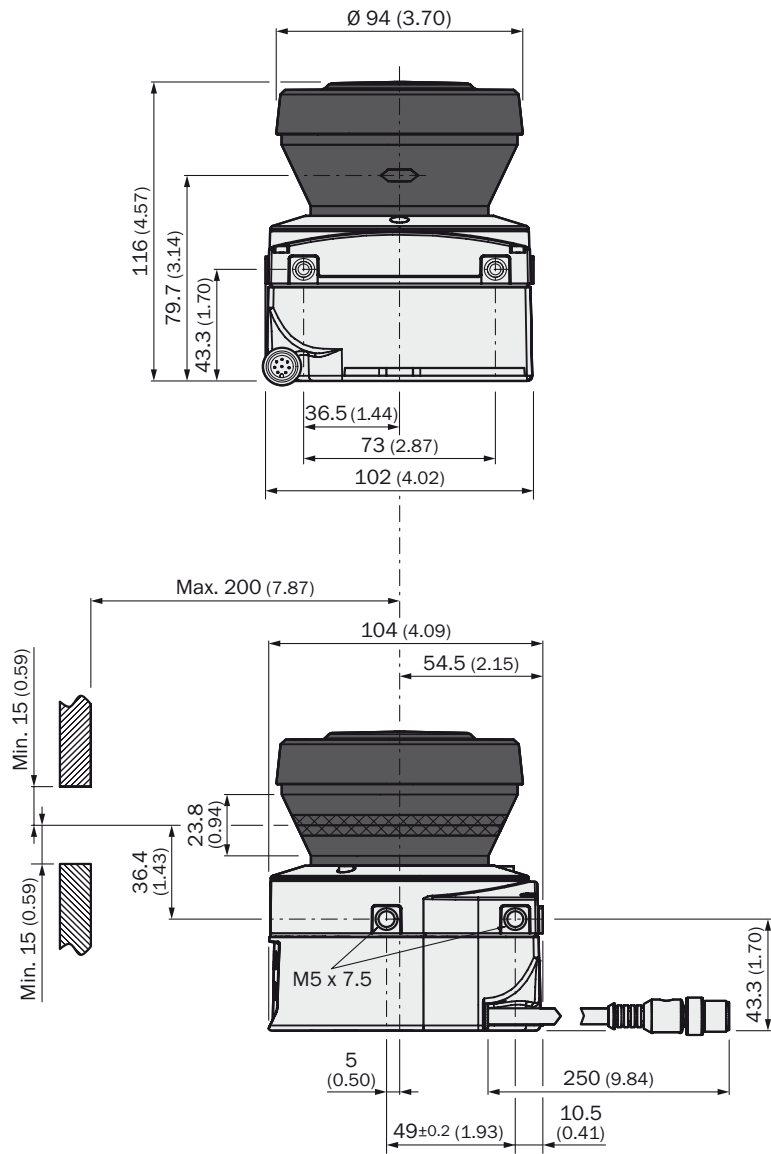


- ① Mirror axis of rotation
- ② Scan plane
- ③ Required viewing slit

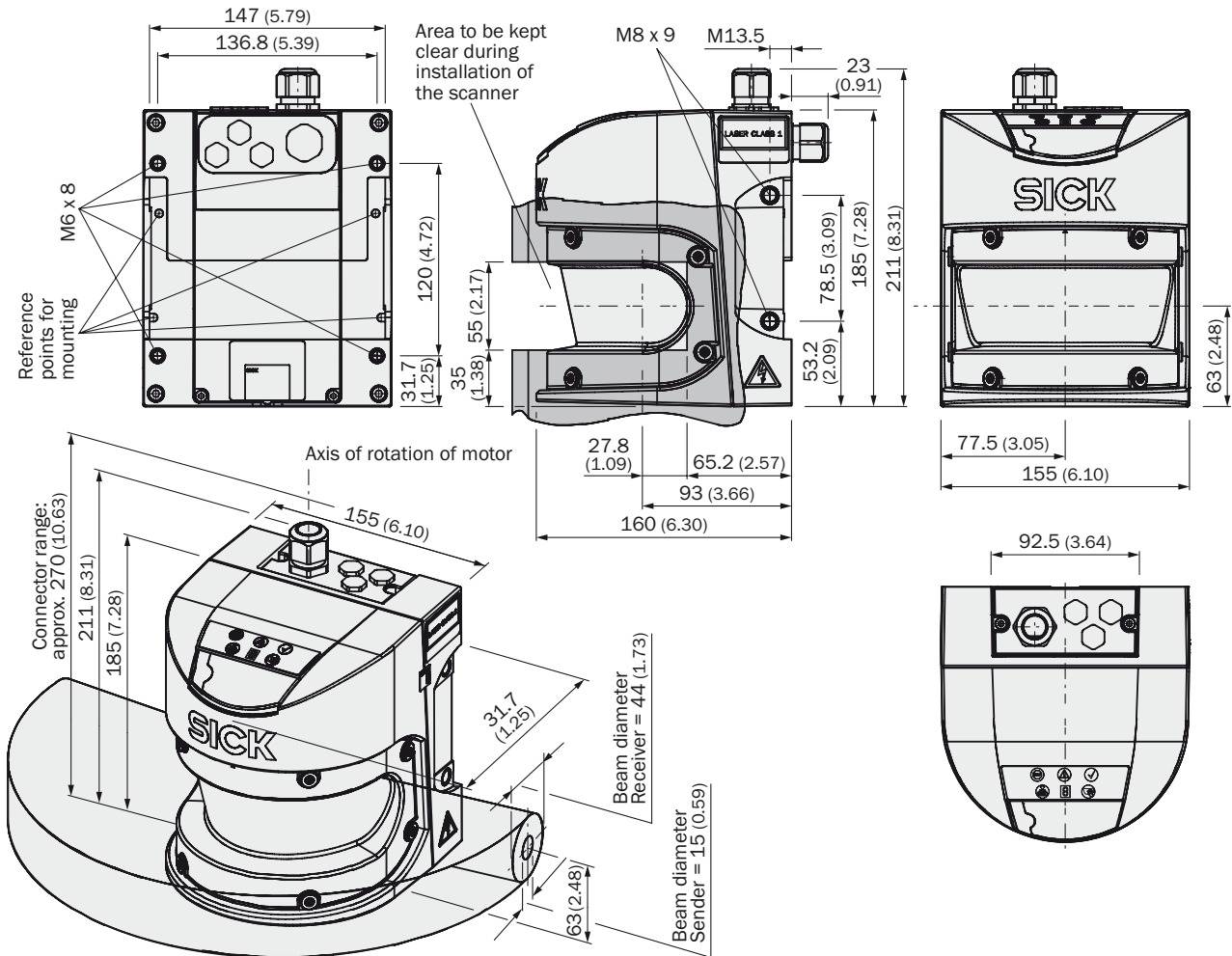
nanoScan3 Core I/O



S300 Mini Standard



S3000 Standard



Accessories required for commissioning






The following accessories are required for commissioning but not included in the delivered safety system.

Description	Number	Usage	deTec4 Core	deTem4 Core	nanoScan3 Core I/O	microScan3 Core I/O	S300 Mini Standard	S3000 Standard
Connecting cable, female connector, M12, 5-pin	2	For connecting deTec4 Core or deTem4 Core with Flexi Classic	●	●	-	-	-	-
Connecting cable, female connector, M12, 8-pin	1	For connecting microScan3 Core I/O or S300 Mini Standard with Flexi Classic	-	-	-	●	●	-
Connecting cable, female connector, M12, 8-pin	1	For connecting nanoScan3 Core I/O with robot control	-	-	●	-	-	-
Connecting cable, female connector, M12, 4-pin, RJ45	1	For connecting nanoScan3 Core I/O with robot control (Ethernet)	-	-	●	-	-	-
System plug S3000 Standard with connecting cable	1	For connecting S3000 Standard with Flexi Classic	-	-	-	-	-	●
Connection cable, USB-A, Mini-USB	1	For configuration of microScan3 Core I/O	-	-	-	●	-	-
Connection cable, USB-A, Micro-B	1	For configuration of nanoScan3 Core I/O	-	-	●	-	-	-
Connection cable, USB-A, male connector, M8, 4-pin	1	For configuration of S300 Mini Standard or S3000 Standard	-	-	-	-	●	●

Accessories



Mounting systems

Mounting brackets

Figure	Description	Packing unit	Type	Part no.	deTec4 Core	deTem4 Core	nanoScan3 Core I/O	microScan3 Core I/O	S300 Mini Standard	S3000 Standard
	Mounting bracket for direct mounting, from the rear, on wall or machine, not adjustable, Aluminum	1 piece	Mounting kit 1	2015623	-	-	-	-	-	●
	Mounting bracket for rear mounting on wall or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623), Aluminum	1 piece	Mounting kit 2	2015624	-	-	-	-	-	●
	Mounting bracket with optics cover protection	1 piece	Mounting kit 1b	2111768	-	-	●	-	-	-
	Mounting bracket for rear mounting on wall or machine with protection of optics hood	1 piece	Mounting kit 1b	2034325	-	-	-	-	●	-
	Mounting bracket with protection of optics hood, Stainless steel V2A (1.4301), powder-coated IGP-DURA face 5803A	1 piece	Mounting kit 1b	2074242	-	-	-	●	-	-

System plug with connecting cable

- **Description:** For S3000 Standard and Remote
- **Number of cores:** 9-wire
- **Items supplied:** With 1 x cable gland M20, 1 x blanking plug M20, 2 x blanking plug M12





Figure	Model	Length of cable	Type	Part no.						
					deTec4 Core	deTem4 Core	nanoScan3 Core I/O	microScan3 Core I/O	S300 Mini Standard	S3000 Standard
	Pre-assembled, cable connection at the rear, Not for use of incremental encoders, integrated configuration storage, PVC, unshielded	5 m	SX0A-B0905G	2049222	-	-	-	-	-	●
	Pre-assembled, Not for use of incremental encoders, integrated configuration storage, PVC, unshielded	10 m	SX0A-B0910B	2027171	-	-	-	-	-	●
		20 m	SX0A-B0920B	2027814	-	-	-	-	-	●

Plug connectors and cables

Connecting cables

Figure	Connection type		Model	Conductor cross-section	Length of cable	Type	Part no.						
	Female connector, M12, 5-pin, straight	Flying leads	PUR, halogen-free, unshielded	0.34 mm ²	2 m	YF2A15-020UB5XLEAX	2095617	●	●	-	-	-	-
					5 m	YF2A15-050UB5XLEAX	2095618	●	●	-	-	-	-
					10 m	YF2A15-100UB5XLEAX	2095619	●	●	-	-	-	-
	Female connector, M12, 8-pin, straight	Flying leads	PUR, halogen-free, unshielded	0.25 mm ²	5 m	DOL-1208G05MD25KM1	2079315	-	-	-	●	-	-
					10 m	DOL-1208G10MD25KM1	2079316	-	-	-	●	-	-
	Female connector, M12, 8-pin, straight	Flying leads	PUR, halogen-free, shielded	0.25 mm ²	5 m	DOL-127SG05ME25KM0	2076541	-	-	-	-	●	-
					10 m	DOL-127SG10ME25KM0	2076543	-	-	-	-	●	-
					15 m	DOL-127SG15ME25KM0	2076544	-	-	-	-	●	-

Connection cables

Figure	Connection type		Model	Length of cable	Type	Part no.						
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	PVC, unshielded	2 m	DSL-8U04G02M025KM1	6034574	-	-	-	-	●	●
				10 m	DSL-8U04G10M025KM1	6034575	-	-	-	-	●	●
	Male connector, USB-A	Male connector, Micro-B	Unshielded	2 m	USB cable	6036106	-	-	●	-	-	-
	Male connector, USB-A, straight	Male connector, Mini-USB, straight	Shielded	3 m	Connection cable (male connector-male connector)	6042517	-	-	-	●	-	-
	Male connector, M12, 4-pin, straight	Male connector, RJ45, 4-pin, straight	PUR, halogen-free, shielded	2 m	YM2D24-020PN1MRJA4	2106182	-	-	●	-	-	-
				5 m	YM2D24-050PN1MRJA4	2106184	-	-	●	-	-	-
				10 m	YM2D24-100PN1MRJA4	2106185	-	-	●	-	-	-

Additional components required


The additionally needed components are not included in the scope of delivery. Further information on the requirements for the additionally needed components can be found in the operating instructions. Download → www.sick.com

	sBot Stop	sBot Stop – URCap
Emergency stop pushbutton	✓ ¹⁾	–
Reset pushbutton	✓	–
Operating mode selector switch	✓ (has to be integrated in the robot pendant or in the robot controller)	✓ (is integrated into the robot pendant or must be integrated into the robot controller)
Three-position enabling device	✓ (has to be integrated in the robot pendant)	✓ (has to be integrated in the robot controller)
Relay module	✓	–






¹⁾ At least two emergency stop devices must be installed, e.g., emergency stop pushbuttons. Depending on the risk assessment, it may be necessary to install additional emergency stop pushbuttons.

→ Suitable devices from SICK can be found in the following tables



Flexi Classic relay modules

Figure	Suitable for	Number of enable current contacts	Number of signalling current contacts	Number of contactor monitoring contacts	Type	Part no.						
							deTec4 Core	deTem4 Core	nanoScan3 Core I/O	S300 Mini Standard	microScan3 Core I/O	S3000 Standard
	Manual robot restart	2	1	1	UE410-2R04	6032677	–	–	–	●	●	●
	Automatic robot restart	4	2	2	UE410-4R04	6032676	–	–	–	●	●	●

Emergency stop pushbuttons and reset pushbuttons

Figure	Product family	Description	Connection type	Type	Part no.						
	ES21	Emergency stop pushbutton	Cable gland, 2 x M20	ES21-SA10E1	6036147	–	–	●	●	●	●
				ES21-SB10G1	6036492	–	–	●	●	●	●
	ES11	Emergency stop pushbutton	Male connector, M12, 4-pin	ES11-SA1A4	6051327	–	–	●	●	●	●
		Emergency stop pushbutton with reset pushbutton	Male connector, M12, 8-pin	ES11-SC4D8	6051329	–	–	–	●	●	●
	ER12	Reset pushbutton	Male connector, M12, 4-pin	ER12-SB3C4	6051330	–	–	–	●	●	●

Accessories for emergency stop pushbuttons and reset pushbuttons

Figure	Connection type		Conductor cross-section	Length of cable	Type	Part no.	ES11-SA1A4	ES11-SC4D8	ER12-SB3C4
	Female connector, M12, 4-pin, straight	Flying leads	0,34 mm ²	10 m	YF2A14-100VB3XLEAX	2096236	●	-	●
				15 m	YF2A14-150VB3XLEAX	2096237	●	-	●
	Female connector, M12, 8-pin, straight	Flying leads	0,25 mm ²	10 m	YF2A18-100UA5XLEAX	2095654	-	●	-
				15 m	YF2A18-150UA5XLEAX	2095679	-	●	-

URCap Software

Detailed technical data

Features

Robot controller	Universal Robots: UR3e, UR5e, UR10e, UR16e
Stopping process of the robot	Depends on the selected hardware
Robot restart	Automatic
Safety task	Hazardous area protection
Performance level	PL d (ISO 13849-1)

Functions

Initiate a safety stop	
Automated reset	✓
Operating mode	
Operating mode selection (implemented in robot control)	✓

Ordering information

URCap Software

- **Robot type:** Universal Robots: UR3e, UR5e, UR10e, UR16e

Variant	Items supplied	Type	Part no.
nanoScan3 Tool – URCap	Configuration tool software: nanoScan3 Tool – URCap as well as configuration tool operating instructions. The software only has to be purchased separately if the associated safety system hardware is already available.	SOW/CTL-URN34ESUA0	1115032
sBot – URCap	Configuration tool software: nanoScan3 Tool – URCap and operating instructions for the sBot Stop – URCap and sBot Speed – URCap safety system, Quick Start Guide, connection diagram and SISTEMA file. The software only has to be purchased separately if the associated safety system hardware is already available.	SOW/BOT-URN34ESUA0	1115031

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Detailed addresses and further locations → www.sick.com