



scanGrid2

WORLDWIDE REVOLUTIONARY SAFETY SOLUTION
FOR LINE-GUIDED SMALL VEHICLES

Safe multibeam scanner

SICK
Sensor Intelligence.



Increases productivity

Up until now it has been necessary to reduce the speed and load of small vehicles to minimize the risk posed by the vehicles – often at the expense of productivity. That is no longer the case with the scanGrid2 safe multibeam scanner. It also protects the small vehicles themselves thereby making mechanical protective barriers a thing of the past. And the solid state technology with no moving parts makes scanGrid2 especially rugged.



Economical and focused on the essential

The PL c rated scanGrid2 is designed for line-guided small vehicles and comes with exactly the right functions: the protective field range for safe leg detection is approx. 1.1 m, the warning field range is approx. 4 m, and the scanning angle is 150°. Thanks to this focusing on the essential, scanGrid2 offers outstanding price-performance ratio, which pays off particularly for large vehicle fleets.

A CLASS OF ITS OWN

Increase productivity in logistics and factory automation in an especially economical manner. With the scanGrid2 safe multibeam scanner, innovation and technology leader SICK is bringing to the market a world novelty in the field of transport automation. scanGrid2 provides cost-efficient protection for small, line-guided automated guided carts (AGCs). As the world's first LiDAR multibeam scanner with safe solid state technology, scanGrid2 is a sensor like no other before it: technologically and price-wise in a class of its own.



More information:

→ www.sick.com/scanGrid2



Fits on the smallest vehicles

Every millimeter counts when it comes to designing small vehicles. Size was therefore another key consideration while developing scanGrid2. Its compact design and installation height of just 43 mm gives you maximum flexibility for space-saving and easy integration of the device in small AGCs.



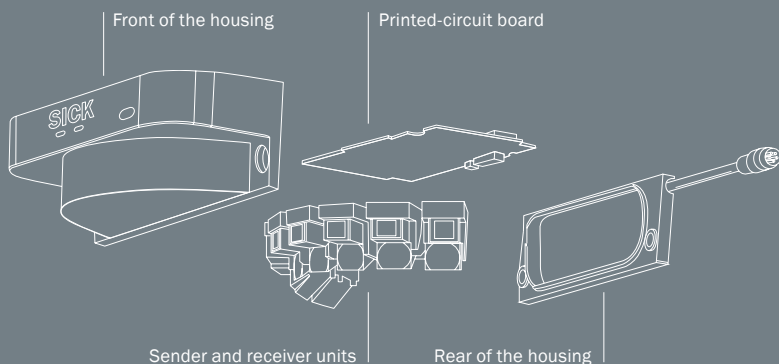
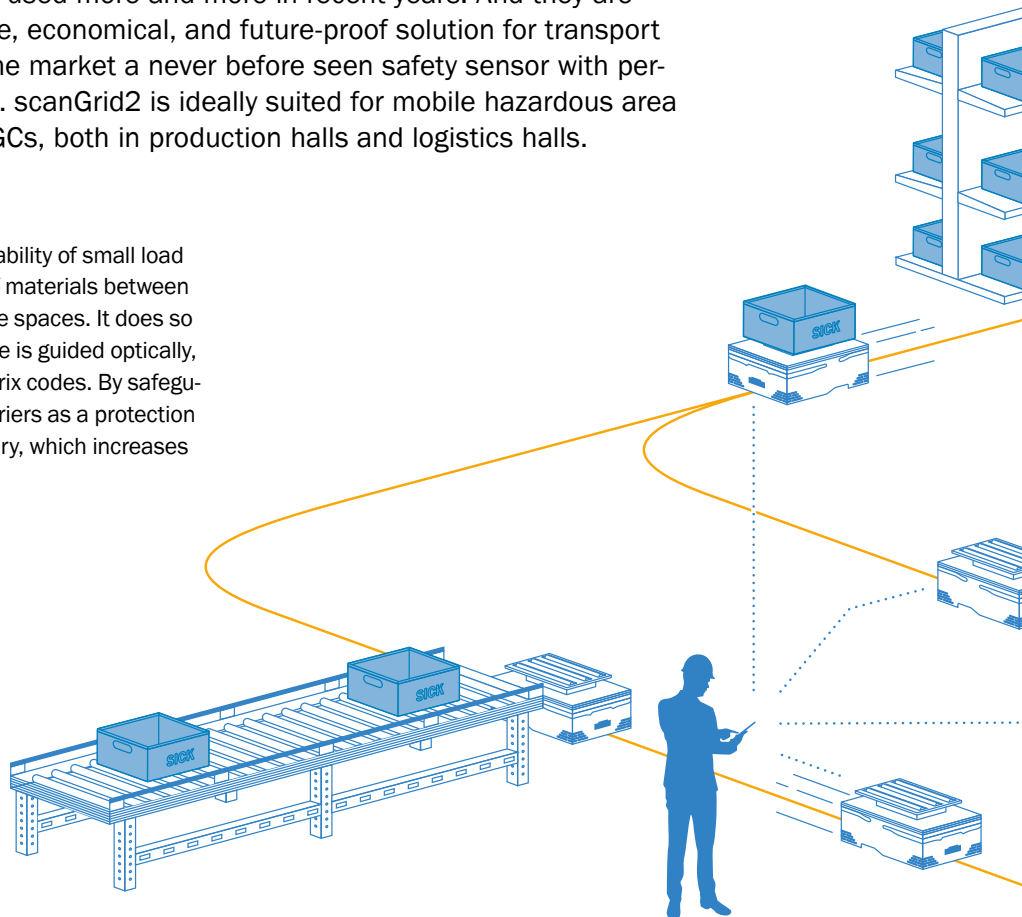
Well designed from connection to diagnostics

scanGrid2 is simple to use thanks to fast installation, the easily accessible interfaces on the front of the housing, and configuration using a cloning function. Diagnostics, too, are simple and easy to perform via the Safety Assistant app or the intuitive and fully featured Safety Designer software.

SAFETY FOR LINE-GUIDED SMALL VEHICLES

Small mobile platforms are being used more and more in recent years. And they are gaining in importance as a flexible, economical, and future-proof solution for transport automation. SICK is bringing to the market a never before seen safety sensor with performance level c – the scanGrid2. scanGrid2 is ideally suited for mobile hazardous area protection of small line-guided AGCs, both in production halls and logistics halls.

scanGrid2 optimizes the transporting capability of small load carriers thereby ensuring a smooth flow of materials between conveyor modules, workstations or storage spaces. It does so regardless of whether the transport vehicle is guided optically, magnetically, by QR codes, or by data matrix codes. By safeguarding the AGCs, it makes mechanical barriers as a protection between humans and vehicles unnecessary, which increases productivity.



A new dimension of innovation

scanGrid2 is the world's first LiDAR multibeam scanner with safe solid state technology. Thanks to innovative design, the sender and receiver units have been integrated into a single device with no moving parts. This ensures a high level of ruggedness, an excellent price/performance ratio, and enables scanGrid2 to suit not only the size but also the overall package price of small line-guided AGCs.



Besides small vehicles, larger AGVs (automated guided vehicles) can also optimally support automated production processes. In particular when combined with other safety sensors, for example safety laser scanners, scanGrid2 provides a tailored and economically attractive solution for protecting AGVs.

scanGrid2 is also ideally suited for use in logistics automation, e.g., for the economical protection of shuttle systems.

Find out more in our scanGrid2 videos:
→ www.sick.com/scanGrid2_videos



Prepared against all risks

Safety sensors need to fulfill different requirements depending on the hazards posed by the application. The scanGrid2 safe multibeam scanner from SICK now offers a performance level c solution for mobile platforms – the ideal supplement to the SICK safety sensors with performance level b and d.

→ www.sick.com/Opto-electronic_protective_devices

SICK is there for you

SICK can offer you a complete portfolio of useful services from risk assessment through to verification and validation. Our specialists in safety applications will support you with their knowledge and expertise as you implement each step on the path to a safe machine.

→ www.sick.com/Consulting_and_design



On the safe side with Rely


The space-saving and easy to use Rely safety relay is the ideal control partner for scanGrid2. Fast response times ensure short safety distances and safe shutdowns.

→ www.sick.com/Rely

CREATING
SAFE
PRODUCTIVITY

WORLDWIDE REVOLUTIONARY SAFETY SOLUTION FOR LINE-GUIDED SMALL VEHICLES



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Product description

With scanGrid2, SICK is offering an economical safety solution for small, line-guided automated guided carts (AGCs): The world's first LiDAR multi-beam scanner with safe solid state technology. Thanks to its excellent price-performance ratio, large fleets of AGCs can not only offer efficient protection up to performance level c, but can also

be made more productive. scanGrid2 enables the elimination of mechanical barriers as well as higher driving speeds and heavier loads on the AGCs. Its compact design and smart functions also ensures quick and simple installation, configuration and diagnostics. Simply revolutionary.

At a glance

- The world's first LiDAR multibeam scanner with safe solid state technology
- Perfectly designed for the requirements of line-guided AGCs: PL c, 1.1 m scanning range, 150° scanning angle
- Compact – only 43 mm high
- Diagnostic data and clone function for configuration via the Safety Assistant app and the Safety Designer software

Your benefits

- Increase your productivity by eliminating mechanical barriers and the possibility to run your line-guided automated guided carts (AGCs) at higher speeds and with higher loads
- Profit from a quick return on investment with an economic safety solution for line-guided small vehicles
- Save space when integrating into your AGCs
- Reduce time and money during installation, configuration and diagnostics

→ www.sick.com/scanGrid2

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.



Detailed technical data

More detailed data can be found in the operating instructions. Download → www.sick.com

Features

	scanGrid2 I/O	scanGrid2 CANopen
Protective field range	1.1 m (at a resolution of 70 mm)	
Warning field range	4 m (at a resolution of 70 mm and a remission of 80%)	
Number of simultaneously monitored fields	≤ 2 ¹⁾	
Number of fields	8	16
Number of monitoring cases	4	8
Scanning angle	150°	
Resolution (can be configured)	50 mm, 70 mm, 150 mm, 200 mm	
Angular resolution	6°	
Response time	≥ 60 ms	≥ 63 ms
Number of multiple samplings	1 ... 4	
Protective field supplement	100 mm	

¹⁾ Protective and warning field.

Safety-related parameters

	scanGrid2 I/O	scanGrid2 CANopen
Type	Type 2 (IEC 61496)	
Safety integrity level	SIL1 (IEC 61508) SILCL1 (IEC 62061)	
Category	Category 2 (ISO 13849-1)	
Performance level	PL c (ISO 13849-1)	
PFH _D (mean probability of a dangerous failure per hour)	1.3 × 10 ⁻⁶	
T _M (mission time)	20 years (ISO 13849-1)	
Safe state in the event of a fault	At least one OSSD is in the OFF state.	The state of the safety output transmitted via CANopen Safety is OFF and the transmitted statuses of the protective fields are "Interrupted". No safety-related data are transmitted via CANopen Safety.

Functions

	scanGrid2 I/O	scanGrid2 CANopen
Restart delay	✓	
Multiple sampling	✓	
Monitoring case switching	✓	
Switch-on delay for monitoring case switching	✓	
Simultaneous monitoring	✓	
Static protective field switching	✓	
Integrated configuration memory	✓	
Measured data output	None	✓, CANopen
Cascading	✓	-

Interfaces

	scanGrid2 I/O	scanGrid2 CANopen
Connection type	Male connector M12, 8-pin, A-coded	Male connector, M12, 5-pin, A-coded
Outputs		
OSSD pairs	1	-
Universal outputs	1	-
Inputs		
Static control inputs	3	-
Near Field Communication (NFC)	✓	
Configuration method	Via software	
Configuration and diagnostic software	Safety Designer (software for configuring and diagnosing safety solutions from SICK AG) Safety Assistant (app for transferring configurations and diagnosing safety solutions from SICK AG)	
Configuration and diagnostics interface	USB 2.0 type C (Safety Designer) NFC (Safety Assistant app)	
Fieldbus, industrial network		CANopen
Protocol	-	CiA 301
Object types	-	PDO - Process Data Object SDO - Service Data Object
Safety protocol	-	CiA 304
Safety object types	-	SRDO - Safety Related Data Object
Display elements	LEDs	

Electrical data

	scanGrid2 I/O	scanGrid2 CANopen
Protection class	III (IEC 61140)	
Supply voltage V_s	24 V DC (8.4 V ... 30 V) ¹⁾	
Supply voltage U_v in a cascade	24 V DC (14 V ... 30 V) ¹⁾	-
Residual ripple	$\leq 10\%$ ²⁾	
Power consumption	≤ 3 W (DC)	
Output signal switching devices (OSSDs)		
Type of output	2 semiconductors, short-circuit protected, cross-circuit monitored ³⁾	-
Output mode (can be configured)	PNP or NPN ^{4) 5)}	-
PNP mode (for safety functions)		
ON state, switching voltage HIGH	$(U_v - 2.25\text{ V}) \dots U_v$	-
OFF state, switching voltage LOW	$\leq 2\text{ V}$	-
Current-carrying capacity per OSSD	$\leq 200\text{ mA}$	-
NPN mode		
ON state, switching voltage LOW	$\leq 2.25\text{ V}$	-
OFF state, switching voltage HIGH	$(U_v - 2\text{ V}) \dots U_v$	-
Current-carrying capacity per OSSD	$\leq 200\text{ mA}$	-

¹⁾ SELV/PELV safety/protective extra-low voltage.

²⁾ Within the limits of V_s .

³⁾ Applies to the voltage range between -30 V and +30 V.

⁴⁾ For safety functions, you must always use PNP mode (default setting).

⁵⁾ Both OSSDs of the safe multibeam scanner always use the same mode.

Mechanical data

Dimensions (W x H x D)	160 mm x 43 mm x 56 mm
Weight	170 g
Housing material	Durabio (front part, black) Polycarbonate (back part, colza yellow)
Housing color	RAL 9005 (black) RAL 1021 (colza yellow)

Ambient data

Enclosure rating	IP65 (IEC 60529)
Ambient light immunity	≤ 10 klx
Ambient operating temperature	0 °C ... +50 °C
Storage temperature	-30 °C ... +70 °C
Air humidity	15 % ... 95 %, non-condensing
Vibration resistance	IEC 60068-2-6, IEC 60068-2-64, IEC 60721-3-5, IEC TR 60721-4-5, IEC 61496-3
Class	5M1 (IEC 60721-3-5)
Shock resistance	IEC 60068-2-27, IEC 60721-3-5, IEC TR 60721-4-5, IEC 61496-3
Class	5M1 (IEC 60721-3-5)
Single shock	150 m/s ² , 11 ms
Continuous shock	100 m/s ² , 16 ms
EMC	IEC 61496-1, IEC 61000-6-2, IEC 61000-6-3

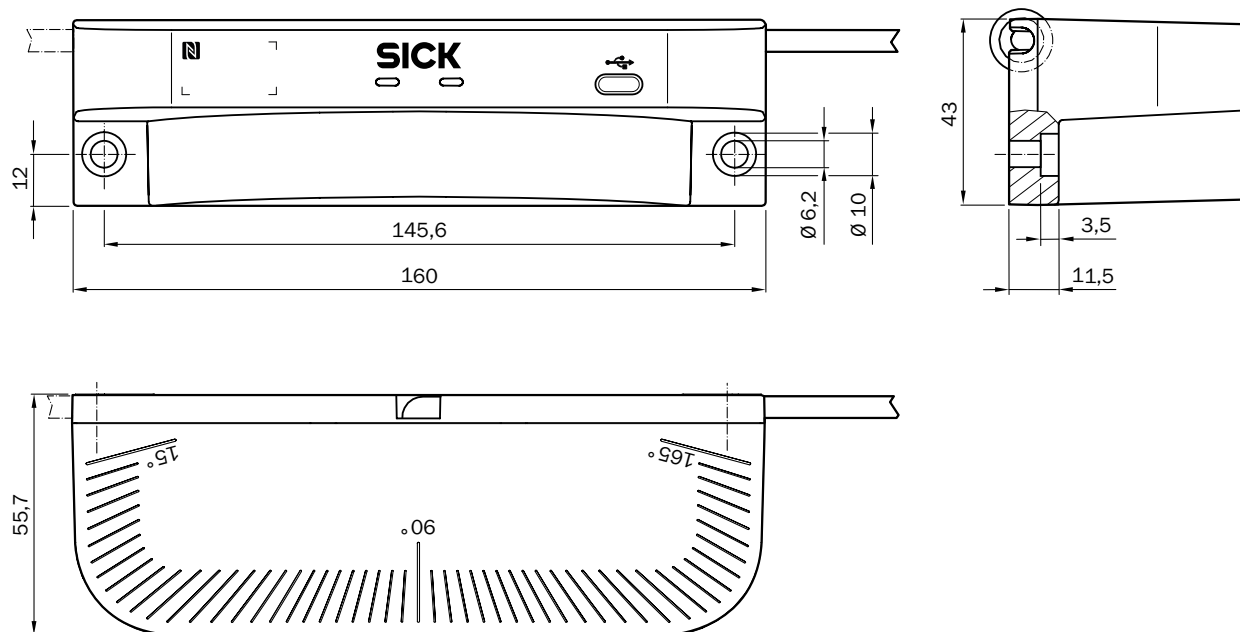
Other information

Type of light	Pulsed laser diode
Wave length	850 nm
Detectable remission	4% ... several 1,000%
Laser class	1

Ordering information

Variant	Integration in the control system	Number of fields	Type	Part no.
scanGrid2 I/O	Local inputs and outputs (I/O)	8	SG2-AAA00011IA0000	1101561
scanGrid2 CANopen	Fieldbus, industrial network	16	SG2-AAA00011CB0000	1109414

Dimensional drawing (Dimensions in mm)



Accessories

Mounting systems

Alignment brackets

Description	Type	Part no.	scanGrid2 I/O	scanGrid2 CANopen
Alignment bracket for scanGrid2, can be aligned $\pm 10^\circ$	BEF-1GHAHVKU1	2116913	●	●

Connection systems


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, shielded	0.25 mm ² + 0.35 mm ² + 1 x drain wire	2 m	YF2A15-020C1BXLEAX	2106283	-	●
					5 m	YF2A15-050C1BXLEAX	2106284	-	●
					10 m	YF2A15-100C1BXLEAX	2106286	-	●
	Female connector, M12, 8-pin, straight	Flying leads	PUR, halogen-free, unshielded	0.25 mm ²	1 m	YF2A18-010UA5XLEAX	2104368	●	-
					2 m	YF2A18-020UA5XLEAX	2095652	●	-
					3 m	YF2A18-030UA5XLEAX	2104369	●	-
					5 m	YF2A18-050UA5XLEAX	2095653	●	-
					7.5 m	YF2A18-075UA5XLEAX	2099230	●	-
					10 m	YF2A18-100UA5XLEAX	2095654	●	-

Connection cables

Figure	Connection type		Model	Conductor cross-section	Length of cable	Type	Part no.	scanGrid2 I/O	scanGrid2 CANopen
	Female connector, M12, 8-pin, straight	Male connector, M12, 8-pin, straight	PUR, halogen-free, unshielded	0.25 mm ²	0.25 m	YF2A18-C25UA5M2A18	2108995	●	-
					0.5 m	YF2A18-C50UA5M2A18	2108996	●	-
					1 m	YF2A18-010UA5M2A18	2096032	●	-
					2 m	YF2A18-020UA5M2A18	2096033	●	-
					3 m	YF2A18-030UA5M2A18	2104373	●	-
					5 m	YF2A18-050UA5M2A18	2096034	●	-
					10 m	YF2A18-100UA5M2A18	2096035	●	-
	USB-A	USB-C	-	-	2 m	YMUSA4-020VG5MUSC4	2119989	●	●

Adaptors

Figure	Description	Type	Part no.		
	Connector for cascading safe multibeam scanners. Connection possibility for 2 scanGrid2 or connection possibility for 1 scanGrid2 and 1 more Multi Sensor Connector.	Multi Sensor Connector scanGrid2	2118543	●	-



Reflectors and optics

Optics cloths


Figure	Description	Type	Part no.		
	Cloth for cleaning optical surfaces	Lens cloth	4003353	●	●

Further accessories

Test and monitoring tools

Figure	Description	Items supplied	Type	Part no.		
	50 mm diameter, 500 mm length	1 piece	Test rod 50 mm	2095105	●	●
	70 mm diameter, 500 mm length	1 piece	Test rod 70 mm	2095139	●	●
	Alignment aid for detecting the infrared light of SICK sensors.	Alignment aid, pedestal, display aid, mounting instructions	Alignment aid	2101720	●	●

Cleaning agent

Figure	Description	Type	Part no.		
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006	●	●

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 10,400 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents, and preventing damage to the environment.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the customers need. In application centers in Europe, Asia, and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes SICK a reliable supplier and development partner.

Comprehensive services round out the offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

That is “Sensor Intelligence.”

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Hong Kong, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and further locations → www.sick.com