

F3S-TGR-CL SERIES

Safety light curtains



- » Comprehensive body, hand and finger protection
- » **Reliable, versatile, flexible**
- » No software, no programming

Total consistency - across the board

All-new Omron F3S-TGR-CL safety light curtains provide comprehensive body, hand and finger protection, making them suitable for the widest possible range of applications in packaging and general industry.

F3S-TGR-CL safety light curtains can be configured to suit different applications precisely, yet they are very simple to engineer, install and set-up.

Engineered for efficiency

The comprehensive range of F3S-TGR-CL safety light curtains meets Type 2 and Type 4 safety applications, complying with EN 61496 and EN ISO 13849-1. There are standard models to suit the majority of applications, with advanced models offering further functionality. And every single unit in the range is designed in exactly the same way. This total consistency saves time at every stage, cutting costs with absolutely no compromise on security.

Global support on your doorstep

Developed with the benefits of uniquely comprehensive applications expertise, F3S-TGR-CL safety light curtains are available across Europe on short lead times. Omron engineers can advise on precisely the right configuration for your application, working with your team to ensure total security. And wherever your machine is used, Omron's local network will provide post-installation support and advice. It's a package for total peace-of-mind at all times.



Benefits without compromise

Specification has never been simpler: F3S-TGR-CL safety light curtains have the same feature-set across the range, and every model comes with a standard connector and mounting brackets. Both engineering and use are simplified, with cost benefits for you and your customer.

No programming – ever: All F3S-TGR-CL safety light curtains are set up in exactly the same way using integrated dip-switches. There are no special tools to use (or lose), no programming to change or update, no menus to translate or adapt. It's safety you just plug-in and use.

Train once, use many: Because these safety curtains use the same parameters whatever the application, all staff can be trained once – and once only. Designers rely on the same

features, production engineers use the same layouts, installation technicians use the same set-ups. It's that simple.

Solutions for safe investment: F3S-TGR-CL safety light curtains are fully compatible with all previous Omron TGR F3S-TGR-SB safety sensors and work with the full range of Omron TGR safety sensor accessories.

Consistency in every application

- Consistent ordering, engineering, configuration
- The same design parameters - always
- Global support wherever you are
- Comprehensive range to meet all needs
- EN ISO 13849-1 certified



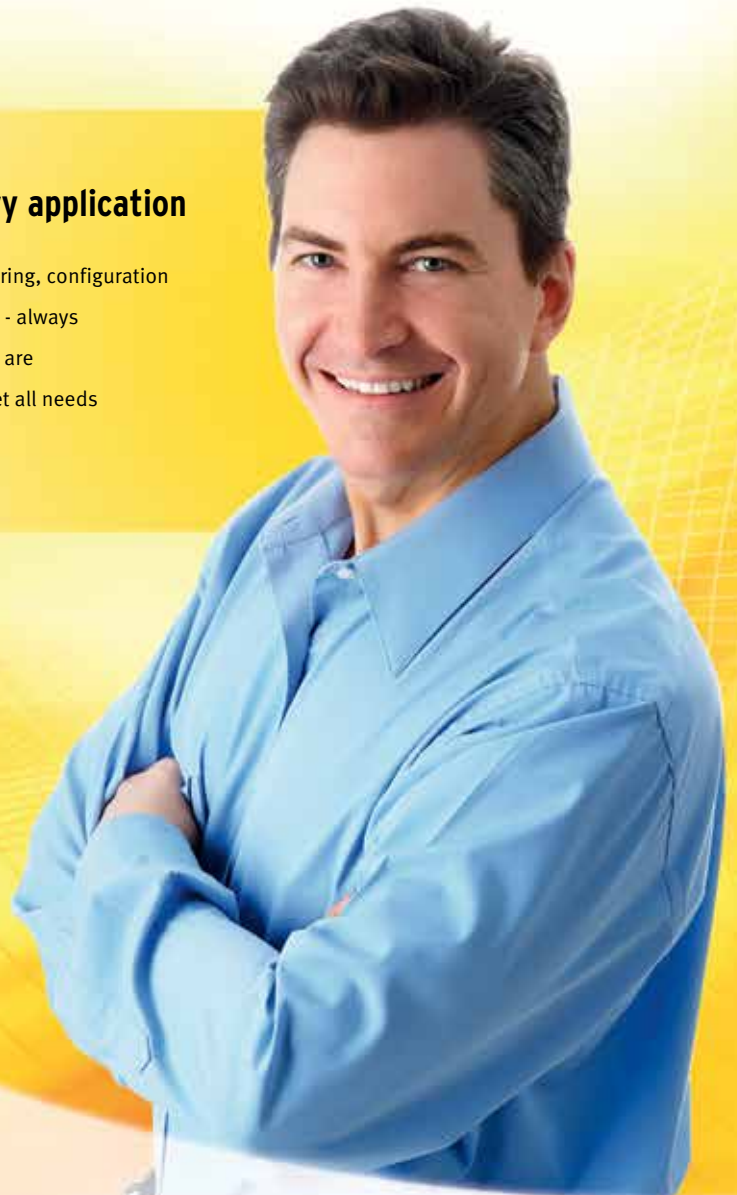
Finger protection



Hand protection



Body protection



Versatile muting for broader applications

Automated production systems can be protected using fixed guards, but where material goes in and out of a danger zone, muting can aid efficiency without affecting operator safety. A full range of muting options is available with F3S-TGR-CL safety light curtains using standard Omron accessories. They can be fully integrated so there's no need for standalone muting sensors, while standard connectors and dip-switch set-up means the curtains can be fitted and configured easily.

Palletiser safety with integrated muting

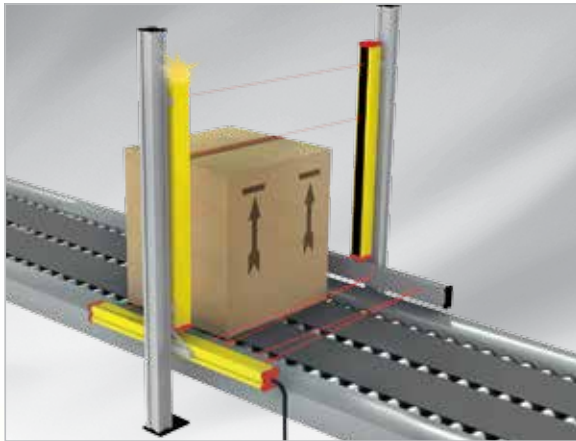
An F3S-TGR-CL safety system with a muting activator enables automated muting when a package on a conveyor breaks the beams. The F3S-TGR-CL safety system incorporates an active side and a passive reflecting side with pre-installed mirrors. When the package has passed the curtain, the beams are reactivated. Functionality is the same whether used in a Type 2 or Type 4 safety application, in T-, L- or X-shape muting in active-active or active-passive setup.



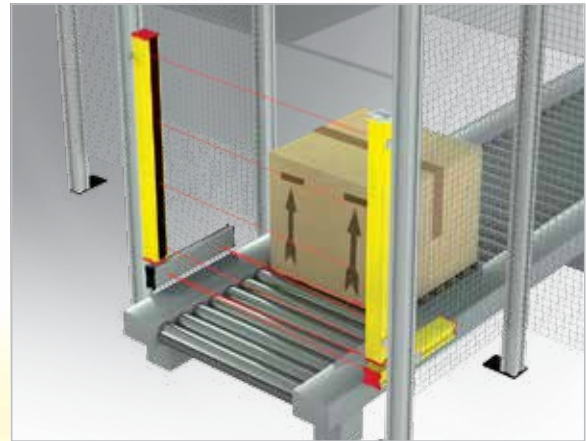
Mute to suit your application

With integrated LEDs for alignment, muting and override on every curtain, set-up really could not be simpler. T-, L- and X-shape muting can be selected, depending on the application, so that products on conveyors can be safely moved in and out of dangerous areas. All muting actuators perfectly fit our F3S-TGR-CL safety sensor range. T-, L- and X-shape is available in active-active for long range and active-

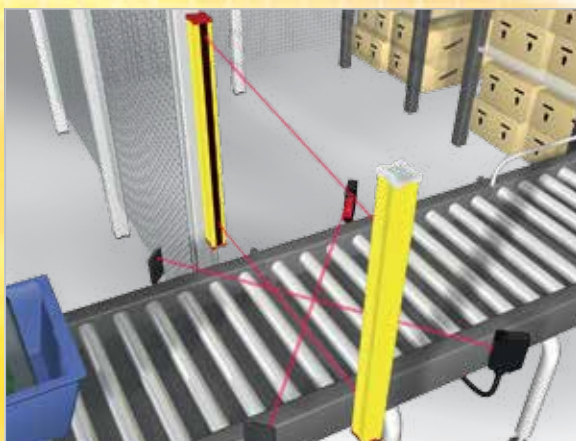
passive for short range applications. The integrated muting lamp shows when the muting facility is activated, so that safety is neither compromised – nor complicated.



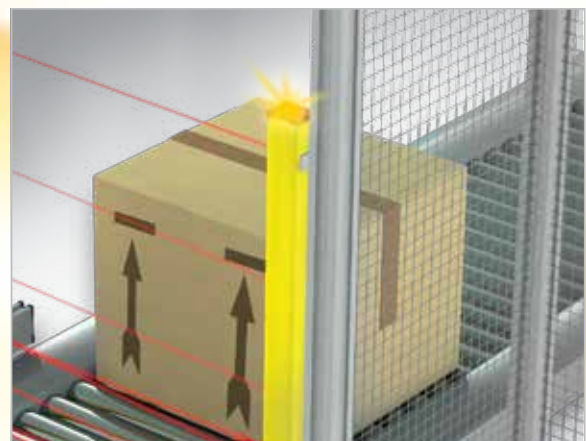
T-Shape muting: Bi-directional muting allows reliable detection of boxes passing into and out of the danger-zone. Boxes don't need to be aligned on the conveyor so there are no timing restrictions.



L-Shape muting: When materials exit the danger zone, two sensors enable the muting function. Installation time is reduced, and there are no time constraints when boxes are not aligned on the belt.



X-Shape muting: If pallets are not evenly packed, or if there are small gaps between the products – for example, on pallets loaded with bottles - time-controlled X-shaped muting will maintain safety without complex installation requirements.



Integrated muting lamp: The muting lamp is installed close to the muted section to indicate when muting has been activated, warning operators against entering the danger zone. The integrated lamp means installation is straightforward, while LED technology ensures a long working life.

Body, hand and finger protection in long- and short-range applications

These safety light curtains are designed for use in the widest range of packaging and industrial applications. Two-, three- and four-beam models give protected heights from 500 to 1200 mm for complete flexibility in machine design. An extended operating range of up to 50 m makes the curtains suitable for full-body protection of operators working with conveyor systems, while 14 mm finger protection can be used for heavy press brakes and similar equipment.

Automated conveyors

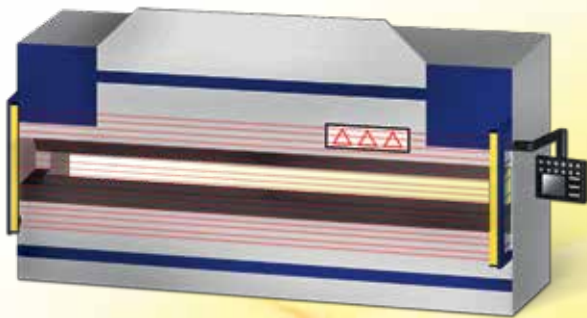
Crossing-stations within automated conveyor systems must be protected so that workers can safely move from one part of a warehouse or production line to the other. With a 50m operating range, F3S-TGR-CL safety light curtains can be used to provide reliable protection, even in environments where visibility is less than perfect.



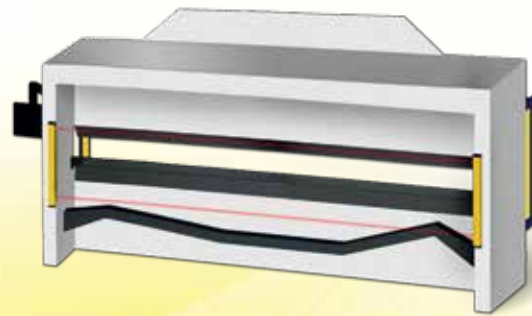
Press brakes and metal forming

Traditionally, 14 mm resolution safety light curtains are used to provide finger protection at the front of presses, with the back secured by a fixed guard. The Omron F3S-TGR-CL range of curtains can be used on both sides of a press, providing secure and efficient protection, with easy access for the operator: as with all F3S-TGR-CL models, integration is simple because both units use the same installation and mounting

methods. A fully integrated single- and double-break function on the 14 mm and 35 mm models enhances efficiency in various press applications.



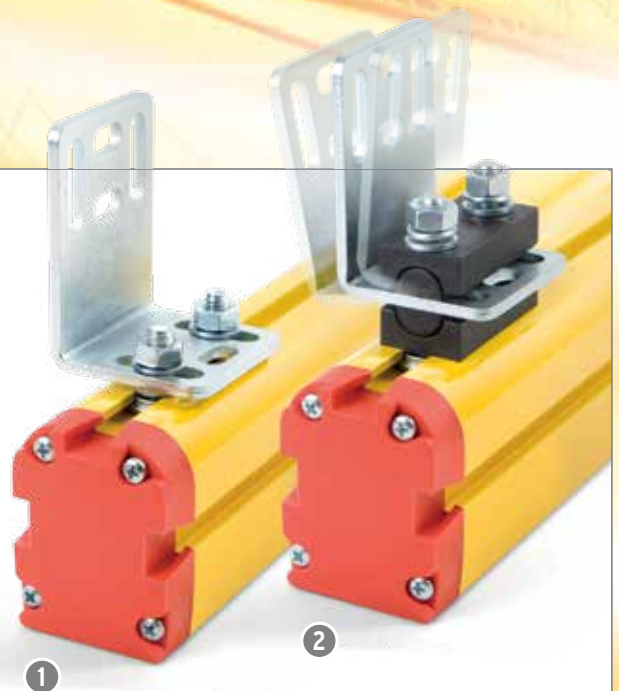
Front using 14 mm finger-protection system



Back with two-beam body-protection system when distance to the danger zone is big enough

Mounting

F3S-TGR-CL system has three rails for mounting. Standard brackets coming with the product (1) or adjustable mounting brackets as accessories (2) offer flexibility in mounting and adjusting as well as rigidity for minimum maintenance.



Special functions for enhanced efficiency

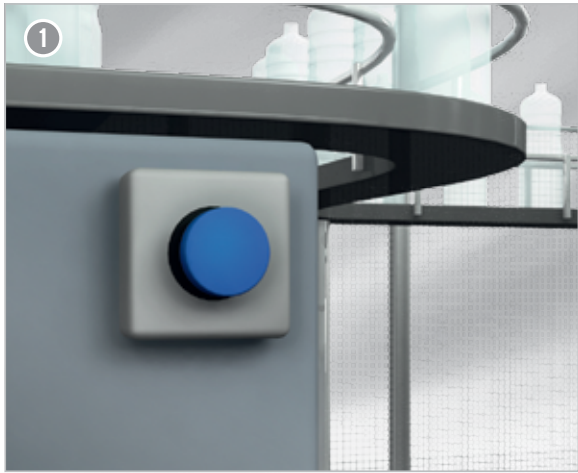
The versatility and simplicity of F3S-TGR-CL safety light curtains makes them suitable for an exceptionally wide range of applications, from simple hand/finger protection on a standalone machine to time-controlled protection of several pieces of equipment within an automated production area. Yet no matter what the application, the same methodology means operatives and maintenance personnel follow exactly the same procedures – in total security.

Pre-reset

In automated industrial applications, where nesting of machines is common, care needs to be taken when individual machines are started.

Person A in the picture below is clearing the machine after a problem. Person B has already finished work and leaves the section. If Person B now restarts the machine, the situation will be dangerous for Person A since the robot will start moving. Using pre-reset function, a reset of the safety system is only possible by first activating the pre-reset pushbutton (1) before leaving the section (2) and resetting the safety system from outside (3).





Local pre-reset pushbutton inside the machine that needs to be pressed before the safety system can be reset



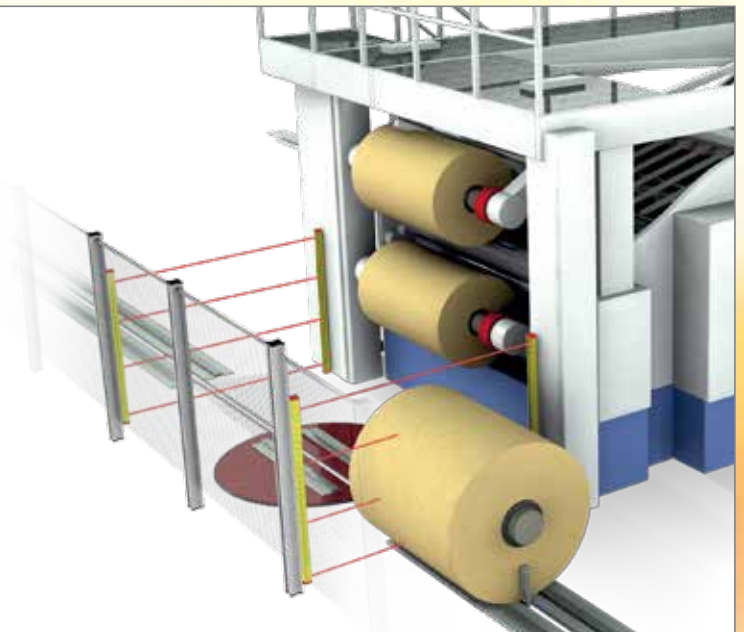
Safety light curtain for easy access, for example by a forklift truck



Reset pushbutton to acknowledge and start

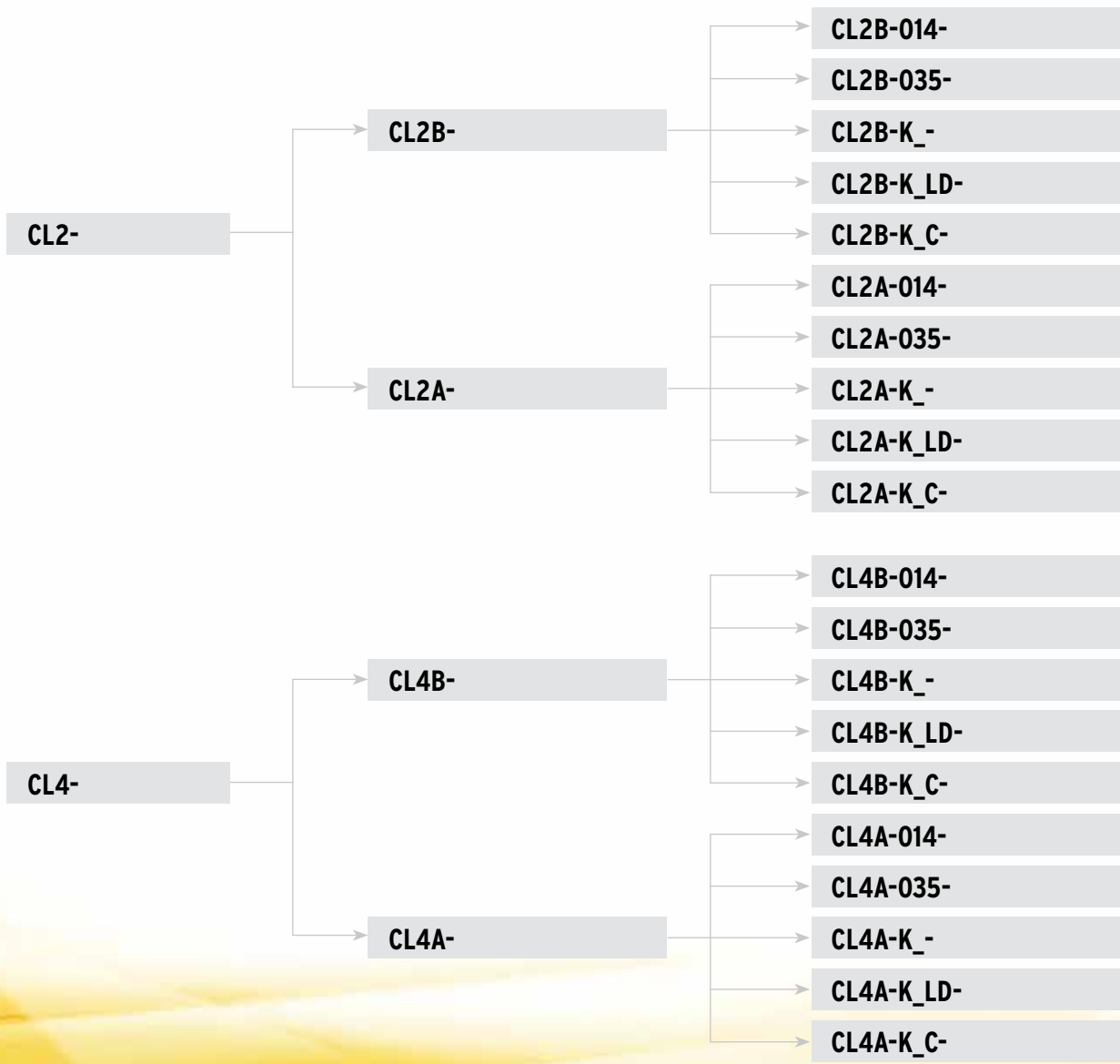
Partial muting

While other systems offer “all or nothing” muting, Omron F3S-TGR-CL models are entirely flexible, allowing just some of the beams to be muted. This can protect operators in applications where products or accessories are changed automatically, such as this roll-changer. A four-beam system is used to protect workers: the three lower beams are muted, the top beam remaining active to protect workers while rolls are moved.



F3S-TGR-series in five simple steps

Lower-case category	Function set	Resolution
Safety category 2 CL2	Basic B Interlock, restart, EDM	Operating range (DIP switch setting) 14 mm: 0,2...6 m 35 mm: 0,2...14 m K_ (2...4 beam): 0,5...40 m K_LD (2...4 beam): 25...50 m K_C (2...4 beam): 0,5...12 m
Safety category 4 CL4	Advanced A All functions on board depending on the resolution (Basic functionset + blanking, muting, pre-reset, cyclic initiation)	
F3S-TGR-		



Length

Maximum length

014- and 035-models in 150 mm increments:

14 mm resolution: 2400 mm

35 mm resolution: 2400 mm

K-Guards:

2-beams: 500 mm, 600 mm

3-beams: 800 mm

4-beams: 900 mm, 1200 mm

Lower-case features

Standard (standalone)

Finger- and hand-protection

Master (Series connection only): M

Slave (Series connection only): S

CL2B-014-XXXX

CL2B-035-XXXX

CL2B-K_-XXXX

CL2B-K_LD-XXXX

CL2B-K_C-XXXX

CL2A-014-XXXX

CL2A-035-XXXX

CL2A-K_-XXXX

CL2A-K_LD-XXXX

CL2A-K_C-XXXX

CL4B-014-XXXX

CL4B-035-XXXX

CL4B-K_LD-XXXX

CL4B-K_C-XXXX

CL4A-014-XXXX

CL4A-035-XXXX

CL4A-K_-XXXX

CL4A-K_-XXXX

CL4A-K_LD-XXXX

CL4A-K_C-XXXX

CL2B-014-XXXX_

CL2B-035-XXXX_

CL2B-K_-XXXX

CL2B-K_LD-XXXX

CL2B-K_C-XXXX

CL2A-014-XXXX_

CL2A-035-XXXX_

CL2A-K_-XXXX

CL2A-K_LD-XXXX

CL2A-K_C-XXXX

CL4B-014-XXXX_

CL4B-035-XXXX_

CL4B-K_-XXXX

CL4B-K_LD-XXXX

CL4B-K_C-XXXX

CL4A-014-XXXX_

CL4A-035-XXXX_

CL4A-K_-XXXX

CL4A-K_LD-XXXX

CL4A-K_C-XXXX



Multi-beam, finger- and hand protection safety sensor

The F3S-TGR-CL multi-beam, finger- and hand protection safety sensors satisfying with integrated safety control functions selectable via built-in dip-switches.

- Type 2 or type 4 acc. EN61496-1
- PL c or PL e acc. ISO13849
- Family concept in wiring and mounting
- All models with dip-switch setup for external device monitoring, interlock function, range setting (short and long range) and optical or wired coding
- Advanced models with pre-reset function, T-, L- or X- muting function and muting lamp integrated

Ordering information

Multi-beam safety sensors

F3S-TGR-CL2_-K_ (Type 2)

System	Sensing distance	Detection capability	Order code	
			Basic feature set* ¹	Advanced feature set* ²
Active/passive	0.5 m to 12 m	500	F3S-TGR-CL2B-K2C-500	F3S-TGR-CL2A-K2C-500
	0.5 m to 8 m	400	F3S-TGR-CL2B-K3C-800	F3S-TGR-CL2A-K3C-800
	0.5 m to 7 m	300	F3S-TGR-CL2B-K4C-900	F3S-TGR-CL2A-K4C-900
		400	F3S-TGR-CL2B-K4C-1200	F3S-TGR-CL2A-K4C-1200
Active/active	0.5 m to 40 m	500	F3S-TGR-CL2B-K2-500	F3S-TGR-CL2A-K2-500
		400	F3S-TGR-CL2B-K3-800	F3S-TGR-CL2A-K3-800
		300	F3S-TGR-CL2B-K4-900	F3S-TGR-CL2A-K4-900
		400	F3S-TGR-CL2B-K4-1200	F3S-TGR-CL2A-K4-1200
Active/active, long distance	25 m to 50 m	500	F3S-TGR-CL2B-K2-500-LD	F3S-TGR-CL2A-K2-500-LD
		400	F3S-TGR-CL2B-K3-800-LD	F3S-TGR-CL2A-K3-800-LD
		300	F3S-TGR-CL2B-K4-900-LD	F3S-TGR-CL2A-K4-900-LD
		400	F3S-TGR-CL2B-K4-1200-LD	F3S-TGR-CL2A-K4-1200-LD

F3S-TGR-CL4_-K_ (Type 4)

System	Sensing distance	Detection capability	Order code	
			Basic feature set* ¹	Advanced feature set* ²
Active/passive	0.5 m to 12 m	500	F3S-TGR-CL4B-K2C-500	F3S-TGR-CL4A-K2C-500
	0.5 m to 8 m	400	F3S-TGR-CL4B-K3C-800	F3S-TGR-CL4A-K3C-800
	0.5 m to 7 m	300	F3S-TGR-CL4B-K4C-900	F3S-TGR-CL4A-K4C-900
		400	F3S-TGR-CL4B-K4C-1200	F3S-TGR-CL4A-K4C-1200
Active/active	0.5 m to 40 m	500	F3S-TGR-CL4B-K2-500	F3S-TGR-CL4A-K2-500
		400	F3S-TGR-CL4B-K3-800	F3S-TGR-CL4A-K3-800
		300	F3S-TGR-CL4B-K4-900	F3S-TGR-CL4A-K4-900
		400	F3S-TGR-CL4B-K4-1200	F3S-TGR-CL4A-K4-1200
Active/active, long distance	25 m to 50 m	500	F3S-TGR-CL4B-K2-500-LD	F3S-TGR-CL4A-K2-500-LD
		400	F3S-TGR-CL4B-K3-800-LD	F3S-TGR-CL4A-K3-800-LD
		300	F3S-TGR-CL4B-K4-900-LD	F3S-TGR-CL4A-K4-900-LD
		400	F3S-TGR-CL4B-K4-1200-LD	F3S-TGR-CL4A-K4-1200-LD

*¹ Basic feature set: Manual/automatic restart, coding

*² Advanced feature set: Basic + Muting + integrated Muting lamp + Pre-reset

Safety sensors

F3S-TGR-CL2_ (Type 2)

Feature set	Master/Slave	Sensing distance	Detection capability	Length	Order code
Basic ^{*1}	Standalone	0.2 m to 6 m	14 mm	150 mm to 2,400 mm ^{*3}	F3S-TGR-CL2B-014-_
		0.2 m to 14 m	35 mm		F3S-TGR-CL2B-035-_
Advanced ^{*2}	Standalone	0.2 m to 6 m	14 mm	150 mm to 2,250 mm ^{*3}	F3S-TGR-CL2A-014-_
		0.2 m to 14 m	35 mm		F3S-TGR-CL2A-035-_
	Master	0.2 m to 6 m	14 mm		F3S-TGR-CL2A-014-_M
		0.2 m to 14 m	35 mm		F3S-TGR-CL2A-035-_M
	Slave	0.2 m to 6 m	14 mm		F3S-TGR-CL2A-014-_S
		0.2 m to 14 m	35 mm		F3S-TGR-CL2A-035-_S
			70 mm	300 mm to 2,100 mm	F3S-TGR-CL2A-070-_S

F3S-TGR-CL4_ (Type 4)

Feature set	Master/Slave	Sensing distance	Detection capability	Length	Order code
Basic ^{*1}	Standalone	0.2 m to 6 m	14 mm	150 mm to 2,400 mm ^{*3}	F3S-TGR-CL4B-014-_
		0.2 m to 14 m	35 mm		F3S-TGR-CL4B-035-_
Advanced ^{*2}	Standalone	0.2 m to 6 m	14 mm	150 mm to 2,250 mm ^{*3}	F3S-TGR-CL4A-014-_
		0.2 m to 14 m	35 mm		F3S-TGR-CL4A-035-_
	Master ^{*4}	0.2 m to 6 m	14 mm		F3S-TGR-CL4A-014-_M
		0.2 m to 14 m	35 mm		F3S-TGR-CL4A-035-_M
	Slave ^{*4}	0.2 m to 6 m	14 mm		F3S-TGR-CL4A-014-_S
		0.2 m to 14 m	35 mm		F3S-TGR-CL4A-035-_S
			70 mm	300 mm to 2,100 mm	F3S-TGR-CL4A-070-_S

^{*1} Basic feature set: Manual/automatic restart, coding

^{*2} Advanced feature set: Basic + Muting + integrated Muting lamp + Pre-reset

^{*3} Available length (in mm): 150, 300, 450, 600, 750, 900, 1,050, 1,200, 1,350, 1,500, 1,650, 1,800, 1,950, 2,100, 2,250, (2,400 mm, only standalone versions)

^{*4} Master/slave system: A master/slave system cannot exceed the total length of 2,400 mm


F3S-TGR-CL- _ _ M/S Master-Slave Series

- A Master-Slave cascade system is made of one master segment and one slave segment.
 - The length of the total protective field can vary from minimum 300 mm till maximum 2,400 mm.
 - The interconnect cable length limitation between master and slave segment is in total max. 0,9 m.
- Possible combinations of master and slave are in this table:


		Slave models																					
		14 mm or 35 mm resolution															70 mm resolution						
		150	300	450	600	750	900	1,050	1,200	1,350	1,500	1,650	1,800	1,950	2,100	2,250	300	600	900	1,200	1,500	1,800	2,100
Master models (14 mm or 35 mm resolution)	150	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	300	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	450	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	600	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	750	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	900	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	1,050	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	1,200	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	1,350	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	1,500	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	1,650	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	1,800	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	1,950	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	2,100	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
2,250	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	

Accessories

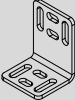
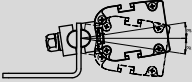
Receiver cables (M12-8pin, shielded, flying leads)

Shape	Description	Remark	Order code
	Sensor connector with open cable end M12-8pin, outer shielding layer	Receiver cable, 2 m length	Y92E-M12PURSH8S2M-L
		Receiver cable, 5 m length	Y92E-M12PURSH8S5M-L
		Receiver cable, 10 m length	Y92E-M12PURSH8S10M-L
		Receiver cable, 25 m length	Y92E-M12PURSH8S25M-L

Transmitter cables (M12-4pin, shielded, flying leads)



Shape	Description	Remark	Order code
	Sensor connector with open cable end M12-4pin, outer shielding layer	Transmitter cable, 2 m length	Y92E-M12PURSH4S2M-L
		Transmitter cable, 5 m length	Y92E-M12PURSH4S5M-L
		Transmitter cable, 10 m length	Y92E-M12PURSH4S10M-L
		Transmitter cable, 25 m length	Y92E-M12PURSH4S25M-L

Mounting brackets

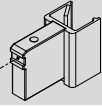
Shape	Description	Remark	Order code
	Mounting bracket	Mounting bracket × 1, SLC mounting screws × 1 set	F39-TGR-SB-ST ^{*1}
	Adjustable bracket	Adjustable bracket × 1, Bracket mounting screws × 1 set	F39-TGR-ADJ

*1 Brackets amount included in shipment is shown in table of Dimensions

Master-Slave accessories

Shape	Description	Remark	Order code
	Male-male extension connector M12-8pin, outer shielding layer	Connection cable, 0.3 m length	Y92E-M12MSM12MSPURSH80.3M-L
		Connection cable, 0.9 m length	Y92E-M12MSM12MSPURSH80.9M-L (included in slave system)
	Alignment kit – end cap	To support alignment of a Master-Slave system	F39-TGR-CL-MSA (included in slave system)

Laser alignment kit

Shape	Description	Remark	Order code
	Laser alignment kit	Scanning range: ≤ 60 m Batteries: 2 × 1.5 V Micro/AAA Laser Class 2 (IEC 60825)	F39-TGR-CL-LLK

Specifications

Multi-beam safety sensors

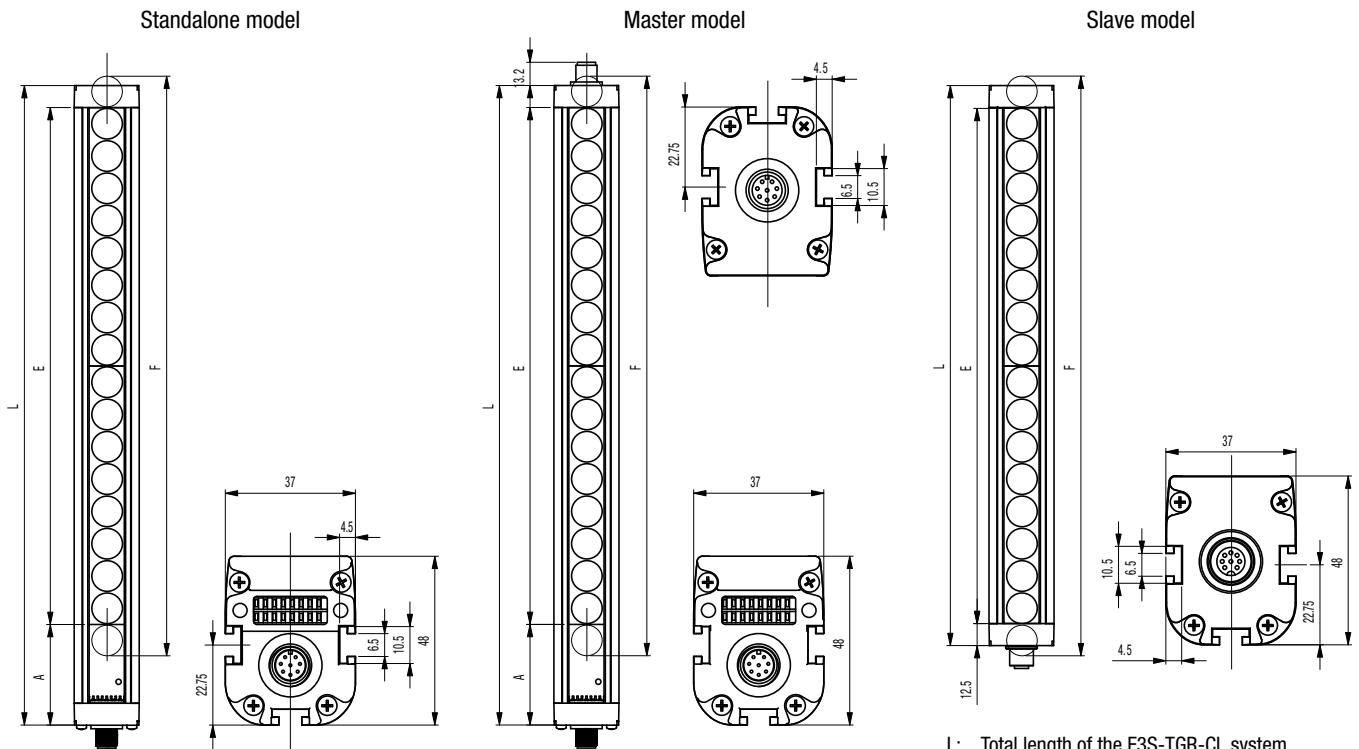
Item	F3S-TGR-CL2_-0_	F3S-TGR-CL4_-0_
Sensor type	Type 2	Type 4
Protective height	500 mm, 800 mm, 900 mm or 1,200 mm	
Operating range	F3S-TGR-CL__-K_ 0.5 to 20 m or 20 to 40 m (Dip switch option) F3S-TGR-CL__-K_-LD 25 to 50 m F3S-TGR-CL__-K2C-500 0.5 to 12 m F3S-TGR-CL__-K3C-800 0.5 to 8 m F3S-TGR-CL__-K4C- 0.5 to 7 m	
Beam pitch	F3S-TGR-CL__-K2_-500: 2 beams, 500 mm F3S-TGR-CL__-K3_-800: 3 beams, 400 mm F3S-TGR-CL__-K4_-900: 4 beams, 300 mm F3S-TGR-CL__-K4_-1200: 4 beams, 400 mm	
Effective aperture angle (EAA)	Within $\pm 5^\circ$	Within $\pm 5^\circ$
	for the emitter and receiver at a detection distance of at least 3 m according to IEC 61496-2	
Light source	Infrared LED (880 nm), power dissipation <3 mW, Class 1 per EN 60825-1	
Supply voltage	24 VDC \pm 20%, according EN 60204-1 able to cover a drop of voltage of at least 20 ms	
OSSD	2 PNP transistor outputs, load current 2 \times 250 mA max	
Test functions	Self test (after power ON and during operation)	
Safety-related functions	All models with dip-switch setup for external device monitoring, interlock function, range setting (short and long range) and optical or wired sync. Advanced models with selectable pre-reset function, T-, L-or X- muting function (timeout or infinite muting dip switch option) and muting lamp integrated (only for the non master-slave systems)	
Response time	ON to OFF: Maximum: 13 ms	
Ambient temperature	Operating: -10 to 55°C, Storage: -25 to 70°C (no icing, no condensation)	
Ambient humidity	95% not condensing	
Degree of protection	IP 65 (IEC 60529)	
Materials	Housing: Painted aluminum, Yellow, RAL 1018 Front Window: Acrylic Lexan Red end cap: PA6 (Standalone models), Transparent end cap: PC (Advanced standalone models), Sealing Gasket: EPDM Mounting Bracket: Cold rolled Steel	
Suitable for safety control systems	PLc (ISO 13849-1)	PLe (ISO 13849-1)
Category	Categorie 2	Categorie 4
PFHd	2.5×10^{-9}	
Proof test interval	every 20 years	

Finger- and hand safety protection sensors

Item	F3S-TGR-CL2_-0_	F3S-TGR-CL4_-0_
Sensor type	Type 2	Type 4
Protective height	150 mm to 2,400 mm	
Operating range (short setting or long setting)	F3S-TGR-CL__-014: 0.2 m to 3 m or 3 m to 6 m (Dip switch option) F3S-TGR-CL__-035: 0.2 m to 7 m or 7 m to 14 m (Dip switch option) F3S-TGR-CL__-070: 0.2 m to 7 m or 7 m to 14 m (Dip switch option)	
Detection capability	F3S-TGR-CL__-014: Opaque objects 14 mm in diameter F3S-TGR-CL__-035: Opaque objects 35 mm in diameter F3S-TGR-CL__-070: Opaque objects 70 mm in diameter	
Effective aperture angle (EAA)	Within $\pm 5^\circ$	Within $\pm 2.5^\circ$
	for the emitter and receiver at a detection distance of at least 3 m according to IEC 61496-2	
Light source	Infrared LED (880 nm), power dissipation <3 mW, Class 1 per EN 60825-1	
Supply voltage	24 VDC \pm 20%, according EN 60204-1 able to cover a drop of voltage of at least 20 ms	
OSSD	2 PNP transistor outputs, load current 2 \times 250 mA max	
Series connection	Number of connections: One master and one slave safety light curtain Total number of beams \leq 336 Maximum interconnect cable length: 900 mm	
Test functions	Self test (after power ON and during operation)	
Safety-related functions	All models with dip-switch setup for external device monitoring, interlock function, range setting (short and long range) and optical or wired sync. Advanced models with selectable pre-reset function, T-, L-or X- muting function (timeout muting), blanking, single / double brake function and muting lamp integrated (only for the non master-slave systems)	
Response time	ON to OFF: 14 ms to 103 ms	
Ambient temperature	Operating: -10 to 55°C, Storage: -25 to 70°C (no icing, no condensation)	
Ambient humidity	95% not condensing	
Degree of protection	IP 65 (IEC 60529)	
Materials	Housing: Painted aluminum, Yellow, RAL 1018 Front Window: Acrylic Lexan Red end cap: PA6 (Standalone models), Transparent end cap: PC (Advanced standalone models), Die cast aluminium (Master-, Slave models) Sealing Gasket: EPDM Mounting Bracket: Cold rolled Steel	
Suitable for safety control systems	PLc (ISO 13849-1)	PLe (ISO 13849-1)
Category	Categorie 2	Categorie 4
PFHd	2.5×10^{-9}	
Proof test interval	every 20 years	

Dimensions

F3S-TGR-CL system data with 14 mm, 35 mm and 70 mm resolution



- L: Total length of the F3S-TGR-CL system
- F: Protective height where an object equal or greater the resolution is detected
- E: Detection zone
- A: Dead zone without detection capability

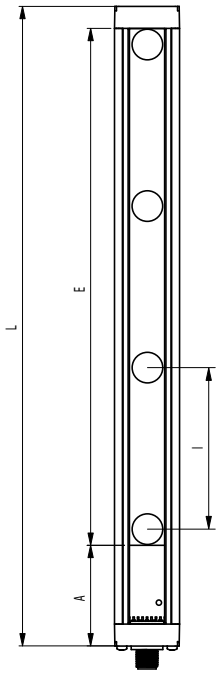
Standalone and master models

Model code		150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	
Standalone and master models	L [mm]	217	364	511	658	805	952	1,099	1,246	1,393	1,540	1,687	1,834	1,981	2,128	2,275	2,422	
	E [mm]	147	294	441	588	735	882	1,029	1,176	1,323	1,470	1,617	1,764	1,911	2,058	2,205	2,352	
	Weight [kg]	1.0	1.4	1.9	2.5	3.0	3.6	4.1	4.7	5.3	5.8	6.4	7.0	7.5	8.1	8.6	9.2	
14 mm	F [mm]	161	308	455	602	749	896	1,043	1,190	1,337	1,484	1,631	1,778	1,925	2,072	2,219	2,366	
35 mm	F [mm]	182	329	476	623	770	917	1,064	1,211	1,358	1,505	1,652	1,799	1,946	2,093	2,240	2,352	
Mounting brackets (F39-TGR-ST-SB) included in shipment		4						6			8			10			12	

Slave models

Model code		150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250		
Slave models	L [mm]	172	319	466	613	760	907	1,054	1,201	1,348	1,495	1,642	1,798	1,936	2,083	2,230		
	E [mm]	147	294	441	588	735	882	1,029	1,176	1,323	1,470	1,617	1,764	1,911	2,058	2,205		
	Weight [kg]	0.8	1.2	1.7	2.3	2.8	3.4	3.9	4.5	5.1	5.6	6.2	6.8	7.3	7.9	8.4		
14 mm	F [mm]	161	308	455	602	749	896	1,043	1,190	1,337	1,484	1,631	1,778	1,925	2,072	2,219		
35 mm	F [mm]	182	329	476	623	770	917	1,064	1,211	1,358	1,505	1,652	1,799	1,946	2,093	2,240		
70 mm	F [mm]	—	347	—	641	—	931	—	1,229	—	1,523	—	1,817	—	2,111	—		
Mounting brackets (F39-TGR-ST-SB) included in shipment		4						6			8			10			12	

F3S-TGR-CL-K system data

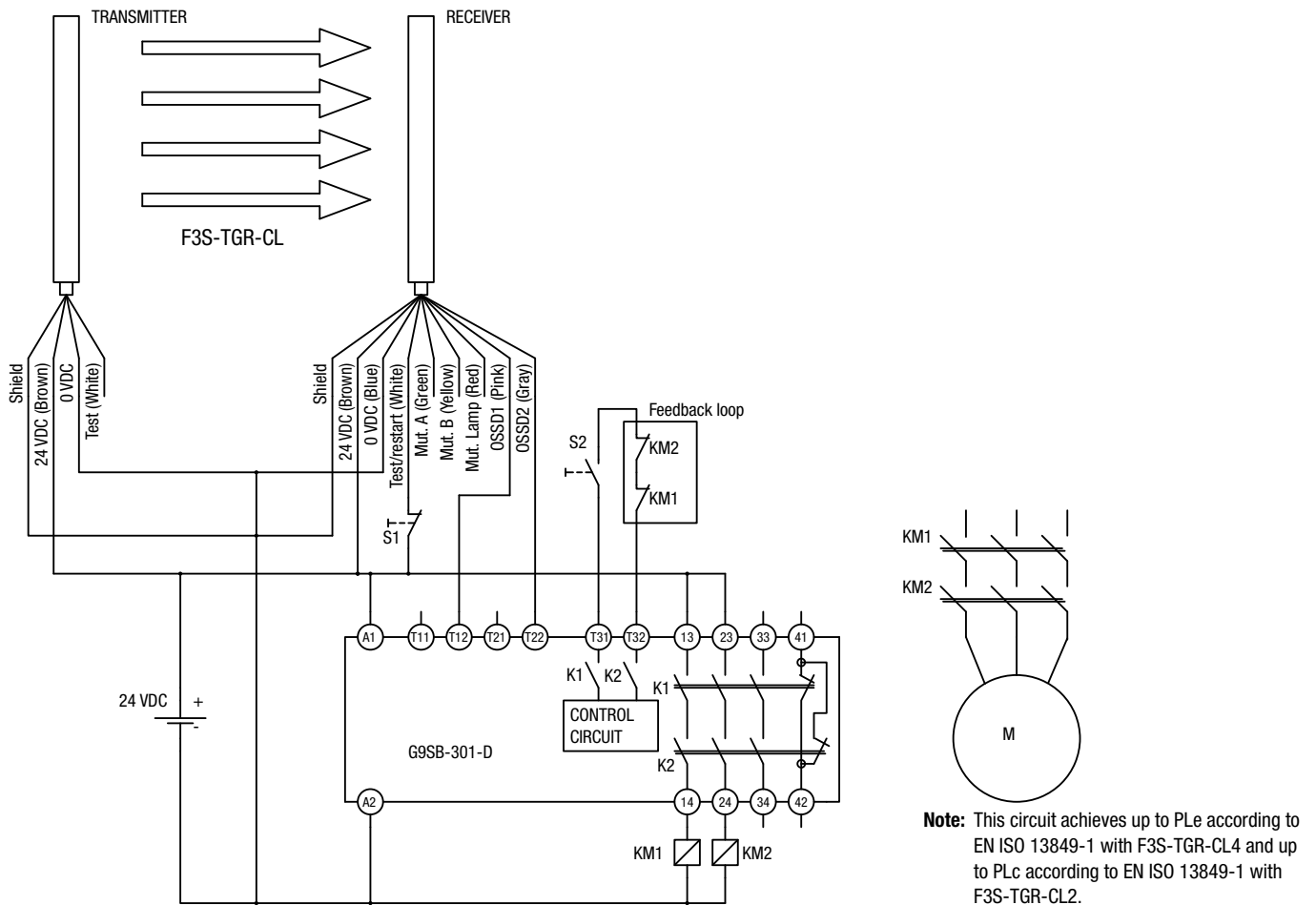


- L: Total length of the F3S-TGR-CL system
- I: Beam distance
- E: Detection zone
- A: Dead zone without detection capability

Model code		500	800	900	1200
All models	L [mm]	682	982	1,082	1,382
	E [mm]	518	818	918	1,218
	Weight [kg]	2.3	3.2	4.1	4.9
	I [mm]	500	400	300	400
Mounting brackets (F39-TGR-ST-SB) included in shipment		4		6	

Wiring example

F3S-TGR-CL and G9SB-301-D in manual reset



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