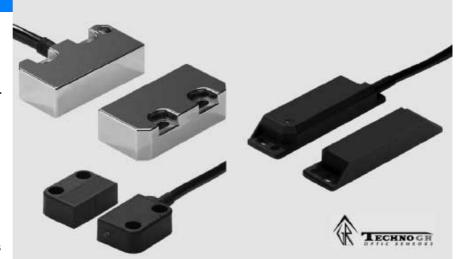
Compact Magnetic Non-contact Safety Switches

F3S-TGR-N□C

Magnetic Coded Non-contact switches are designed to interlock hinge, sliding or removal guard doors. All coded Non-contact switches have a LED for easy diagnosis.

- Coded actuator for applications requiring anti tamper switches
- Non-contact = no abrasion = no particles
- Excellent coverage of mechanical tolerances
- · Can operate behind stainless steel fittings
- Screw-hole covers support hygienic design (NMPC)
- Conforms to safety categories up to 4 acc. EN 954-1 and PDF-M acc. EN60947-5-3.



Model Number Structure

F3S-TGR-N \square \square C- \square \square \square \square \square 4

1. Type

L: Elongated Sensor

S: Small Sensor for NLPC and NSMC

M: Miniature Sensor

2. Housing Material

P: Plastic Housing

M: Stainless Steel Housing

3: Contact configuration

20: 2 Normally Closed Contacts (NC)
21: 2 Normally Closed Contacts (NC) +
1 Normally Open Contact (NO)

4: Cable Length/connection

02: 2m Cable05: 5m Cable10: 10m Cable

M1J8: M12 male connector, 8pin

4: Cable Length/connection for NMPC

02: 2m Cable, cable exit to the left
05: 5m Cable, cable exit to the left
10: 10m Cable, cable exit to the left

M1J8: M12 male connector, 8-pin, cable exit to the left

Ordering Information

Elongated Sensors	Туре	Cable Connection	Contact Configuration
	F3S-TGR-NLPC-20-02	2 m pre-wired	2NC
	F3S-TGR-NLPC-20-05 *	5 m pre-wired	2NC
	F3S-TGR-NLPC-20-10	10 pre-wired	2NC
	F3S-TGR-NLPC-20-M1J8	M12, 8-pin	2NC
	F3S-TGR-NLPC-21-02	2 m pre-wired	2NC/1NO
	F3S-TGR-NLPC-21-05 *	5 m pre-wired	2NC/1NO
	F3S-TGR-NLPC-21-10	10 pre-wired	2NC/1NO
	F3S-TGR-NLPC-21-M1J8	M12, 8-pin	2NC/1NO

^{*.} Preferred stock items.

Small Sensor	Type Cable Co		Contact Configuration
-3	F3S-TGR-NSMC-20-02	2 m pre-wired	2NC
	F3S-TGR-NSMC-20-05 *	5 m pre-wired	2NC
	F3S-TGR-NSMC-20-10	10 pre-wired	2NC
	F3S-TGR-NSMC-20-M1J8	M12, 8-pin	2NC
	F3S-TGR-NSMC-21-02	2 m pre-wired	2NC/1NO
	F3S-TGR-NSMC-21-05 *	5 m pre-wired	2NC/1NO
	F3S-TGR-NSMC-21-10	10 pre-wired	2NC/1NO
	F3S-TGR-NSMC-21-M1J8	M12, 8-pin	2NC/1NO

^{*.} Preferred stock items.

Miniature Sensor	Туре	Cable Connection	Contact Configuration
	F3S-TGR-NMPC-20-02	2m pre-wired	2NC
	F3S-TGR-NMPC-20-05 *	5m pre-wired	2NC
	F3S-TGR-NMPC-20-10	10m pre-wired	2NC
	F3S-TGR-NMPC-20-M1J8	M12, 8pin	2NC
	F3S-TGR-NMPC-21-02	2m pre-wired	2NC/1NO
	F3S-TGR-NMPC-21-05 *	5m pre-wired	2NC/1NO
	F3S-TGR-NMPC-21-10	10m pre-wired	2NC/1NO
	F3S-TGR-NMPC-21-M1J8	M12, 8pin	2NC/1NO

^{*.} Optional cable exit to the right is available for F3S-TGR-NMPC - types. Please contact your Omron distributor

Accessories

	G9SA	G9SA-301		
	400/1	G9SA-501		
	4 4 40	G9SA-321-T075		
		G9SA-321-T15		
	******	G9SA-321-T30		
	G9SB	G9SB-2002-C		
	ATT. ATT.	G9SB-2002-A		
		G9SB-200-B		
Safety relay units	HILL MAN AND AND AND AND AND AND AND AND AND A	G9SB-200-D		
Culoty rolay armo	and the land	G9SB-3012-A		
		G9SB-301-B G9SB-3012-C		
	- A - A - A - A - A - A - A - A - A - A	G9SB-301-D		
		G93B-301-D		
	G9SX	G9SX-BC202-R_		
		G9SX-AD322-T15-R_		
	The state of the state of	G9SX-AD322-T150-R_		
		G9SX-ADA222-T15-R_		
		G9SX-ADA222-T150-R_		
	Standalone controller 16 inputs	NE1A-SCPU01L		
	Standalone controller 40 inputs	NE1A-SCPU02L		
Programmable	Safety Network controller 16 inputs	NE1A-SCPU01-V1		
Controllers	Safety Network controller 40 inputs	NE1A-SCPU02		
Controllere	Safety input terminal	DST1-ID12SL-1		
	Safety mixed terminal	DST1-MD16SL-1		
	Safety mixed terminal (relay out)	DST1-MRD08SL-1		
Cables 8-pin	2 m	F39-TGR-CVL-B-2-R		
	5 m	F39-TGR-CVL-B-5-R		
	10 m	F39-TGR-CVL-B-10-R		
	for M12 connector - types	F39-TGR-NT		
T-Connector	2m M12-8pin, 2m	F39-TGR-CVL-N-2		
Connection cable	5m M12-8pin, 5m	F39-TGR-CVL-N-5		
	10m M12-8pin, 10m	F39-TGR-CVL-N-10		

F3S-TGR-N□**C** 3

Mechanical Data

		Elongated Sensor	Small Sensor	Miniature Sensor	
Operating distance	OFF → ON (Sao)	12mm Close		8mm Close	
Operating distance	ON → OFF (Sar)	17mm Open		12mm Open	
Actuator approach	Min.	4mm/s			
speed	Max.	1000mm/s			
Switching frequency		1Hz			
Operating temperature		-25°C+80°C	-25°C+105°C	-25°C+80°C	
Enclosure protection	Flying lead M12 connector	IP67			
Material		Black Polycarbonate	Stainless Steel 316	Black Polyester	
Mounting bolts		2 x M4 recommended	2 x M4 recommended		
Tightening torque		1Nm	1Nm		
Mounting position		any			
Mechanical life expectancy		10.000.000 cycles			
Electrical life expectancy		1.000.000 cycles			
	De-rating Safety factor 2	2.000.000 cycles @ 24VDC/100mA			
Cable diameter and material		6mm PVC			

Electrical Data

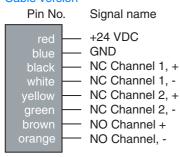
		Elongated Sensor	Small sensor	Miniature Sensor
Power supply		24VDC ±15%		
Power consumption	Max.	50mA		
Switching current	Min.	10mA @ 10VDC		
Rated loads	NC contacts NO contacts	100mA @ 24VDC 100mA @ 24VDC		
Insulation resistance		100ΜΩ		
Rated insulation voltage		250VAC		
Output type	-1	electronic output (potential	-free optocoupler output	t)

Approved Standards

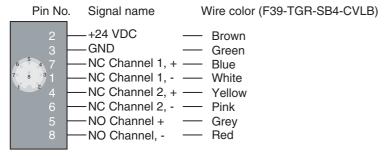
- EN standards certified by TÜV Rheinland
- EN 954-1
- EN 60204-1
- EN/IEC 60947-5-3
- UL 508, CSA C22.2
- BS 5304
- EN 1088-1 conformance

Connection diagram

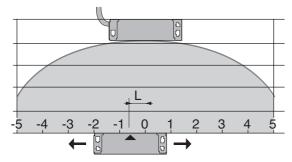
Cable version



M12-Connector version



Operating characteristics

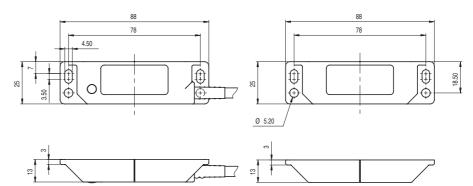


5 mm misalignment tolerance after setting

Elongated Sensor (Sensor/Actuator)

F3S-TGR-NLPC

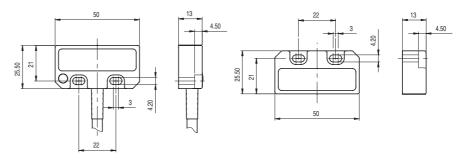




Small Sensor (Sensor/Actuator)

F3S-TGR-NSMC

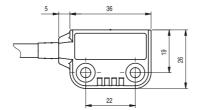


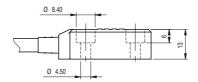


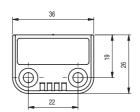
Miniature Sensor (Sensor/Actuator)

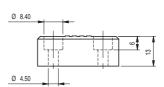
F3S-TGR-NMPC









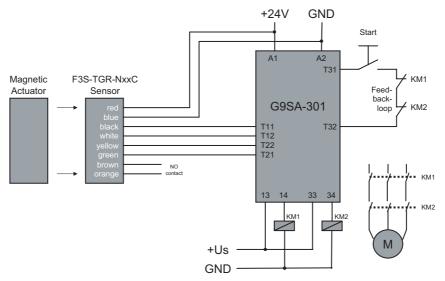


Wiring examples (Single head connection up to category 4 acc. EN954-1)

GOSA

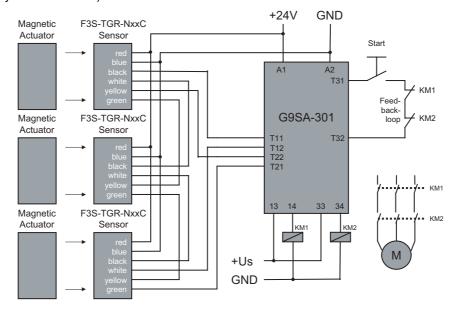
Single Sensor Application with G9SA-301

(up to Safety Category 4 acc. EN954-1)



Series connection Application, up to 6 Sensors with G9SA-301

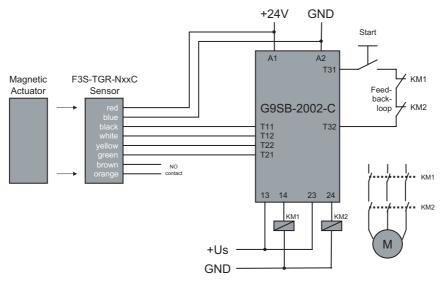
(up to Safety Category 3 acc. EN954-1)



G9SB

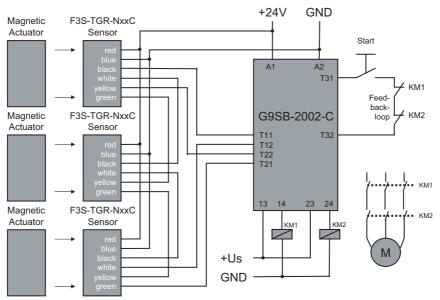
Single Sensor Application with G9SB-2002-C

(up to Safety Category 4 acc. EN954-1)



Series connection Application, up to 6 Sensors with G9SB-2002-C

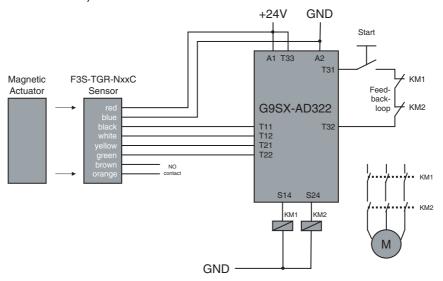
(up to safety Category 3 acc. EN954-1)



G9SX

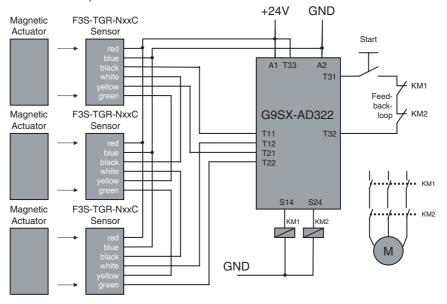
Single Sensor Application with G9SX-AD322-T15

(up to Safety Category 4 acc. EN954-1)



Series connection Application, up to 6 Sensors with G9SX-AD322-T15

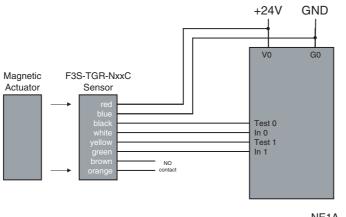
(up to Safety Category 3 acc. EN954-1)



DeviceNet Safety NE1A and DST1-I/O-Terminals

Single Sensor Application with NE1A and DST1-Safety-IO

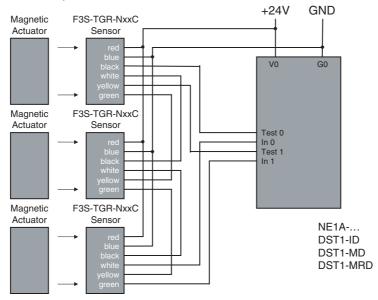
(up to safety Category 4 acc. EN954-1)



NE1A-... DST1-ID DST1-MD DST1-MRD

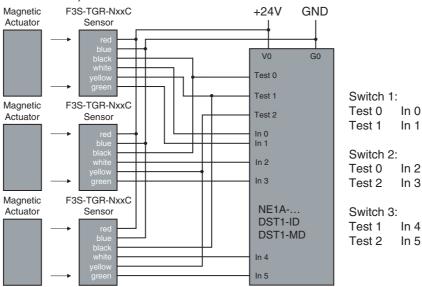
Series connection Application, up to 6 Sensors with NE1A or DST1-Safety-IO

(up to Safety Category 3 acc. EN954-1)



Application with multiple Sensors with NE1A or DST1-Safety-IO

(up to Safety Category 4 acc. EN954-1)



/!\ WARNING

Be sure to turn OFF the power before performing wiring. Do not touch charge parts (e.g., terminals) while power is ON. Doing so may result in electric shock.



Do not allow the actuator to come close to the switch with the door open. Doing so may cause machinery to start operating and may result in injury.



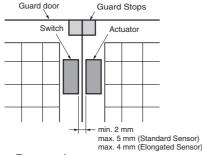
Keep actuators (magnets) away from magnetically sensitive equipment like PC harddisks, floppy disks etc. The magnetic field of the magnet will damage existing data.



∕!\ CAUTION

Use guard stops in the way shown below to ensure that the switch and actuator do not make contact when the guard door is closed.





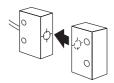
Application Precautions

- Do not use the product in locations subject to explosive or flammable gases.
- Do not use load currents exceeding the rated value.
- · Be sure to wire each conductor correctly.
- Be sure to confirm correct operation after completing mounting and adjustment.
- Do not drop or attempt to disassemble the product.
- Be sure to use the correct combination of switch and actuator.
- Use a power supply of the specified voltage. Do not use power supplies with large ripples or power supplies that intermittently generate incorrect voltages.
- Capacitors are consumable and require regular maintenance and inspection.

Precautions for Safe Use

Mounting Direction of Switch and Actuator

The Sensor will not operate properly if the switch and actuator come towards each other diagonally. The Sensor will, however, operate properly if the switch and actuator come towards each other headon, horizontally or vertically (as long as the faces have the same orientation).



CORRECT

CORRECT

CORRECT

INCORRECT



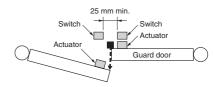






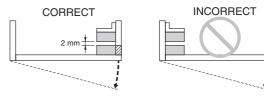
Mutual Interference

If the switch and actuator are mounted in parallel, be sure to separate them by at least 25 mm, as shown below.



Using for Hinged Doors

On hinged doors, install the Sensor at an opening edge as shown below.



Solvents

Ensure that solvents, such as alcohol, thinner, trichloroethane, or gasoline do not adhere to the product. Solvents may cause markings to fade and components to deteriorate.

Installation Location

Do not install the product in the following locations. Doing so may result in product failure or malfunction.

- · Locations subject to direct sunlight
- Locations subject to humidity levels outside the range 35% to 85% or subject to condensation due to extreme temperature changes
- Locations subject to corrosive or flammable gases
- Locations subject to shocks or vibration in excess of the product ratings
- · Locations subject to dust (including iron dust) or salts

Take appropiate and sufficient countermeasures when using the product in the following locations.

- Locations subject to static electricity or other forms of noise
- Locations subject to possible exposure to radioactivity
- Locations subject to power supply lines
- It is advisable to mount the switches on non ferrous materials.
 The presence of ferrous material can effect switching sensitivity.

Wiring

Perform wiring using wire with the following dimensions.

Stranded wire: 2.5 mm²
Solid wire: 4.0 mm²

Tighten the terminal screws with the specified torque. Not doing so may result in malfunction or abnormal heat generation.

Terminal screw tightening torque: 1 Nm for NLPC and NSMC 0,8 Nm for NMPC

F3S-TGR-N□C

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. E14E-EN-02

In the interest of product improvement, specifications are subject to change without notice.