






**EMERGENCY STOP**  
 Suitable for monitoring emergency stop buttons. Duelco has a wide range of relays for 1-channel operation, 2-channel operation and 2-channel operation with short-circuit monitoring respectively.












**DOOR MONITORING**  
 Suitable for monitoring door contacts. Opening or closing of the door activates a forced contact, which provides a stop signal via the Duelco safety module.

**LIGHT CURTAIN**  
 Suitable for monitoring safety light curtains or light barriers, both for safety category 2 and 4. Duelco has modules in both 22,5 and 45 mm housing width with different reset types.

**SAFETY MAT / SAFETY EDGE**  
 Suitable for monitoring safety mats and safety edges. As long as the switch is held down by the operator, the machine cannot start. When released, the signal to the safety module is cut off.

**NON-CONTACT SWITCHES**  
 Suitable for monitoring non-contact switches for doors and gates. When the door opens or is removed, the magnetic contact is activated, which provides a stop signal via the Duelco safety-module.

**TWO HAND CONTROL**  
 Two hand control module suitable for push buttons such as the Duelco TST-4 hand sensor actuator or mechanical buttons. Two hand operations forces the operator to activate the machine with both hands.

	EMERGENCY STOP RELAYS AND EXTENSION MODULES							TWO-HAND MODULE	HAND SENSOR ACTUATOR	TWO HAND PANEL	STANDSTILL MONITORING
	NST-3.2	NST-2002.2	NST-2004	NST-2007	NST-2008	NST-2009	EU-2001	HR-2007	TST-4	PCB3	SSO-2010
<b>APPLICATIONS</b>											
 Emergency stop	•	•	•	•	•	•	•				
 Door monitoring		•	•	•	•	•	•				
 Safety mat/edge		•									
 Light curtain		•	•				•				
 Non-contact switches		•	•				•				
 Two hand control								•			
<b>SAFETY CATEGORY</b>											
PL, EN ISO 13849-1	d	e	e	e	e	e	e	e	e		e
Category, EN ISO 13849-1	3	4	4	4	4	4	4	4	III C, EN 574		4
<b>DIMENSIONS</b>											
width (mm)	22,5	22,5	22,5	22,5	22,5	35	22,5	22,5	Built-in = Ø 50mm; Touch = Ø 59,5mm	480 x 161 x 172	45
<b>RESET TYPES AND TEST</b>											
Automatic/manual	•	•	•	•	•	•	•				
Monitored							•				
Manual monitored			•								
<b>NUMBER OF OUTPUTS</b>											
 Safety outputs NO	3	3	3	3	3	2	4 (EU-2001)	2	2		2
 Delayed safety outputs NO							2	4 (EU-2001S)			
 Signal output NC	1		1 (option)	1	1	1		1	1		1
 Transistor (signal)			1 (option)					1	1		
 Current limited power outlet		< 80 mA	< 70 mA / 420 mA		< 100 mA						
<b>LOAD</b>											
Max. load, output	6A AC / 6A DC	6A AC / 6A DC	6A AC / 6A DC	6A AC / 6A DC	6A AC / 6A DC	5A AC / 5A DC	6A AC / 6A DC	6A AC / 6A DC	TST-4: 0,1ADC		10A AC / 5A DC
<b>ORDER INFORMATION</b>											
12 V DC	42042228										42800005 (inclusive push buttons and emergency stop button)
24 V DC		42042222	42010204 (F) 42011204 (D)		42080010 (F)	42080020	42022001		42000010		42800007 (inclusive push buttons and emergency stop button + 4 holes)
24 V AC/DC	42042248			42080001				42080030			42800010 (stand for PCB3 panel)
8-36 V DC	42042237		42010205 (F)								42800011 (stand with base plate for foot control units)
230 V AC			42012301 (F)	42080003				42080031			

F = Fixed terminals  
 D = Detachable terminals



**duelco**  
SAFETY solutions

## Safety relays



## The standard in safety technology

### IT PAYS TO USE SAFETY TECHNOLOGY

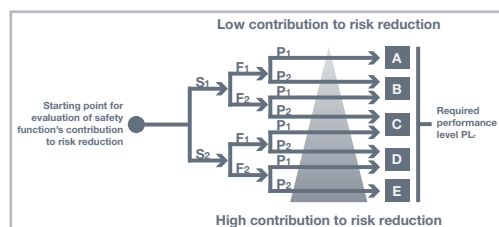
The protection of man and machine through the targeted control of hazardous movements, cost savings thanks to fewer accidents, reduced downtimes and fewer production losses – these are some of the real benefits that you can enjoy when you use Duelco safety components.

### SAFETY RELAYS FROM DUELCO

Our safety relays comply with international standards and regulations. Our safety relays mostly have been approved by BG, TÜV or another notified body and offers users considerable benefits. Long service life and high availability ensure it is cost-effective to use.

### EN ISO 13849-1

As the successor standard to EN 954-1, EN ISO 13849-1 is based on the familiar categories. Equally, it examines complete safety functions, including all the components involved in their design. EN ISO 13849-1 goes beyond the qualitative approach of EN 954-1 to include a quantitative assessment of the safety functions. A performance level (PL) is used for this, building upon the categories.



Risk analysis in accordance with EN 13849-1

### SAFETY ASSESSMENT IN ACCORDANCE WITH EN/IEC 62061

According to the standard EN/IEC 62061, safety requirements in control technology can be divided into safety integrity levels. SIL 3 represents the highest risk reduction and protection level, where the safety function must always be maintained. The risk is estimated through consideration of the severity of injury (Se), the frequency and duration of exposure to the hazard (Fr), probability of occurrence of a hazardous event (Pr) and the possibility of avoiding or limiting the harm (Av).

Consequences	Class CL = Fr + Pr + Av					
	SE	3-4	5-7	8-10	11-13	14-15
Death, losing an eye or arm	4	SIL 2	SIL 2	SIL 2	SIL 3	SIL 3
Permanent, losing fingers	3		OM	SIL 1	SIL 2	SIL 3
Reversible, medical attention	2			OM	SIL 1	SIL 2
Reversible, first aid	1				OM	SIL 1

Risk assessment and definition of the required safety integrity level (SIL)

## Made in Denmark



Ever since Duelco A/S started in 1974, our aim has been to provide good service with a high standard of technical know-how, high quality products and top-line supply capability. In other words we want to become an excellent partner for our customers when it comes to competent, innovative and overall economic solutions.

Through more than 30 years Duelco A/S has been working with machine safety. To a great extent this is due to the fact that we still are the only Danish producer of safety relays, which are exported worldwide.

Duelco's strength consists of the comprehensive "know-how" in design philosophy and requirements of standards, which are translated into market conforming products in our development - and design department. Fertile teamwork with customers and distributors has shown us the way to products specifically suited to customer needs. Duelco has specialized itself in easy understandable safety relays

for diverse application. Special low voltage versions are unique and can not be found elsewhere on the market. Duelco's department in Sønderborg provides the foundation for design and development of new safety relays and support for both export customers and distributors as well as our Danish customers.

The testing department has an essential function in the daily development of new relays, not least because the products must contribute to high levels of personal safety. The testing department creates the framework for developing reliable relays of the highest quality by virtue of demanding test procedures and long-term tests. New ideas for future relay designs must be put to the test in the testing department as well. During the production of the relays by sub-suppliers, every single relay goes through a comprehensive function test. All our subcontractors are carefully selected according to the highest quality criteria's in accordance with ISO 9001.



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