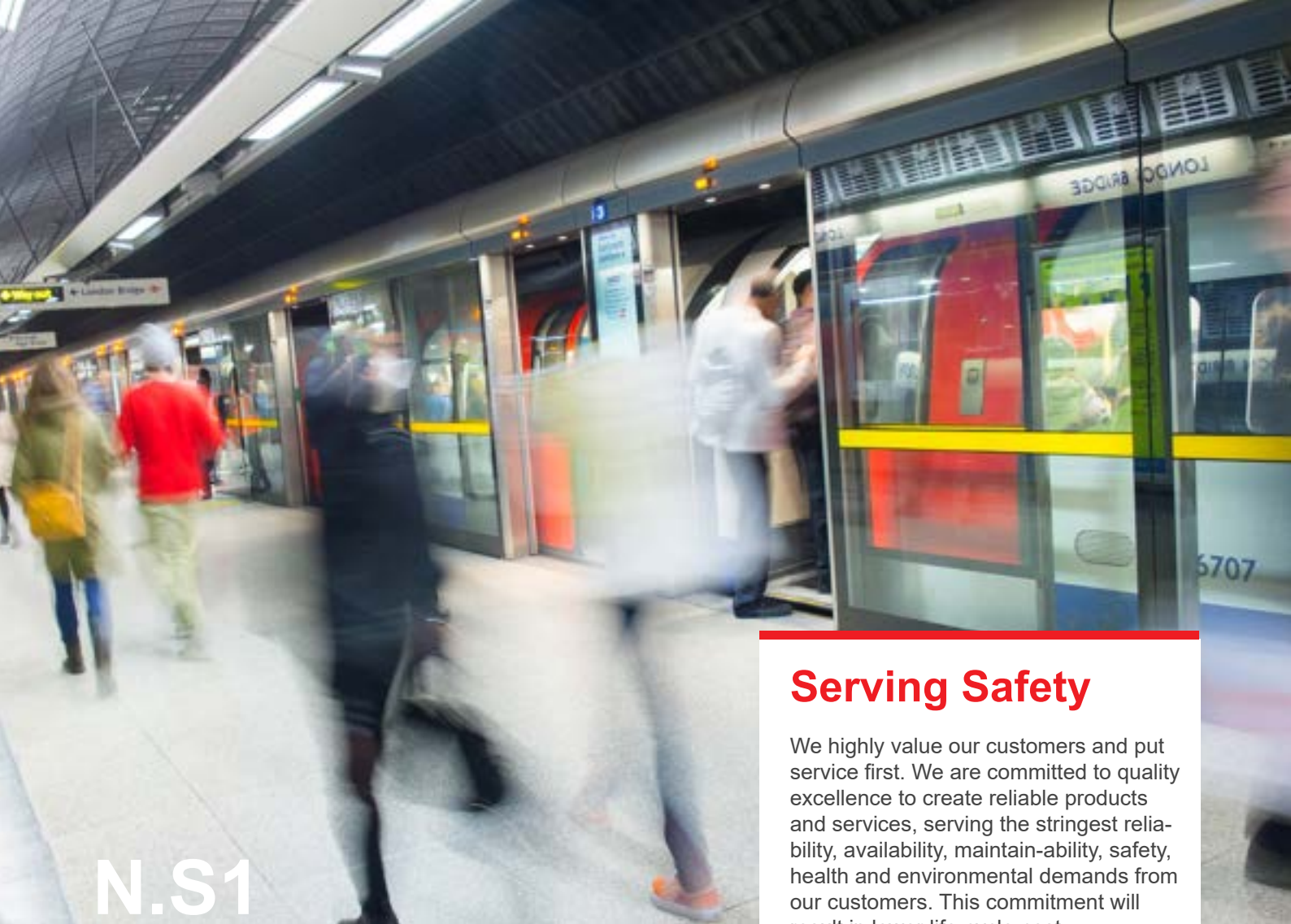




**Prioritizing  
safety in  
protection  
& control**

# **N.S1 Signalling Relays**



## Serving Safety

We highly value our customers and put service first. We are committed to quality excellence to create reliable products and services, serving the stringest reliability, availability, maintain-ability, safety, health and environmental demands from our customers. This commitment will result in lower life-cycle-cost.

Mors Smitt is a trusted partner in your supply chain. World wide availability of products is assured by a network of professional, trained and dedicated subsidiaries, distributors and agents offering local service and support.

Mors Smitt is a total supplier for onboard and trackside safety-critical solutions. Combining electro-mechanical ultra-high dependable relays with safety-critical electronics

All is manufactured to the strictest standards.



Mors Smitt is part of Wabtec Corporation. A global provider of value-added, technology-based products and services for railway, transit, freight and other industrial markets, with facilities world wide.

N.S1

# Signalling relays

Mors Smitt is a well known railway relay supplier offering a wide range of N.S1 signalling and vital relays comforted by four decades of experience in the field.

### Unique features

Mors Smitt N.S1 relays: Drop out gravity relay in combination with function in combination with 'non weldable' double make - double break contacts, weld no transfer function, gold bifurcated signal contacts, ensuring the compliance with the highest safety demands.

### Our experience

Our factory offers automated vision system and operator inspection as well as an automated end of line testing with conformity certificates with each order. Also included are recertification and repair services.






Not just our products and services but also our production sites are focused on environmental performance improvements by certifications according to the IRIS, ISO 9001:2008 and ISO 14001 standards.





Product range

N.S1 signalling and vital relays are a consistent, adaptable range of relays with plug-in connection, small size, modular construction, low power consumption, compliant to French and SNCF standards, conformity to UIC recommendation, Ag / Ag CdO contacts and 24 V standard.

Line relay	Point operating relay	Post relay
 N.S1-L-24-4.0.4	 N.S1-R-24-4.0.4	 N.S1-P-24-4.0.4
 N.S1-L-24-12.0.8		 N.S1-P-24-12.0.8



References

N.S1 relays are implemented in the applications by:

- Railways : SNCF, RENFE, ENR (Egypt), NS (Netherlands), Spoornet (South Africa) and various networks in Algeria, Argentina, Australia, Bangladesh, Belgium, Brasil, Canada, China, Chili, Cuba, Greece, Hong Kong, India, Indonesia, Italy, Latvia, Luxemburg, Mexico, Morocco, New Zealand, Portugal, Singapore, Slovenia, South Korea, Spain, Switzerland, Tunesia, Turkey, UK and Vietnam
- Mass-transits and metros: RATP Paris, Lyon, Marseille, (France) MTRC (Hong-Kong), Santiago (Chile), Caracas (Venezuela), Mexico city (Mexico), Cairo (Egypt) and more



Standards

NF F70-021	Railway fixed equipment - Modulated switchgear enclosures - Classification, definition of test & approval proc.
NF F70-020	Fixed railway equipment - Case of modular equipment - Engineering and designing rules
NF F70-032	Railway fixed equipment - Safety electromechanical relays - Routing tests
NF F70-031	Fixed railway equipment - Safety electromechanical relays - Approval procedure and type test
NF F70-030	Railway applications - Fixed installations - Safety electromechanical relays - Engineering and designing rules



Characteristics

N.S1 relays are modular plug-in relays designed for safety functions in railway signalling installations. They are in conformity with UIC recommendations and French National Railways specifications.

N.S1 relays operating characteristics are guaranteed at any temperature between -25°C to +70°C and mechanical performance of 10 million operations.

- N.S1 relays and modules :
- Consistent, adaptable range of relays
  - Plug-in connection
  - Small size
  - Modular construction
  - Low power consumption
  - French and SNCF standards
  - Driver-type contacts:
    - Front contacts: Ag / Ag CdO
    - Front contacts (breaker): Ag Ni / Ag Ni
    - Back contacts: Ag / Ag CdO
  - Standard voltage: 24 VDC



Description	Function	No. of modules	Contacts			Weight (kg)	Coils resistance or impedance (ohm)	Rated voltage (VDC)
			Front or right	Two ways	Back or left			
N.S1-P-24-4.0.4	Post	1	4	0	4	<0.85	250	24
N.S1-L-24-4.0.4	Line	1	4	0	4	<0.95	600	24
N.S1-R-24-4.0.4	Point operating	1	4	0	4	<0.95	150	24
N.S1-P-24-12.0.8	Post	2	12	0	8	<1.50	250	24
N.S1-L-24-12.0.8	Line	2	12	0	8	<1.75	600	24

Modular concept



The N.S1 equipment is removable i.e. the relay itself and its accessories which can be plugged into the 'fixed' equipment.

The removable equipment is accommodated in separate plug-in housing. The moving part of the plug-in connector consists of a molded base bearing the mechanism and the contact blades of the relay.

A modular component is specified with reference to a basic module. Only the height of the component can vary, depending on how many modules are necessary to accommodate its constituents.



**N.S1-P-24-4.0.4**

## Instantaneous vital relay

### Post

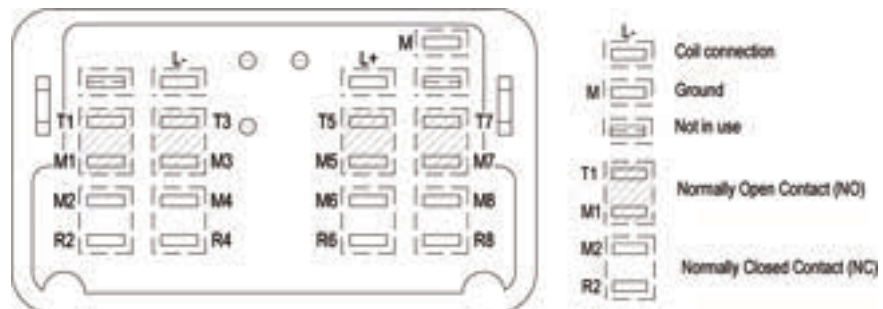


The N.S1-P-24-4.0.4 is a 24 VDC track side safety relay for the signalling railway market. It is a single module plug-in relay with positive mechanical keying, equipped with 4 normally open contacts and 4 normally closed contacts.

## General characteristics

Function	Post	
Housing type (# modules)	1	
Contact arrangement	N/O	4
	C/O	0
	N/C	4
Command elements (coils)	1	
Operating temperature range	-25 °C...+70 °C	
Nominal voltage (operating voltage range)	24 VDC (-6%, +20%)	
Coil resistance at 15 °C	250 ohm ± 5%	
Minimal drop out torque	0.15 Nm	
Relay socket	2x N.S1-PFC.12-C or 1x N.S1-PFC.AV-24	
Dimensions	152.5 x 100 x 58 mm	
Weight	< 0.95 kg	
Standards	NF F70-030 August 2004	
	NF F70-020 September 1991	
	SNCF symbol: 7.954.0230 mechanical keying: 123	

## Contacts position and marking



**More information on this relays is available on the datasheet on our website.**

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## Instantaneous vital relay

### Line

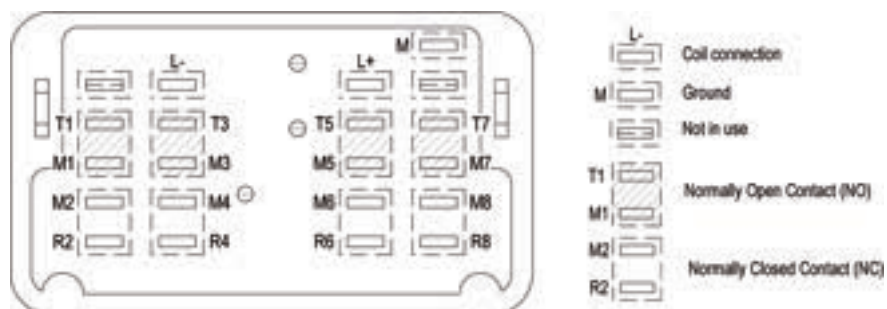


The N.S1-L-24-4.0.4 is a 24 VDC track side safety relay for the signalling railway market. It is a single module plug-in relay with positive mechanical keying, equipped with 4 normally open contacts and 4 normally closed contacts.

## General characteristics

Function	Line	
Housing type (# modules)	1	
Contact arrangement	N/O	4
	C/O	0
	N/C	4
Command elements (coils)	1	
Operating temperature range	-25 °C...+70 °C	
Nominal voltage (operating voltage range)	24 VDC (-6%, +20%)	
Coil resistance at 15 °C	600 ohm $\pm$ 5%	
Minimal drop out torque	0.15 Nm	
Relay socket	2x N.S1-PFC.12-C or 1x N.S1-PFC.AV-24	
Dimensions	152.5 x 100 x 58 mm	
Weight	< 0.95 kg	
Standards	NF F70-030 August 2004	
	NF F70-020 September 1991	
	SNCF symbol: 7.954.4062 mechanical keying: 245	

## Contacts position and marking



**More information on this relays is available on the datasheet on our website.**



**N.S1-R-24-4.0.4**

## Instantaneous vital relay

### Point operating

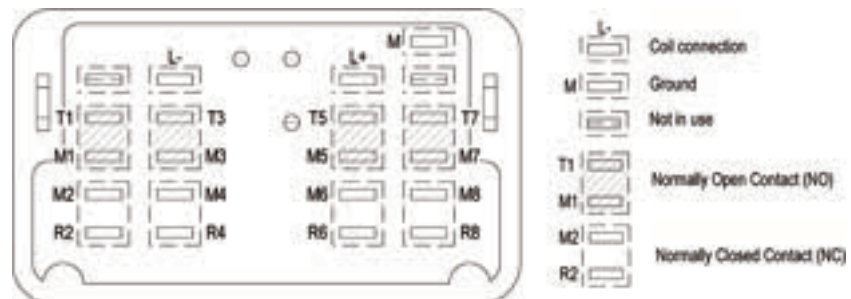


The N.S1-R-24-4.0.4 is a 24 VDC track side safety relay for the signalling railway market. It is a single module plug-in relay with positive mechanical keying, equipped with 4 heavy duty normally open contacts and 4 normally closed contacts.

## General characteristics

Function	Switch machine motor command
Housing type (# modules)	1
Contact arrangement	N/O 4 C/O 0 N/C 4
Command elements (coils)	1
Operating temperature range	-25 °C...+70 °C
Nominal voltage (operating voltage range)	24 VDC (-6%, +20%)
Coil resistance at 15 °C	150 ohm $\pm$ 5%
Minimal drop out torque	0.15 Nm
Relay socket	2x N.S1-PFC.12-C or 1x N.S1-PFC.AV-24
Dimensions	152.5 x 100 x 58 mm
Weight	< 0.95 kg
Standards	NF F70-030 August 2004 NF F70-020 September 1991 SNCF symbol: 7.954.0234 mechanical keying: 124

## Contacts position and marking



**More information on this relays is available on the datasheet on our website.**





N.S1-P-24-12.0.8 Instantaneous vital relay  
Post

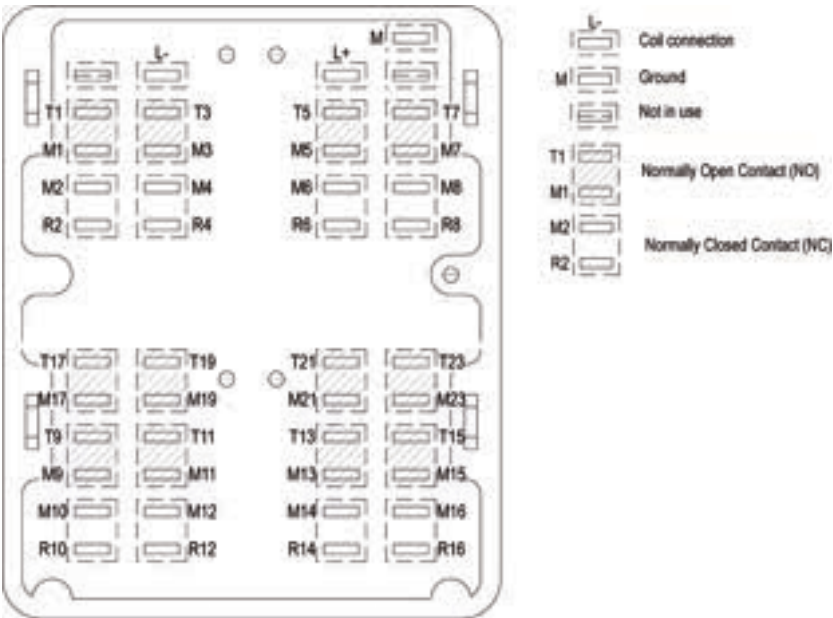


The N.S1-P-24-12.0.8 is a 24 VDC track side safety relay for the signalling railway market. It is a dual module plug-in relay with positive mechanical keying, equipped with 12 normally open contacts and 8 normally closed contacts.

General characteristics

Function	Signalling, trackside
Housing type (# modules)	2
Contact arrangement	N/O 12
	C/O 0
	N/C 8
Command elements (coils)	1
Operating temperature range	-25 °C...+70 °C
Nominal voltage (operating voltage range)	24 VDC (-6%, +20%)
Coil resistance at 15 °C	250 ohm ± 5%
Minimal drop out torque	0.15 Nm
Relay socket	4x N.S1-PFC.12-C or 2x N.S1-PFC.AV-24
Dimensions	152.5 x 100 x 123 mm
Weight	< 1.5 kg
Standards	NF F70-030 August 2004
	NF F70-020 September 1991
	SNCF symbol: 7.954.0231 mechanical keying: 128.12

Contacts position and marking



More information on this relays is available on the datasheet on our website.





N.S1-L-24-12.0.8 Instantaneous vital relay  
Line

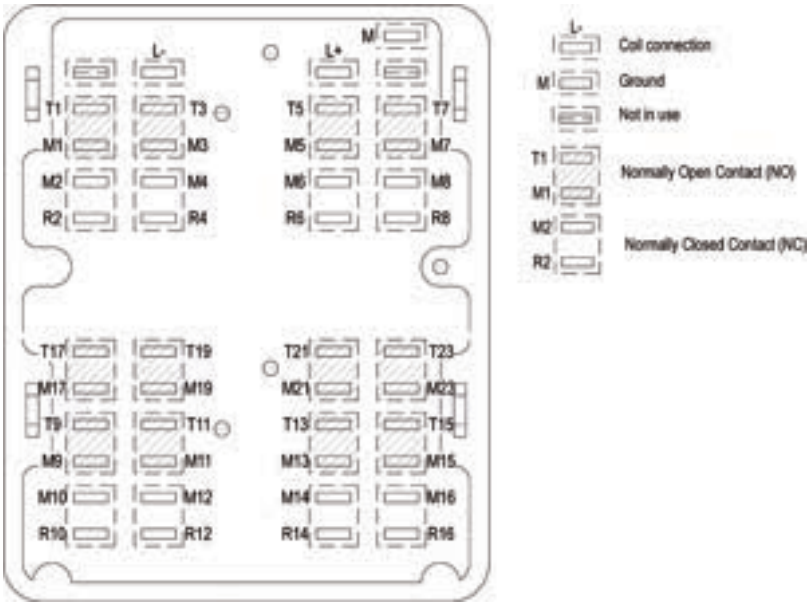


The N.S1-L-24-12.0.8 is a 24 VDC track side safety relay for the signalling railway market. It is a dual module plug-in relay with positive mechanical keying, equipped with 12 normally open contacts and 8 normally closed contacts.

General characteristics

Function	Signalling, trackside	
Housing type (# modules)	2	
Contact arrangement	N/O	12
	C/O	0
	N/C	8
Command elements (coils)	1	
Operating temperature range	-25 °C...+70 °C	
Nominal voltage (operating voltage range)	24 VDC (-6%, +20%)	
Coil resistance at 15 °C	600 ohm ± 5%	
Minimal drop out torque	0.15 Nm	
Relay socket	4x N.S1-PFC.12-C or 2x N.S1-PFC.AV-24	
Dimensions	152.5 x 100 x 123 mm	
Weight	< 1.75 kg	
Standards	NF F70-030 August 2004	
	NF F70-020 September 1991	
	SNCF symbol: 7.954.3824 mechanical keying: 238.23	

Contacts position and marking

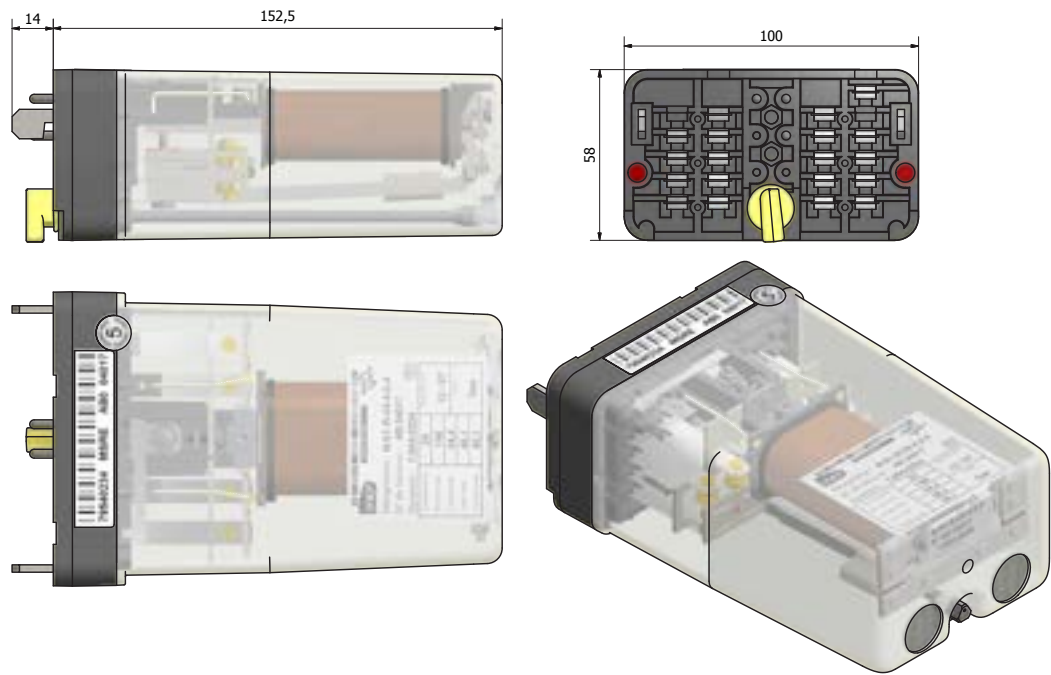


More information on this relays is available on the datasheet on our website.

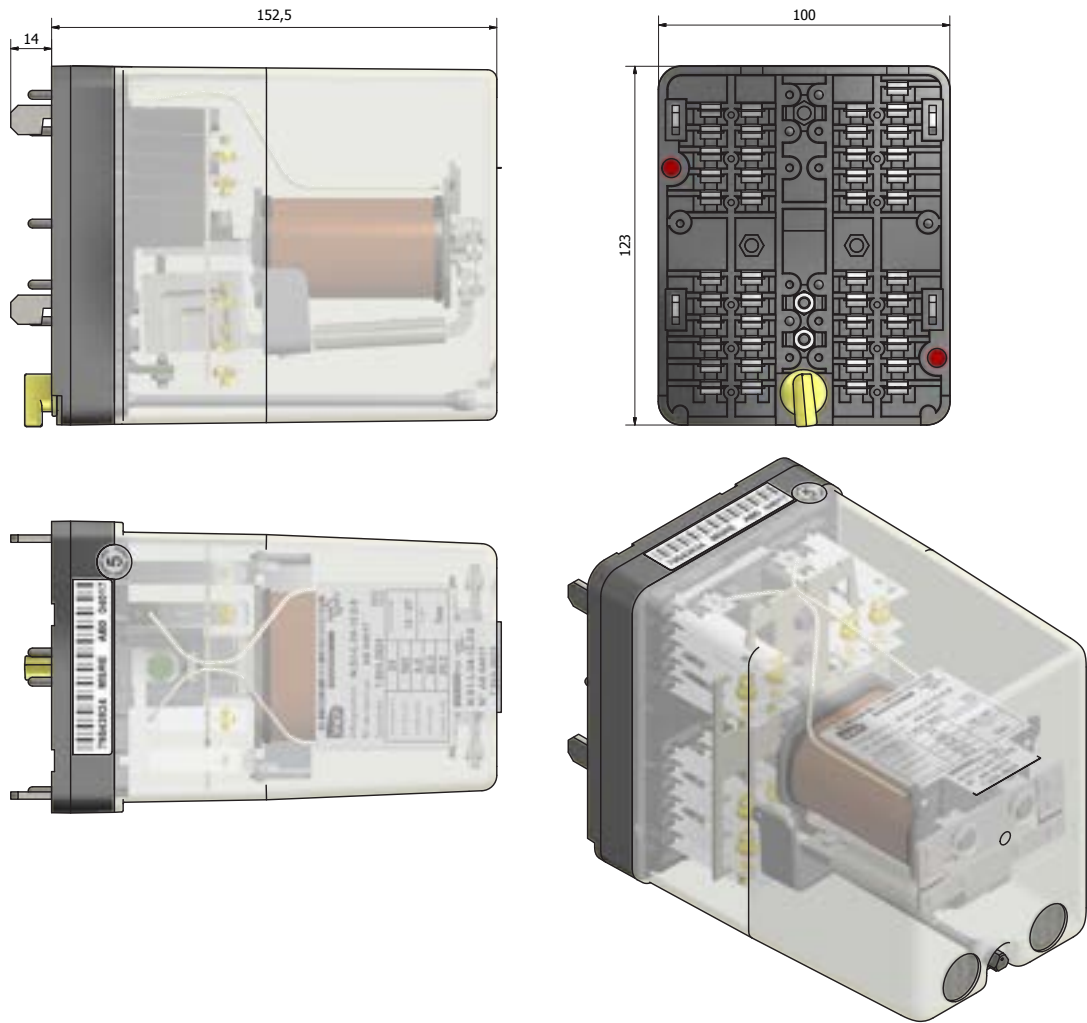


Dimensions

N.S1 1 module example



N.S1 2 module example





Bill of material for N.S1

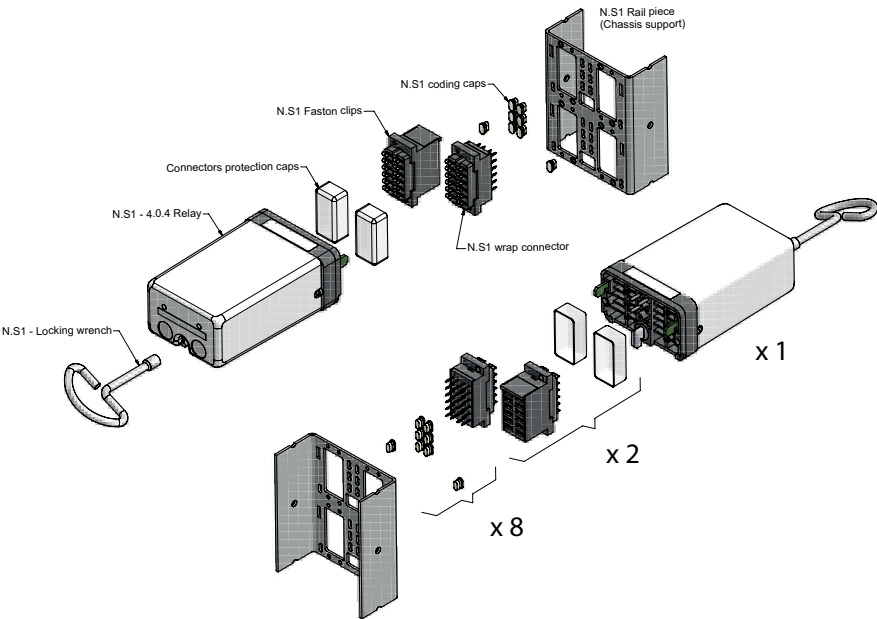
Relays		SNCF symbol	Partnumber	Quantity
N.S1	N.S1-P-24-4.0.4	7.954.0230	Q43PF0061	1
	N.S1-L-24-4.0.4	7.954.4062	Q43PF0062	1
	N.S1-R-24-4.0.4	7.954.0234	Q43PF0063	1
	N.S1-P-24-12.0.8	7.954.0231	Q43PF0058	1
	N.S1-L-24-12.0.8	7.954.3824	Q43PF0059	1

Rail mounting accessories				
N.S1 rail	4 modules		Q43ARC012	1
Marking labels with rivets for	N.S1-P-24-4.0.4		Q43ARC007	1
	N.S1-L-24-4.0.4		Q43ARC008	1
	N.S1-R-24-4.0.4		Q43ARC009	1
	N.S1-P-24-12.0.8		Q43ARC010	1
	N.S1-L-24-12.0.8		Q43ARC011	1
No relay snap-on cover	N.S1-PFO	7.954.0381	Q43ARC004	optional
No relay empty connector with screws and contacts coding	N.S1-PFCO	7.954.4543	Q43ARC005	optional
Coding cap		7.966.0496	Q43ARC003	8 per module
Marking holder		7.966.0494	Q43ARC006	1
Screw stainless steel M3x10			211643011	4 per module
Screw zinc brichomated M3x10			60301106	4 per module
Clip connector	N.S1-PFC.12-C	7.954.0380	Q43ARC002	2 per module
Wrapping connector	N.S1-PFC.12-W	7.954.4436	Q43ARC022	2 per module
Wall mounting accessories				
AV front connector	N.S1-PFC-AV-24	7.954.3895	Q43ARC017	1 per module

Accessories				
N.S1 locking wrench			Q43ARC001	

For N.S1-PFC.12-C				
Tinned clip 2.8 x 0.5 (red)	Faston 2.8 x 0.5	7.847.1903	OEA408221	tbd
Gold plated clip 2.8 x 0.5 (red)	Faston 2.8 x 0.5	7.847.1902	OEA408222	tbd
Gold plated clip 2.8 x 0.5 (white)	Faston 2.8 x 0.5	7.847.1901	OEA408223	tbd

Example





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