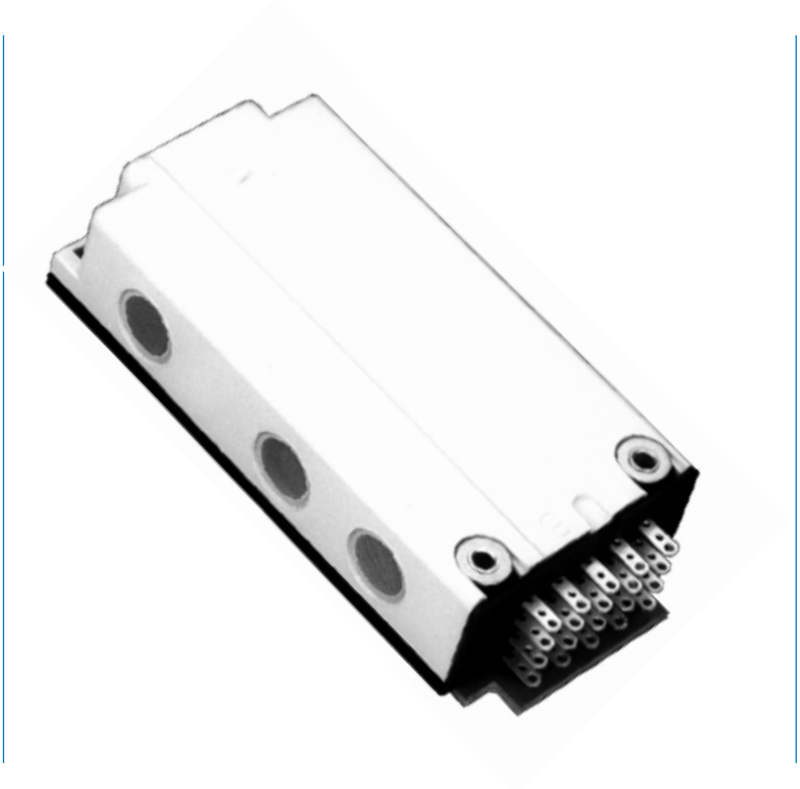
1019 relay - Solid state flashing

Datasheet



Description

The 1019 is a solid state flashing relay to control filament light bulbs. The independant output channels configuration and flashing delay are factory set and depend on 1019 series.

The plug-in design offers secure locking feature for maximum ease of maintenance (no wires need to be disconnected or other hardware removed for relay inspection or replacement).

The resistance to impact and vibration is conforming the standards in force for Railway Transported Equipment.

Positive mechanical keying of relay to socket is built into relay and socket during manufacture and terminal identifications are clearly marked on identification plate that is permanently attached to the relay.

The 1019 solid state flasing relay is pluggable in the COR NJ socket.

Application

The 1019 solid state flashing relay is designed to control the train headlight warning mode.

Features

- Solid state outputs
- One or two independant output channels
- Flashing frequency varies according to series
- Plug-in design with secure locking feature for maximum ease of maintenance
- -25 °C...+70 °C operating temperature

Benefits

- Proven reliable
- Long life cycle
- Accurate timing
- Easy to maintain and replace
- Low life cycle cost
- No maintenance

Railway compliancy

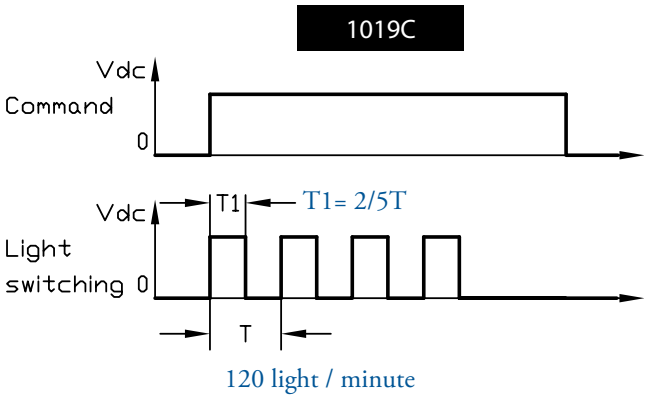
- NF F 62-002 Rolling stock - Instantaneous relays contacts and sockets
- NF F16-101/102 Fire behaviour - Railway rolling stock
- EN 50155 Railway application - Electronic equipment used on rolling stock
- IEC 61373 Railway application - Shock and vibration tests

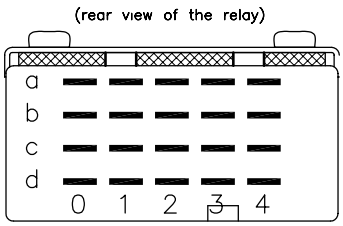
1019 relay - C, 24 VDC
Technical specifications

Functional and connection diagrams

Timing diagram	Relay pin correspondence

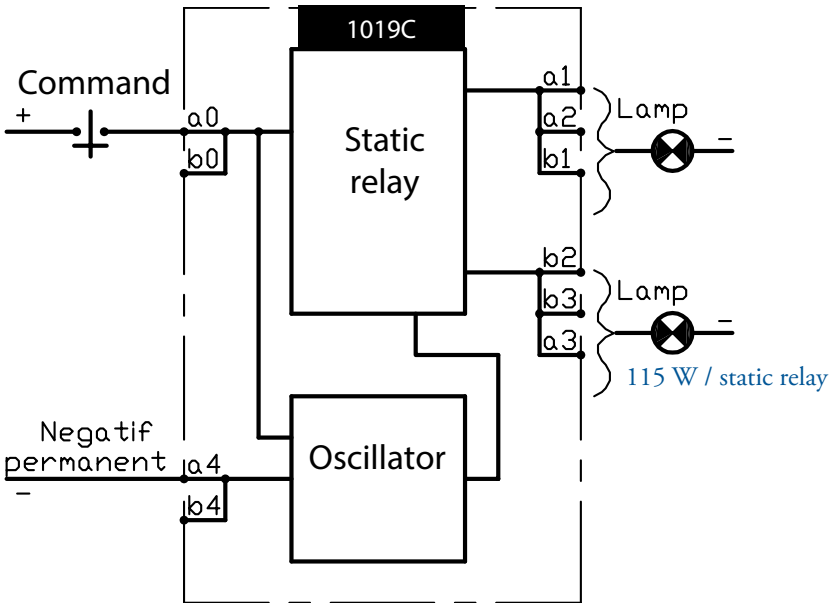
Flashing delay





Connection diagram

Electrical schematic



1019 relay - C, 24 VDC
Technical specifications

Features

- Solid state flashing relay designed to control the train headlight warning mode
- Relay has one channel capable of flashing two light bulbs (55 W - 50 W) 24 VDC

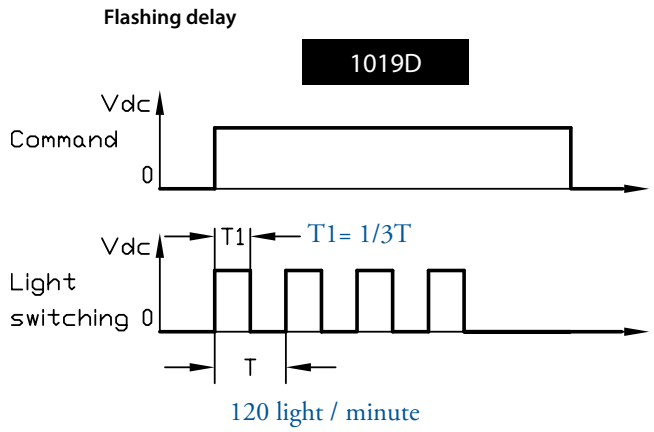
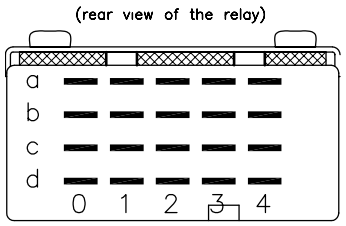
- Operation postion: may be mounted in any attitude
- Colour code: orange, white
- Relay socket keying: COR NJ 58

Electrical characteristics

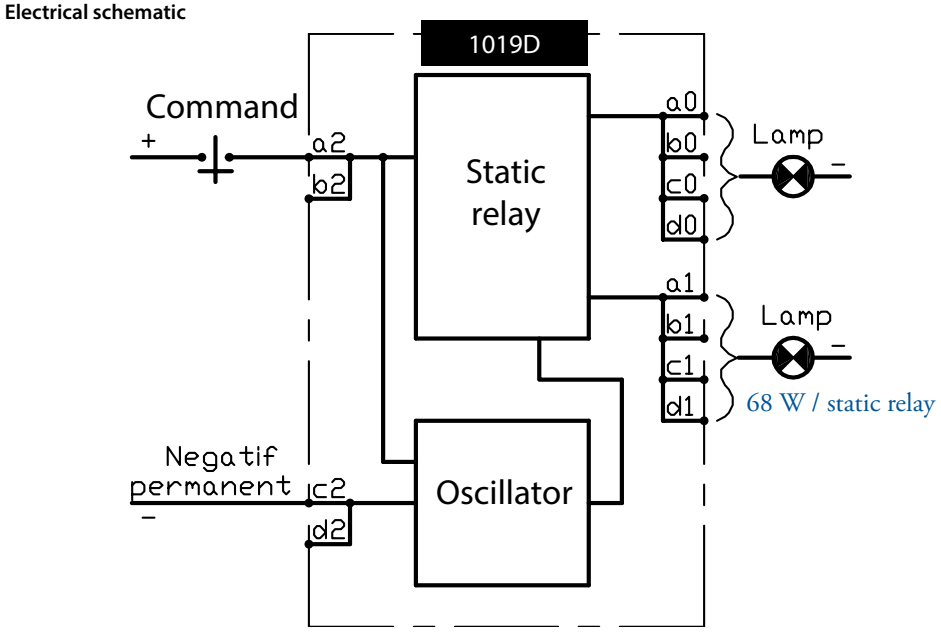
Operating voltage range	16 VDC...33 VDC, 24 VDC nominal voltage
Power consumption without load	0.1 W
Flashing rate	120 light on per minute
Switching on timing T1	2/5 of periodic value T
Variation limit at lamp switching on	T1 ± 16 %
Variation of flashing frequency	± 20 light on at 20 °C
Dielectric strength	1500 VAC, 1 min between the pins and the case
Maximum power	115 W
Breaking capacity	24 VDC - 115 W - Resistive load; 1 million ops. 24 VDC - 115 W - Inductive load: 30 ms; 1 million ops. 24 VDC - 115 W - Filament lamp; 1 million ops.

1019 relay - D, 72VDC
Technical specifications

Functional and connection diagrams

Timing diagram	Relay pin correspondence
	

Connection diagram



1019 relay - D, 72 VDC
Technical specifications

Features

- Solid state flashing relay designed to control the train headlight warning mode
- Relay has one channel capable of flashing two light bulbs (55 W - 18 W) 85 VDC

- Operation postion: may be mounted in any attitude
- Colour code: grey, orange
- Relay socket keying: COR NJ 34

Electrical characteristics

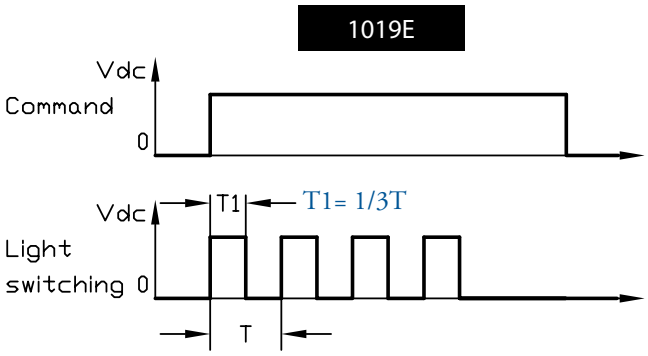
Operating voltage range	50 VDC...90 VDC, 72 VDC nominal voltage
Power consumption without load	0.1 W
Flashing rate	120 light on per minute
Switching on timing T1	1/3 of periodic value T
Variation limit at lamp switching on	T1 ± 16 %
Variation of flashing frequency	± 20 light on at 20 °C
Dielectric strength	1500 VAC, 1 min between the pins and the case
Maximum power	68 W
Breaking capacity	72 VDC - 68 W - Resistive load; 1 million ops. 72 VDC - 68 W - Inductive load: 30 ms; 1 million ops. 72 VDC - 68 W - Filament lamp; 1 million ops.

1019 relay - E, 72 VDC
Technical specifications

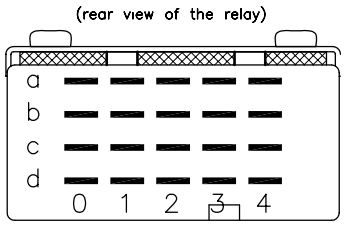
Functional and connection diagrams

Timing diagram	Relay pin correspondence

Flashing delay

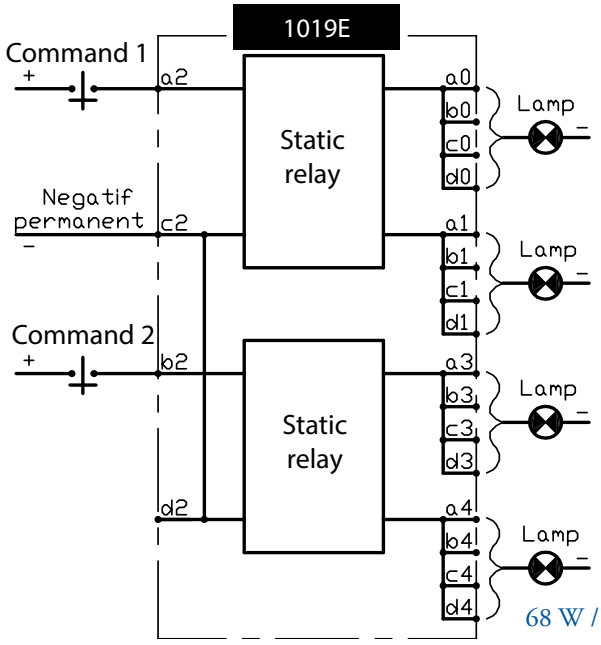


120 light / minute



Connection diagram

Electrical schematic



68 W / static relay

1019 relay - E, 72 VDC
Technical specifications

Features

- Solid state flashing relay designed to control the train headlight warning mode
- Relay has two independent channels, each capable of flashing two light bulbs (50 W - 18 W) 85 VDC

- Operation postion: may be mounted in any attitude
- Colour code: yellow ochre, red
- Relay socket keying: COR NJ 11A

Electrical characteristics

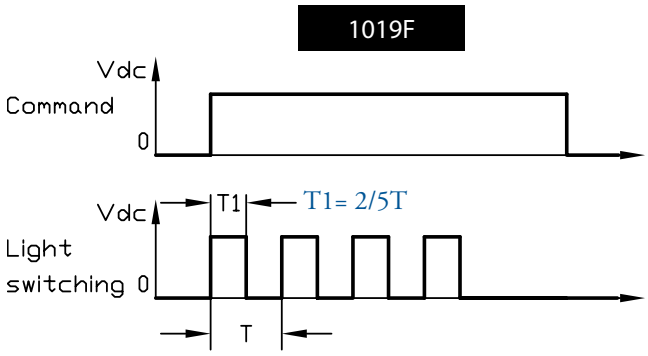
Operating voltage range	50 VDC...90 VDC, 72 VDC nominal voltage
Power consumption without load	0.1 W
Flashing rate	120 light on per minute
Switching on timing T1	1/3 of periodic value T
Variation limit at lamp switching on	T1 ± 16 %
Variation of flashing frequency	± 20 light on at 20 °C
Dielectric strength	1500 VAC, 1 min between the pins and the case
Maximum power	68 W
Breaking capacity	72 VDC - 68 W - Resistive load; 1 million ops. 72 VDC - 68 W - Inductive load: 30 ms; 1 million ops. 72 VDC - 68 W - Filament lamp; 1 million ops.

1019 relay - F, 24 VDC
Technical specifications

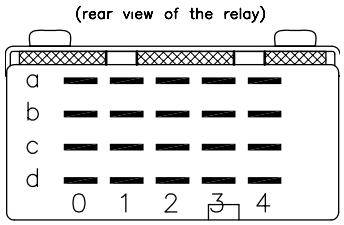
Functional and connection diagrams

Timing diagram	Relay pin correspondence

Flashing delay

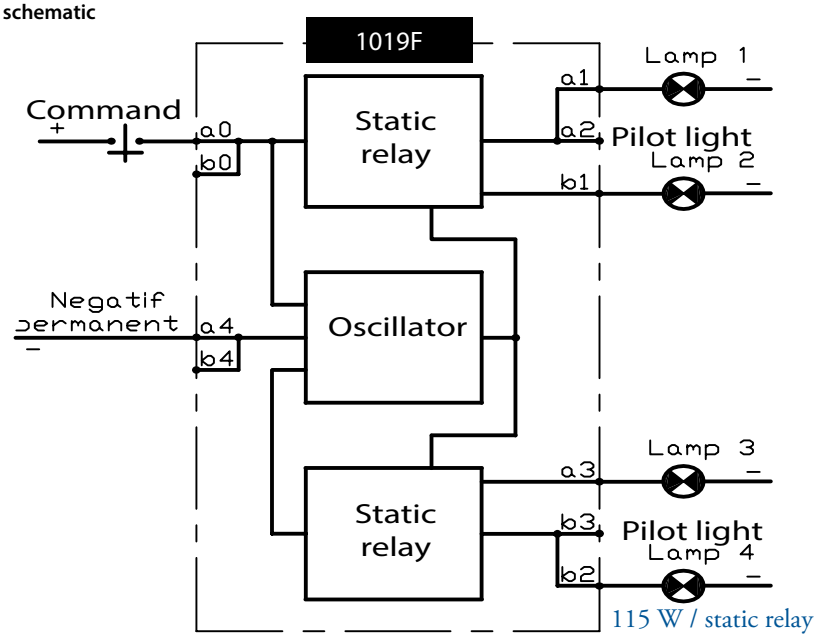


120 light / minute



Connection diagram

Electrical schematic



115 W / static relay

1019 relay - F, 24 VDC
Technical specifications

Features

- Solid state flashing relay designed to control the train headlight warning mode
- Relay has two independent channels, each capable of flashing four light bulbs (55 W - 50 W) 24 VDC

- Operation postion: may be mounted in any attitude
- Colour code: orange, white
- Relay socket keying: COR NJ 158

Electrical characteristics

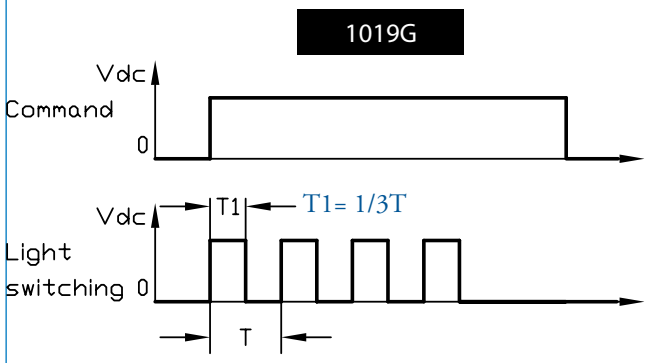
Operating voltage range	16 VDC...33 VDC, 24 VDC nominal voltage
Power consumption without load	0.1 W
Flashing rate	120 light on per minute
Switching on timing T1	2/5 of periodic value T
Variation limit at lamp switching on	T1 ± 16 %
Variation of flashing frequency	± 20 light on at 20 °C
Dielectric strength	1500 VAC, 1 min between the pins and the case
Maximum power	115 W
Breaking capacity	24 VDC - 115 W - Resistive load; 1 million ops. 24 VDC - 115 W - Inductive load: 30 ms; 1 million ops. 24 VDC - 115 W - Filament lamp; 1 million ops.

1019 relay - G, 72 VDC
Technical specifications

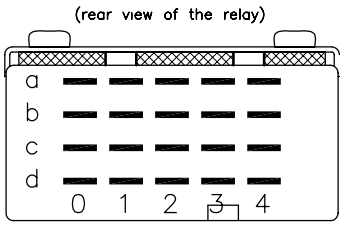
Functional and connection diagrams

Timing diagram	Relay pin correspondence

Flashing delay

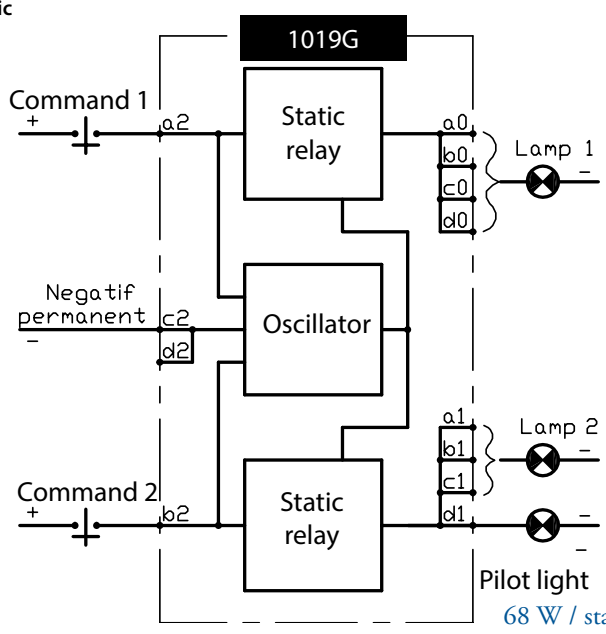


120 light / minute



Connection diagram

Electrical schematic



68 W / static relay

1019 relay - G, 72 VDC
Technical specifications

Features

- Solid state flashing relay designed to control the train headlight warning mode
- Relay has two independent channels, each capable of flashing two light bulbs (50 W - 18 W) 85 VDC and a pilot light

- Operation postion: may be mounted in any attitude
- Colour code: opal green, white
- Relay socket keying: COR NJ 311

Electrical characteristics

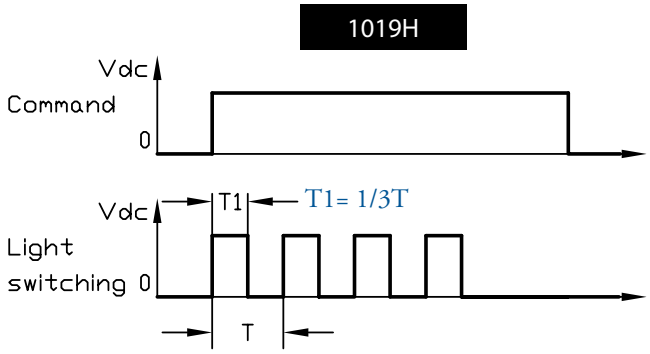
Operating voltage range	50 VDC...90 VDC, 72 VDC nominal voltage
Power consumption without load	0.1 W
Flashing rate	120 light on per minute
Switching on timing T1	1/3 of periodic value T
Variation limit at lamp switching on	T1 ± 16 %
Variation of flashing frequency	± 20 light on at 20 °C
Dielectric strength	1500 VAC, 1 min between the pins and the case
Maximum power	68 W
Breaking capacity	72 VDC - 68 W - Resistive load; 1 million ops. 72 VDC - 68 W - Inductive load: 30 ms; 1 million ops. 72 VDC - 68 W - Filament lamp; 1 million ops.

1019 relay - H, 24 VDC
Technical specifications

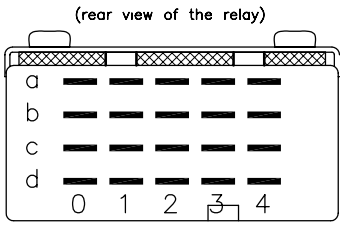
Functional and connection diagrams

Timing diagram	Relay pin correspondence

Flashing delay

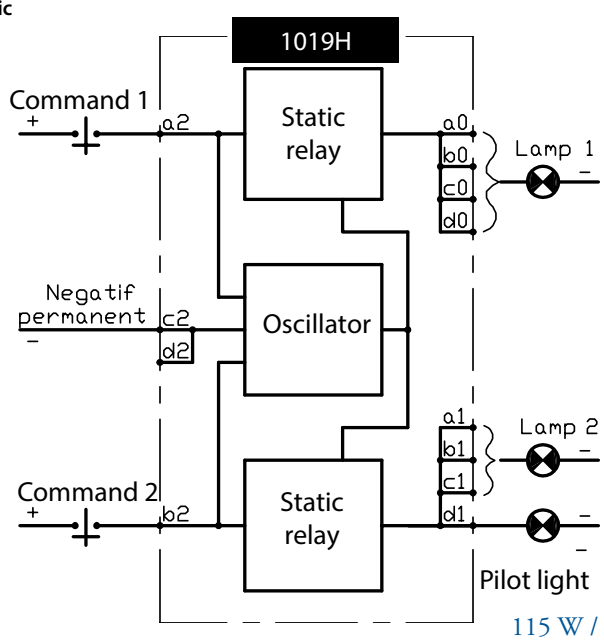


120 light / minute



Connection diagram

Electrical schematic



115 W / static relay

1019 relay - H, 24 VDC
Technical specifications

Features

- Solid state flashing relay designed to control the train headlight warning mode
- Relay has two independent channels, each capable of flashing two light bulbs (55 W) 24 VDC and a pilot light

- Operation postion: may be mounted in any attitude
- Colour code: silver, blue flag, canary yellow
- Relay socket keying: COR NJ 5F

Electrical characteristics

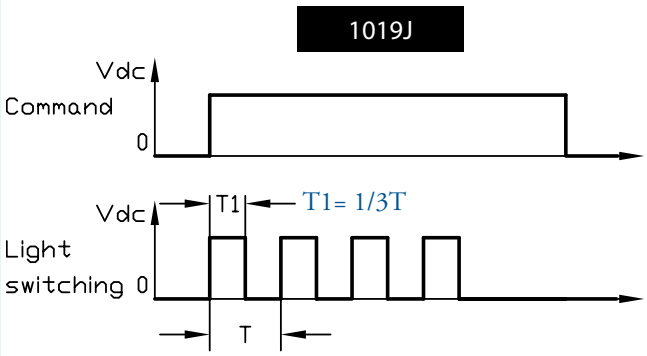
Operating voltage range	16 VDC...33 VDC, 24 VDC nominal voltage
Power consumption without load	0.1 W
Flashing rate	120 light on per minute
Switching on timing T1	1/3 of periodic value T
Variation limit at lamp switching on	T1 ± 16 %
Variation of flashing frequency	± 20 light on at 20 °C
Dielectric strength	1500 VAC, 1 min between the pins and the case
Maximum power	115 W
Breaking capacity	24 VDC - 115 W - Resistive load; 1 million ops. 24 VDC - 115 W - Inductive load: 30 ms; 1 million ops. 24 VDC - 115 W - Filament lamp; 1 million ops.

1019 relay - J, 12 VDC
Technical specifications

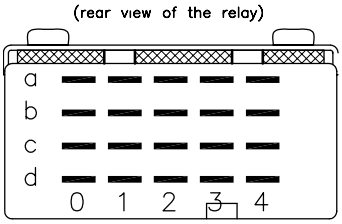
Functional and connection diagrams

Timing diagram	Relay pin correspondence

Flashing delay

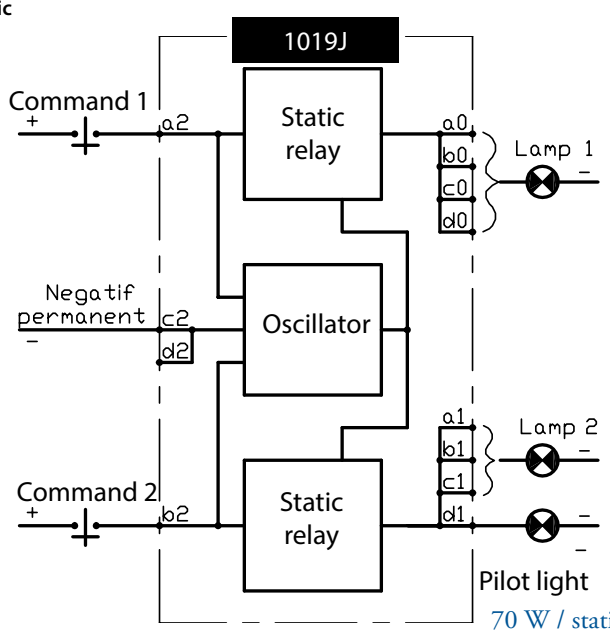


120 light / minute



Connection diagram

Electrical schematic



70 W / static relay

1019 relay - J, 12 VDC
Technical specifications

Features

- Solid state flashing relay designed to control the train headlight warning mode
- Relay has two independent channels, each capable of flashing one light bulb (55 W)

- Operation postion: may be mounted in any attitude
- Colour code: tbd
- Relay socket keying: tdb

Electrical characteristics

Operating voltage range	8 VDC...16 VDC, 12 VDC nominal voltage
Power consumption without load	0.1 W
Flashing rate	120 light on per minute
Switching on timing T1	1/3 of periodic value T
Variation limit at lamp switching on	T1 ± 16 %
Variation of flashing frequency	± 20 light on at 20 °C
Dielectric strength	1500 VAC, 1 min between the pins and the case
Maximum power	70 W
Breaking capacity	12 VDC - 70 W - Resistive load; 1 million ops. 12 VDC - 70 W - Inductive load: 30 ms; 1 million ops. 12 VDC - 70 W - Filament lamp; 1 million ops.

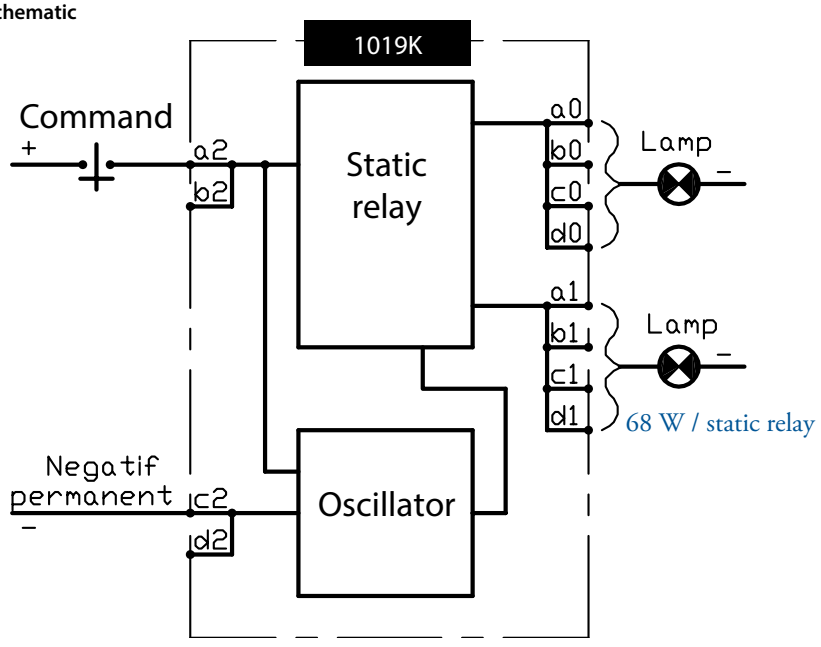
1019 relay - K, 24 VDC
Technical specifications

Functional and connection diagrams

Timing diagram	Relay pin correspondence
Flashing delay 1019K Vdc Command 0 Vdc Light switching 0 T1 T1= 1/3T T 120 light / minute	(rear view of the relay) a b c d 0 1 2 3 4

Connection diagram

Electrical schematic



1019 relay - K, 24 VDC
Technical specifications

Features

- Solid state flashing relay designed to control the train headlight warning mode
- Relay has two independent channels, each capable of flashing two light bulbs (55 W + 18 W) 24 VDC

- Operation postion: may be mounted in any attitude
- Colour code: yellow ochre, orange, brown
- Relay socket keying: COR NJ 48B

Electrical characteristics

Operating voltage range	16 VDC...33 VDC, 24 VDC nominal voltage
Power consumption without load	0.1 W
Flashing rate	120 light on per minute
Switching on timing T1	1/3 of periodic value T
Variation limit at lamp switching on	T1 ± 16 %
Variation of flashing frequency	± 20 light on at 20 °C
Dielectric strength	1500 VAC, 1 min between the pins and the case
Maximum power	68 W
Breaking capacity	24 VDC - 68 W - Resistive load; 1 million ops. 24 VDC - 68 W - Inductive load: 30 ms; 1 million ops. 24 VDC - 68 W - Filament lamp; 1 million ops.

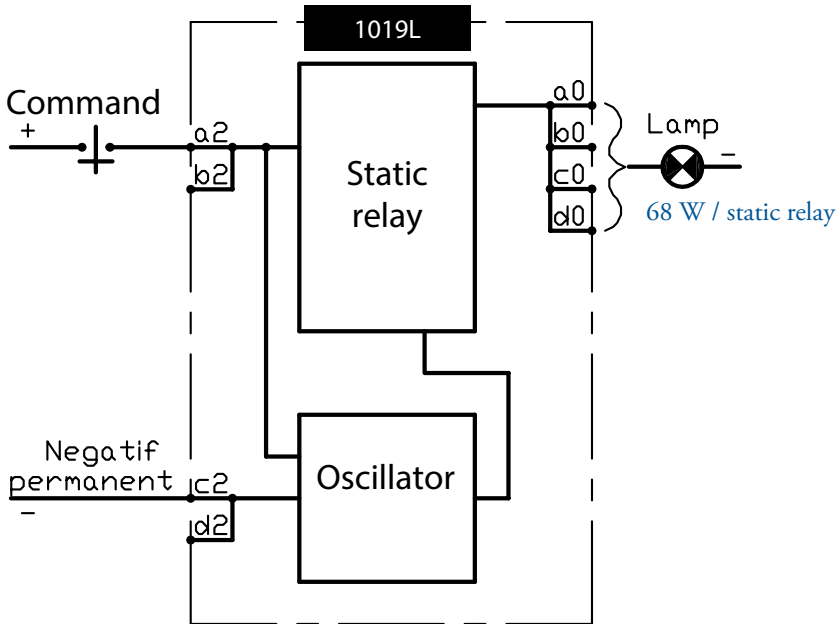
1019 relay - L, 72 VDC
Technical specifications

Functional and connection diagrams

Timing diagram	Relay pin correspondence
Flashing delay 1019L Vdc Command 0 Vdc T1 T1= 1/2T Light switching 0 T 360 light / minute	(rear view of the relay) a b c d 0 1 2 3 4

Connection diagram

Electrical schematic



1019 relay - L, 72 VDC
Technical specifications

Features

- Solid state flashing relay designed to control the train headlight warning mode
- Relay has one channel of flashing one light bulb (2 W) 72 VDC

- Operation postion: may be mounted in any attitude
- Colour code: yellow ochre, orange, opal green
- Relay socket keying: COR NJ 48C

Electrical characteristics

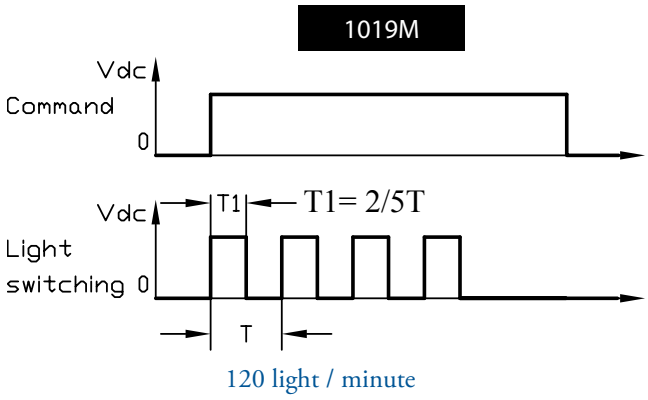
Operating voltage range	50 VDC...90 VDC, 72 VDC nominal voltage
Power consumption without load	0.1 W
Flashing rate	360 light on per minute
Switching on timing T1	1/2 of periodic value T
Variation limit at lamp switching on	T1 ± 50 %
Variation of flashing frequency	± 40 light on at 20 °C
Dielectric strength	1500 VAC, 1 min between the pins and the case
Maximum power	68 W
Breaking capacity	72 VDC - 68 W - Resistive load; 1 million ops.

1019 relay - M, 100 VDC
Technical specifications

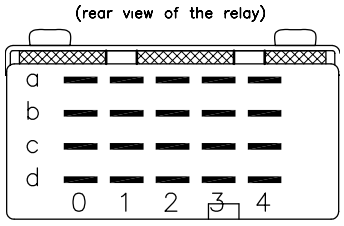
Functional and connection diagrams

Timing diagram	Relay pin correspondence

Flashing delay

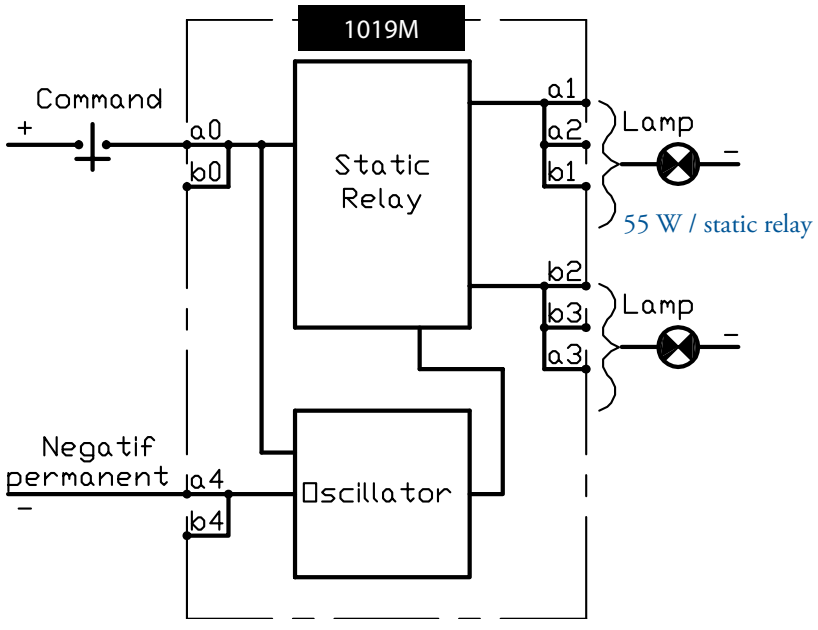


120 light / minute



Connection diagram

Electrical schematic



1019 relay - M, 100 VDC
Technical specifications

Features

- Solid state flashing relay designed to control the train headlight warning mode
- Relay has two independent channels, each capable of flashing one light bulb (55 W) 100 VDC

- Operation postion: may be mounted in any attitude
- Colour code: canary yellow, orange, white
- Relay socket keying: COR NJ 49E

Electrical characteristics

Operating voltage range	70 VDC...138 VDC, 100 VDC nominal voltage
Power consumption without load	<1 W
Flashing rate	120 light on per minute
Switching on timing T1	2/5 of periodic value T
Variation limit at lamp switching on	T1 ± 16 %
Variation of flashing frequency	± 20 light on at 20 °C
Dielectric strength	1500 VAC, 1 min between the pins and the case
Maximum power	55 W
Breaking capacity	100 VDC - 55 W - Resistive load; 1 million ops. 100 VDC - 55 W - Inductive load: 30 ms; 1 million ops. 100 VDC - 55 W - Filament lamp; 1 million ops.

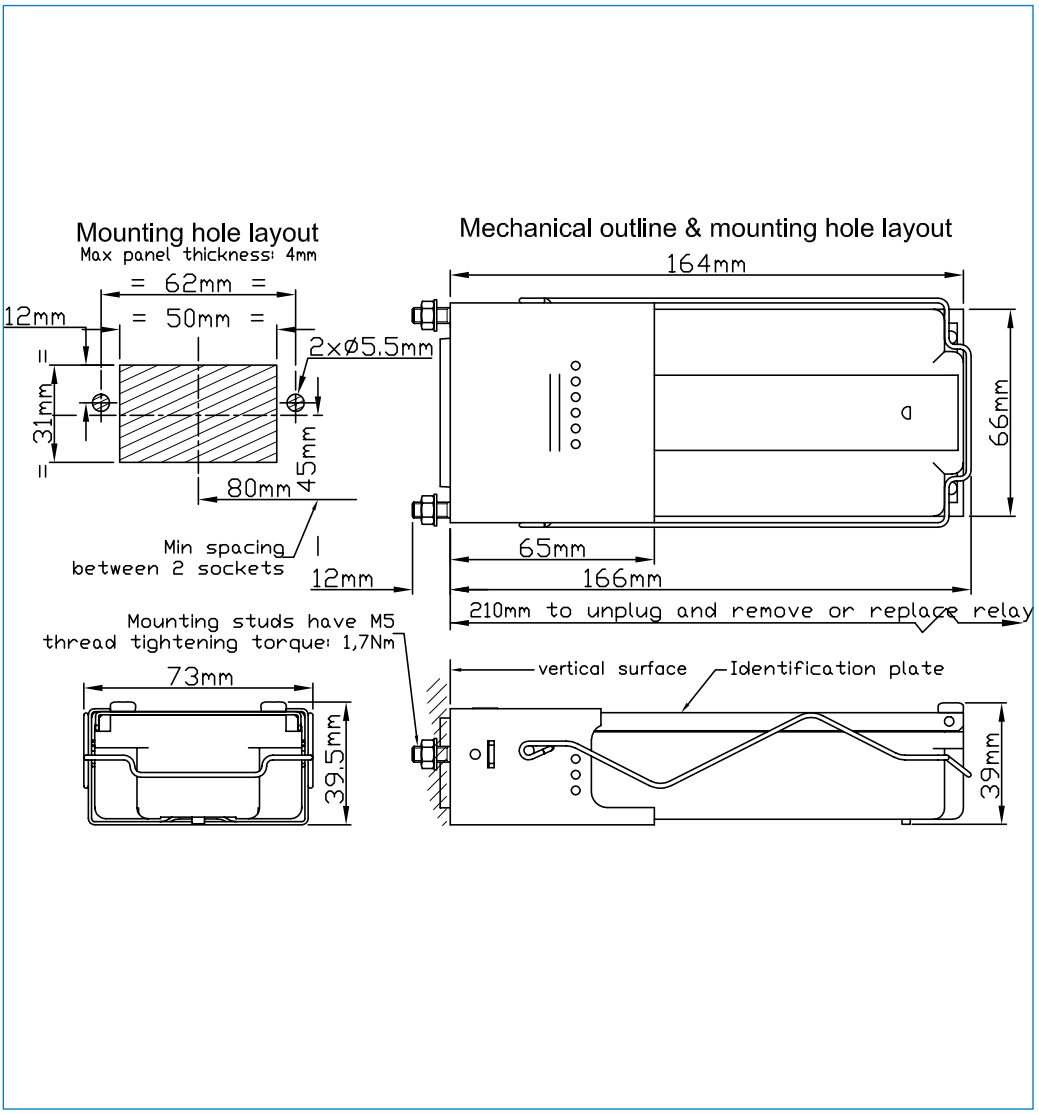
1019 relay
Technical specifications

Mechanical & environmental characteristics

Vibration	NF F 62-002 The tests are conducted in the X, Y , Z planes at frequency between 10 & 150 cycles (sinusoidal) at 2 g
Shock	NF F 62-002 Tests are applied in both directions in the X, Y & Z planes. Then successive shocks are administered consisting of the positive component of sinusoidal with a value of 30 g, 11 ms Other vibration and shock tests can be performed on request.
Weight	300 g
Temperature	-25 °C...+70 °C
Humidity	93% RH, 40° C for 4 days
Salt mist	5% NaCl, 35° C for 4 days
Protection	IP50 (timing relay on socket)
Fire & smoke	Materials: Polycarbonate resin (cover) / polyester (base) Note: These materials have been tested for fire propagation and smoke emission according standards NF F 16-101, NF F 16-102.

1019 relay
Technical specifications

Dimensions

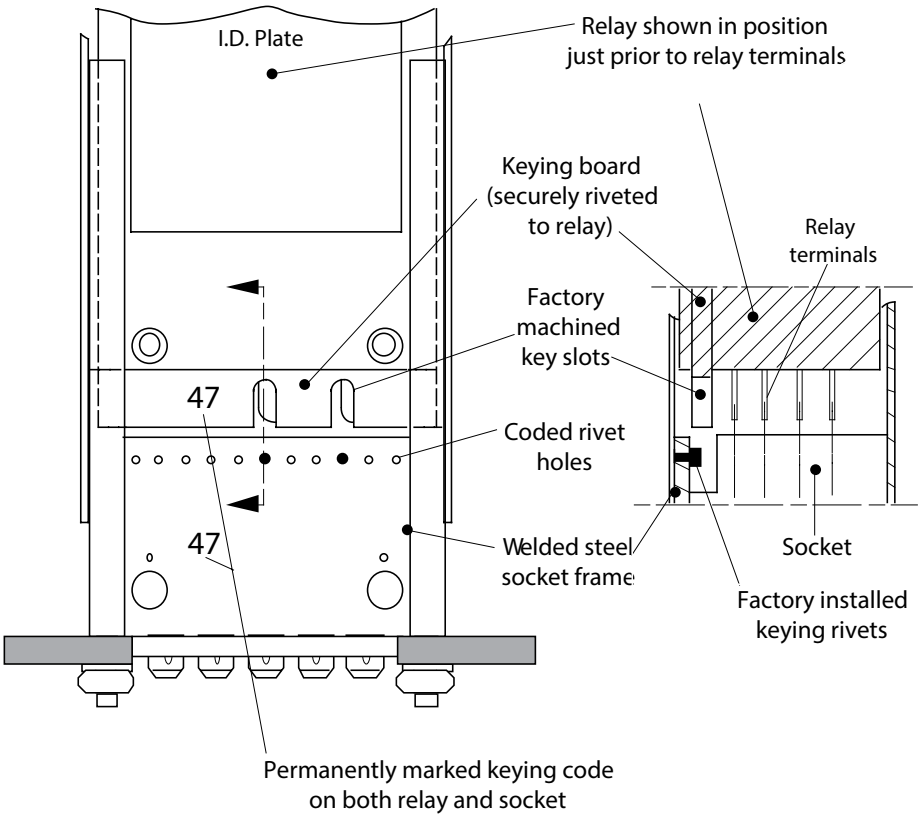


1019 relay
Technical specifications

Mechanical keying

- Mechanical keying of the relay to the socket is accomplished during manufacturing
- Keying slots are located by their keying code numbers on the relay board. Keying rivets are located in the steel socket frame in the correct (and corresponding) coded rivet holes to mate with the relay
- Once keying has been completed during manufacture, it is permanent and cannot be changed. This is intentional in the design to insure that only the correct relay can be plugged into the socket
- They keying is completed by a color code on the top of the relay cover and on the side of the socket for better identification on the train

They keying details are illustrated below.



1019 relay
Mounting possiblities / sockets

COR NJ

Panel mounting

153879	COR NJ X*	Socket (Alkyde compound) with locking spring, weight: 200 g

* X indicates keying code from relay table

1019 relay
Instructions

Installation

Install socket and connect wiring correctly according identification to terminals. Plug relay into socket. Reverse installation into socket not possible due to mechanical blocking by snap-lock.
Don't reverse polarity of coil connection. Relays can be mounted (tightly) next to each other and in any attitude.
Warning! Never use silicon near by relays

Operation

Before operating always apply voltage to coil to check correct operation.
Long term storage may corrode the silver on the relay pins. Just by plugging the relay into the socket, the female bifurcated receivers will automatically clean the corrosion on the pins and guarantee a good connection.

Maintenance

When the relay doesn't seem to operate correct, please check presence of coil voltage. Use a multimeter.
If relay doesn't work after inspection, please replace relay unit by a similar model. Send defective relay back to manufacturer. Normal wear and tear excluded.

1019 relay
Ordering scheme

Configuration:

1019	D
1. Relay model	2. Series

This example represents a **1019 D relay**
Description: 1019 D relay, Unom 72 VDC and keying 34

1. Relay model

1019

2. Series, nominal voltage & keying

C	24 VDC, keying 58
D	72 VDC, keying 34
E	72 VDC, keying 11A
F	24 VDC, keying 158
G	72 VDC, keying 311
H	24 VDC, keying 5F
J	12 VDC, keying tbd
K	24 VDC, keying 48B
L	72 VDC, keying 48C
M	100 VDC, keying 49E

Mors Smitt
A Wabtec Company

SERVING SAFETY

DS-1019 relay-V2.0 May 2013

Mors Smitt France SAS
Tour Rosny 2, Avenue du Général de Gaulle,
F - 93118 Rosny-sous-Bois Cedex, FRANCE
T +33 (0)1 4812 1440, F +33 (0)1 4855 9001
E sales@msrelais.com

Mors Smitt Asia Ltd.
807, Billion Trade Centre, 31 Hung To Road
Kwun Tong, Kowloon, HONG KONG SAR
T +852 2343 5555, F +852 2343 6555
E info@morssmitt.hk

Mors Smitt B.V.
Vrieslantlaan 6, 3526 AA Utrecht,
NETHERLANDS
T +31 (0)30 288 1311, F +31 (0)30 289 8816
E sales@nieaf-smitt.nl

Mors Smitt Technologies Inc.
420 Sackett Point Road
North Haven, CT 06473, USA
T +1 (203) 287 8858, F +1 (888) 287 8852
E mstechnologies@msrelais.com

Mors Smitt UK Ltd.
Doulton Road, Cradley Heath
West Midlands, B64 5QB, UK
T +44 (0)1384 567 755, F +44 (0)1384 567 710
E info@morssmitt.co.uk

www.morssmitt.com