NSE relay - Over- and undervoltage monitoring

Datasheet

NSE relay is obsolete from October 1, 2018

(Picture shows NSR relay)

Description

Overvoltage and undervoltage monitoring railway relay with two change-over contacts. Suitable for AC 50 Hz voltages. Auxiliary power supply necessary, either DC or AC (0...60 Hz). When the relay is activated there is a delay on pull-in. The delay time is adjustable with a lockable knob. The overvoltage and undervoltage are also adjustable with a lockable knob.

The NSE-relay has a fail-safe circuit: also an auxiliary supply failure is detected.

The construction of the relay and choice of materials makes the NSE-relay suitable to withstand corrosive atmospheres, low and high temperatures, shock & vibrating and dry to very humid environments.

No external socket necessary, the relay can be mounted directly on a 35 mm rail without extra fasteners, or on any surface via 2 screws.

Application

These relay series are designed for rolling stock applications. The NSE-relay is used in applications for overvoltage and undervoltage monitoring.

Features

- Overvoltage and undervoltage monitoring relay with delay on pull-in
- AC input (50 Hz)
- 2 C/O contacts
- Overvoltage and undervoltage adjustable via lockable knobs
- Overvoltage adjustment: 100...130%
- Undervoltage adjustment: 70...100%
- Delay time adjustable via lockable knob
- Time delay range: 1...10 s
- Auxiliary power supply necessary
- Auxiliary power supply failure also detected
- Screw terminals IP 20
- Mounting on 35 mm rail
- Mounting on any surface via 2 screws

Benefits

- Proven reliable
- Long term availability
- Easy to maintain
- Low life cycle cost
- No maintenance

Railway compliancy

- EN 50155 - Electronic equipment used on rolling stock for railway applications
- IEC 60571 - Electronic equipment used on railway vehicles
- IEC 60077 - Electrical equipment for rolling stock in railway applications
- IEC 60947 - Low voltage switch gear and control gear
- IEC 61373 - Rolling stock equipment - Shock and vibration test
- IEC 60947-5-4 - Electromechanical components for control applications
- EN 50121 - Electromagnetic compatibility for railway applications

NSE relay
Technical specifications

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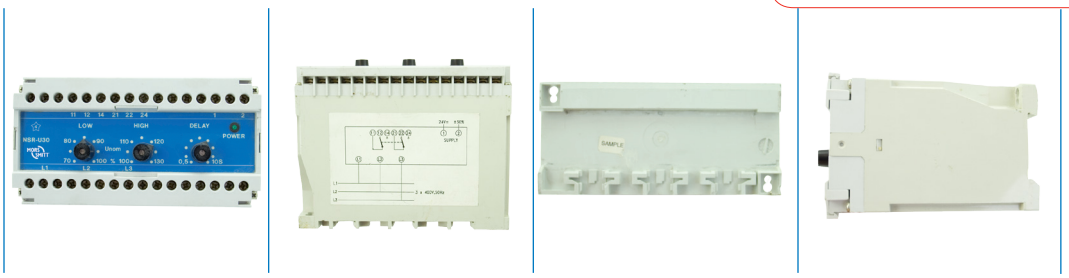
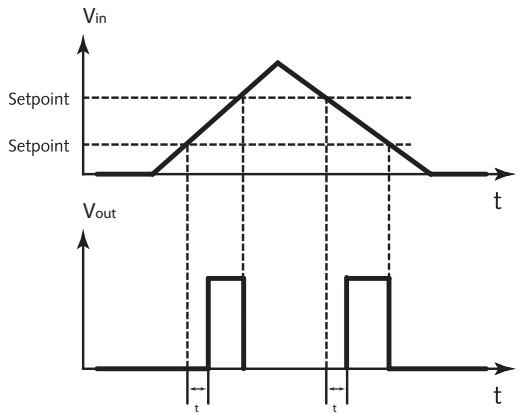


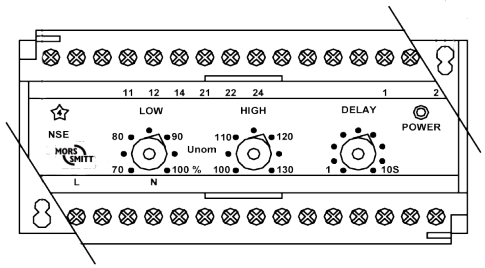
(Pictures show NSR relay)

Functional and connection diagrams

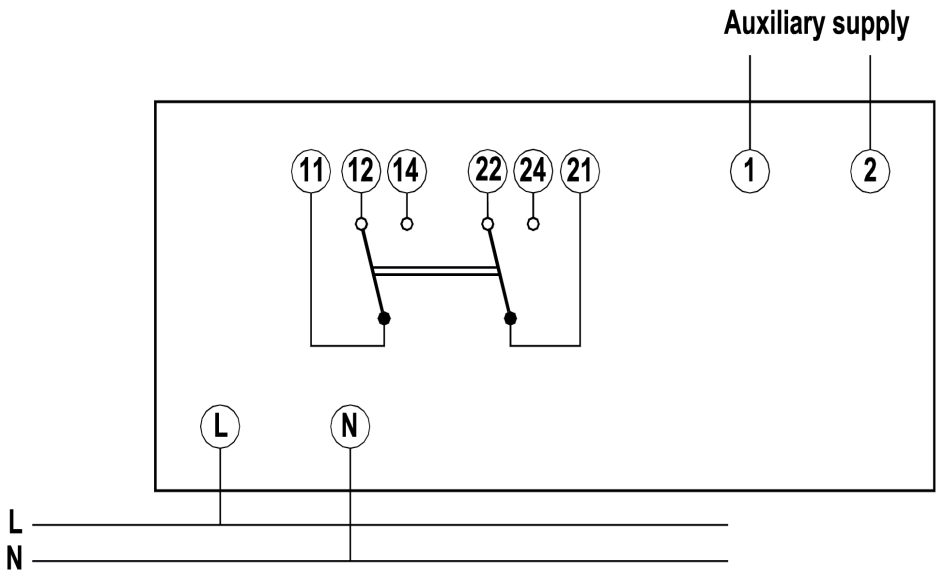
Timing diagram



Relay pin correspondence



Connection diagram



NSE relay
Technical specifications

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Input characteristics

Type	U_{nom} (VAC)	U_{max} (VAC)	Frequency (Hz)
NSE-110	110	170	50
NSE-220	220	330	50
NSE-240	240	360	50

Adjustment	Overvoltage	100...130 %
	Undervoltage	70...100 %
	Delay-on time	1...10 s

Max. power interruption	10 ms
Nom. power consumption	< 3 VA

Accuracy - adjustment	< 5 %
Accuracy - repeatability	< 1 %
Hysteresis	< 1 %

Auxiliary supply characteristics

Type	U_{min} (V)	U_{max} (V)	f_{nom} (Hz)
L	16.5	90	0...60
H	65	270	0...60

NSE relay
Technical specifications

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Contact characteristics

Amount and type of contacts	2 C/O
Maximum make current	14 A
Maximum continuous current	8 A (AC1 ; IEC 60947)
Maximum switching voltage	300 VDC 250 VAC
Minimum switching voltage	12 V
Minimum switching current	100 mA
Material	AgCdO

Electrical characteristics

Dielectric strength	EN 50155	
Pole - pole	IEC 60255-5	2.5 kV, 50 Hz, 1 min
Cont-coil	IEC 60077	1 kV, 50 Hz, 1 min
Input - output	3.5 kV, 50 Hz, 1 min	
Input - supply	4 kV, 50 Hz, 1 min	
Insulation between open contacts	1 kV; 50 Hz; 1 min	
Pulse withstanding	IEC 60255-5	5 kV (1.2 / 50 µs)

Mechanical characteristics

Mechanical life	20 x 10^6 operations
Maximum switching frequency	Mechanical 3600 ops/h Electrical 1200 ops/h
Maximum torque value screw to lock knob	0.15 Nm
Weight	40 g

Environmental characteristics

Environmental	EN 50125-1 and IEC 60077-1
Vibration	IEC 61373, Category I, Class B, Body mounted
Shock	IEC 61373, Category I, Class B, Body mounted
Operating temperature	-25 °C...+70 °C
Humidity	95 %
Damp heat	IEC 60068-2-30, Test method Db variant 1
Protection	IEC 60529, IP20
Insulation materials	Cover: polycarbonate

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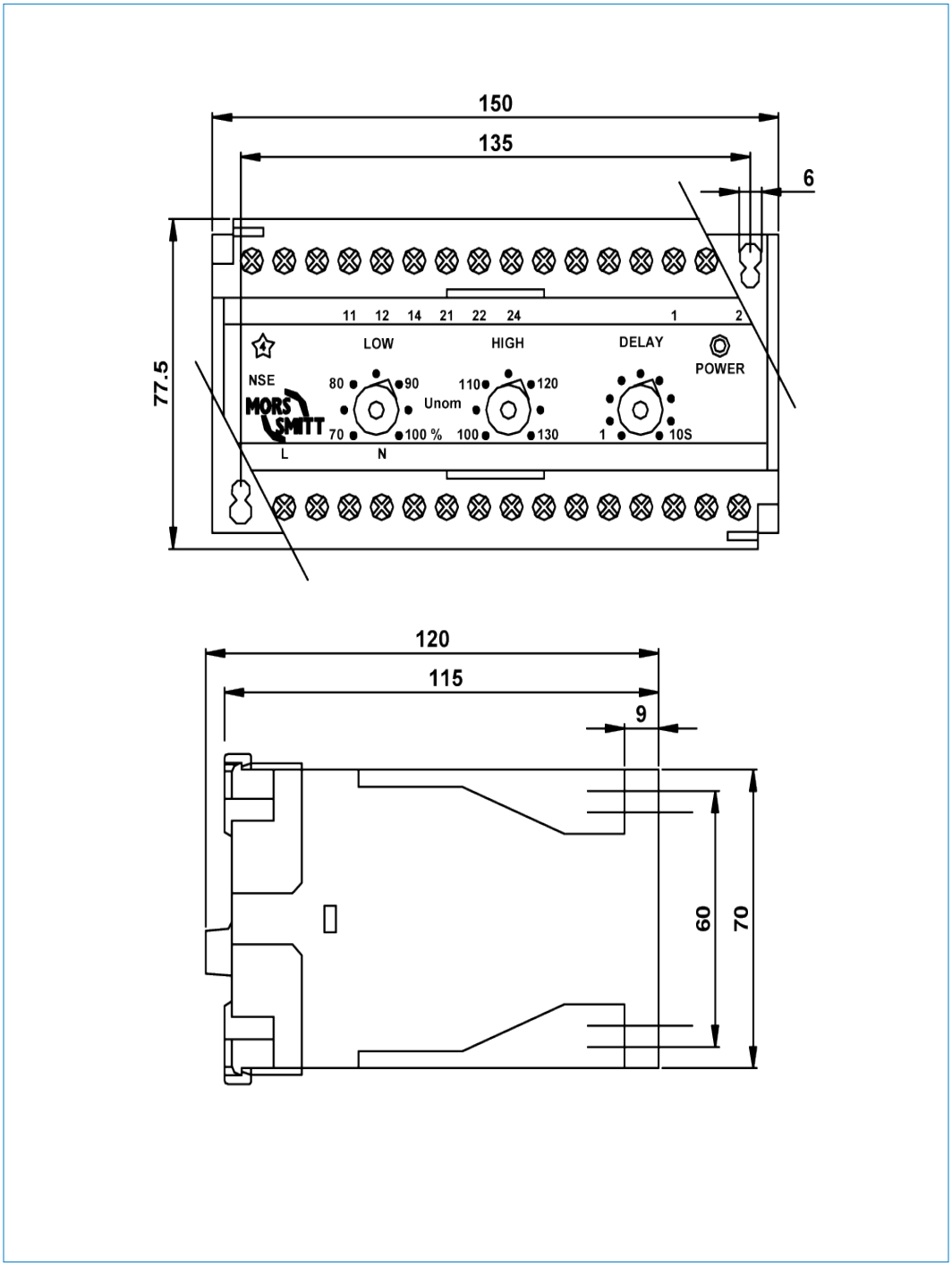
Dimensions (mm)



NSE relay
Instructions

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Installation, operation & inspection

Installation

Before installation or working on the relay: disconnect the power supply first! Install relay and connect wiring according to the terminal identification. Relays can be mounted tightly together to save space.

When rail mounting is used, always mount the relay with the text on the label readable (not upside down) to have proper fixation of the relay on the rail.

Warning!
- Never use silicon in the proximity of the relays.
- Do not use the relay in the presense of flammable gas as the arc generated from switching could cause ignition.

Operation

After installation always apply the rated current to the coil to check correct operation.

Before actual use of relays, it is advised to switch the load several times with the contacts. The contacts will both be electrically and mechanically cleaned due to the positive wiping action. Sometimes a contact can build up increased contact resistance (≤ 15 mΩ when new). When using silver contacts one can clean the contact by switching a contact load a few times using >24 VDC & ~2 A. Increased contact resistance is not always problematic, as it depends on circuit conditions.In general a contact resistance of 1 Ω is no problem, consult Mors Smitt for more information.

Condensation in the relay is possible when the coil is energised (warm) and the outside, environmental temperature is cold. This is a normal phenomenon and will not affect the function of the relay. Materials in the relay have no hygroscopic properties.

Inspection

If the relay does not seem to operate correctly, check for presence of the appropriate coil current using a suitable multimeter. The LED shows presence of the auxiliary power supply.

If the relay doesn't work after inspection, replace the relay unit with a similar model. Do not attempt to open the relay cover or try to repair. Contacts are calibrated and in balance, touching can affect proper operation. Also resoldering may affect correct operation.

Most relay defects are caused by installation faults such as overvoltage, spikes/transients, high/short current far exceeding the relay specifications. When returning the relays for investigation, please provide all information on the RMA form. Send defective relays back to the manufacturer for repair or replacement. Normal wear and tear or external causes are excluded from warranty.

NSE relay
Ordering scheme

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Configuration:

NSE	-	110	-	L

1. Relay model 2. Nominal voltage 3. Auxiliary supply

This example represents a **NSE-110-L**
Description: NSE series relay, U_{nom}: 110 VAC, auxiliary supply type L

1. Relay model

NSE

2. Nominal voltages

110	110 VAC, 50 Hz
220	220 VAC, 50 Hz
240	240 VAC, 50 Hz

3. Auxiliary supply

L	16.5...90 VDC/VAC, 0...60 Hz
H	65...270 VDC/VAC, 0...60 Hz

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SERVING SAFETY

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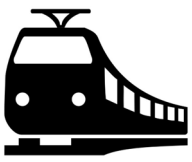

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