

# EN - Quick start guide

**NOTE**

**Read the operating instructions**

You can find detailed instructions and comprehensive information in the full user manual for the product. This document is available on the [www.niceforyou.com](http://www.niceforyou.com).

**Read and keep instructions**

Read this document before you use the product for the first time, and keep it in a safe place for future reference.

**Maintenance and repairs**

No maintenance or servicing are required for this product. In the event of malfunctions and faults, please contact the vendor or the manufacturer.

**WARNING**

**Improper use**

The device is subject to the manufacturer's guarantee conditions valid at the time of purchase. The manufacturer shall not accept any responsibility for incorrect manual or automatic parameter settings performed on a device or the inappropriate use of a device.

**Improper repairs**

Repairs may only be performed by the manufacturer. Failure to comply results in endangering the safety of the device and renders the warranty null and void.

**Permitted power sources**

The power supply must meet the requirements for safety extra-low voltage (SELV).

**Essential safety equipment**

The device may not be used as a safety component as defined by the Machinery Directive 2006/42/EG, the Construction Products Regulation 305/2011/EU or other safety regulations. Systems posing a threat of danger require additional safety equipment.

## 1 Product overview

Product components
LP22/LP21 Traffic Detector
Plug-in terminal blocks (1 x supply, 1 x loop, 2 x relays)
Quick guide

Tab. 1: Scope of delivery

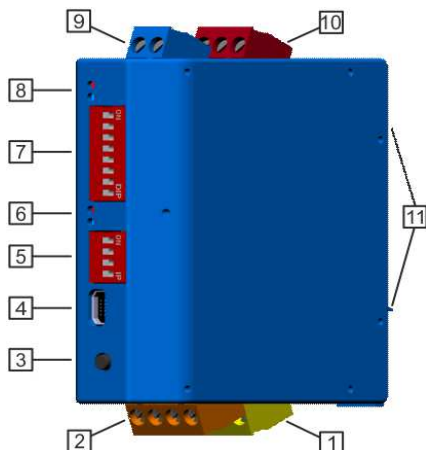


Fig. 1: LP21/LP22 product image

Index	Component
1	Terminal block output 1: • Relay 1 (yellow)
2	Terminal block loop channel input (orange)
3	Reset button
4	USB interface
5	DIP switch 2 (LP22)
6	LED's loop channel 1 (red + blue) LP21 LED's loop channel 2 (red + blue) LP22
7	DIP switch 1
8	LED's loop channel 1 (red + blue) LP22
9	Terminal block AC/DC (blue)
10	Terminal block output 2: • Relay 2 (red)
11	Mounting device for DIN rail

Tab. 2: LP21/LP22 component list

Technical data	
Dimensions	22.5 x 79.0 x 81.0 mm (W x H x L without terminals)
Power supply (1x blue)	10 – 30 VDC / 10 – 26 VAC, max. 2 W (SELV)
Protection type	IP20
permissible operating temperature	-37 – +70°C
relative humidity	< 95 % (non-condensing)
Loop inputs (1x orange, 2-pole, 4-pole for double channel variants)	
• max. inductivity range	20 - 700 µH (see note 1)
• recommended inductivity range	100 – 300 µH
• operating frequency	30 - 130 kHz
• max. cable length	200 m
• max. internal resistance	20 Ω (including cable)
2 relays (1x yellow + 1x red)	max. 48 V (AC/DC), 2 A, 60 W, 125 VA (SELV) min. 1 mA / 5 V
Configuration switch 1 (all variants)	8-pole DIP switch
Configuration switch 2 (2 channel variants)	4-pole DIP switch
LED (1x blue + 1x red per loop channel)	
Reset	Push button
PC interface	USB port, type mini AB

Tab. 3: Technical data

**NOTE**

- Restrictions with loop inductivity**  
For loop inductances outside the recommended range, only one frequency level may be available. For very small loop inductances, the maximum loop resistances are lower.

## 2 Product description

LP21/LP22 series Traffic Detectors are electronic sensors for inductive recording of metallic objects. Vehicles, and depending on the device also their model and the direction of movement, can be detected via up to two induction loops.

Traffic detectors are operated in combination with a wide variety of induction loops and control systems, such as frequency converters and PLC control systems.

Areas of application may be facilities in the traffic engineering, door and barrier control, or parking and tunnel surveillance sectors.

The LP21/LP22 Traffic Detector is intended for installation in a control cabinet or a housing similar to a control cabinet.

LP21/LP22 series Traffic Detectors have the following product characteristics:

- 1 loop channel (LP21) or 2 loop channels (LP22)
- 2 potential-free relay outputs
- 1 connection for power supply (24 volt AC/DC)
- 1 USB interface for diagnostics and expanded configuration
- 8-pole DIP switch, and 4-pole DIP switch (LP22) for configuration
- LEDs to indicate detector and loop status
- compact plastic housing for mounting on DIN rail in controller cabinet
- galvanic isolation between loops and electronics
- automatic adjustment of the system after activation
- continuous readjustment of frequency drifts to suppress environmental influences
- sensitivity independent of loop inductivity
- fixed signal hold times independent of the coverage rate of the loops
- direction detection with two loop channels (LP22)
- multiplexing prevents mutual interference between loop channels (LP22)

Configuration options offered by LP21/LP22 series Vehicle Detectors include:

- Switching between two frequency levels
- Output as presence, pulse or direction signal (2 channel variant)
- Choice of directional logic (2 channel version)
- Response threshold adjustable on each channel service program, in 4 steps on each DIP switch
- Hold time adjustable 5 minutes or infinitely with the DIP switch

## 3 Description of connections

### 3.1 Power supply

The detector can be operated with direct or alternating current, in accordance with the requirement for safety extra-low voltage (SELV).

**WARNING**

**Note the permissible power supply**

Observe the technical data and safety instructions!

The connections on the blue terminal block allow for any desired polarity of the power supply.

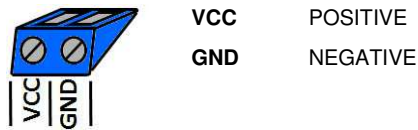


Fig. 2: Example of power supply (blue)

### 3.2 Loop inputs

Up to two analogue inputs for the induction loops on the terminal block are located on the underside of the traffic detector. The terminal block is either 2-pole (LP21) or 4-pole (LP22), depending on the number of channels.

The induction loops are connected to the orange terminal blocks as shown in the illustration.

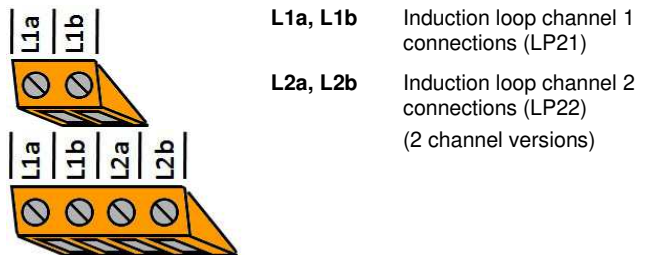


Fig. 3: Loop connections 1 channel or 2 channel versions (orange)

### 3.3 Signal outputs

#### 3.3.1 Relay outputs with changeover contact

The outputs on the relay versions are constructed as changeover contacts. This allows the contacts to be connected as normally closed (NC) or as normally open (NO) contacts. The relays are potential-free and suitable for many different types of switch.

The output signal of the relay can also be inverted (default). In this case, when the power supply is turned on normally open contacts function as normally closed contacts, and vice versa. This happens by switching between open circuit and closed circuit principle.

Loop faults can also be interpreted as *loop covered* or as *loop free*.

Status	Normally closed contact (NC)		Normally open contact (NO)	
	Open circuit current	Closed circuit current	Open circuit current	Closed circuit current
Voltage off				
Detector ready, loop free				
Loop covered				
Loop fault	(default: loop covered)			

Tab. 4: Relay switch status

The analogue outputs of the relay versions (-R24) are connected to the red and yellow terminal blocks as shown in the following illustration.

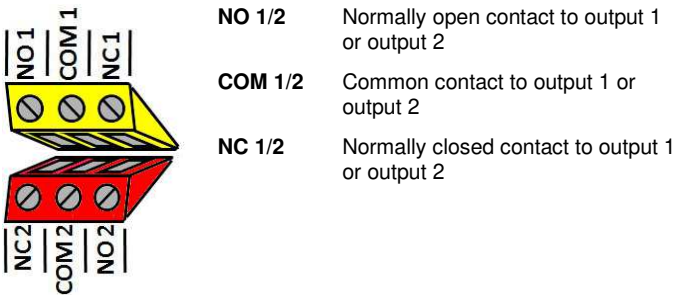


Fig. 4: Relay connection 1 (yellow) and 2 (red)

## 4 Description of functions

### 4.1 LED status indicators

The LEDs (light emitting diodes) on the front side display the state of the loops and the detector.

There is a blue and red LED for each loop channel:

- the red LED provides information on the loop state
- the blue LED provides information on the detector state
- Position of the LEDs on the LP22: loop 1 upper left, loop 2 centre

Red LED	Blue LED	Description of status
		no power supply, detector inactive
		detector ready, loop connected, no object detected
		detector ready, loop connected, object detected
		no loop connected, loop break, loop short-circuit
	 1 Hz	ready for operation following earlier, now rectified, loop error
	 5 Hz	frequency readjustment is running
		after the frequency readjustment, both LEDs indicate the set loop frequency simultaneously in a flashing code (see LED flashing code illustrated example)

Tab. 5: LED signal colours

### Key to LED symbols



### LED flashing code

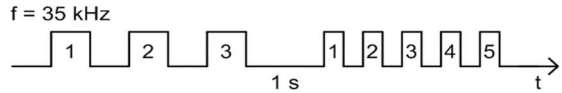


Fig. 5: LED indicates loop frequency

## 4.2 Reset button

The device is reset using the reset button on the front as follows:

Function	Description	Press button	LED
reset / readjustment	runs a frequency readjustment and clears the LED fault messages	1 second	red LED flashes
factory settings	resets the device to factory settings (DIP switch default settings)	5 seconds	blue LED flashes

Tab. 6: Reset functions

## 4.3 DIP switch settings

Parameter	Description
Sensitivity	Switch-on threshold for signal output on covered loop
Frequency level	Frequency of the loop oscillating circuit in two levels
Hold time	Maximum duration of the output signal up to the automatic readjustment of the loop channel
Output 2 signal mode	Switching between continuous signal and pulse signal at output 2
Output 2 switching time	Time of signal output with activated pulse signal at output 2
Output signal inversion	Switching between open circuit and closed circuit principle for signal outputs
Direction detection	Switching between presence detection and direction of travel detection for both outputs (2-channel variants)
Direction logic	Evaluation logic of the direction of travel according to application on covered loop (see complete operating manual!)

Tab. 7: Settings description

The 1-channel variants have an 8-pole DIP switch for configuring the detector.

DIP1	Designation	Function
1	Sense a	loop 1 sensitivity
2	Sense b	loop 1 sensitivity
3	Frequency	frequency level
4	Hold Time	hold time until readjustment
5	Output 2	output 2 signal mode
6	Edge 2	output 2 switching time
7	Inv. out 1	output 1 signal inversion
8	Inv. out 2	output 2 signal inversion

Tab. 8: DIP switch assignment (standard, 1-channel variants)

The 2-channel variants have an 8-pole and 4-pole DIP switch for configuring the detector.

DIP1	Designation	Function
1	Sense 1a	loop 1 sensitivity
2	Sense 1b	loop 1 sensitivity
3	Sense 2a	loop 2 sensitivity
4	Sense 2b	loop 2 sensitivity
5	Frequency	frequency level
6	Hold Time	hold time until readjustment
7	Output 2	output 2 signal mode
8	Edge 2	output 2 switching time

Tab. 9: DIP switch 1 assignment (standard, 2-channel variants)

DIP2	Designation	Function
1	Dir. mode	direction detection
2	Dir. logic	direction logic
3	Inv. out 1	output 1 signal inversion
4	Inv. out 2	output 2 signal inversion

Tab. 10: DIP switch 2 assignment (standard, 2-channel variants)

The following parameters can be set with the DIP switch:

Parameter	DIP switch	Pos.	Value
Sensitivity	Sense a	ON	0.01% (high)
	Sense b	ON	
	Sense a	OFF	0.04%
	Sense b	ON	
Frequency level	Sense a	ON	0.16%
	Sense b	OFF	
Frequency level	Sense a	OFF	0.64% (low)
	Sense b	OFF	
Frequency level	Frequency	OFF	low
		ON	high
Hold time	Hold time	OFF	5 min
		ON	Infinite
Output 2 signal mode	Output 2	OFF	Continuous signal
		ON	Pulse signal
Output 2 switching time	Edge 2	OFF	on entering
		ON	on leaving

Parameter	DIP switch	Pos.	Value
Output signal inversion	Inv. Out 1/2	OFF ON	inverted not inverted
Direction detection	Dir. Mode	OFF ON	Presence Direction
Direction logic	Dir. Logic	OFF ON	Continuous signal 2 Wrong-way driver 1

Tab. 11: Settings via DIP switch (default)

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