50 years
1958-2008

NEED
programmable relays

www.relpol.com.pl

relpol® S.A.

NEED programmable relay

Exceptional simplicity of programming

Service and technical counseling provided by **Relpol S.A.**

why is NEED outstanding:

- possibility to measure voltages 0...255 V AC, 0...25,5 V DC or 0...255 V DC and currents 0...51 mA,
- LED signalling the status of relay and inputs / outputs,
- internal potentiometer and possibility of connecting external potentiometer in DC versions,
- fast bidirectional counter / frequency meter - measurement up to 20 kHz,
- possibility of configuration of DC analog-digital inputs as voltage or current ones,
- possibility of configuration of counters and timers from DC analog-digital inputs,
- possibility of monitoring of three-phase voltage for AC version (asymmetry and phase sequence),
- real time clocks with automatic time change (summer / winter),
- LAD and STL programming possible,
- competitive price.

ORDERING CODES

Programmable relays	Supply voltage	Description				
		Version	Inputs	Outputs	Index	Dimensions
NEED-230AC-11-08-4R	230 V AC	11	8 inputs	4 relay outputs	857737	90 x 72 x 55 mm
NEED-24DC-11-08-4R	24 V DC	11	8 inputs	4 relay outputs	857736	90 x 72 x 55 mm
NEED-12DC-11-08-4R	12 V DC	11	8 inputs	4 relay outputs	857735	90 x 72 x 55 mm
NEED-220DC-11-08-4R	220 V DC	11	8 inputs	4 relay outputs	858158	90 x 72 x 55 mm
NEED-230AC-11-16-8R	230 V AC	11	16 inputs	8 relay outputs	857365	90 x 132 x 55 mm
NEED-24DC-11-16-8R	24 V DC	11	16 inputs	8 relay outputs	857366	90 x 132 x 55 mm
NEED-12DC-11-16-8R	12 V DC	11	16 inputs	8 relay outputs	857367	90 x 132 x 55 mm
NEED-220DC-11-16-8R	220 V DC	11	16 inputs	8 relay outputs	858159	90 x 132 x 55 mm

The data in bold type pertain to the standard versions of the relays.

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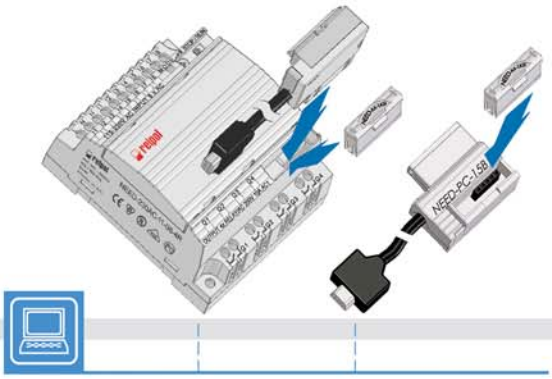
NEED system structure

- **NEED**: programmable relay (see page 2 - table „Ordering codes"),
- **NEED-PC-15B**: cable for programming and diagnostics (with RS232 or USB serial port for connection to PC computer) - index 857734,
- **NEED-M-1KB**: external memory card (1 kB) - index 856450 ❶,
- **PC NEED**: software for editing, compiling, programming of the relay and the external memory card; programming in graphic language LAD and text language STL,
- user's manual (www.need.com.pl).

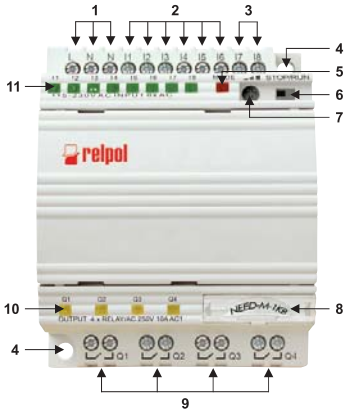


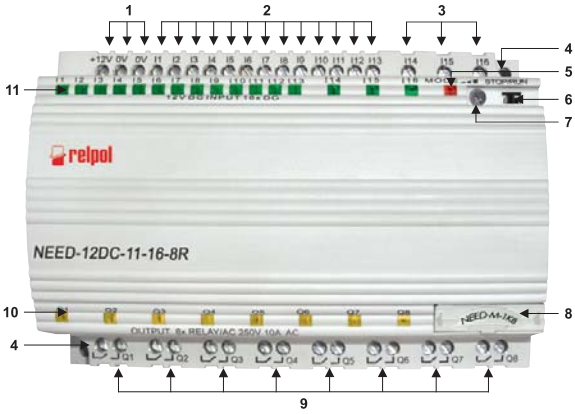
Resources available in the relay

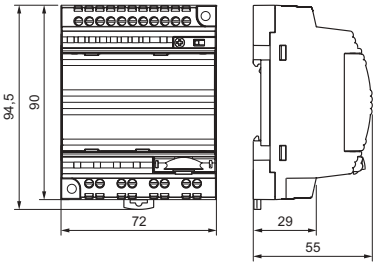
Physical resources	NEED-...-08-4R	NEED-...-16-8R
Inputs	6 digital inputs (I1 - I6), 2 analog-digital inputs (I7 - I8)	13 digital inputs (I1 - I13) ❷, 3 analog-digital inputs (I14 - I16)
Outputs	4 relay outputs (Q1 - Q4)	8 relay outputs (Q1 - Q8)
LED indicator of the relay status	Yes	Yes
Three-phase network control system (voltage, asymmetry and phase sequence) ❸	No	Yes
STOP/RUN mode switch	Yes	Yes
Potentiometer for analog settings	Yes	Yes
LED indicators of input / output status	Yes	Yes
Program resources	**NEED-...-08-4R**	**NEED-...-16-8R**
Markers	16 (M1 - M16)	16 (M1 - M16)
Marker of phase sequence ❸	No	Yes
Timers ❹	8 (T1 - T8)	16 (T1 - T16)
Counters - count up and down	8 (C1 - C8) values 0-65535	8 (C1 - C8) values 0-65535
Fast bidirectional counter / meter of frequency up to 20 kHz	No	Yes
Comparators of analog values	8 (A1 - A8)	12 (A1 - A12)
Real time clocks	4 (H1 - H4)	4 (H1 - H4) ❺

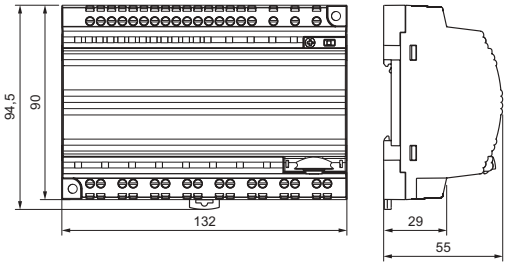
Front panel description

1. Supply terminals
2. Digital input terminals
3. Analog-digital input terminals
4. Openings of 5,5 mm diameter for panel mounting with two M4 screws
5. LED indicator (three-coloured) of the relay status
6. STOP/RUN switch of operation mode
7. Potentiometer for analog values setting
8. Programming connection of relay and external memory card, secured by stopper
9. Output terminals
10. LED indicators (yellow) of output status
11. LED indicators (green) of input status









❶ The external memory card is not required and is an optional extension of the relay program memory.
❷ Input I11 may function as a fast counter or meter of frequency for the versions 12, 24 V DC (up to 20 kHz), for the version 230 V AC it may serve as a network frequency meter or extra timer.
❸ Only for AC version.
❹ Time range
10 ms...99 h 59 min., resolution 10 ms, precision ±1% of the set value +0...1 ms.
❺ With automatic time change (summer / winter) for various time zones - EU, GB, US, RU.

Technical data

Programmable relays	NEED-230AC-...	NEED-24DC-...	NEED-12DC-...	NEED-220DC-...
Supply voltage				
Rated supply voltage	230 V AC 50/60 Hz	24 V DC	12 V DC	220 V DC
Operating range of supply voltage	95...260 V AC	19,2...28,8 V DC	10,2...14,4 V DC	154...264 V DC
Power consumption (at rated voltage)	NEED-...-08-4R: < 5 VA NEED-...-16-8R: < 10 VA	NEED-...-08-4R: < 3 W NEED-...-16-8R: < 5 W	NEED-...-08-4R: < 3 W NEED-...-16-8R: < 5 W	NEED-...-08-4R: < 3 W NEED-...-16-8R: < 6 W
Inputs				
Number of digital inputs	NEED-...-08-4R: 6 (I1 - I6); NEED-...-16-8R: 13 (I1 - I13)			
Number of analog-digital inputs	NEED-...-08-4R: 2 (I7 - I8); NEED-...-16-8R: 3 (I14 - I16)			
Types of analog-digital inputs	AC voltage ones	DC voltage ones ❶	DC voltage ones ❶	DC voltage ones
Rated voltage • for logic state "1"	85...260 V AC 50 Hz	15...40 V DC	8...26 V DC	80...260 V DC
• for logic state "0"	0...32 V AC 50 Hz	-3...5 V DC	-1,5...4 V DC	0...40 V DC
Range of analog input signals	0...255 V AC 50 Hz	0...25,5 V DC 0...51 mA ❶	0...25,5 V DC 0...51 mA ❶	0...255 V DC
Outputs				
Number and type of outputs	unprotected relay outputs: NEED-...-08-4R: 4 NO (Q1 - Q4); NEED-...-16-8R: 8 NO (Q1 - Q8)			
Rated load current	AC1: 10 A / 250 V AC			
General data				
Dimensions (L x W x H) / weight	NEED-...-08-4R: 90 x 72 x 55 mm / 210 g; NEED-...-16-8R: 90 x 132 x 55 mm / 370 g			
Cover protection category	IP 20 PN-EN 60529			
Ambient temperature	storage: -40...+70 °C; operating: -20...+55 °C			
Standards, recognitions, certificates	NEED-...-08-4R: CE B UL VDE PCT ; NEED-...-16-8R: CE			

Time relays	TR4N 4 C/O	TR4N 1 C/O	TR4N 2 C/O
Input control circuit			
Rated voltage	115-230 V AC 50/60 Hz; 12-24 V AC/DC AC: 50/60 Hz		
Rated power consumption	1,0 VA / 1,0 W 12-24 V AC/DC 2,2 VA 115- 230 V AC	0,5 VA / 0,5 W 12 V AC/DC; 0,7 VA / 0,7 W 24 V AC/DC 1,3 VA 115 V AC; 1,7 VA 230 V AC	
Output circuits - contact data			
Number and type of contacts	4 C/O - changeover	1 C/O - changeover	2 C/O - changeover
Rated / max. switching voltage	250 V AC / 250 V AC	250 V AC / 440 V AC	
Rated load	AC1: 6 A / 250 V AC DC1: 6 A / 24 V DC	AC1: 16 A / 250 V AC DC1: 16 A / 24 V DC	AC1: 8 A / 250 V AC DC1: 8 A / 24 V DC
Time module data			
Functions	E, Wu, Bp, Bi, PWM, R, Ws, Wa, Esa, B, permanent switching ON and OFF		
Time intervals	1 s; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d		
Timing adjustment (setting accuracy)	smooth - (0,1...1) x time interval (± 5% - calculate from final range value)		
General data			
Dimensions (L x W x H) / weight	90 x 36 x 55 mm / 115 g	90 x 17,6 x 55 mm / 67 g	
Cover protection category	IP 20		
Ambient temperature	storage: -40...+70 °C; operating: -20...+55 °C		
Standards, recognitions, certificates	CE PCT		

DIN rail power supply	RPS-30-12	RPS-30-24	RPS-120-12	RPS-120-24
Input circuit				
Voltage range	85...264 V AC; 120...370 V DC		88...132 / 176...264 V AC ❷; 120...370 V DC	
Rated current / voltage	1,1 A / 115 V AC; 0,6 A / 230 V AC		2,8 A / 115 V AC; 1,7 A / 230 V AC	
Max. inrush current	cold start: 30 A / 115 V AC; 40 A / 230 V AC		cold start: 30 A / 115 V AC; 60 A / 230 V AC	
Output circuit				
Rated current / voltage	2 A / 12 V DC	1,5 A / 24 V DC	10 A / 12 V DC	5 A / 24 V DC
Rated power	24 W	36 W	120 W	120 W
Max. ripple & noise	120 mVp-p	150 mVp-p	80 mVp-p	80 mVp-p
Voltage adjustment range	10,8...13,2 V	21,6...26,4 V	12...14 V	24...28 V
General data				
Overload protection	105...155% of rated output power		105...150% of rated load	
Overvoltage protection	13,8...16,2 V	27,6...32,4 V	15...16,5 V	29...33 V
Overtemperature protection			+85 °C ± 5 °C (TSW1)	+90 °C ± 5 °C (TSW1)
Dimensions (L x W x H) / weight	78 x 93 x 56 mm / 270 g		65,5 x 125,2 x 109 mm / 800 g	
Ambient temperature	storage: -40...+85 °C; operating: -20...+50 °C		storage: -20...+85 °C; operating: -10...+60 °C	
Standards, recognitions, certificates	CE cULus			

❶ The relays **NEED-...-16-8R** (DC versions) offer the possibility to programmably configure the type of outputs as voltage/current ones. ❷ Change of range by switch.

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PC NEED

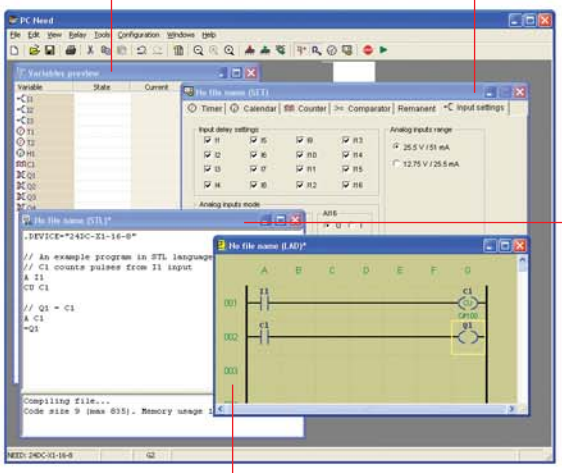
Computer program which allows editing, compiling and downloading of a program to the memory of a programmable relay. Additionally, the resources of the relay may be monitored during operation owing to which the user may be currently informed about the status of the inputs, outputs, timers, counters, etc.

The simplicity and variety of the program edition (text or graphics) make the PC NEED a very convenient tool owing to which even complex applications are made very quickly, and their start-up time is short.

Hardware requirements:
any computer of PC class with RS232 or USB interface and VGA graphic card, operating system - Windows 98®, Windows 2000®, Windows XP®.

Preview of variables:
- possibility to monitor the relay's resources.

Resources settings:
- possibility to set the parameters of timers, counters, clocks, compactors, etc.,
- simple operation and understandable menu.



STL:
- conversion from LAD to text language,
- programming in text editor and possibility to copy the application later on.

LAD:
- simplicity of programming which allows quick application designing,
- possibility to create labels of individual elements,
- 150 lines in the program structure,
- color which simplify managing the program,
- easy creation of applications based upon an electrical chart.

NEED - never before

The **NEED programmable relay** is a product based on the Polish technological knowledge which is perfectly implemented in applications of industrial automatics.

The relay is an interesting alternative for similar solutionas offered by other manufacturers as it **has numerous exceptional advantages**.

1) Preview of variables as a tool for monitoring all the resources in the relay.

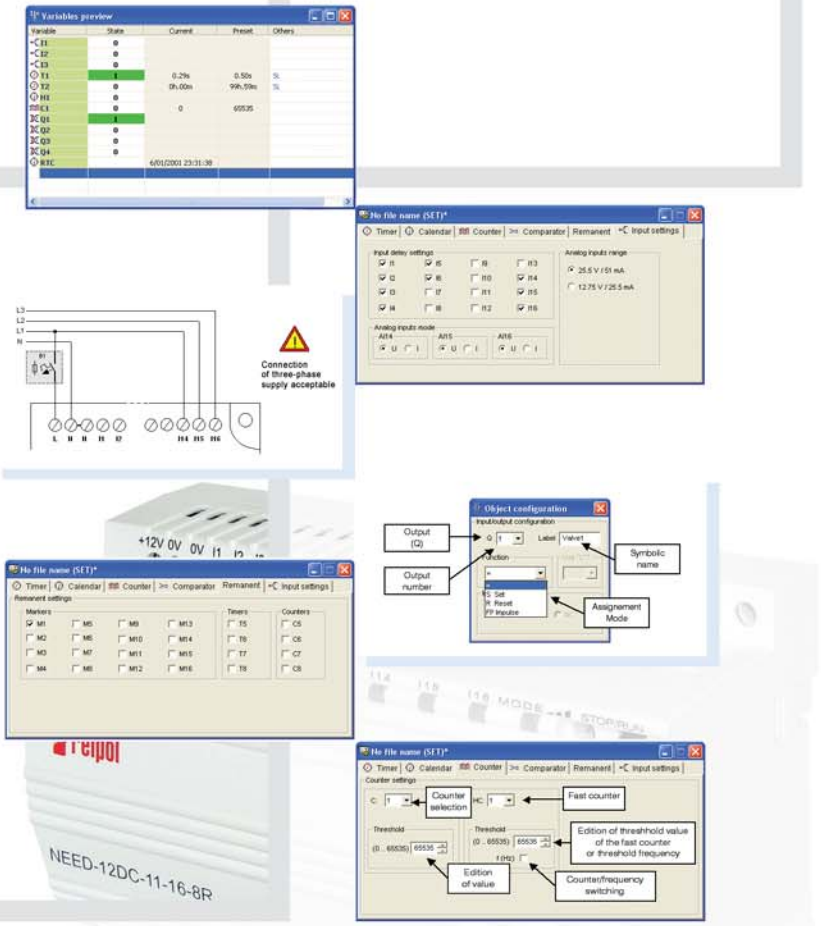
2) A wide range of analog-digital inputs and possibility of configuration of DC inputs as voltage or current ones.

3) Possibility to monitor three-phase voltage for the AC version (device control of phase asymmetry and phase sequence).

4) **Possibility to read the program structure existing in the relay, including the symbolic names which have been assigned to individual elements.**

5) Remanence mode - possibility of setting some resources of the relay, which might be maintained when the supply voltage is off.

6) Fast bidirectional counter / frequency meter - measurement up to 20 kHz.



Control your application

Management of a parking lot with limited number of places

The parking lot may operate in timing mode (from … to …) or in permanent mode.

The sensors at the entrance and exit help to define the number of cars in the parking lot and to compare the number with the preset number of places.

When the maximum number of vehicles are parked, the information "NO PLACES AVAILABLE" is lit at the entrance. Additionally, the entrance gate remains closed as long as a vehicle leaves the parking lot.

Controller of two pumps - direct start-up

Alternate operation of pumps - automatic or manual.

Sequence control of the pumps - two levels of switching on, one level of switching off.

Automatic start-up of the second pump in case of a failure of the first one.

Protection against dry operation.

Outlets to the external alarm signaling (failure of the pump).

Control of a machine for wire mesh production

Control of the squashing unit which bends the end parts of the wires of the mesh so to avoid injuries.

The design of the unit is based on two pneumatic servo-motors connected to the compressed air supply source.

The control system protects also against failures in course of production.

Segregation of details in production process

Segregation of details on stroke feed according to their height.

Two height sensors of the appropriate range.

Control of moving stairways

Control of the direction of movement (up and down).

Detection of passengers on the stairway on the basis of the signals from movement detectors.

Control of lighting and drives of ventilators

Voltage central switching on and off - manual or automatic switching according to timing schedule.

Possibility of flexible shaping of the function of lighting for each room.

Automatic reserve switching (ARS)

Automatic reserve switching (ARS) switches the basic supply to the reserve one in case the voltage in the basic supply line decays or drops excessively while the devices of the reserve supply remain entirely efficient. The purpose of ARS is to provide reliability in electric power supply.

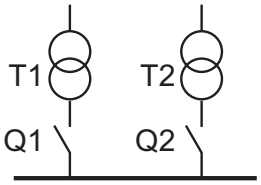
With the use of the NEED controller, modules of ARS may be designed for one's supply sources (supply-supply or supply-aggregate) with the option of the operation with or without automatic reset. Automatics built on the basis of the freely-programmable NEED relay manufactured by RELPOL S.A.

General technical data		ASZR-2Z	ASZR-1Z1G
Rated supply voltage		400 V 50 Hz	
Supply voltage for automatics		230 V UPS or guaranteed	
AC1 current		according to selected switches	
Supply monitoring		voltage control in three phases, monitoring of phase sequence and phase loss, monitoring of phase asymmetry	
Delay time	• prior to disconnecting the basic supply	programmable 0,1...60 s ❶	
	• prior to connection of switches	programmable 0,1...60 s ❶	
	• following the return of the basic voltage	programmable 0,1...600 s ❶	
Collaboration with power contactors		YES	
Collaboration with the remote drives of switches		YES	
Operation modes		manual, automatic, disconnection of the automatics system, operation with or without automatic reset	
Control blocking		blocking of the system disconnection, short-circuit and/or overload blocking	
Signaling		optical control of the ARS status - remote and/or local control	

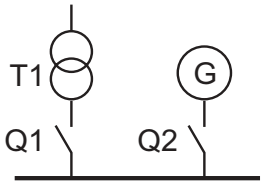
❶ Other time periods possible according to recommendations.

Possible configurations

ASZR-2Z - ARS automatics for the supply-supply system



ASZR-1Z1G - ARS automatics for the supply-aggregate system



All the systems are open and their configuration may be changed at any time.

Special version, e.g. **ASZR-2ZS** - ARS automatics for the supply-supply-coupler - upon order.

Detailed information about the ARS systems available at: **www.need.com.pl** or **www.szr.pl**

Are you seeking help in solving a problem with a NEED relay, do you want to exchange your opinion and experience?
Become a member of the NEED Club - **www.need.com.pl**

Are you seeking somebody to design an application for you?

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European Regional Development Fund

UNION FOR ENTERPRISING PEOPLE
COMPETITIVENESS PROGRAMME

company quoted at the WSE

The offer of Relpol S.A. includes the following products:

- **subminiature signal relays**
  rated switching capacity: from 1 A to 3 A,
  coil voltage range: from 3 V to 48 V DC
- **miniature relays**
  rated switching capacity: from 5 A to 20 A
- **industrial relays**
  rated switching capacity: from 5 A to 30 A,
  mounting: to plug-in sockets on 35 mm DIN rail mount, EN 50022 or on panel mounting, for PCB
- **interface relays**
  rated switching capacity: from 0,5 A to 16 A,
  number of contacts: from 1 to 4
- **plug-in sockets for relays**
  PCB plug-in sockets, plug-in sockets for 35 mm DIN rail mount, EN 50022
- **contactors**
  rated switching power: from 2,2 kW to 200 kW /at 400 V/
- **motor protection circiut breakers**
  setting range: from 0,1 A to 63 A
- **time relays**
  single- and multifunction time relays,
  wide range of time adjustments
- **monitoring relays**
  monitoring of current, voltage, temperature, level
- **NEED programmable relays**
  versions: 8 inputs / 4 relay outputs,
  16 inputs / 8 relay outputs, programming: LAD, STL,
  supply voltages: 230 V AC, 12-24-220 V DC,
  LED indicators of the relay and input / output status
- **RPS - DIN rail power supply**
  for automation systems, output circuit: 12-24 V DC,
  rated currents: from 1,5 A to 20 A
- **solid state relays**
  rated load currents: from 1 A to 100 A,
  switching at zero or at any time
- **overvoltage arresters**
  classes I, II and III, available with changeover signal contact
- **switches and rotary switches**
  lever switches of 1-, 2-, 3- and 4-pole versions,
  rotary switches from 1 to 6 sections
  and from 2 to 12 positions
- **digital protection sets for automation, measurements and control for mid-voltage fields**
- **production and installation of stationary devices for monitoring of radioactive radiation**

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