ELR 3/9-400(/SI)
ELR 3/9-500

Electronic Load Relay for 3-Phase Networks

Data Sheet 01/2005

Features

Electronic Load Relay

Electronic load relays offer the advantage of a virtually unlimited service life along with the same functions as mechanical contactors. The optocoupler technology used enables contactless, bounce-free, and wear-resistant switching of loads in 3-phase networks. In comparison with conventional electromechanical components, 50 cycles per hour represents a considerable increase in cost-effectiveness.

Contactless switching with Triacs at zero voltage crossing does not generate any additional high-frequency disturbing pulses. This means that the ELR can be used close to modules and electronic devices with low electromagnetic compatibility (EMC).

Other key features include:

– Reliable Phoenix Contact connection technology for conductor cross sections up to 6 mm^2 (10 AWG)
– Easy to assemble housing technology for use on EN DIN rails with a width of just 62 mm (2.441 in.)
– Easy to read status indication using clearly visible LEDs

All electronic load relays have a very low input power and can thus be controlled directly with any PLC or automation device. An additional RCV protective circuit for the outputs enables permanently safe operation even with inductive loads.

Standard Version of ELR 3/9-400 and ELR 3/9-500

The ELR 3/9... is the fully electronic alternative to mechanical contactors. It features a compact design and low control power. A further advantage is the high-quality, safe screw connection technology.

Version With Fuse ELR 3/9-400/SI

In addition to the advantages of electronic load relays already mentioned, this component also provides effective short-circuit protection. If the permissible current is exceeded, very fast fuses in the standard size of 6.3 mm x 32 mm (0.248 x 1.260 in.) disconnect the connected load. This provides optimum protection of the power semiconductor in the electronic load relay.

Easily-accessible fuse holders enable fuses to be replaced quickly.

In accordance with DIN VDE 0110 and DIN VDE 0636, a conductor cross section of 1.5 mm^2 (16 AWG), which must be fitted with one fuse each (10 A slow-blow as mains protection), is required to connect the electronic load relay to the 3-phase network.

Technical Data

Input Data (Input)	ELR 3/9-400(/SI)	ELR 3/9-500
Control voltage	24 V DC ±20%	
Nominal current at U_N	8 mA, approximately (typical)	
Input wiring	LED, diode for protection against polarity reversal, surge protection	

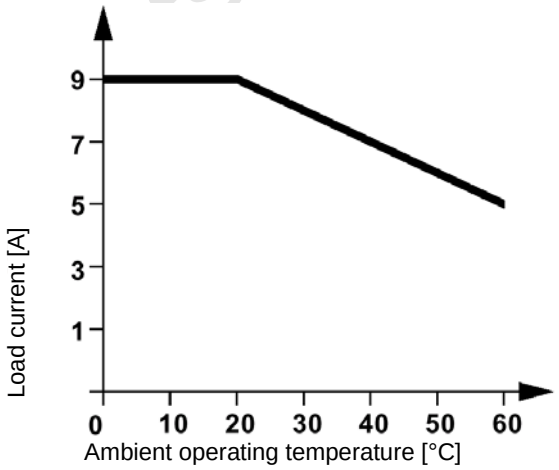
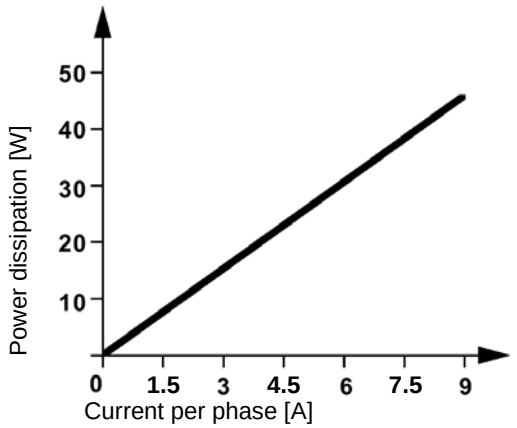
Output Data (Output)	ELR 3/9-400(/SI)	ELR 3/9-500
Operating voltage (conductor voltage) 50 Hz/60 Hz	400 V AC	500 V AC
Operating voltage range	110 V AC - 440 V AC	110 V AC - 550 V AC
Reverse voltage	800 V	1200 V
Maximum continuous load current	3 x 9 A	
Load current depending on the ambient operating temperature Operating time: 100% operating factor		

Figure 1 Load current depending on the ambient operating temperature

Output Data (Output) (Continued)	ELR 3/9-400(/SI)	ELR 3/9-500
Power dissipation depending on the load current Operating time: 100% operating factor	 Figure 2 Power dissipation depending on the load current	
Fuse for short circuit	16 A FF 6.3 x 32 mm (0.248 x 1.260 in.) (.../SI)	–
Transmission frequency: With ohmic load With cos φ 0.5	10 Hz 10 Hz (depending on the connected motor)	
Surge current	230 A (t = 10 ms)	
Minimum load current	150 mA	
Residual voltage at I_N	1.7 V, typical	
Residual current in the OFF state	6 mA, typical	
Output wiring	RCV circuit Short-circuit protection (.../SI)	RCV circuit

General Data	
Housing dimensions (length x width x height)	84 mm x 62 mm x 110 mm (3.307 x 2.441 x 4.331 in.) 84 mm x 62 mm x 117 mm (3.307 x 2.441 x 4.606 in.) (.../SI)
Insulating housing version	Polycarbonate (PC), color: green
Test voltage I/O	2.5 kV_{rms}
Ambient operating temperature range	-20°C to +60°C (-4°F to +140°F)
Standards/specifications	EN 61000-4-4/DIN EN 61000-4-4/VDE 0847-4-4; EN 61000-4-5/DIN EN 61000-4-5/VDE 0847-4-5; IEC 60664/IEC 60664 A/DIN VDE 0110, basic insulation

General Data (Continued)	
Degree of protection according to IEC 60529/EN 60529/DIN VDE 0470-1	IP20
Mounting position	Vertical (DIN rail horizontal)
Mounting	Can be mounted with spacing ≥ 20 mm (0.787 in.)

Connection Data

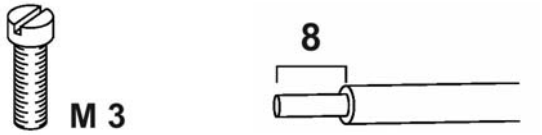


Figure 3 Connection data

The following cable cross sections can be connected:

Solid [mm²]	Stranded [mm²]	AWG	Stripping Length L [mm]
0.2 - 6	0.2 - 4	25 - 10	8 mm (0.31 in.)

Block Diagram

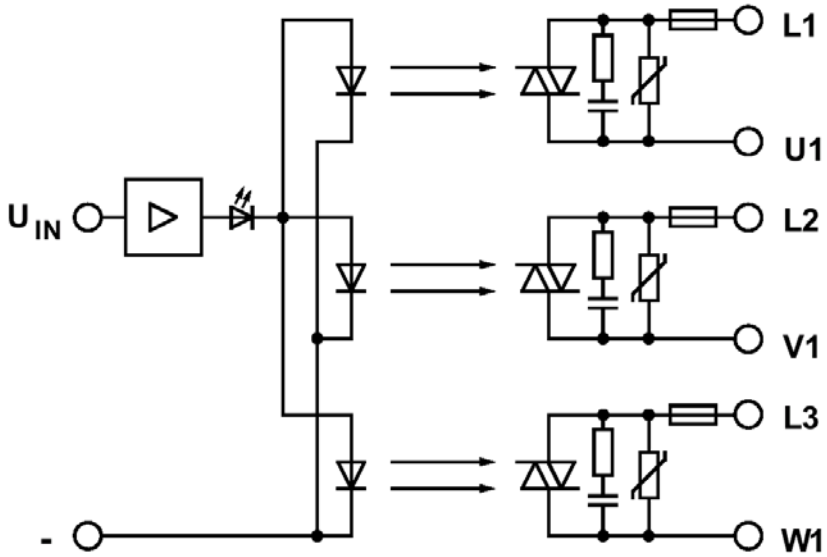


Figure 4 Block diagram

Ordering Data

Description	Order Designation	Order No.
Electronic load relay for directly controlling devices in a 3-phase network, with LED and protective circuit.	ELR 3/9-400	29 41 70 1
	ELR 3/9-500	29 41 71 4
Electronic load relay for directly controlling devices in a 3-phase network, with LED, protective circuit, and fuse.	ELR 3/9-400/SI	29 41 72 7
Replacement fuse for ELR 3/9-400/SI (pack of 10)	SI 16A FF	29 40 99 3
For marking systems and assembly material, see CLIPLINE catalog.		

Make sure you always use the latest documentation.
It can be downloaded from www.download.phoenixcontact.com.

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