ELKO EP HRN-55N

ELKO EP HRN-55N Phase Sequence Monitoring Relay

User Instruction Manual

1. Introduction and Overview

The ELKO EP HRN-55N is a sophisticated electronic relay designed for continuous monitoring of phase sequence and phase loss in three-phase electrical systems. This device is crucial for protecting sensitive equipment, such as motors, pumps, and compressors, from damage caused by incorrect phase rotation or the complete absence of one or more phases. It ensures the correct operation and longevity of machinery by disconnecting the load when an anomaly is detected.

This manual provides comprehensive instructions for the safe installation, operation, and maintenance of the HRN-55N relay. Please read this manual thoroughly before installation and operation to ensure proper functionality and to prevent potential hazards.

Safety Warning: Installation and servicing must be performed by qualified personnel only, in accordance with all local and national electrical codes and regulations. Disconnect all power before working on the device.
Note: No product images or videos were provided for this manual. Please refer to the product packaging or manufacturer's website for visual aids.

2. Setup and Installation

2.1 Mounting

The HRN-55N relay is designed for DIN rail mounting (EN 60715). Ensure the mounting location is free from excessive vibration, moisture, dust, and corrosive gases. Maintain adequate ventilation around the device to prevent overheating.

1. Securely attach the DIN rail to a stable surface within an electrical enclosure.
2. Clip the HRN-55N relay onto the DIN rail by aligning the bottom clips and pressing the top edge until it locks into place.

2.2 Wiring

Before wiring, ensure the main power supply to the circuit is disconnected and locked out. Refer to the wiring diagram typically found on the side of the device or in the product datasheet for precise terminal connections. The HRN-55N typically requires connection to all three phases (L1, L2, L3) and a neutral (N) if applicable, for its monitoring function, and also has output relay contacts (e.g., 15, 16, 18) for controlling the load.

- Connect the three-phase supply lines (L1, L2, L3) to the corresponding input terminals on the HRN-55N.
- If the device requires a neutral connection, connect the neutral line to the designated terminal.
- Connect the load control circuit to the output relay contacts. These contacts are typically Normally Open (NO) and Normally Closed (NC), and a Common (COM) terminal. For most applications, the NO contact is used to energize a contactor coil, which then supplies power to the protected equipment.
- Ensure all connections are tight and secure to prevent loose contacts and potential arcing.

Important: Incorrect wiring can damage the device or the connected equipment, and poses a severe electrical hazard.

3. Operating Instructions

Once properly installed and wired, the HRN-55N operates automatically to monitor the phase conditions.

3.1 Power-Up and Initial Operation

1. After completing all wiring, restore power to the circuit.
2. The HRN-55N will perform a self-check. The status LED (typically green) will illuminate if all phases are present and in the correct sequence.
3. If the phase sequence is correct and no phase loss is detected, the output relay will energize (the NO contact will close), allowing power to the protected equipment.

3.2 Indicator LEDs

The HRN-55N typically features one or more LEDs to indicate its operational status:

- **Green LED (Power/Status):**
  - Solid ON: All phases present, correct sequence, relay energized.
  - OFF: No power, or internal fault.
  - Flashing: (Specific to model, may indicate a delay or specific fault condition).
- **Red LED (Fault/Error):** (If present)
  - Solid ON: Phase loss or incorrect phase sequence detected, relay de-energized.

3.3 Phase Sequence and Loss Detection

The HRN-55N continuously monitors the voltage and phase angle of each connected phase. If the phase sequence (L1-L2-L3) is incorrect, or if any phase voltage drops below a preset threshold (phase loss), the relay will immediately de-energize its output contacts, thereby protecting the connected load. The relay will automatically reset and re-energize once the correct phase conditions are restored.

4. Maintenance

The ELKO EP HRN-55N relay is designed for long-term, maintenance-free operation. However, periodic

inspection of the installation environment is recommended.

- **Cleaning:** Ensure the device is free from dust and debris. Use a soft, dry cloth for cleaning. Do not use liquid cleaners or solvents.
- **Connections:** Periodically check terminal connections for tightness, especially in environments with vibration. Loose connections can lead to overheating and malfunction.
- **Environmental Conditions:** Verify that the operating environment remains within the specified temperature and humidity ranges.

Note: There are no user-serviceable parts inside the HRN-55N. Do not attempt to open or repair the device. Doing so will void the warranty and may pose a safety risk.

5. Troubleshooting

If the HRN-55N is not functioning as expected, refer to the following troubleshooting guide:

Symptom	Possible Cause	Solution
Device has no power (LEDs off).	No input voltage; incorrect wiring; blown fuse in supply circuit.	Check input voltage at terminals; verify wiring against diagram; check and replace fuses.
Green LED off, Red LED (if present) on, or relay not energizing.	Incorrect phase sequence; phase loss detected; voltage outside operating range.	Verify phase sequence (L1, L2, L3) at input terminals; check for missing phases; measure line voltages. Correct any issues.
Relay cycles on/off rapidly.	Unstable input voltage; intermittent phase loss.	Check power supply stability; inspect wiring for loose connections; consult with an electrician to diagnose power quality issues.
Relay energized, but load not receiving power.	Fault in load circuit; contactor coil failure; wiring error to load.	Check the load circuit and contactor; verify wiring from HRN-55N output to contactor coil.

If the problem persists after following these steps, contact ELKO EP technical support or a qualified electrician.

6. Specifications

The following are typical specifications for the ELKO EP HRN-55N. Refer to the specific product datasheet for exact values, as specifications may vary slightly by production batch or region.

- **Function:** Phase sequence and phase loss monitoring
- **Supply Voltage:** 3x 400V AC (L1, L2, L3) or 3x 230V AC (L1, L2, L3) depending on model variant.
- **Frequency:** 50/60 Hz
- **Output Contact:** 1x Changeover (SPDT) relay, typically 8A / 250V AC (resistive load)
- **Operating Temperature:** -20°C to +55°C (-4°F to +131°F)
- **Storage Temperature:** -30°C to +70°C (-22°F to +158°F)

- **Protection Degree:** IP20 (terminals), IP40 (front panel)
- **Mounting:** DIN rail EN 60715
- **Dimensions (W x H x D):** Approximately 90 x 17.6 x 64 mm (1-module width)
- **Weight:** Approximately 60g

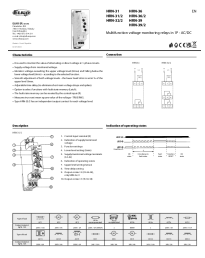
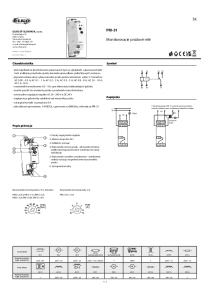
7. Warranty Information

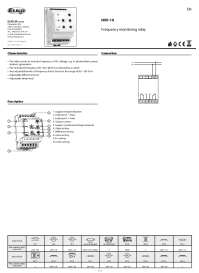
ELKO EP products are manufactured to the highest quality standards. This product is covered by a standard manufacturer's warranty against defects in materials and workmanship for a period typically specified at the point of purchase or on the official ELKO EP website. The warranty does not cover damage resulting from improper installation, misuse, unauthorized modification, or natural disasters.
For detailed warranty terms and conditions, please refer to the official ELKO EP warranty policy available on their website or contact your local distributor.

8. Support and Contact

For technical assistance, product inquiries, or support regarding the ELKO EP HRN-55N relay, please contact your authorized ELKO EP distributor or visit the official ELKO EP website.
ELKO EP Official Website: www.elkoep.com
Please have your product model number (HRN-55N) and any relevant details about your installation or issue ready when contacting support.

Related Documents - HRN-55N

	ELKO EP HRN Series Multifunction Voltage Monitoring Relays | Technical Datasheet Detailed technical datasheet for ELKO EP's HRN series multifunction voltage monitoring relays. Covers specifications, functions, and applications for 1-phase AC/DC circuits.
	ELKO EP PRI-51 Current Monitoring Relay - Technical Specifications Detailed technical specifications, features, and wiring diagrams for the ELKO EP PRI-51 current monitoring relay. Learn about its characteristics, functions, and applications for electrical monitoring.

	[ELKO EP HRF-10 Frequency Monitoring Relay Technical Specification] Technical specifications and functional description for the ELKO EP HRF-10 frequency monitoring relay. Details include characteristics, connection diagrams, load types, technical parameters, and operational warnings for AC voltage monitoring in industrial and photovoltaic applications.
	[ELKO EP Modular Electronic Devices Technical Catalogue] Explore the comprehensive ELKO EP Technical Catalogue featuring a wide array of modular electronic devices. This guide details products such as time relays, power supplies, dimmers, monitoring relays, smart home solutions, and more, essential for both industrial and residential electrical installations.
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