

# CVI Series Voltage Presence Indicating System

## User Manual



**Version: 1.11**

**Revision: 2026.09**

## Read me

**When you use CVI Series High voltage indicator, be sure to read this user manual carefully, and be able to fully understand the implications, the correct guidance of operations in accordance with user manual, which will help you make better use of CVI Series High voltage indicator and help to solve the various problems on the site.**

1. Always keep safe distance between the high voltage part and the instrument, probe and operator.
2. Measurements must not be taken when thunderstorms are nearby.
3. Do not operate the instrument or accessories in explosive atmospheres.
4. After the battery alarm of the instrument, please turn off the power to charge.
5. Do not open the instrument without permission, this will affect the warranty of the product. The factory is not responsible for self-disassembly.
6. When the instrument is transported, it should avoid rain erosion and prevent collision and falling.
7. When storing and keeping the instrument, attention should be paid to the ambient temperature and humidity, and it should be protected from dust, moisture, shock, acid, and corrosive gas.



- **Please read this user manual carefully**
- **Please save this document**

## Directory

|                                                  |              |
|--------------------------------------------------|--------------|
| <b>1.- SUMMARIZE .....</b>                       | <b>- 1 -</b> |
| <b>2.- TECHNICAL SPECIFICATION .....</b>         | <b>- 2 -</b> |
| <b>3. - INSTALLATION AND START-UP .....</b>      | <b>- 3 -</b> |
| 3.1.- INSTALLATION .....                         | - 3 -        |
| 3.2.- TERMINAL DEFINITION .....                  | - 4 -        |
| 3.3.- WIRING DIAGRAM .....                       | - 4 -        |
| <b>4.- FUNCTION INTRODUCTION .....</b>           | <b>- 5 -</b> |
| 4.1.- VOLTAGE PRESENCE INDICATION FUNCTION ..... | - 5 -        |
| 4.2.- PHASE SEQUENCE VERIFICATION FUNCTION ..... | - 6 -        |
| 4.3.- SELF-TEST BUTTON FUNCTION .....            | - 6 -        |
| 4.4.- VOLTAGE TEST BUTTON FUNCTION .....         | - 6 -        |
| <b>5.- SELECTABLE MODELS .....</b>               | <b>- 7 -</b> |
| <b>6.- SAFETY CONSIDERATIONS .....</b>           | <b>- 8 -</b> |

## 1.- SUMMARIZE

The CVI Series is designed for medium-voltage switchgear and power distribution systems rated 7.2–40.5 kV, 50/60 Hz, providing reliable three-phase voltage indication and phase verification at critical points such as incoming busbars, circuit breakers, and main transformers. The series includes four models with flexible configurations: EP models (CVI-EP / CVI-EPR) use an external 85–265Vac/dc power supply, while SP models (CVI-SP / CVI-SPR) are self-powered from the monitored voltage.

The series provides clear LED voltage indication and phase verification across all four models. EP models feature a self-test function for convenient operational checks, while R models (CVI-EPR / CVI-SPR) provide interlocking relay outputs for remote signaling, control, and protection linkage. This flexible design supports reliable voltage monitoring and safe operation of MV switchgear.

### FEATURES

- Multiple LED flashing modes;
- IEC 61243-5:2021 compliant;
- Threshold voltage  $10\% \cdot U_n < U < 40\% \cdot U_n$ ;
- Available in externally powered and self-powered versions;
- Interlocking relay output available (Models with "R");
- Single-phase/three-phase voltage indication.

### APPLICATIONS

- High and Medium voltage switchgear;
- Ring network cabinet, outdoor terminal box;
- Transformer, circuit breaker, isolating switch;
- Power distribution room, bus-bar system;
- Mechanical control cabinet, motor control center;
- Outdoor distribution pillar, feeder terminal unit (FTU);
- Industrial plant power distribution cabinet, factory substation;

## 2.- TECHNICAL SPECIFICATION

| Parameter              | Value                                                                                  |
|------------------------|----------------------------------------------------------------------------------------|
| Power supply           | 85-265Vac/dc                                                                           |
| Rated voltage          | 7.2~40.5 KV                                                                            |
| Power consumption      | Less than 2W                                                                           |
| Rated frequency        | 50-60Hz                                                                                |
| Light-emitting element | Ultra-high brightness LED, operating voltage < 2.5 VDC, service life > 50,000 hours.   |
| Digital output         | Passive, dry contact, NO, load capacity: 5A@250VAC                                     |
| Insulation             | Input, output, power supply to shell >5MΩ                                              |
| Withstand voltage      | 2 kV AC RMS 1 minute, between power supply to ground/ between relay contact to ground. |
| Standards              | Compliant with IEC 61243-5:2021                                                        |
| Protection class       | IP54                                                                                   |
| Installation dimension | 96x48x43mm                                                                             |
| Hole size              | 92*44mm                                                                                |
| Working environment    | -25~40°C Altitude ≤2000m,<br>0~95%RH, non-condensing, non-corrosive gas                |

### Adaptation capacity parameter table:

| Voltage Level (kV)         | 7.2      | 12       | 24      | 40.5    |
|----------------------------|----------|----------|---------|---------|
| Adaptable Capacitance (pF) | 150(±15) | 115(±15) | 80(±10) | 45(±10) |

### 3. - INSTALLATION AND START-UP



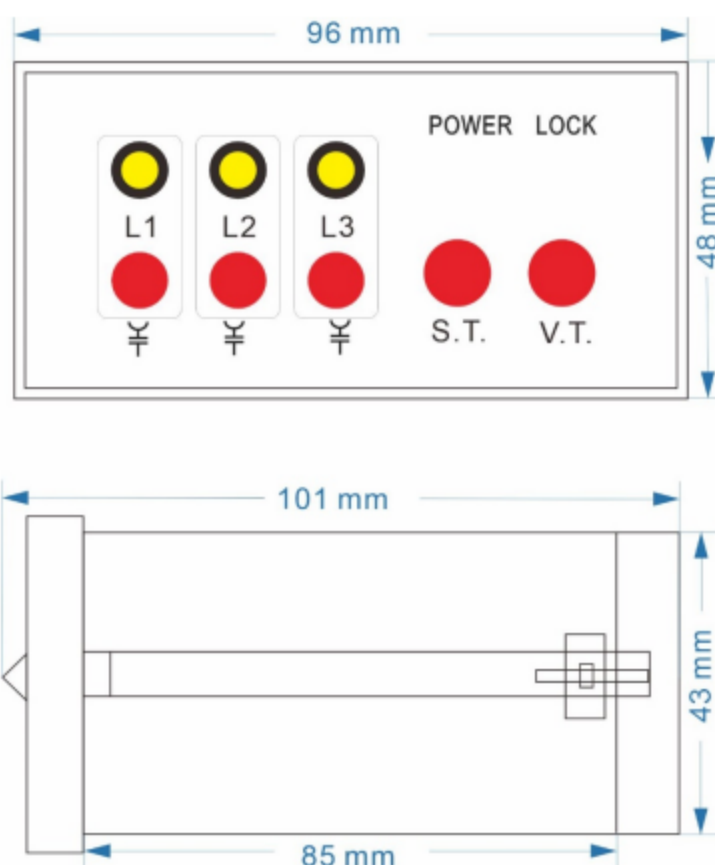
The manual you hold in your hand contains information and warnings that the user should respect in order to guarantee a proper operation of all the instrument functions and keep it in safety conditions. The instrument must not be powered on and used until its definitive assembly is on the cabinet's door.

**If the instrument is not used as manufacturer's specifications, the protection of the instrument will be damaged.**

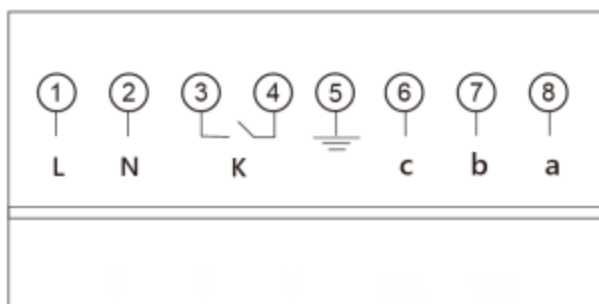
When any protection failure is suspected to exist (for example, it presents external visible damages), the instrument must be immediately powered off. In this case contact a qualified service representative.

#### 3.1.- Installation

**Dimension (WXHxD): 96x48x43mm, hole size: 92\*44mm**

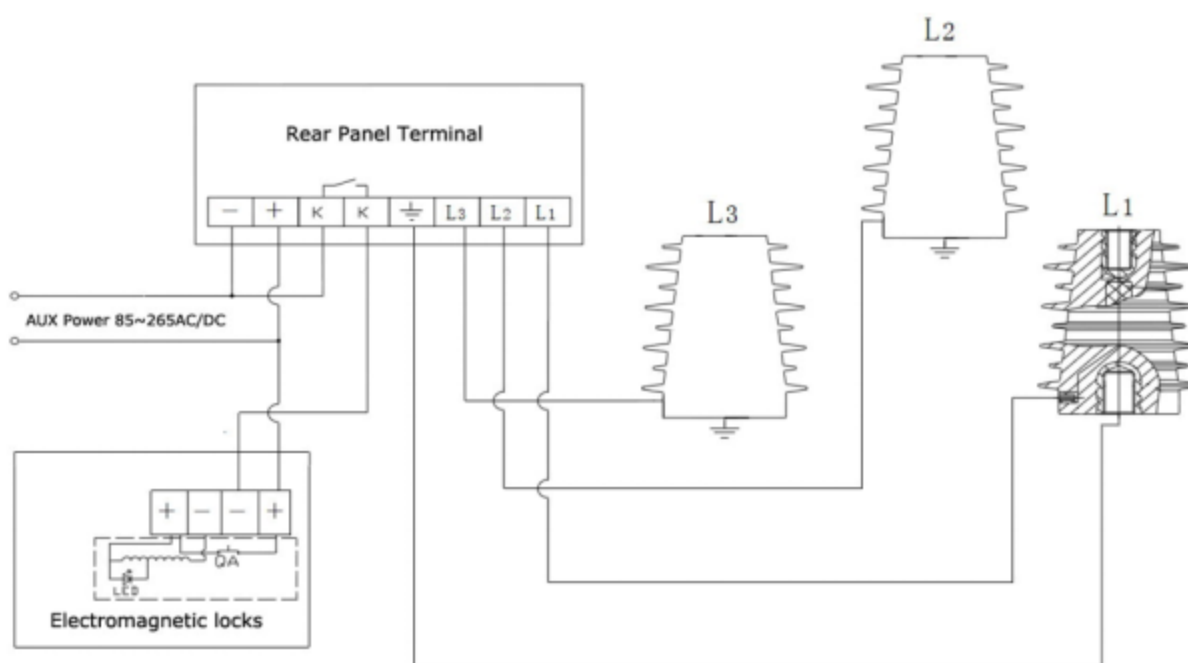


### 3.2.- Terminal definition



| No. | Marked  | Notes                                                                                                                |
|-----|---------|----------------------------------------------------------------------------------------------------------------------|
| 1-2 | L, N    | <b>Model EP:</b> 85-265Vac/dc,<br><b>Model SP:</b> Self-powered; no external power supply need.                      |
| 3-4 | K       | Digital output, passive, dry contact, NO (Available only for model with "R") details see <a href="#">chapter 5</a> . |
| 5   | ⏏       | Earth                                                                                                                |
| 6-8 | c, b, a | Connect L3, L2, L1 phase capacitance sensor                                                                          |

### 3.3.- Wiring Diagram



#### Note:

This connection drawing is for reference only; the actual connecting terminal, please refer to the label on the rear part.

## 4.- FUNCTION INTRODUCTION

### 4.1.- Voltage Presence indication function

CVI series is equipped with three LED indicators to display the voltage status of phases L1, L2, and L3. When voltage is detected on any phase, the corresponding LED indicator lights up, providing a clear and intuitive system status display.

Additionally, the device integrates relay outputs, enabling remote alarm functions, interlocking control, or fault protection, significantly enhancing system safety and operational flexibility.

#### Indication status:

| No. | HV Terminal Voltage (%)              | Interlock Power Supply Voltage (%) | Phase LED                      | Power LED | Interlock LED | Interlock Relay Status<br>(When Self-Test Pressed) |
|-----|--------------------------------------|------------------------------------|--------------------------------|-----------|---------------|----------------------------------------------------|
|     |                                      |                                    | (When Self-Test Pressed)       |           |               |                                                    |
| 1   | 0<br>(all three phases)              | 85–110                             | ON                             | ON        | ON            | Opened                                             |
| 2   | $\geq 40\% \cdot U_n$<br>(any phase) | 85–110                             | ON<br>(Voltage Present Phase ) | ON        | ON            | Opened                                             |
| 3   | 0<br>(all three phases)              | 0                                  | OFF                            | OFF       | OFF           | Opened                                             |
| 4   | $\geq 40\% \cdot U_n$<br>(any phase) | 0                                  | ON<br>(Voltage Present Phase ) | OFF       | OFF           | Opened                                             |

#### Note:

No. 3 and 4 are in the indicator's protection status. When the indicator power loss, regardless of whether the high-voltage terminals are energized, the interlocking relay output is always opened.

## **4.2.- Phase sequence verification function**

CVI series is equipped with a phase sequence verification function, which detects and indicates the phase rotation order of the incoming voltage. This ensures the correct connection sequence before circuit closing, preventing phase errors that could lead to equipment malfunction or operational hazards.

## **4.3.- Self-test button function**

1. When high-voltage side powered off, when the secondary working power is connected, press this button, the L1, L2, L3 indicator lights are on, and the interlocking relay output contacts be opened; release this button, the L1, L2, L3 indicator lights are off, and the interlocking relay outputs are closed.

2. When the high-voltage terminal voltage reaches or exceeds 40% of the nominal voltage, whether the secondary power is connected or not, press the self-test button, the L1, L2, L3 indicator lights are on, the interlocking relay output contacts be opened.

## **4.4.- Voltage test button function**

1. When the high-voltage side is powered off, press this button, and the L1, L2, and L3 indicator lights will not be on.

2. When the high-voltage terminal voltage reaches or exceeds 40% of the nominal voltage, press this button, and the L1, L2, L3 indicator lights must be on.

### **Note:**

The above description presents the full set of available features. Actual functions depend on the selected configuration. Please refer to the selectable models [chapter 5](#) for details.

## 5.- Selectable Models

| Model   | Description                                                                                                                         |
|---------|-------------------------------------------------------------------------------------------------------------------------------------|
| CVI-EP  | <b>Power supply:</b> 85–265Vac/dc<br><b>Function:</b> LED Indication · Self-Test · Phase Sequence Verification                      |
| CVI-EPR | <b>Power supply:</b> 85–265Vac/dc<br><b>Function:</b> LED Indication · Self-Test · Phase Sequence Verification · Interlocking Relay |
| CVI-SP  | <b>Power supply:</b> Self-Powered<br><b>Function:</b> LED Indication · Phase Sequence Verification                                  |
| CVI-SPR | <b>Power supply:</b> Self-Powered<br><b>Function:</b> LED Indication · Phase Sequence Verification · Interlocking Relay             |

## 6.- SAFETY CONSIDERATIONS



All installation specification described at the previous chapters named:

**INSTALLATION AND STARTUP, INSTALLATION MODES and SPECIFICATIONS.**

Please note that with the instrument powered on, the terminals could be dangerous to touching and cover opening actions or elements removal may allow accessing dangerous parts. This instrument is factory-shipped at proper operation condition.

- ◆ The device must have a professional installation and maintenance.
- ◆ Any operation of the device, you must cut off the input signal and power.

For any inquiry about the instrument performance or any failure, contact to Blue Jay's technical service.

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