

General

Phase failure relays are designed to prevent mains-related malfunctions of three-phase motors operating in phase sequence.

Use and Working Principle of the Device

When There is No Error: When the phases are at normal values and the phase sequence is correct, the relay is energized and the OUT LED is on.

High Voltage Error (H): When one or more of the phases exceeds the high voltage set value, the device waits for the error waiting time ($E_{err} \text{ In}$), then the phrase (H) appears on the screen, the relay is de-energized and the OUT LED goes off. When all voltages fall below 5V of the high voltage set value, the device waits for the error exit time ($E_{err} \text{ Out}$), then the relay energized and the OUT LED turns on. (For FKV-03DF, the High Voltage Value is 450V and the error waiting/error exit time is fixed and 2 seconds.)

Low Voltage Error (L): When one or more of the phases exceeds the high voltage set value, the device waits for the error waiting time, then the phrase (L) appears on the screen, the relay is de-energized and the OUT LED goes off. When all voltages goes above 5V of the low voltage set value, the device waits for the error exit time, then the relay energized and the OUT LED turns on. (For FKV-03DF, the Low Voltage Value is 280V and the error waiting/error exit time is fixed and 2 seconds.)

Asymmetry Error (R5Y): When the voltage difference between the phases exceeds the asymmetry set value, the device waits for the error waiting time, then the phrase (R5Y) appears on the screen, the relay is de-energized and the OUT LED goes off. If the voltage difference between the phases decreases by 2% from the asymmetry set value, the device waits for the error exit time, then the relay is energized and the OUT LED turns on. (For FKV-03DF, the Asymmetry value is 15% and the error waiting/error exit time is fixed and 2 seconds.)

Phase Sequence Error (Ph5): When the sequence of the phases connected to the device is not correct, the device waits for the error waiting time, then the phrase (Ph5) appears on the screen, the relay de-energized and the OUT LED goes off. When the phase sequence is corrected, the device waits for the error exit time, then the relay is energized and the OUT LED turns on. (For FKV-03DF, Error waiting/error exit time is fixed 2 seconds.)

Setting Up the Device

The setting mode is entered by pressing and holding the SET button on the device for 2 seconds. After entering the setting mode, the high voltage set value (H In VOL) appears on the first screen, and the **High Voltage Set Value** is adjusted by pressing the UP button on this screen.

After setting the high voltage set value, the SET button is pressed for 2 seconds and the low voltage set value (L In VOL) appears on the screen. While on this screen, the **Low Voltage Set Value** is adjusted by pressing the UP button.

After setting the low voltage set value, the SET button is pressed for 2 seconds and the asymmetry set value (R5Y In VOL) appears on the screen. While on this screen, the **Asymmetry Set Value** is adjusted by pressing the UP button.

After setting the asymmetry set value, the SET button is pressed for 2 seconds and the error waiting time value ($E_{err} \text{ In}$) appears on the screen. While on this screen, the **Error Waiting Time** is adjusted by pressing the UP button.

After setting the error waiting time value, the SET button is pressed for 2 seconds and the error exit time value ($E_{err} \text{ Out}$) appears on the screen. While on this screen, the **Error Exit Time** is adjusted by pressing the UP button.

NOTE: While in the setting mode, if no button is pressed for 10 seconds, the device saves the changes and exits the setting mode.

Notifications and Display:

One LED and one display on the device provide information about the settings and device status.

OUT LED: This LED turns on when the relay is energized.

Display: It shows mains voltages, error conditions and setting values.

While on the normal operating screen: It shows phase-to-phase voltage values and error conditions. If the device is in error state, it shows the screen by flashing between the voltage values screen and the error status screen.

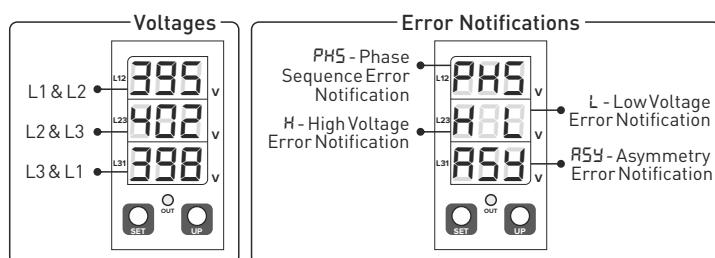
While in the setting mode: High voltage, low voltage, asymmetry settings, error waiting and error exit time shows.

Warnings

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

Device Maintenance

Switch off the device and release from connections. Clean the trunk of device with a swab. Don't use any conductor or chemical might damage the device. Make sure device works after cleaning.



Technical Specifications

Operating Volt. (Un)	: 3 x 380V AC and N.
Operating Frequency	: 50/60 Hz.
Operating Power	: <6VA
Operating Temp.	: -20°C.....+55°C
High Voltage	: 400V - 480V AC
Low Voltage	: 260V - 360V AC
Asymmetry	: %5 - %50

Error Waiting	: 1 - 30sec. ($E_{err} \text{ In}$)
Error Exit	: 1 - 30sec. ($E_{err} \text{ Out}$)
Contact	: 5A 250V AC (Resistive Load)
Display	: 3x3 Display, 1x LED
Mounting	: Terminal rail mounted
Weight	: <150gr.
Operating Altit.	: <2000m
Cable Diameter	: 2,5mm ²

Menu Map (Available for FKV-03HF, all values are fixed for FKV-03DF.)

