



Under and overvoltage protection for low and medium voltage industrial installations.

Features and Benefits

- Part of a modular system
- Independent 2" modules
- 1/8 standard 19" rack cases available
- LED indicators and reset button
- Trip, auxiliary, power supply alarm

Applications

- Automatic transfer equipment
- Automatic control systems
- Component for complex protection scheme

Protection and Control

- Instantaneous under and overvoltage
- Time delay under and overvoltage
- Phase to ground fault detection in isolated neutral systems
- Third harmonic filter (single phase)



Description

TOV relays are undervoltage and overvoltage relays, single phase or three phase, instantaneous or fixed time.

Adjustments are made from dip switches located on the front of the relay.

The single phase relays may include a filter for third harmonics, as well as the ability to select between overvoltage and undervoltage operation in the same relay.

TOV relays are solid state, modular relays and are supplied in 1/8 standard 19" wide rack size cases.

Applications

Some of the more common undervoltage applications of the TOV relay are:

1. Instantaneous detection of undervoltage in automatic transfer equipment.
2. As fault detector with distance relays (using communication channels) in the case of lines with weak infeed at one terminal.

Some of the more common overvoltage applications of the TOV relay are:

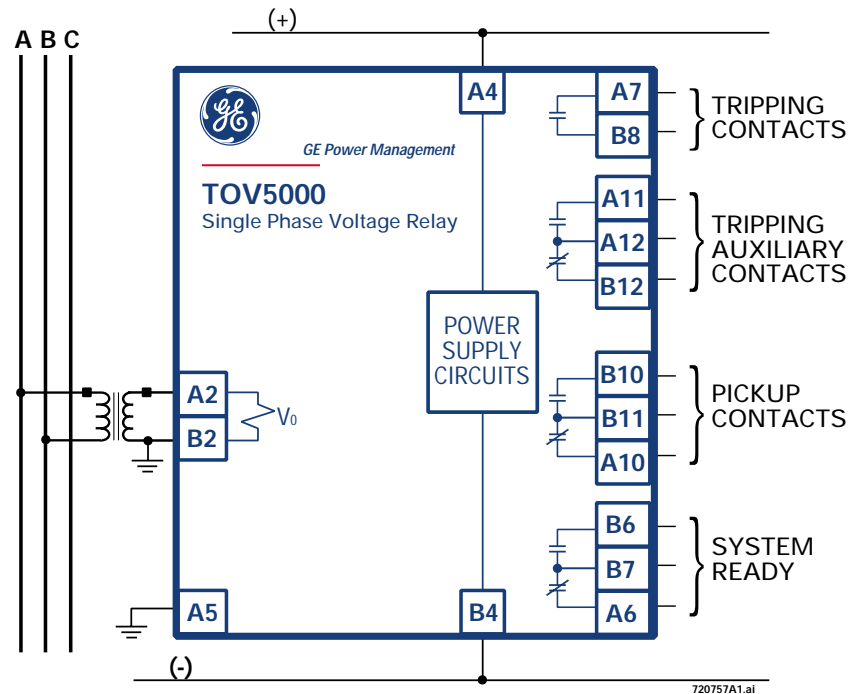
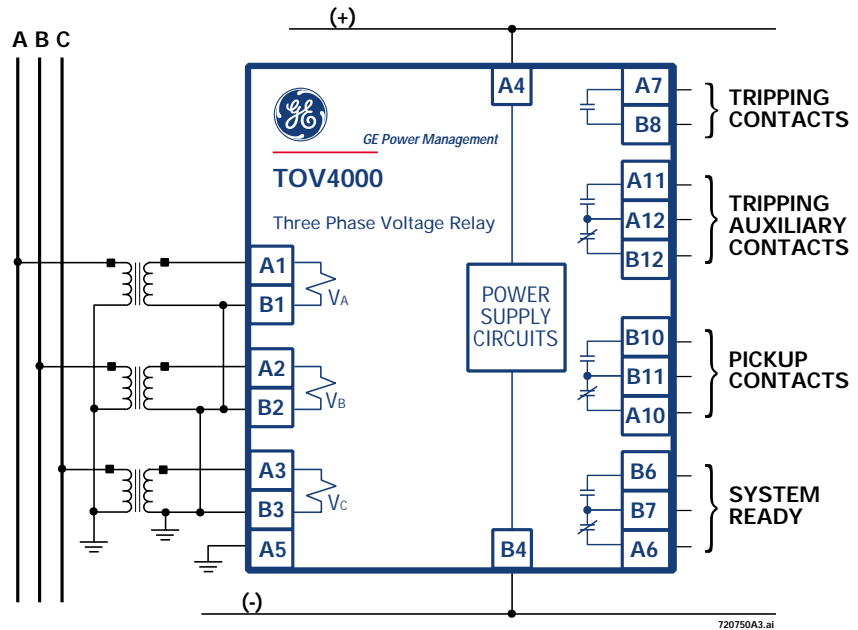
1. As overvoltage detector for automatic control systems whose functional security depends on voltage.
2. Three phase overvoltage protection with time delays.
3. Phase to ground fault detection in systems with isolated neutrals and in alternating current rotating machines.

Construction

- Accurate and reliable, with low power consumption
- Drawout case
- LED indicating lamps: PICK-UP target with manual reset auxiliary power supply voltage
- Fire resistant, shock resistant, sealable plastic cover, with exterior indicator resets
- Output unit with high seismic rating
- High reliability components,

manufactured using techniques to minimize failures

Connection Diagrams



Technical Specifications

PROTECTION			
OPERATING TIMES			
There are Two Operating Modes :			
1. Instantaneous (30 to 50 ms)			
2. Time delay 130 ms to 25.6 sec in 100 ms steps			
The same relay can be used in either mode, or in both modes			
VOLTAGE RANGES			
Adjustable Voltage Ranges are available as follows:			
20 to 275 VAC			
50 to 305 VAC			
3 to 65 VAC (only in single phase version) in 1 V steps			
The Maximum Allowable Continuous Voltages are:			
400 AC for the 20 to 275 V and 50 to 305 V ranges			
200 VAC for the 3 to 66 V range			
FREQUENCY RANGE			
Normal frequency	With filter		Without filter*
	50 Hz	60 Hz	50/60 Hz
Effective range	45-51 Hz	57-63 Hz	48/63 Hz
Operating range	46-53 Hz	57-63 Hz	46/64 Hz
* Only the three-phase model			
MONITORING			
ACCURACY			
Accurate to within $\pm 5\%$ of operating value			
Accurate to within $\pm 5\%$, or 30 ms, of operating time			

POWER SUPPLY	
AUXILIARY CIRCUIT VOLTAGE	
Nominal Voltage	Operating Range
24-48 VDC/VAC	19-60 VDC/VAC
48-125 VDC/VAC	38-150 VDC/VAC
110-240 VDC	88-288 VDC
110-220 VAC	88-264 VAC

INPUTS	
BURDENS	
Depending on the service voltage and the number of auxiliary relays, the DC burden is:	
Normal:	45-63 mA
Tripped:	63-79 mA The burden of the AC voltage circuits is less than 1 VA

OUTPUTS	
CONTACT DATA	
The basic TOV relay has one trip output relay and three switched auxiliary output relays, the trip output contact rating is:	
Continuous:	16 A
Make and Carry:	30 A
Break:	180 VA resistive at 125/250 VDC
	60 VA inductive at 125/250 VDC
The three auxiliary output relays contact rating is:	
Continuous:	3 A, 250 VDC max
Make and Carry:	5 A for 30 sec, 250 VDC max
Break:	20 W inductive 250 VDC max

PACKAGING	
Approximate Weight:	
Net:	5 lbs. (2.3 kg)
Ship:	5.5 lbs. (2.5 kg)

ENVIRONMENTAL	
Temperature Ranges:	
Operating range:	-20°C to +55°C
Storage range:	-40°C to + 60°C
Relative Humidity:	Up to 95% without condensing

TYPE TESTS	
The TOV relay complies with the type tests recommended by IEC 255.5, impulse withstand and high frequency interference. The relay also complies with GE standards for fast transients.	
Between terminals and ground:	2000 VAC for one min at frequency (50 Hz-60 Hz)
Between independent terminal groups:	2000 VAC for one min at frequency (50 Hz-60 Hz)
Between terminals of each one of the output contacts:	1000 VAC for one min at frequency (50 Hz-60 Hz)

APPROVALS	
CE Compliant	

*Specifications subject to change without notice.

Ordering

TOV 40 * 3 * 030 * 00 *

TOV 4				Three phase voltage relay
1				Voltage range: 20/275 VAC
2				Voltage range: 50/305 VAC
	I			Undervoltage
	M			Overvoltage
		F		Auxiliary voltage: 24-48 VDC/VAC
		G		Auxiliary voltage: 48-125 VDC/VAC
		H		Auxiliary voltage: 110-240 VDC, 110-220 VAC
			C	Individual housing
			S	As part of a 'MID system

†Modular Industrial Protection System

TOV 50 * 3B * 10 * 00 *

TOV 5				Single phase voltage relay
1				Voltage range: 20/275 V
2				Voltage range: 50/305 V
3				Voltage range: 3/66 VAC
		1		50 Hz filter
		2		60 Hz filter
			F	Auxiliary voltage: 24-48 VDC/VAC
			G	Auxiliary voltage: 48-125 VDC/VAC
			H	Auxiliary voltage: 110-240 VDC, 110-220 VAC
			C	Individual housing
			S	As part of a 'MID system

†Modular Industrial Protection System