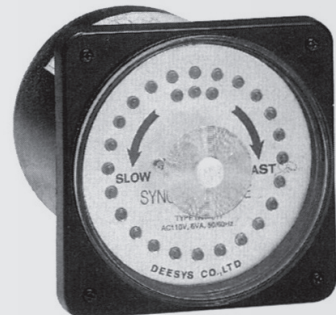
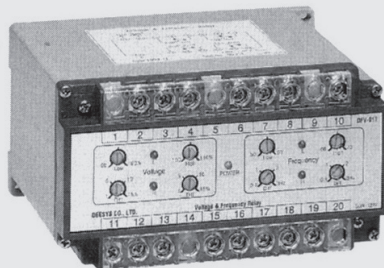


Marine Type Protective Relays

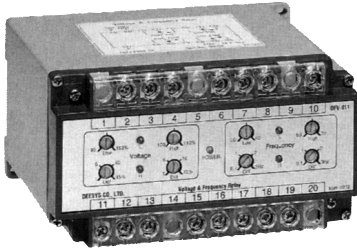
VOLTAGE AND FREQUENCY RELAY
3PHASE PHASE FAIL RELAY
3PHASE PHASE SEQUENCE INDICATOR RELAY
SINGLE SYNCHROSCOPE

VOLT/Hz, PFR, PSI, SYNC



VOLTAGE AND FREQUENCY RELAY

DFV-011



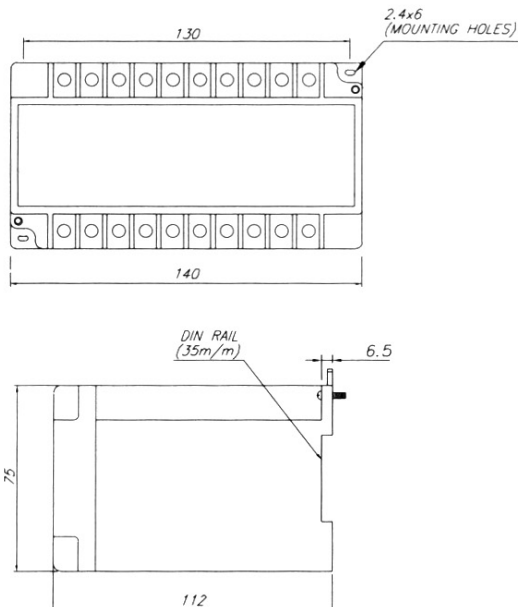
Feature

The single Phase voltage & frequency relay (Type DFV-011) is designed to control electric equipment for high-low voltage and frequency in identical power system. For voltage and frequency setting, There are two potentiometers respectively – one for coarse adjusting another for fine adjusting. The relay can be mounted on DIN rail or surface. Current and delay time are adjusted with each potentiometer. It needs AC 440V (single phase, 50/60Hz) input source and DC 24V aux. power, Aux. Power LED, High/Low operating LEDs are prepared for checking status of the relay.

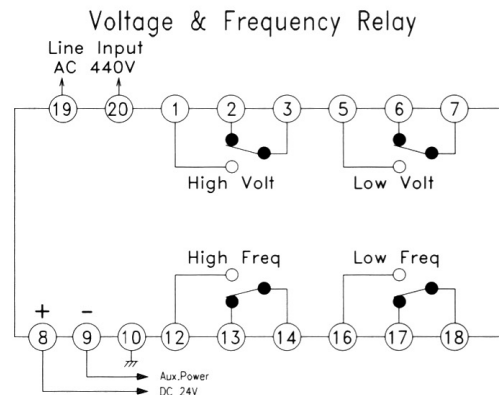
Specification

Part Name	3-Phase Voltage and Frequency Relay
Style	DIN Rail
Type	DFV-011
Connection	Use to VT or Direct Connection
Input	VT : AC440V, Burden : 0.3VA, Frequency : 60Hz
Aux. Power burden	DC24V, 10W
Voltage set range	Low : 90~100%(396~440V), High : 100~110%(440~484V)
Frequency set	Low : 50~60Hz, High : 60~70Hz
Operating time	200ms approx
Reset	AC110V 10A 0.5sec($\cos\phi=1.0$)
Reset	Auto Reset
Temperature	Operating temperature $-10\sim 55^{\circ}\text{C}$ RH < 95% Storage temperature $-20\sim +70^{\circ}\text{C}$
Vibration	Vibration frequency:16.7Hz Double amplitude:0.4mm Direction:horizontal, vertical, transverse
Shock	Shock acceleration:50G Shock application direction:horizontal, vertical, transverse Shock times : 3 times
Weight	1.0kg

Dimension



Connection Diagram



3-PHASE PHASE FAIL RELAY



DFR-021



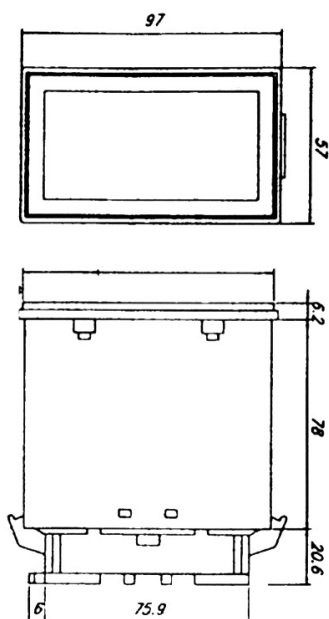
Feature

The PFR(Type DFR-021) is designed to protect electric equipment against a phase fail of three phases by sensing under-current. Current converter(MCT) is specially designed for detecting current level from the three phase supply (Refer to Item MCT for more detailed information). To prevent any mal-operation, the trip level can be set High or Low. No using temporarily, there is a switch selecting Able or Disable on the front plate. The relay has 8 pins for Inputs/Outputs and is mounted on surface with a socket base. It can be removed or installed from the socket by pulling or pressing.

Specification

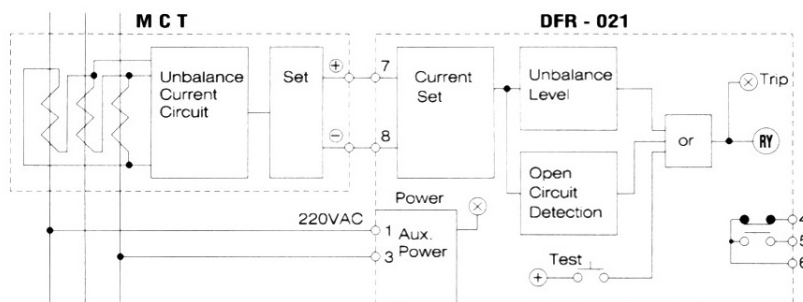
Part Name	3-Phase Phase Fail Relay
Style	Flush mounted type
Type	DFR-021
Connection	Current converter (MCT)
Input	CT : AC5A, Burden : 0,3VA
Aux. Power	Voltage : AC220V, Frequency : 50/60Hz
Aux. Power burden	7VA
Current set range	AC 1~80 or 64~160A (1' ry current of MCT 3Ø)
Operating time	Less than 4sec, Start Lock
Accuracy	±10%
Contact	AC 110V 5A 30min (cosØ=1.0)
Temperature	Operating temperature -10~60°C RH < 95% Storage temperature -20~+70°C
Vibration	Vibration frequency:16,7Hz Double amplitude:0,4mm Direction:horizontal, vertical, transverse
Shock	Shock acceleration:50G Shock application direction:horizontal, vertical, transverse Shock times : 3 times
Weight	0,5kg

Dimension



Connection Diagram

Please Fail Relay Block Diagram And External Connection Dawning



Equipment	MCT Selection	MCT Model	MCT Tap(A)	P,F,R1' ry turns	dial set.
Rated Cur					
1~2,5	MCT-31		20	8	0,25
2~5				4	0,5
4~10				2	1
8~20				1	2
16~40				40	4
32~80		80	1	8	
64~160	MCT-32		160	1	16

3-PHASE PHASE SEQUENCE INDICATOR

DPS-011



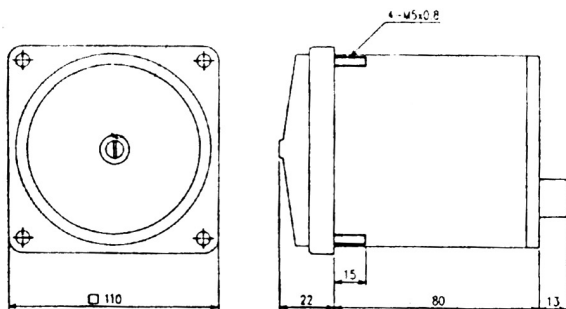
Feature

The Phase Sequence Detector (Type DPS-011) is designed to detect phase rotation of power supply source, it can be installed on flush mount in front of panel or cubicle. Input voltage range can be selected either 100V ~ 300V or 300V ~ 600V in the detector. If phase rotation from power source is clockwise, a green LED is lit. If counter-clockwise, be lit red LED.

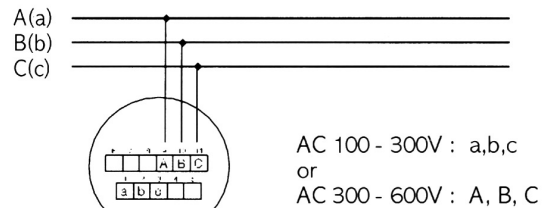
Specification

Part Name	3-Phase Phase Sequence Indicator (Relay)
Style	Flush mounted type
Type	DPS-011
Connection	Use to VT or Direct Connection
Input	AC110/190/220/380/440V Burden:3VA(Aux.)±10%
Aux. Power	Voltage : AC110~600V Frequency :50/60Hz
Normal	Green LED : R□S□T, S□T□R, T□R□S
Reverse	Red LED : S□R□T, T□S□R, R□T□S
Contact	AC110V 10A 0.5sec (cosφ=1.0)
Temperature	Operating temperature -10 ~ 55°C RH < 95% Storage temperature -20 ~ + 70°C
Vibration	Vibration frequency:16.7Hz Double amplitude:0.4mm Direction:horizontal, vertical, transverse
Shock	Shock acceleration:50G Shock application direction:horizontal, vertical, transverse Shock times:3 times
Weight	2.0kg

Dimension

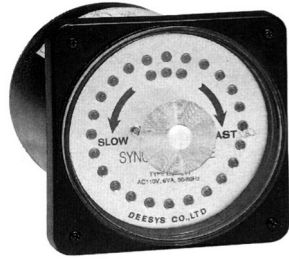


Connection Diagram



SINGLE SYNCHROSCOPE

DVF-011



Operation/Starting	Rotation
OHZ<SHz	↻ (LED)
OHZ>SHz	↺ (LED)

Feature

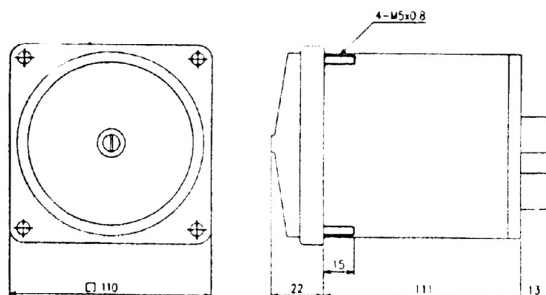
The synchroscope (Type DVF-011) is designed to detect dynamic phase angle and frequency between two isolated power sources. Detecting media is twinkling light of LEDs which are arranged in a circle on the face of the scope instead of a mechanical needle. It can be installed on flush mount in front of panel or cubicle. Rated input voltages from two sources are AC110V, single phase. Clockwise rotation (FAST) shows higher frequency of starting generator (bus) than the system-bus-frequency and counter-

clockwise rotation shows lower frequency of starting generator than the system-bus-frequency. A red LED which is twinkling in a flash shows the phase-angle-difference between two sources. Counter-clockwise shows lower frequency of starting generator (bus) than the system-bus-frequency. Higher or lower circling speed, bigger or smaller frequency difference between starting generator (bus) and the system bus.

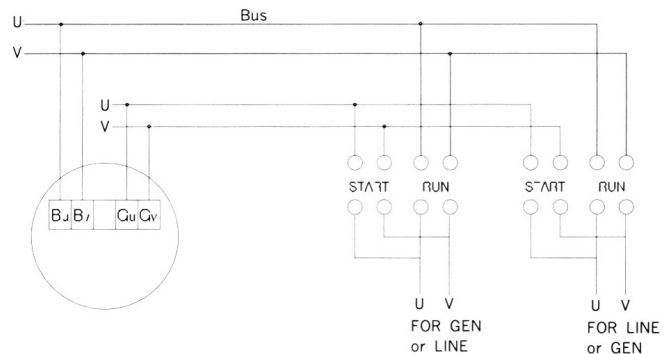
Specification

Part Name	Synchroscope
Type	DVF-011
Style	Flush mounted type
Type	DVF-011
Connection	VT, Direct
Input	AC110V ± 20% Burden : 6VA (also Aux. power)
Aux. Power	Voltage : AC110 Frequency : 50/60Hz
Temperature	Operating temperature -10 ~ 55°C RH < 95% Storage temperature -20 ~ + 70°C
Vibration	Vibration frequency: 16.7Hz Double amplitude: 0.4mm Direction: horizontal, vertical, transverse
Shock	Shock acceleration: 50G Shock application direction: horizontal, vertical, transverse Shock times: 3 times
Weight	2.0kg

Dimension



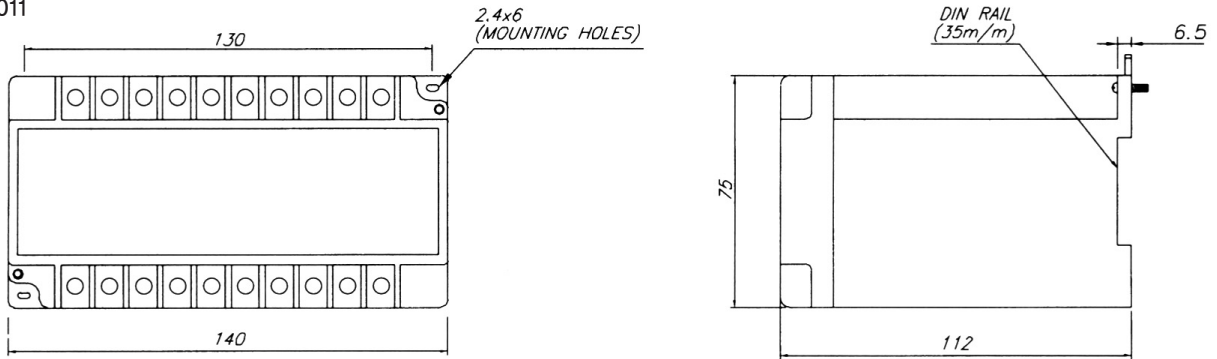
Connection Diagram



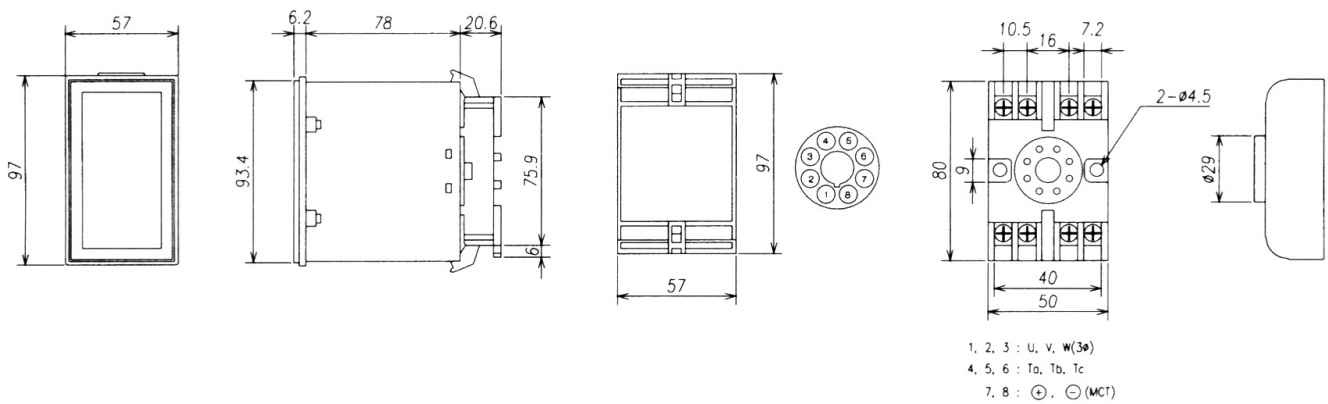
DIMENSION

Dimension

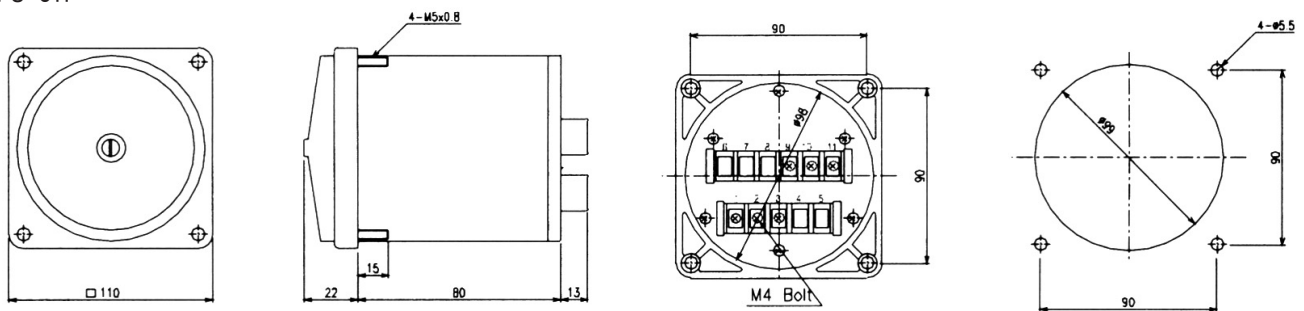
DFV-011



DFR-021



DPS-011



DVF-011

