

MONITORING RELAYS

VOLTAGE / CURRENT / FREQUENCY / POWER

MONITORING RELAYS

These relays are best suitable for monitoring balanced or unbalanced supplies, either of single phase, 3-phase 3-wire or 3-phase 4 wire loads powered by generators, UPS, stabilizers, inverters, or Mains (by Electricity Boards / Utilities); in AMF panels, PCCs, distribution boards and for power monitoring of individual loads / motors / pumps.



MODELS

VCR D2, D1 VCR1

UVT D1, UVF D1,

VCT D2, VCF D2, D2 VCT1,

S2 VMR 4, S2 VMR 5,

D2 EFR1, CCSD2, OCS D1,

S2 CMR2, S2 CMR3, S2 CMR4,

FCS D2, OFS D1, S2 FMR2,

RPT D2, RPF D2,

PMR D2 + PTS D1,

F3 VSR1, F3 VSR2, F3 VSR3

FEATURES

- Fixed/adjustable under/Over trip settings for parameters.
- Fixed/adjustable trip delays and Power On delays
- Built-in or external power supply
- Resetting – Auto or Manual
- Output contacts : 1 CO or 2 CO
- Choice of enclosures (DIN-Rail, Plug-in, Flush)
- Models with Micro-Controller based design
- 2 line alpha-numeric LCD display (for F3 VSR1/2)
- Serial Communication (RS232) port (for F3 VSR1/2 models)
- Use of SMD Technology
- User-friendly LED indications

PROTECTIONS / FUNCTIONS


- Under/over Voltage,
- Under/Over Current
- Under/Over Frequency
- Under/Over Power
- Reverse Power
- Earth Fault/Ground Fault
- Earth leakage

Ordering Instructions

- ✓ Product Family Name
- ✓ Model Name
- ✓ System Supply Voltage & frequency
- ✓ Aux. Supply/Control supply voltage
- ✓ Current input (1A or 5A)

VOLTAGE MONITORING RELAYS


	VCR D2 1 Phase Voltage Monitoring Relay	D1 VCR 1	VCT D2 Voltage Monitoring Relay, 3Ø-3W	VCF D2 Voltage Monitoring Relay, 3Ø-4W	P2 SMV1 Voltage Monitoring Relay, 3Ø-3W
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Single Phase Under & Over voltage, Auto / Manual Reset, Adjustable under/over voltage settings, adjustable trip delay / ON delay, 2 CO output relay



Single Phase Under & Over voltage, Auto / Manual Reset, Adjustable under / over voltage settings, adjustable trip delay, 2 CO output relay.






3-Phase 3-Wire Under & Over voltage Auto/Manual Reset, Adjustable under/over voltage settings, adjustable trip delay & ON delay, 2 CO output relay



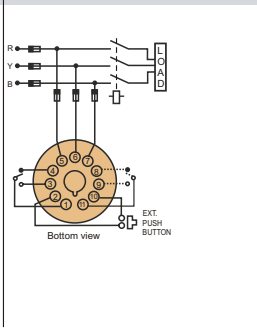
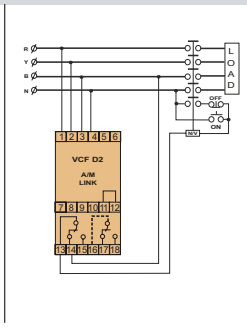
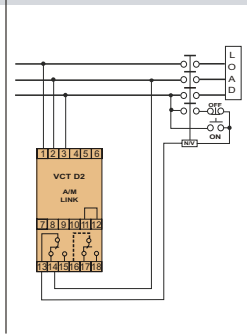
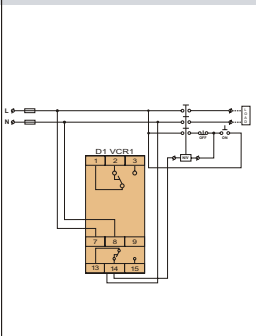
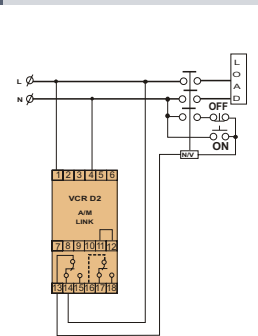
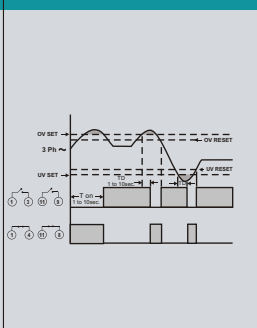
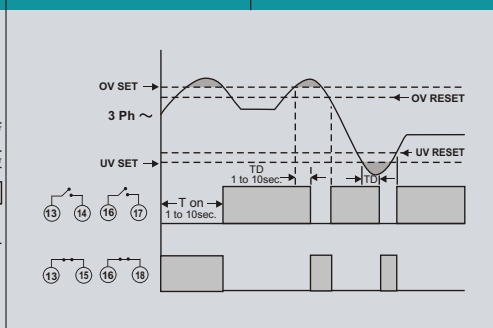
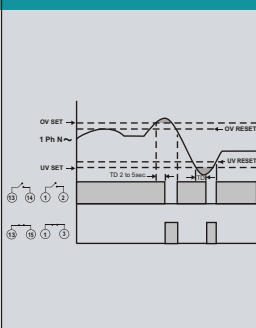
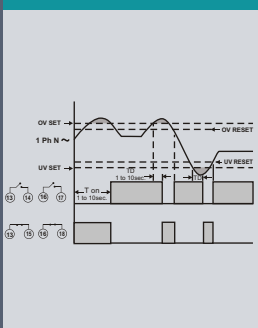
3-Phase 4-Wire Under & Over voltage Auto/Manual Reset, Adjustable under/over voltage settings, adjustable trip delay & ON delay, 2 CO output relay



3-Phase 3-Wire Under & Over voltage Auto/Manual Reset, Adjustable under/over voltage settings, adjustable trip delay & ON delay, 2 CO output relay

System Supply	110 / 240 V AC (+20%, -25%) 50/60Hz	220-240 (+ 20% - 30%), 50/60 Hz ±	110/240/380/415/440 V AC +20%, -25% 50/60Hz		240/380/415 V AC ±15% 50/60Hz
Output Relay Contact	2 CO	2 CO	2 CO	2 CO	2 CO
Trip Setting					
Under Voltage	75% - 95% (adjustable)	75 - 95% [Variable] of set value	75% - 95% (adjustable)	75% - 95% (adjustable)	85% - 95% (adjustable)
Over Voltage	105% - 120% (adjustable)	105 - 120% [Variable] of set value	105% -120% (adjustable)	105% -120% (adjustable)	105% - 115% (adjustable)
Trip Time Delay	1 - 10 secs. (adjustable)	2- 5 Sec (Fixed) (UV/OV)	1-10 secs. (adjustable)	1-10 secs. (adjustable)	1-10 secs. (adjustable)
Power on Delay	1 - 10 secs. (adjustable)	—	1-10 secs. (adjustable)	1-10 secs. (adjustable)	1-10 secs. (adjustable)
Reset	Auto / Manual	Auto Reset	Auto / Manual	Auto / Manual	Auto / Manual
Weight	450 gms.	180 gms.	450 gms.	450 gms.	200 gms.
Dimensions (mm)					
Overall (L x W x D)	76 x 56.5 x 117.5	76 x 30.5 x 117.5	76 x 56.5 x 117.5	76 x 56.5 x 117.5	75 x 35 x 95
Mounting	67 x 46  / 35 mm rail mounting	68 centre to centre / 35 mm rail mounting	67 x 46  / 35 mm rail mounting	67 x 46  / 35 mm rail mounting	11 - Pin plug in

• Wherever not specified
Contact Rating :
5A @ 230 V AC
(resistive)



Relay contact position shown in 'Power on' (Healthy) condition

VOLTAGE MONITORING RELAYS

UVT D1 Under Voltage Relay 3Ø-3W



3-Phase 3-Wire Under voltage
Auto Reset, Adjustable under voltage settings, adjustable trip delay, 1 CO output relay

UVF D1 Under Voltage Relay 3Ø-4W



3-Phase 4-Wire Under voltage
Auto Reset, Adjustable under voltage settings, adjustable trip delay, 1 CO output relay

D2 VCT1 Voltage Monitoring Relay



3-Phase 3-Wire and 3-Phase 4-Wire (selectable) Under & Over voltage, Microcontroller based design, Auto/Manual Reset, Adjustable under/over voltage settings, Absolute values for UV/OV, adjustable trip delay & ON delay, 2 CO output relay (or selectable 1CO for UV, 1CO for OV) Failsafe-non-failsafe selectable

S2 VMR4 Voltage Monitoring Relay, 3Ø-3W



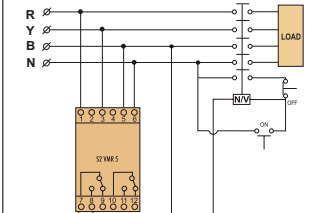
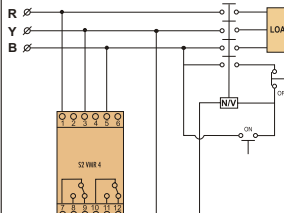
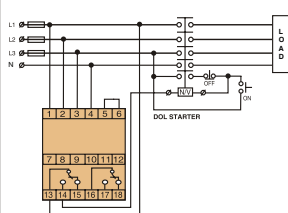
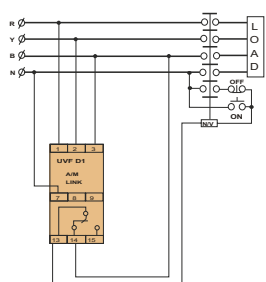
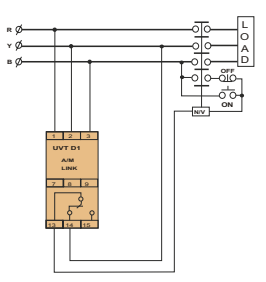
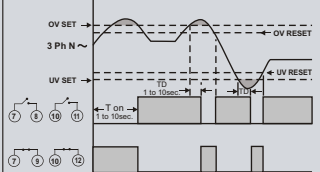
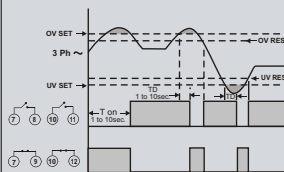
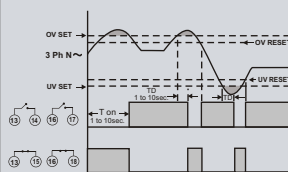
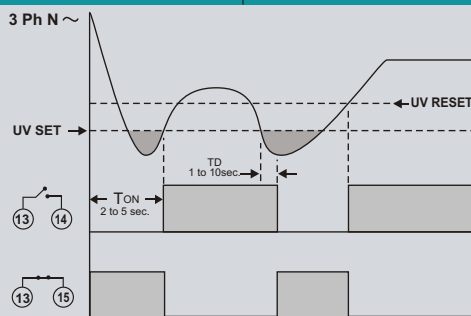
3-Phase 3-Wire Under & Over voltage, Microcontroller based design, SMD Technology Auto/Manual Reset, , Adjustable under/over voltage settings, Absolute values for UV/OV, adjustable trip delay & ON delay, 2 CO output relay (or selectable 1CO for UV, 1CO for OV) Failsafe-non-failsafe selectable

S2 VMR5 Voltage Monitoring Relay, 3Ø-4W



3-Phase 4-Wire Under & Over voltage, Microcontroller based design, SMD Technology Auto / Manual Reset, Adjustable under/over voltage settings, Absolute values for UV/OV, adjustable trip delay & ON delay, 2 CO output relay (or selectable 1CO for UV, 1CO for OV) Failsafe-non-failsafe selectable

110 / 240 / 380 / 415/440 V AC+20 / -25%, 50 / 60 Hz	100-120 / 220-240 / 380-440V AC ± 20%, 50/60 Hz	100-120 / 220-240 / 380-440V AC ± 20%, 48-63 Hz	100-120 / 220-240 / 380-440V AC ± 20%, 48-63 Hz																																																																
1 CO	1 CO	1 CO + 1 CO / 2 CO	1 CO + 1 CO / 2 CO																																																																
75% - 95% (adjustable)	75% - 95% (adjustable)	<table border="1"> <thead> <tr> <th colspan="2">Ph Ph Setting:</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>For 380-440V AC</td> <td>285-425V AC (Variable)</td> <td>285 - 425V AC (Variable)</td> <td></td> </tr> <tr> <td>For 220-240V AC</td> <td>165-225V AC (Variable)</td> <td>165-225V AC (Variable)</td> <td></td> </tr> <tr> <td>For 100-120V AC</td> <td>75-115V AC (Variable)</td> <td>75-115V AC (Variable)</td> <td></td> </tr> <tr> <th colspan="2">Ph N Sensing:</th> <td></td> <td></td> </tr> <tr> <td>For 380-440V AC</td> <td>165-245V AC (Variable)</td> <td></td> <td>45-65V AC (Variable)</td> </tr> <tr> <td>For 220-240V AC</td> <td>95-135V AC (Variable)</td> <td></td> <td>90-130V AC (Variable)</td> </tr> <tr> <td>For 100-120V AC</td> <td>45-65V AC (Variable)</td> <td></td> <td>165-245V AC (Variable)</td> </tr> <tr> <th colspan="2">Ph Ph Sensing:</th> <td></td> <td></td> </tr> <tr> <td>For 380-440V AC</td> <td>400-520V AC (Variable)</td> <td>400-520V AC (Variable)</td> <td></td> </tr> <tr> <td>For 220-240V AC</td> <td>230-290V AC (Variable)</td> <td>230-290V AC (Variable)</td> <td></td> </tr> <tr> <td>For 100-120V AC</td> <td>105-145V AC (Variable)</td> <td>105-145V AC (Variable)</td> <td></td> </tr> <tr> <th colspan="2">Ph N Sensing:</th> <td></td> <td></td> </tr> <tr> <td>For 380-440V AC</td> <td>230-310V AC (Variable)</td> <td></td> <td>60-80V AC (Variable)</td> </tr> <tr> <td>For 220-240V AC</td> <td>130-170V AC (Variable)</td> <td></td> <td>130-170V AC (Variable)</td> </tr> <tr> <td>For 100-120V AC</td> <td>60-80V AC (Variable)</td> <td></td> <td>230-310V AC (Variable)</td> </tr> </tbody> </table>		Ph Ph Setting:				For 380-440V AC	285-425V AC (Variable)	285 - 425V AC (Variable)		For 220-240V AC	165-225V AC (Variable)	165-225V AC (Variable)		For 100-120V AC	75-115V AC (Variable)	75-115V AC (Variable)		Ph N Sensing:				For 380-440V AC	165-245V AC (Variable)		45-65V AC (Variable)	For 220-240V AC	95-135V AC (Variable)		90-130V AC (Variable)	For 100-120V AC	45-65V AC (Variable)		165-245V AC (Variable)	Ph Ph Sensing:				For 380-440V AC	400-520V AC (Variable)	400-520V AC (Variable)		For 220-240V AC	230-290V AC (Variable)	230-290V AC (Variable)		For 100-120V AC	105-145V AC (Variable)	105-145V AC (Variable)		Ph N Sensing:				For 380-440V AC	230-310V AC (Variable)		60-80V AC (Variable)	For 220-240V AC	130-170V AC (Variable)		130-170V AC (Variable)	For 100-120V AC	60-80V AC (Variable)		230-310V AC (Variable)
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For 100-120V AC	60-80V AC (Variable)		230-310V AC (Variable)																																																																
1 - 10 secs. (adjustable)	1- 10 secs. (adjustable)	1-10 Sec (Variable) SP/UV/OV	1-10 Sec. (Variable)																																																																
3.5 secs. ±1.5 secs.	3.5 secs ±1.5 secs	1-10 Sec (Variable)	1 10 Sec (Variable)																																																																
Auto	Auto	Auto/ Manual Reset	Auto / Manual Reset																																																																
175 gms.	175 gms.	300 gms (Approx.)	110 gms (Approx.)																																																																
76 x 30.5 x 117.5	76 x 30.5 x 117.5	76 X 56.5 X 117.5	35 X 60 X 90																																																																
68 centre to centre / 35 mm rail mounting	68 centre to centre / 35 mm rail mounting	67 x 46 mm / 35 mm rail mounting	35 mm Rail Mounting																																																																



Relay position shown in 'Power on' (Healthy) condition

Relay position shown in 'Power off' condition

CURRENT MONITORING RELAYS



CCS D2 1 Phase Current Monitoring Relay



Single phase under & over current
Auto/Manual reset,
Input 1A or 5 A through CT,
Adjustable under/over current trip settings,
Adjustable trip delay & ON delay,
2 CO output relay

OCS D1 1 Phase Over Current Relay



Single phase over current
Auto reset,
Input 1A or 5 A through CT,
Adjustable over current trip settings,
Adjustable trip delay,
1 CO output relay

S2 CMR2 1 Phase Current Monitoring Relay



Single phase under & over current
Microcontroller based design, SMD technology, Auto/Manual reset, Input 1A or 5 A through CT, Adjustable under / over current trip settings, adjustable trip delay & ON delay, 2 CO output relay (or selectable 1CO for UC, 1CO for OC)
Failsafe-non-failsafe mode selectable

Supply Voltage System Auxiliary

110 / 240 / 380 / 415V AC $\pm 20\%$, 12 V DC / 24 / 30 V DC $\pm 10\%$

110 / 240 V AC $\pm 20\%$, 24 V DC $\pm 10\%$

Ext. Input

1 Amp or 5 Amp (Selectable) CT

1 Amp or 5 Amp (Secondary) CT

1 Amp or 5 Amp (Secondary) CT

Output contact

2 CO

1 CO

1 CO + 1 CO

Trip setting

EF Trip Setting

—

—

—

Under Current

10%-100% (adjustable)

N.A.

50% - 140% (Variable)

Over Current

50% - 140% (adjustable) of CT sec

50% - 140% (adjustable) of CT sec

10% - 100% (Variable)

Power On Delay

1 - 10 secs (adjustable)

3.5 secs ± 1.5 sec (fixed)

1-10 Sec. (Adjustable) ± 1 Sec.

Trip Time Delay

1 - 10 secs (adjustable)

1 - 10 secs (adjustable)

1-10 Sec. (Adjustable) ± 1 Sec.

Resetting

Manual / Auto

Auto

Auto / Manual

Weight

550 gms.

250 gms.

140 gms

Dimensions (mm)

Overall (L x W x D)

76 x 56.5 x 117.5

76 x 30.5 x 117.5

35 X 60 X 90

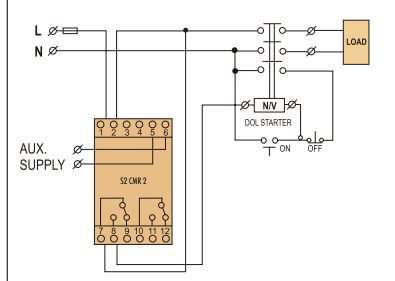
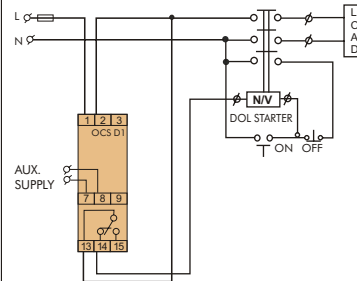
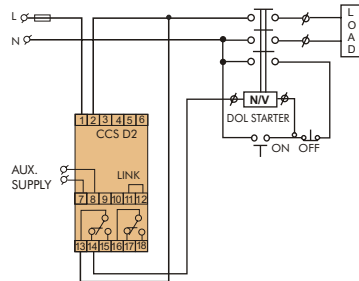
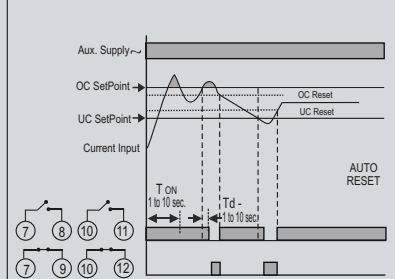
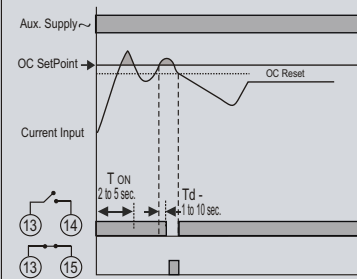
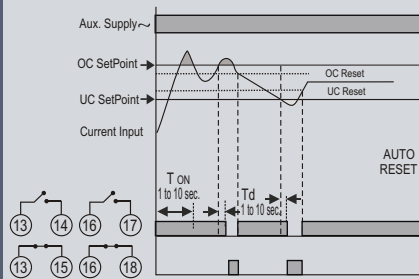
Mounting (L x W)

67 x 46 / 35 mm rail Mounting

68 centre to centre / 35 mm rail Mounting

35 mm Rail Mounting

• Wherever not specified
Contact Rating :
5A @ 230 V AC
(resistive)



Relay contact position shown in 'Power on' (Healthy) condition

Relay position in
'Power off' condition

D2 EFR1 Earth Fault Relay



Earth fault/Ground fault monitoring of 3 phase systems
Manual Reset,
Input 1A or 5A through CBCT,
Adjustable earth fault trip setting,
adjustable trip delay,
2 CO relay output

S2 CMR3 Ground Fault Relay



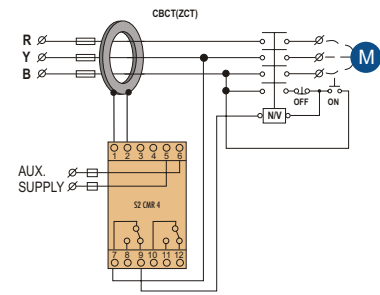
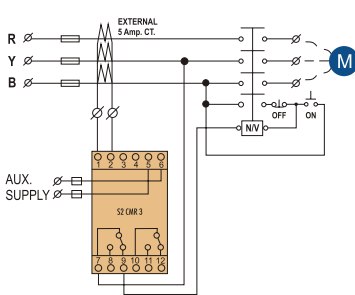
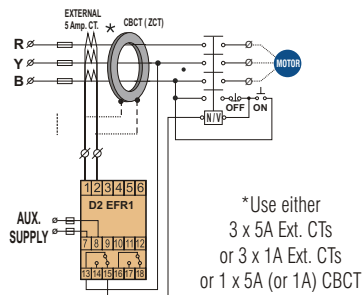
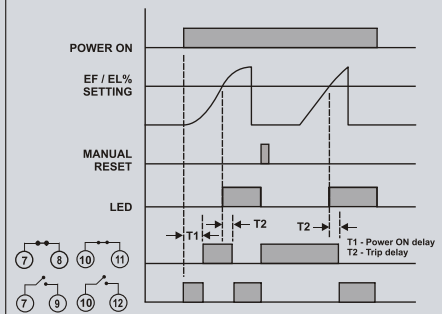
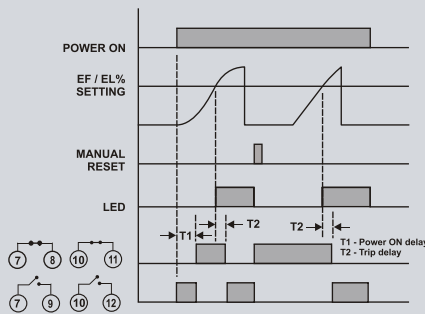
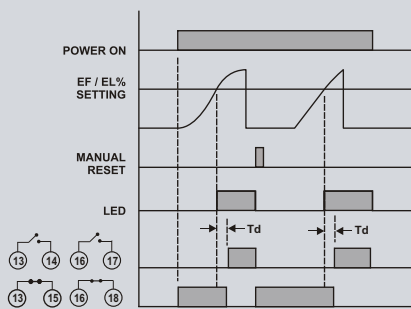
Earth fault/Ground fault monitoring of 3 phase systems, Microcontroller based design, SMD technology, Manual Reset,
Input 1A or 5A through CBCT,
Adjustable earth fault trip setting,
Adjustable trip delay & ON delay,
2 CO relay output
Failsafe-non-failsafe seletable

S2 CMR4 Earth Leakage Relay



Earth leakage monitoring of 3 phase systems, Microcontroller based design, SMD technology, Manual Reset,
Input through CBCT,
Adjustable trip setting,
Adjustable trip delay & ON delay,
2 CO relay output
Failsafe-non-failsafe seletable

110 / 240 / 380 / 415 V AC $\pm 20\%$	100-110/240/380/415V AC $\pm 20\%$, 48-63 Hz 100-110/240V AC / 24V DC $\pm 20\%$	100-110/240/380/415/440V AC $\pm 20\%$, 48-63 Hz 100-110/240V AC / 24V DC $\pm 20\%$
1A or 5A (Selectable) CBCT 1 CO (2 CO) (Pick up on Fault)	2 CO	2 CO
10% -100% (adjustable) of CT sec	10% - 100% of Rated Current Input (Variable) (Input through CT of 1AMP or 5AMP Secondary)	10% - 100% of Rated Current Input (Variable) (Input through CBCT of 300m A Secondary)
N.A.	N.A.	N.A.
N.A.	N.A.	N.A.
N.A.	1 -10 Sec.(Adjustable)	1 -10 Sec.(Adjustable)
0.1-1.0 / 1-10 Sec. (Adjustable)	0.1 - 1 Sec.(Adjustable)	0.1 Sec to 1 Sec.(Adjustable)
Manual / Remote (Selectable)	Manual	Manual
550gms.	140 gms	140 gms
76 x 56.5 x 117.5 67 x 46 / 35 mm rail Mounting	35 X 60 X 90 35 mm Rail Mounting	35 X 60 X 90 35 mm Rail Mounting



Relay position in 'Power on' (Healthy) condition

Relay position shown in 'Power off' condition

FREQUENCY MONITORING RELAYS



FCS D2 Frequency Monitoring Relay



Single phase under & over frequency
Auto reset,
Adjustable under/over frequency trip settings,
Adjustable trip delay & ON delay,
2 CO output relay

OFS D1 Over Frequency Relay



Single phase over frequency
Auto reset,
Adjustable over frequency trip settings,
Adjustable trip delay,
1 CO output relay

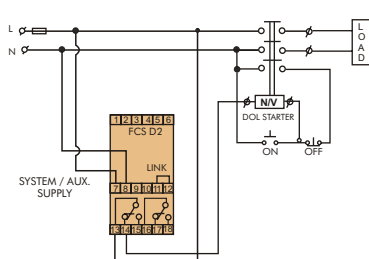
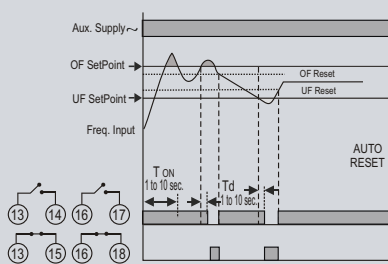
S2 FMR1 Frequency Monitoring Relay



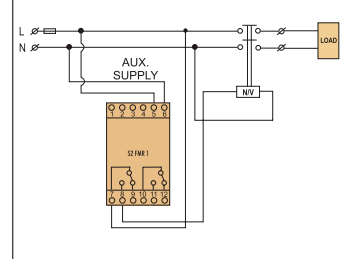
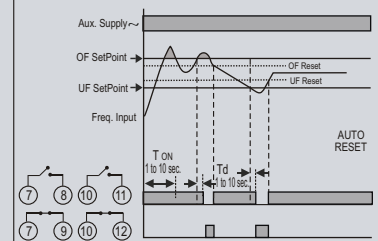
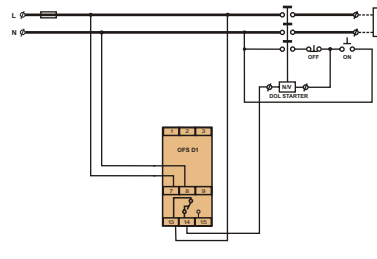
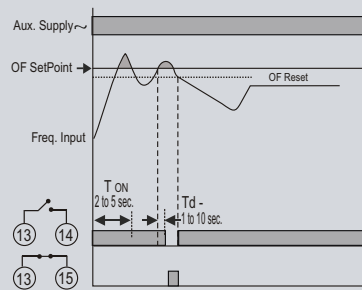
Single phase under & over frequency,
Microcontroller based design, SMD technology, Auto reset,
Adjustable under/over frequency trip settings,
Adjustable trip delay & ON delay,
2 CO output relay
Failsafe-non-failsafe mode selectable

Supply Voltage			
System	110 / 240 / 380 / 415 V AC $\pm 20\%$	110 / 240 / 380 / 415 V AC $\pm 20\%$	100-110/240V AC $\pm 20\%$, 38-72 Hz
Auxiliary	Built-in	12 / 24 V DC or Built in	In Built or 24V DC $\pm 20\%$
Ext. Input	—	—	—
Output contact	2 CO	1 CO	1 CO + 1 CO
Trip setting			
Under Current	—	—	—
Over Current	—	—	—
Under Frequency	40 Hz - 60 Hz (variable)	N.A.	40 Hz - 60 Hz (Variable)
Over Frequency	50 Hz - 70 Hz (variable)	50 Hz - 70 Hz	50 Hz - 70 Hz (Variable)
Under Power	—	—	—
Over Power	—	—	—
Reverse Power	—	—	—
Power On Delay	1 - 10 secs. (adjustable)	3.5 secs. ± 1.5 sec (fixed)	1 - 10 Sec. (Adjustable) ± 1 Sec.
Trip Time Delay	1 - 10 secs. (adjustable)	1 - 10 secs. (adjustable)	1 - 10 Sec. (Adjustable) ± 0.1 Sec.
Resetting	Auto	Auto	Auto / Manual
Weight	450 gms.	450 gms.	130 gms
Dimensions (mm)			
Overall (L x W x D)	76 x 56.5 x 117.5	76 x 30.5 x 117.5	35 X 60 X 90
Mounting (L x W)	67 x 46 / 35 mm Rail Mounting	68 centre to centre / 35 mm Rail Mounting	35 mm Rail Mounting

• Wherever not specified
Contact Rating :
5A @ 230 V AC
(resistive)



Relay contact position shown in 'Power on' (Healthy) condition



Relay position in 'Power off' condition

POWER MONITORING RELAYS



RPT D2

Reverse Power Relay, (3Ø-3W)



3-phase 3-wire generators reverse power monitoring
Auto/Manual reset,
Reverse power (current) trip settings adjustable,
ON delay and trip delay adjustable,
2 CO output relay

RPF D2

Reverse Power Relay, (3Ø-4W)



Single phase or 3-phase 4-wire generators reverse power monitoring
Auto/Manual reset,
Reverse power (current) trip settings adjustable,
ON delay and trip delay adjustable,
2 CO output relay

PMR D2 + PTS D1

Motor Power Monitoring Relay



Under Power & Over Power Monitoring
Auto/Manual Reset,
Adjustable UP/OP settings,
Adjustable On delay and trip delay,
2 CO output relays

3 Ph/3 W, 110/240/380/415 V AC $\pm 20\%$
Built-in
5A, CT & R,Y, B
2 CO

3 Ph/4 W, 110/240/380/415 V AC $\pm 20\%$
Built-in
5A, CT & R,Y, B
2 CO

3 Ph/3 W, 110/240/380/415 V AC $\pm 20\%$
Built-in
PTS D1 (1A/5A CT & 3Ph)
1 CO + 1 CO

—
—
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—
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—
—
2% - 20% (adjustable)
1 - 10 secs. (adjustable)
1 - 10 secs. (adjustable.)
Auto / Manual
460 gms.

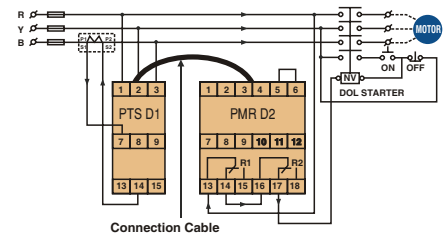
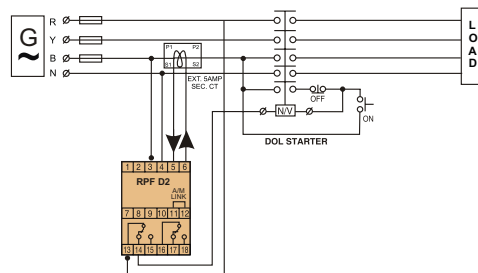
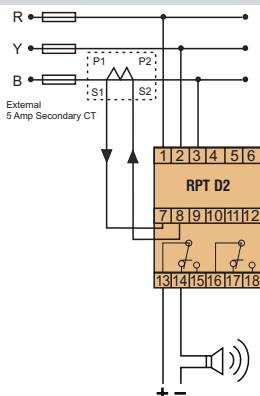
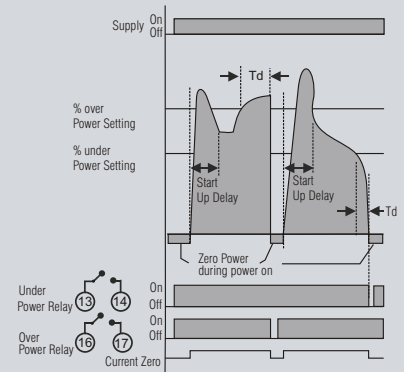
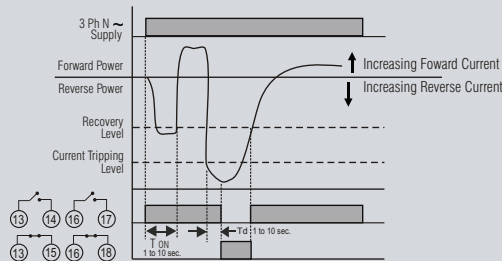
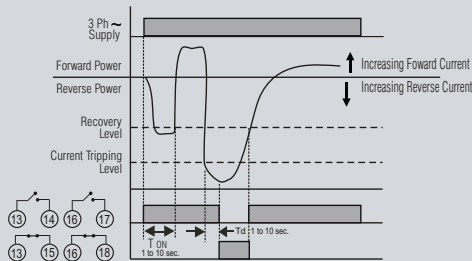
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2% - 20% (adjustable)
1 - 10 secs. (adjustable)
1 - 10 secs. (adjustable)
Auto / Manual
460 gms.

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—
—
10% - 100% (adjustable)
10% - 100% (adjustable)
—
1 - 10 secs. (adjustable)
1 - 10 secs. (adjustable)
Auto / Manual
400 gms.

76 x 56.5 x 117.5
67 x 46 / 35 mm Rail Mounting

76 x 56.5 x 117.5 x 27
67 x 46 / 35 mm Rail Mounting

76 x 56.5 x 117.5
67 x 46 / 35 mm Rail Mounting



Relay contact position shown in 'Power on' (Healthy) condition

VOLTAGE SCANNERS & CONTROLLERS

F3 VSR1
Voltage Scanner 3Ø-3W



3-Phase 3-Wire voltage monitoring & display, Phase Failure, Unbalance, Phase Sequence, under voltage, Over Voltage, Auto / Manual Reset, Adjustable unbalance trip setting, Adjustable under/over voltage settings, adjustable trip delay, RS232 communication port, 2 CO output relay

F3 VSR2
Voltage Scanner 3Ø-4W



3-Phase 4-Wire voltage monitoring & display, Phase Failure, Unbalance, Phase Sequence, under voltage, Over Voltage, Auto / Manual Reset, Adjustable unbalance trip setting, Adjustable under/over voltage settings, Adjustable trip delay, RS232 communication port, 2 CO output relay

F3 VSR3
Voltage Scanner & Phase Selector



3-phase 4-wire system voltage monitor with phase selector Under voltage and over voltage monitoring Auto reset, Adjustable UV/OV trip settings, Adjustable trip delay, 5x1NO output relays.

Supply voltage			
System	380 / 415 V AC (3 Ph - 3 W)	380 / 415 V AC (3 Ph - 4 W)	415 VAC, + 20 % -30 %, 50 Hz / (60Hz) ± 3 %
Auxiliary	90-270 V AC/DC	Self Powered (Neutral & any Phase)	48 VDC ± 10 %
Output relay contacts	2 CO & RS 232 (optional)	2 CO & RS 232 (optional)	5 Nos. x 1NO.
Trip setting			
Phase Sequence	Yes	Yes	No
Phase Unbalance	1 - 10 % (Adj.)	1 - 10 % (Adj.)	
Under Voltage	1 - 80V below nominal voltage	1 - 50V below nominal voltage	75 % TO 95 % [VARIABLE BY POT]
Over Voltage	1 - 60V above nominal voltage	1 - 25V above nominal voltage	105 % TO 120 % [VARIABLE BY POT]
Trip time delay	1 - 60 secs. or 1-5 mins select.	1 - 60 secs. or 1-5 mins select.	1-10 SEC. [VARIABLE BY POT]
Reset	Manual	Manual	AUTO
Display	Backlit LCD (16 x 2 character)	Backlit LCD (16 x 2 character)	—
Monitoring	Phase to Phase	Phase to neutral	Phase to neutral
Weight	800 gms.	800 gms.	900 gms.
Dimensions (mm)			
Overall (L x W x D)	96 x 96 x 130	96 x 96 x 130	96 x 96 x 130
Mounting (L x W)	92 x 92	92 x 92	92 x 92
	RP, UV / OV and UB Protection override facility provided	RP, UV / OV and UB Protection override facility provided	On Delay - 3mins ± 10%

• Wherever not specified
Contact Rating :
5A @ 230 V AC
(resistive)

