MC3V

MULTIFUNCTION THREE PHASE OVERVOLTAGE / UNDERVOLTAGE RELAY

Three-phase voltage relay, suitable for protection of HV, MV, LV power transmission and distribution systems.

The relay MC3V measures the true R.M.S. value of the 3 phase to neutral voltages fed to three transformers isolated high-impedance inputs.

Protective Functions

- F59 : 2 Overvoltage elements
- F27 : 2 Undervoltage elements
- F81> : 1 Overfrequency element
- F81< : 1 Underfrequency element
- F59Vo : 1 Zero sequence Overvoltage element
- F59V2 : 1 Negative Sequence Overvoltage Element
- F27V1 : 1 Positive Sequence Undervoltage Element

Measurements

- Real Time Measurements (V - Hz)
- Trip Recording (last 20 trips with date & time)

Control

- 4 Output Relays (programmable)
- 3 Digital Inputs
- Time tagged multiple event recording
- Oscillographic wave form capture
- Blocking Outputs and Blockings Input for pilot wire selectivity coordination

Technical Characteristics

- Complete autodiagnostic program
- Display LCD 16 (2x8) characters
- 4 Leds for signalization

Communications

- 1 RS485 Serial communication port on rear side
- 1 RS232 Serial communication port on front panel
- Modbus RTU / IEC870-5-103 Communication Protocols

Expansion Modules (optional)

The relay support only one expansion module

- "UX10-4" 10 Digital Input and 4 Outputs Relay
- "14DI" 14 Digital Inputs.
- "14DO" 14 Output Relays

Mounting

- 1 Module box (2 modules with expansion), totally draw-out execution
- IP44 protection case (on request IP54)

Power Supply Ratings

- Type 1 : 24V(-20%) / 110V(+15%) a.c. - 24V(-20%) / 125V(+20%) d.c.
- Type 2 : 80V(-20%) / 220V(+15%) a.c. - 90V(-20%) / 250V(+20%) d.c.

Software

- MSCom2 Program interface for device management

MC05-ING-Rev.04

Electronics

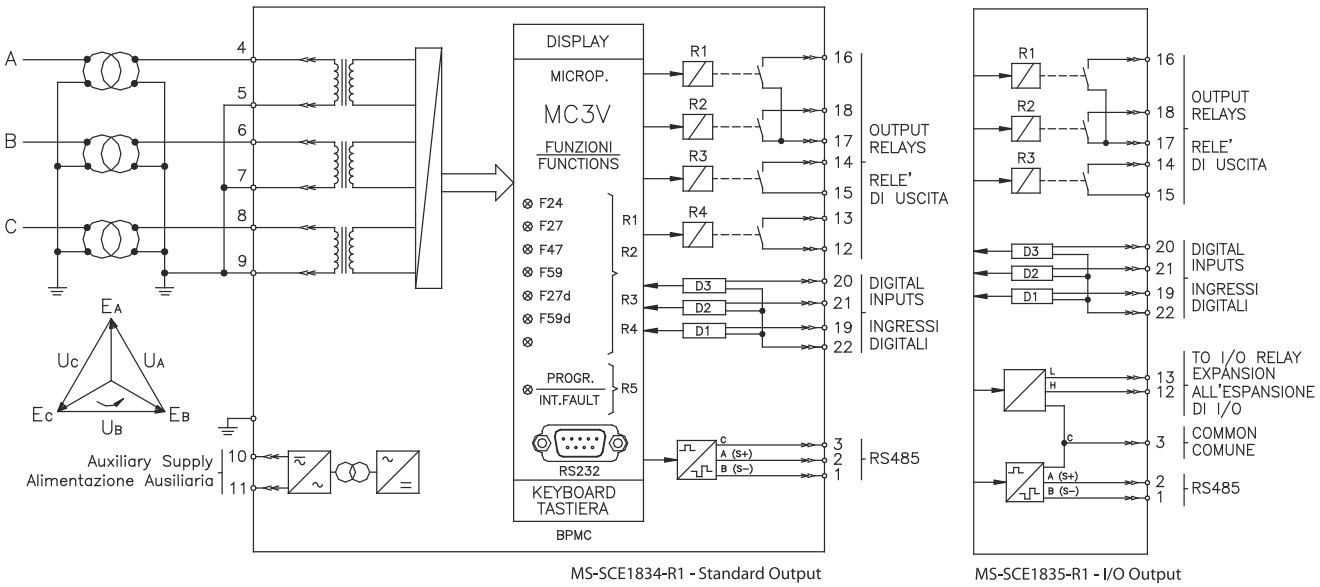
Programmable Input Quantities		
Fn = System frequency	: (50 ÷ 60)Hz	
V1 = Rated primary phase to phase voltage of system's Pts	: (0.05 ÷ 500)kV	step 0.01kV
V2 = Rated secondary phase to phase voltage of system's Pts	: (50 ÷ 400)V	step 0.01V

Real time Measurements		
f - EA - EB - EC - Vo - V1 - V2		
1 - F59 (V>) : First OverVoltage Element		
Function enabling	: Enable/Disable	
Voltage setting range	: V> = (0.5 ÷ 1.50)Vn	step 0.01Vn
Independent trip time delay	: tV> = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ⩽0.03s	
2 - F59 (V>>) : Second OverVoltage Element		
Function enabling	: Enable/Disable	
Voltage setting range	: V>> = (0.5 ÷ 1.50)Vn	step 0.01Vn
Independent trip time delay	: tV>> = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ⩽0.03s	
1 - F27 (V<) : First UnderVoltage Element		
Function enabling	: Enable/Disable	
Voltage setting range	: V< = (0.2 ÷ 1.20)Vn	step 0.01Vn
Independent trip time delay	: tV< = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ⩽0.03s	
2 - F27 (V<<) : Second UnderVoltage Element		
Function enabling	: Enable/Disable	
Voltage setting range	: V<< = (0.2 ÷ 1.20)Vn	step 0.01Vn
Independent trip time delay	: tV<< = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ⩽0.03s	
1 - 81> (f>): Maximum Frequency Element		
Function enabling	: Enable/Disable	
Voltage setting range	: V< = (0.2 ÷ 1.20)Vn	step 0.01Vn
Independent trip time delay	: tV< = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ⩽0.03s	
1 - 81< (f<): Minimum Frequency Element		
Function enabling	: Enable/Disable	
Voltage setting range	: f< = (40 ÷ 70)Hz	step 0.01Hz
Independent trip time delay	: tf< = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ⩽0.03s	
1 - 59o (Vo>): Zero Sequence Voltage Control Element		
Function enabling	: Enable/Disable	
Voltage setting range	: Vo> = (0.1 ÷ 2)Vn	step 0.01Vn
Independent trip time delay	: tVo> = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ⩽0.03s	
1 - 27 (V1<): Positive Sequence Undervoltage Element		
Function enabling	: Enable/Disable	
Voltage setting range	: V1< = (0.02 ÷ 1.5)Vn	step 0.01Vn
Independent trip time delay	: tV1< = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ⩽0.03s	
1 - 47 (V2>): Negative Sequence (Unbalanced) Overvoltage Element		
Function enabling	: Enable/Disable	
Voltage setting range	: V2> = (0.1 ÷ 1.5)Vn	step 0.01Vn
Independent trip time delay	: tV2< = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ⩽0.03s	

Electronics

MC3V

Connection Diagram



MS-SCE1834-R1 - Standard Output

MS-SCE1835-R1 - I/O Output

Typical Characteristics		
Accuracy at reference value of influencing factors	2% Un	for measurements
	2% + (to=20 ÷ 30ms)	for times
Rated Voltage	Un = (50 ÷ 400)Vac phase to phase	
Voltage Overload	2Un for 1sec	
Burden on voltage input	0.2 VA/phase at Un	
Average power supply consumption	<7 VA	
Output relays	rating 6 A; Vn = 250 V	
	A.C. resistive switching = 1500W (400V max)	
	make = 30 A (peak) 0.5 sec.	
	break = 0.3 A, 110 Vcc,	
	L/R = 40 ms (100.000 op.)	

Order code - Example :		
MC3V	1	1
	Power Supply	Output Options
	1 = Type 1	1 = Standard (with R4)
	2 = Type 2	2 = UX10-4
		3 = 14DI
		4 = 14DO

The performances and the characteristics reported in this document are not binding and can modified at any moment without notice.

MC05-ING-Rev.04

KNORR-BREMSE

Microelettrica Scientifica

Microelettrica Scientifica S.p.A. - 20089 Rozzano (MI) - Via Alberelle 56/58 Italy
Tel. +39 02 575731 - Fax +39 02 57510940 - E-Mail: sales.relays@microelettrica.com
www.microelettrica.com