



MC20-R

OVERCURRENT and EARTH FAULT + AUTORECLOSING - RELAY

Overcurrent + Earth Fault + autoreclosure relay with programmable time-current curves suitable for protection of power distribution systems with insulated, resistance earthed or compensated neutral.

Rated input current selectable 1A or 5A, 50/60 Hz.

3rd Harmonic Filter on the neutral input current.

Protective Functions

- F50/51 : Three Phase-Fault elements
- F50N/51N : Three Earth Fault elements
- F79 : Four/shot programmable Autoreclosing
Reclosure sequence coordination
- F51BF : Breaker Failure protection

Measurements

- Real Time Measurements (IA - IB - IC - Io)
- Maximum Demand and Inrush Recording (IA - IB - IC - Io)
- 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

- MCom2 Program interface for device management

Electronics

MC20-R

Programmable Input Quantities

In : Rated primary current of phase CTs	: (1 ÷ 9999)A	step 1A
Fn : System frequency	: (50 ÷ 60)Hz	

1F - 50/51 (I>): First Overcurrent Element

Function enabling	: Enable/Disable	
Current setting range	: I> = (0.10 ÷ 4)In	step 0.01In
Definite trip time delay (10x[I>] in inverse time operation modes)	: tI> = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ≤ 0.03s	
Time current curves	: Indep.Definite Time (D), IEC (A / B / C), IEEE (MI / VI / I / EI / SI)	
Autoreclosure shot enabling	: Shx = 1 - 2 - 3 - 4 (any combination)	

2F - 50/51 (I>>): Second Overcurrent Element

Function enabling	: Enable/Disable	
Current setting range	: I>> = (0.50 ÷ 40)In	step 0.01In
Definite trip time delay	: tI>> = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ≤ 0.03s	
Automatic threshold doubling on inrush	: 2xI = Enable/Disable	
Trip time delay	: t2xI = (0.02 ÷ 9.99)s	step 0.01s
Autoreclosure shot enabling	: Shx = 1 - 2 - 3 - 4 (any combination)	

3F - 50/51 (IH): Third Overcurrent Element

Function enabling	: Enable/Disable	
Current setting range	: IH = (0.50 ÷ 40)In	step 0.01In
Definite trip time delay	: tIH = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ≤ 0.03s	
Automatic threshold doubling on inrush	: 2xI = Enable/Disable	
Trip time delay	: t2xI = (0.02 ÷ 9.99)s	step 0.01s
Autoreclosure shot enabling	: Shx = 1 - 2 - 3 - 4 (any combination)	

1F - 50N/51N (Io>): First Earth Fault Element

Function enabling	: Enable/Disable	
Current setting range	: Io> = (0.01 ÷ 4)Ion	step 0.01Ion
Definite trip time delay (10x[Io>] in inverse time operation modes)	: tIo> = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ≤ 0.04s	
Time current curves	: Indep.Definite Time (D), IEC (A / B / C), IEEE (MI / VI / I / EI / SI)	
Autoreclosure shot enabling	: Shx = 1 - 2 - 3 - 4 (any combination)	

2F - 50N/51N (Io>>): Second Earth Fault Element

Function enabling	: Enable/Disable	
Current setting range	: Io>> = (0.01 ÷ 9.99)Ion	step 0.01Ion
Definite trip time delay (10x[Io>>] in inverse time operation modes)	: tIo>> = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ≤ 0.04s	
Autoreclosure shot enabling	: Shx = 1 - 2 - 3 - 4 (any combination)	

3F - 50N/51N (IoH): Third Earth Fault Element

Function enabling	: Enable/Disable	
Current setting range	: IoH = (0.01 ÷ 9.99)Ion	step 0.01Ion
Definite trip time delay (10x[IoH] in inverse time operation modes)	: tIoH = (0.05 ÷ 60)s	step 0.01s
Instantaneous output	: ≤ 0.04s	
Autoreclosure shot enabling	: Shx = 1 - 2 - 3 - 4 (any combination)	

F79 - Autoreclose

Number of reclosure shots to Lock-out	: RSh (1 / 2 / 3 / 4)	
Reclosing time delay first shot	: RCL1 (0.1 ÷ 300)s	step 0.1s
Reclosing time delay first second	: RCL2 (0.1 ÷ 300)s	step 0.1s
Reclosing time delay first third	: RCL3 (0.1 ÷ 300)s	step 0.1s
Reclosing time delay first fourth	: RCL4 (0.1 ÷ 300)s	step 0.1s
Reset (Reclaim) time	: RCLtr = (0.1 ÷ 300)s	step 0.1s

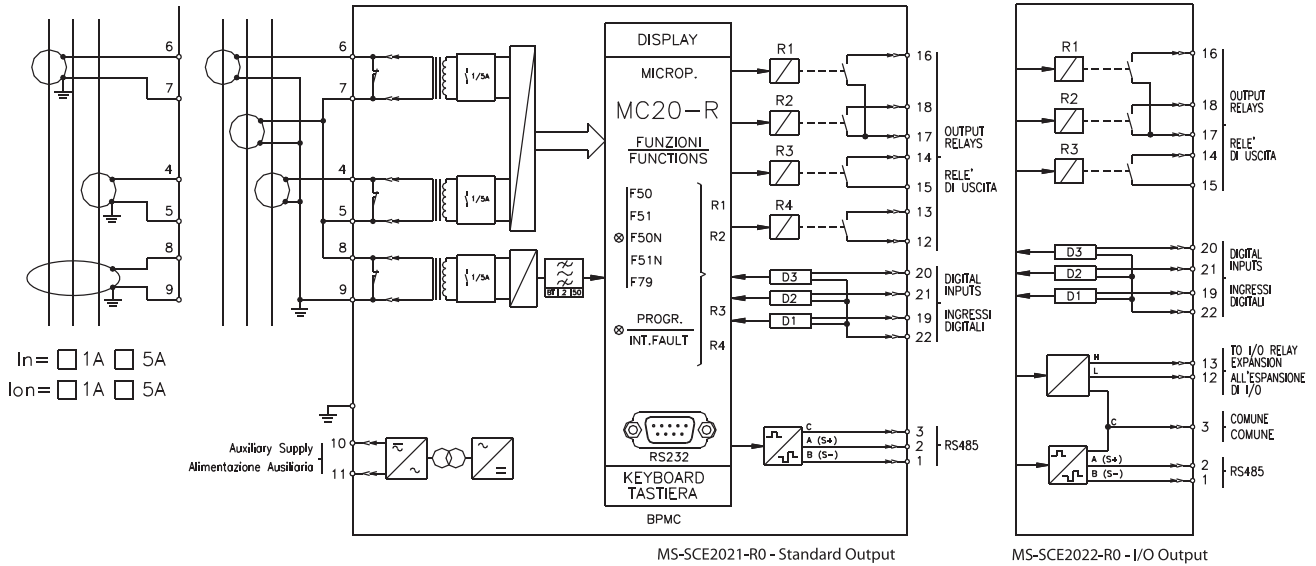
Breaker Failure Element

Trip time delay	: tBF = (0.05 ÷ 0.75)s	step 0.01s
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Connection Diagram



Typical Characteristics		
Accuracy at reference value of influencing factors (In, On = Nominal current of the System's CT)	2% In - 0.2% On	for measurements
Rated current	In = 1A/5A On = 1A/5A	for times
Current Overload	400A for 1sec; 20A continuous	
Burden on current inputs	Phase : 0.05VA at In=1A - 0.2VA at In 5A Neutral : 0.05VA at On=1A - 0.2VA at On 5A	
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 :				
MC20-R	1	2	1	1
	Power Supply	Phase Rated Input Current	Zero sequence Input Current	Output Options
	1 = Type 1 2 = Type 2	1 = 1A 2 = 5A	1 = 1A 2 = 5A	1 = Standard (with R4) 2 = UX10-4 3 = 14DI 4 = 14DO

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