



PROTECTION RELAYS

MC20

Overcurrent and earth fault – relay

Overcurrent + Earth Fault 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. As Optional Trip Coil Supervision function is available.

Protective Functions

- **F50/51** : Three Phase-Fault elements
- **F50N/51N** : Three Earth Fault elements
- **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



MICROELETTRICA

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

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.

Mounting

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

Software

- MCom2 Program interface for device management

Programmable Input Quantities		
In : Rated primary current of phase CTs	$(1 \div 9999)A$	step 1A
Fn : System frequency	$(50 \div 60)Hz$	step 1A
1F - 50/51 (I>): First Overcurrent Element		
Function enabling	Enable/Disable	
Current setting range	$I> = (0.20 \div 4)I_n$	step 0.01I _n
Definite trip time delay (10x[I>] in inverse time operation modes)	$tI> = (0.05 \div 60)s$	step 0.01s
Instantaneous output	$\leq 0.03s$	
Time current curves	Indep.Definite Time (D), IEC (A / B / C), IEEE (MI / VI / I / EI / SI)	
2F - 50/51 (I>>): Second Overcurrent Element		
Function enabling	Enable/Disable	
Current setting range	$I>> = (0.50 \div 40)I_n$	step 0.01I _n
Definite trip time delay	$tI>> = (0.05 \div 60)s$	step 0.01s
Instantaneous output	$\leq 0.03s$	
Automatic threshold doubling on inrush	$2xI = \text{Enable/Disable}$	
3F - 50/51 (IH): Third Overcurrent Element		
Function enabling	Enable/Disable	
Current setting range	$I_H = (0.50 \div 40)I_n$	step 0.01I _n
Definite trip time delay	$tI_H = (0.05 \div 60)s$	step 0.01s
Instantaneous output	$\leq 0.03s$	
Automatic threshold doubling on inrush	$2xI = \text{Enable/Disable}$	
1F - 50N/51N (Io>): First Earth Fault Element		
Function enabling	Enable/Disable	
Current setting range	$I_{o>} = (0.01 \div 4)I_{on}$	step 0.01I _{on}
Definite trip time delay (10x[Io>] in inverse time operation modes)	$tI_{o>} = (0.05 \div 60)s$	step 0.01s
Instantaneous output	$\leq 0.04s$	
Time current curves	Indep.Definite Time (D), IEC (A / B / C), IEEE (MI / VI / I / EI / SI)	
2F - 50N/51N (Io>>): Second Earth Fault Element		
Function enabling	Enable/Disable	
Current setting range	$I_{o>>} = (0.01 \div 9.99)I_{on}$	step 0.01I _{on}
Definite trip time delay	$tI_{o>>} = (0.05 \div 60)s$	step 0.01s
Instantaneous output	$\leq 0.04s$	
3F - 50N/51N (IoH): Third Earth Fault Element		
Function enabling	Enable/Disable	
Current setting range	$I_{oH} = (0.01 \div 9.99)I_{on}$	step 0.01I _{on}
Definite trip time delay	$tI_{oH} = (0.05 \div 60)s$	step 0.01s
Instantaneous output	$\leq 0.04s$	

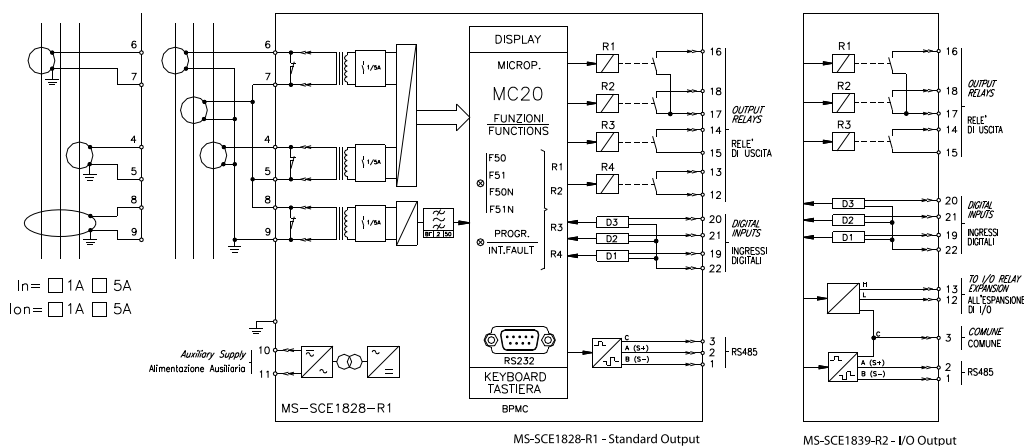
Breaker Failure Element

Trip time delay

$t_{BF} = (0.05 \dots 0.75)s$

step 0.01s

Connection Diagram



Typical Characteristics

Accuracy at reference value of influencing factors	2% In	for measurements
	0.2% On	
	2% + (to=20 ÷ 30ms)	for times
Rated Current	In = 1A/5A; On = 1A/5A	
Current Overload	400A for 1 sec; 20A continuous	
Burden on current input	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 6A; Vn = 250V 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	1	2	1	1
	Power Supply	Phase Rated Input Current	Zero sequence Input Current	Output Options
	1 = Type 1	1 = 1A	1 = 1A	1 = Standard (with R4)
	2 = Type 2	2 = 5A	2 = 5A	2 = UX10-4
				3 = 14DI
				4 = 14DO

The technical specifications reported are not binding and they should be agreed in the contract.

For further technical information on our products visit www.microelettrica.com

Microelettrica Scientifica S.p.A.

20090 Buccinasco (MI) , Via Lucania 2, Italy

Tel.: +39 02 575731

E-mail: info@microelettrica.com

www.microelettrica.com



KNORR-BREMSE

SELECTRON

NEW YORK AIR BRAKE

KIEPE ELECTRIC

IFE

EVAC

MERAK

ZELISKO

MICROELETTRICA

RAILSERVICES