



MC20-CEI

OVERCURRENT and EARTH FAULT - RELAY

Overcurrent + Earth Fault (directional or not Directional) relay with programmable time-current curves suitable for power distribution systems.

Protective Functions

- F50/51 : Three Phase-Fault elements
- F50N/51N/67N : Two Directional or not Directional Earth-Fault elements, with trip sector.
- 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

- 3 Output Relay (programmable)
- 3 Digital Inputs
- Data Logger
- Trip circuit supervision
- Time tagged multiple event recording
- C/B controlled via serial communication
- Blocking Output and Blocking 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 Communication Protocols

Mounting

- 1 Module box, 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

Protection Relays

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Programmable Input Quantities		
In : Rated primary current of phase CTs	: $(1 \div 9999)A$	step 1A
Fn : System frequency	: $(50 \div 60)Hz$	
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
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
3F - 50/51 (I>>>): Third 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
1F - 50N/51N (Io>): First Earth Fault Element		
Function enabling	: Enable/Disable	
Current setting range	: $I_o> = (10 \div 200)mAsec$	step 5mAsec
Definite trip time delay	: $tI_o> = (0,05 \div 60)s$	step 0,05s
2F - 50N/51N (Io>>): Second Earth Fault Element		
Function enabling	: Enable/Disable	
Current setting range	: $I_o>> = (100 \div 5000)mAsec$	step 10mAsec
Definite trip time delay	: $tI_o>> = (0,05 \div 60)s$	step 0.01s
1F - S1: First Directional Earth Fault element		
Minimum residual voltage level for operation	: $1U_o = (0,01 \div 0,4)V_n$	step $0,01V_n$
Lower limit of the tripping zone	: $1aA = (0 \div 359)^\circ$	step 1°
Upper limit of the tripping zone	: $1aB = (0 \div 359)^\circ$	step 1°
Current setting range	: $1I_o = (0,01 \div 0,2)I_{on}$	step $0,01I_{on}$
Definite trip time delay	: $t1I_o = (0,05 \div 60)V_n$	step $0,01s$
1F - S21: Second Directional Earth Fault element		
Minimum residual voltage level for operation	: $1U_o = (0,01 \div 0,4)V_n$	step $0,01V_n$
Lower limit of the tripping zone	: $1aA = (0 \div 359)^\circ$	step 1°
Upper limit of the tripping zone	: $1aB = (0 \div 359)^\circ$	step 1°
Current setting range	: $1I_o = (0,01 \div 0,2)I_{on}$	step $0,01I_{on}$
Definite trip time delay	: $t1I_o = (0,05 \div 60)V_n$	step $0,01s$
Breaker Failure Element		
Trip time delay	: $tBF = (0,05 \div 0,75)s$	step 0.01s



Protection Relays

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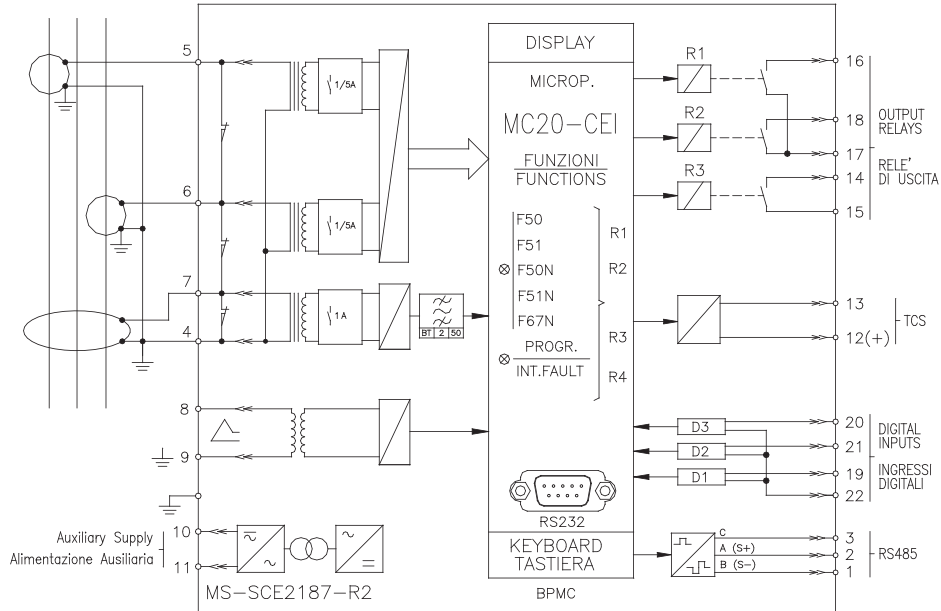
APPROVAL : CE			
REFERENCE STANDARDS IEC 60255 - EN50263 - CE Directive - EN/IEC61000 - IEEE C37 - BSI			
Dielectric test voltage	IEC 60255-5	2kV, 50/60Hz, 1 min.	
Impulse test voltage	IEC 60255-5	5kV (c.m.), 2 kV (d.m.) - 1.2/50ms	
Insulation resistance	>100 M		
Environmental Std. Ref. (IEC 680068)			
Operation ambient temperature	-10°C / +55°C		
Storage temperature	-25°C / +70°C		
Environmental testing	(Cold)	IEC60068-2-1	
	(Dry heat)	IEC60068-2-2	
	(Change of temperature)	IEC60068-2-14	
	(Damp heat, steady state)	IEC60068-2-78 93% Without Condensing 40°C	
CE EMC Compatibility (EN50081-2 - EN50082-2 - EN50263)			
Electromagnetic radiated and conducted emission	EN55022	Industrial Environment	
Radiated electromagnetic field immunity test	IEC61000-4-3	level 3	80 ÷ 2000MHz/10V/m
	ENV50204		900MHz/200Hz 10V/m
Conducted disturbances immunity test	IEC61000-4-6	level 3	0.15 ÷ 80MHz/10V
Electrostatic discharge test	IEC61000-4-2	level 4	6kV contact / 8kV air
Power frequency magnetic test	IEC61000-4-8		1000A/m, 50/60Hz
Pulse magnetic field	IEC61000-4-9		1000A/m, 8/20ms
Damped oscillatory magnetic field	IEC61000-4-10		100A/m, 0.1 ÷ 1MHz
Immunity to conducted common mode disturbance 0/150KHz	IEC61000-4-16	level 4	
Electrical fast transient/burst	IEC61000-4-4	level 4	2kV, 5kHz
HF disturbance test with damped oscillatory wave (1MHz burst test)	IEC60255-22-1	class 3	400pps, 2.5kV (m.c.), 1kV (d.m.)
Oscillatory waves (Ring waves)	IEC61000-4-12	level 4	4kV(c.m.), 2kV(d.m.)
Surge immunity test	IEC61000-4-5	level 4	2kV(c.m.), 1kV(d.m.)
Voltage interruptions	IEC60255-4-11		50ms
Resistance to vibration and shocks	IEC60255-21-1 - IEC60255-21-2		
Typical Characteristics			
Accuracy at reference value of influencing factors	2% In - 0,2%On	for measurements	
	2% + (to=20 ÷ 30ms@2xls)	for times	
Rated current	In = 1A/5A; On = 1A		
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		
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.)		



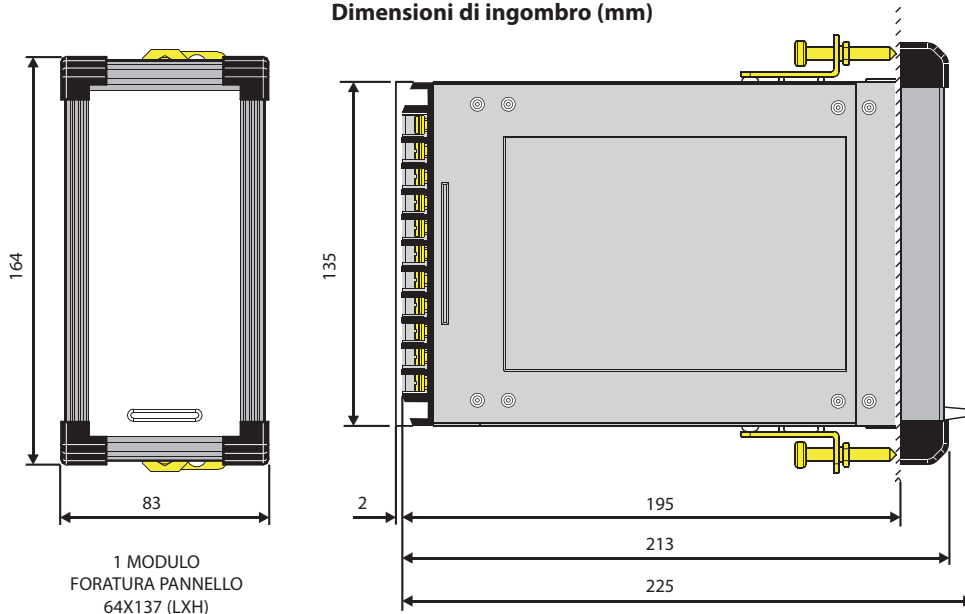
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Connection Diagram



Dimensioni di ingombro (mm)



Order code - Example :			
MC20-CEI	1	2	1
	Power Supply	Phase Rated Input Current	Zero Sequence Input Current
	1 = Type 1	1 = 1A	1 = 1A
	2 = Type 2	2 = 5A	

The performance and the charecteristics reported in this document are not binding and can modified ant any moment without notice.



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