

MC30-AR

MC14-R3



49, 50/51, 50N/51N, 51BF

- Three independent overcurrent elements.
- Three Earth Fault elements.
- One Thermal Image element.
- Blocking Output and Blocking Input for pilot wire selectivity coordination.
- Breaker Failure protection.
- Time tagged multiple event recording.
- Oscillographic wave form capture.
- Modbus RTU / IEC870-5-103 Communication Protocols
- Display LCD 16 (2x8) characters .



Three phase 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.

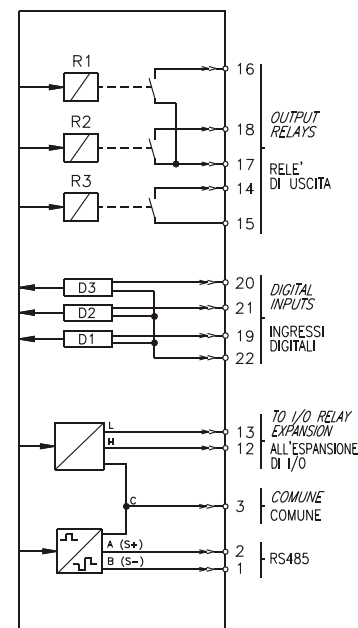
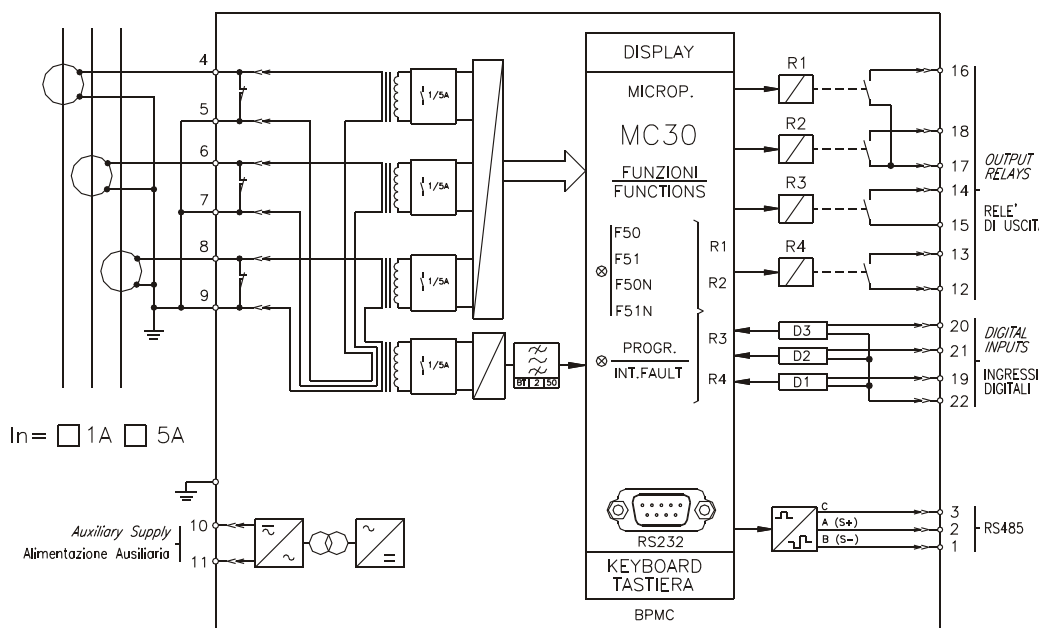
Connection through 3 CTs.

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

Programmable Input Quantities

- F_n = System frequency : (50 - 60)Hz
- I_n = Rated primary current of phase CTs : (1 - 9999)A, step 1A

Connection Diagram



F49 (T>): Thermal Image

- ⊙ Function enabling : Enable/Disable
- ⊙ Temperature prealarm : $T_{al} = (50 \quad 110)\%T_b$, step 1% T_b
- ⊙ Thermal Image reset level : $T_{st} = (10 \quad 100)\%T_b$, step 1% T_b
- ⊙ Continuous admissible current : $I_b = (50 - 130)$, step 1 % I_n
- ⊙ Warming-up Time constant : $TW = (1 - 60)min$, step 1min

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

- ⊙ Function enabling : Enable/Disable
- ⊙ Current setting range : $I> = (0.10 \quad 4.00)I_n$, step 0.01 I_n
- ⊙ Definite trip time delay : $tI> = (0.05 \quad 60.00)s$, step 0.01s
- ⊙ Instantaneous output : 0.03s
- ⊙ Time current curves : Indep.Definite Time (D), IEC (A / B / C), IEEE (MI / VI / I / EI / SI)
- ⊙ Definite trip time delay (10x[I>] in inverse time operation modes) : $tI> = (0.05 - 60.00)s$, step 0.01s

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

- ⊙ Function enabling : Enable/Disable
- ⊙ Current setting range : $I>> = (0.50 \quad 40.00)I_n$, step 0.01 I_n
- ⊙ Definite trip time delay : $tI>> = (0.05 \quad 60.00)s$, step 0.01s
- ⊙ Instantaneous output : 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 : $I_H = (0.50 \quad 40.00)I_n$, step 0.01 I_n
- ⊙ Definite trip time delay : $tI_H = (0.05 \quad 60.00)s$, step 0.01s
- ⊙ Instantaneous output : 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 : $I_{o>} = (0.01 \quad 4.00)I_{on}$, step 0.01 I_{on}
- ⊙ Definite trip time delay : $tI_{o>} = (0.05 \quad 60.00)s$, step 0.01s
- ⊙ Instantaneous output : 0.04s
- ⊙ Time current curves : Indep.Definite Time (D), IEC (A / B / C), IEEE (MI / VI / I / EI / SI)
- ⊙ Definite trip time delay (10x[I_{o>}] in inverse time operation modes) : $tI_{o>} = (0.05 - 60.00)s$, step 0.01s

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

- ⊙ Function enabling : Enable/Disable
- ⊙ Current setting range : $I_{o>>} = (0.01 \quad 9.99)I_n$, step 0.01 I_n
- ⊙ Definite trip time delay : $tI_{o>>} = (0.05 \quad 60.00)s$, step 0.01s
- ⊙ Instantaneous output : 0.04s

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

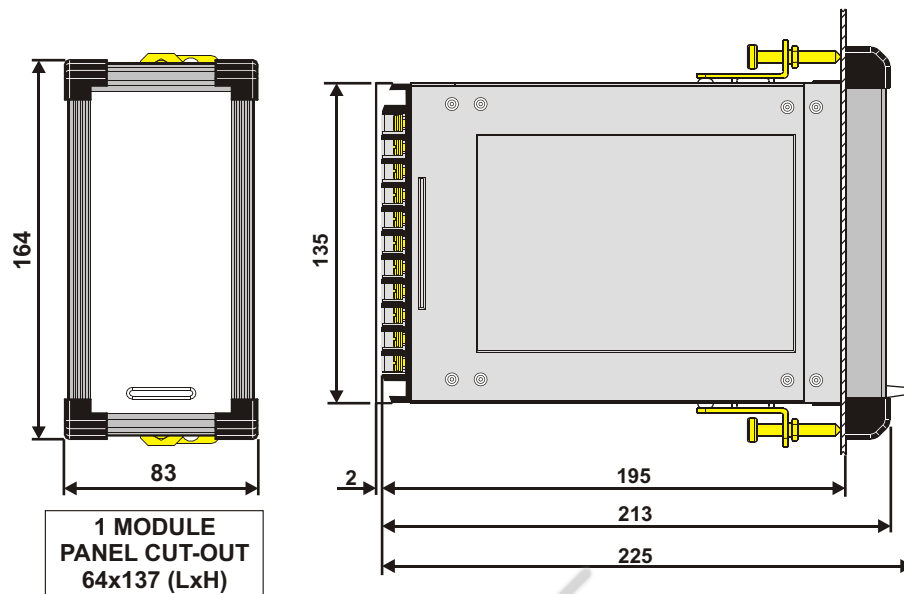
- ⊙ Function enabling : Enable/Disable
- ⊙ Current setting range : $I_{oH} = (0.01 \quad 9.99)I_n$, step 0.01 I_n
- ⊙ Definite trip time delay : $tI_{oH} = (0.05 \quad 60.00)s$, step 0.01s
- ⊙ Instantaneous output : 0.04s

Breaker Failure Element

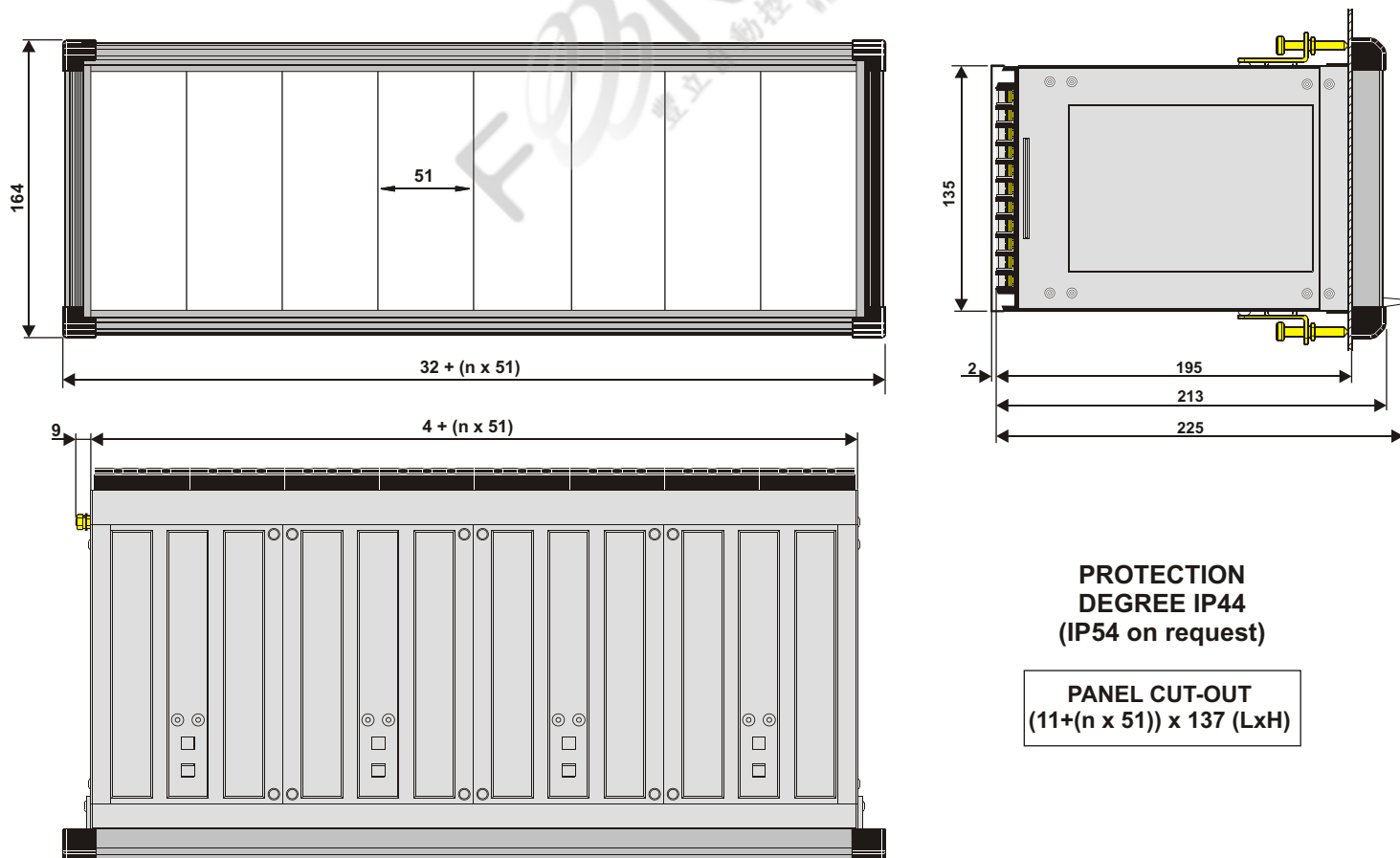
- ⊙ Trip time delay : $tBF = (0.05 - 0.75)s$, step 0.01s

OVERALL DIMENSIONS (mm)

PROTECTION DEGREE IP44
(IP54 on request)



Overall Dimensions - Multi-Modules (mm)



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.) - 1,2/50 s
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	IEC68-2-3 RH 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
	ENV50204	80-2000MHz10V/m
Conducted disturbances immunity test	IEC61000-4-6	level 3
Electrostatic discharge test	IEC61000-4-2	level 4
Power frequency magnetic test	IEC61000-4-8	0.15-80MHz10V
Pulse magnetic field	IEC61000-4-9	6kV contact / 8kV air
Damped oscillatory magnetic field	IEC61000-4-10	1000A/m, 50/60Hz
Immunity to conducted common mode disturbance 0/150KHz	IEC61000-4-16	1000A/m, 8/20ms
Electrical fast transient/burst	IEC61000-4-4	100A/m, 0.1-1MHz
HF disturbance test with damped oscillatory wave (1MHz burst test)	IEC60255-22-1	level 4
Oscillatory waves (Ring waves)	IEC61000-4-12	level 4
Surge immunity test	IEC61000-4-5	level 4
Voltage interruptions	IEC60255-4-11	50ms
Resistance to vibration and shocks	IEC60255-21-1 - IEC60255-21-2	2kV, 5kHz
		400pps, 2.5kV (m.c.), 1kV (d.m.)
		4kV(c.m.), 2kV(d.m.)
		2kV(c.m.), 1kV(d.m.)

Typical Characteristics

Accuracy at reference value of influencing factors	2% In - 0.2% On	for measurements
Rated Current	2% + (to = 20 30ms @ 2xIs) for times	
Current Overload	In = 1A/5A - On = 1A/5A	
Burden on current input	400A for 1 sec; 20A continuous	
Average power supply consumption	0.1VA a In = 1A; 0.3VA a In = 5A	
Output relays	7 VA	
	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.)	

Power Supply

Type 1 : 24	110V A.C.(20%)	-	24	125V D.C. (20%)
Type 2 : 80	220V A.C.(20%)	-	90	250V D.C. (20%)

Communication Parameters

RS485 (Back)	9600/19200 bps 8,N,1 - 8,E,1 - 8,O,1 Modbus RTU or IEC60870-5-103
RS232 (Front)	9600 8,N,1 Modbus RTU

Order code - Example : MC30-AR-1-2-2-1
MC30-AR

			
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 = Can bus port