



# PROTECTION RELAYS

## MC2-30V

### Three phase voltage protection relay with islanding detection

#### General Characteristics

MC2 is the new generation of Microelettrica Scientifica's base-performance protection relays.

This range is the ideal solution for protection and automation, thanks to its high configurability.

The platform is based on a four-channel configuration, allowing it to be used for current or voltage protection functions.

MC2-30V is a relay designed to interface the active user to the public distribution grid.

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

#### Protective Functions

- F27 : 2 Undervoltage element
- F59 : 2 Overvoltage element
- F59Vo : 2 Zero sequence overvoltage element
- F81< : 2 Undervoltage frequency element
- F81> : 2 Overvoltage frequency element
- F81v : 2 "Voltmetric unlock" islanding detector element
- df/dt : 2 Element
- F74 : Trip circuit supervision

#### Measurements

- Real Time Measurements:
  - Phase and time voltages
  - Frequency
  - Positive and negative sequence
  - Zero sequence voltage
- Trip Recording (30 last trip)



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### Control

- Four complete setting programs switchable locally or remotely
- Time tagged multiple event recording and journal (500 events)
- Oscillographic wave form capture up to 40 sec.
- Complete autodiagnostic program
- Blocking Outputs and Blockings Inputs
- File system - Mass storage device
- Oscillo available also in comtrade format

### Technical Characteristics

- 8 Programmable Output Relays
- 8 Programmable Digital Inputs
- Hi-resolution graphic display (240\*128)
- 10 Programmable Leds
- 6 Programmable push buttons

### Software

- MCom2 Program interface for device management

### Communications

- RS485 Serial communication port on rear side
- USB communication port on front panel
- Modbus RTU / IEC870-5-103 Communication protocol

### 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.

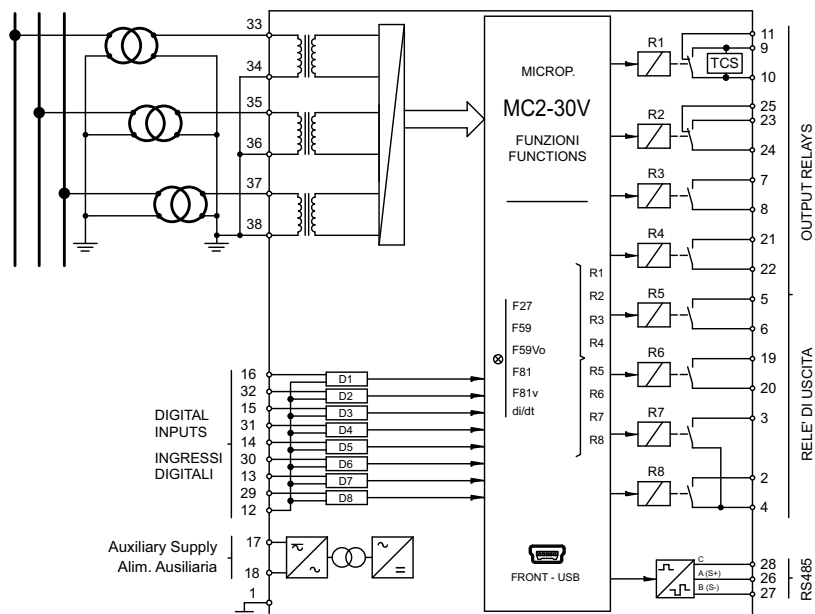
### Execution

- Plastic Enclosure
- IP44 degree of protection

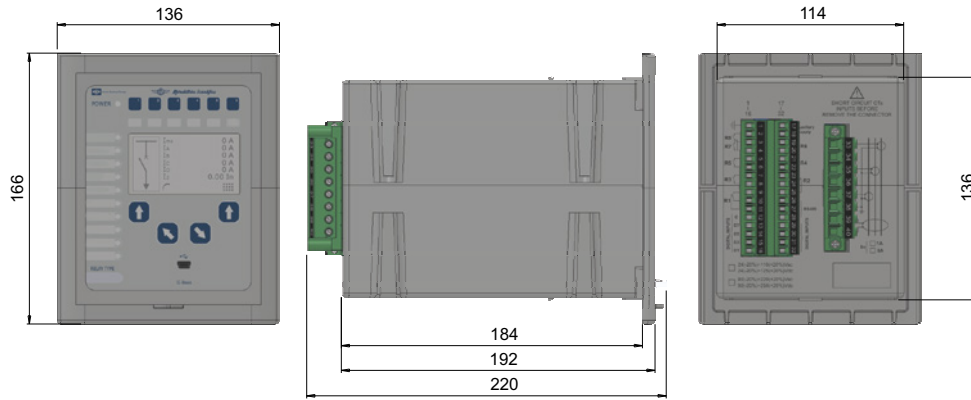
F59 (1U>): 1st Overvoltage Element		
Function enabling	No - Yes	
Operation level	$U_s = (10 \div 190)\%U_n$	step 1
Independent time delay	$t_s = (0.08 \div 100)s$	step 0.01
F59(2U>): 2nd Overvoltage Element		
Function enabling	No - Yes	
Operation level	$U_s = (10 \div 190)\%U_n$	step 1
Independent time delay	$t_s = (0.08 \div 100)s$	step 0.01
F27 (1U<): 1st Undervoltage Element		
Function enabling	No - Yes	
Operation level	$U_s = (10 \div 190)\%U_n$	step 1
Independent time delay	$t_s = (0.08 \div 100)s$	step 0.01
F27 (2U<): 2nd Undervoltage Element		
Function enabling	No - Yes	
Operation level	$U_s = (10 \div 190)\%U_n$	step 1
Independent time delay	$t_s = (0.08 \div 100)s$	step 0.01
F81> (1f>): 1st Overfrequency Element		
Function enabling	No - Yes	
Operation level	$F_s = (40 \div 70)Hz$	step 0.01
Independent time delay	$t_s = (0.1 \div 100)s$	step 0.01
F81> (2f>): 2nd Overfrequency Element		
Function enabling	No - Yes	
Operation level	$F_s = (40 \div 70)Hz$	step 0.01
Independent time delay	$t_s = (0.1 \div 100)s$	step 0.01
F81< (1f<): 1st Underfrequency Element		
Function enabling	No - Yes	
Operation level	$F_s = (40 \div 70)Hz$	step 0.01
Independent time delay	$t_s = (0.1 \div 100)s$	step 0.01

F81< (2f<): 2nd Underfrequency Element		
Function enabling	No - Yes	
Operation level	$F_s = (40 \div 70)\text{Hz}$	step 0.01
Independent time delay	$t_s = (0.1 \div 100)\text{s}$	step 0.01
F59Vo (1Uo>): 1st Zero sequence overvoltage element		
Function enabling	No - Yes	
Operation level	$U_s = (1 \div 100)\%U_n$	step 1
Independent time delay	$t_s = (0.08 \div 100)\text{s}$	step 0.01
F59Vo (2Uo>): 2nd Zero sequence overvoltage element		
Function enabling	No - Yes	
Operation level	$U_s = (1 \div 100)\%U_n$	step 1
Independent time delay	$t_s = (0.08 \div 100)\text{s}$	step 0.01
F81v (U1<): 1st "Voltmetric unlock" islanding detector element		
Function enabling	No - Yes	
Operation level	$U_s = (10 \div 190)\%U_n$	step 1
Independent time delay	$t_s = (0.08 \div 100)\text{s}$	step 0.01
F81v (U2>): 2st "Voltmetric unlock" islanding detector element		
Function enabling	No - Yes	
Operation level	$U_s = (10 \div 190)\%U_n$	step 1
Independent time delay	$t_s = (0.08 \div 100)\text{s}$	step 0.01
df/dt (1df/dt): 1st element		
Function enabling	No - Yes	
Operation level	$df/dt = (0.1 \div 9.9)\text{Hz/s}$	step 0.1
Operation level	$U_{b<} = (30 \div 90)\%U_n$	step 1
df/dt (2df/dt): 2nd element		
Function enabling	No - Yes	
Operation level	$df/dt = (0.1 \div 9.9)\text{Hz/s}$	step 0.1
Operation level	$U_{b<} = (30 \div 90)\%U_n$	step 1

### Connection Diagram



## Overall Dimensions (mm)



### Typical Characteristics

Accuracy at reference value of influencing factors	1% Vn	for measurements
	2% + (to = 20 ÷ 30ms @ 2xIs)	for times
Rated Current	100 ÷ 125V	
Voltage Overload	2Vn continuous	
Burden on current input	0.1 VA at Vnt	
Average power supply consumption	≤ 7 VA	
Output relays	rating 6 A; 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

MC2-30V	1
	Power Supply
	1 = Type 1
	2 = Type 2

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For further technical information on our products visit [www.microelettrica.com](http://www.microelettrica.com)

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