



PROTECTION RELAYS

MC3V-CEI A70

Multifunction three phase overvoltage / undervoltage relay According to CEI 0-16 (ed III 2012-12) Standards

Three-phase voltage relay, suitable for protection of MV power transmission and distribution systems.

The relay MC3V-CEI measures the true R.M.S. value of the 3 phase to neutral voltages fed to three transformers isolated highimpedance inputs.

It's available an input for the homopolar voltage, coming from type VT connected as open delta.

Protective Functions

- F27 : 2 Undervoltage elements
- F59 : 2 Overvoltage elements
- F81> : 1 Overfrequency element
- F81< : 1 Underfrequency element
- F59Vo : 1 Zero sequence Overvoltage element
- F51BF : Breaker Failure protection
- 81v : Voltmetric unlock for setting bank changing
- 27V1 : Minimum direct sequence (Vd)*

- 59V2 : Maximum inverse sequence (Vi)*
- 59Vo : Maximum zero sequence*
- 47TCS : Trip Circuit Supervision.
- 2 Setting Banks

* This three functions works together to allow a group changing or as standard function with only one delay timer.

Measurements

- Real Time Measurements (Hz - EA - EB - EC - Vo - V1 - V2)
- 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
- Remote Trip



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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

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

- Module box , totally draw-out execution
- IP44 protection case (on request IP54)

Software

- Program interface for device management

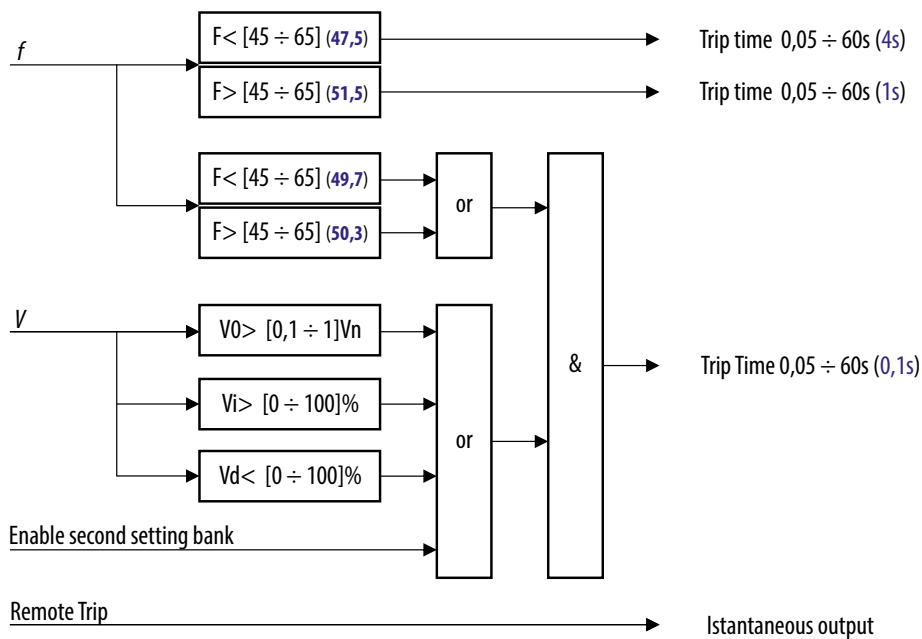
Programmable Input Quantities		
Fn : System frequency	(50 ÷ 60)Hz	
V1 : Rated primary phase to phase voltage of system's Pts	(0,05 ÷ 500)kV	step 0,01kV
V2 : Rated secondary phase to phase voltage of system's Pts	(100 ÷ 440)V	step 0,01V
1 - F27 (S1) : First Undervoltage Element		
Function enabling	Enable/Disable	
Setting range	S1 = (0,2 ÷ 1,20)Vn	step 0,01Vn
Instantaneous output	≤ 0,03s	
Independent trip time delay	27tS1 = (0,05 ÷ 60)s	step 0,01s
2 - F27 (S2) : Second Undervoltage Element		
Function enabling	Enable/Disable	
Setting range	S1 = (0,2 ÷ 1,20)Vn	step 0,01Vn
Instantaneous output	≤ 0,03s	
Independent trip time delay	27tS1 = (0,05 ÷ 60)s	step 0,01s
1 - F59 (S1) : First Overvoltage Element		
Function enabling	Enable/Disable	
Setting range	S1 = (0,5 ÷ 1,50)Vn	step 0,01Vn
Instantaneous output	≤ 0,03s	
Independent trip time delay	59tS1 = (0,05 ÷ 60)s	step 0,01s
2 - F59 (S2) : Second Overvoltage Element		
Function enabling	Enable/Disable	
Setting range	S2 = (0,5 ÷ 1,50)Vn	step 0,01Vn
Instantaneous output	≤ 0,03s	
Independent trip time delay	59tS2 = (0,05 ÷ 60)s	step 0,01s
59o : First Zero Sequence Voltage Control Element		
Function enabling	Enable/Disable	
Setting range	59o = (0,02 ÷ 1)Vn	step 0,01Vn
Instantaneous output	≤ 0,03s	
Independent trip time delay	t59o = (0,05 ÷ 60)s	step 0,01s
81< : Underfrequency Element		
Function enabling	Enable/Disable	
Setting range	81< = (45 ÷ 65)Hz	step 0,01Hz
Instantaneous output	≤ 0,03s	
Independent trip time delay	t81< = (0,05 ÷ 60)s	step 0,01s

81> : Overfrequency Element

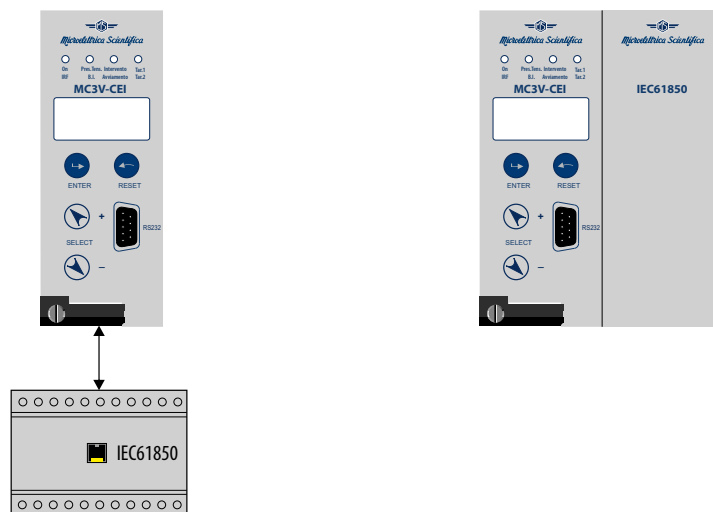
Function enabling	Enable/Disable	
Setting range	$81 < = (45 \div 65)\text{Hz}$	step 0,01Hz
Instantaneous output	$\leq 0,03\text{s}$	
Independent trip time delay	$t81 < = (0,05 \div 60)\text{s}$	step 0,01s

81v : (27V1; 59V2; 59Vo)

Function enabling	Enable/Disable	
Vo for changing bank (59Vo)	$V_o = (0,02 \div 1.00)V_n$	passo 0,01Vn
Vi for changing bank (27V1)	$V_i = (1,00 \div 100)\%$	passo 1%
Vd for changing bank (59V1)	$V_d = (20 \div 200)\%$	passo 1%
Time for changing bank	$tCh = (0 \div 300)\text{s}$	passo 0,01s

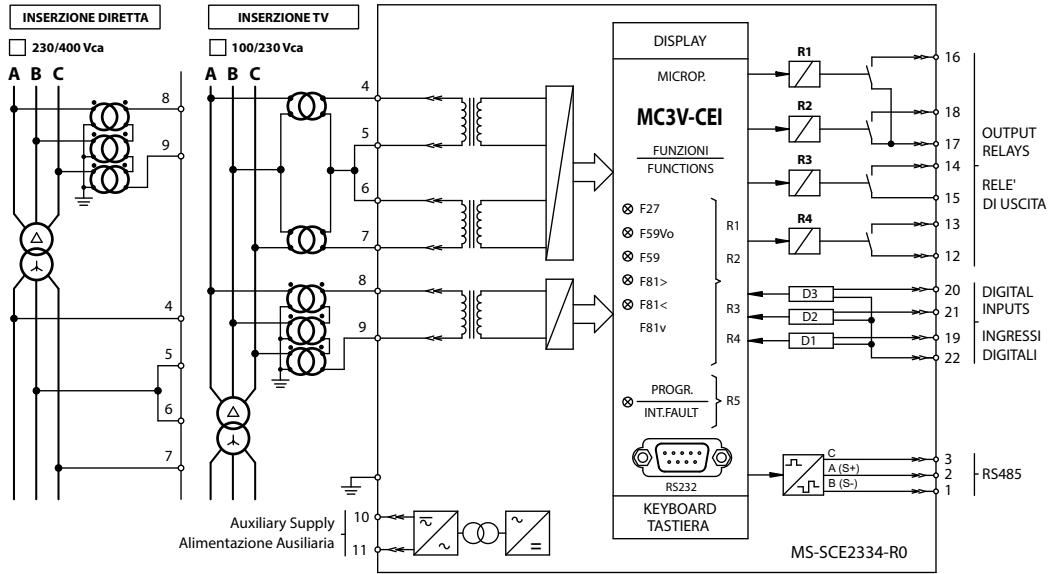


Available configurations - IEC61850



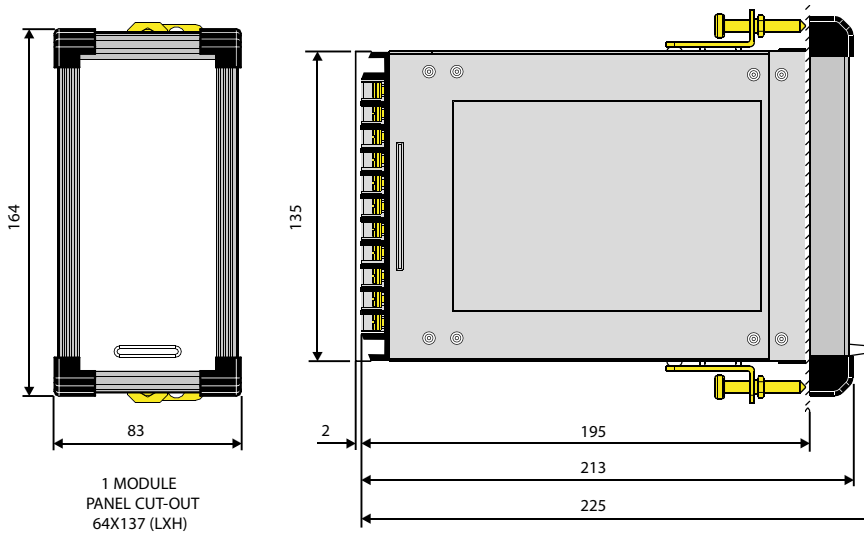
Approval : CE - reference standards IEC 60255 - EN50263 - CE Directive - EN/IEC61000 - IEEE C37 - BSI According to CEI 0-16 (ed III 2012-12) + Allegato A70 standards			
Dielectric test voltage	IEC 60255-5	2kV, 50/60Hz, 1 min.	
Impulse test voltage	IEC 60255-5	5kV (c.m.), 2 kV (d.m.) - 1,2/50ms	
Insulation 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 Enviroment	
Radiated electromagnetic field immunity test	IEC61000-4-3	level 3	80-2000MHz10V/m
	ENV50204		900MHz/200Hz 10V/m
Conducted disturbances immunity test	IEC61000-4-6	level 3	0.15-80MHz10V
Electrostatic discharge test	IEC61000-4-2	level 3	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%Un	for measurements	
	2% + (to = 20 ÷ 30ms @ 2xIs)	for times	
Rated Voltage	Un = (100 ÷ 230)Vca	Insertion through VT	
	Un = (230 ÷ 440)Vca	Direct insertion in LV	
Voltage Overload	2Un for 1sec		
Burden on Voltage input	0,2VA at Un		
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.)		

Wiring Diagram



with TCS option the output relays will be reduced to 3

Overall Dimensions (mm)



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

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