

## MC1V

## MC06-R3



27, 59, 81

- Two Under Voltage elements.
- Two Over Voltage elements.
- One UnderFrequency element.
- One OverFrequency element.
- Blocking Output and Blocking Input.
- Time tagged multiple event recording.
- Oscillographic wave form capture.
- Modbus RTU / IEC870-5-103 Communication Protocols.
- Display LCD 16 (2x8) characters.



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

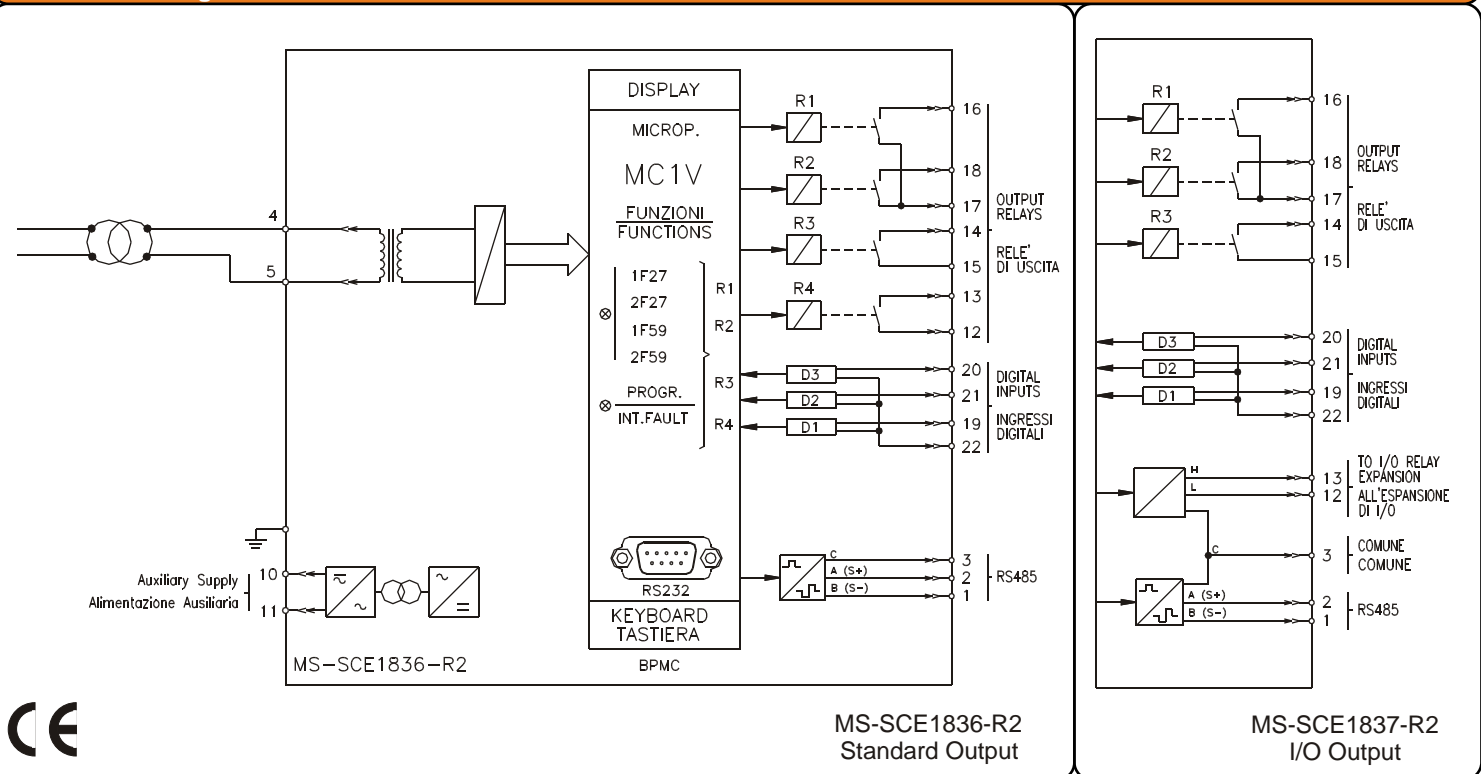
The relay MC1V measures the true R.M.S. value of the phase to phase voltage.

**Real Time Measurements =** Voltage and Frequency

**Programmable Input Quantities**

- F<sub>n</sub>** = System frequency : (50 - 60)Hz
- V<sub>1</sub>** = Rated primary phase to phase voltage of system's Pts : (0.05 - 500)kV, step 0.01kV
- V<sub>2</sub>** = Rated secondary phase to phase voltage of system's Pts : (50 - 115)V, step 0.01V.

**Connection Diagram**



**1 - F27 (V<) : First UnderVoltage Element**

- ⊙ Function enabling : **Enable - Disable**
- ⊙ Setting range : **V< = (0.20 - 1.20)Vn,** step 0.01Vn
- ⊙ Instantaneous output : **£ 0.03s**
- ⊙ Trip time delay : **tV< = (0.05 - 60)s,** step 0.01s

**2 - F27 (V<<) : Second UnderVoltage Element**

- ⊙ Function enabling : **Enable - Disable**
- ⊙ Setting range : **V<< = (0.20 - 1.20)Vn,** step 0.01Vn
- ⊙ Instantaneous output : **£ 0.03s**
- ⊙ Trip time delay : **tV<< = (0.05 - 60)s,** step 0.01s

**1 - F59 (V>) : First OverVoltage Element**

- ⊙ Function enabling : **Enable - Disable**
- ⊙ Setting range : **V> = (0.50 - 1.50)Vn,** step 0.01Vn
- ⊙ Instantaneous output : **£ 0.03s**
- ⊙ Trip time delay : **tV> = (0.05 - 60)s,** step 0.1s

**2 - F59 (V>>) : Second OverVoltage Element**

- ⊙ Function enabling : **Enable - Disable**
- ⊙ Setting range : **V>> = (0.50 - 1.50)Vn,** step 0.01Vn
- ⊙ Instantaneous output : **£ 0.03s**
- ⊙ Trip time delay : **tV>> = (0.05 - 60)s,** step 0.01s

**1 - 81> (f>) : Maximum Frequency Element**

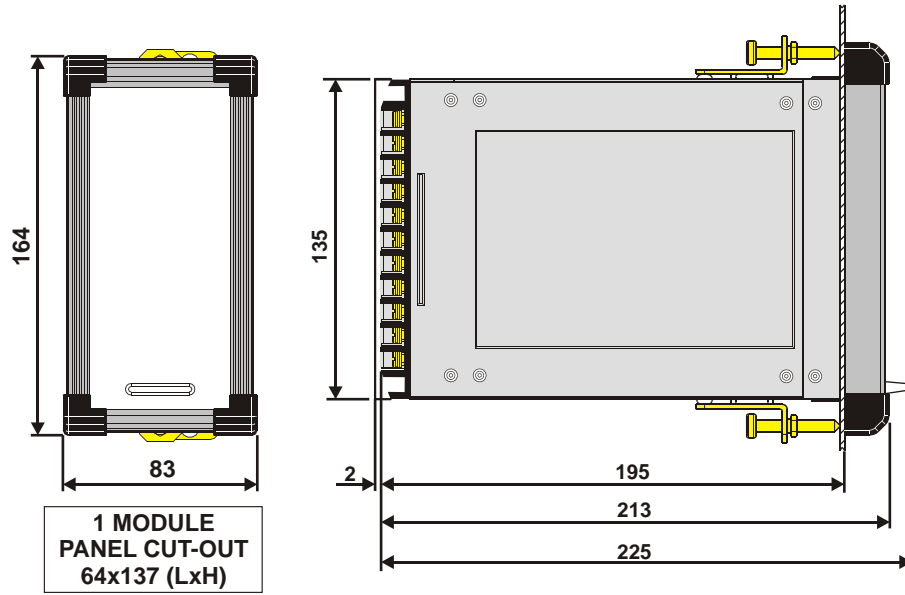
- ⊙ Function enabling : **Enable - Disable**
- ⊙ Setting range : **f> = (40.00 - 70.00)Hz,** step 0.01Hz
- ⊙ Instantaneous output : **= £ 0.03s**
- ⊙ Trip time delay : **tf> = (0.1 - 60)s,** step 0.01s

**1 - 81< (f<) : Minimum Frequency Element**

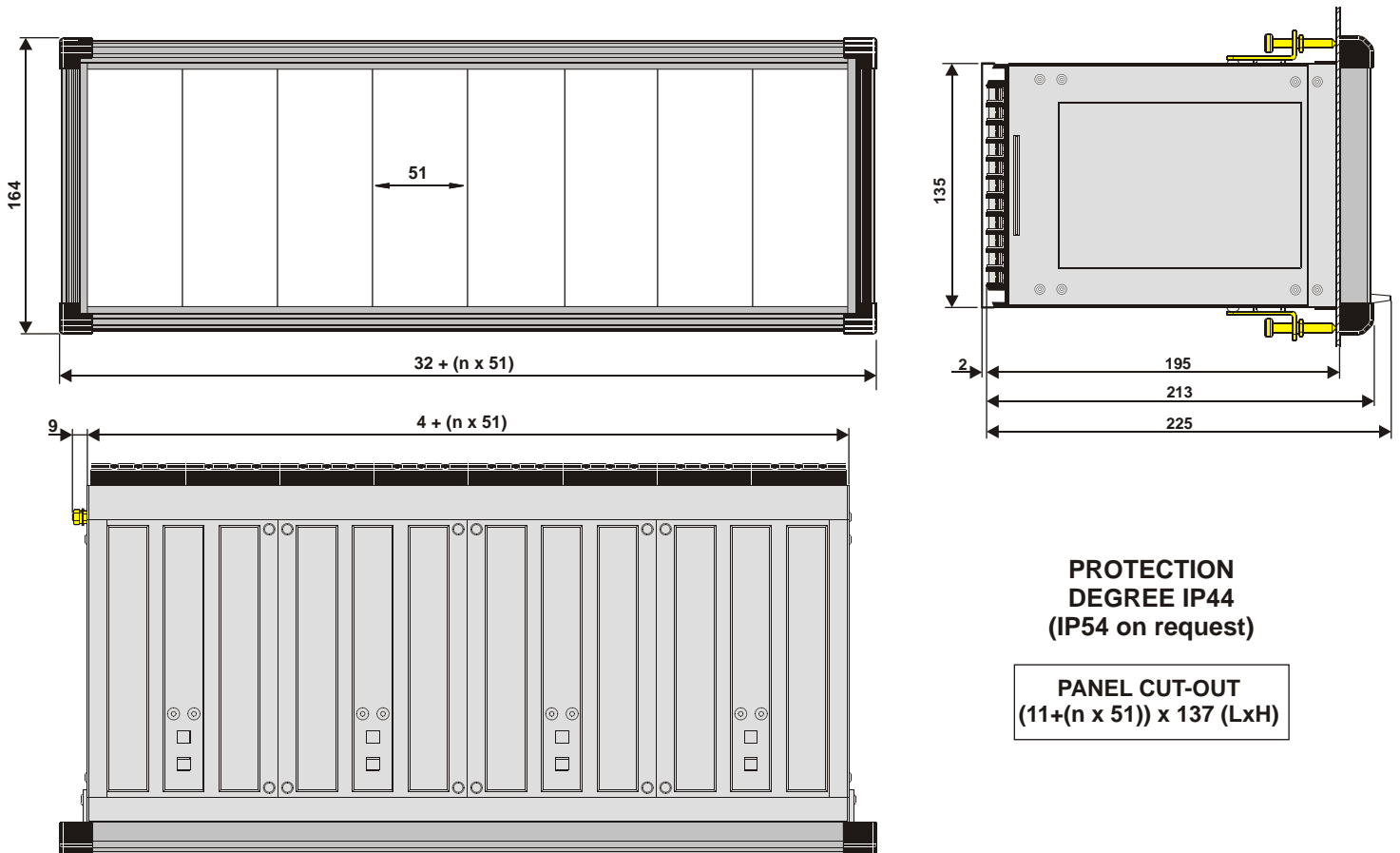
- ⊙ Function enabling : **Enable - Disable**
- ⊙ Setting range : **f< = (40.00 - 70.00)Hz,** step 0.01Hz
- ⊙ Instantaneous output : **= £ 0.03s**
- ⊙ Trip time delay : **tf< = (0.1 - 60)s,** step 0.01s

**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.) - 1,2/50ms
⊙ 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	
⊙ Environmental testing (Dry heat)	IEC60068-2-2	
⊙ Environmental testing (Change of temperature)	IEC60068-2-14	
⊙ Environmental testing (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 ENV50204	level 3 80-2000MHz/10V/m 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% Un	for measurements
	2% + (to=20-30ms)	for times
⊙ Rated Voltage	(50-125)Vac	phase to phase
⊙ Voltage Overload	2Un for 1sec	
⊙ Burden on voltage input	0.2 VA/phase 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.)	

**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