CAPACITOR OVERLOAD, EARTH FAULT AND UNBALANCE PROTECTION

Microelettrica Scientifica

IM30-C

N06-R3

LINE M

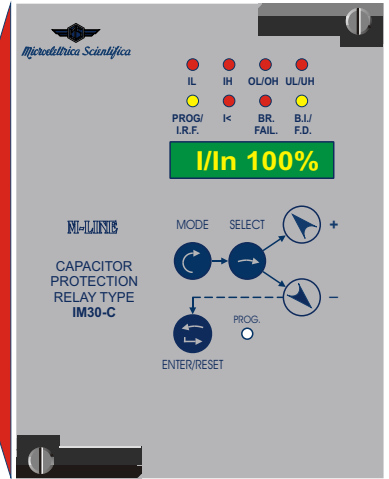### 37, 46N, 50/51, 50N/51N, 51BF, 68

- Two Overload levels.
- Two Unbalance levels.
- Two Earth-Fault levels.
- Undercurrent detection.
- Dynamic Compensation of Capacitors Inherent unbalance.
- Breaker Failure protection.
- Time delayed capacitor reenergization.
- Blocking Outputs and Blocking Inputs for pilot wire selectivity coordination.
- Modbus Communication Protocol.
- UL / CSA listed.

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IL   IH   OL/OH   UL/UH
PROG/   I<   BR.   B.I./
I.R.F.   FAIL.   F.D.

I/In 100%

M-LINE

CAPACITOR PROTECTION RELAY TYPE IM30-C

MODE   SELECT   +
PROG.
ENTER/RESET   −

Three-phase overload Earth Fault and unbalance relay with programmable inverse and definite time characteristics suitable for protection, of ungrounded double-wye capacitor banks.

The overload is measured as image of phase currents detected by the three main CTs.

The phase elements compute the contribution of the current harmonics as inversely proportional to their order.
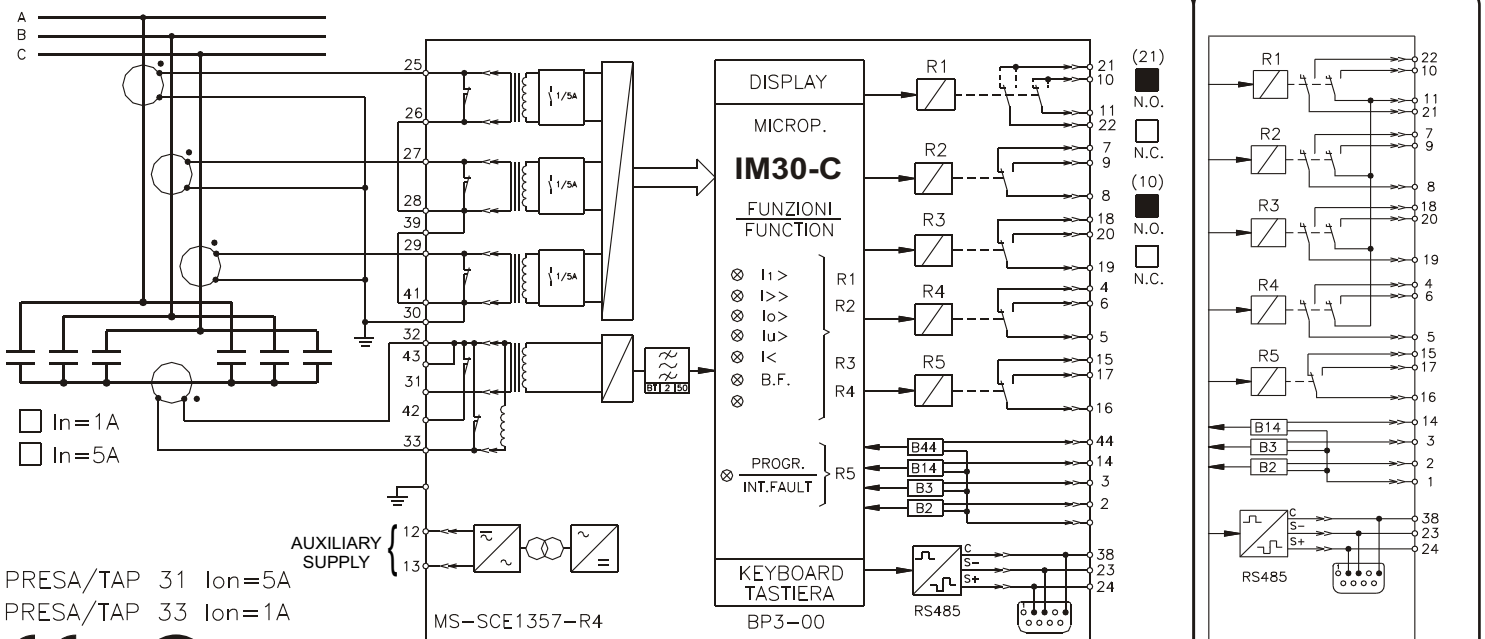
The unbalance current input circuit includes a third harmonic active filter.

⊙ **Real Time Measurements** = $I_A - I_B - I_C - I_o - I_Y$
⊙ **Maximum Demand and Inrush Recording** = $I_A - I_B - I_C - I_o - I_Y$

Programmable Input Quantities

⊙ **Fn =** System frequency : **(50 - 60) Hz**
⊙ **In =** Rated primary current of phase CTs : **(0 - 9999)A**, step 1A

Connection Diagram

PRESA/TAP 31 Ion=5A
PRESA/TAP 33 Ion=1A

In=1A
In=5A

AUXILIARY SUPPLY

MS-SCE1357-R4

BP3-00

MS-SCE1357-R4
Standard Output

MS-SCE1536-R4
Double Output

CE
RINA
c UL us LISTED
IND.CONT.EQ.   19CN

IL : First Overload Stage

- Current setting range : **IL = (0.3 - 1.5)In**, step 0.01In
- Instantaneous element : **0.03 s**
- Definite time delay - F(IL) = D : **tIL = (1 - 50)s**, step 0.1s
- Dependent time delay (IEC inverse time) - F(IL) = SI : **tIL = (1 - 50)s @ 10x[IL]**, step 0.1s

IH : Second Overload Stage

- Current setting range : **IH = (0.2 - 2)In**, step 0.01In
- Instantaneous element : **0.03s**
- Independent time delay : **tIH = (0.1 - 6500)s**, step 0.1s

OL : Low-set Earth Fault Element

- Current setting range : **OL = (0.1 - 1.0)In**, step 0.01In
- Instantaneous element : **0.04s**
- Definite time delay - F(OL) = D : **tOL = (0.05 - 30)s**, step 0.1s
- Dependent time delay (IEC inverse time) - F(OL) = SI : **tOL = (0.05 - 30)s @ 5x[OL]**, step 0.01s

OH : High-set Earth Fault Element

- Current setting range : **OH = (0.1 - 2.0)In**, step 0.01In
- Instantaneous element : **0.04s**
- Independent time delay : **tOH = (0.05 - 9.99)s**, step 0.01s

UL : Low-set Unbalance Element

- Current setting range : **UL = (0.02 - 0.8)On**, step 0.01On
- Instantaneous element : **0.03s**
- Definite time delay - F(UL) = D : **tUL = (1 - 30)s**, step 0.1s
- Dependent time delay (IEC inverse time) - F(UL) = SI : **tUL = (1 - 30)s @ 10x[UL]**, step 0.01s

UH : High-set Unbalance Element

- Current setting range : **UH = (0.01 - 1.0)On**, step 0.01On
- Instantaneous element : **0.03s**
- Independent time delay : **tUH = (0.1 - 300)s**, step 0.1s

I< : Undercurrent Level

- Current setting range : **I< = (0.1 - 1)In**, step 0.01In
- Independent time delay : **tI< = (1 - 99.9)s**, step 0.1s
- Reset time delay (for capacitor switch-on) : **tRI< = (0.5 - 100)min**, step 0.1min

Inherent Unbalance Compensation

- Compensation level : **Ic = (0 - 0.2)On**, step 0.01On
- Compensation angle : **c = (0 - 359)°**, step 1°

Breaker Failure Element

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