Project :	Little Barford RFC
Plant :	Overcurrent Monitoring Equipment
AMEC Birwelco Ltd Order n° :	P00116 -09107
Matthew C Blythe & Son Ltd Order n° :	0/6008
Microelettrica Order n° :	987/01

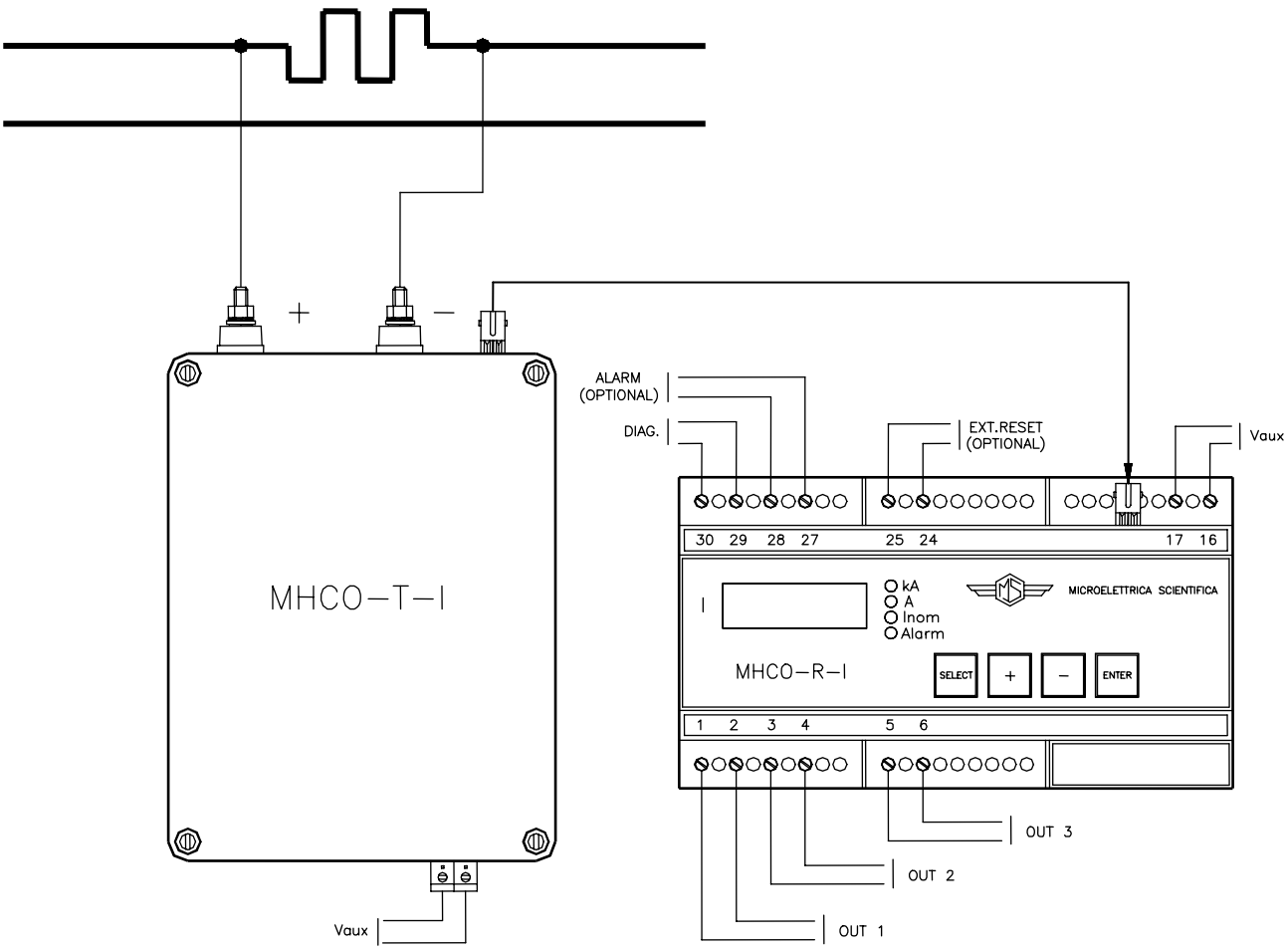
DC CURRENT MEASURING CONVERTER

TYPE

MHCO/I

version C987-01

OPERATION MANUAL



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1 – GENERAL

The operation principle and the general characteristics are reported in the catalogue M2-98 attached.

The version C987-01 has the specific characteristics herebelow reported:

A) CONVERTER – Transmitter unit

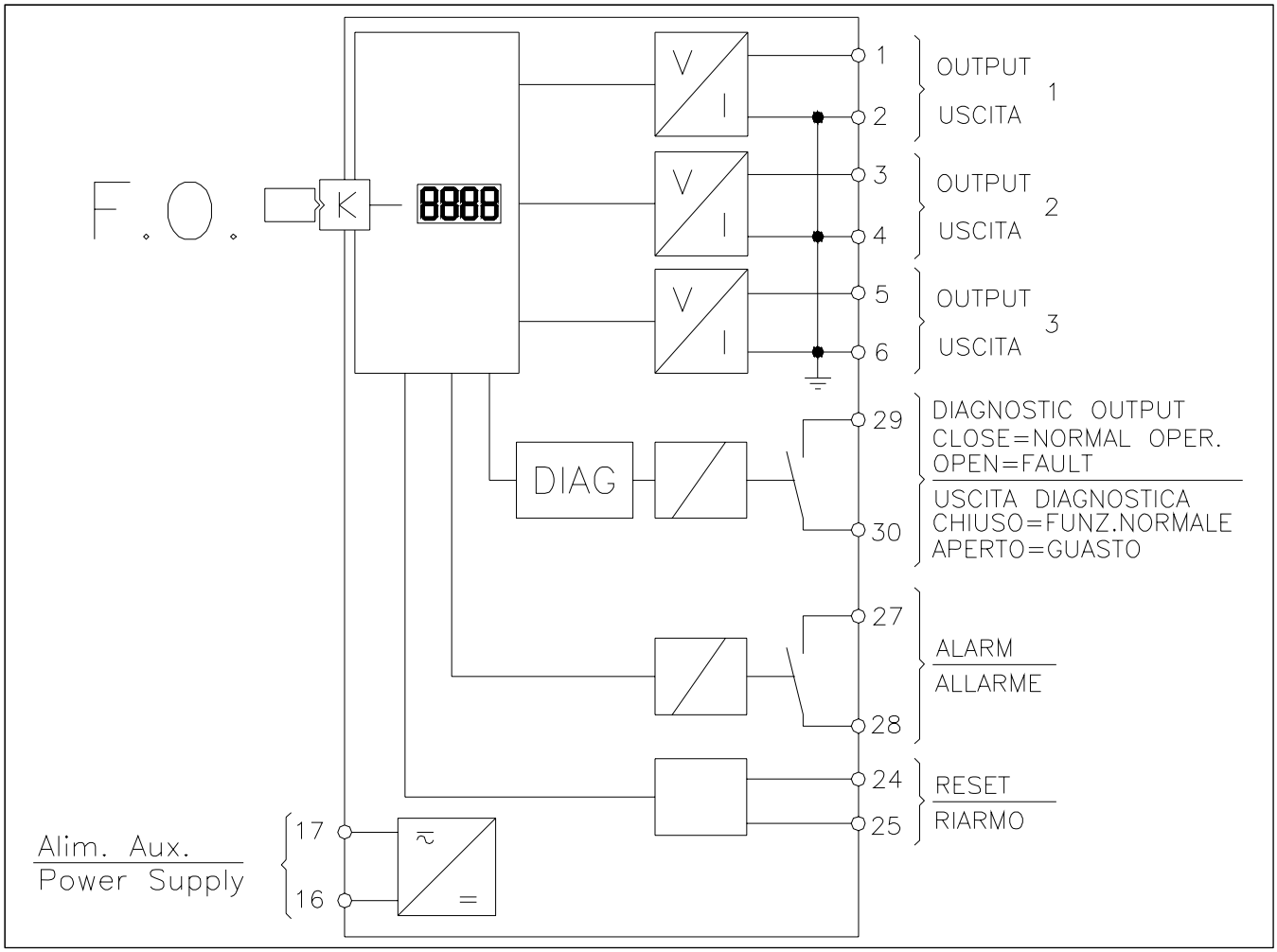
- Reference code : MHCO-T20I-4-1-1
- Rated operational voltage : 4 kV dc
- Insulation test voltage between High Voltage and power supply inputs : 20 kV, 1min
- Rated measuring input : 60 mV dc
- Calibrated measuring range : ± 120 mV
- Fiber optic output : 200/230μ ST-ST
- Power supply : 110 Vac ±20%
- Power supply consumption : ≤ 5 VA

B) RECEIVER unit with display

- Reference code : MHCO-O-R-2-16-26-36-4
- Rated insulation voltage : 2500 Vac – 1min.
- Fiber optic input : 200/230μ ST-ST
- Power supply : 110 Vac ±20%
- Power consumption : ≤ 8 VA
- Calibrated measuring range : 0 ÷ ±2In
- Output range (1-2 = 3-4 = 5-6) : 4÷12÷20 ≡ -1200÷0÷+1200A
- Max output power : 0.7VA – 13.5V
- Overcurrent level : 0 ÷ +2400A
- Overcurrent output contact : 1 N/O – 3A – 220Vac
- Diagnostic output contact : 1 N/O – 3A – 220Vac

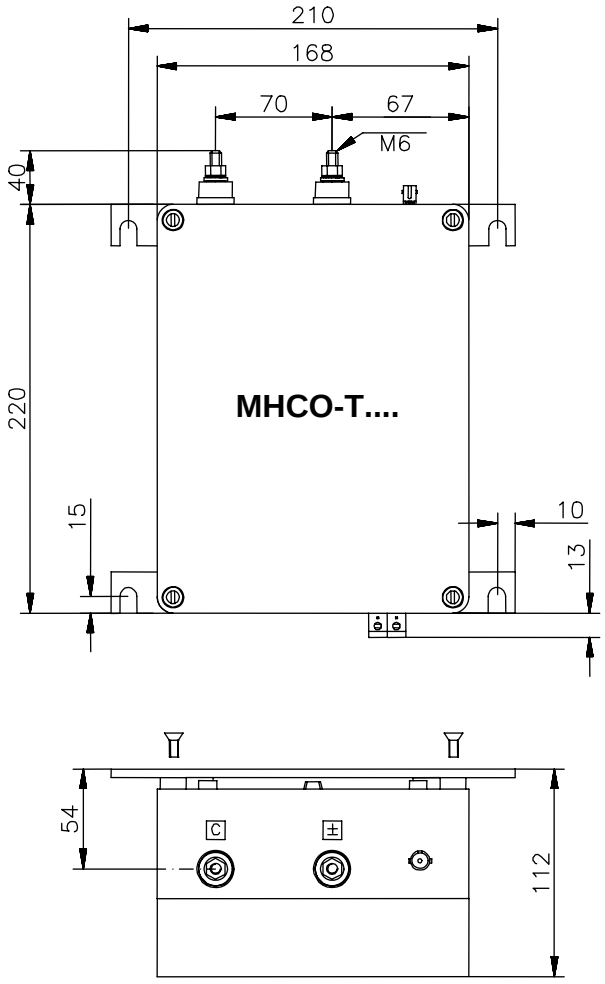
2 – Connection

- Input terminals on bushing isolators with bolt and nut 6MA, mounted on top side of Transmitter unit.
- Fiber optic input / output through ST connectors
- Transmitter power supply terminals: screw type for flexible cable up to 4 sqmm.
- Input / Output terminals of receiver unit: screw type for flexible cable up to 2.5 sqmm.
- Fiber optic plastic or glass type 200/230μ ST-ST

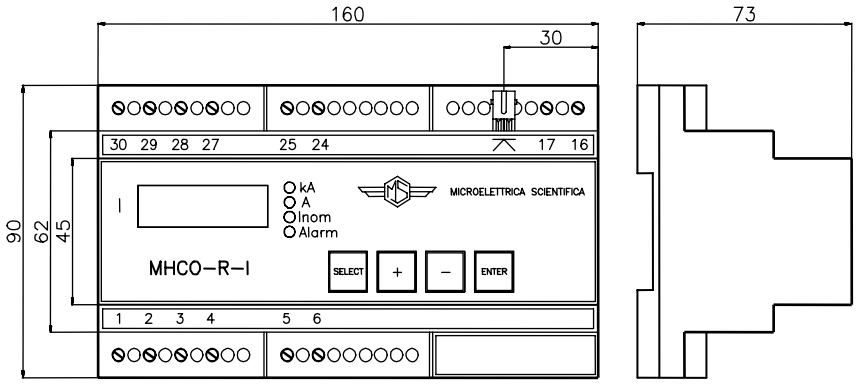


3 – Mounting

A) Transmitter unit - Surface mounting with fiber glass brackets



B) Receiver unit – Surface mounting on profile DIN-EN50022



4 – Operation and Setting

4.1 Controls

The Receiver unit includes the following controls:

- 4-digit, 7-segment Led display
- 4 signal leds:

  KA = shows that display indication is kA

  A = shows that display indication is A

  INOM = Lit-on when the unit is in the programming mode for setting display full scale measurement.

  Alarm = Lit-on when the unit is in the programming mode for setting the overcurrent pick-up level.

- 4 programming push buttons :

  SELECT = To select the programmable variable

  +/- = To increase/decrease the variable setting

  ENTER = To enter programmed settings

4.1.1 – Calibration procedure for zero

Program In=1200A, Alarm 1000A

Check all the following points with power supply at 93 – 110 – 127 V 50Hz

Measurement with zero input

- Short HV input
- Measure on all outputs 12mA ± 0,06 mA
- Display indication 0

4.2 - Alarms

- Diagnostic alarm : one output relay with one N/O contact.
  The relay is energized under normal operation and get deenergized when any internal fault or interruption of fiber optic connection or interruption of the SHUNT on high voltage side is detected.
  ON Detection of internal fault, the display shows “4”; on detection of broken connection, the display shows “0”.

- Overcurrent alarm : one output relay with one N/O contact.
  The relay is normally deenergized and picks-up as soon the current measured exceeds the set level.

N.B. Overcurrent pick-up only takes place for positive overcurrent.

Example :

Overcurrent set level : 500A
Relay picks-up when current exceeds +500A

For negative current (any value) the relay does not trip.

Reset of overcurrent relay after trip can be automatic if terminals 24-25 are permanently shorted, or manual if a N/O push button operates terminals 24-25.

4.3 - Setting

Programming is only possible with:

- Power supply on to Transmitter and Receiver
- High voltage terminals connected to the current measuring shunt or short circuited.
- Sound Fiber optic cable connecting Transmitter output to Receiver input.

In these conditions the display must indicated “0000”.

A – To program the rated primary current to be measured (Shunt rated current)

- Press Select until the led “INOM” is lit-on
- Operate the +/- buttons to obtain the required rated current read-out
- Press Enter to validate the setting.

B – To program the overcurrent trip level

- Press Select until the led “Alarm” is lit-on
- Operate the +/- buttons to read on display the required setting in Amps.
- Press Enter to validate the setting

5 - Acceptance check-out.

- Check that the enclosures are clean and without any crack or damage.
- Check that the high voltage bushings have not been damaged or cracked.
- Power up both Transmitter and Receiver unit with 110Vac
- Remove protective cups from the Fiber-Optic connectors and connect the Fiber-Optic cable.
- Shunt the High Voltage input terminals and check that output is 12mA ±0.06mA on all the Receiver outputs..

6 - Maintenance

- No maintenance is required
- Periodically clean the enclosure as needed
- Periodically check the accuracy of the measurement.