



**CURRENT INJECTION
RELAY TESTER**

CR-250

(Code 7 70 070)

INSTRUCTIONS MANUAL

(M 981 330 / 99 B)

(c) CIRCUTOR S.A.

CURRENT INJECTION RELAY TESTER CR-250

1.- CR-250 DESCRIPTION

CR-250 is a current source specially designed for testing the current/time curves of automatic switches and indirect protection relays.



The CR250 consists of an adjustable current source, a control circuit and a measurement unit.

- The current source is supplied by the mains, at 230Vac and is provided with an adjustable autotransformer, a separation transformer with two independent outputs and corresponding output terminals.

This circuit is protected by 20A automatic breaker and is provided also with an output to supply the 2500 A transformer (Code: 770 071)

- The control circuit consists of an ON/OFF element, indications and voltage free external terminals to be connected to the contact (NC or NO) of the relay to be tested.

- The measurement unit is synchronized with the start and stop of the current circuit. It consists of a digital ammeter and chronometer. The measurement unit and the control circuit are protected by a fuse.

2.- MAIN CHARACTERISTICS

SUPPLY:

- Voltage 230Vac + 10% - 15 %, single phase - 50.....60 Hz
- 20 A maximum

ADJUSTABLE CURRENT SOURCE

- Outputs: **0 - 30V, 50A max. 1500 VA**
0 - 6V, 250A max. 1500 VA
- Isolated circuit
- Maximum overcurrent: 1,25 In, 1 minute
- Current adjustment by turning control knob
- Output by means of the 1A/200A transformer; power 4000 VA-2500 A max. (optional)

CURRENT MEASUREMENT

- Digital ammeter with following scales:
19,99A 199,9A 999A 999x10A
- Preselection of the scales by scale selector
- Out of scale indication
- Protection against over current
- Accuracy : 0.5 % of readout \pm 1 digit

TEST TIME MEASUREMENT

Digital chronometer up to **9999,99** seconds

TEST CONTROL

- Start : By means of 'ON' button
- Stop : Automatic by external NC contact
Automatic by external NO contact
Manual by 'OFF' button
- The time of the test is shown in the chronometer display until the "Reset" button is pressed.

DIMENSIONS, WEIGHT

- Dimensions : 500 x 415 x 280 mm
- Approximate weight : 43 kg.

ACCESSORIES (included)

- 2 cables of 6 m for test up to 250 A
- 2 cables of 6 m for test up to 30 A
- 1 cable for control of the chronometer
- 1 instruction manual

OPTIONAL ACCESSORIES 2500A

- Transformer 1A/200A (2500 A) (code 7 70 071)
- Cable - 1,5m - 2500A (code 7 70 072)

3.- INSTALLATION AND START-UP



The manual you hold in your hands contains information and warnings that the user should respect in order to guarantee a proper operation of all the instrument functions and keep its safety conditions.

Whether the instrument is not used as manufacturer's specifications, the protection of the instrument can be damaged.

When any protection failure is suspected to exist (for example, it presents external visible damages), the instrument must be immediately powered off. In this case contact a qualified service representative.

3.2.- CONNECTION UP TO 250A

Once the necessary test current is determined, the CR-250 can be connected to the relay to be tested.

- If the necessary current is higher than 30A, the 70 mm² section cables have to be used.
- For current of 30A or lower, the 6 mm² section cable have to be used.
- The terminals are chosen according to the required current (up to 50A or up to 250A), the common is the same for both current ranges.
- If it is assumed that the **Stop** at the end of the test is done automatically, it is necessary also to connect two cables at the 'EXTERNAL CONTACT-NC/NO' terminals and at the contacts of the relay under test. Also the switch has to be set according to the function of the contacts of the relay under test:

NC: normally closed (stops when opening)

NO: normally open (stops when closing)

- In case the stop has to be done manually, the 'OFF' button has to be used. In this case no cable need to be connected to the 'EXTERNAL CONTACT-NC/NO' terminals and the switch has to be set to the 'ADJUST' position.

3.2.- CONNECTION UP TO 2500 A (optional)

In this case, the 1A/200A (2500 VA) transformer that can be ordered as optional accessory for the CR-250 is used.

Due to the large currents that can be obtained, it is necessary that the distances are as minimal as possible and all connections perfect. For the connection, the 1,5m cable, that is supplied as accessory, can be used.


The 1A/200A transformer is supplied from the CR-250 by the 6mm section cable delivered with the CR-250 and connected to the 0-250V output at the back side of the CR-250.

The connection of the 'EXTERNAL CONTACT-NC/NO' is as described in the previous section.

4.- TESTING THE RELAY


PREVIOUS ADJUSTMENT

- The ammeter has to be set to the 999A scale (or 10 x 999 scale in case the 1A/200A, 2500 VA transformer is used)
- The switch is set to the 'ADJUST' position.
- With the turning knob in the 0% position, the 'ON' button is pressed and the required current can be adjusted.

 **THE ADJUSTMENT TIME HAS TO BE AS SHORT AS POSSIBLE TO AVOID PREVIOUS WARMING OF THE RELAY. IN ANY CASE, A CERTAIN COOLING DOWN TIME HAS TO BE PASSED BEFORE EXECUTING THE TEST.**

TEST

- The switch is set to the required position (NC or NO).
 - The correct setting of the ammeter has to be set in order to get the maximum accuracy in the read-out.
 - The RESET button has to be pressed to set the chronometer to '0'
- Now the 'ON' button can be pressed that starts the flow of the selected current and the chronometer will start to count.

 If the CR250 is not starting to test, probably the NO / NC switch is in the wrong position.

DURING THE TEST, AS THE TEMPERATURE OF THE RELAY UNDER TEST WILL CHANGE, ALSO THE FLOWING CURRENT WILL CHANGE. IT IS THEREFORE NECESSARY TO READJUST THE CURRENT FREQUENTLY TO MAINTAIN THE CURRENT AT THE REQUIRED VALUE.

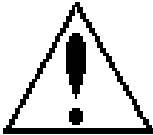
If the stop is automatic, the test is stopped when the relay contact trips. In case the stop has to be manual, the 'OFF' button has to be pressed immediately when the relay trips.

In both cases, the duration of the test will be indicated in the chronometer display until the 'RESET' button is pressed.

5.- INTERPRETATION OF THE RESULTS

The goal of the test is to know tripping time of a relay for a previous set over-current. The CR-250 relay tripping tester from CIRCUTOR allows the read-out of this time by means of a digital chronometer. The result is given in seconds, decimals and hundreds of seconds. It is the responsibility of the operator that the current stays stable on the set value during the whole test.

6.- SAFETY CONSIDERATIONS



All installation specification described at the previous chapters named INSTALLATION AND START-UP, INSTALLATION MODES and SPECIFICATIONS.

Note that with the instrument powered on, the terminals could be dangerous to touching and cover opening actions or elements removal may allow accessing dangerous parts. This instrument is factory-shipped at proper operation condition.

7.- MAINTENANCE

The **CR-250** does not require any special maintenance. No adjustment, maintenance or repairing action should be done over the instrument open and powered and, should those actions are essential, high-qualified operators must perform them.

Before any adjustment, replacement, maintenance or repairing operation is carried out, the instrument must be disconnected from any power supply source.

When any protection failure is suspected to exist, the instrument must be immediately put out of service. The instrument's design allow a quick replacement in case of any failure.

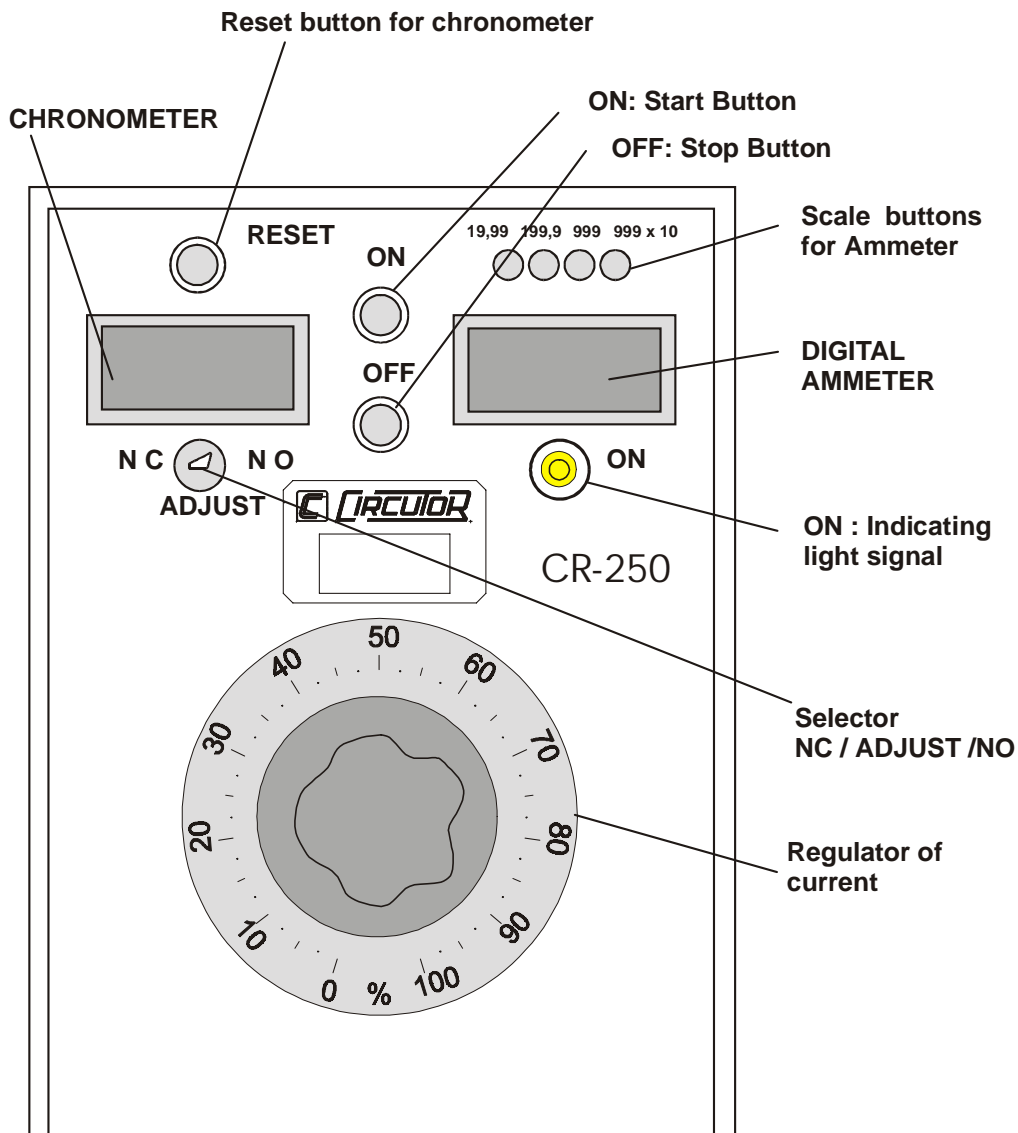
8.- TECHNICAL SERVICE

For any inquiry about the instrument performance or whether any failure happens, contact to CIRCUTOR's technical service.

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c / Lepanto , 49
08223 - TERRASSA
Tel - + 34 93 745 29 00
fax - + 34 93 745 29 14
E-mail : central@circutor.es*

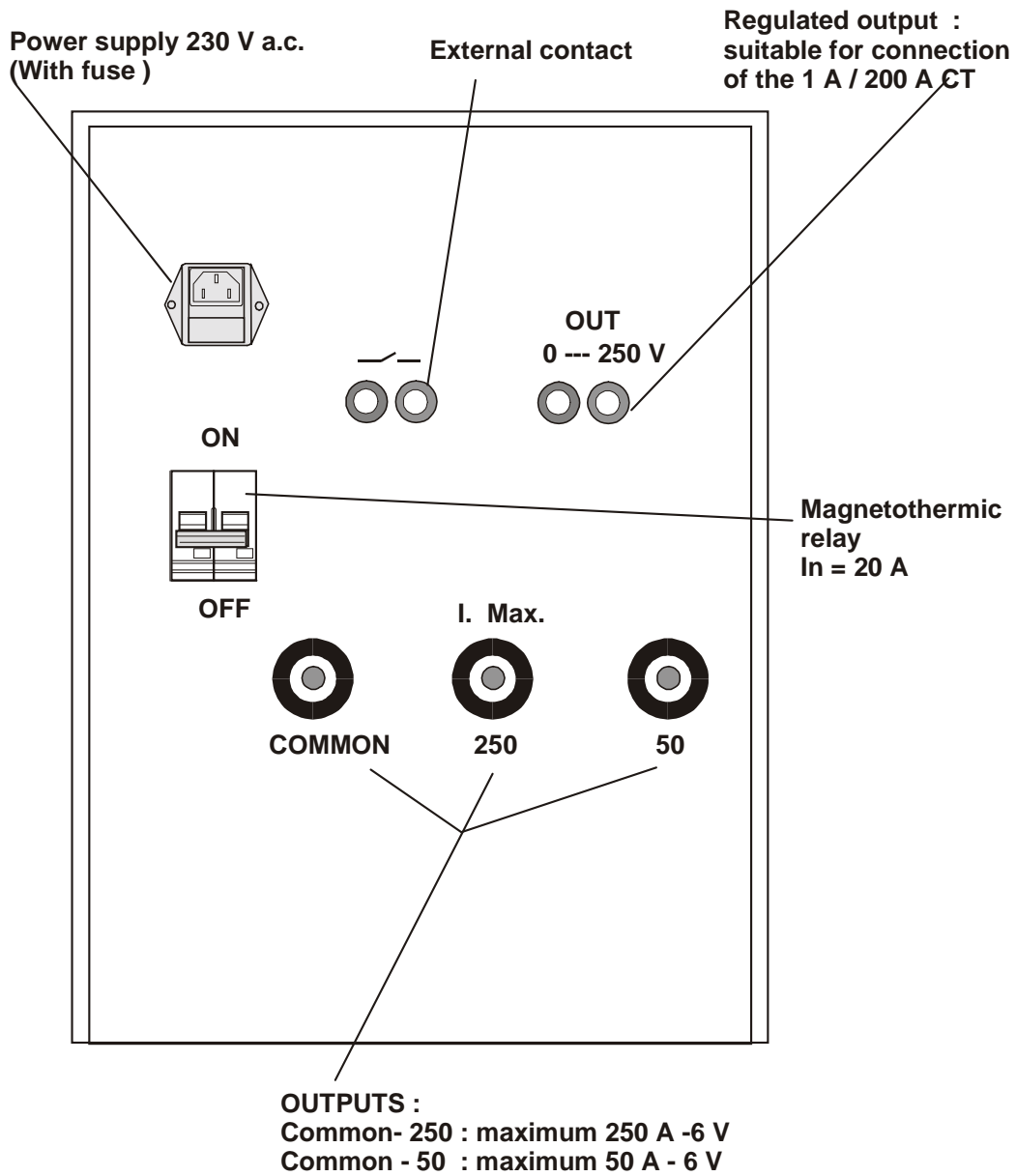
ANNEX A

MAIN ELEMENTS (FRONT PART)



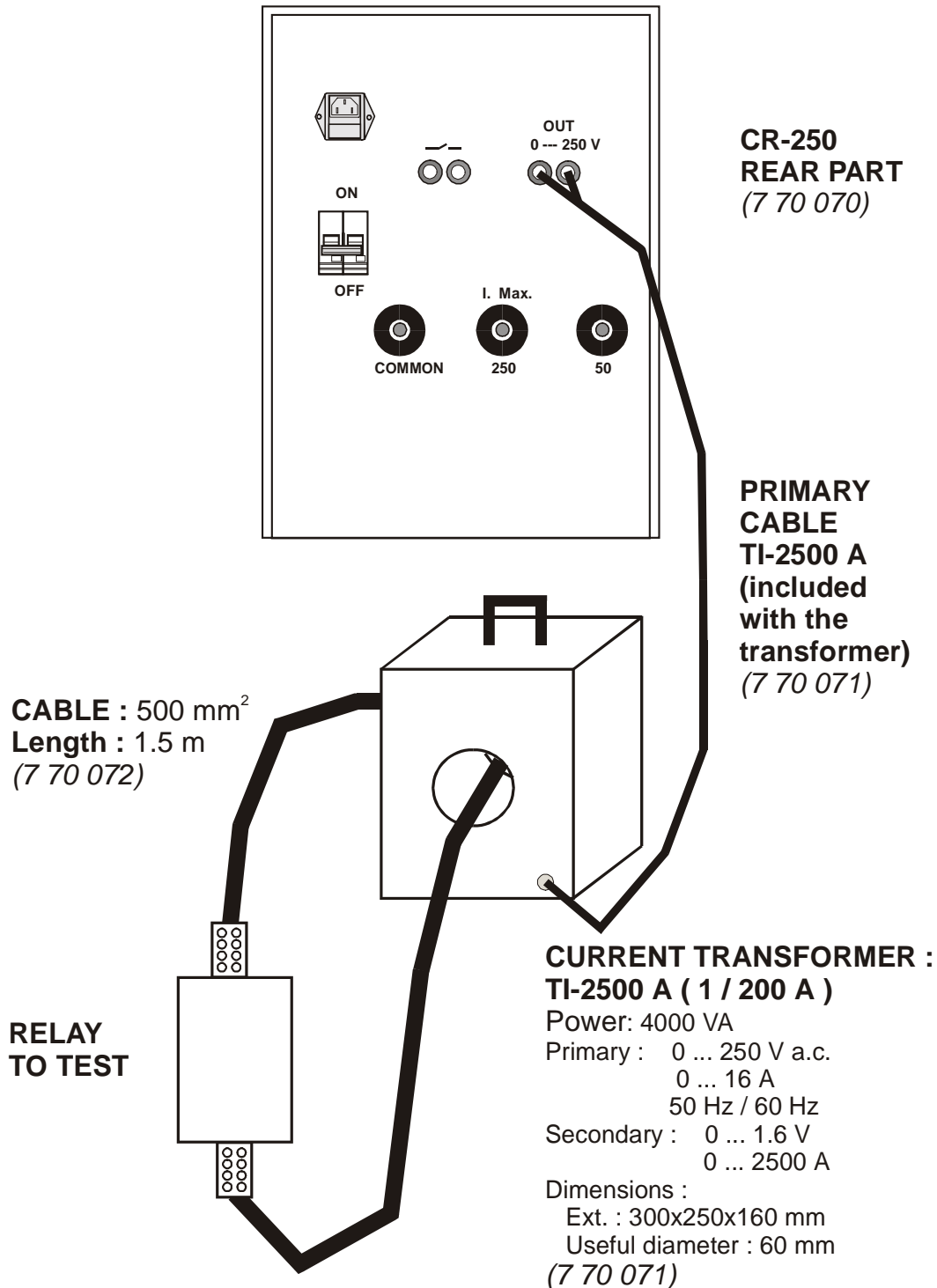
ANNEX B

MAIN ELEMENTS: CONNECTIONS (REAR PART)



ANNEX C

**CONNECTION DIAGRAM : CR-250
WITH THE TI-2500 A TRANSFORMER**



Note: Due the high flowing currents that will be obtained, very chort distances and perfect connections will be required.