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INSTRUCTIONS FOR THE COMMISSIONING AND MAINTENANCE OF CURRENT AND VOLTAGE RELAYS 700 SERIE (RMS 700 / TMS 700)

M.1824/A.XE
04/97

4 Commissioning-Setting-Display

5 Electrical tests

6 Maintenance

Annexes

1 - FUNCTIONS AND APPLICATIONS:

1.1 GENERAL OUTLINE:

Series 700 relays form a new range of PROCOM digital protection devices, complementary to the 7000 series.
They come in R2 or R3 cases, maintaining the advantages of withdrawability and strength of this type of relay, and fit perfectly into the PROCOM architecture.

The 700 series is made up of:

-the RMS711	overcurrent, single phase (phase or earth fault)
-the RMS761	overcurrent, three phase
-the RMS771	overcurrent, two phase and earth fault
-the RMS791	overcurrent, three phase and earth fault
-the TMS711	under/over voltage, single phase
-the TMS761	under/over voltage, three phase
-the TMS714	neutral displacement over voltage.

The RMS700 has two wide setting range current thresholds:
-dependent (inverse) or definite time low set
-definite time high set

On the RMS771 and the RMS791 the setting and the choice of the curve for the overcurrent and the earth fault elements are independent of each other.

On the TMS700, each of the 2 voltage thresholds may be set independently to under or over voltage, with dependent or definite time response curves.

Series 700 relays are equipped with three output relays:
-one from the self supervision watch dog
-the other two associated with the various instantaneous or time delayed thresholds.
The latter are each provided with two contacts: one NO and the other NO or NC, depending upon the relay model.

On the RMS771 and the RMS791 the A and B output relays are programmable:
-Overcurrent and earth fault, low sets on A / high sets on B
OR
-Low set and high set overcurrent on A/ low set and high set earth fault on B

On the RMS711, RMS761, A is connected to the low set and B to the high set.
On the TMS711, TMS761, TMS714 A is connected to threshold 1 and B to threshold 2.

Operation of the relay is memorised and signalled by the flashing of the electroluminescent display.

The relay has a current loop communication port and fits into the PROCOM network.

1.2 COMMUNICATIONS

Series 700 relays communicate with the outside world in two ways:

.Local communications:
The man machine interface is provided by a 4-key keyboard on the relay front plate; this allows the device to be set and measured values to be read. This information is read on the high contrast electroluminescent display.

.Digital network communications:

RMS700 and TMS700 cases are fitted with current loop (0-20mA) communications port brought out to terminals. This allows the case to be inserted into a communications network supervised by a PC or a PROSATIN device. All the information available locally, measured values or settings, can be remotely transmitted. When an event such as a relay trip occurs, the rms values of the currents and voltages measured at the instant of operation are made available to the central system.

2 RECEPTION AND INSTALLATION

2.1 PHYSICAL LAYOUT AND INSTALLATION

All parts necessary for the physical mounting of the relay (in the version ordered) are part of the package as supplied, including the screws for the terminals.

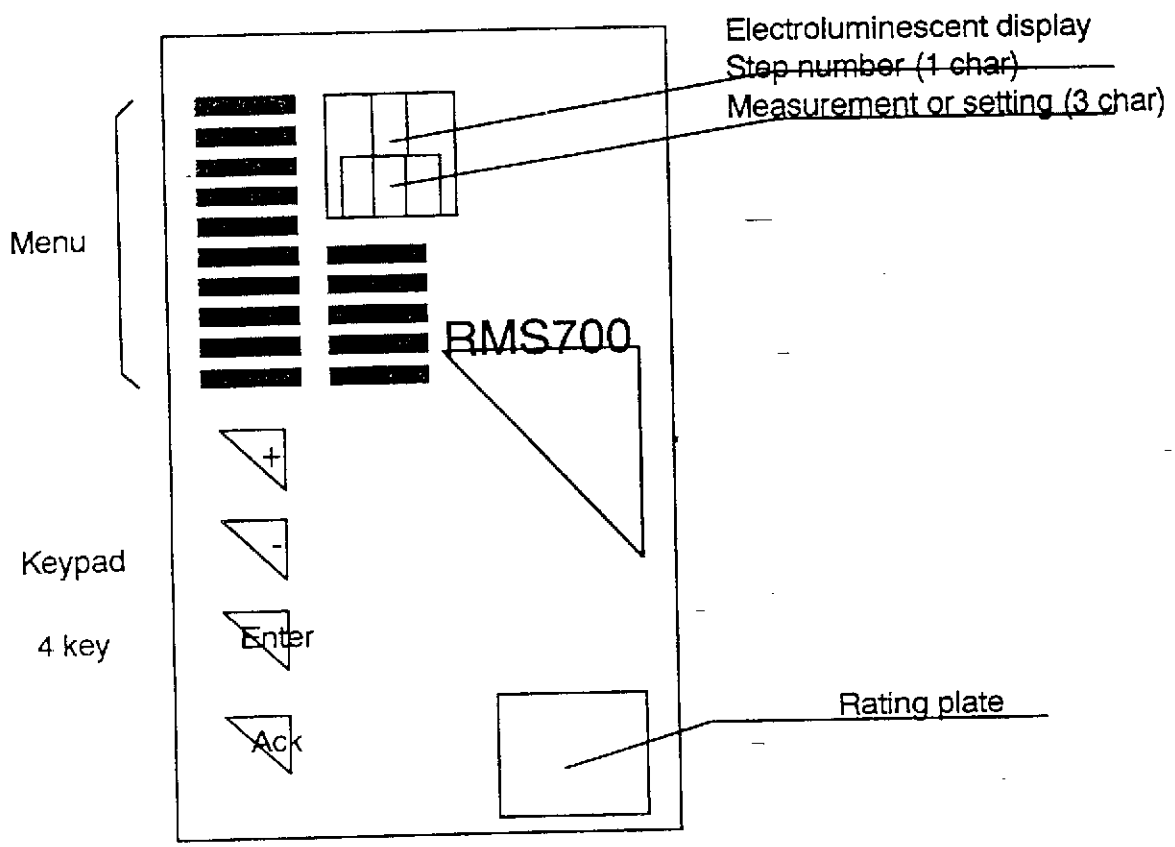
The current inputs on the relay bases and the communications ports are equipped with automatic short circuiting when the relay is withdrawn. This is why it is important, after plugging the relay in, to fully screw home the fixing rods. A flat 3.5 mm screwdriver should be used .

NOTE:

All relays are delivered complete with a lead-seal applied after the final factory inspection. The lead seals should only be broken when the units are put into service by personnel qualified for such an operation.

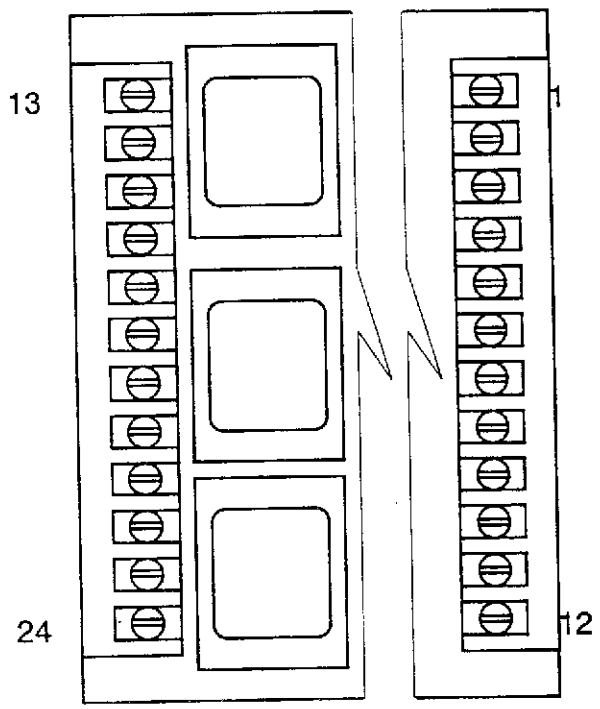
Before any modification, it is important to ensure that the relay has not suffered any mechanical damage.

2.2 RELAY FRONT VIEW:



2.3 RELAY REAR VIEW:

(R2 or R3 case)



2.4. PANEL CUT-OUTS AND DIMENSIONS

See Annexes A1 and A2

3 CONNECTIONS

3.1 GENERAL OUTLINE:

Using the connection diagrams below (and the communications network diagram where appropriate), make the various connections using the terminal references given in Paragraph 3-3.

RECOMMENDATIONS

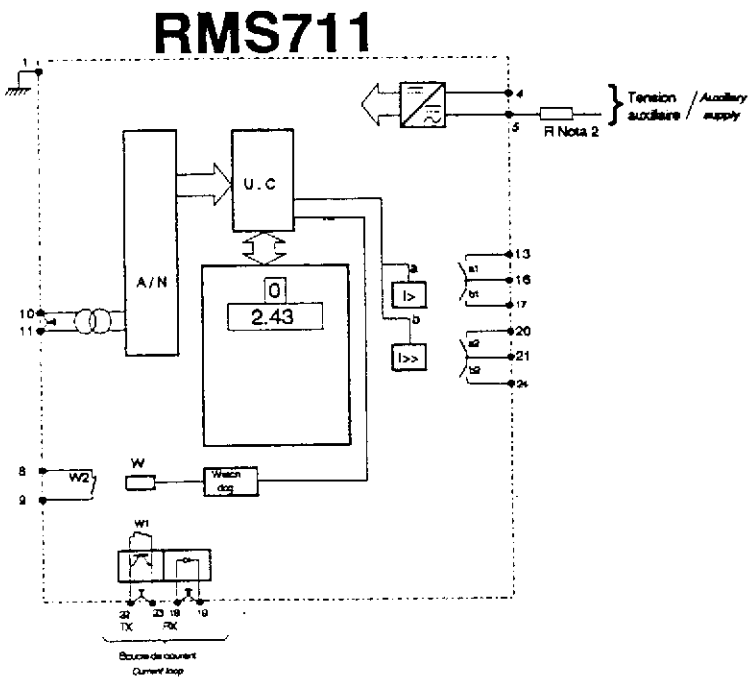
Before commissioning, it is important to check that:

- the current transformers have a secondary rated current the same as that indicated on the relay rating plate and have a rating of at least 5VA,
- the voltage transformers have a secondary rated voltage the same as that indicated on the relay rating plate,
- the frequency of the network is identical to that shown on the relay (see Paragraph 4-3),
- the wiring connections agree with the diagram (depending upon the type of relay),
- the auxiliary voltage is identical to that shown on the rating plate,
- the relay is correctly plugged in, and the fixing rods are fully screwed in,
- the circuit breaker trip circuit operates correctly.

3.2 CONNECTION DIAGRAMS

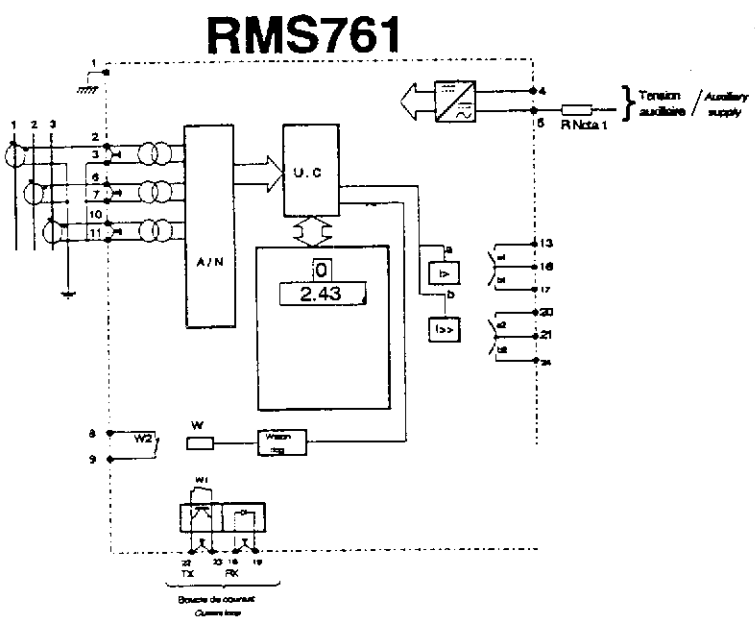
3.2.1 RMS711 CONNECTION DIAGRAM:

Single phase overcurrent or earth fault relay



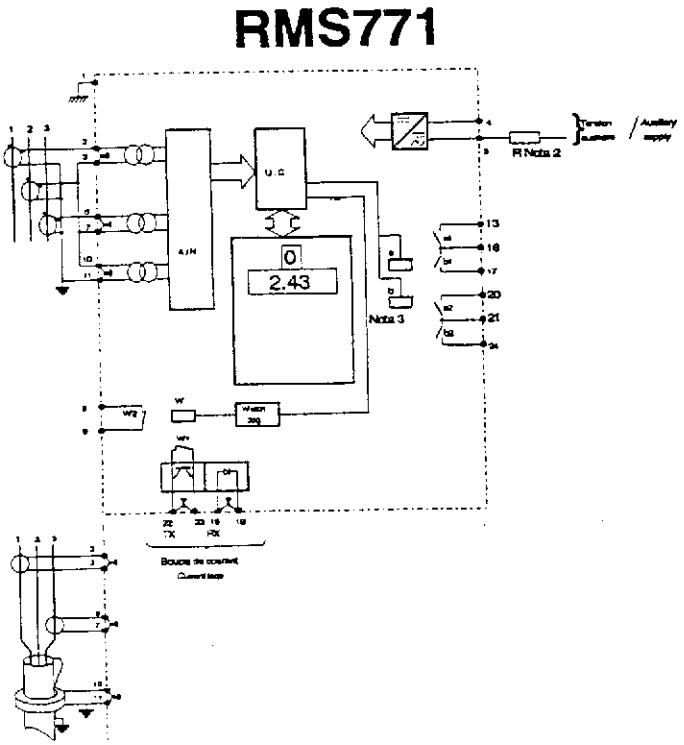
3.2.2 RMS761 CONNECTION DIAGRAM:

Three phase overcurrent fault relay



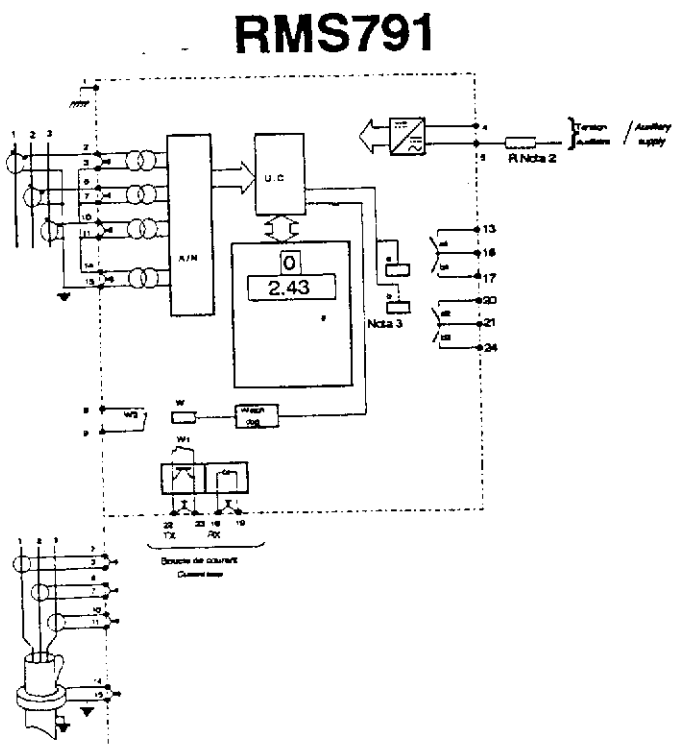
3.2.3 RMS771 CONNECTION DIAGRAM:

Two phase overcurrent and earth fault relay



3.2.4 RMS791 CONNECTION DIAGRAM:

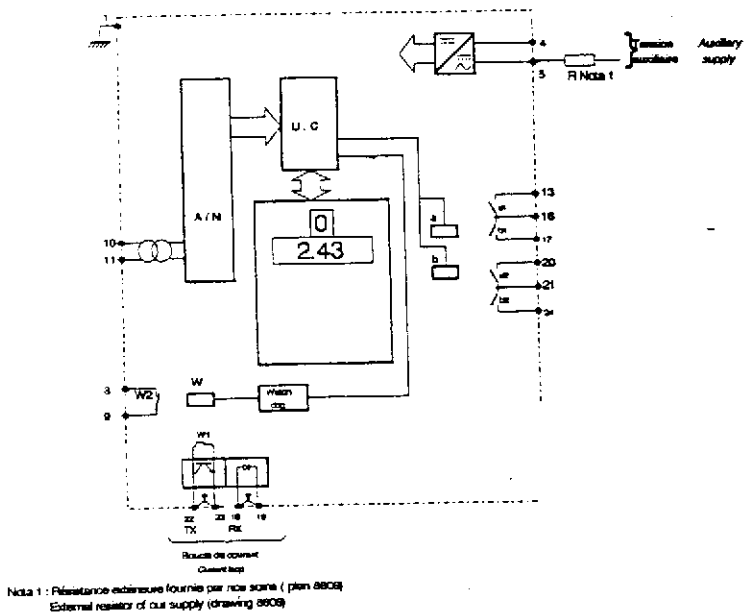
Three phase overcurrent and earth fault relay



3.2.5 TMS711 CONNECTION DIAGRAM:

Single phase under/over voltage relay

TMS711

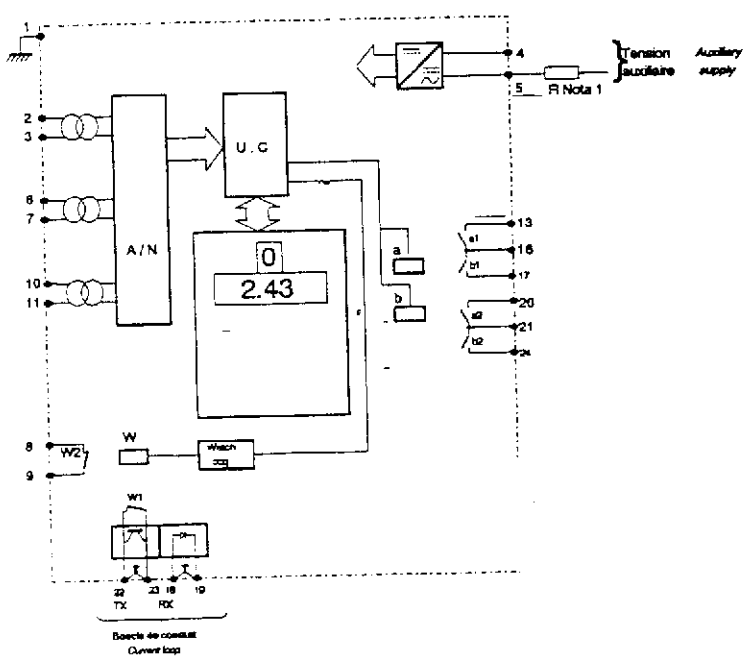


Nota 1 : Résistance extérieure fournie par nos soins (plan 8809)
External resistor of our supply (drawing 8809)

3.2.6 TMS761 CONNECTION DIAGRAM:

Three phase under/over voltage relay

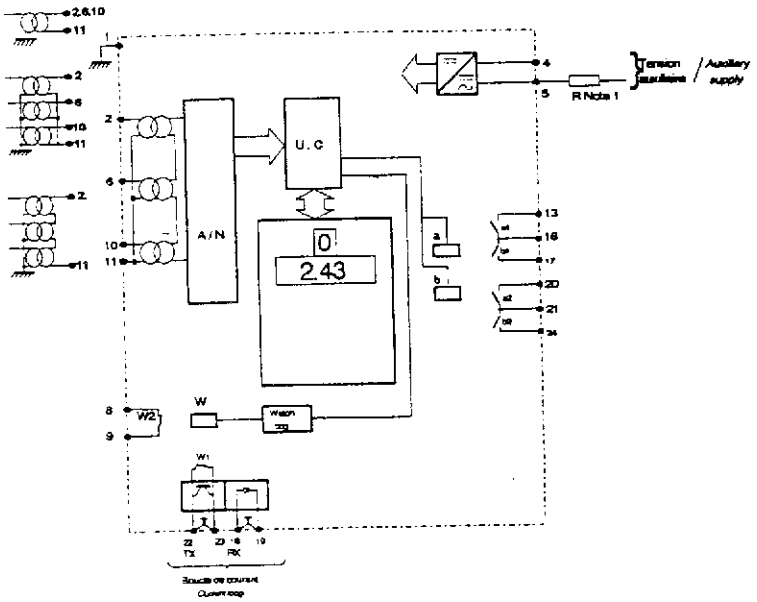
TMS761



3.2.7 TMS714 CONNECTION DIAGRAM:

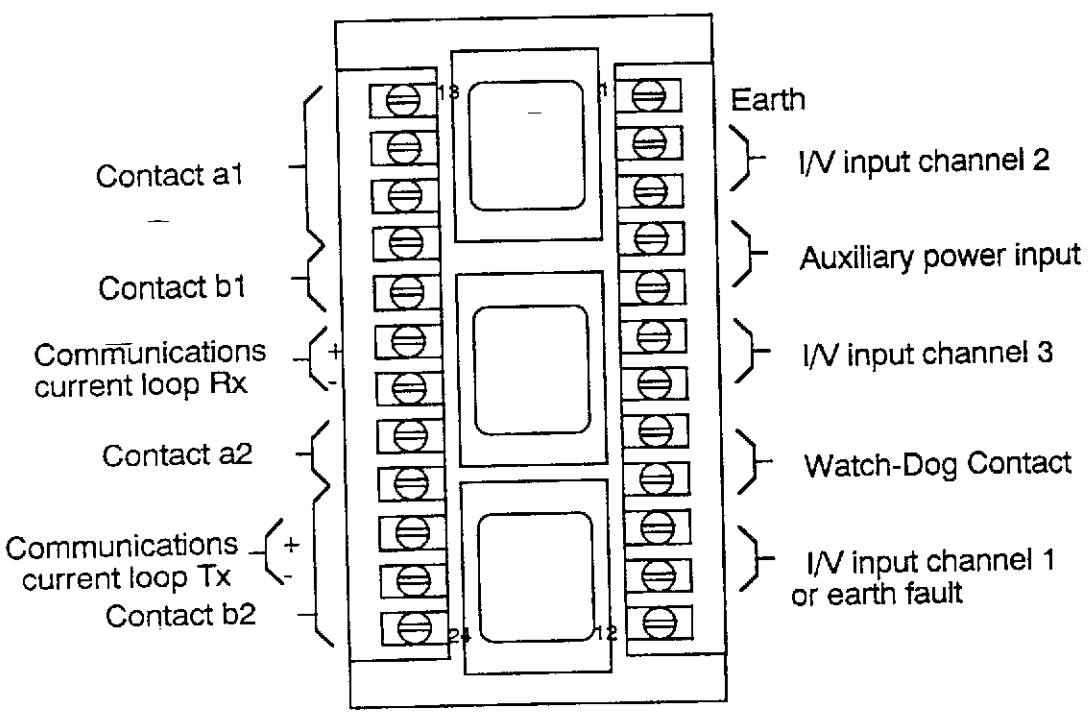
Neutral displacement under/over voltage relay

TMS714



3.3 Terminal layouts

3.3.1 RMS711, RMS761, RMS771, TMS711, TMS714, TMS761 relays

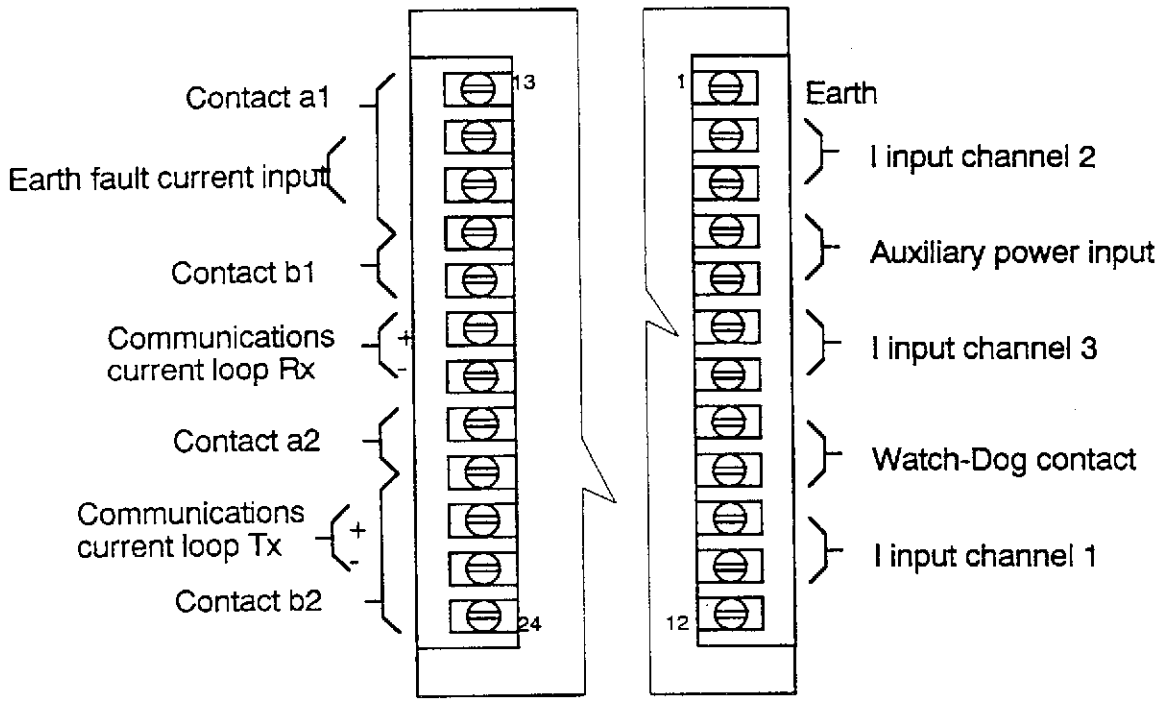


Normally open contacts a1 and b1 : common terminal 16

Normally open or closed contacts a2 and b2 : common terminal 21

Communications terminals : passive current loops

3.3.2 RMS791 relay:



Normally open contacts a1 and b1 : common terminal 16
Normally open or closed contacts a2 and b2 : common terminal 21
Communications terminals : passive current loops

4 COMMISSIONING-SETTING-DISPLAY

Switch on the auxiliary supply. Under normal conditions, the display should show step 0 (at the top) and eventually a current value (or voltage as appropriate) on the lower line (if not 000).

If this is not the case, it signifies that one of the start up self tests has failed. The fault number is displayed between dashes. See chapter 6 for what to do.

The relay is set using 4 keys and the electroluminescent display.

4.1 CURRENT RELAY SETTINGS:

-line ct ratio
-low set curve
-low set threshold
-low set - trip time delay
-high set threshold
-high set - trip time delay
-output relay setting (as appropriate)
-current frequency
-communications network settings

4.2 VOLTAGE RELAY SETTINGS:

-rated secondary voltage
-vt ratio
-threshold type (over or under)
-threshold
-type of curve
-trip time delay
-blocking for loss of voltage
-voltage frequency
-communications network settings

4.3 SETTING:

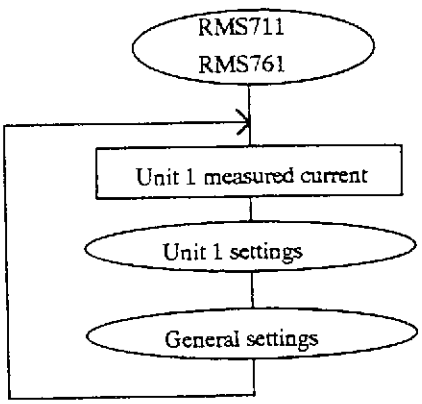
The sequence to be followed is described in the following paragraphs.

See annex A3 for the setting steps for each relay category and for the setting range of each parameter.

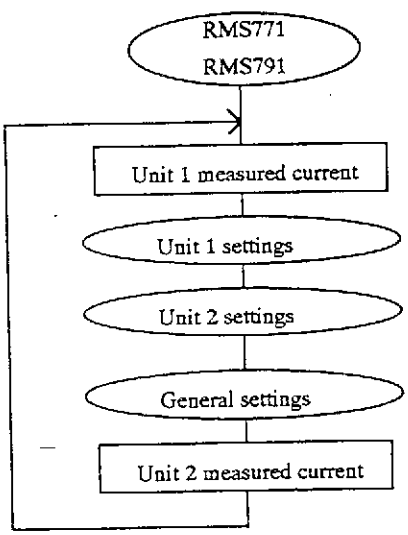
Note:

1)For reasons of clarity, only the + key is shown to advance in a parameter. The - key produces a single step in the reverse direction.
2)The old settings remain current during setting changes until the new set has been validated.
3)To validate the entry of a new set of parameters, make sure that the relay is at step 0 before pressing key ENTER (see paragraph 4.3.6)
4)The device is delivered with default settings.

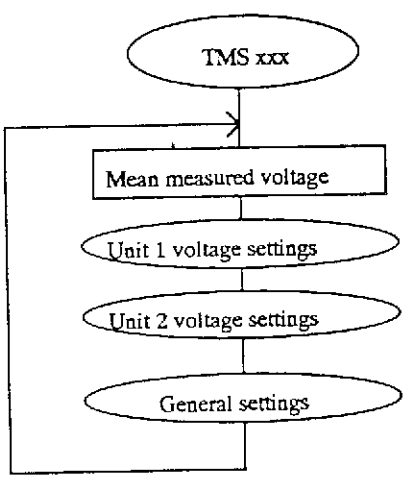
4.3.1 Single or three phase current relay:



4.3.2 Two phase and earth fault relays:

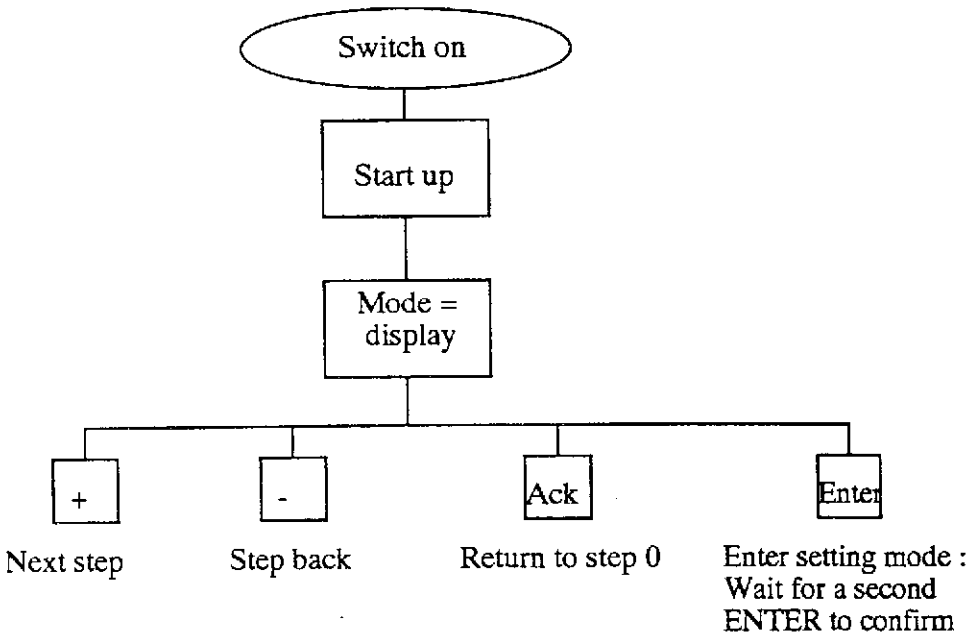


4.3.3 Voltage relays:



4.3.4 Operator interface:

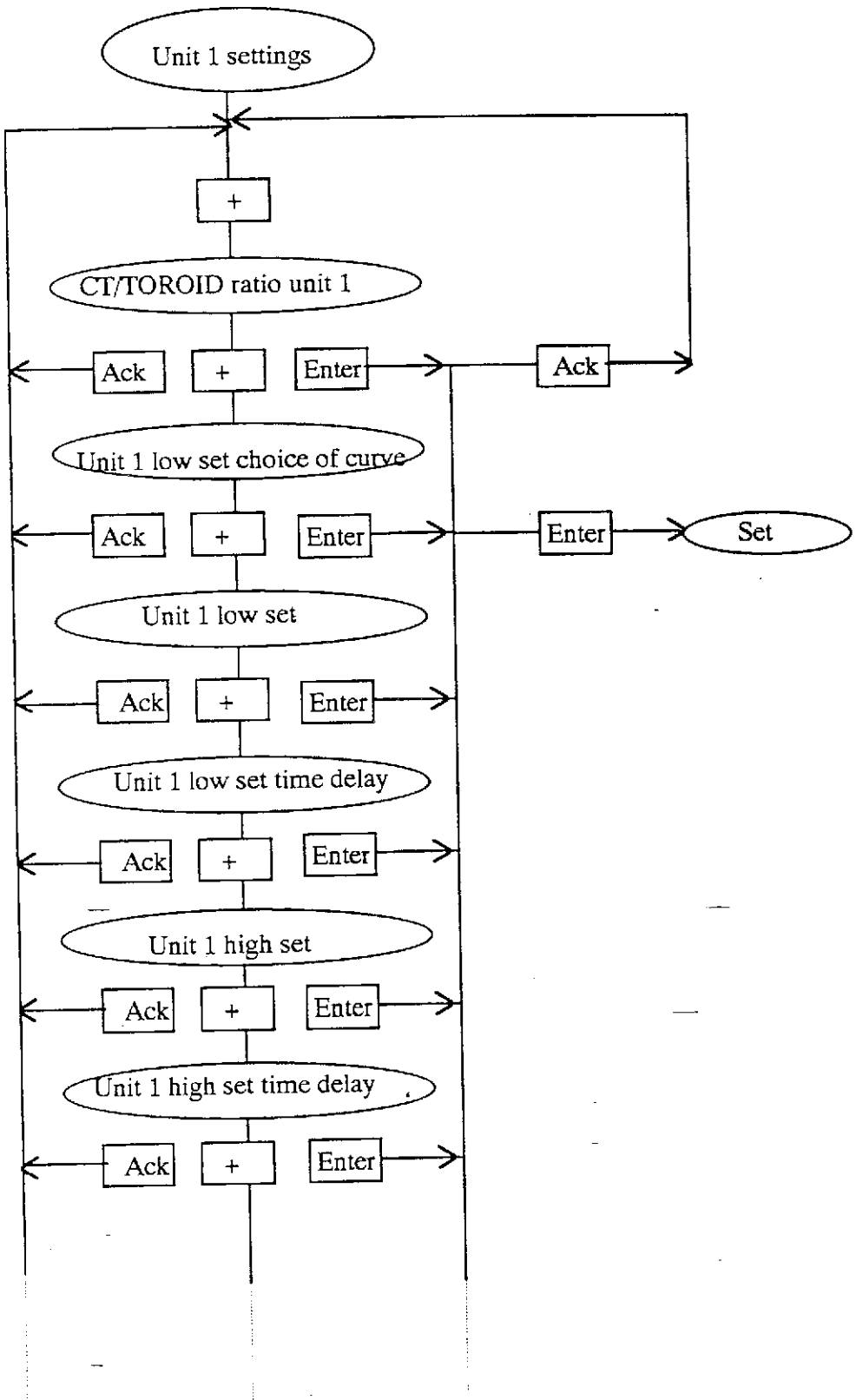
4.3.4.1 Display mode:



In display mode:

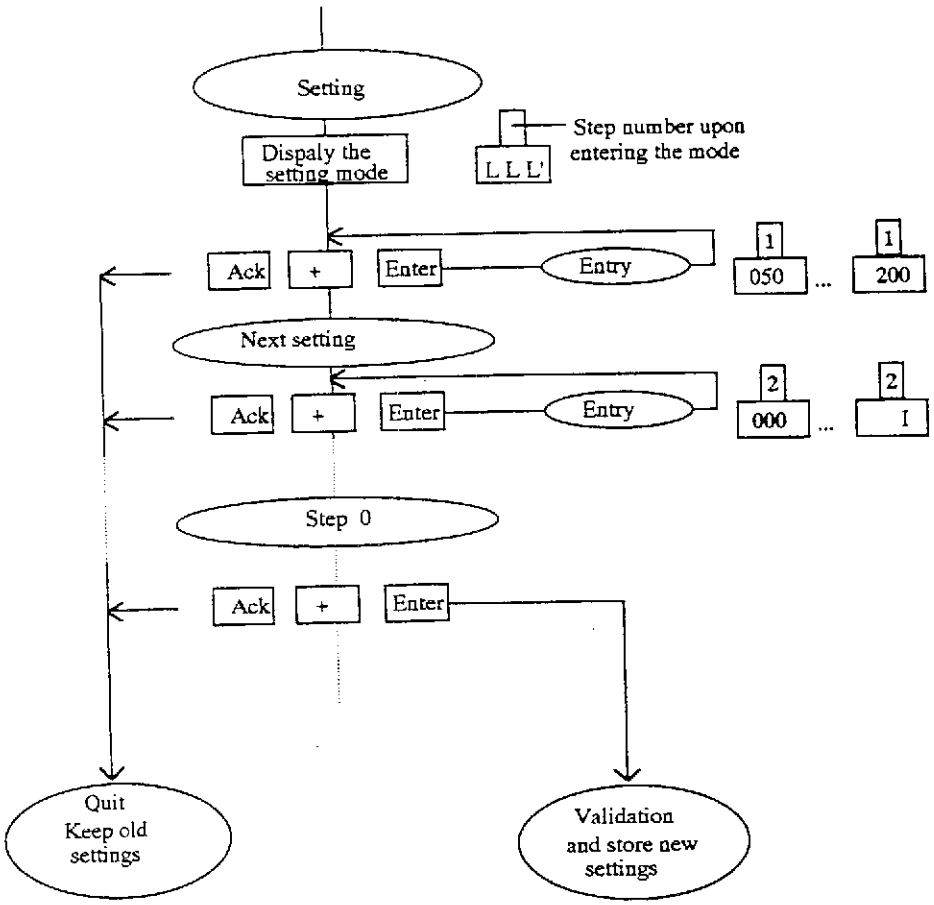
-Pressing once on the + and - keys moves one step forward or back
-Pressing twice successively on ENTER moves you to the setting mode
-Pressing once on ACK moves you back to step 0

Setting sequence example (current relay):



The parameter list for all the types of relays is found in Annex A3.

4.3.4.2 Setting mode:



Notes:

1)Pressing ENTER when not at step 0 terminates the setting mode at this step.
Pressing ENTER when at step 0 validates the set of setting information entries , stores them in non volatile memory and starts to use them.

2)CURVE CHANGES:
If the operator changes from a definite time to a dependent time (NI,VI or EI), the RMS (or the TMS as appropriate) checks the time delay setting when the new settings are being validated. If it does not fall within the dependent time setting range, the RMS displays an E 4 error (Unit 1 time error) or E 4. (Unit 2 time error) and the TMS an E 6 or E 6. Error.

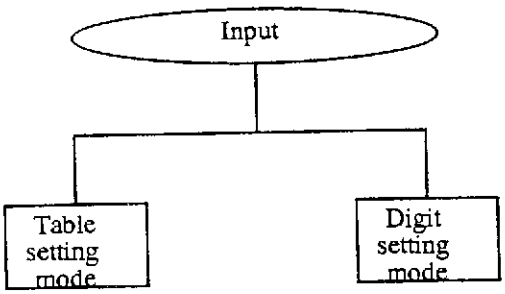
3) With the TMS, if the operator chooses a characteristic that is not compatible with the type of threshold (example: extremely inverse for the under threshold), the TMS displays an E 5 or E 5. Error.

4)If the result of the secondary rated voltage multiplied by the vt ratio is greater than 240 kV, the TMS displays an E 2 error

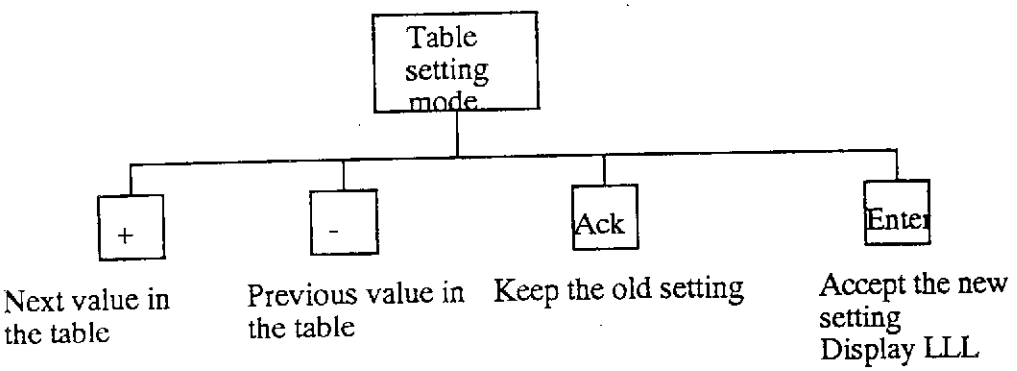
Data entry modes:

The + and - keys allow the operator to move around a table, usually of settings . (Table setting mode)

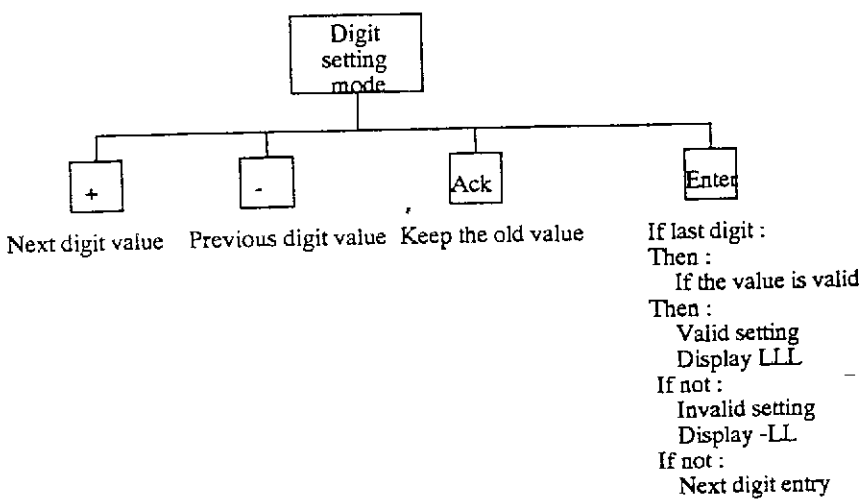
When the range of setting values leads to a table that is too big, data entry is digit by digit with validation at the exit from the step (example: Step 1: CT ratio).
See annex A3 for the setting parameter ranges.



4.3.4.2.1 Table setting mode:



4.3.4.2.2 Digit setting mode:



5 ELECTRICAL TESTS:

5.1 PRELIMINARY CHECKS

These tests are intended to ensure that the equipment has not suffered any damage during transport or storage and confirms correct operation at the set values.

These tests require a minimum amount of test equipment, namely :

-a current source (or voltage as appropriate) with a timer and an automatic injection cut-off function, as well as a dc supply.

-all results are expressed with a tolerance, taking into account normal site test equipment

If the test equipment does not incorporate an automatic injection cut-off function, it is advisable to stop the current or voltage injection (as appropriate), as soon as the expected response occurs.

IMPORTANT :

In order to preserve the quality of the relay female terminals, it is formally prohibited to test this equipment without its base by plugging in standard commercially available plugs or leads.

5.2 CURRENT RELAYS RMS711, RMS761, RMS771, RMS791

5.2.1 Overcurrent unit tests

5.2.1.1 Low set:

Steps to be taken	Expected results
RMS711 Overcurrent, RMS761 and RMS771, RMS791 Overcurrent: **Verification of low set overcurrent trip: I>** RMS771 and RMS791 only: Step E: 1 (relay A on low sets, B on high sets)	The display should follow the change in current
Connect the current source to 10-11 (RMS711, RMS761) or 2-3 (RMS771, RMS791) Continue to increase the current up to the threshold. The threshold is reached at 100% of the setting for definite time curves (type 000) and at 110% of setting for dependent time curves	For a current equal to the threshold +/- 10% Contact 13-16 should close Opening or closure of contact 20-21 The display should flash at step 0, until the current falls below the setting AND Ack is pressed.
RMS711 Overcurrent, RMS761 and RMS771, RMS791 Overcurrent: **Verification of low set overcurrent trip time : t(I>)**	
Connect the current source to 10-11 (RMS711, RMS761) or 2-3 (RMS771, RMS791), connect the test set automatic stop to 13-16. Preset the current to 10 times the setting (dependent time) or > than 1.5 times the setting (definite time) Stop the injection and reset the timer Inject the current and check the time delays	The A contact should pick up at the end of the time delay +/-10%

5.2.1.2 High set:

Steps to be taken	Expected results
RMS711 Overcurrent, RMS761 and RMS771, RMS791 Overcurrent inputs: **Verification of high set overcurrent trip: I>>**	
Connect the current source to 10-11 (RMS711, RMS761) or 2-3 (RMS771, RMS791), connect the test set automatic stop to 16-17. Preset the current to 0.9I>>	
Inject the current for approximately 1 second	Contact B should not change state
Preset the current to 1.1I>>	Closure of contacts 16-17 Opening or closure of contact 21-24 The display should flash at step 0, until the current falls below the setting AND Ack is pressed.
RMS711 Overcurrent, RMS761 and RMS771, RMS791 Overcurrent: **Verification of high set overcurrent trip time : t(I>>)**	
Connect the current source to 10-11 (RMS711, RMS761) or 2-3 (RMS771, RMS791), connect the test set automatic stop to 16-17. Preset the current to 1.5 times the setting	
Inject the current	The B contact should change state at the end of the time delay +/-10%

5.2.2 Earth fault unit tests

Same method as for paragraph 5.2.1

-The earth fault input is on terminals 10-11(711,771) or 14-15 (791)

-To test the earth fault unit under the same conditions as for the overcurrent unit, the test current must not contain any harmonics.

If this is not the case, the relay will appear to operate above its setting on the earth fault input (current measurement made with a true rms ammeter).

The relay ignores the rms value of the harmonics present on this input.

NOTE:

-The programmed ct ratio is that of the line cts when the relay is residually connected to the line cts.

-The programmed ct ratio must be 100 when the relay is connected to a 100 turn toroid, so that the earth fault current measurement is expressed directly in primary amps. The various settings are expressed in a % of the primary rated current, a setting of X% of 100A corresponds to the true value in primary amps.

Example: setting Io> = 0.07 In, corresponds to 0.07 x 100 = 7A.

5.3 VOLTAGE RELAYS TMS711, TMS761, TMS714

5.3.1 Unit 1 tests

5.3.1.1 Under voltage threshold:

Steps to be taken	Expected results
TMS711 and TMS761: Verification of the threshold Set: 3 to L (under threshold) 4=threshold setting 5=type of characteristic 6=time delay value Connect the voltage source to 10-11 (and 2-3, 6-7 for the TMS761) Connect a timer to the A contact Preset the voltage to 1.2 times the setting Continue to decrease the voltage down to the threshold. The threshold is reached at 100% of the setting for definite time curves (type 000) and at 90% of setting for dependent time curves	Contact 13-16 should close The display should flash at step 0, until the voltage returns to above the setting OR Ack is pressed.
Verification of the time delay -connect an A contact to stop the injection -Preset the voltage to 1.2 times the setting -Start the injection and reset the timer -Stop the injection	The A contact should close at the end of the time delay

5.3.1.2 Over voltage threshold:

Steps to be taken	Expected results
TMS711 and TMS761: Verification of the threshold Set: 3 to H (over threshold) 4=threshold setting 5=type of characteristic 6=time delay value Connect the voltage source to 10-11 (and 2-3, 6-7 for the TMS761) Connect a timer to the A contact Preset the voltage to 0.9 times the setting Continue to increase the voltage up to the threshold. The threshold is reached at 100% of the setting for definite time curves (type 000) and at 90% of setting for dependent time curves	Contact 13-16 should close The display should flash at step 0, until the voltage returns to above the setting OR Ack is pressed.
Verification of the time delay -connect an A contact to stop the injection -Preset the voltage to 1.5 times the setting -Stop the injection and reset the timer -Start the injection	The A contact should close at the end of the time delay

5.3.1.3 Neutral displacement Over voltage threshold:

TMS714:

Same method as for paragraph 5.3.1.2. The threshold corresponds to the measured voltage V(2-3) + V(6-7) + V(10-11) (taking into account phase shifts)

5.3.2 Unit 2 tests

Same method as for unit 1.
The associated settings are 3.,4.,5.,6.
The output relay is B (contacts 16-17 and 21-24)

6. MAINTENANCE

6.1 ABNORMAL SITUATIONS:

-the display does not light up : check the current drain given is between 110 and 180mA
-the relay operates but the circuit breaker does not trip : check the continuity of the trip circuit wiring
-threshold will not operate or is too high : check that the relay is fully plugged in and that the fixing rods are screwed in.
-continuous operation of the residually connected earth fault element : check the wiring and the polarity of the cts.
-toroid connected earth fault element will not operate : check the wiring of the cable sheath
-poor communications . Check : the terminal wiring, the Rx and Tx polarities, the loop current (20mA), the slave number, the speed
-display locked showing a number between dashes, see below

6.2 SELF TESTS:

When the relay is switched on, the operator can choose between two self test modes:

-normal switch-on tests
-extended switch-on tests

The first group is the default switch-on tests.
The second is selected at the time of switch-on by pressing simultaneously on the + and - keys.

IMPORTANT:

During switch on, avoid the combination + and ENTER in order not to disturb the relay environment: this initiates a third set of tests, including the communication functions and the operation of the output relays. In addition, at the end of the test, the relay is no longer operational but blocked in watch dog mode. If this does occur, switch off the auxiliary supply for a brief period (more than 2s).

No matter what the mode, in the event of a fault with the tests 1 to 8, the number of the failed test is displayed, preceded by the letter H , and the watch dog is eventually tripped.

Test	Number displayed	Mode 1	Mode 2	Rem.
Display	-0-		x	
Internal RAM	-1-	x	x	
External RAM	-2-	x	x	
EEPROM	-5-	x	x	1)
CRC/ Checksum PROM	-6-	CHKS	CRC	2)
Display of the version number and the type of relay			x	3)
Analogue measurements	-8-	x	x	4)

Note 1)
The operator can correct this fault.
If an error of this type is displayed, the relay loads a standard set of parameters, but does not write them to non volatile memory.
So the operator must:

-acknowledge the fault (Ack key)
-re-enter the settings
-validate the entry

The relay supervises the entry into non volatile memory. If it is correct, the relay becomes operational, If not, the error is again displayed.
If not, supervise the method of entry. In particular, ensure that it is at step 0 before validating. If it is impossible to write to the non volatile memory, the relay blocks itself as faulty and gives a watch dog alarm.
Attempt another switch-on to check that the data has been stored correctly: the fault must not reappear.
If several attempts fail, replace the relay.

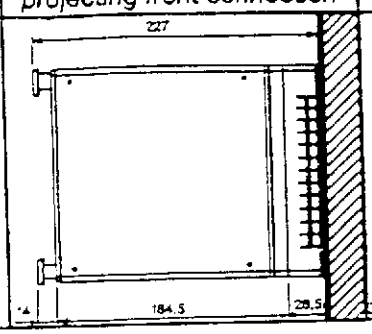
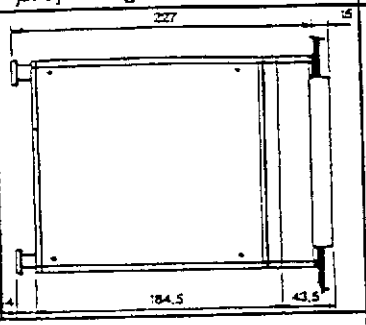
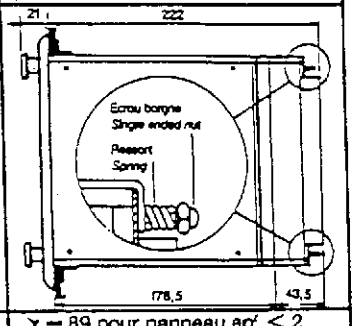
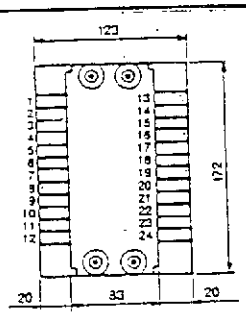
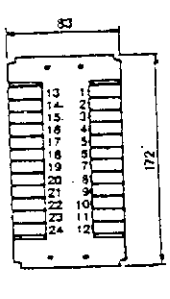
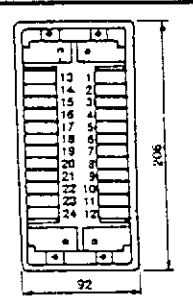
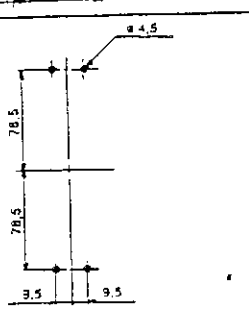
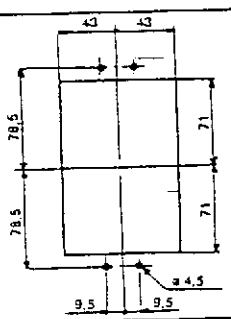
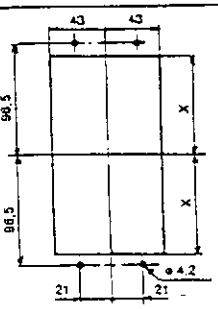
Note 2):
The level 2 test is more complete and lasts for about 3 seconds

Note 3):
The display shows the type of relay (711/761/771/791) alternating with the software version number.

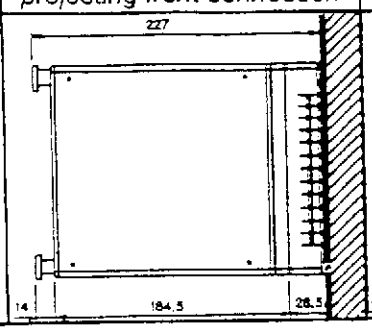
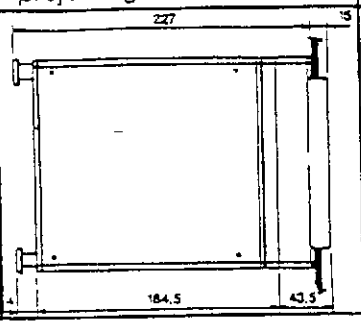
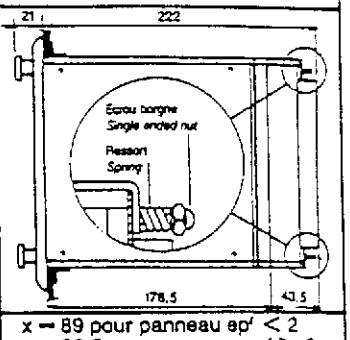
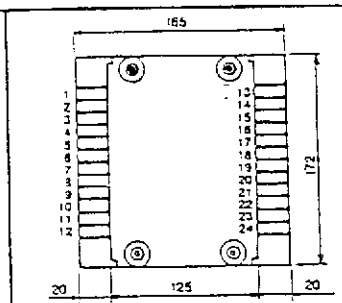
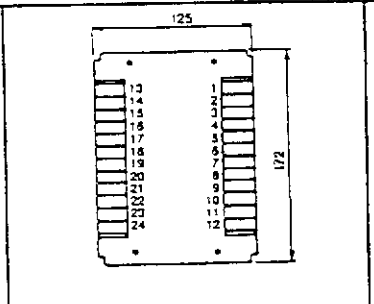
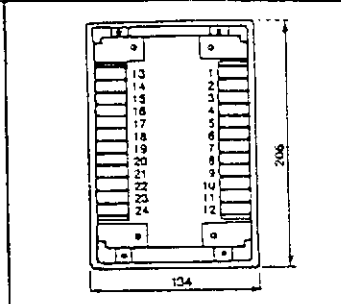
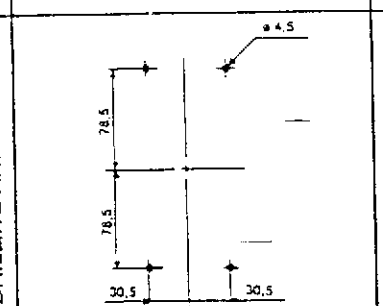
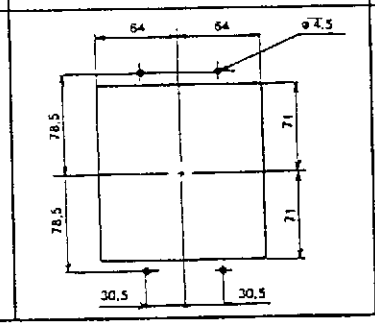
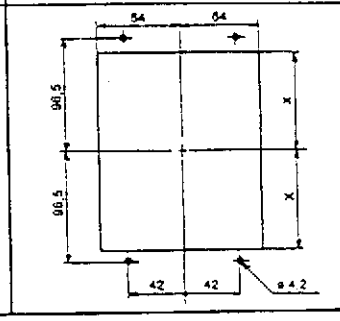
Note 4):
Check the auxiliary voltage. If it is normal and the fault persists, replace the relay.

ANNEXES

A1 R2 CASE PANEL CUT OUT AND DIMENSIONS

		saillie prises avant *projecting front connection*	saillie prises arrière *projecting rear connection*	encastré prises arrière *flush rear connection*
ENCOMBREMENTS *CASE DIMENSIONS* / RACCORDEMENT PAR VIS ø M4 *CONNECTING SCREWS ø M4*				
				x = 89 pour panneau ep' < 2 x = 90,5 pour panneau ep' > 2 x = 89 *for panel th. < 2* x = 90,5 *for panel th. > 2*
R2	ENCOMBREMENTS *CASE DIMENSIONS*			
	PERÇAGES ET DÉCOUPES *DRILLING AND CUT OUT*			

A2 R3 CASE PANEL CUT OUT AND DIMENSIONS

		saillie prises avant *projecting front connection*	saillie prises arrière *projecting rear connection*	encastré prises arrière *flush rear connection*
ENCOMBREMENTS *CASE DIMENSIONS* / RACCORDEMENT PAR VIS ø M4 *CONNECTING SCREWS ø M4*				
				x = 89 pour panneau ep' < 2 x = 90,5 pour panneau ep' > 2 *x = 89 for panel th. < 2* *x = 90,5 for panel th. > 2*
R3	ENCOMBREMENTS *CASE DIMENSIONS*			
	PERÇAGES ET DÉCOUPES *DRILLING AND CUT OUT*			

A3 SETTINGS AND AUTHORISED VALUES

RMS771, RMS791

Step[1]	Setting	Possible values	Meaning	Comments	Your Setting 3)
0_2	Unit 1 mean measured current		Primary current	In kA	
1	CT or toroid ratio	2-2500		no units	
2	Unit 1 low set curve type	0,1,11,111	0 Definite time 1 Inverse 11 Very inverse 111 Extremely inverse		
3	Unit 1 low set	0.5 to 4 In	Based upon line cts	0.1In step	
4	Unit 1 low set time delay	0.1 to 3s 3s to 30s	0,1,11,111 curve types 0 curve type only	0.05s step 0.5s step	
5	Unit 1 high set	1 to 25 In	Based upon line cts	0.1In step from 1 to 2.5In and 0.5In above this	
6	Unit 1 high set time delay	0 0.1 to 3s	Instantaneous (55ms) Time delayed	 0.05s step	
1.	CT or toroid ratio	2-2500		no units	
2.	Unit 2 low set curve type	0,1,11,111	0 Definite time 1 Inverse 11 Very inverse 111 Extremely inverse		
3.	Unit 2 low set	0.05 to 0.4 In 1-8A 5-40A	Residually connected cts 100 turn toroid 100 turn toroid	0.01In step 0.2A step 1A step	
4.	Unit 2 low set time delay	0.1 to 3s 3s to 30s	0,1,11,111 curve types 0 curve type only		
5.	Unit 2 high set	0.1 to 2.5 In 5-40A 10-250A	Residually connected cts 100 turn toroid 100 turn toroid		
6	Unit 2 high set time delay	0 0.1 to 3s	Instantaneous (55ms) Time delayed		
E	Output relay configuration	1 2	A from low sets, B from High sets A from overcurrent, B from earth fault		
H	Rated frequency	50-60		In Hz	
L	JBUS address	1-254	If connected to PROCOM	Step 1	
P	Transmission speed	12-24-48	If connected to PROCOM	1200/2400/4800 bauds	
0_2	Unit 2 measured current				

Step[1]	Setting	Single Phase Overcurrent RMS711	Three Phase RMS761	Single Phase Earth Fault RMS711	Possible values	Meaning	Comments	Your Setting 3)
0_2	Unit 1 mean measured current	*	*	*		Primary current	In kA	
1	CT or toroid ratio	*	*	*	2-2500		no units	
2	Unit 1 low set curve type	*	*	*	0,1,11,111	0 Definite time 1 Inverse 11 Very inverse 111 Extremely inverse		
3	Unit 1 low set	*	*		0.5 to 4 In	From line cts	0.1 In step	
3	Unit 1 low set			*	0.05 to 0.4In 1-8A 5-40A	Residually connected cts 100 turn toroid 100 turn toroid	0.01In step 0.2A step 1A step	
4	Unit 1 low set time delay	*	*	*	0.1 to 3s 3s to 30s	0,1,11,111 curve types 0 curve type only	0.05s step 0.5s step	
5	Unit 1 high set	*	*		1 to 25 In	Based upon line cts	0.1In step from 1 to 2.5In and 0.5In above this	
				*	0.1 to 2.5In 5-40A 10-250A	From residual connection 100 turn toroid 100 turn toroid	0.05In step 1A step 5A step	
6	Unit 1 high set time delay	*	*	*	0 0.1 to 3s	Instantaneous (55ms) Time delayed	0.05s step	
	Output relay configuration					A from low sets, B from high sets	Can not be modified	
H	Rated frequency	*	*	*	50-60		In Hz	
L	JBUS address	*	*	*	1-254	If connected to PROCOM	Step 1	
P	Transmission speed	*	*	*	12-24-48	If connected to PROCOM	1200/2400/4800 bauds	

General notes:

1)The steps flow in a circle. The display returns to 0 after 5 minutes

2) The tripping of one of the output relays causes the display to flash. The display continues to flash after the fault has disappeared until the Ack key is pressed. The quantity displayed corresponds to what caused the trip (0 for unit 1, and 0. For unit 2). The value displayed corresponds to the measured value at the instant of tripping.

3) Write your settings in this column.

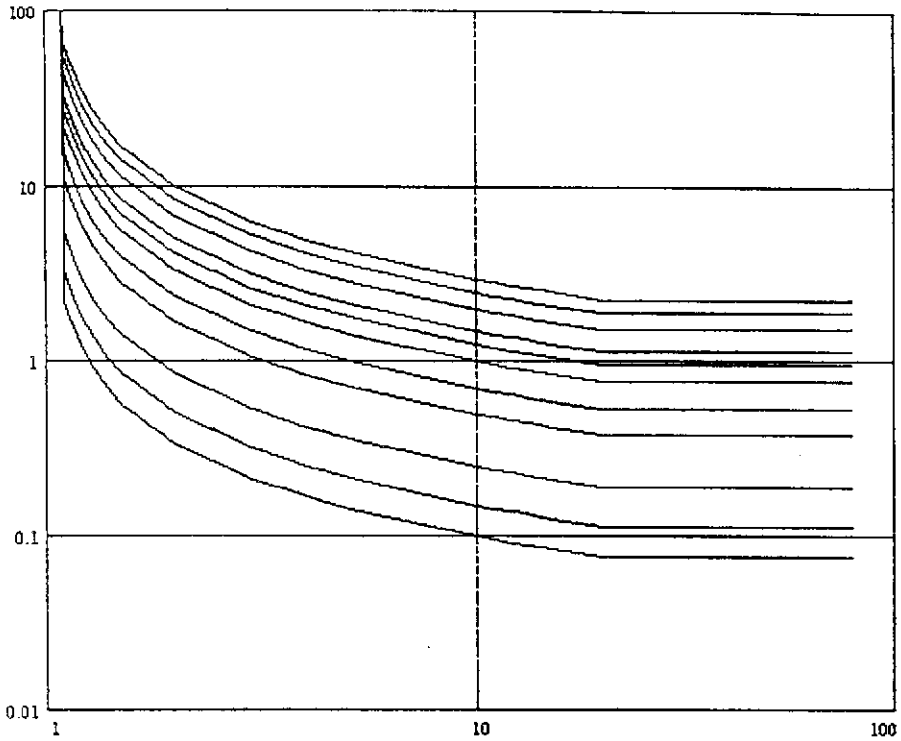
Step$_1$	Setting	TMS711 TMS761	TMS714	Possible values	Meaning	Comments	Your Setting 3)
0_2	Mean measured voltage	*	*		Primary voltage	In kV	
1	VT rated secondary voltage	*		100,110,120, 100/,110/,120/ √3 √3 √3 400/√3(=230)	VT secondary rated voltage	In V	
1	VT rated secondary voltage		*	100/,110/,120/, 3 3 3 100/,110/,120/ √3 √3 √3	VT secondary rated voltage	In V	
2	VT ratio	*	*	1-2500		No units	
3	Unit 1 type	*		L, H	L= under H= over		
3	Unit 1 type		*	H	H= over		
4	Unit 1 threshold	*		0.15 to 1.5		In multiples of Vn, 0.01 step	
4	Unit 1 threshold		*	0.03 to 0.6		In multiples of Vn, 0.01 step. Applies to V(2-3)+V(6-7)+V(10-11).	
5	Unit 1 type of curve	*		000,1,111	000 Definite time 1 Inverse 111 extremely Inverse	Under voltage: Definite time and Inverse Over voltage :Definite time and extremely inverse	
5	Unit 1 type of curve		*	000	000 Definite time		
6	Unit 1 time delay	*		0.05 to 99s 0.1 to 3s	Type 0 Types 1,111	0.02s step between 0.05 and 1s and then 0.1s step above this 0.05s step	
6	Unit 1 time delay		*	0.05 to 99s	Type 0	0.02s step between 0.05 and 1s and then 0.1s step above this	
3.	Unit 2 type	*		L, H	L= under H= over		
3.	Unit 2 type		*	H	H= over		
4.	Unit 2 threshold	*		0.15 to 1.5		In multiples of Vn, 0.01 step	
4.	Unit 2 threshold		*	0.03 to 0.6		In multiples of Vn, 0.01 step. Applies to V(2-3)+V(6-7)+V(10-11).	
5.	Unit 2 type of curve	*		000,1,111	000 Definite time 1 Inverse 111 extremely Inverse	Under voltage: Definite time and Inverse Over voltage :Definite time and extremely inverse	
5.	Unit 2 type of curve		*	000	000 Definite time		
6	Unit 2 time delay	*	*	0.05 to 99s 0.1 to 3s	Type 0 Types 1,111	0.02s step between 0.05 and 1s and then 0.1s step above this 0.05s step	
6	Unit 2 time delay		*	0.05 to 99s	Type 0	0.02s step between 0.05 and 1s and then 0.1s step above this	

Step$_1$	Setting	TMS711 TMS761	TMS714	Possible values	Meaning	Comments	Your Setting 3)
E	Under voltage blocking	*		0,1	0=Normal 1=Blocked	Under voltage in service for all values of V If V≤0.1Vn, under voltage blocked	
H	Rated frequency	*	*	50-60		In Hz	
L	JBUS address	*	*	1-254	If connected to PROCOM	Step 1	
P	Transmission speed	*	*	12-24-48	If connected to PROCOM	1200/2400/4800 bauds	

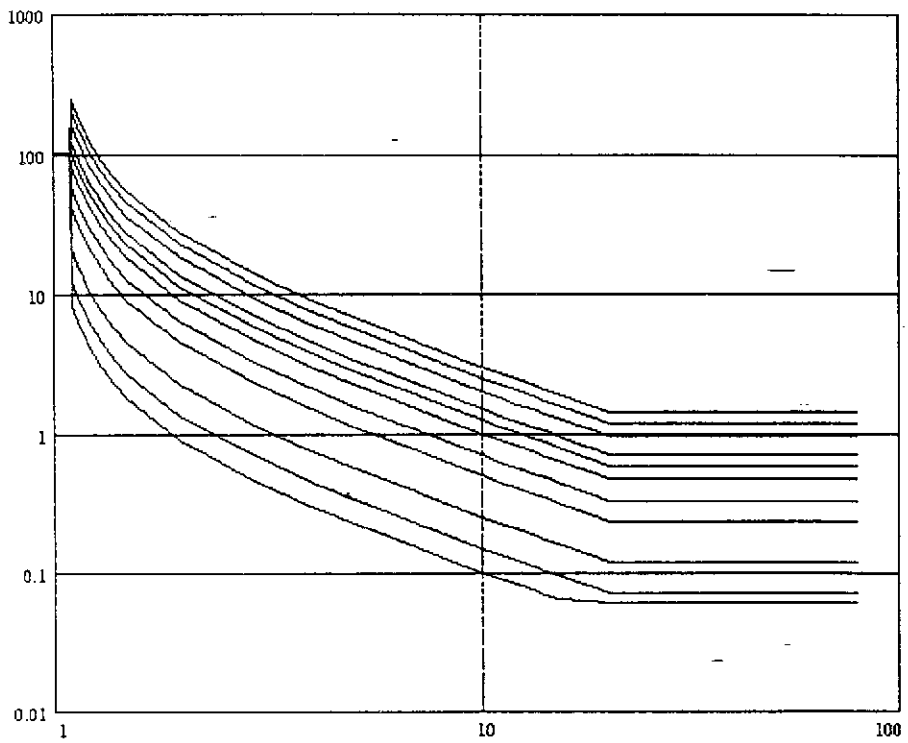
A4 CHARACTERISTICS

A4-1 RMS7xx

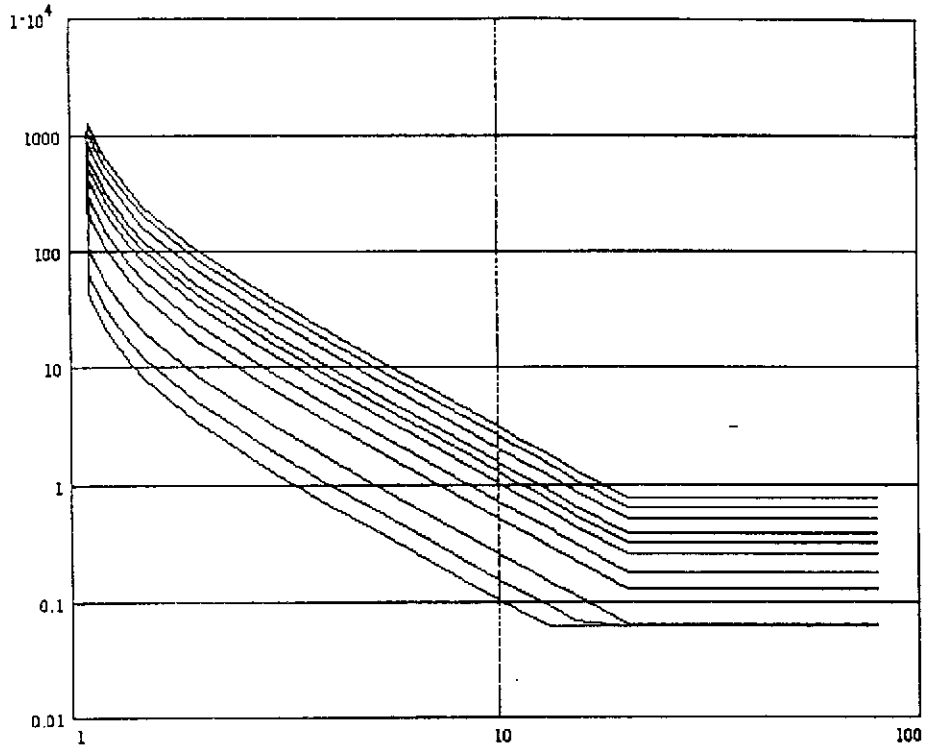
Inverse time : α=0,02 T=0,0466



Very inverse time : α=1 T=9

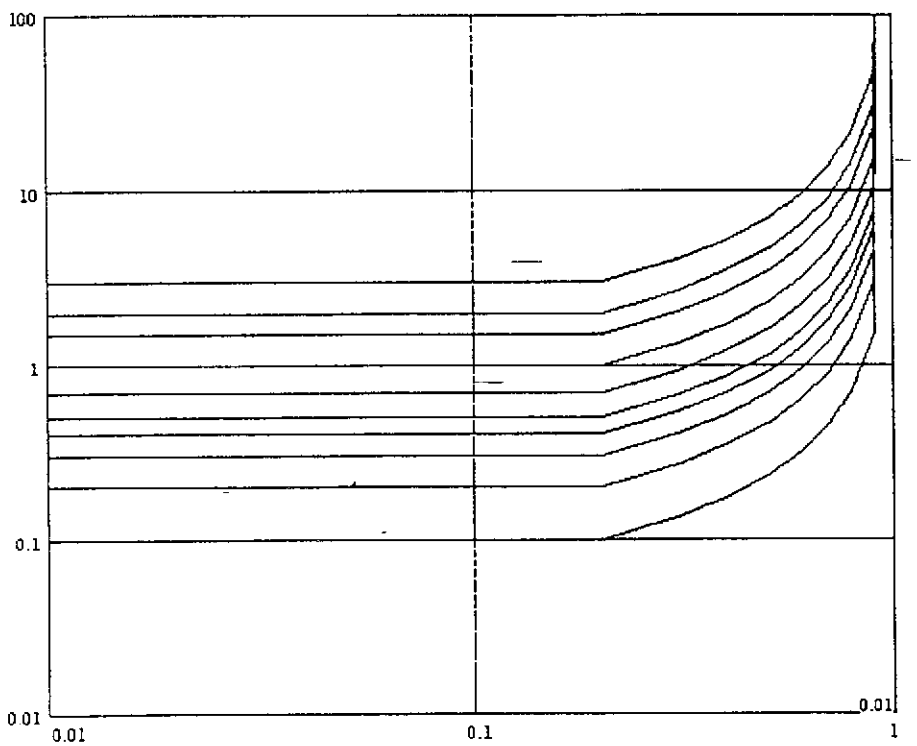


Extremely inverse time : α=2 T=100

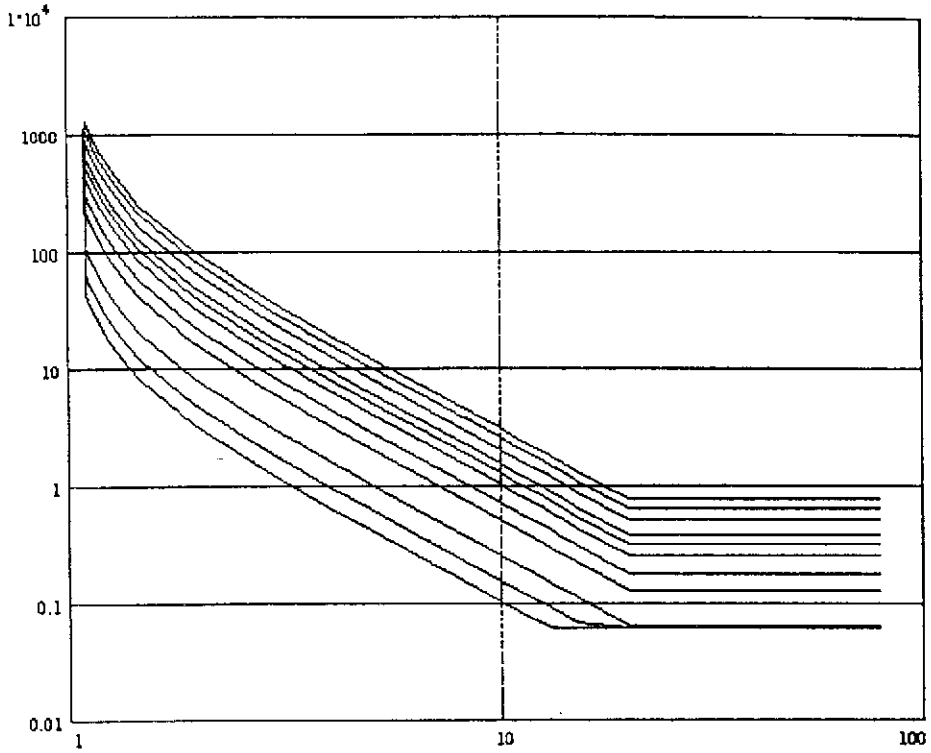


A4-2 TMS7xx:

Inverse time : α= 0,02 T= 0,033



Extremely inverse time : $\alpha = 2$ $T = 3$



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