



CVM_ST SOFTWARE 3.x

(Cod 7 75 042)

INSTRUCTION MANUAL

(S 42-2 / 95)

(c) CIRCUTOR S.A.

INDEX

1. Introduction.
2. CVM_ST contents.
3. Characteristics
4. Installation.
5. Performance.
 - 5.1 Beginning.
 - 5.2 New devices installation.
 - 5.3 Set Up menu.
 - 5.3.1 CVM data.
 - 5.3.2 Com data.
 - 5.3.3 ER data.
 - 5.3.4 ER/REDMAX Module.
 - 5.3.5 ER/RedC2 Module.
 - 5.3.6 ER/Red420 Module.
 - 5.3.7 R8 Alarm program.
 - 5.3.8 R8 PLC program.
 - 5.3.9 R8 Power control program.
 - 5.3.10 Memory.
 - 5.4 Display mode.
 - 5.4.1 General parameters.
 - 5.4.2 Maximeter display.
 - 5.4.3 Energy counters display.
 - 5.4.4 R8 Alarm program display.
 - 5.4.5 R8 PLC program display.
 - 5.4.6 R8 Power control program display.
 - 5.4.7 Memory program display. Data load and M.C.
6. Delete a CVM.
7. Network test.

1.0 INTRODUCTION.

Welcome to CVM_ST, the basic software for CVM family users. This software runs under MS-DOS 5.0 version or higher.

This program let you configure and display any CVM instrument, as well as the CVM-R8 peripheral. It can support up to 12 instruments connected in a network. These instruments are easily accessible from CVM_ST.

In the display option we will be able to see all CVM family parameters.

2.0 CVM ST CONTENTS.

CVM_ST is supplied with following items:

- 3.5" , 1.4 Mbyte diskette with CVM_ST program.
- Instruction manual.
- Register card.

3.0 CHARACTERISTICS.

CVM_ST allows the centralization of several CVM measurement points at one computer.

All the readouts get from CVM are instantaneous, so the communications between instruments and the computer are made in real time.

The parameters displayed by the computer can also be stored in the Hard Disk, to export them to other programs as LOTUS, EXCEL,....

4.0 INSTALLATION.

Before installing the program, be sure that your system has the required equipment for a proper operation.

The equipment must be the following: MS-DOS 5.0 (or higher) plus one serial communication port (or more).

Once you have checked the environment, **Install** program can be executed. Following the computer will install CVM_ST program in your hard disk.

☐ Fill the register card and sent it to us. Once you are registered, you will receive information about new products, updates programs and technical support.

5.0 PERFORMANCE.

5.1 BEGINNING

Execute the program CVM_ST. If it is the first time you execute it, a password will be requested, being this password the number 775042 followed by the serial number of the diskette (from 1 to 9999); after a **language** menu will appear, in which you can select the language you desire. Use arrow keys to choose it and press Enter to validate. Second time you execute the program, **language** choice will not be required, as it will take by default the last you selected. If you want to change the language, you should delete LING.DAT file, and execute again CVM_ST program.

The first time you enter in the CVM_ST program, NET_485.DAT file will not be found, in which network configuration is stored. To advise that the file is not found a message will appear on screen. The file will not exist until you add any instrument in the network .

Following, the following options appear: **Add CVM** and **Quit**. The first option let you add another instrument in the network (see section 5.2).

The possibility to choose the language will depend on the following files:

LINGESP.MSG	SPANISH
LINGGB.MSG	ENGLISH
LINGFR.MSG	FRENCH
LINGDE.MSG	GERMAN
LINGIT.MSG	ITALIAN

5.2 NEW INSTRUMENTS INSTALLATION

For a proper installation of new instruments, please follow the next steps:

- 1.- Physical disconnection of all instruments connected to the network.
- 2.- Connect only the instrument you want to install.

After that, go to **Add** option and write peripheral number, by default number 00 appears (CVM has 00 number by default, too). Using 00 you can communicate to any CVM, although it has assigned another number, therefore, it is essential to have disconnected the rest of CVMs.

Then press Enter to communicate to the instrument. If the action is successful*, it will show the current transformer status, with the messages: *Correct, Inverted* or *There is not current*.

* CVM_ST will automatically change serial port and baud rate if the communication causes an error. It will try:

COM1: 9600, 4800, 2400

COM2: 9600, 4800, 2400

5.3 SET UP MENU.

The set up menu is automatically selected depending on the instrument you have connected, CVM with or without ER module, CVM_R8C, ...

The following options are available:

CVM data General data of the CVM.

Com. data Communication parameters (we suggest not to modify these parameters)

ER module Energy and time module data.

ER/REDMAX It only appears when a CVM has connected this target (231).

- ER/REDC2** It only appears when a CVM has connected this target (242).
ER/RED420 It only appears when a CVM has connected this target (251).
R8 program It only appears when a CVM_R8C is connected. This option will be different depending on the CVM-R8C program you have.
Memory It only appears when a CVM-M is connected. This option includes set-up data.
Back to menu This option will return us to the main menu.

5.3.1 CVM data.

In this section you will set up the instrument you selected. Put the cursor over the parameter you want modify using the arrow keys and write directly the new one, or press Enter key to edit the parameter and modify it. To validate the parameter press Enter, or ESC to quit without any modification.

CIRCUTOR S.A.		Fecha: 6/12/1994
01-Acometida	05-ADS-1	09-Oficinas
02-Sección Pintura	06-UPS-Central	10-Depuradora
03-Sección Soldadura	07-Almacen-1	11-Auxiliar-P1
04-Sección Ensamblaje	08-Almacen-2	12-FPT-1

Configuración de datos	
Tipo de CVM	CUR-4C
Nº de Periférico	01
Descripción	Acometida
Trafo. Tensión Prim.	006600
Trafo. Tensión Sec.	110
Trafo. Intensidad Prim.	01000
Período del maxímetro	15
Parámetro a controlar	P. Aparente

F1 salir y grabar modif. ESC salir sin grabar

When you finish the modification of the parameters, you can exit using two keys:

- ESC: Quit without saving the modifications.
- F1: Exit saving the parameters you modified.

Parameters of this option are following ones:

CVM type: this parameter will show which CVM type you have connected.

1. CVM	Standard
2. CVM-4C	Four Quadrants
3. CVM-DC	Direct Current
4. CVM-MD	Max. Demand
5. CVM-R8-AL	CVM-R8 with alarm program

This parameter can not be modified.

CVM Number: It is the identification number of each CVM (from 01 to 99). 00 is the number that all CVM will answer.

Description: The customer can write his own message to identify the device. This message will appear on the main screen.

Voltage transformer primary: Value of the voltage transformer primary (from 1 to 500000 V).

Voltage transformer secondary: Value of the voltage transformer secondary (from 1 to 999 V). Ratio between primary and secondary cannot be higher than 9090.

Current transformer primary: Value of the current transformer primary (from 1 to 10000 A). The current transformer secondary is always 5 A.

* Maximeter period: it is maximeter integration period, it will be from 1 to 60 minutes.

*Control parameter: let you select which parameter you want in the maximeter: Active power (kW) or Apparent power (kVA).

** Both these data will appear in CVM-4C and CVM-MD*

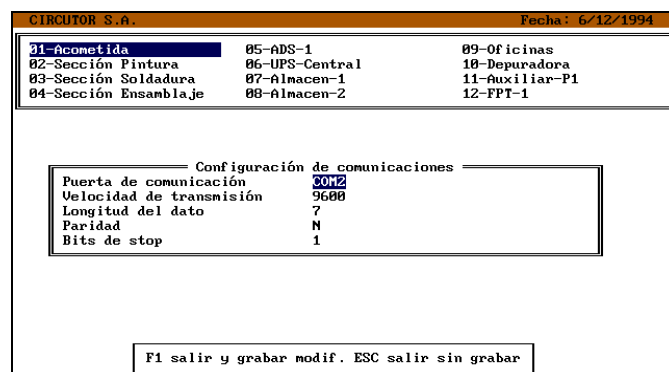
5.3.2 Com. data

Before entering in this section a password will be requested. This password is: **9999 plus Enter.**

In this section you will set up the communication parameters. Put the cursor over the parameter you want modify using the arrow keys and write directly the new one, or press Enter key to edit the parameter and modified it. To validate the parameter press Enter, or ESC to quit without modification.

When you finish the modification of the parameters you can exit using two keys:

- ESC: Quit without saving the modifications.
- F1: Exit saving the parameters you modified.



Communication parameters are the following:

Serial communication port: CVM_ST can detect automatically in which port is the instrument connected, so if you change this parameter you have to change it physically. Available serial ports are COM1 & COM2.

Baud rate: 2400, 4800 or 9600.

Serial data: 7 or 8 bits

Parity: **Even** , **Odd** or **No** (without parity control).

Stop bit: 1 or 2 bits.

NOTE: Do not modify communication parameters unless it is necessary.

5.3.3 ER data.

Before entering in this section a password will be requested. This password is: **9999 plus Enter**.

In this section you will set up the energy and clock parameters. Put the cursor over the parameter you want modify using the arrow keys and write directly the new one, or press Enter key to edit the parameter and modified it. To validate the parameter press Enter, or ESC to quit without any modification.

When you finish the modification of the parameters you can exit using two keys:

- ESC: Quit without saving the modifications.
- F1: Exit saving the parameters you modified.

This option only will appears if you have installed CVM/ER module.

CIRCUITOR S.A.		Fecha: 6/12/1994
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04-Sección Ensamblaje	08-Almacen-2	12-FPT-1

Configuración del módulo Energía	
Fecha (DD/MM/AAAA)	06/12/1994
Hora (HH:MM)	17:35
Valor inic. energía activa	000007896
Valor inic. energía inductiva	000000340
Valor inic. energía capacitiva	000001290
Valor inic. energía activa neg.	000000230
Valor inic. energía inductiva neg.	000000000
Valor inic. energía capacitiva neg.	000000090

F1 salir y grabar modif. ESC salir sin grabar

Energy and clock parameters are the following:

DATE (DD/MM/YYYY): Date parameter. Its format is: day / month / year. The year parameter can be four or two characters, if is two characters and the number is under 80, for example 01, then CVM will store 2001.

TIME (HH:MM): you set the time. The format is: **hour : minutes** . 00<hour<23 and 00<min.<59.

Initial active energy value: This value is the initial active energy value you want to begin to count from. Remember that this value will be fixed in the instrument when you finish the configuration and if you exit using F1 key.

Initial inductive energy value: This value is the initial inductive energy value you want to begin to count from. Remember that this value will be fixed in the instrument when you finish the configuration and if you exit using F1 key.

Initial capacitive energy value: This value is the initial capacitive energy value you want to begin to count from. Remember that this value will be fixed in the instrument when you finish the configuration and if you exit using F1 key.

*Initial negative active energy value: This value is the initial negative active energy value you want to begin to count from. Remember that this value will be fixed in the instrument when you finish the configuration and if you exit using F1 key.

*Initial negative inductive energy value: This value is the initial negative inductive energy value you want to begin to count from. Remember that this value will be fixed in the instrument when you finish the configuration and if you exit using F1 key.

*Initial negative capacitive energy value: This value is the initial negative capacitive energy value you want to begin to count from. Remember that this value will be fixed in the instrument when you finish the configuration and if you exit using F1 key.

**only available on CVM-4C*

5.3.4. REDMAX module.

With this module (Card Type 0231) you can program CVMk to store energy in three different tariffs.

In first menu will appear:

CIRCUTOR S.A.

Date: 9/8/1995

02-

Red-Max configuration	
External peak hours signal ?	No
External Maximum Demand signal	No
Data source ?	CVMk █CVMk

<F1> Continue <ESC> Exit without saving

External peak hours signal? If you have or not external peak hours signal.
External Maximum Demand signal? If you have or not external Maximum Demand signal.
Data source? If you want to read data from CVMk or from file.

When are you ready push F1 to continue to calendar or Esc to go back.

CIRCUTOR S.A.

Date: 9/8/1995

Day type: 1	Tariff
Period 1 00 h - 03 h	1
Period 2 03 h -	2
Period 3 06 h - 09 h	3
Period 4 09 h - 12 h	1
Period 5 12 h - 15 h	2
Period 6 15 h - 18 h	3
Period 7 18 h - 21 h	1
Period 8 21 h - 24 h	2
Description	NORMAL

PgUp/PgDn More days <F1> Calendar <ESC> Exit without Saving

In this screen you can program the different types of days, with a maximum of 7. You have 8 different periods to program in one day. It's important to put a description of the day. With PagUp/PagDown change the day, with F1 go to next page:

CIRCUTOR S.A. Date: 9/8/1995

02-

Day	type	Description
1		NORMAL
2		WEEKEND
3		HOLIDAY
4		
5		
6		
7		

←

JANUARY							1995
L	M	X	J	V	S	D	
						1	
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
16	17	18	19	20	21	22	
23	24	25	26	27	28	29	
30	31						

0-7 Days F1 Save CVMk & Disk F2 Save CVMk F3 Save Disk ESC Exit

Here you must program all the days of the year with the different types of day. You must push the day (0,,7) and move over the month with cursor key. To change month push PgUp/PgDown.

- 0-7 days: Pushing over the numbers 0 to 7 select the different type of day.
- F1 Save CVMk & Disk: Send the programation to CVMk and store to a file.
- F2 Save CVMk: Send the programation to CVMk.
- F3 Save Disk: Store programation to a file.
- ESC Exit: Goes out without saving anything.

5.3.5. CVM/RED-C2 Module

This module (Card Type 0242) provides two external outputs which can be independently set as either an alarm or an energy pulse. the performance of the output as a pulse or alarm will depend on the electrical parameter that we have selected, so, if the parameter is within 1 and 30 the output will be an alarm, and if it is within 32 and 38 the output will be a pulse.

To change that parameter just place over it and press **Enter**. We can then choose the variable with the **↑** and **↓** keys and finally pressing **Enter** to validate the our selection.

If an output is set as an alarm, four parameters are available:

- Variable: The variable measured by the CVM that we want to control, from 1 to 30.
- Minimum: Minimum value of the alarm condition. If the value measured by the CVM is lower than this the output is activated.
- Maximum: Maximum value of the alarm condition. If the value measured by the CVM is higher than this the output is activated.
- Delay: The period of time in seconds that the alarm condition must be occurring to provoke the output activation.

If an output is set as an energy pulse, two parameters are available:

- Variable: The variable measured by the CVM that we want to control, from 32 to 38.
- Pulse: Value of the energy in W/h, varL/h or varC/h that must be reached to generate a pulse output.

5.3.6. CVM/RED-420 Module

This module (Card Type 0251) has a 4-20 mA output linked to any variable measured by the CVM.

Configuration parameters:

- Parameter: Variable measured by the CVM, from 1 to 30.
- Offset: Reference value taken as the zero (0/4 mA) for the output.
- Full scale value: Value to which we assign the 20 mA.
- Output mode: We can select among a 0-20 mA or a 4-20 mA output.

5.3.7 R8 alarm program.

This option allows programming:

- Up to 50 alarms with any parameter from the CVM.
- A/D channel parameters: offset & full scale values.

CIRCUITOR S.A.		Fecha: 6/12/1994			
00-Acometida	05-ADS-1	09-Oficinas			
02-Sección Pintura	06-UPS-Central	10-Depuradora			
03-Sección Soldadura	07-Almacen-1	11-Auxiliar-P1			
04-Sección Ensamblaje	08-Almacen-2	12-FPT-1			
Nº	Parámetro	Máximo	Mínimo	Retardo	Relé
1 (1) U1		410.000	360.000	1	5
2 (2) A1		200.000	40.000	3	2
3 (3) kW1		800.000	200.000	8	3
4 (39) A/D 1		45.000	10.000	10	1
5 (41) M.D. kWIII		3500.000	1290.000	15	6
Validación de Relés					
1 Valida	4 Invalida	7 Valida	10 Invalida	13 Invalida	16 Invalida
2 Valida	5 Valida	8 Valida	11 Valida	14 Valida	17 Invalida
3 Valida	6 Valida	9 Valida	12 Invalida	15 Invalida	18 Valida
----- Canales A/D -----					
Cero	A/D 1	Fondo escala		Cero	A/D 2
10		100		-50	Fondo escala
					100
F5 Alarmas F6 Relés F7 Canales A/D F1 Grabar ESC Salir					

At the bottom of the screen you can see the following menu:

- F5: Alarms
- F6: Relays
- F7 A/D channels
- F1: Save
- ESC: Exit

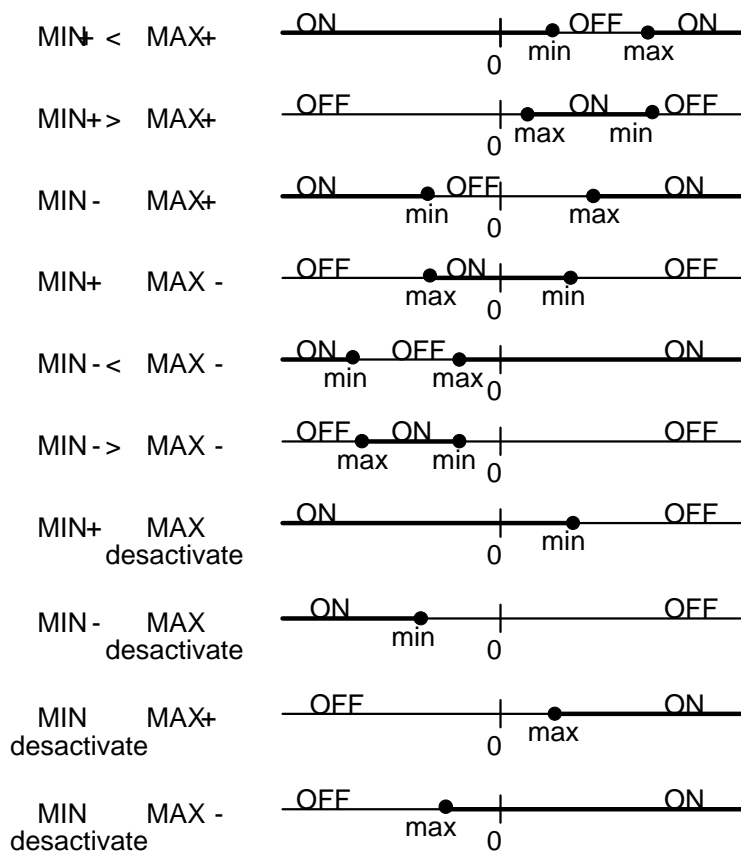
F5: Alarms

Following data appear on the screen:

Nº: It indicates the alarm number. It is not possible to modify it.

Parameter: It is the electric parameter to be controlled. Place the cursor over the parameter you want to modify using the arrow keys to select it. Press Enter to validate the parameter, or ESC to leave the previous one.

Maximum and minimum parameters: Depending on these values the relay will switch ON or OFF. Herewith it is enclosed the following table explaining different configurations:



Parameter range:

Max. or Min.: -9.999 < Param. < 9.999, and 10.000 disable the alarm.

Note that the value you enter has 4 characters and if you enter 10.000 is to disable the alarm.

Example:

300 kW	Correct
1.23 kW	Correct

555.32 kW Error: There are more than 4 characters

WARNING:

Voltage parameter has another set-up rules:

First of all it is necessary to explain that CVM_R8C works with "kV" units, but you enter "V", therefore if CVM_R8C accept 4 characters of "kV" and you enter "V", the range values are the following: -999.900< Volts < +999.900, and 1.000.000 is to disable the alarm.

That means that if you enter 10.540 V, the value is accepted because for the CVM_R8C that value is 10,54 kV and it has 4 digits, but if you enter 10.543 V, CVM_R8C takes this value as 10,543 kV and it can not be accepted because it has 5 digits.

Delay: It is the time the relay takes to activate. The value range is between 0 and 99 sec.

Relay: This shows the relay number we want to activate, for CVM_R8C the possible values are 1 to 8 and if you also have CVM_R10 the values are 1 to 18.

To finish, press ESC key.

F6 Relays:

This option let you validate or invalidate relay status, using arrow keys and pressing enter over the relay you want to set.

To finish, press ESC key.

F7 A/D channels:

Offset and full scale programming of two analog channels.

Using arrow keys you can place the cursor over the A/D channel you want to set.

After that, you can directly enter the number, or pressing Enter you edit the number.

Values are between -20.000 to +20.000.

F1 Save:

This option sends all modifications you have done to the instrument and checks them. If wrong parameters are transmitted, it will appear a message saying which alarm can not be set.

ESC Exit:

This option does not transmit the information to the CVM_R8C and go back.

5.3.8 R8 PLC program.

PLC program provides us a complete set of instructions suitable for the generation of multiple PLC performances.

Entering in this section following options are available:

- F5 : Diagram
- F6 : A/D channels

F5 Drawing

With this option we enter in the CIR_LD program, which will allow us designing a logical circuit with the addition of relays, timers, meters, etc.

Due to the complexity of the program and the necessity of showing some examples, it has been separately edited.

¡WARNING! : F4 Transfer option of CIR_LD program, needs a minimum quantity of memory, if computer does not have enough memory, you should execute Memmaker program from DOS, if still memory is not enough, transfer the automat program through DOS executing CIR_SEND <programe.OBJ>.

F6 A/D channels and stop/start relays

The CVM-R8C peripheral has two A/D channels, where zero and full scale value can be programmed. You place over the data to be modified with the cursor keys, entering directly the value or with the Enter key which edits the data.

Values must be within -20.000 and 20.000.

Two relays which can be programmed as Normal or Stop/Start are also available. With Enter key the relay type is changed.

F1 Save

This option send the modifications to the CVM-R8C equipment.

Following we pass to the previous menu.

ESC Exit

With this option we exit the set-up option without any modification.

5.3.9 R8 Power control program.

Power control program allows the regulation of the power at any installation, keeping the power consumption below a certain value. In case that the trend is to exceed the prefixed limit, the P.L.C. will order the disconnection of loads as per the previously set up priority. The program works with sliding window system.

Entering in this section following set up parameters are available:

- Parameter to be controlled (Active P. or Apparent P.).
- Maximeter power.
- Integration period.

- Hysteresis margin.
- Disconnection priority of the relays.

Parameter to be controlled

This parameters refers to the power type we want to control. Pressing Enter when we are over this option a menu with two options (Active power or Apparent power) is shown up.

Maximeter power

Upper limit in Watts for the power consumption.

Integration period

Period in minutes of the maximeter, which can be within 1 and 60 minutes. It should be the same as for the electrical utility and, if it is possible, for the CVM.

Hysteresis margin

It is a zone under the prefixed power where no operation is carried out. It can be programmed from a 0 to a 100 % of the prefixed power. This value will depend on the load size, as the lower the loads are the lower the hysteresis margin must be.

Disconnection priority of the relays

This data is the disconnection priority chart, from the highest to the lowest. The output relays (between 2 and 8, and between 2 and 18 if R10 peripheral is also connected) will be shown. The 1 output has been fixed as an error alarm (if the communication with the CVM is lost). Relays will be entered with a comma separation and from lower to higher disconnection priority.

F1 Save

This option send the modifications to the CVM-R8C equipment. It only allows modification provided all relays are open.

Following we pass to the previous menu.

ESC Exit

With this option we exit the set-up option without any modification.

5.3.10 Memory.

Put the cursor over the command you want to work with and press the Enter key to spread down the available options. Then using the arrow keys select the desired option.



☞ **WARNING:** Each option of this screen is explained in the own user's manual of the device (CVM-M).

If we work with the special file type, a new screen containing 180 configurable parameters will appear. This is the storage record of the parameters we want to save.

<Ins> Key allowing to insert a new parameter from the cursor position.

 Key to eliminate the parameter placed at the cursor position.

<Space> The space bar activates all the previous parameters from the present cursor position, only the active ones will be saved.

<CR> The Enter key followed by the  or  arrows allows to select a parameter. A description of this parameter is shown in the lower side.

F1 Save

This option sends the done modification to the CVM-M and check that they are correct.

ESC Exit

This option do not provoke any change in the device. It can be used, for instance, if we are not sure of the changes we have done.

5.4 DISPLAY MODE.


5.4.1 General parameters.

This option displays instantaneous data from the instruments connected to the computer.

Each instrument has different parameters to show, so it will be different screens of presentation.

CIRCUITOR S.A.		Fecha: 6/12/1994					
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03-Sección Soldadura	07-Almacen-1	11-Auxiliar-P1					
04-Sección Ensamblaje	08-Almacen-2	12-FPT-1					
	KV f/n	A	KW	var.L	Kvar.C	F.P.	Hz
L1	12.62	35	446.00	0	40.00	1.00	50.0
L2	12.63	30	384.00	0	33.00	-0.99	50.0
L3	12.68	29	366.00	0	28.00	-0.99	50.0
III	12.64	31	1196.00	0	101.00	-0.99	50.0
Fecha	Max. último reset		Max. último periodo		Periodo		
06/12/94 17:31	1185.000 kVA		1167.000 kVA		15		
Energía Activa		Energía Inductiva		Energía Capacitiva			
+ 000549557		+ 000003223		+ 000050350			
- 000678897		- 000021356		- 000070431			
ESPACIO U f-f / f-n CR graba cont. F1 graba todo ESC Salir							


While you are getting the information from an instrument, you can store it in the computer.

 ENTER key: It stores the energy counters (if it has energy module) in a file called: Dddmmyy.WAT, where:

dd = day number
 mm = month number
 yy = year number

So each day it will change the file automatically.

 F1 key: It stores the displayed electrical parameters.

 Files has a format which can be easily exported to other programs.

Displayed parameters are (except CVM_DC and CVM_R8C) :

- Voltage: by default it shows voltage between phases (ph/ph), if you press **space** it will display phase-neutral voltage (ph/n). Voltages are show in *V* units, but if the value exceed of 9999 *V* the scale is automatically changed to *kV*.
- Current: this parameter is displayed in *A* units, but if its value is bigger than 999 *A*, then the units will change to *kA* .
- Active power: this parameter is displayed in *Watt* units, but if its value is bigger than 9999 *W* then the units will change to *kW* .
- Inductive power: this parameter is displayed in *VarL* units, but if its value is bigger than 9999 *VarL* then the units will change to *kVarL* .
- Capacitive power: this parameter is displayed in *VarC* units, but if its value is bigger than 9999 *VarC* then the units will change to *kVarC* .
- Power Factor: The $\cos\phi$ of each phase and of the three phases together is displayed
- Frequency: The frequency is displayed in *Hz* units.

5.4.2 Maximeter Display

This parameter is only available in CVM_MD and CVM_4.

Following data will appear:

- Period: It is the integration period we have programmed, in minutes.
- Max. last reset: It is the maximum since last reset. This maximum is in *kW* or *kVA* depending on the parameter you had selected.
- Max. last period: This is the maximum of the last period of integration. Because it uses a sliding window this parameter will be refreshed every second.

- Date: Date and time when the maximum has occurred.

5.4.3 Energy counters display.

This parameter is only available if energy module is installed.

Under general parameters box, it appears another box with energy counters.

- Active energy.
- Inductive energy.
- Capacitive energy.

These values can be initiated from a certain value (see section 5.3.3.)

If the device is CVM_4, then negative energy counters are displayed, too.

5.4.4 CVM_R8C Alarm program display.

In this screen you can see several interesting parameters to check.

CIRCUTOR S.a.		Fecha: 6/12/1994									
00-Acomodado	05-ADS-1	09-Oficinas									
02-Sección Pintura	06-UPS-Central	10-Depuradora									
03-Sección Soldadura	07-Almacen-1	11-Auxiliar-P1									
04-Sección Ensamblaje	08-Almacen-2	12-FPT-1									
Nº	Estado	Parámetro	Máximo	Mínimo	Retardo	Relé					
1	Activada (1)	U1	410.000	360.000	1	5					
2	Activada (2)	A1	200.000	40.000	3	2					
3	Desactivada (3)	kW1	800.000	200.000	8	3					
4	Desactivada (39)	A/D 1	45.000	10.000	10	1					
5	Desactivada (41)	M.D.kWIII	3500.000	1290.000	15	6					
Estado/Validación de Relés											
1	Abi/Ual	4	Abi/Inv	7	Abi/Ual	10	Abi/Inv	13	Abi/Inv	16	Abi/Inv
2	Cer/Ual	5	Cer/Ual	8	Abi/Ual	11	Abi/Ual	14	Abi/Ual	17	Abi/Inv
3	Abi/Ual	6	Cer/Ual	9	Abi/Ual	12	Abi/Inv	15	Abi/Inv	18	Abi/Ual
Canales A/D											
Canal A/D 1: 10				Canal A/D 2: -50							
PGUP / PGDN más alarmas ESC vuelve al menú											

Alarm state: You can see the instantaneous status of each relay (closed or open) and its parameters: alarm n^o, variable, max., min., delay and relay number. It is possible to see 5 alarms at the same time, to see the rest you have to press PgUp/PgDn keys.

Relay validation: you can also see if the relays are or not validated.

A/D channels: A/D channels values appear at the bottom.

5.4.5 CVM_R8C PLC program display.

The display system of this peripheral involves some parameters which are really useful for a proper use of it.

The data display of this peripheral is carried out in real time and the access to any data is immediate.

SET_R8 offers the possibility of creating our own data display screens, including a data description and an associated memory position.

When entering this option, a screen name is requested, the default one is **standard**. To create a new one, write the new name (without extention as SET_R8 automatically gives the .AUT) and press Enter. 40 empty cells with the text "NOT IN USE", where we can enter our data, will appear up. Its syntax is as follows:

<text> : R : < mem. n^o > For relays

<text> : L : < mem. n^o > For *Long* registers

To clear a full cell, enter a blank space in it and press Enter.

During the modification process a help key (**Av Pag**) shows a memory map of the peripheral.

5.4.6 CVM_R8C Power control program display.

The display system allows to check the proper performance of the equipment.

The data display of this peripheral is carried out in real time and the access to any data is immediate.

SET_R8 offers the possibility of creating our own data display screens, including a data description and an associated memory position.

When entering this option, we have a default screen named **power.aut**. We can modify the data pressing F5. Sintax is as follows:

<text> : R : < mem. n^o > For relays

<text> : L : < mem. n^o > For *Long* registers

To clear a full cell, enter a blank space in it and press Enter.

During the modification process a help key (**Av Pag**) shows a memory map of the peripheral.

5.4.7 Memory Display. Data load and M.C.

Data display option

Display of any file of the CVM-M. In case of a *.CVT file (special), we will see on screen the parameters that have not been selected with a zero value. In case of a *.CVM (standard) only the following parameters are saved:

***.CVM File**

DATE
 TIME
 STORING PERIOD
 PHASE-NEUTRAL VOLTAGE
 MAXIMUM PHASE-NEUTRAL VOLTAGE
 MINIMUM PHASE-NEUTRAL VOLTAGE
 CURRENT
 MAXIMUM CURRENT
 MINIMUM CURRENT
 ACTIVE POWER
 INDUCTIVE POWER
 CAPACITIVE POWER
 POWER FACTOR
 ACTIVE ENERGY (INTEGER PART & /1000)
 INDUCTIVE ENERGY (INTEGER PART & /1000)
 CAPACITIVE ENERGY (INTEGER PART & /1000)
 FREQUENCY
 AD CHANNEL 1
 AD CHANNEL 2

☞ **CVM-M PARAMETERS:**

Nº	VARIABLE	Nº	VARIABLE	Nº	VARIABLE	Nº	VARIABLE
0	V1	46	kW3mx	90	V12mn	136	kvarCh-1
1	A1	47	kvar L3mx	91	V23mn	137	kvarCh/1000-1
2	kW1	48	kvar C3mx	92	V31mn	138	nkwh-1
3	kvar L1	49	PF3mx	93	Vav III mn	139	nkvarLh/1000-1
4	kvar C1	50	Vav III Nmx	94	DC1mn	140	nkvarLh-1
5	PF 1	51	Aav III mx	95	DC2mn	141	nkvarLh/1000-1
6	V2	52	kWIII mx	96	nkW1	142	nkvarCh-1
7	A2	53	kvar LIII mx	97	nkvar L1	143	nkvarCh/1000-1
8	kW2	54	kvar CIII mx	98	nkvar C1	144	kwh-2
9	kvar L2	55	PF III mx	99	nkW2	145	kwh/1000-2
10	kvar C2	56	Hzmx	100	nkvar L2	146	kvarLh-2

11	PF2	57	kVA III mx	101	nkvar C2	147	kvarLh/1000-2
12	V3	58	V12mx	102	nkW3	148	kvarCh-2
13	A3	59	V23mx	103	nkvar L3	149	kvarCh/1000-2
14	kW3	60	V31mx	104	nkvar C3	150	nkwh-2
15	kvar L3	61	Vav III mx	105	nkWIII	151	nkwh/1000-2
16	kvar C3	62	DC1mx	106	nkvar LIII	152	nkvarLh-2
17	PF3	63	DC2mx	107	nkvar CIII	153	nkvarLh/1000-2
18	Vav III N	64	V1mn	108	nkW1mx	154	nkvarCh-2
19	Aav III	65	A1mn	109	nkvar L1mx	155	nkvarCh/1000-2
20	kWIII	66	kW1mn	110	nkvar C1mx	156	kwh-3
21	kvar LIII	67	kvar L1mn	111	nkW2mx	157	kwh/1000-3
22	kvar CIII	68	kvar C1mn	112	nkvar L2mx	158	kvarLh-3
23	PF III	69	PF 1mn	113	nkvar C2mx	159	kvarLh/1000-3
24	Hz	70	V2mn	114	nkW3mx	160	kvarCh-3
25	kVA III	71	A2mn	115	nkvar L3mx	161	kvarCh/1000-3
26	V12	72	kW2mn	116	nkvar C3mx	162	nkwh-3
27	V23	73	kvar L2mn	117	nkWIII mx	163	nkwh/1000-3
28	V31	74	kvar C2mn	118	nkvar LIII mx	164	nkvarLh-3
29	Vav III	75	PF2mn	119	nkvar CIII mx	165	nkvarLh/1000-3
30	DC1	76	V3mn	120	nkW1mn	166	nkvarCh-3
31	DC2	77	A3mn	121	nkvar L1mn	167	nkvarCh/1000-3
32	V1mx	78	kW3mn	122	nkvar C1mn	168	nPF 1
33	A1mx	79	kvar L3mn	123	nkW2mn	169	nPF 2
34	kW1mx	80	kvar C3mn	124	nkvar L2mn	170	nPF 3
35	kvar L1mx	81	PF3mn	125	nkvar C2mn	171	nPF III
36	kvar C1mx	82	Vav III Nmn	126	nkW3mn	172	nPF 1 mx
37	PF 1mx	83	Aav III mn	127	nkvar L3mn	173	nPF 2 mx
38	V2mx	84	kWIII mn	128	nkvar C3mn	174	nPF 3 mx
39	A2mx	85	kvar LIII mn	129	nkWIII mn	175	nPF III mx
40	kW2mx	84	kWIII mn	130	nkvar LIII mn	176	nPF 1 mn
41	kvar L2mx	85	kvar LIII mn	131	nkvar CIII mn	177	nPF 2 mn
42	kvar C2mx	86	kvar CIII mn	132	kwh-1	178	nPF 3 mn
43	PF2mx	87	PF III mn	133	kwh/1000-1	179	nPF III mn
44	V3mx	88	Hzmn	134	kvarLh-1		
45	A3mx	89	kVA III mn	135	kvarLh/1000-1		

Load CVM-M data

This option allows the reading of a file, either from the device or from the memory card inserted into it, saving the file in the hard disk of the computer.

This option is also useful for creating a directory of the card.

File export

Creates a file in ASCII format exportable to a standard datasread software. The name of the file is the same and the extension will be **txm**, **txt**, **txp**, **txx** or **txe**, depending on the original file.

Functions of the memory card

Rename a file: select the file and rename it.
Delete a file in the card: select the file to be deleted.
Format the card.

6 DELETE A CVM.

This option let you delete a CVM from the network. Once you have deleted it, its name disappears from the screen.

7 NETWORK TEST

Use this option to verify all the instruments connected to the computer. If the instrument can communicate with the computer then **OK !** message appears beside it, but if the communication is failed then **Err** message appears beside it.