



SUPPLY NETWORK ANALYZER

CVM-D

(Code 7 70 213 – 7 70 214)

INSTRUCTION MANUAL

(M 981 311 / 00 A)

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USERS MANUAL

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1.- INTRODUCTION

The CVM network analyzer can be complemented with different modules and peripherals.

The name **MODULE** is used for the additional pluggable circuit card connected inside the same CVM (example, the CVM/ ER-485 module).

PERIPHERAL is a external device, but works starting from the electrical values measured for one CVM



You need plug in the CVM/ RED module to the CVM , in order to connect the differents peripherals. In this module you have : ENERGY + principal RS-485 communications + second serial RS-485 output .

2.- MAIN CHARACTERISTICS

The CVM-D is a PERIPHERAL : It is a panel programmable remote instrument which **DISPLAYS** all main electrical parameters measured with the main CVM. The CVM-D is equipped with a serial input communication type RS-485, and one or more **CVM-D** can be connected to one **CVM** (with the **CVM/ RED module**).

With this system we can monitoring all parameters in one central point of reading, measured to CVM in other part of the installation. With a RS-485 communications connections you can display the measured values in different places at the same time.

¡ NOTE !

CVM-D (4 digits display) **code 7 70 213** for the standard **CVM** and **CVM-MD**
CVM-D (5 digits display) **code 7 70 214** for the **CVM-4 (four quadrants)**

With the CVM it is possible to read up to 35 parameters shown in three big LCD displays. (35 parameters with Energy measuring module). On the three displays you can see:

(a) Phase-Phase or Phase-Neutral Voltage of three phases.

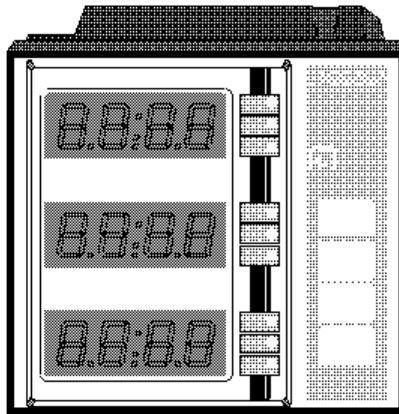
- (b) 3 parameters of your choice from the below mentioned.
- (c) 3 parameters of your choice from the below mentioned.

DISPLAYED PARAMETERS TABLE

parameter	L1	L2	L3	Average	add.
Voltage (phase-neutral)	x	x	x	x	
Voltage (between two phases)	x	x	x	x	
Current	x	x	x	x	
Active power	x	x	x		x
Inductive reactive power	x	x	x		x
Capacitive reactive power	x	x	x		x
Power factor	x	x	x	x	
Apparent power					x
Frequency	x				

and if you have connected the ENERGY + CLOCK module :

Date/ TIME dd/mm/nn hh:mm:ss	TIME
Active energy	kW.h
Reactive energy (inductive)	kvarh.L
Reactive energy (capacitive)	kvarh.C



2.1.- Other Characteristics

- Panel mounting instrument.
- Easy installation and programming.
- Memorizes Maximum and Minimum values.
- Autoscaling during data reading.
- Three big LCD displays (67 x 26 mm).
- Bubble keyboard, with 4 keys, for control and programming.
- LED indicators, with 9 LED (3 red, 3 green, 3 yellow) to know the type of parameter shown.
- Reduced dimensions: 144 x 144 mm
- RS485 communication .

3.- Connections

Before connecting the instrument verify the following:

Power supply

- (a) Power supply voltage : (*) 220 / 380 V ac +10 % / -15 %
 (b) Frequency : 50...60 Hz

(*) Special Voltages allowed but not at the standard version

The CVM-D has one connection terminal located at the side of the set.
 There are 3 input terminals to connect the power line and the measured network signals.

Terminal Nr. Value	Value
3	400 V
2	230 V
1	0 V

Power
Supply

Communications

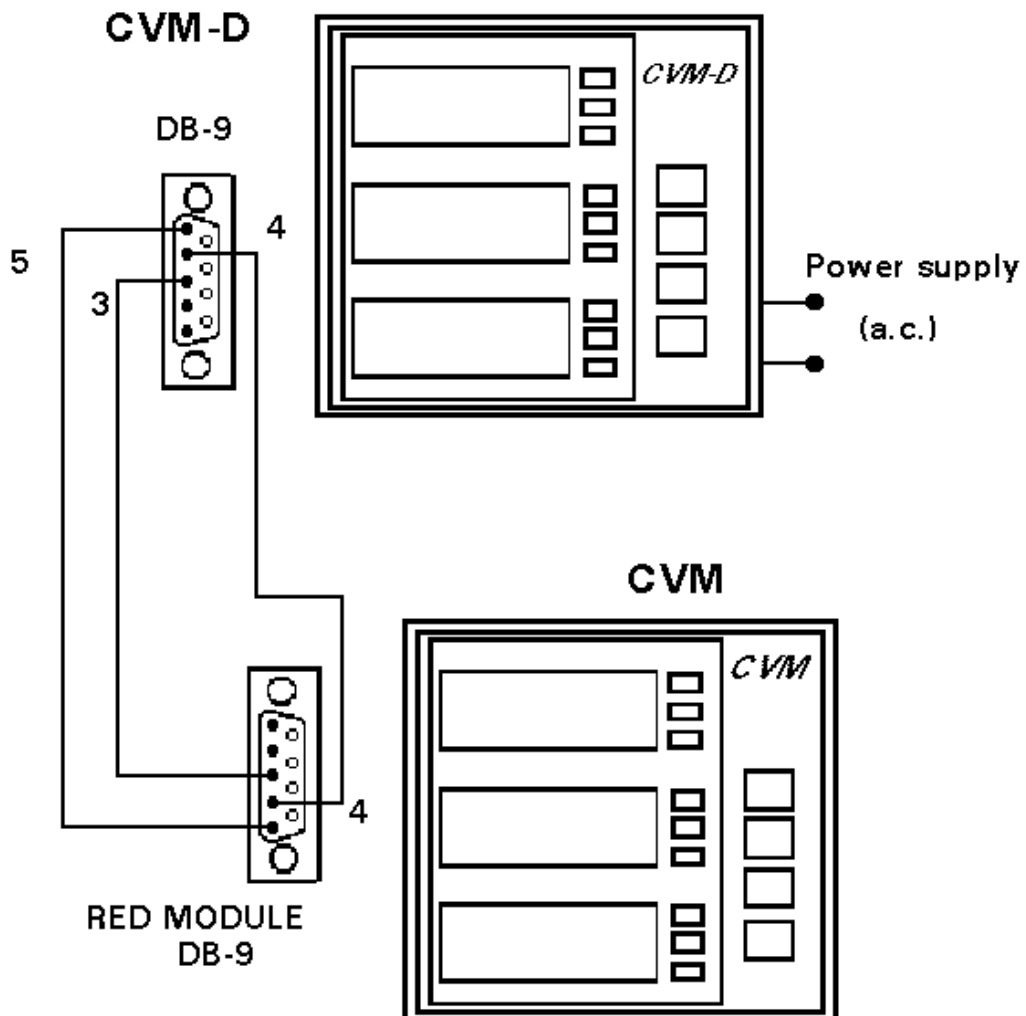
- One or some **CVM-D** can be connected to the second serial output type RS-485 of the **CVM**, with the **CVM/ RED module** : pin n° 3, 4 and 5

Pin N°	Signal
3 ③ -----	TX --
4 ④ -----	TX +
5 ⑤ -----	GND

- 2° Baud rates : 2.400 - 4.800 - 9.600 bauds
 - The CVM-D recognizes the communication configuration programmed in the main CVM.

- **Connection drawing**

The following is the CVM-D connection diagram to the CVM analyzer (* with CVM/RED module) :



4.- OPERATING PERFORMANCES

The CVM-D has **three displays** with three LED indicators (red, green, yellow). Every LED indicates the present reading variable type.

When you switch on the power supply of the CVM-D, all 9 LED indicators will light, and you will see on the display : "Circutor **di..** " (program version) and you can read also. Finally only one LED remain lit. It means that the instrument is ready to work.

Display

Initially, when the red LED of every display is lighting, it means that we are reading Voltage values. First display shows the voltage of phase L1 (V1), Second display shows the voltage of phase L2 (V2) and Third display shows the voltage of phase L3 (V3).

If you press the "**display**" key, the three red LED will light off, and the three green LED will light on. It means that we are reading the parameters already programmed according to the customer's choice. (currents are the default values : Every screen corresponds to different phases (A1, A2, A3)).

When pressing again the "**display**" key, the three green LED will light off, and the three yellow LED will light on. It means that we are reading the parameters already programmed according to the customer's choice. If you press the "**display**" key again you repeat the procedure.

Max

When pressing the "max" key, Maximum values of the present parameter

readings are shown.

This function is only valid when you keep on pressing the "max" key. If you stop pressing the key, present reading values are shown again. When showing Maximum values the LED indicators remain blinking.

Min

When pressing the "min" key, Minimum values of the present parameter readings reading are shown. This function is only valid when you keep on pressing the "min" key. If you stop pressing the key, actual reading values are shown again. When showing Minimum values the LED indicators remain blinking.

Reset

When pressing the "reset" key the system is reseted. This is equivalent to switch off the power supply of the instrument.

If you are into the programming procedure and press the "reset" key, you exit of the programme without saving any modification done. You also get a reset of the system.

5.- SETUP

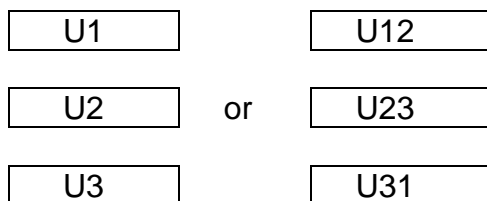
To get into the **programming menu** just follow this procedure:

- (a) Connect the CVM-D to the main.
- (b) Press the two green buttons (**max, min**) simultaneously.

You will see during a few seconds the word "**set**". It means we are at the programming option. Then we go to different options, step by step:

5.1.- Phase-Phase or Phase-Neutral Voltage

After the word "set" you will see on the three displays the Voltages of the Phases L1, L2, L3.



Phase to Neutral Voltages: U1 , U2 , U3

Phase to Phase Voltages : U12 , U23 , U31

a.- To select one of the Voltages options just press the green key "**max**" and all options will appears alternately.

b.- When you get at the display the chosen option just press the green key "**display**" to validate and to access to the next programming option.

5.2.- User Parameters SETUP

Now, we are able to setup the **6 additional parameters** that we like to see on the screen.

This option is identified with the lightning on of the three yellow (2^s page) and the three green (3th page) LED indicators.

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Every display has two digits to select the chosen parameters from the following chart of values.

- To write or modify the value you just press the key "**max**". The present digit value will increase one by one.
- When the reading value is correct, we can go to the next digit by pressing the key "**min**". Same procedure to select the value.
- If you are then at the last digit when pressing the key "**min**" you will automatically go back to the first value.
- If you press the key "**display**" you will automatically go to the next programming option.

PARAMETER	SYMBOL	CODE
Voltage L1 - Neutral	V 1	01
Current L1	A 1	02
Active Power L1	kW 1	03
Inductive Power L1	kvarL 1	04
Capacitive Power L1	kvarC 1	05
Cosinus Phi L1	PF 1	06
Voltage L2 - Neutral	V 2	07

Current L2	A 2	08
Active Power L2	kW 2	09
Inductive Power L2	kvarL 2	10
Capacitive Power L2	kvarC 2	11
Cosinus Phi L2	PF 2	12
Voltage L3 - Neutral	V 3	13
Current L3	A 3	14
Active Power L3	kW 3	15
Inductive Power L3	kvarL 3	16
Capacitive Power L3	kvarC 3	17
Cosinus Phi L3	PF 3	18
Voltage Three Phase network	Vav III	19
Current Three Phase network	Aav III	20
Active Power Three Phase network	kW III	21
Inductive Power Three Ph. network	kvarL III	22
Capacitive Power Three P. network	kvarC III	23
Power Factor Three Phase network	PF III	24
Frequency	Hz	25
Apparent Power Three Phase network	kVA III	26
Voltage between L1 - L2	V 12	27
Voltage between L2 - L3	V 23	28
Voltage between L3 - L1	V 31	29
Voltage Three Phase network	Vc III	30
Date / TIME dd/mm/nn hh:mm:ss	(*) TIME	31
Active energy	(*) kW.h	32 + 36**
reactive energy (inductive)	(*) kvarh.L	33 + 37 **
reactive energy (capacitive)	(*) kvarh.C	34 + 38**
MAXIMETER (kW or kVA)	Maximeter	35

(*) With ENERGY and CLOCK module in the CVM.

(**) Only the CVM-D with 5 digits (code 7 70 214)

NOTES :

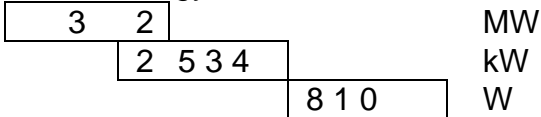
- If you programme the parameter 31, different things may be displayed by pushing the following keys :

initially	HOUR: MINUTES
with MAX	DAY : MONTH
with MIN	MINUTES : SECOND

- If you programme the parameter 32 (or 33, or 34) , different things may be displayed by pushing the following keys :

initially	kW
with key MAX	MW
with key MIN	W

Example : If the energy counter is 32.534,81 kW.h you will see on the display :



initially	2534 kW
MAX	32 MW
MIN	810 W

5.3.- First Page SETUP

When the previous setup option is done, we automatically get into the first page programming option. This programming option allows you to select which display will appear when connecting CVM to the main (or when making a reset). This option is identified because all LED indicators are active.

- SET
- AUTO
- PAGE

- The "**max**" key allows you to modify the actual display first page option (the actual selection is indicated by its LED. The "**display**" key allows you to validate the chosen option.

6.- SPECIFICATIONS

Power Supply :

Supply Voltage	230 V ac or 380 V ac
Voltage Tolerance	+10 % / -15 %
Frequency	50 ... 60 Hz
Power consumption	3 VA
Operating temperature	0 to 50° C

Mechanical Characteristics :

Installation	Panel mounting
Connections.....	Connections board
Protection	IP-41
Dimensions	144 x 144 mm (DIN 43 700)
Weight	0.67 kg

Standards : IEC 664, VDE 0110, UL 94



Notes

CVM-D display

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