

# Analizzatore di Rete ADR-Vision

Manuale d'Uso



**Vision Power Supply Analyser User's Manual**  
**Manuel d'Utilisation Analyseur de Réseau**  
**Bedienungsanleitung Netzanalysator**  
**Manual de Uso Analizador de Red**



**Vemeter**  
SPA



# Digital power supply analysers with led display for the measurement of the main electrical values in AC in single phase, three phase and three phase + neutral systems

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## SAFETY WARNINGS

■ **During the installation and operation of the instrument, please proceed as follows:**

- 1) **The instrument should be installed by a capable operator**
- 2) **Carefully follow the connection diagrams when installing the instrument**
- 3) **When connecting the instrument, always use TA x/5 A**
- 4) **The appliance should be installed in a panel in such a way that there is no access to the terminals following installation**
- 5) **The terminals of the voltage and current circuits may be connected with a maximum rated voltage to earth of 300 V eff**
- 6) **The panel should be wired in accordance with the CEI standards**
- 7) **Do not power or connect the instrument if any part of it is damaged**

### NOTE:

- **The VEMER power supply analysers are designed for use in areas with over-voltage category III and pollution level 2, in line with the CEI-EN 61010-1 standard**
- **The electrical system of the building in which the instrument is to be installed should be fitted with a disconnection or isolator switch, which should be located near the instrument and be easy to reach.**  
**An over-current protection device should be fitted.**

## TECHNICAL SPECIFICATIONS

- Power supply: 115-230 V AC (-15%/+10%) - 50/60 Hz  
140-300 V DC
- Maximum power consumption: 4 VA
- Display:
  - 3x3 digit fields for the display of the phase values.
  - 1x7 digit numerical field for the display of the active and reactive energy and the system and total values.
  - 8 indicator lamps for the value selected, the measurement unit and the pre-set value, where applicable
- Voltmeter inputs: 500 V AC RMS (phase-phase), 47-63 Hz
- Ammeter inputs: 6 A, 47-63 Hz
- Scales: 1 voltage scale with maximum 500 V RMS  
2 automatic selection current scales with maximum 2 A RMS and 6 A RMS
- Precision:
  - Voltage: 0.5% of maximum reading (minimum signal that can be measured 4% of maximum reading)
  - Current: 0.5% of maximum reading (minimum signal that can be measured 20 mA)

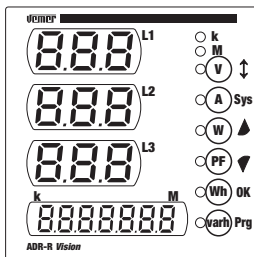
- Active energy class 2 (CEI-EN 61036)
- Reactive energy class 3 (CEI-EN 61268)
- TV available: primary 1-9999 V or 10-65 kV; secondary 230 V
- TA available: primary 1-9999 A; secondary 5 A
- Insulation voltage: 4 kV between the terminals
- Operating temperature: 0 °C - +50 °C
- Relative humidity: 10%÷90% non condensing
- Containers:
  - **Rear panel version:** material in class V0 in line with the UL 94 standard, Standard dimensions 96x96 mm in line with the DIN 43700 standards
  - **Modular version:** material in class V0 in line with the UL 94 standard, 9 DIN module containers, colour RAL-7035 grey

## Power Supply Analysers

Code	Model	Description
<b>VN811600</b>	ADR-R-Vision	Power supply analyser, 96x96 mm rear panel version
<b>VN812400</b>	ADR-D-Vision	Power supply analyser, 9 DIN module version

## DESCRIPTION OF INSTRUMENT

### Screen and display



- The **V**, **A**, **W** and **PF** values are those for the three phases and the system, each displayed in three digits.
- For the **Wh** and **varh** values, only the system value is displayed, in seven digits (with pre-set value).
- For the phase values, two indicator lamps are used for the **k** and **M** pre-set values. These come on in line with the pre-set value adopted by the measurement unit displayed.

## KEYS

- The user interface consists of six keys and an indicator lamp for each one of these. Each key gives direct access to the display of the corresponding value. The values are as follows, from top to bottom:

- **voltage**
- **current**
- **active power ratings**
- **power factor**
- **total active energy**
- **total reactive energy**

When the secondary menu is displayed and the parameters are being set, the keys take on a different meaning, as shown in the right hand symbol column.



**Voltage display** / Page scroll



**Current display** / System value display



**Active power rating display** / Increase active number



**Power factor display** / Decrease active number




**Display total active energy** / Confirm value selected



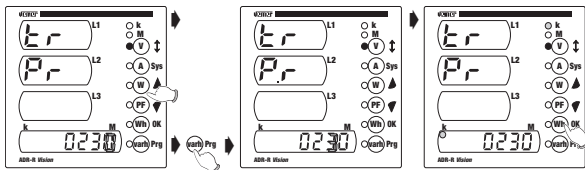
**Display total reactive energy** / Select next parameter

## PARAMETER SETTING

### **Programming on initial installation**

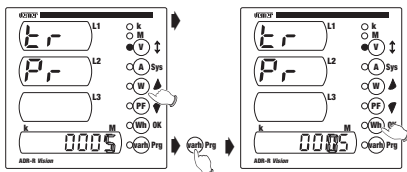
- The programming menus are entered by holding down the “” key for at least three seconds.
- The user programmable parameters are as follows, in order:
  - **Primary TV** (fixed secondary 230 V)
  - **Primary TA** (fixed secondary 5 A)
  - **Zero active energy meter**
  - **Zero reactive energy meter**

## Setting the primary TV



- Press the “**W**” or “**PF**” keys to select the required value for the flashing digit
- To go to the next digit, press the “**Search Prg**” key
- After setting the numerical value, press the “**W**” or “**PF**” keys to select or deselect the multiplication factor “**k**”
- To confirm the value set and go to the next window, press the “**Wh OK**” key

## TA setting



- Press the “**W**” or “**PF**” keys to select the required value for the flashing digit
- To go to the next digit, press the “**Search Prg**” key
- To confirm the value set and go to the next window, press the “**Wh OK**” key

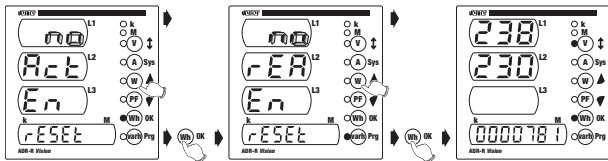
**Note: for the TV and TA primaries, any numerical value from 0001 to 9999 can be set.**

**If the value 0000 is set, the instrument will force this to 0001.**

**The secondaries are set at 230 V and 5 A respectively.**

**For the TV primary, it is also possible to set a value between 10 kV and 65 kV.**

## Zeroing the active energy meter



- Press the “**W**” or “**PF**” keys to select the “**YES**” or “**NO**” options
- To confirm the value set and go to the next window, press the “**Wh OK**” key

## Zeroing the reactive energy meter

- Proceed as with the zeroing of the active energy meter
- When the “**Wh OK**” key is pressed, all the symbols on the display will come on for approximately 3 seconds, after which the main page will be displayed

**Note: if the power supply is cut off during programming, the instrument will memorise all the settings entered up to the time when it is switched off.**

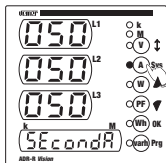
## DISPLAYING THE MEASUREMENT PAGES

- When the instrument is switched on (or after programming), the voltage page will be shown after the display has been switched on for approximately 3 seconds
- The main values (**voltage, current, active power ratings, power factor and total active and reactive energy**) are displayed when the corresponding key is pressed
- Values **V, A, W** and **PF** are those for the three phases and the system, each of which is displayed in three digits  
For **Wh** and **varh**, only the system value is displayed, in seven digits
- The type of value displayed is indicated by a warning lamp alongside the label



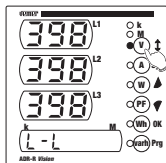
## DISPLAYING THE SECONDARY VALUES

- When the “ $\text{A}_{\text{Sys}}$ ” key is held down for more than 3 seconds, the instrument will display the measurement and secondary value pages and vice versa
- When going to the display of the secondary values, the message “**SecondArY Menu**” will scroll down the screen, and on return to the display of the measurement pages, the message “**PrINCIPAL Menu**” will scroll down the screen
- When the “ $\text{V} \updownarrow$ ” key is pressed from the main page, all the other measurement pages will be displayed in sequence  
When the “ $\text{V} \updownarrow$ ” key is pressed from the last page, the instrument returns to the main page



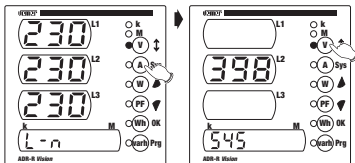
### 1) Concatenated voltage page

- The concatenated voltages  $V_{12}$ ,  $V_{23}$  and  $V_{31}$  are displayed with the message “**L-L**”
- Press the “ $\text{V} \updownarrow$ ” key to go to the phase voltage display page



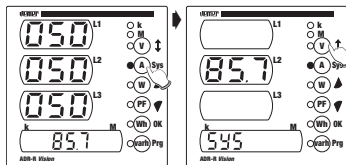
### 2) Phase voltage page

- The phase voltages  $V_{1n}$ ,  $V_{2n}$  and  $V_{3n}$  are displayed with the message “**L-n**”
- When the “ $\text{A}_{\text{Sys}}$ ” key is pressed, the system voltage is displayed (in field L2)
- Press the “ $\text{A}_{\text{Sys}}$ ” key again to return to the phase voltage page, and use the “ $\text{V} \updownarrow$ ” key to go to the display of the current page



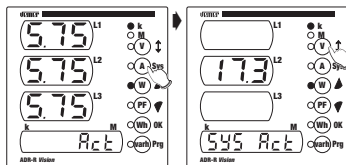
### 3) Current page

- The currents  $I_1$ ,  $I_2$  and  $I_3$  and the system current are displayed
- When the “ $\odot$  A Sys” key is pressed, the system current is displayed (in field L2)
- Press the “ $\odot$  A Sys” key again to return to the current page, and use the “ $\odot$  V  $\updownarrow$ ” key to go to the display of the active power page

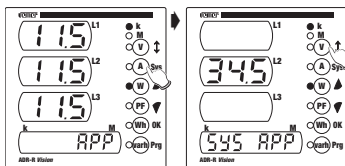


### 4) Active power page

- The active power ratings  $P_1$ ,  $P_2$  and  $P_3$  are displayed with the message “Act”
- When the “ $\odot$  A Sys” key is pressed, the active power rating of the system is displayed (in field L2)
- Press the “ $\odot$  A Sys” key again to return to the active power page, and use the “ $\odot$  V  $\updownarrow$ ” key to go to the display of the apparent power ratings



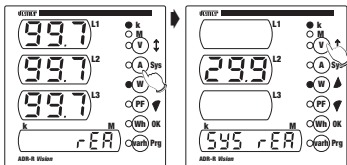
### 5) Apparent power page



- The apparent power ratings  $A_1$ ,  $A_2$  and  $A_3$  are displayed with the message “APP”
- When the “ $\odot$  A Sys” key is pressed, the apparent power rating for the system is displayed (in field L2)
- Press the “ $\odot$  A Sys” key again to return to the apparent power page, and use the “ $\odot$  V  $\updownarrow$ ” key to go to the display of the reactive power page

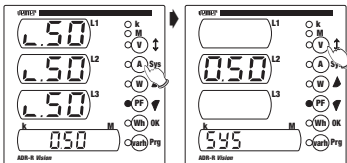
## 6) Reactive power page

- The reactive power ratings  $Q_1$ ,  $Q_2$  and  $Q_3$  are displayed with the message "rEA"
- When the "A Sys" key is pressed, the reactive power rating of the system is displayed (in field L2)
- Press the "A Sys" key again to return to the reactive power page, and use the "V ↓" key to go to the display of the power factor page



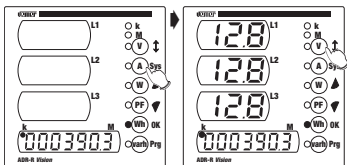
## 7) Power factor page

- The power factors  $PF_1$ ,  $PF_2$  and  $PF_3$  and the system power factor are displayed
- When the "A Sys" key is pressed, the system power factor is displayed (in field L2)
- Press the "A Sys" key again to return to the power factor page, and use the "V ↓" key to go to the display of the active energy page



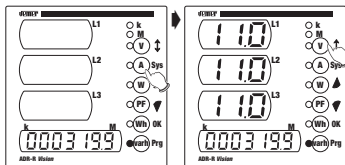
## 8) Active energy page

- The total active energy is displayed
- When the "A Sys" key is pressed on the active energy indication, the partial active energy meters for each phase are added. These meters are zeroed when the sum of the active partial energy ratings for the phases increases the total active energy value
- Press the "A Sys" key again to return to the active energy page, and use the "V ↓" key to go to the display of the reactive energy page



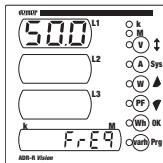
## 9) Reactive energy page

- The total reactive energy is displayed
- When the “**A Sys**” key is pressed on the reactive energy indication, the partial reactive energy meters for each phase are added
- These meters are zeroed when the sum of the reactive partial energy ratings for the phases increases the total reactive energy value
- Press the “**A Sys**” key again to return to the reactive energy page, and use the “**V ↓**” key to go to the display of the frequency page



## 10) Frequency page

- The frequency is displayed (in field L1)
- Press the “**V ↓**” key again to return to the display of the concatenated voltage page



## MEASUREMENT / CALCULATION METHOD

- The voltage and current values are measured in TRMS (True RMS) by means of sampling and analogue-digital conversion.
- The following formulas are used to calculate the system values:

System voltage 
$$V = \frac{V_1 + V_2 + V_3}{\sqrt{3}}$$

System current 
$$I = \frac{I_1 + I_2 + I_3}{\sqrt{3}}$$

Active power rating of system 
$$P = P_1 + P_2 + P_3 \quad (\text{algebraic sum})$$

Reactive power rating of system 
$$Q = Q_1 + Q_2 + Q_3 \quad (\text{algebraic sum})$$

Apparent power rating of system 
$$A = \sqrt{P^2 + Q^2}$$

Power factor of system

$$PF = \frac{P}{A}$$

Total active energy

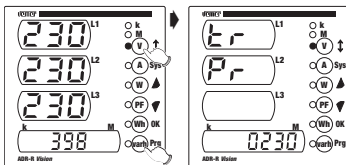
$$E = E_1 + E_2 + E_3$$

Total reactive energy

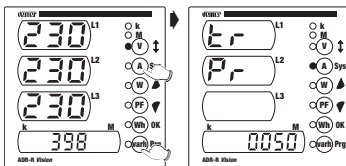
$$Er = Er_1 + Er_2 + Er_3$$

## DISPLAYING THE PRIMARY TV AND TA

- From the main menu of the measurement pages, the primary TV and TA values can be displayed



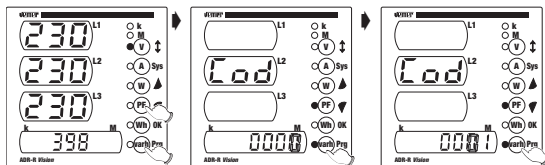
- To display the TV value, simply hold down keys “**PrG**” and “**V** ↑” for approximately 3 seconds  
The message “**VolTAGE trAnSForMEr**” will scroll down the screen, followed by the value of the primary in volts  
After a couple of seconds, the voltage page will be displayed



- To display the TA value, simply hold down keys “**PrG**” and “**A Sys**” for approximately 3 seconds  
The message “**CurrEnt trAnSForMEr**” will scroll down the screen, followed by the value of the primary in amps  
After a couple of seconds, the current page will be displayed

## SETTING THE PASSWORD

- It is possible to enter a 4-digit password to protect the access to the programming function

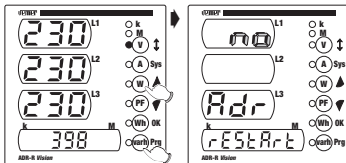


- Hold down keys “**Wh Prg**” and “**PF**” for approximately 3 seconds from the measurement page  
The message “**InSert nEW CodE**” will scroll through the screen
- To set the value of the flashing digit, use the “**W**” or “**PF**” keys, then press “**Wh Prg**” to go to the next digit  
Press “**Wh OK**” to memorise the password entered and return to the display of the main menu
- If a password is already entered in the instrument and you want to change it, the message “**InSert Old CodE**” will appear before you enter the new password, and you will have to enter the old password  
If the password entered is incorrect, the message “**Error**” will appear and the instrument will return to the display of the main menu. Otherwise, the user will be asked to enter the new password

**Note: the password set by default is “0000”, which means that the access to the programming function is not protected. The default password can be reset by switching off the power supply or resetting the instrument.**

## RESETTING THE INSTRUMENT

- In the event of extraordinary operations following the installation of the instrument, it may be necessary to reset it

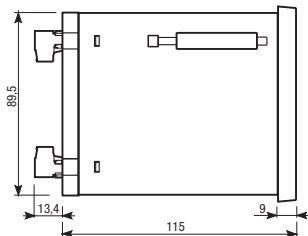
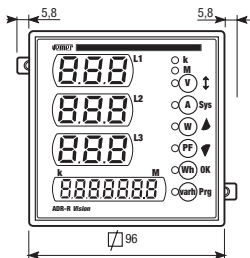


- To reset the instrument, hold down the “**Wh Prg**” and “**W**” keys for approximately 3 seconds  
The message “**InStruMent rEstArt**” will scroll through the screen, followed by the confirmation menu
- Select one of the “**Yes**” or “**No**” options with the “**W**” and “**PF**” keys and confirm with “**Wh OK**”

## REFERENCE STANDARDS

- Conformity with the European Union directives:  
**73/23/EEC** modified by **93/68/EEC** (safety)  
**89/336/EEC** modified by **92/31/EEC** and **93/68/EEC** (EMC)  
is declared with reference to the following harmonised standards:
- Safety:**  
**CEI-EN 61010-1:** safety provisions for electrical measurement, control and laboratory instruments; **Part I:** general provisions
- Electromagnetic compatibility:**  
**CEI-EN 61000-6-2:** electromagnetic compatibility (EMC)  
**Part 6-2:** general standards - immunity for industrial environments  
**CEI-EN 61000-6-3:** electromagnetic compatibility (EMC)  
**Part 6-3:** general standards - Emissions for household, commercial and light industrial environments
- Metering provisions:**  
**CEI-EN 61036:** static active energy electricity meters for AC (classes 1 and 2)  
**CEI-EN 61268:** static reactive energy electricity meters for AC (classes 2 and 3)

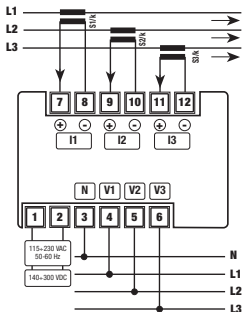
## DIMENSIONS ADR-R Vision



English

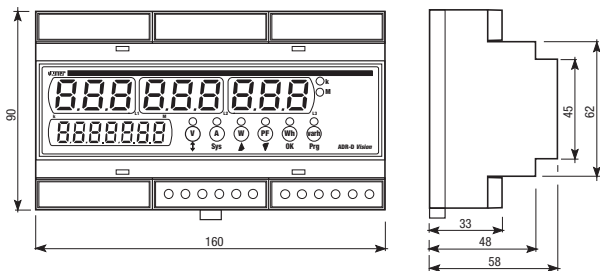
## CONNECTION DIAGRAMS

### ADR-R Vision





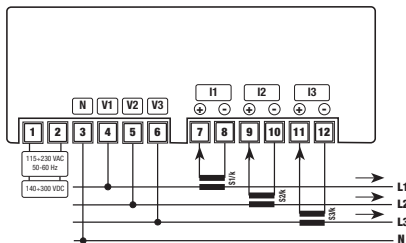
## DIMENSIONS ADR-D Vision



English

## CONNECTION DIAGRAMS

### ADR-D Vision









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