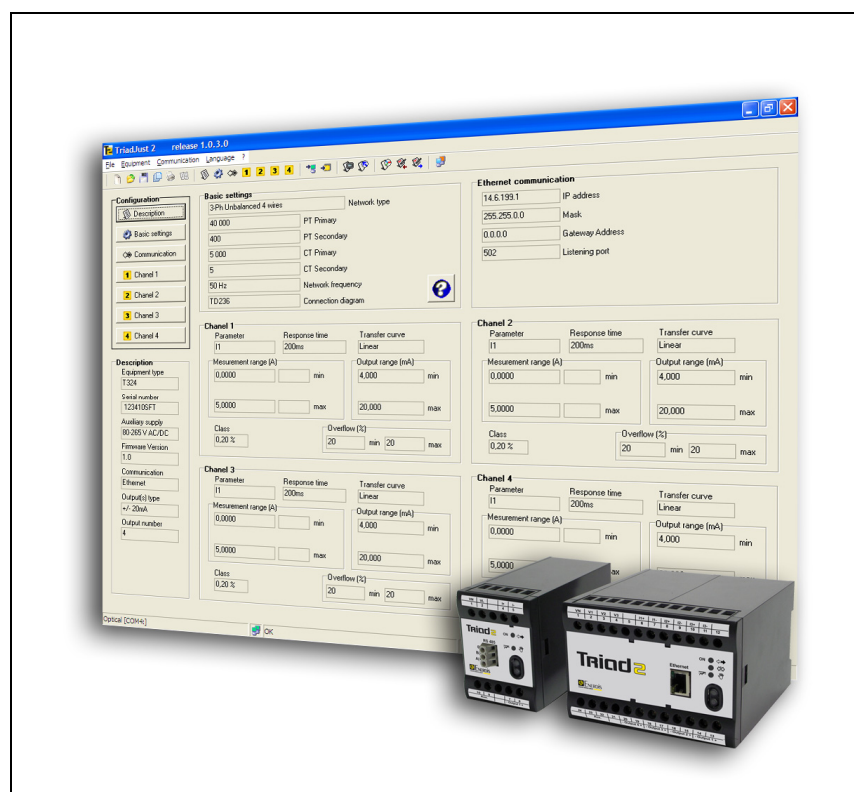


## ■ *TriadJust2* Software





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# Introduction



# 1. PURPOSE OF THE MANUAL

This manual is intended for those who want to use the *TriadJust2* software application with one or more *Triad2* transducers.

This manual gives information on:

- The application's functions.
- The application's implementation and usage.
- The application's characteristics.

*Enerdis* (company) produces this manual with the aim to provide simple and accurate information. *Enerdis* cannot be held responsible for any incorrect interpretation of this manual. Although every effort has been made to produce a manual that is as accurate as possible, the manual may nevertheless contain technical and/or typographical errors.

It is the software owner's responsibility to keep this manual throughout the duration of use of the application.

All information or modification relating to this manual should be addressed to:

**ENERDIS**

The Publication Manager  
16, rue Georges Besse  
SILIC 44  
F - 92182 Antony Cedex

## 2. WARRANTY, RESPONSIBILITY AND COPYRIGHT

### 2.1 Warranty

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Our warranty is applicable, unless explicitly stipulated otherwise for, 90 days after the date the software is made available (extract from our *General Terms and Conditions of Sale*, sent on request).

### 2.2 Ownership

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All manuals and documentation of any type are *Enerdis* proprietary and are protected by copyright, all rights are reserved. They may not be distributed, translated or reproduced, either in whole or in part, in any way whatsoever or in any form whatsoever.

### 2.3 Licence

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The application licence authorises the use of this software on only one workstation at a time.

### 2.4 Copyright

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First edition, July 2009.

### 2.5 Registered trademarks

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*TriadJust2* and *Triad2* are registered trademarks of *Enerdis*.

*Excel* and *Windows* are registered trademarks of *Microsoft Corporation* in the United States and in other countries.



### 3. PACKAGE

The software is delivered as follows.

Description	Qty
CD ROM containing the application software <i>TriadJust2</i> and this reference manual in <i>pdf</i> format.	1



# 4. INSTALLING THE APPLICATION

## 4.1 Hardware configuration

To run the *TriadJust2* application, a PC with the following minimum features are:

- PC: compatible processor.
- Operating system:
  - XP SP2 or higher
  - or Windows 2000 SP4 or higher.
- RAM memory: 512 Mb minimum, 1 Gb recommended.
- Monitor: 1024 \* 768 minimum.
- CD ROM Reader.
- Free hard disk space: around 20 Mb.
- Local communication port: at least one USB port (1.1 minimum) for the optical head connection.
- Remote communication port: at least one RS232C port (with RS485 adaptor for connecting to the Triad2 device) or Ethernet.

## 4.2 Installing the application

Proceed as follows.

- Insert the CD ROM into the reader. The automatic installation wizard is launched.  
Note: if *auto-run* has been deactivated, double click on the CD Rom icon and double click the *setup.exe* icon.
- The first window enables the selection of the language for menu installation.

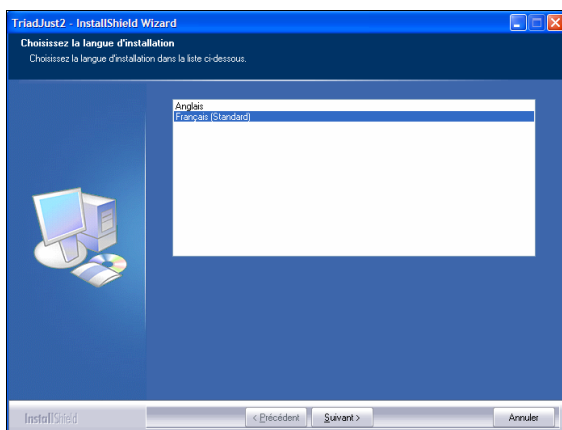


Figure 4-1: screen for selecting the display language.

- Select the desired language and click *Next*.
- In the displayed window, click *Next* to start the installation.



Figure 4-2: the screen prior to the installation.

- After reading the licence conditions, click on the "I accept the terms of the licence agreement" button and click *Next*.



Figure 4-3: License conditions screen.

- Select next the installation type:
  - **Complete**: install all the application features.
  - **Custom**: enables you to choose the installation directory for the *TriadJust2* application as well as the components to install (instructions in PDF format, the actual application and the USB driver).

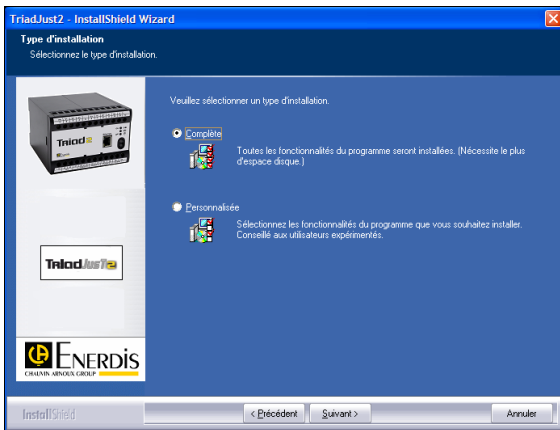


Figure 4-4: screen for selecting the installation type.

- Click **Next** to start the installation.

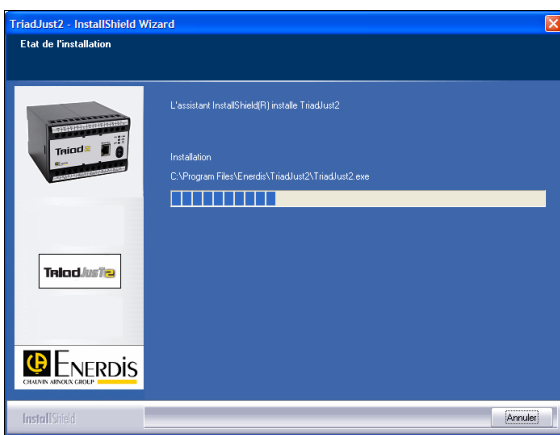


Figure 4-5: the installation is launched.

- After some time, the installation completion screen is displayed. Click **Finish**.

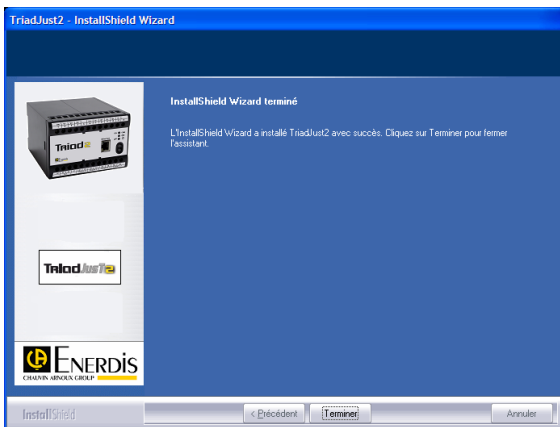


Figure 4-6: the application installation is finished.

## 4.3 Application location

### 4.3.1 *TriadJust2* Application

Unless modified during installation, the application files are located as follows:

C:\Program files\Enderdis\TriadJust2.

### 4.3.2 USB optical head driver Application location

The USB driver installation file is located in:

C:\Program files\Enderdis\TriadJust2\Driver\Driver USB.



The CD Rom supplied with the optical head will hence not be used for using *Triad2*.

## 4.4 Purpose of the application

The *TriadJust2* application works on a PC under Windows® environment and its purpose is:

- **To read in real-time** information read on a *Triad2* type device connected to the PC supporting the application through an USB link (optical head), RS485 or Ethernet.
- **To configure in offline mode** (no active connection) certain information which will be sent later to a *Triad2* type device which will then be connected to the PC supporting the application through an USB link (optical head), RS485 or Ethernet.
- **To display in real-time** data measured by a *Triad2* type device connected to the PC supporting the application through an USB link (optical head), RS485 or Ethernet.

## 4.5 Launching



When the optical head is connected for the *first time* to the USB port of the PC, whether the application is started or not, an automatic installation procedure for the optical head driver is activated. Refer to paragraph 4.8 on page 14 for details.

The application can be accessed:

- either from the menu *Start > Programs > Enderdis > TriadJust2*, as is shown in the following diagram.

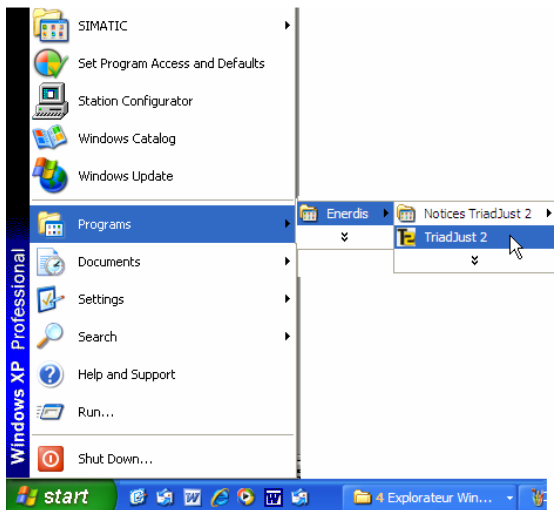


Figure 4-7: Accessing the application once the installation is completed.

- Or from the shortcut automatically created on the desktop.



Figure 4-8 : the application icon created on the desktop.

The screen is displayed as follows.

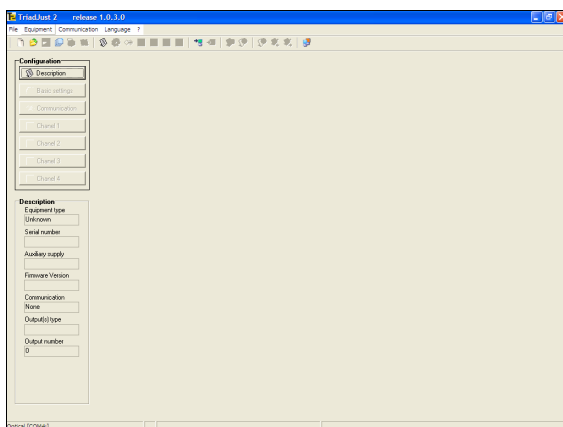


Figure 4-9: display when used for the first time.

Chapter 5 introduces the application, while chapter 7 presents a summary of the application usage.



This application can be copied on several computers.

## 4.6 Repair

Proceed as follows:

- Given that the application was previously installed, insert the CD Rom. The *autorun* displays, after a few seconds, the following window:



Figure 4-10: the screen for selecting the actions to be performed.

- Select *Repair* to repair the installed features.

## 4.7 Un-installation

The application can be uninstalled either from the *Add/Remove programs* menu or a special function of the CD Rom.



The DAT and LOG directories are not deleted (C:\Program files \ Enerdis \ TriadJust2\).

### 4.7.1 From Add/Remove programmes

Select *Start > Settings > Control Panel > Add/Remove programs > TriadJust2* and click on the *Remove* button.

### 4.7.2 Using the CD Rom

Given that the application was previously installed, insert the CD Rom. The *autorun* displays, after a few seconds, the following window:



Figure 4-11: selecting the actions to be performed.

- Select **Delete** to delete the *TriadJust2* application.

## 4.8 Note concerning the optical head driver

The optical head driver is installed during the application installation (see paragraph 4.2). However, this installation will be completed when the optical head is plugged in for the first time as follows.

### 4.8.1 Installation of the USB driver of the optical head

Proceed as follows when the different screens are displayed.

- Insert the optical head on the computer port.
- When the *Add hardware* wizard is displayed, select *Not this time* and click *Next*.

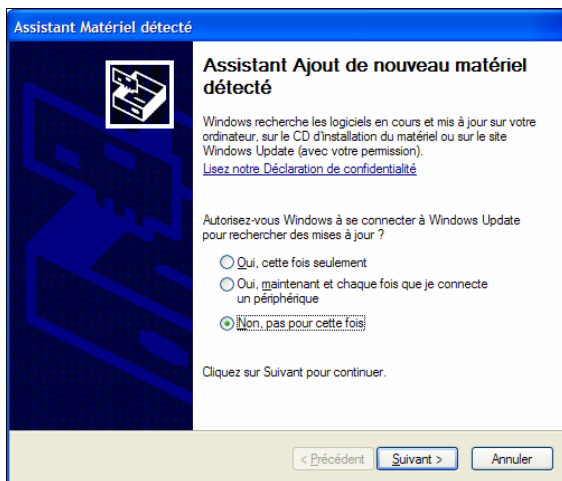


Figure 4-12: display the add hardware wizard.

- Select *Install the software automatically (recommended)* and click *Next*.

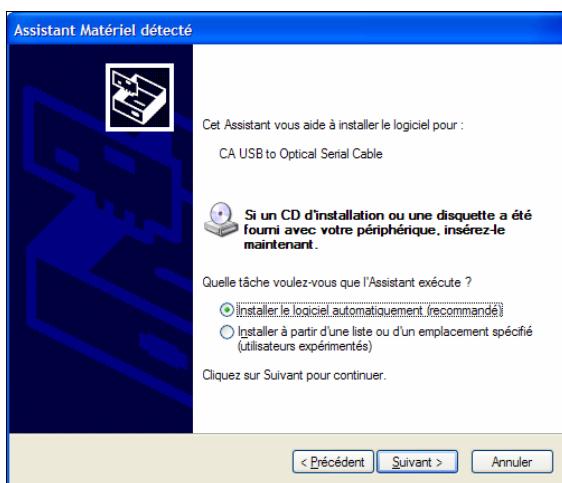


Figure 4-13: display of the "add automatically" wizard.

- When the following screen appears, click on *Continue*.

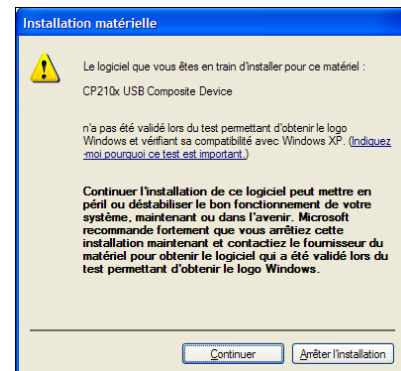


Figure 4-14 : intermediate step.

- The screen shows the installation progress.

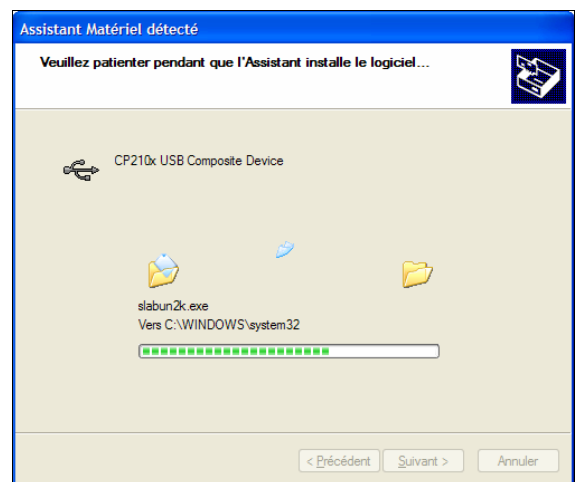


Figure 4-15: installation progress.

- The screen shows the completion of the installation of the USB driver of the optical head.

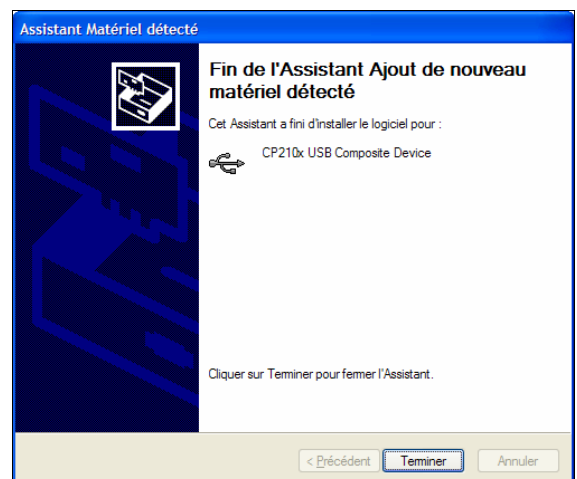


Figure 4-16: the USB driver of the optical head is installed.

- Click *Finish*.
- Wait for a few seconds for the following screen to appear (see paragraph 4.8.2).

#### 4.8.2 Creation of a virtual communication port

Proceed as follows when the different screens are displayed.

- When the *Add hardware* wizard is displayed, select *Not this time* and click *Next*.

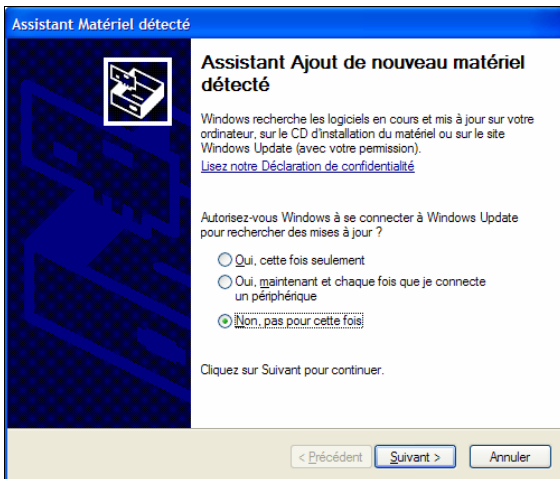


Figure 4-17: display the virtual port creation wizard.

- Select *Install the software automatically (recommended)* and click *Next*.

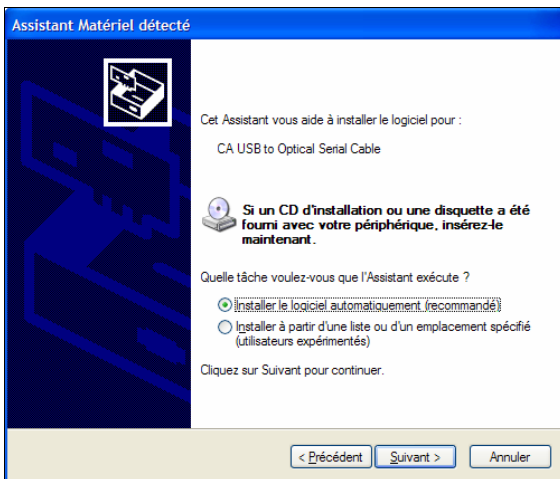


Figure 4-18: display of the "add automatically" wizard.

- When the following screen appears, click on *Continue*.

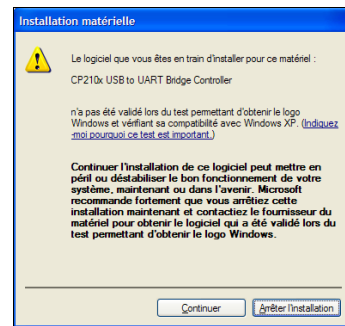


Figure 4-19: intermediate step.

- The screen shows the installation progress.

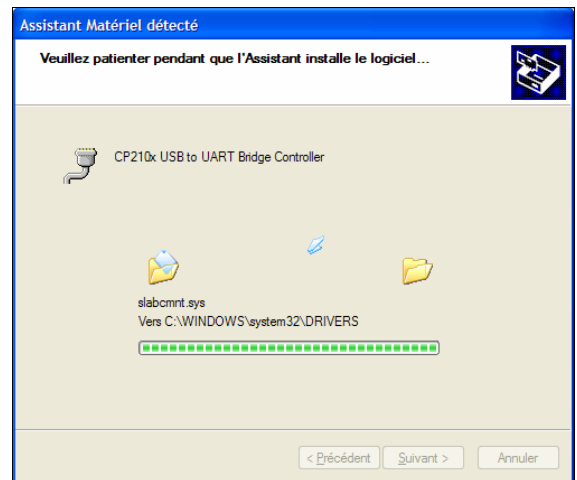


Figure 4-20: installation progress.

- The screen shows the completion of the creation of the virtual communication port of the optical head.

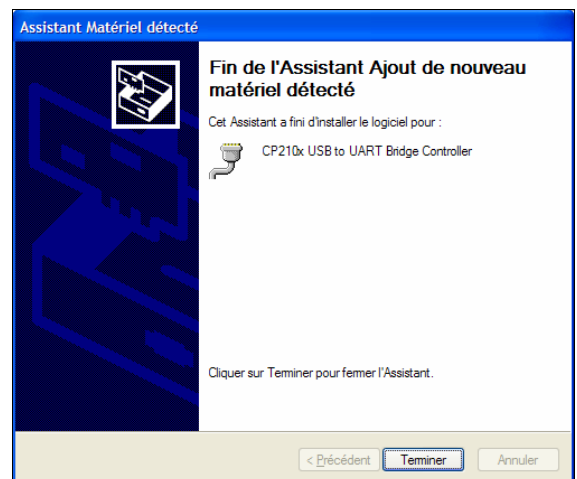


Figure 4-21: the virtual communication port of the optical head is created.

- Click *Finish*.

#### 4.8.3 End of installation

Both the optical head driver installation procedure and the creation of the virtual communication port are completed.





## General description



# 5. GENERAL PRESENTATION

## 5.1 The application

The *TriadJust2* application enables the configuration of *Triad2* transducers. It runs on a PC in Windows® environment. The PC will be connected to:

- either a single *Triad2* type device by an optical head through an USB link.
- or to one or more *Triad2* type devices by a RS485 or Ethernet link.

## 5.2 The features

On the PC hosting the application, digital or optical communication enables particularly:

- **The reading in real-time** of information read on the *Triad2* device(s) connected to the PC.
- **The offline configuration** (no active link) of certain information which will be later sent to the selected *Triad2* type device.
- **The display in real-time** of information measured on the selected *Triad2* type device.

## 5.3 Shortcuts

The illustration of the following page shows an example of using the application with shortcuts to the concerned chapters.

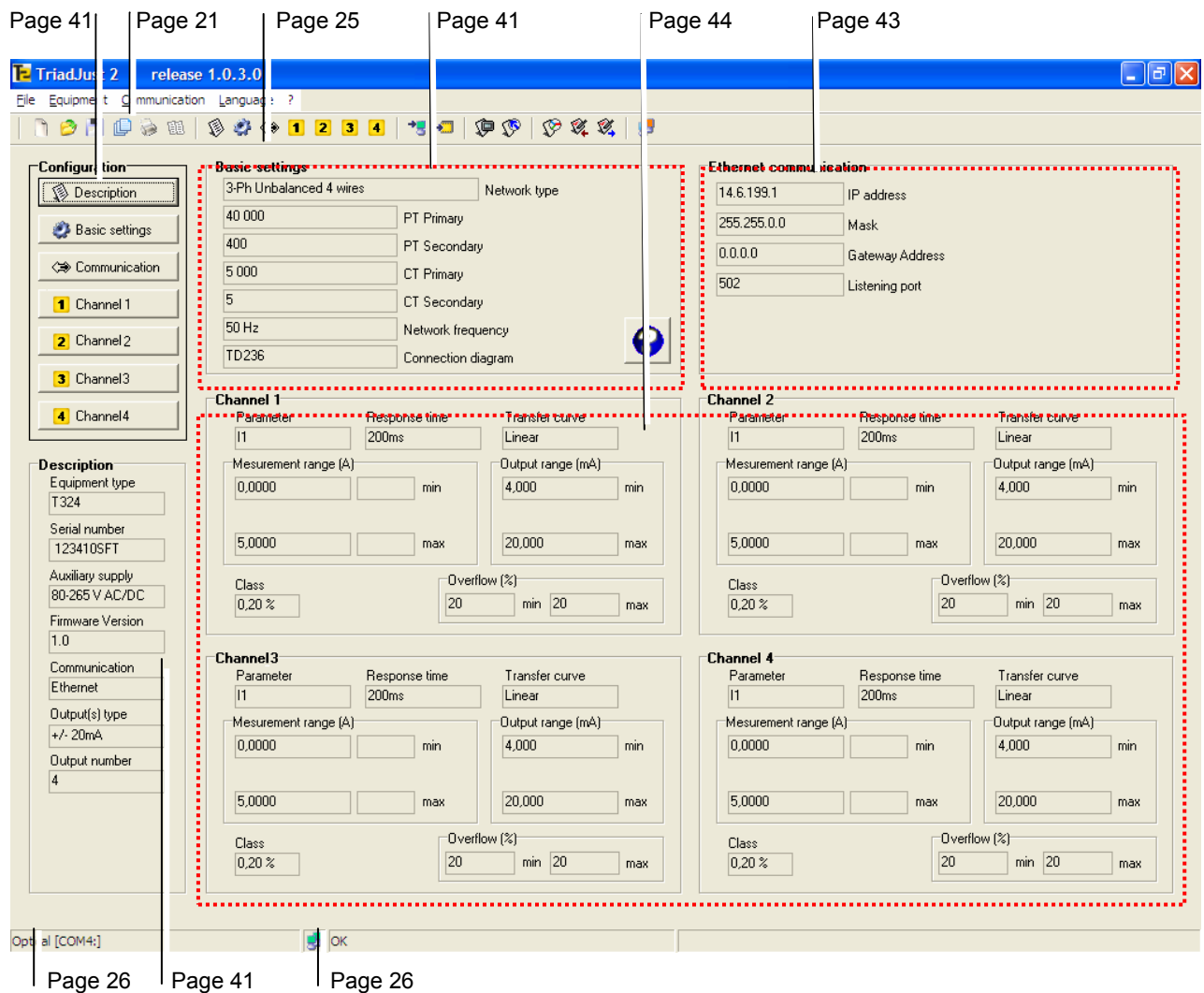


Figure 5-1: overall view of the application with shortcuts to the concerned chapters.

# 6. THE START-UP PAGE

This chapter presents the start-up page of the application and provides shortcuts to the chapters that detail the various options.

## 6.1 Presentation

The start-up page displayed when the application is first opened is shown below.

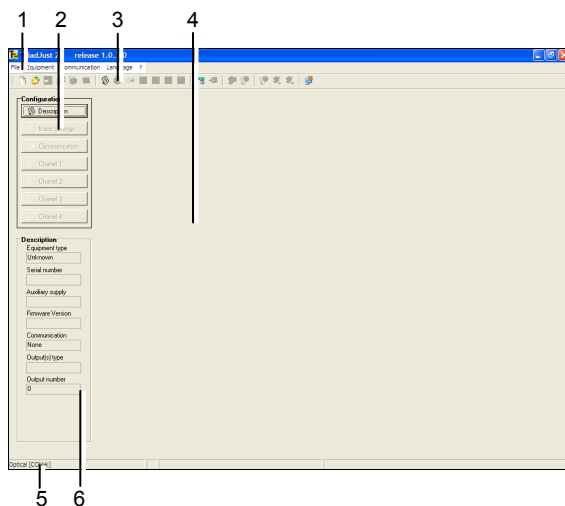


Figure 6-1: the start-up page displayed the first time the application is used.

Id.	Meaning	Refer §
1.	Menu bar.	6.2
2.	Tool bar.	6.7
3.	Configuration buttons.	11
4.	Display area.	5
5.	Status bar.	6.8

## 6.2 Menus

The menu presents the following functions:

Menu	Purpose	Refer §
<b>File</b>	Manages the configuration files (creation, import, recording, printing, preview), label printing, and application exit.	6.3
<b>Equipment</b>	Access to configuration sub-menus of <i>Triad2</i> and shows the connected <i>Triad2</i> .	6.4
<b>Communication</b>	Defines the type of communication between the <i>TriadJust2</i> application and the connected <i>Triad2</i> .	6.5
<b>Language</b>	Selects automatically or manually the menu display language.	6.6
<b>?</b>	Displays the <i>About</i> window, launches the mail software enabling the user to send an e-mail to the technical department of <i>Enerdis</i> and access the <i>Enerdis</i> web site.	

## 6.3 The menu *File*

The sub-menus accessible from the *File* menu depend on the items currently displayed, as explained below.

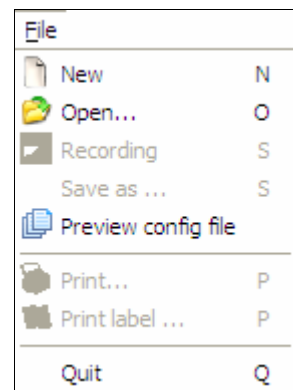



Figure 6-2 : example of the *File* menu.


### 6.3.1 New

Clears the contents of the window, which is displayed then as in Figure 6-1.

This menu is the same as that obtained by clicking on the  icon.


### 6.3.2 Open

Opens a window enabling the incorporation of *xml* data relating to a previously saved configuration.

This menu is the same as that obtained by clicking on the  icon.

### 6.3.3 Recording

Records the configuration in the active configuration file or opens the *Save as* menu if no recording has still been made. These data elements will be saved in XML format in a file with “trd” extension. The *Recording* sub-menu is accessible only if a *Triad2* device is activated.

This menu is active only if a configuration is displayed (Figure 6-1, item. 4). It is the same as that obtained by clicking on the  icon.

### 6.3.4 Save as


Opens a window enabling the saving of all the data items relating to a displayed *Triad2* or to the current configuration, in a user-defined directory. These data elements will be saved in XML format in a file with “trd” extension.

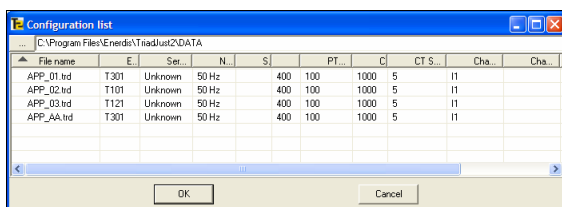
By default, the file is saved in the C:\Program Files\Enerdis\TriadJust2\DATA directory.

This menu is active only if a configuration is displayed (Figure 6-1, item. 4).

### 6.3.5 Preview config file

Displays, in a table, the main characteristics embedded in the configuration files of a given directory, the default directory being DATA. This table cannot be modified.

This menu is the same as that obtained by clicking on the  icon.



File name	E	Se...	N.	S	PT...	C	CT S	Cha	Cha...
APP_01.trd	T301	Unknown	50 Hz	400	100	1000	5	11	
APP_02.trd	T101	Unknown	50 Hz	400	100	1000	5	11	
APP_03.trd	T121	Unknown	50 Hz	400	100	1000	5	11	
APP_AA.trd	T301	Unknown	50 Hz	400	100	1000	5	11	

Figure 6-3: the “Communication” menu before a connection.

These data elements are:

- **File name:** name of the configuration file saved in the DATA directory.
- **Equipment type:** type of *Triad2* concerned in the configuration file.
- **Serial number:** serial number of the *Triad2*.


- **Network frequency:** fundamental frequency of the network (50, 60 or 400 Hz).
- **Sqrt (3):** indication of a connection on a star-connected voltage transformer.
- **PT primary:** operating voltage of the primary of the voltage transformer.
- **PT secondary:** operating voltage of the secondary of the voltage transformer.
- **CT primary:** operating current of the primary of the current transformer.
- **CT secondary:** operating current of the secondary of the current transformer.
- **Channel 1...4:** magnitudes allotted on the channels 1, 2, 3 and 4.



A click on the column header sorts the data with respect to the selected column.

### 6.3.6 Print

Opens the *Windows* print window and enables the printing of the active configuration.


This menu is active only if a configuration is displayed (Figure 6-1, item. 4). It is the same as that obtained by clicking on the  icon.

### 6.3.7 Print label



The printer will be configured in A6 format, in *Landscape* mode.

Opens the *Windows* print window and enables the printing of the configuration label in A6 format.

This menu is active only if a configuration is displayed (Figure 6-1, rep. 4). It is same as that obtained by clicking on the  icon.

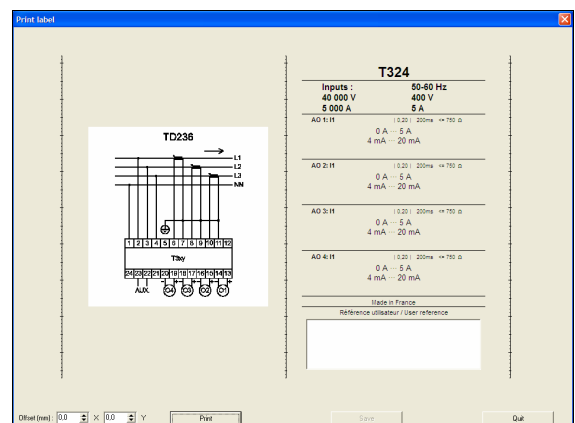


Figure 6-4: the “Print label” window.

The label has 2 parts to be pasted on the device, namely:

- **Left portion:** connection diagram coming from the configuration or from the information read from the connected *Triad2*.
- **Right portion:** characteristics inferred from the configuration or from the information read from the connected *Triad2*.

The lower right portion has a free text zone meant for the user. This zone is generally used to write data such as the inventory number or device location.

### 6.3.8 Quit

Closes the application. A window however asks the recording of the configuration, displays the Save as window, if a modification was made with respect to the file available when the window was opened.

## 6.4 The *Equipment* menu

The sub-menus accessible from the *Equipment* menu depend on the items currently displayed, as explained below.

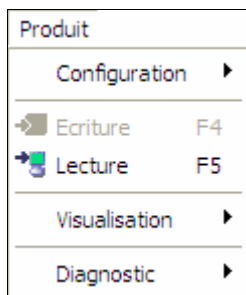


Figure 6-5: example of the *Equipment* menu.

### 6.4.1 Configuration

Accesses the configuration sub-menus of the *Triad2* to be configured. The options of this sub-menu are identical to those available in the *Configuration* zone of the window (Figure 6-1, item. 4). Refer to chapter 11, page 41, for details.

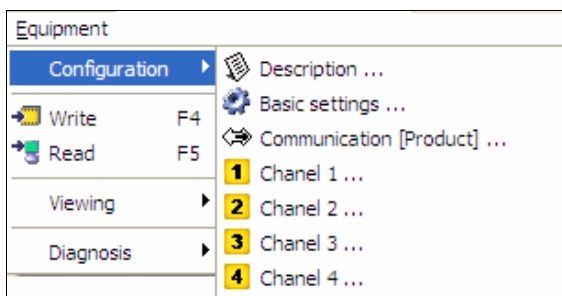



Figure 6-6 : example of the Configuration window.

### 6.4.2 Write

This sub-menu is accessible when a *Triad2* is detected (refer the procedure in paragraph 8.3, page 33). In this case, the configuration data are downloaded from the connected *Triad2* to the displayed *TriadJust2*


application window; Refer Figure 5-1, on page 20, for details.

This menu is the same as that obtained by clicking on the  icon.

### 6.4.3 Read

This sub-menu is accessible when a configuration is active in the *TriadJust2* application window (refer the procedure in paragraph 9.2.3, on page 35).

In this case, the configuration data input manually in the *TriadJust2* application window are displayed to the connected *Triad2*; refer to Figure 5-1, on page 20, for details.

This menu is the same as that obtained by clicking on the  icon.

### 6.4.4 Viewing

This sub-menu is accessible only if a *Triad2* is detected (see the procedure on page 89).

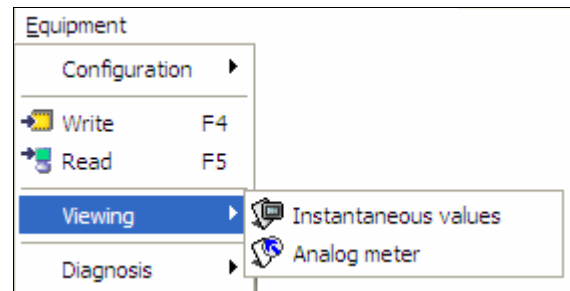

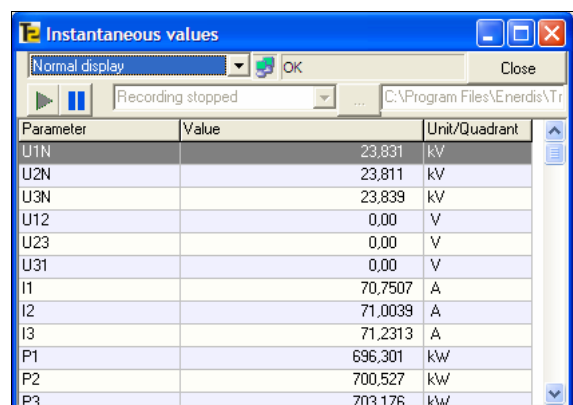



Figure 6-7 : example of the Viewing menu.

- **Instantaneous values:** the data downloaded from the connected *Triad2* is displayed in the *Instantaneous values* window of the *TriadJust2* application; refer to paragraph 12.1, on page 47, for details. This menu is the same as that obtained by clicking on the  icon.



Parameter	Value	Unit/Quadrant
U1N	23,831	kV
U2N	23,811	kV
U3N	23,839	kV
U12	0,00	V
U23	0,00	V
U31	0,00	V
I1	70,7507	A
I2	71,0039	A
I3	71,2313	A
P1	696,301	kW
P2	700,527	kW
P3	703,176	kW

Figure 6-8: example of display of instantaneous measures.

- **Analog meter:** the data downloaded from the connected *Triad2* are displayed in the *Analog meter* window of the *TriadJust2* application; refer to paragraph 12.2, on page 49, for details. This menu is the same as that obtained by clicking on the  icon.

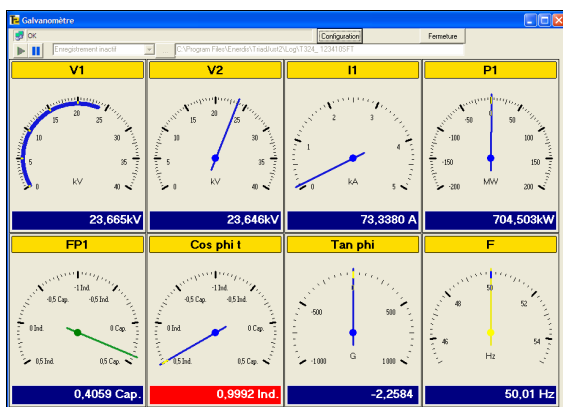


Figure 6-9: example of display of galvanometers.

## 6.4.5 Diagnosis

This sub-menu is accessible only if a *Triad2* is detected (refer to the procedure in chapter 89).

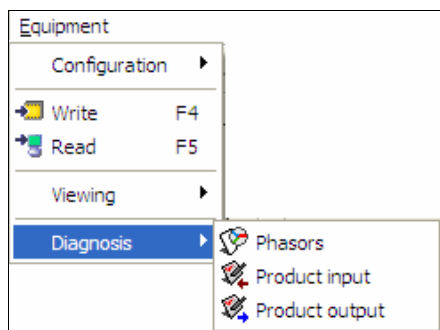



Figure 6-10 : example of the Diagnosis menu.

- **Phasors:** the data downloaded from the connected *Triad2* is displayed in the form of Fresnel diagram in the *Fresnel* window of the *TriadJust2* application; refer to paragraph 13.1, on page 51, for details. This menu is the same as that obtained by clicking on the  icon.

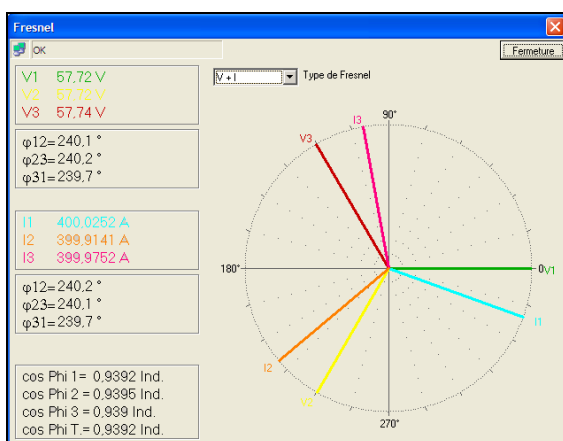



Figure 6-11: example of display of Phasors measures.

- **Product input:** the data downloaded from the connected *Triad2* are displayed in the form of input state table in the *Product input* window of the *TriadJust2* application; refer to paragraph 13.2, on page 52, for details. This menu is the same as that obtained by clicking on the  icon.

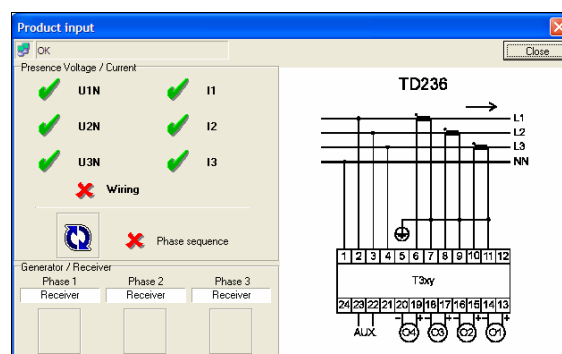



Figure 6-12: example of display of Product input measures.

- **Product output:** the data downloaded from the connected *Triad2* are displayed in the form of output state table in the *Product output* window of the *TriadJust2* application; refer to paragraph 13.3, on page 52, for details. This menu is the same as that obtained by clicking on the  icon.

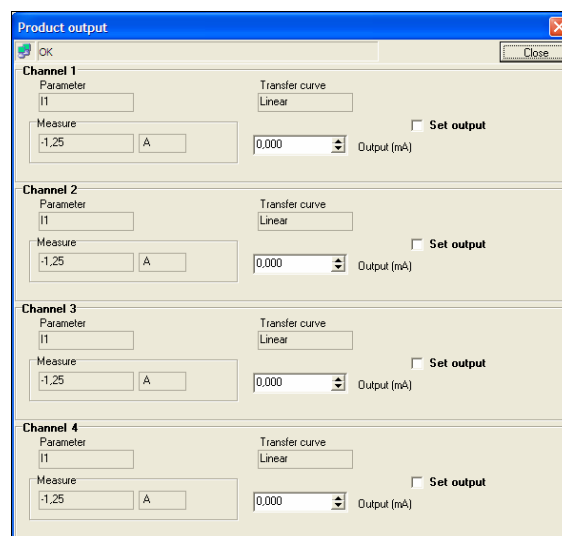


Figure 6-13: example of display of Product output measures.



## 6.5 The *Communication* menu

This menu enables the definition of a communication channel between the *TriadJust2* application and the addressable *Triad2* (s).

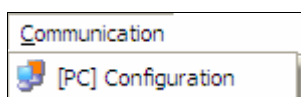



Figure 6-14: the *Communication* menu.

Refer to paragraph 14, on page 55, for details. This menu is the same as that obtained by clicking on the  icon.

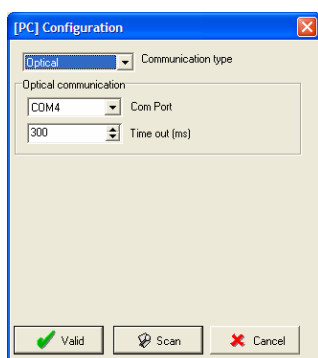


Figure 6-15 : example of display *Communication*.

## 6.6 The *Language* menu

This menu enables the selection of the display language for menus, sub-menus and various windows of the application.

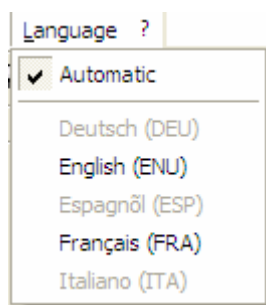


Figure 6-16: the *Language* menu.

The selection of a new language requires the application to be restarted.

The *Automatic* option displays the texts in the default language defined by *Windows*.

## 6.7 The toolbar

The icons displayed in the toolbar depend on prior choices. Thus certain icons could be disabled (greyed) if the corresponding options for their enabling are not selected together.

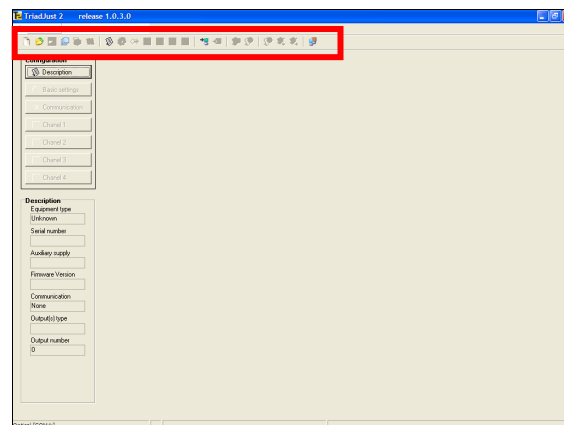



















Figure 6-17: location of the toolbar.

However, the features of the toolbar are similar to the menu commands. The table below presents the icons and the related commands.

Icons	Meaning	Refer §
	Similar to the sub-menu <i>File &gt; New</i> .  This icon is always enabled.	6.3.1
	Similar to the sub-menu <i>File &gt; Open</i> .  This icon is always enabled.	6.3.2
	Similar to the sub-menu <i>File &gt; Recording</i> .  This icon is enabled when a <i>Triad2</i> is displayed in the application window.	6.3.3
	Similar to the sub-menu <i>File &gt; Preview config file</i> .  This icon is always enabled.	6.3.5
	Similar to the sub-menu <i>File &gt; Print</i> .  This icon is disabled (greyed) if no <i>Triad2</i> is defined.	6.3.6
	Similar to the sub-menu <i>File &gt; Print label</i> .  This icon is disabled (greyed) if no <i>Triad2</i> is defined	6.3.7
	Similar to the sub-menu <i>Equipment &gt; Configuration &gt; Description</i> .  This icon is always enabled.	11.1
	Similar to the sub-menu <i>Equipment &gt; Configuration &gt; Basic settings</i> . This icon is disabled (greyed) if no <i>Triad2</i> is defined	11.2

	Similar to the sub-menu <i>Equipment &gt; Configuration &gt; Communication [Product]</i> .  This icon is disabled (greyed) if no <i>Triad2</i> is defined or if the option is not available.	11.3
<b>1</b>	Similar to the sub-menu <i>Equipment &gt; Configuration &gt; Channel 1</i> .  This icon is disabled (greyed) if no <i>Triad2</i> is defined or if the option is not available.	11.4
<b>2</b>	Similar to the sub-menu <i>Equipment &gt; Configuration &gt; Channel 2</i> .  This icon is disabled (greyed) if no <i>Triad2</i> is defined or if the option is not available.	11.4
<b>3</b>	Similar to the sub-menu <i>Equipment &gt; Configuration &gt; Channel 3</i> .  This icon is disabled (greyed) if no <i>Triad2</i> is defined or if the option is not available.	11.4
<b>4</b>	Similar to the sub-menu <i>Equipment &gt; Configuration &gt; Channel 4</i> .  This icon is disabled (greyed) if no <i>Triad2</i> is defined or if the option is not available.	11.4
	Reading the configuration of the connected <i>Triad2</i> ; the information is then displayed in the <i>TriadJust2</i> application window.  Similar to the sub-menu <i>Equipment &gt; Configuration &gt; Read</i> .  This icon is disabled (greyed) if no communication channel is defined.	6.4.2 8.3
	Sending the configuration from the <i>TriadJust2</i> application window to the connected <i>Triad2</i> .  Similar to the sub-menu <i>Equipment &gt; Configuration &gt; Write</i> .  This icon is enabled when a communication channel and a <i>Triad2</i> have been defined.	6.4.3 9.2.3
	Viewing, in the <i>TriadJust2</i> application window, the amplitudes of the connected <i>Triad2</i> in the form of table.  Similar to the sub-menu <i>Equipment &gt; Viewing &gt; Instantaneous values</i> .  This icon is enabled when a communication channel and a <i>Triad2</i> have been defined.	12.1

	Viewing, in the <i>TriadJust2</i> application window, the amplitudes of the connected <i>Triad2</i> in the form of galvanometers.  Similar to the sub-menu <i>Equipment &gt; Viewing &gt;&gt; Analog meter</i> .  This icon is enabled when a communication channel and a <i>Triad2</i> have been defined.	12.2
	Viewing, in the <i>TriadJust2</i> application window, the amplitudes of the connected <i>Triad2</i> in the form of Fresnel diagram.  Similar to the sub-menu <i>Product &gt; Diagnosis &gt; Phasors</i> .  This icon is enabled when a communication channel and a <i>Triad2</i> have been defined.	13.1
	Viewing, in the <i>TriadJust2</i> application window, the input amplitudes of the connected <i>Triad2</i> (input diagnostics).  Similar to the sub-menu <i>Product &gt; Diagnosis &gt; Product input</i> .  This icon is enabled when a communication channel and a <i>Triad2</i> have been defined.	13.2
	Viewing, in the <i>TriadJust2</i> application window, the output amplitudes of the connected <i>Triad2</i> (output diagnostics).  Similar to the sub-menu <i>Product &gt; Diagnosis &gt; Product output</i> .  This icon is enabled when a communication channel and a <i>Triad2</i> have been defined.	13.3
	Choice and configuration of the communication between the PC hosting the <i>TriadJust2</i> application and the <i>Triad2</i> to be monitored.  Similar to the sub-menu <i>Communication &gt; [PC] Configuration</i> .  This icon is always enabled.	14

## 6.8 The status bar

It displays error messages intended for the application user. The list of these messages is the subject of chapter 10, on page 37.

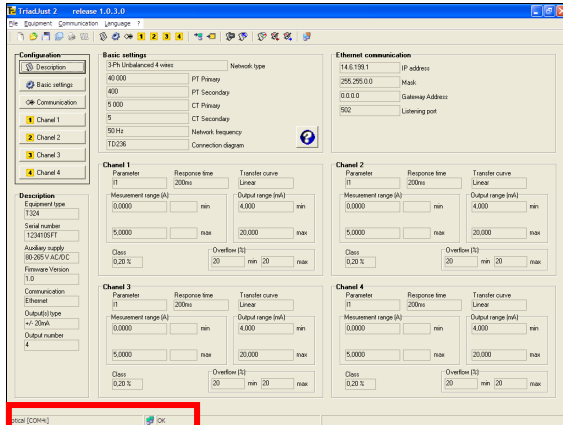



Figure 6-18: location of the status bar.

Indication	Meaning
Optical	Displays the connection type (Unknown, Ethernet, RS485, Optical) and the COM port, if any, selected. See paragraph 11.3, on page 43.
	This icon is displayed when a connection is activated between the PC and the <i>Triad2</i> . See paragraph 8.3 or 9.2.3.
OK	Displayed when communication between <i>Triad2</i> and the PC is successful.



# Utilisation



# 7. GENERAL POINTS ABOUT THE UTILISATION

The *TriadJust2* application can be used in 2 ways:

- **With an active connection** with a *Triad2* device, exchanges between the *TriadJust2* application and the *Triad2* are done in **real time (online mode)**.
- **Without an active connection with a *Triad2*** device, exchanges between the *TriadJust2* application and the *Triad2* are done in **deferred time (batch / offline mode)**.

## 7.1 Active connection

An active connection means that the *Triad2* is in direct communication with the *TriadJust2* application through an optical, RS485 or Ethernet link. Thus, the exchanges between the *TriadJust2* application and the *Triad2* are in real time, hence immediate.

The displays of values by the *Viewing*, *Diagnostics* functions are refreshed in real time. It is also possible to use the *Read* and *Write* functions since the communication is active.

Chapter 8, page 33, explains this type of connection.

## 7.2 Inactive connection

An inactive connection means that the *Triad2* is not in direct communication with the *TriadJust2* application through an optical, RS485 or Ethernet link. Thus, the exchanges between the *TriadJust2* application and the *Triad2* will be in deferred time.

Displays of values by the *Viewing*, *Diagnostics* functions are not possible in real time. It is possible to use the *Read* and *Write* functions only when the communication is enabled.

This type of use enables defining the configuration of one or more *Triad2*, recording the configuration file, before a subsequent connection according to chapter 9, page 35, explains this type of connection.





# 8. ACTIVE CONNECTION



The purpose of the active connection is discussed in 7.1.

## 8.1 Preparation

Proceed as follows:

1. **Connect the PC through the cable which will be used for the connection (RS485, Ethernet or optical sensor).**
  - For an optical cable, connect the optic cable to the USB port of the PC and connect the other end in the optic card of the Triad2.
  - For an Ethernet or RS485 cable, connect the cable to the corresponding port of the PC and connect the other end in the remote transmission card.

2. **Launch the *TriadJust2* application.**  
A blank page is displayed.

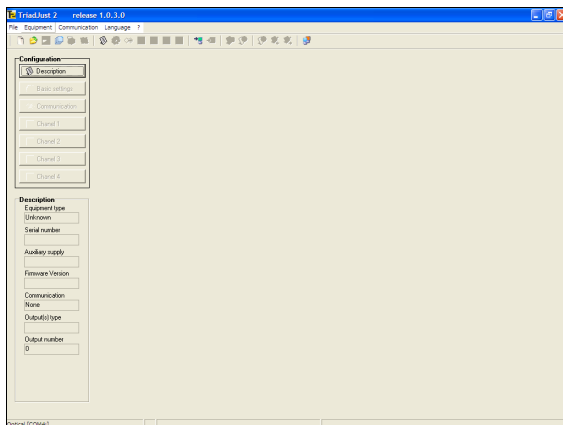


Figure 8-1 : the application at the beginning.

## 8.2 Configuring the communication type

This step enables the user to define the connection to use between the PC running the *TriadJust2* application and a *Triad2*. Proceed as follows:

1. In the menu bar, select **Communication > [PC] Configuration** or click on the icon

2. In the window opened, select, from the dropdown list, the **Communication type** to be used.

Refer to the chapter 14, on page 55, for details of options.

3. **Define the communication parameters.**

For an Ethernet or RS485 connection, the address mentioned must correspond to the *Triad2* on which the information will be read.

Refer to the chapter 14, on page 55, for details of options.

4. Click **Valid** to close the window.

## 8.3 Establishing the connection

Once the communication type is defined as per the previous paragraph, activate the connection between the *TriadJust2* application and a *Triad2* as follows:

1. In the menu bar, select **Equipment > Read** or press on <F5> or click on the icon

2. **A message can be displayed.**

Refer to chapter 10, on page 37, for the interpretation of the messages.

- 3 **After a few seconds, the screen displays the information read on the *Triad2* indicated in step 3 of paragraph 8.2.**

Refer to Figure 5-1, on page 20, for details of the display.

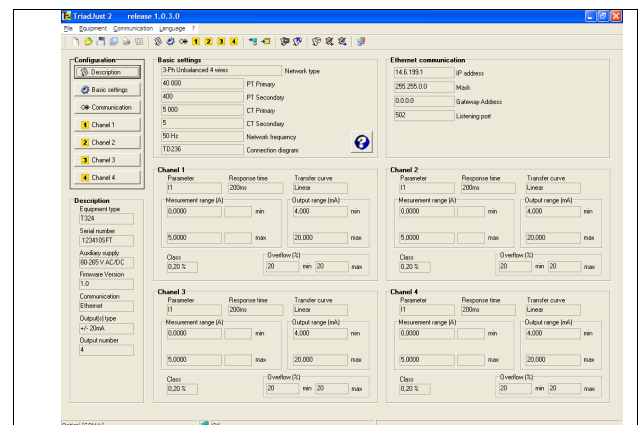


Figure 8-2: example of display.

## 8.4 Reading information

Once the communication is established, it is then possible to view the data read by the *Triad2*.

Use the table below to access the available functions.

Function	Refer §
Viewing the configuration	5.3
Modifying the configuration	11
Transferring the new configuration to the <i>Triad2</i>	9.2.3
Configuring and viewing instantaneous measures	12.1
Configuring and viewing galvanometers	12.2
Displaying the Fresnel diagram	13.1
Displaying inputs	13.2
Displaying outputs	13.3

## 8.5 Quit the application

Proceed as follows:

1. In the menu bar, select **File > Quit** or <CTRL + Q> or click on the icon .

## 9. INACTIVE CONNECTION



The purpose of the inactive connection is discussed in 7.2.

### 9.1 Configuration

Proceed as follows:



No link is to be provided at this stage between the PC running the *TriadJust2* application and any *Triad2*.

1. **Launch the *TriadJust2* application.**  
A blank page is displayed.

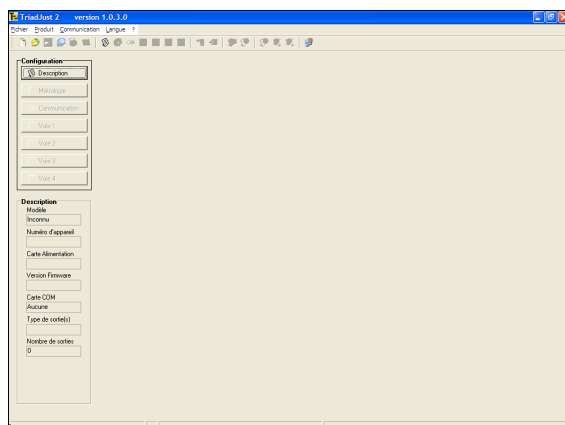




Figure 9-1: the application on start up.

2. **Define the configuration of a *Triad2*.**  
Set the following configuration parameters:


Function	Refer §
Description	11.1
Basic settings	11.2
Communication	11.3
Channel 1 to "n"	11.4

3. **Save the configuration of the *Triad2*.**  
In the menu bar select *File > Save as* or click on .
4. **If required, configure another *Triad2*.**  
Use steps 2 and 3 above.
5. **The application can be closed.**  
In the menu bar, select *File > Quit* or <CTRL + Q> or click on the icon .

## 9.2 Transferring parameters

### 9.2.1 Retrieving the configuration file

This step will enable loading the previously saved configuration file to the *TriadJust2* application (See paragraph 9.1). Proceed as follows:


1. **In the menu bar, select *File > Open* or <CTRL + O> or click on the icon .**
2. **In the opened window, select the configuration file with ".TRD" extension to be used and click *Open*.**

The application window is refreshed with the loaded parameters.

Refer to Figure 5-1, on page 20 for details.


### 9.2.2 Configuring the communication type

This step will enable defining the connection to be used between the PC hosting the *TriadJust2* application and a *Triad2*. Proceed as follows:

1. **In the menu bar, select *Communication > [PC] Configuration* or click on the icon .**
2. **In the opened window, select in the dropdown list, the *Communication type* to be used.**  
Refer to paragraph 11.2, on page 42, for details of options.
3. **Define the communication parameters.**  
For an Ethernet or RS485 connection, the address mentioned must correspond to the *Triad2* on which the information will be sent.  
Refer to chapter 14, on page 55, for details of options.
4. **Click *Scan* to display the *Triad2* present. In the resulting window, double click on the selected *Triad2* to initialize its communication parameters.**  
Refer to paragraph 11.2, on page 42, for details of this command.
5. **Click *Valid/OK* to close the window.**

### 9.2.3 Transferring parameters

Once the communication type and the configuration file are defined according to the previous paragraphs, transfer the parameters from the *TriadJust2* application to a *Triad2* as follows:

1. In the menu bar, select **Equipment > Read** or press on <F4> or click on the icon .
2. A message can be displayed.  
Refer to chapter 10, on page 37, for the interpretation of the messages.
3. After a few seconds, the *Triad2* referred to in step 3 of paragraph 9.2.2 is loaded with the sent parameters.  
Refer to paragraph 5.3, page 19, for details of the display.

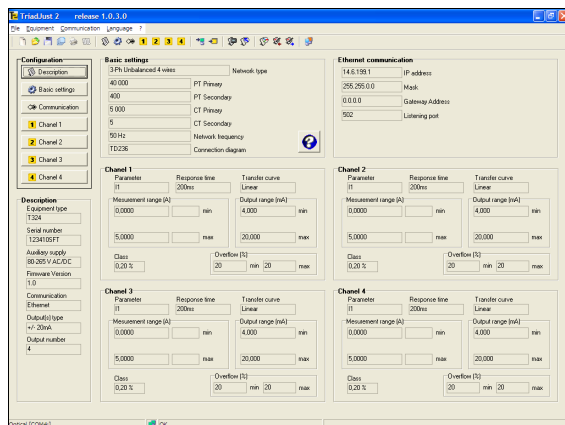


Figure 9-2: example of display.

## 9.3 Reading information

Once the communication is established, it is then possible to view the data read by the *Triad2*.

Use the table below to access the available functions.

Function	Refer §
Viewing the configuration	5.3
Modifying the configuration	11
Transferring the new configuration to the <i>Triad2</i>	9.2.3
Configuring and viewing instantaneous measures	12.1
Configuring and viewing galvanometers	12.2
Displaying the Fresnel diagram	13.1
Displaying inputs	13.2
Displaying outputs	13.3

## 9.4 Quit the application

Proceed as follows:

1. In the menu bar, select **File > Quit** or <CTRL + Q> or click on the icon .

# 10. ERROR MESSAGES

## 10.1 Present configuration not saved

Cause: the current configuration was modified but not saved when closing the application.

Action: validate the new configuration by clicking on the button Yes.

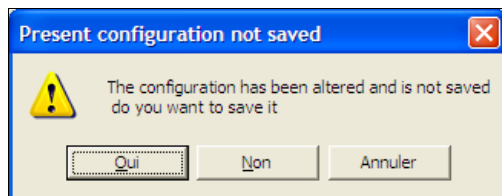


Figure 10-1: present configuration not saved.

## 10.2 Warning

### 10.2.1 While writing mode

Cause: the *TriadJust2* application detected that the configuration of the connected device number does not correspond to the information displayed in the *TriadJust2* application window, when a write to the *Triad2* was requested.

Action: verify that the device being written is identical to the one used for reading.

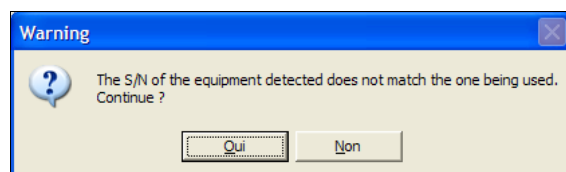


Figure 10-2: "Warning" message during write.

### 10.2.2 While reading mode

Cause: the *TriadJust2* application detected that the configuration of the connected device number does not correspond to the information displayed in the *TriadJust2* application window, when a write to the *Triad2* was requested.

Action: verify that the device being read is identical to that which was displayed in the application window.

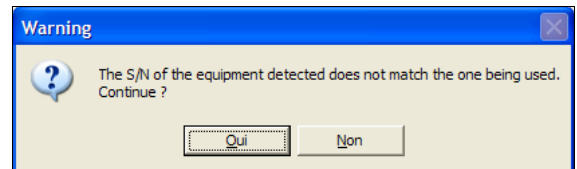


Figure 10-3: "Warning" message during read.

## 10.3 Error

Cause: The *TriadJust2* application detected that the configuration of the connected device number is not compatible with the information displayed in the *TriadJust2* application window, whereas a write to the *Triad2* was requested.

Action: writing in *Triad2* is impossible because of the incompatibility of the equipment configuration.

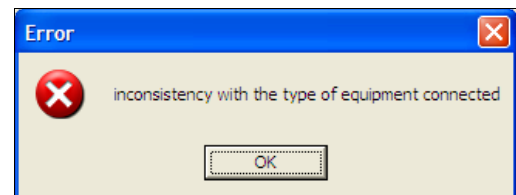


Figure 10-4: "Error" message during write.

## 10.4 Information

Cause: the *TriadJust2* application indicates that the write operation towards the connected *Triad2* was correctly executed.

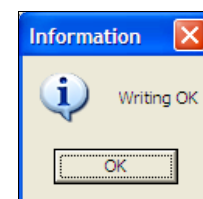


Figure 10-5: "Information" message after write.



# Menus





# 11. CONFIGURATION

The *Configuration* sub menus are accessible by two different ways:

- From the menu bar, by *Product > Configuration*.
- From the left zone of the application (figure below).

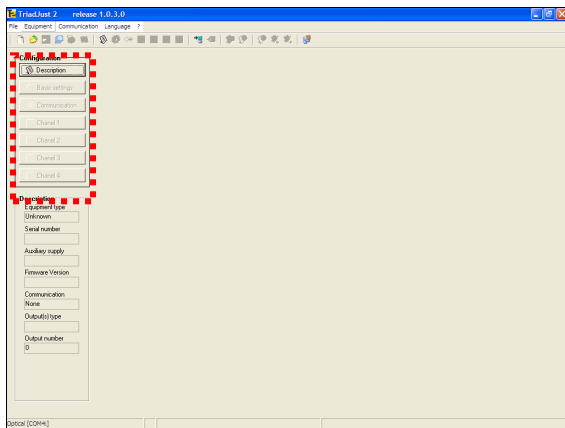


Figure 11-1: location of the Configuration zone.

These sub-menus are:

- **Description** enables the hardware configuration of the *Triad2* to be configured or the display of the characteristics of the *Triad2* read. Refer to paragraph 11.1, on page 41.
- **Basic settings** configure the wiring of the *Triad2* to be configured or the display of the wiring information of the *Triad2* read. Refer to paragraph 11.2, on page 42.
- **Communication** defines the communication parameters of the *Triad2* to be configured or the display of information of the *Triad2* read. Refer to paragraph 11.3, on page 43.
- **Channel x**, which defines the amplitudes of each of the available channels of the *Triad2* to be configured or the display of channels of the *Triad2* read. Refer to paragraph 11.4, on page 44.

## 11.1 Description

This screen defines the hardware configuration of the *Triad2* to be configured or the display of the characteristics of the *Triad2* read. During configuration, the values are entered manually by the user.

On reading, these values are those read on the *Triad2* in communication. These same values are displayed in the left part of the window in the *Description* zone.

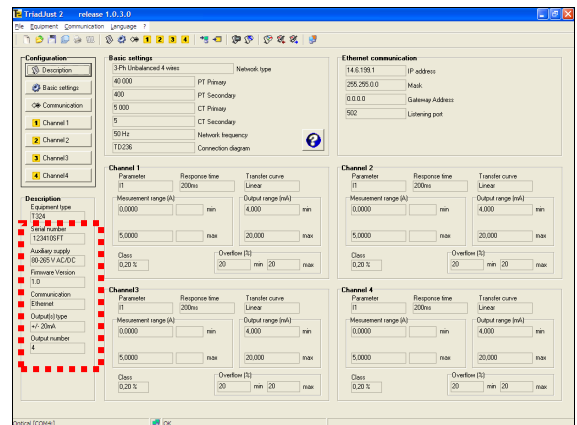


Figure 11-2: location of the Description zone.

The *Description* window is displayed as follows:

The screenshot shows the 'Description' window. It contains the following fields and values:

- Equipment type: T324
- Serial number: 123410SFT
- Auxiliary supply: 80-265 V AC/DC
- Firmware Version: 1.0
- Communication: Ethernet
- Output(s) type: +/- 20mA
- Output number: 4

At the bottom, there are 'Valid' and 'Cancel' buttons.

Figure 11-3: the Description window.

### 11.1.1 Equipment type

Type of model of *Triad2* read by the application or configured by the user. The following is the coding:

Position	Meaning
1 <sup>st</sup>	Letter always T (for <i>Triad</i> ).
2 <sup>nd</sup>	1: <i>Triad</i> – small model. 3: <i>Triad</i> – large model.
3 <sup>rd</sup>	0: optical link. 1: optical and RS485 link. 2: optical and Ethernet link.
4 <sup>th</sup>	Number of channels (0, 1, 2, 3 or 4).

*Example: T324 means a Triad2, large model, optical and Ethernet links, 4 channels.*

### 11.1.2 Serial number

Non-modifiable information read after communication with the *Triad2*, corresponding to the device serial number.

### 11.1.3 Auxiliary supply

Non-modifiable information read after communication with the *Triad2*, corresponding to the device grid supply card type (voltage permissible on the grid supply terminals).

### 11.1.4 Firmware version

Non-modifiable information read after communication with the *Triad2*, corresponding to the version number of the electronic card of the *Triad2*.

### 11.1.5 Communication

Non-modifiable information read after communication with the *Triad2*, corresponding to the communication card type of the *Triad2*.

### 11.1.6 Output(s) type

Output type of the model of *Triad2* read by the application or configured by the user. Corresponds to the voltage or current type outputs.

### 11.1.7 Output number

Non-modifiable information read after communication with the *Triad2*.

## 11.2 Basic settings

This screen configures the cabling of the *Triad2* to be configured or the display of the cabling information of the read *Triad2*.

During configuration, the values are entered manually by the user.

During the read operation, these values are those read on the *Triad2* in communication. These values are

displayed in the upper part of the window, in the *Metrology* zone.

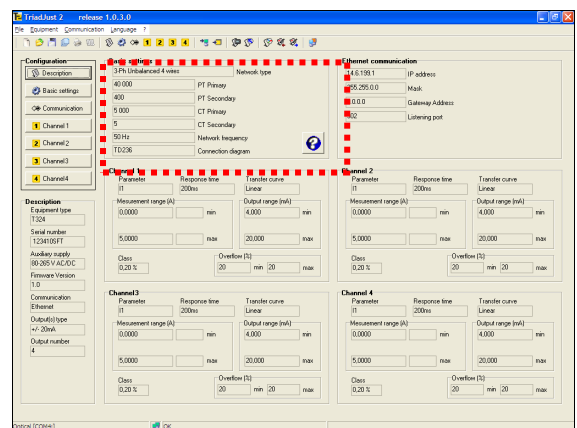


Figure 11-4: location of Basic settings zone.

The *Basic settings* window is displayed as follows:

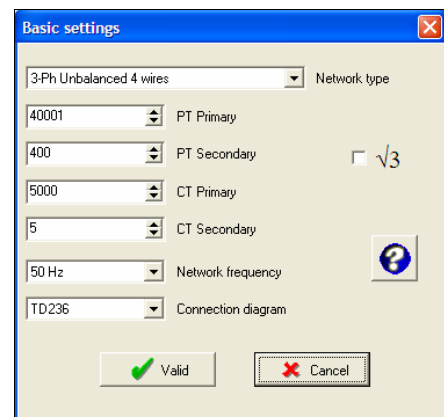



Figure 11-5: the Basic settings window.

### 11.2.1 Network type



Click on the icon  to display the corresponding cabling diagram.

Defines or displays the network cabling type of the *Triad2*.

### 11.2.2 PT primary

Defines or displays the maximum operating voltage indicated on the primary of the voltage transformer. The primary value (phase to phase voltage) of the PT transformer can be defined between 100 V and 650 000 V. The primary of the PT can be adjusted by 1 V steps and its default value is 100 V.

### 11.2.3 PT secondary

Defines or displays the maximum operating voltage indicated on the secondary of the voltage transformer. The secondary value (phase to phase voltage) of the PT transformer can be defined between 100 V and 480 V. The secondary of the PT can be adjusted by 1 V steps and its default value is 100 V.

## 11.2.4 CT primary

Defines or displays the maximum working current indicated on the primary of the current transformer. The value of the primary of the CT transformer is between 1 A and 25,000 A. The primary CT can be adjusted by 1 A steps and its default value is 100 A.


## 11.2.5 CT secondary

Defines or displays the maximum working current indicated on the secondary of the current transformer. The value of the secondary of the CT transformer is between 1 A and 10 A. The secondary CT can be adjusted by 1 A steps and its default value is 5 A.

## 11.2.6 Network frequency

Defines or displays the fundamental network frequency (5, 60 or 400 Hz).

## 11.2.7 Connection diagram

Defines or displays the connection type which will be used on the device. The connection diagram is displayed by clicking on the icon . Click on the diagram to close the diagram.

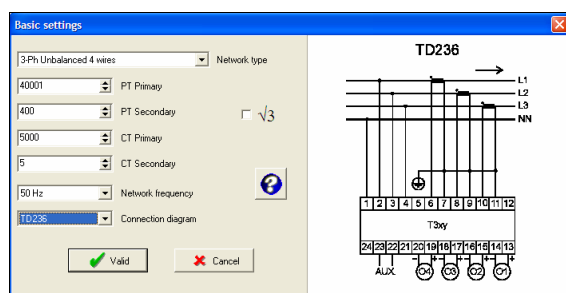


Figure 11-6 : example of display of the connection diagram.

## 11.2.8 Root of 3 ( $\sqrt{3}$ )

When this box is checked, it calls up the indication of a connection on a star-connected voltage transformer.

# 11.3 Communication

This screen defines the communication parameters of the *Triad2* to be configured or displays the information of the *Triad2* read.

During the configuration, the values are entered manually by the user.

During the read operation, these values are those read on the *Triad2* in communication. These same values are displayed in the upper part of the window, in the *Ethernet Communication* zone when the *Triad2* has an Ethernet card.

The parameters in Ethernet or RS485 format are displayed automatically depending on the type of device selected; See paragraph 11.1.1.

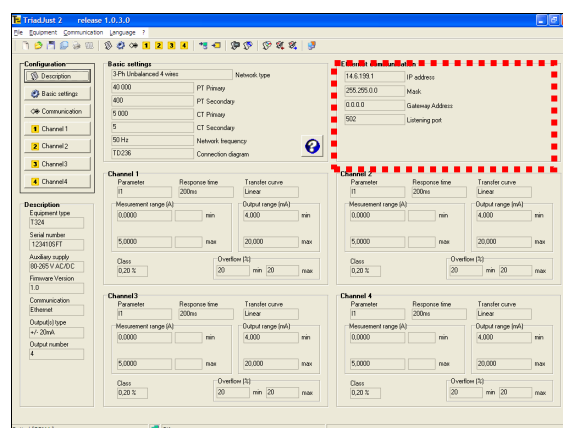


Figure 11-7 : location of the Communication zone.

## 11.3.1 Ethernet Communication

The *Ethernet Communication* is displayed as follows:

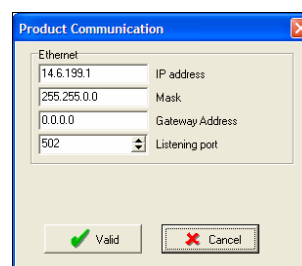


Figure 11-8: the Product Communication window, in Ethernet version.

The parameters are read or defined as follows:

Parameters	Range of values
IP address	IP address of the <i>Triad2</i> on the Ethernet network. Format 000.000.000.000.
Mask	Part of the IP address corresponding to the part network number and host number.
Gateway address	Format 000.000.000.000
Listening port	Socket number.

## 11.3.2 RS485 communication

The *RS485 Communication* is displayed as follows:

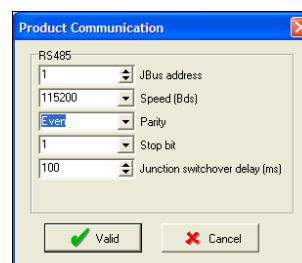


Figure 11-9: the Product Communication window, in RS485 version.

The parameters are read or defined as follows:

Parameters	Range of values
JBUS address	1 to 247
Speed (Bds)	Up to 115200 Bds
Parity	Without, even, odd
Stop bit	1 or 2
Junction switchover delay (ms)	0 to 1 000 ms

## 11.4 Channel 1 to n

This screen defines the channels present (1 to 4 maximum) of the *Triad2* to be configured or displays the information of the *Triad2* read.

During configuration, the number of channels is automatically selected depending on the type of device selected; See paragraph 11.1.1.

During the read operation, these values are those read on the *Triad2* in communication. These same values are displayed in the lower part of the window, in the *Channel 1 to Channel 4* depending on the type of *Triad2* connected.

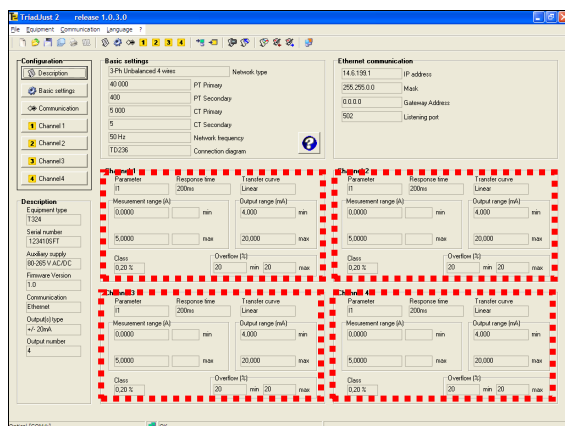


Figure 11-10: location of the Channel 1 to Channel 4 zones.

The data to be configured or read are the following.

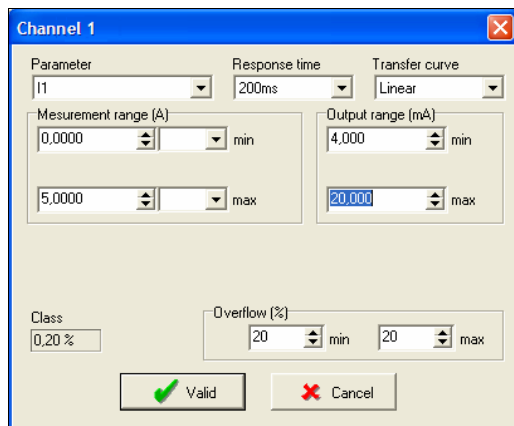


Figure 11-11: configuration of channel 1.

### 11.4.1 Parameter

Select, in the dropdown list box, the amplitude to be assigned on the selected channel from among the proposed amplitudes, according to the selected connection diagram.

### 11.4.2 Response time

Select, in the dropdown list box, the response time. This determines the integration period. The higher this duration, the better will be the precision of the measurement (see paragraph 11.4.6).

### 11.4.3 Transfer curve

Select, in the dropdown list box, the transfer function to be used during the conversion of the input measurement to the analog output (voltage or current).

#### 11.4.3.1 Linear

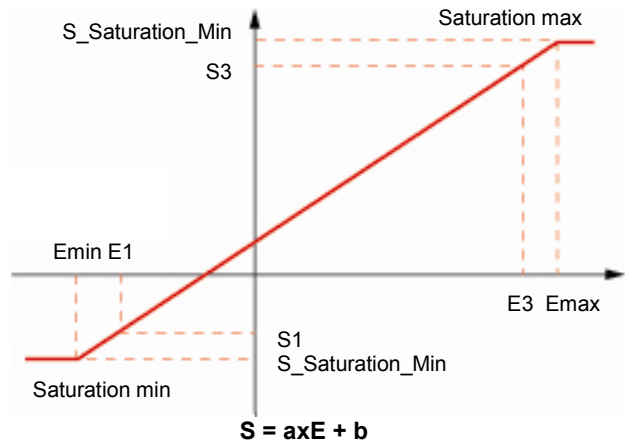


Figure 11-12: transfer curve in linear mode (single slope).

#### 11.4.3.2 Dual slope

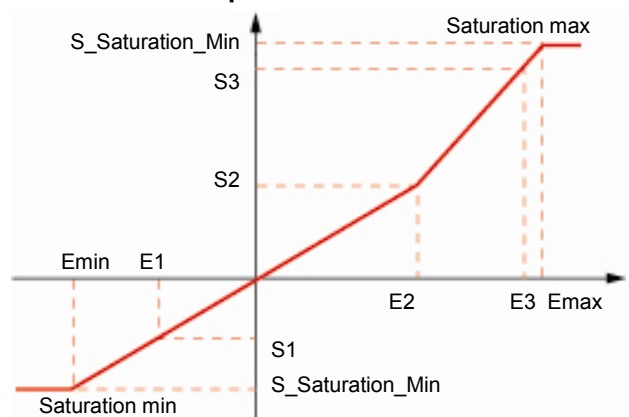


Figure 11-13: transfer equation in dual slope mode.

For slope 1:  $S = a_1xE + b_1$

For slope 2:  $S = a_2xE + b_2$

### 11.4.3.3 Quadratic

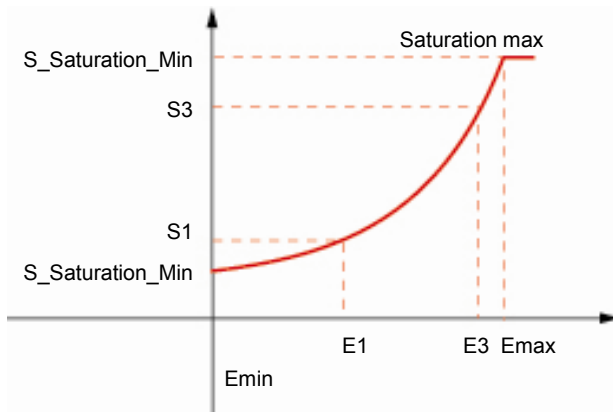


Figure 11-14: transfer curve in quadratic mode.

For slope 1 :  $S = axE^2 + b1$

### 11.4.4 Measurement range

The displayed unit depends on the selected amplitude of measurement (See paragraph 11.4.1). Defines the measurement range between the minimum and maximum values which are based on the selected amplitude and the configuration of the CT and PT.

### 11.4.5 Output range (mA or V)

Define the range of output values of the *Triad2* in mA according to specific needs. The range 4-20 mA is generally used. Wider this range, better the precision of measurement (See paragraph 11.4.6).

### 11.4.6 Class

This value is calculated by the *TriadJust2* application. It depends on the choice of the following parameters:

- Response time (§ 11.4.2).
- Range of output measurement (§ 11.4.5).

The more the value of class calculated is low (minimum error), the better is the precision of the output.

### 11.4.7 Overflow (%)

Defined, in percent, the range of permitted overflow for the minimum and maximum output values (refer § 11.4.4).

This function is generally used for certain types of galvanometers fed on a current range less than 4 mA. For the values higher than 20 mA, an overflow allowance enables an overflow to be indicated on a galvanometer.



Example, for a measurement range set between 4-20 mA in paragraph 11.4.4, an overflow in % of:

- 0% on 4 mA will limit the output to 4 mA at the minimum;
- 20% on 20 mA will limit the output to 24 mA at the maximum.



# 12. VIEWING

The sub-menus of *Viewing* are accessible in two different ways:

- From the menu bar, by *Equipment > Viewing*.
- From the toolbar, by clicking on one of the icons  or .

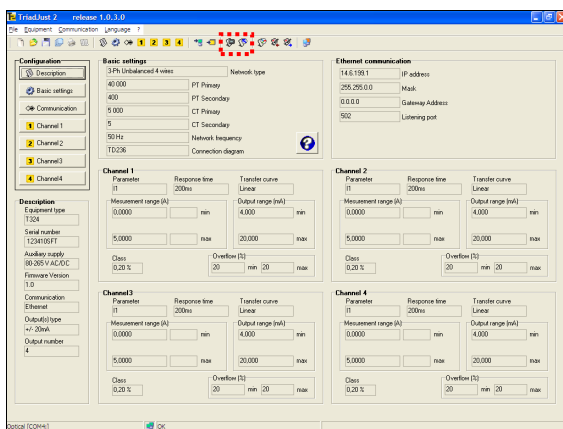


Figure 12-1: location of the Viewing icons.


These sub-menus are:

- **Instantaneous values** displays permanently, in tabular form, the information read on the *Triad2*, with or without recording. Refer to paragraph 12.1.
- **Analog meter** displays permanently, in the form of galvanometers defined by the user, the information read on the *Triad2*. Refer to paragraph 12.2.

## 12.1 Instantaneous values

This screen displays permanently, in tabular form, the instantaneous measurements read on the *Triad2*, with or without recording.

To access this display:

- From the menu bar, select *Equipment > Viewing > Instantaneous values*.
- Or, from the toolbar by clicking on the icon .

Parameter	Value	Unit/Quadrant
U1N	23,831	kV
U2N	23,811	kV
U3N	23,839	kV
U12	0,00	V
U23	0,00	V
U31	0,00	V
I1	70,7507	A
I2	71,0039	A
I3	71,2313	A
P1	696,301	kW
P2	700,527	kW
P3	703,176	kW

Figure 12-2: example of display of *instantaneous measurements*.

### 12.1.1 Normal display/High resolution display

This dropdown list defines the precision of display of measurements as follows:

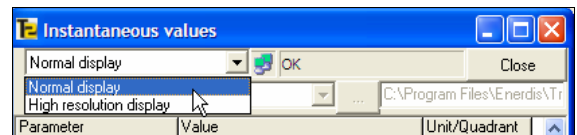


Figure 12-3: the Normal display / High resolution display selection.

- **Normal display:** the measurement coefficients (K, M, G) are automatically managed.

Parameter	Value	Unit/Quadrant
U1N	23,831	kV
U2N	23,811	kV
U3N	23,839	kV
U12	0,00	V
U23	0,00	V
U31	0,00	V
I1	70,7507	A
I2	71,0039	A
I3	71,2313	A
P1	696,301	kW
P2	700,527	kW
P3	703,176	kW

Figure 12-4: example of normal display. The K values are present.

- **High resolution display:** the measurements are displayed in the lowest unit, hence an increased display precision.

Parameter	Value	Unit/Quadrant
U1N	23 729.25	V
U2N	23 709.93	V
U3N	23 737.35	V
U12	0.00	V
U23	0.00	V
U31	0.00	V
I1	70.2131	A
I2	70.4977	A
I3	70.7569	A
P1	694 911	W
P2	699 653	W
P3	703 135	W

Figure 12-5: example of high resolution display. The K values are absent.

## 12.1.2 Recording of measurements

Proceed as follows to record the measurements displayed in the table (Figure 12-2) in a special *log* file.



### 12.1.2.1 Configuring of recording mode

1. Click on the button .

Parameter	Value	Unit/Quadrant
U1N	23.831	kV
U2N	23.811	kV
U3N	23.839	kV
U12	0.00	V
U23	0.00	V
U31	0.00	V
I1	70.7507	A
I2	71.0039	A
I3	71.2313	A
P1	696.301	kW
P2	700.527	kW
P3	703.176	kW

Figure 12-6: location of functions and buttons used for recording measurements.

2. In the dropdown list box **Recording stopped**, select the file recording format.

The  button changes to grey and the button  changes to green.

The displayed measurements can be recorded as they flow in one of the following formats:




- **TXT:** text format.
- **CSV:** format readable by any application reading this type of format; the data items are separated by comma. .
- **ASC:** ASCII format.
- **XLS:** format readable only by an application compatible with Microsoft Excel.

3. Click on the button  and select the destination directory for the logs.

By default, the log files are stored in the directory  
C:\Program files\ Enerdis\ TriadJus2\ Log.













### 12.1.2.2 Managing the recording

#### View without recording

Step	Button state	Click on	Result
0.			The dropdown list box displays <i>Recording stopped</i> .
1.			Refreshing, every second, the amplitudes without recording.
2.			
3.			Stopping the refresh of amplitudes.
4.			Return to 1.

#### Viewing and recording

Note: *Inactive recording* must be selected.


Step	Button state	Click on	Result
1.			Refreshing, every second, the amplitudes without recording.
2.			Refreshing, every second, the amplitudes without recording.
3.			
4.			Stopping the refresh of amplitudes.
5.		Dropdown list box	Select <i>Recording with xxx format</i> .
6.			Awaiting the start of recording
7.			
8.			Recording of amplitudes started
9.			Pause the recording.
10.			Awaiting restart of recording
11.			
12.			Restart of the recording.
13.		Dropdown list box	Select <i>Recording stopped</i> .
14.			Stopping the recording and refreshing of amplitudes.
15.			Resume at step 1.



## 12.2 Analog meter

This screen displays permanently, in the form of a maximum of 8 galvanometers, the instantaneous measurements read on the *Triad2*, with or without recording.

To access this display:

- From the menu bar, select *Equipment > Viewing > Analog meter*.
- Or, from the toolbar by clicking on the icon .

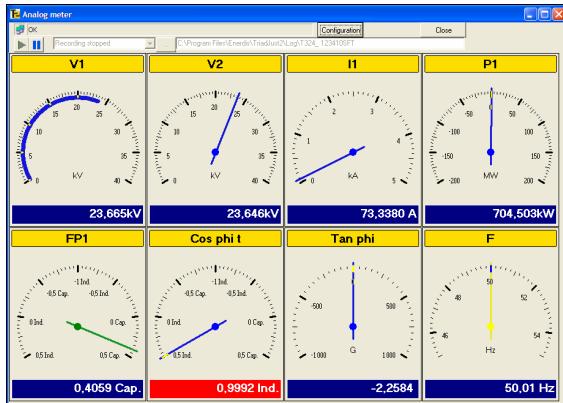



Figure 12-7: example of display of instantaneous values in the form of galvanometers.

### 12.2.1 Configuring a galvanometer

1. In the menu bar, select *Equipment > Viewing > Analog meter* or click on the icon  in the toolbar.

If no galvanometer has been defined yet, the *Analog display configuration* window is displayed.

If one or more galvanometers have already been defined, the *Analog meter* window is displayed. Click on the *Configuration* button to display the *Analog display configuration* window.

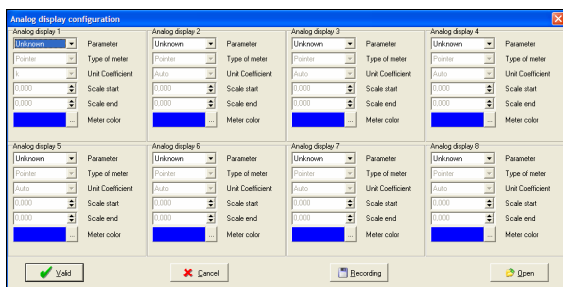


Figure 12-8: the galvanometers configuration window.

2. To configure one of the galvanometers, click on the corresponding dropdown list boxes.

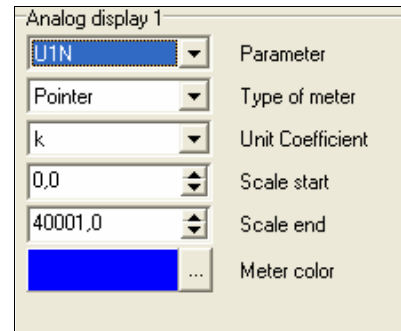


Figure 12-9: the configuration zone of a galvanometer.

- **Parameter:** select the amplitude (U, I, etc.) to be displayed, depending on the connection diagram read in the device.
- **Type of meter:** select the type of graphics of the pointer (*Gauge* or *Pointer*).

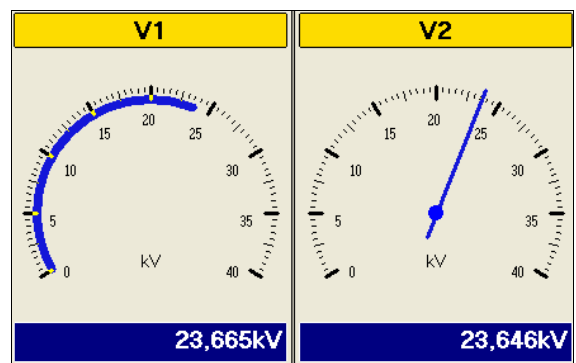


Figure 12-10: indicator with display in the form of gauge (left) and pointer (right).

- **Unit coefficient:** selects the unit of measurement.
  - None: the measurement is displayed without measurement coefficient, that is, in the lowest unit (no use of multiplier k, M or G).
  - K, M, G: the measurement is displayed with the multiplier k, M or G.
  - Auto: the application determines the multiplier (k, M or G) to be used depending on the measurement value.

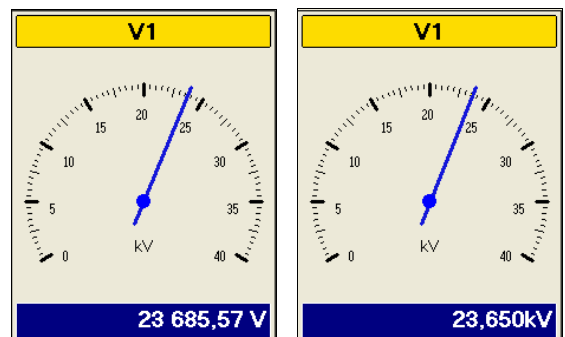


Figure 12-11: the numeric value indicated in the bottom part of the galvanometer depends on the option "Coefficient unit". "None" was used (left) and "K" (right).

- **Scale start:** defines the lowest value of the display unit's dial.

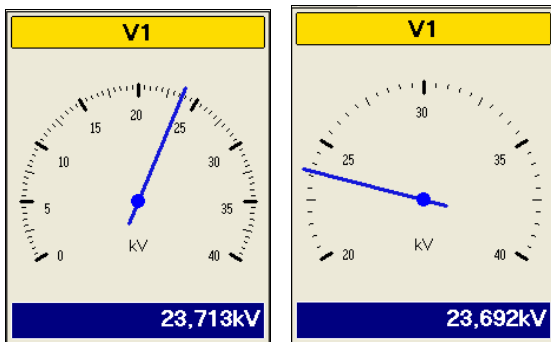



Figure 12-12: dial with a scale start value of "0" (left) and "20000" (right).

- **Scale end:** defines the highest value of the display unit's dial.
  - **Meter colour:** defines the colour of the pointer and the lower coloured range.
3. If necessary, click on **Recording** to save the configuration in a special file, by default in the directory C:\Program files \ Enerdis \ TriadJust2.
  4. Validate to display the measurements on the configured galvanometers.

## 12.2.2 Retrieving the configuration of a galvanometer

If a configuration file was previously saved (paragraph 12.2.1, step 3), it is then possible to retrieve it, so as to display the galvanometers without a new configuration. Proceed as follows:




1. In the menu bar, select **Equipment > Viewing > Analog meter** or click on the icon  in the toolbar.
2. Click successively the **Configuration** and **Open** buttons.
3. In the **Open** window displayed, select the galvanometers configuration file and click the button **Open**.  
The parameters are loaded in the window *Configuration of galvanometers*.
4. Click the **OK** button.  
The galvanometers are displayed in accordance with the parameters.

## 12.2.3 Recording of measurements

It is possible to record the measurements displayed by the galvanometers (Figure 12-7) in a specific *log* file. To do this, use the procedure described in paragraph 12.1.2, on page 48.

# 13. DIAGNOSIS

Sub-menus of *Diagnostic* are accessible in two different ways:

- From the menu bar, by *Equipment > Diagnosis*.
- From the toolbar, by clicking on one of the icons  or  or .

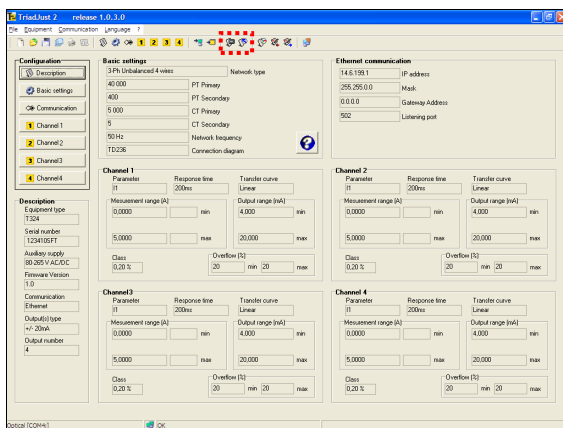


Figure 13-1: location of diagnostics icon.

These sub-menus are:

- **Phasors** display, in the form of Fresnel diagrams, the Fresnel values read on the *Triad2*. Refer to paragraph 13.1 on page 51.
- **Product input** displays the functioning (correct or incorrect) of all the input amplitudes of the connected *Triad2*. Refer to paragraph 13.2., on page 52.
- **Product output** displays all the output values of the connected *Triad2*. Refer to paragraph 13.3, on page 52.

## 13.1 Phasors

This screen shows all the Fresnel values as follows.

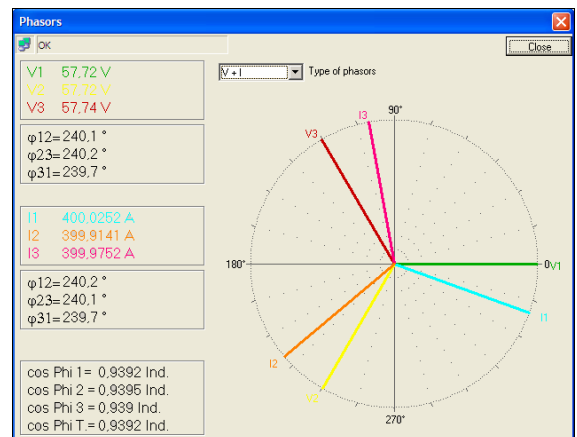



Figure 13-2: example of a Fresnel diagram.

To access this display:

- From the menu bar, by *Equipment > Diagnosis > Phasors*.
- Or, from the toolbar by clicking on the icon .

### Ref Indication

1. Instantaneous values (V, U, I, etc.).
2. Selecting the type of Fresnel graph to be displayed.
3. Fresnel graph from instantaneous values.

#### 13.1.1 Instantaneous values (ref. 1)

The number of measures displayed depends on the selection in the dropdown list (ref. 2).

The text colour, and hence the corresponding bars in the Fresnel graph, can be redefined by double-clicking on a coloured line.

#### 13.1.2 Type of phasors (ref. 2)

This dropdown list is for selecting the type of Fresnel graph to be displayed as follows:

- **V**: displays phase to ground voltages, with V1 for reference (0°).
- **U**: displays phase to phase voltages, with U12 for reference (0°).

- **I**: displays neutral currents, with I1 for reference (0°).
- **V + I**: displays phase to ground voltages and neutral currents, with V1 for reference (0°).
- **I + V**: displays neutral currents and phase to ground voltages, with I1 for reference (0°).
- **U + I**: displays phase to phase voltages and neutral currents, with V1 for reference (0°).
- **I + U**: displays line currents and phase to ground voltages, with I1 for reference (0°).

### 13.1.3 Fresnel graph (ref. 3)

The Fresnel graph is displayed with the instantaneous values and the defined colours (ref. 1) and the measurements selected from the dropdown list (ref. 2)

The phase shift values are more accurately read in the instantaneous values zone (ref. 1).

## 13.2 Product input

This screen displays the functioning (correct or incorrect) of the amplitudes of voltage, current and order of phases of the connected *Triad2* as follows.

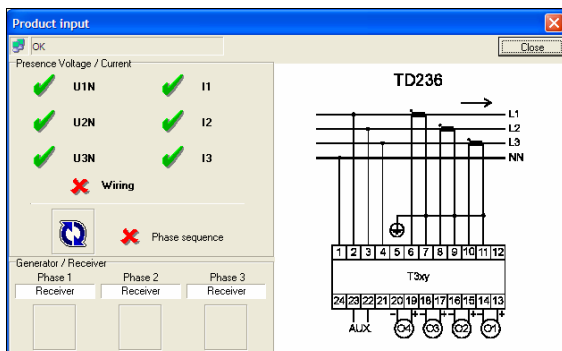



Figure 13-3: example of a product input window.

To access this display:

- From the menu bar, by *Equipment > Diagnosis > Product input*.
- Or, from the toolbar by clicking on the icon .

### 13.2.1 Presence voltage / Current

A green tick indicates only the presence of voltages or currents on the terminals of the connected device.



Indicates the presence of voltages or currents on the terminals of the *Triad2*.



Indicates the absence of voltages or currents on the terminals of the *Triad2*.

**Wiring** Wiring status:



: indicates a correct wiring.



: indicates an incorrect wiring.



Order of phases:



: indicates a correct order of phases.



: indicates an incorrect order of phases (connection order not followed).

### 13.2.2 Generator / Receiver

The phases are monitored individually. The indication "Generator" indicates that the phase works in generator mode. With indication, "Receiver" the phase works normally in receiver mode.

For example, if all the currents are reversed, there is no phase order error, but the equipment works as generator.

### 13.2.3 Wiring

The displayed diagram is automatically displayed from the *Triad2* model selected in the description (paragraph 11.2, on page 42).

## 13.3 Product output

This screen displays all the output values of the connected *Triad2*, for the available channels, as follows.

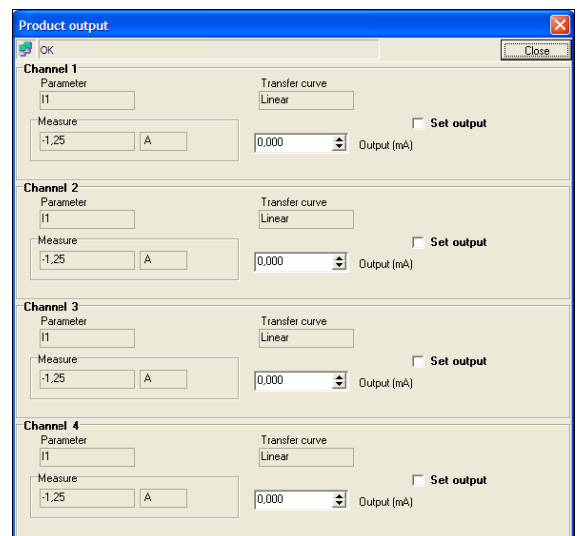



Figure 13-4: example of a product output window.

To access this display:

- From the menu bar, by *Equipment > Diagnosis > Product output*.
- Or, from the toolbar by clicking on the icon .

### 13.3.1 Parameter

Amplitude used on the corresponding channel of the connected *Triad2*. This option was defined by the user in the configuration; see 11.4.1, on page 44.

### 13.3.2 Transfer curve

Transfer function used during the conversion of the input measure to the current output of the corresponding channel of the connected *Triad2*. This option was defined by the user in the configuration; see 11.4.3, on page 44.

### 13.3.3 Measure

Current value, non-modifiable by the user, of the input measure of the corresponding channel of the connected *Triad2*.

### 13.3.4 Output

Value of the voltage or current generated by the connected *Triad2*.



This output value is set and sent on the output of the *Triad2* when once the checkbox *Set output* is activated. This prevents the sending of an intermediate value between the actual output value and the set value.

### 13.3.5 Set output

When the checkbox *Set output* is:

- Unchecked: the output value is the one from the current output of the connected *Triad2*.
- Checked: select, in the *Output* zone, the output value (from -20 to +20 mA) to be generated as output of the connected *Triad2*, and also to set the analog output to the indicated value.



By leaving *Product output* page, *Triad2* returns on normal functioning mode




# 14. [PC] CONFIGURATION

This chapter explains in detail the procedure for making a connection between the PC supporting the *TriadJust2* application and a *Triad2*.



The *Triad2* can be connected to the PC through an optical head, a RS232 link or an Ethernet connection; follow the corresponding paragraph.

## 14.1 Operation procedure

1. Launch the *TriadJust2* application.
2. In the menu bar select **Communication > [PC] Configuration** or click on the icon .

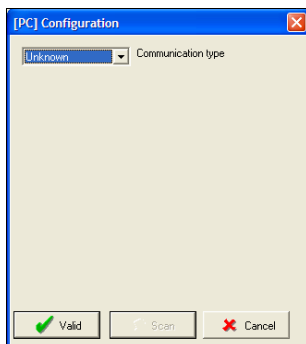


Figure 14-1: the window when called.

3. Select the communication type (Ethernet, RS485, Optical).

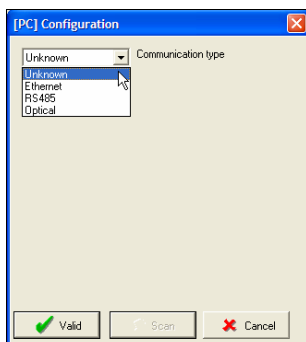


Figure 14-2: selection of the communication type.

4. Configure the channel according to the communication type.

### Ethernet Port

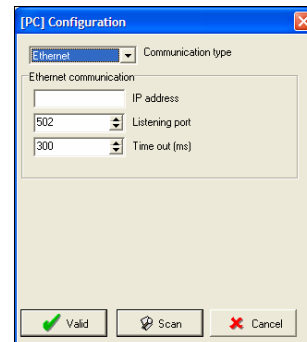


Figure 14-3: parameters for an Ethernet communication.

Parameters	Range of values
IP address	Format 000.000.000.000
Listening port	502 by default
Time out	0 to 2 000 ms



**Listening port:** socket number.

**Time out:** time interval in milliseconds after which the communication is stopped without activity on the port. With the value 0, the device is continuously listening on the serial network.

### RS485 Port

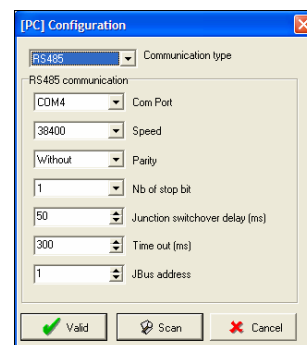


Figure 14-4: parameters for an RS485 communication.

Parameters	Range of values
COM port :	COM1 to x
Speed	Up to 115200 Bds, in 6 predefined values (JBUS speed)
Parity	Without, even, odd

Nbr of stop bit	1 or 2
Junction switchover time	0 to 1000 ms
Time out	0 to 2 000 ms
JBus address	1 to 247



**Switchover time:** minimum time interval that the master requires before restarting to listen on the communication channel. This time is added to the *time-out*.

**Time out:** time interval in milliseconds after which the communication is stopped without activity on the port. With the value 0, the device is continuously listening on the serial network.

## Optical

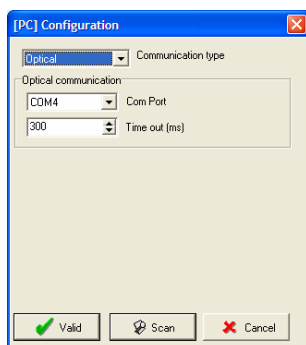


Figure 14-5: parameters for an optical communication.

Parameters	Range of values
COM port:	COM1 to x.
Time out	0 to 2 000 ms



**Time out:** time interval in milliseconds after which the communication is stopped without activity on the port. With the value 0, the device is continuously listening on the serial network.

- Clicking **Scan** detects all the *Triad2* present on the line corresponding to this communication type.



In the case of an optical head, a single *Triad2* will be detected.

- The resulting window displays the detected *Triad2*.

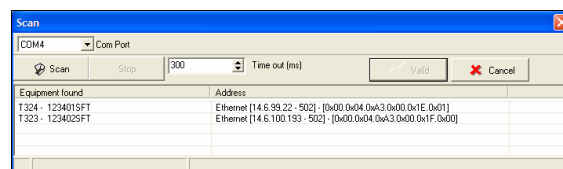


Figure 14-6: parameters for an optical communication.

- Double click on the selected *Triad2* to initialise its communication parameters.

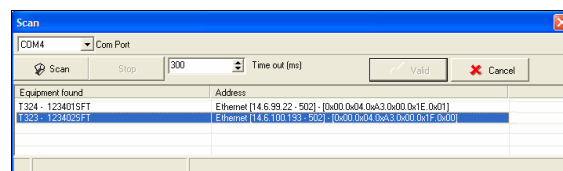


Figure 14-7: parameters for an optical communication.

- Click **OK** to confirm the configuration and close the windows.



# Appendix



# 15. INDEX

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