Tde Macno

OPD Explorer Manual

Cod. MU00101E00 V_1.2

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1 INTRODUCTION

OPD Explorer is a software program that can be used to configure and operate the OPD Exp series drives.

The main functions of OPD Explorer (from here onwards called “Explorer”) are:

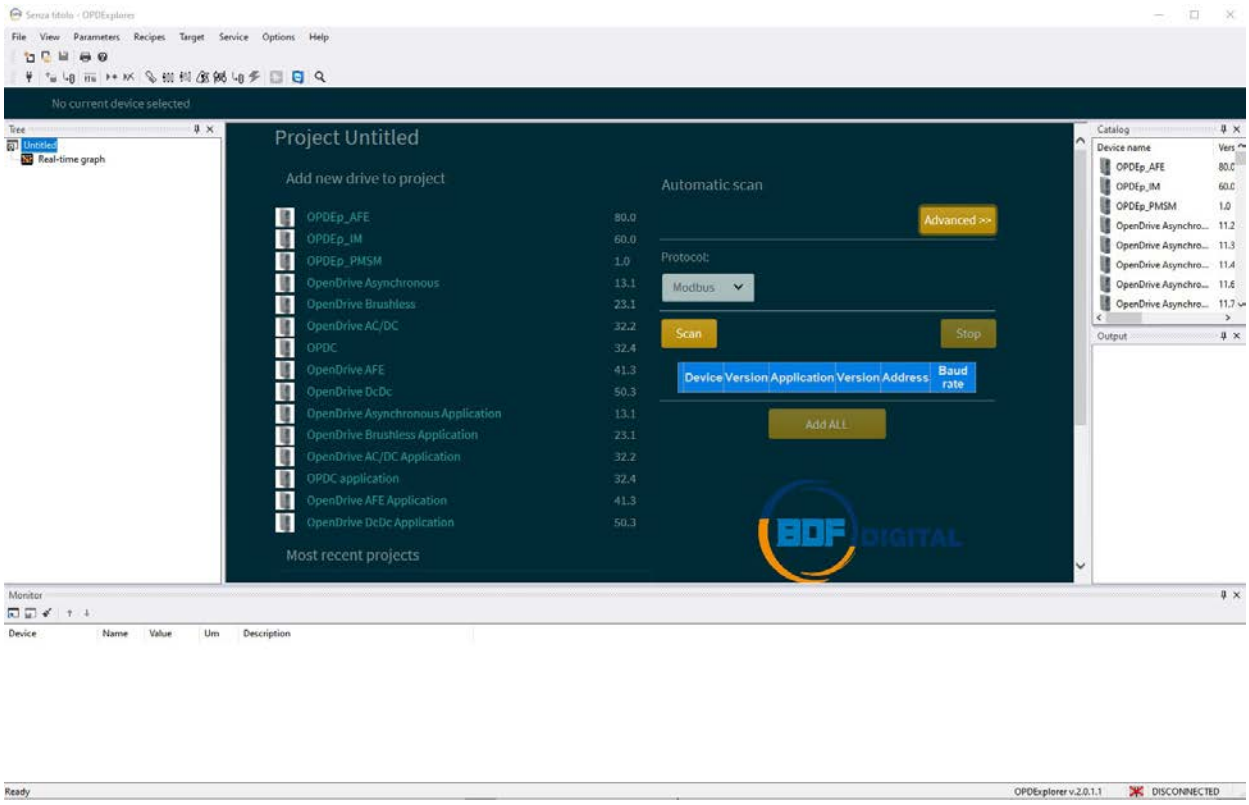
- Serial communication with the device
- Drive parameter reading and writing
- Device state check
- Recipe saving and loading for specific applications.

1.1 PC REQUIREMENTS

- Processor: Pentium or above
- Adapter for RS232/RS485 and/or CANOPEN communication
- Operating system: Windows 7 or above

1.2 WORK AREA PRESENTATION

Once the program has been installed and started, the work area appears initially as shown below:

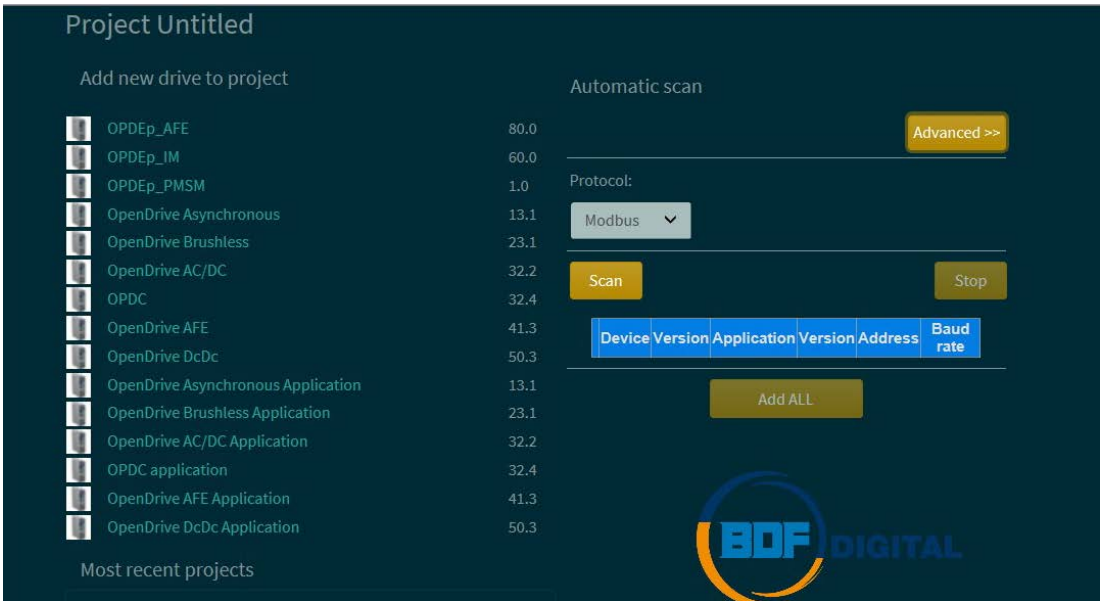


The main parts present are:

- The drop down menu

- The tool bar

- The project area



2 OPERATION DESCRIPTION

2.1 WORK SESSION

After having carried out the necessary electric connections and started the program, the user can start a work session by:

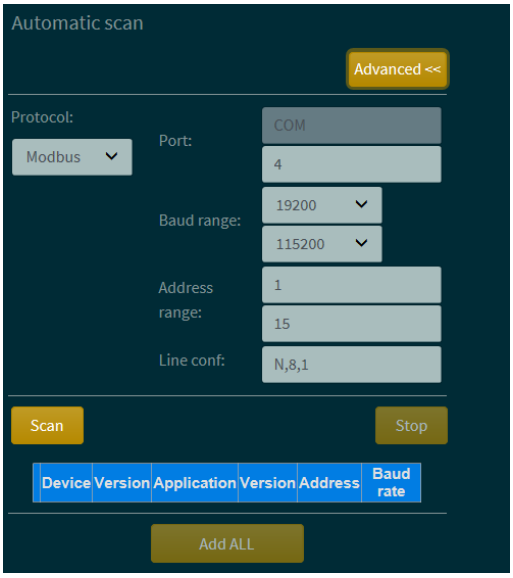
- Creating a new project
- Opening an already existing one

2.1.1 CREATING A NEW PROJECT

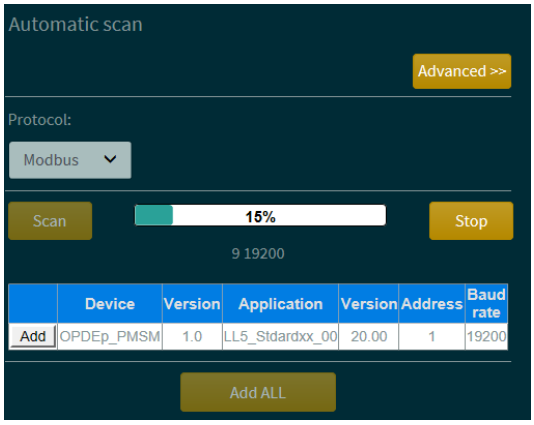
A new program can be created in two different ways:

1. By configurating the serial communication parameters and launching automatic scanning
2. By selecting the drive type to be checked and then establishing connection with the drive.

With the first option, all the serial communication data must be set after having pressed the “Advanced” key in the “Automatic scan” window.



At this point press the “Start scan” key and a search will begin for all the connected drives that correspond to the data that was inserted.



If the drive you are interested in appears among those identified, pressing the “Select” key opens the project relative to that drive.

With the second option, when the “Add new drive to project” window appears the user must select the type of motor that is to be controlled and if the application is standard or specific.

At this point a new project will open and (after being suitably configured) connection must be made with the drive using the specific key in the tool bar .

2.1.2 OPENING A NEW PROJECT

A previously saved project can be opened using the “Open” command in the “File” menu, represented on the tool bar by the icon. Alternatively, the project can be selected from the recently opened projects listed in the “Most recent project” window, but only if it is listed. Saved projects have a .TCN extension.

3 PROJECT

3.1 PARAMETERS

All the parameters needed for configuring the drive are organised in the “Tree” window (as a list or inside folders to make drive configuration easier) and they can be seen on the central display.
Each parameter is defined by the following fields:

- Name: indicates the mnemonic name used to identify the parameter
- Value: the actual parameter value
- Um: unit of measurement
- Default: contains the default value
- Min: corresponds to the minimum value
- Max: corresponds to the maximum value
- Description: contains a brief description of the parameter

Note: the “name” field can change according to the parameter state or characteristics. In particular:

Black: the parameter can be modified freely
Grey: a read only parameter that cannot be modified
Blue: reserved parameter, can only be modified after having unlocked the key that corresponds to the RES_PAR_KEY parameter (P60 – Access key to reserved parameters) or TDE_PAR_KEY (P99 – Access key to TDE parameters) while the drive is not working.
Purple: TDE reserved parameter, can only be modified after having unlocked the key that corresponds to the TDE_PAR_KEY parameter (P99 – Access key to TDE parameters) while the drive is not working

3.1.1 MODIFYING PARAMETERS

The parameter can be modified if it is not read only, or if it is reserved and the key is unlocked.
To modify the value just click in the “Value” column and insert the new datum. A multiple choice menu can, however, be displayed from which to select the required option.

The value is coloured red if the datum is not current with the drive datum.

3.1.2 EXPORTATION AND COMPARING PARAMETERS

All the project parameters can be exported in TXT format by selecting the “Export to text file” command, which can be found in the “Parameters” drop down menu.
The “Compare parameters” command is also present in the same menu, and it can be used to compare the parameters present in the project opened by OPD Explorer with the actual drive parameters, saving the information in a .TXT file

3.1.3 SEARCHING FOR A PARAMETER

All the parameters are present in the list that is generated in the “All parameters” folder, and they can be listed in increasing or decreasing order according to which descriptive fields is selected.
After having identified the required parameter in the “All parameters” folder, the user can be taken to the specific folder that contains the parameter by clicking the right-hand button and selecting “Open parameter menu”.

3.2 READ AND WRITE COMMANDS

Once the connection between Explorer and the drive has been established, it is possible to write the updated parameter values and read the parameters contained in the drive.

Data can be read and written using the following keys, which are present on the toolbar:

Key	Name	Description
	Toggle Auto refresh mode	If active, makes it possible to cyclically update all the parameters of the active page
	Refresh page	Each time it is pressed, this key updates the parameters of the page being used
	Select all parameters	Selects all the parameters of the page being used
	Read parameter	Updates the selected parameters that have been downloaded into the drive
	Write parameter	Writes the selected drive parameters
	Read all	Reads all the drive parameters, independently from the active page
	Write all	Writes all the drive parameters, independently from the page being used

3.3 SAVING THE PROJECT

The realised projects can be saved or updated in TCN format using the “Save” and “Save as” commands.

3.4 RECIPES

A recipe is a selection of parameters that are personalised by the user.
The list of recipes that are present is shown in the “Tree” window.

3.4.1 CREATING A NEW RECIPE

To create a new recipe just click with the right-hand button on the “Recipes” icon and select “Add recipe” or, alternatively, click on the “Recipes” key in the drop down menu and select “Add recipe”.

Once created, the required parameters can be selected with the mouse and dragged into the folder of the new recipe using drag&drop. If multiple parameters were selected, they will be added contemporaneously when they are inserted in the recipe.

3.4.2 IMPORTING A RECIPE

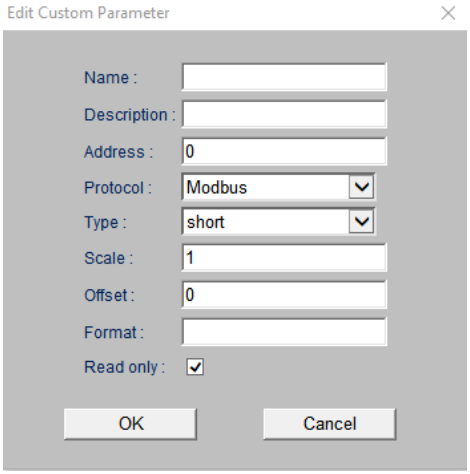
Single recipes can be imported from the “Recipes” menu, or by clicking the right-hand mouse button on the “Recipes” option in the “Tree” menu.
The imported files must have an “RCP” extension and contain the list of recipe parameters with the relative associated values.

3.4.3 EXPORTING A RECIPE

In the same way as importing, the created recipes can be exported using the “Recipes” menu or by clicking the right-hand mouse button on the “Recipes” option of the “Tree” window.

3.4.4 PERSONALISED PARAMETERS

OPD Explorer can be used to create and modify parameters that have been purposely created by the user.
To do this, select the “Add custom parameters” from the “Recipes” drop down menu and insert the data in the relative window.



For further details contact TDE technicians

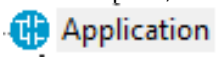
3.5 RUNNING MORE THAN ONE DRIVE IN THE SAME PROJECT

OPD Explorer can run more than one drive contemporaneously in the same project.

From the “Tree” window press the right-hand mouse button when positioned above the icon and select “Add”. The “Device catalog” window opens, where the user can find the motor types to be run, and whether the application is standard or specific.

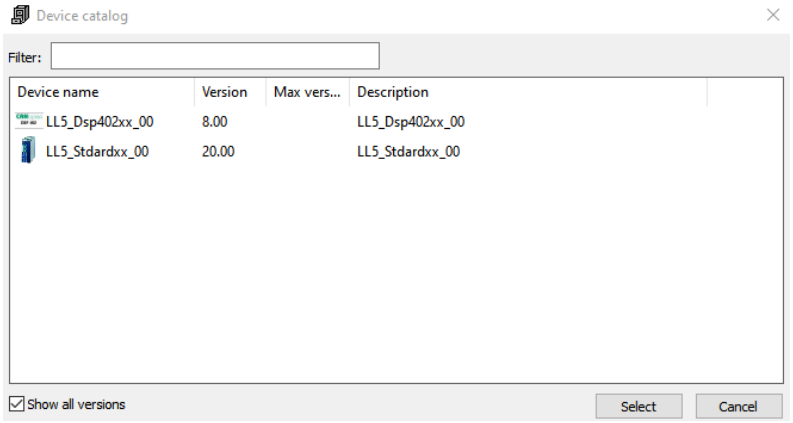
3.6 RUNNING A DRIVE WITH A NON STANDARD APPLICATION

When a drive to be run is added to a project, the type of motor and the requested application must be known. In some cases the standard drive configuration is not suitable for running some special applications correctly (for example rotary cutter, electrical gear, digital phasing…), and in such cases the motor type must be selected from among the “Application” options.

In this manner the relative section regarding the added drive opens; the section differs from the standard application because the “Application” icon 

appears in the “Tree” window.

Pressing the right-hand mouse button on this icon and selecting “Add” makes a window with all the available applications appear (an example is given below.)

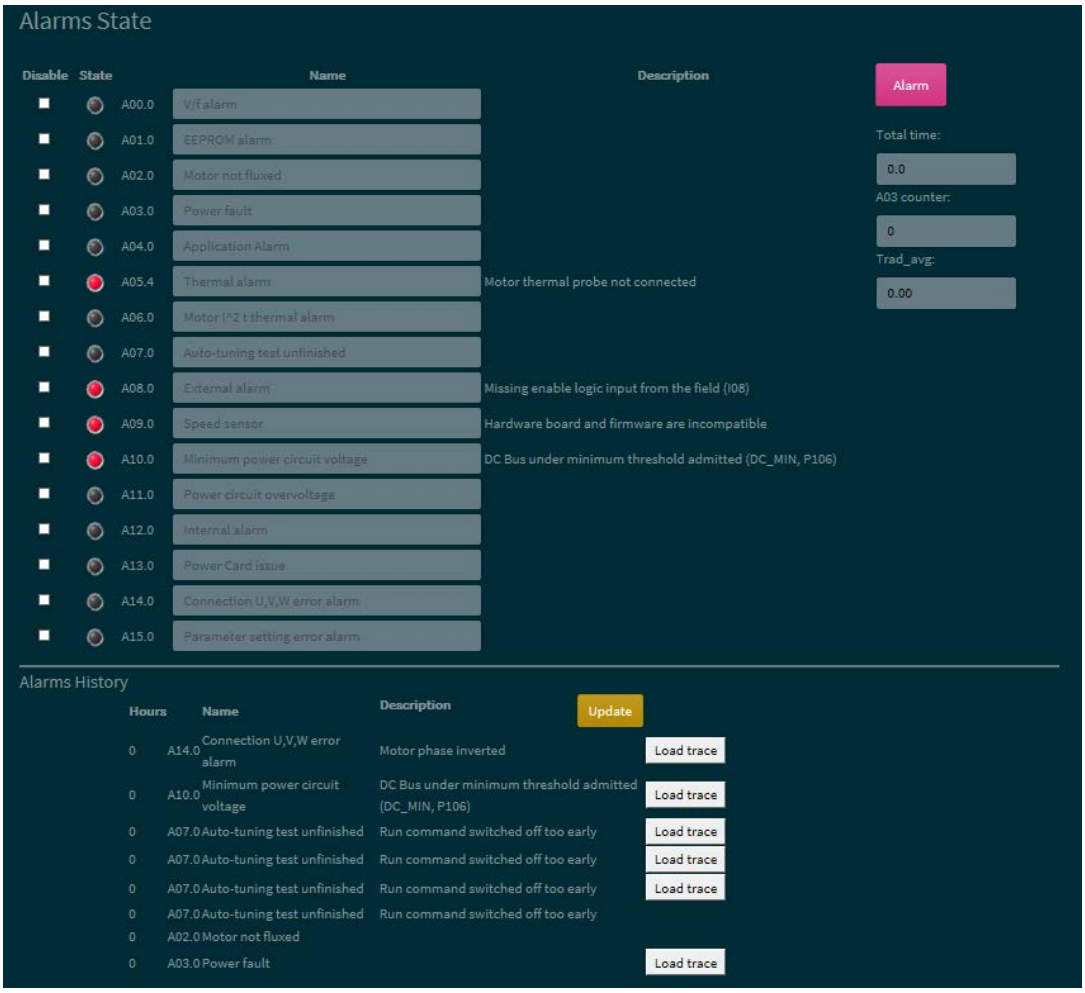


When the required application has been identified, it can be selected by pressing the “Select” key. Alternatively, after having selected the “Application” icon and activating the “Catalog” window (by pressing the “Show/Hide catalog” key), the required application can be selected or dragged to the “Application” icon.
At this point the parameters are updated according to the selected application.

4 ALARMS

The “Alarms” section in the “Tree” window shows all information on alarms that may activate.

If an alarm is signalled, it is highlighted and a short description is given as shown in the example image below.



A drive working time counter and a log covering the last 8 alarms signalled together with the relative description and a time reference tied to the working time counter are also present.

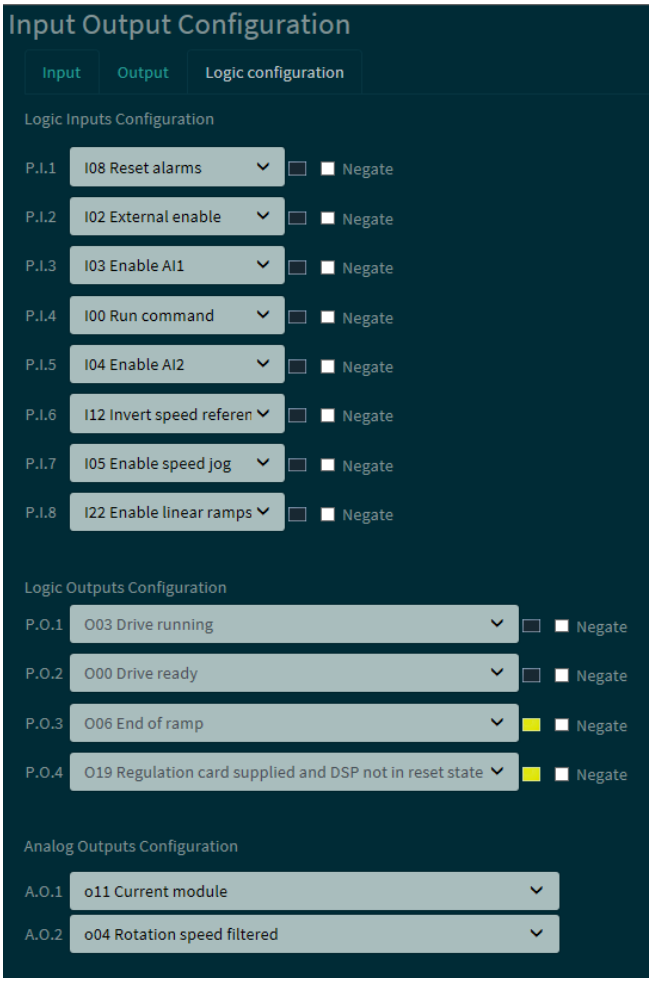
All the alarms excluding A01 and A03 can be disabled by selecting the relative flag. This allows the drive to operate (if possible), so ignoring the alarm signal.

The alarms can be reset or if necessary updated by pressing the key on the tool bar.

5 INPUT OUTPUT CONFIGURATION

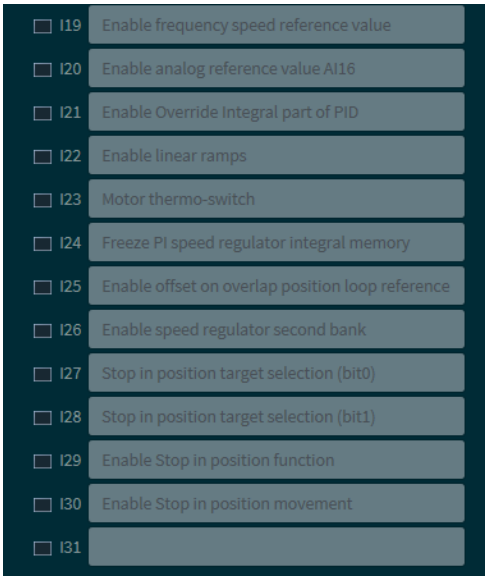
The drive input and output settings can be configured and displayed in the I/O section of the “Tree” window.

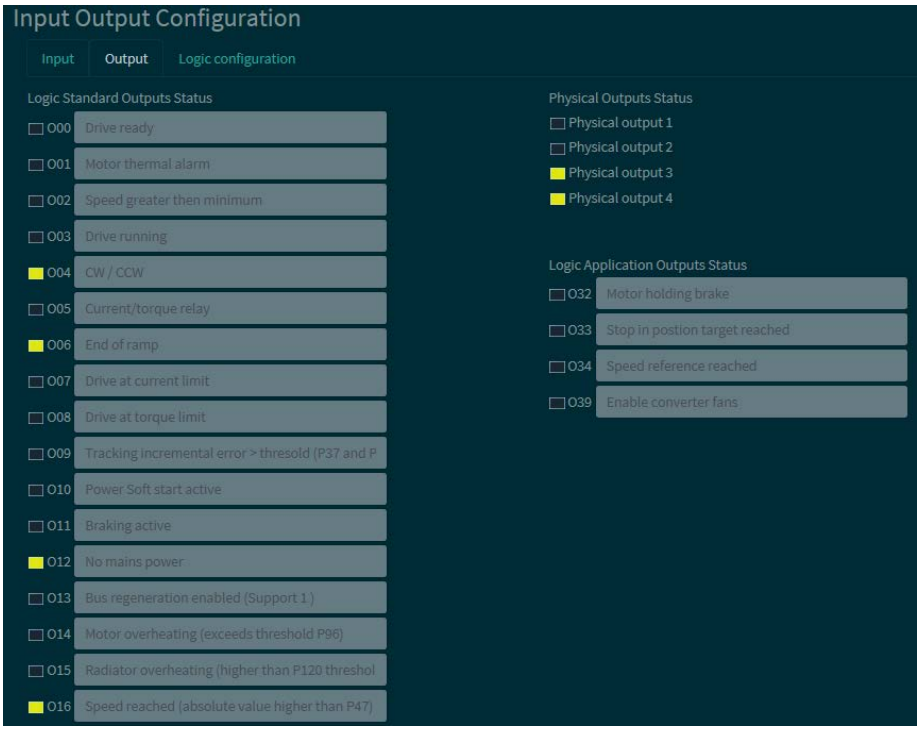
Using the “Logic configuration” folder, the physical inputs and outputs (respectively P.I. and P.O.) can be associated with the logic function of the preselected input or output, and they can be selected from the options given in the drop down menu.
In addition, selecting the relative flag or not can establish if the active level of the signal is high or low.
The box next to each input is coloured yellow or black to indicate if the signal is enabled or not.
.

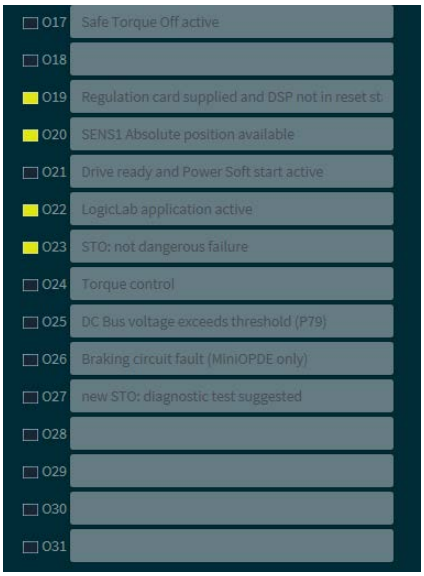


The states of both the logic and the physical inputs and outputs are shown in the “Input” and “Output” folders (yellow enabled, black disabled), as can be seen in the example that follows:

Input Output Configuration
Input
Output
Logic configuration
Logic Inputs Status
I00 Run command
I01 Torque control
I02 External enable
I03 Enable AI1
I04 Enable AI2
I05 Enable speed jog
I06 Enable digital potentiometer value
I07 Enable AI3
I08 Reset alarms
I09 Digital potentiometer UP
I10 Digital potentiometer DOWN
I11 Load last digital potentiometer value
I12 Invert speed reference value
I13
I14 Enable FIELD-BUS reference values
I15 Enable PID ref
I16 Enable second parameter bank
I17 Enable space loop for electric axis
I18 Freeze Integral part of PID
Physical Inputs Status
Physical input 1
Physical input 2
Physical input 3
Physical input 4
Physical input 5
Physical input 6
Physical input 7
Physical input 8
Power Board Inputs Status
Motor Encoder presence
MaxV DcBus Hw
Main supply presence
Second Encoder presence

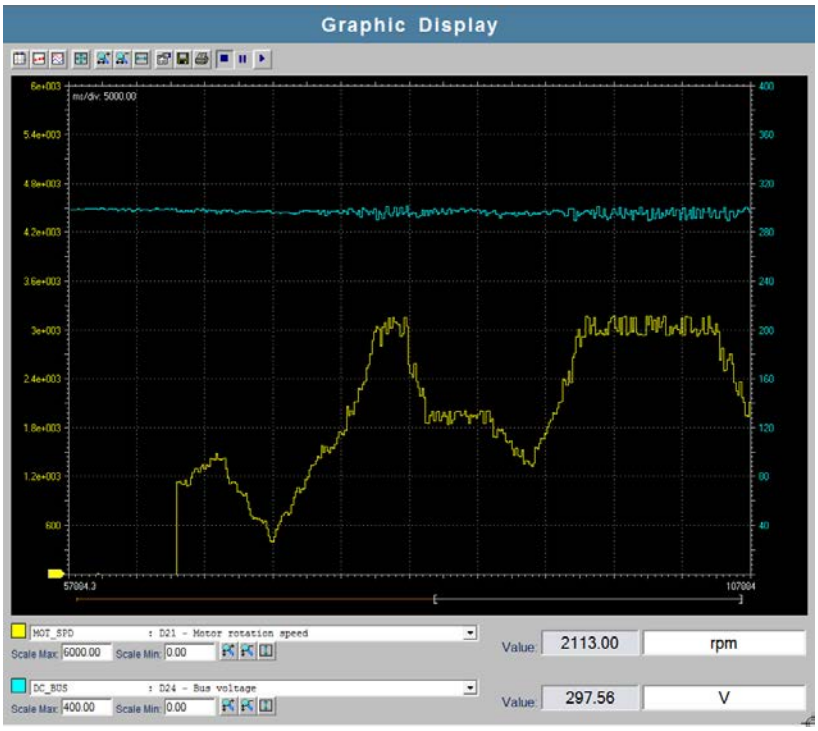

I19 Enable frequency speed reference value
I20 Enable analog reference value AI16
I21 Enable Override Integral part of PID
I22 Enable linear ramps
I23 Motor thermo-switch
I24 Freeze PI speed regulator integral memory
I25 Enable offset on overlap position loop reference
I26 Enable speed regulator second bank
I27 Stop in position target selection (bit0)
I28 Stop in position target selection (bit1)
I29 Enable Stop in position function
I30 Enable Stop in position movement
I31


Input Output Configuration
Input
Output
Logic configuration
Logic Standard Outputs Status
O00 Drive ready
O01 Motor thermal alarm
O02 Speed greater then minimum
O03 Drive running
O04 CW / CCW
O05 Current/torque relay
O06 End of ramp
O07 Drive at current limit
O08 Drive at torque limit
O09 Tracking incremental error > thresold (P37 and P
O10 Power Soft start active
O11 Braking active
O12 No mains power
O13 Bus regeneration enabled (Support 1)
O14 Motor overheating (exceeds threshold P96)
O15 Radiator overheating (higher than P120 threshol
O16 Speed reached (absolute value higher than P47)
Physical Outputs Status
Physical output 1
Physical output 2
Physical output 3
Physical output 4
Logic Application Outputs Status
O32 Motor holding brake
O33 Stop in postion target reached
O34 Speed reference reached
O39 Enable converter fans


O17 Safe Torque Off active
O18
O19 Regulation card supplied and DSP not in reset st
O20 SENS1 Absolute position available
O21 Drive ready and Power Soft start active
O22 LogicLab application active
O23 STO: not dangerous failure
O24 Torque control
O25 DC Bus voltage exceeds threshold (P79)
O26 Braking circuit fault (MiniOPDE only)
O27 new STO: diagnostic test suggested
O28
O29
O30
O31

6 GRAPHIC DISPLAY

The “Graphic display” function in the “Tree” window can be used to see two internal sizes of the drive (Dxx) contemporaneously and in graph form.
The two sizes can be selected from among those available in the relative drop down menu, and are displayed in a range that can be selected by the user. In addition, as the example that follows shows, the immediate value of the interested size, as well as the size itself, can also be seen.



Some keys appear in this window, and their functions are described below:

Key	Description
	Makes it possible to position two cursors for measuring the time interval between the cursors themselves
	Shows the points that correspond to the samples used for generating the graph
	The two traces are scaled and repositioned automatically in a manner that does not allow them to overlap
	Sets the *x*- and *y*-coordinates to expand the acquired signal over the whole graph area
	Zoom in
	Zoom out

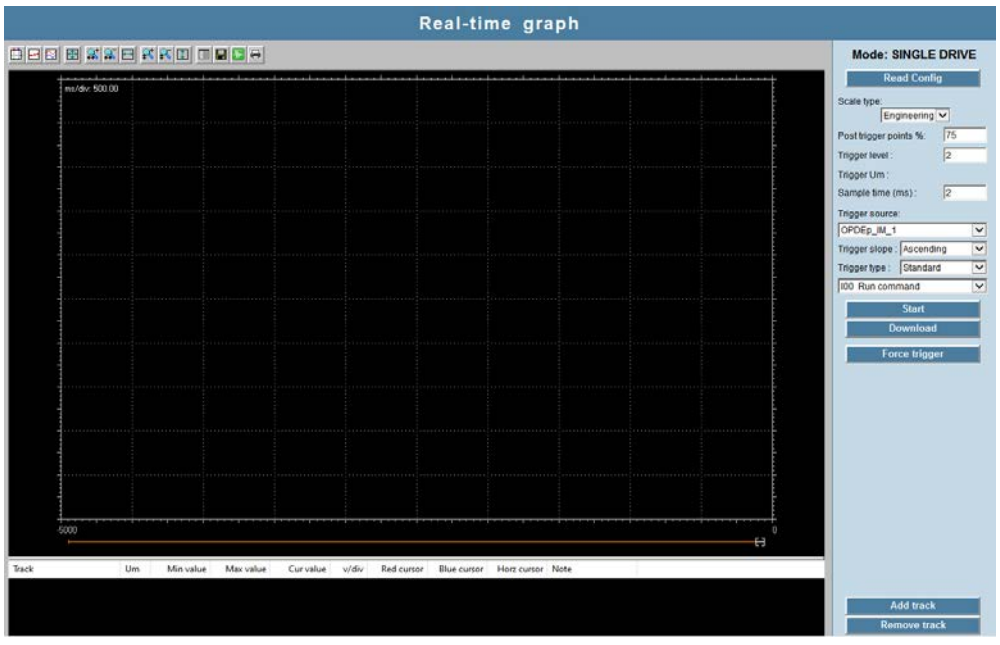
	Sets the x-coordinate to expand the acquired signal over the whole considered time interval
	Graph properties
	Save
	Print
	Stop
	Pause
	Play

7 REAL-TIME GRAPH

The “Real-time graph” function can be used to acquire some of the internal variables of the drive in real time, saving them with reference to a selectable trigger.
The window of this function is divided into two folders:

- Configuration
- Graph

The “Configuration” folder contains data on the acquisition type and mode, and the fields to be configured are described below



- **Post trigger points %** → percentage of points to be acquired after the trigger (100% corresponds to acquisition fully after the trigger, 0% corresponds to acquisition termination on the trigger)
- **Trigger level** → level where to position the trigger, expressed as a percentage of the selected size
- **Sample time** → Sampling time
- **Trigger type** → the trigger can be “standard” and refer to one of the internal sizes of the drive listed below, or with debug functions and refer to specific memory positions (suitable for developing specific applications)
- **Trigger slope** → trigger active at upward or downward ramp.
- **2-4 channels** → it is possible to select whether to display 2 or 4 channels. Using 4 channels halves the number of samples collected using 2 channels.
- **Channel A-B-C-D** → the sizes to be acquired are selected in these fields

In addition to the graph area, the “graph” folder also has some keys that are described below:

Key	Description
	Makes it possible to position two cursors for measuring a time interval
	Shows the points that correspond to the samples acquired for generating the graph
	The two traces are scaled and repositioned automatically in a manner that does not allow them to overlap
	Sets the *x*- and *y*-coordinates to expand the acquired signal over the whole graph area
	x-axis zoom in
	x-axis zoom out

Key	Description
	Sets the *x*-coordinate to expand the acquired signal over the whole considered time interval
	y-axis zoom in
	y-axis zoom out
	Sets the *y*-coordinates to expand the acquired signal over the whole graph area
	Graph properties
	Save. The generated graphs can be saved in two formats: OSC or OSCX. The first (OSC) is a format which, after being saved with an xls extension, can be imported to Excel, while the second (OSCX) is a format that can be used to reload the graph saved in Explorer onto the real-time graph window using the “Open” command
	Open
	Print
	Enables sample acquisition which ends in relation to the trigger
	Downloads the samples acquired from the drive
	Forces the trigger, even if it has not been verified, in order to start sample acquisition

8 FIRMWARE AND APPLICATION UPDATING

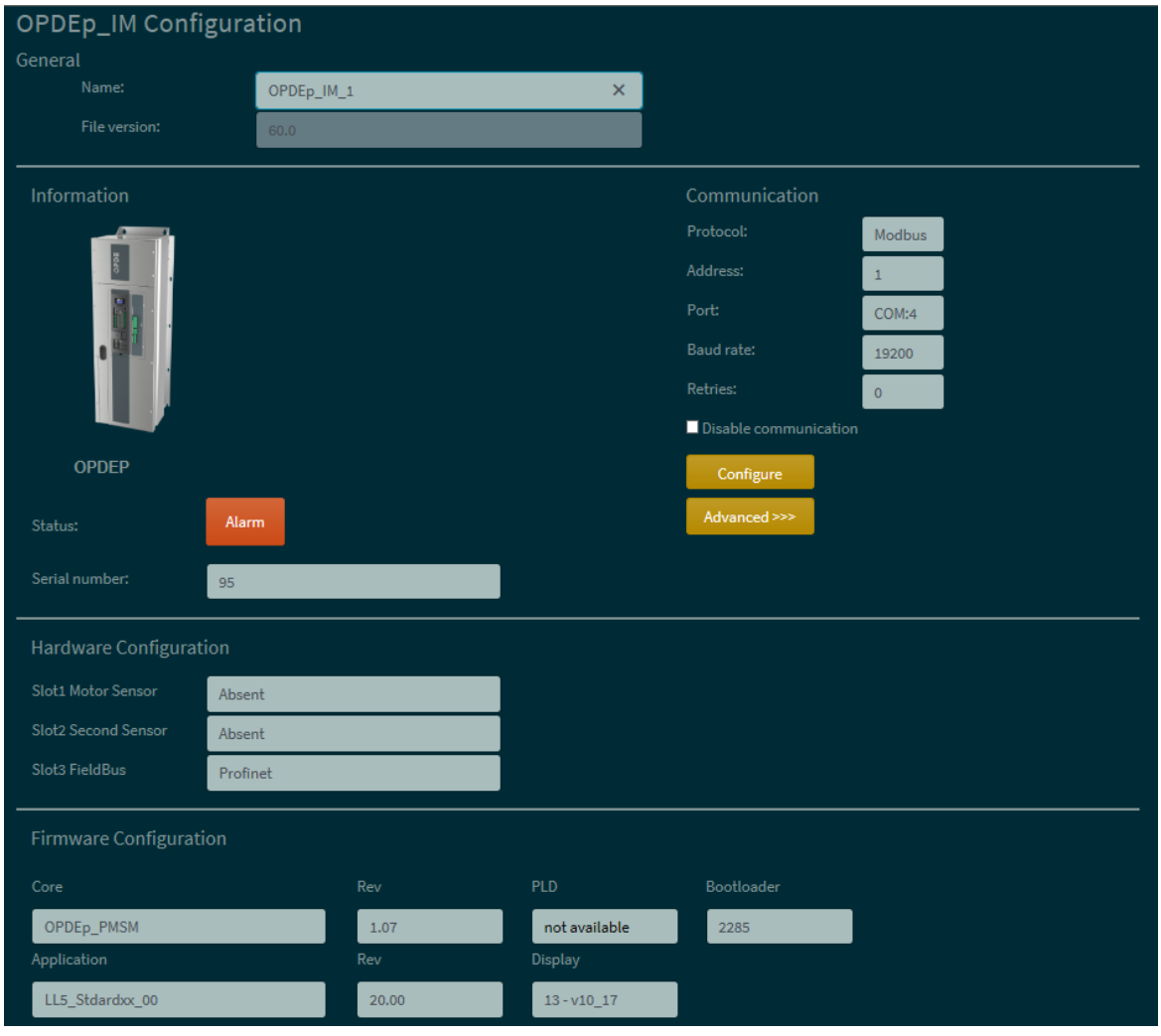
After creating a new project with OPDExplorer, make sure that the correct firmware and application versions are present in the drive. To do so, follow the procedure below:

- connect OPDExplorer to the drive via Modbus using the key

  To configure the serial communication, press the **Configure button** from the Home Page of OPDExplorer – in the "Device Link Manager Config" window select Modbus from the "protocols" menu and press **Properties** –in the "Modbus Config" window enter the serial communication parameters and press **OK**;

- display the Home Page of OPDExplorer and read the "Core" and "Application" revision details displayed in the "Firmware Configuration" box. If the "Core" and "Application" are the desired ones, move on to the next commissioning step.

Make sure that OPDExplorer is updated before starting to update the firmware and the application. Also, make sure that the baud rate is set to 19.2 kbps (parameter P93).



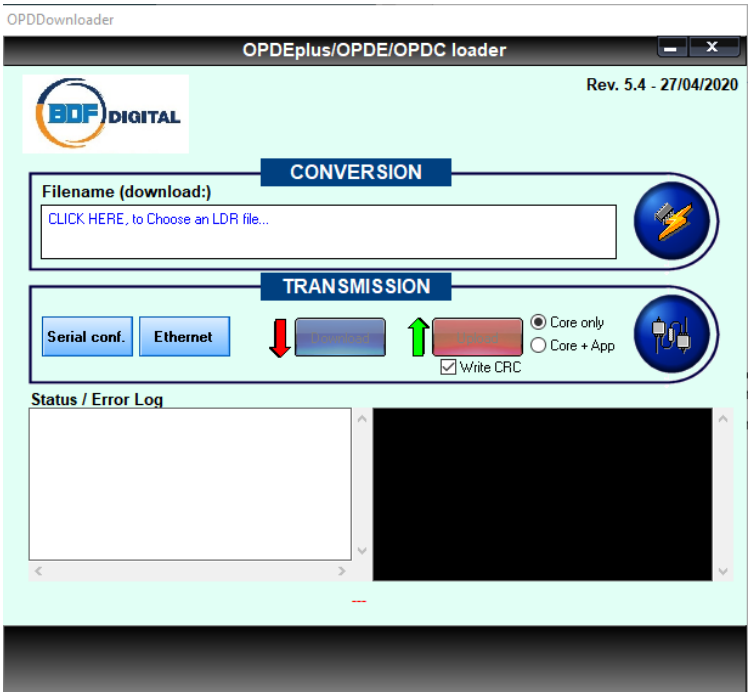
Home Page OPDExplorer

- Press the **Unlock Reserved Parameters** button and type 95 in the window that appears.

- Press the **Firmware Download** button. The OPDDownloader/Uploader window will appear. Press the **File select…** button and select the directory where the latest firmwares are located (.ldr files). Usually, the path to be followed to reach that directory is

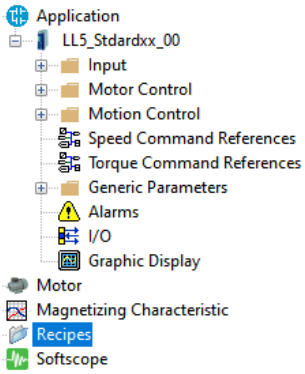
  C:\Bdf_Digital\Catalog\OpenDrive\firmware

  If the “Core” that is installed in the drive is an older revision than the revisions that have been found in the firmware directory, proceed with the updating, that is, select the latest revision and press **Open**. Make sure that “Com port”, “Baud” and “Slave” are set correctly and finally press **Download**. The firmware download procedure may take some minutes.



OPDDownloader/Uploader

- Once the application has been selected, the **PLC Download** button will appear. Pressing this button will start the download of the application.



Selezione dell’applicativo

For the standard application, the “Application” icon will not appear. To download the application, just press PLC Download

- Turn the drive off and then on again.

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