Tech-note

The UniDataExchanger

The UniDataExchanger is a tool that allows an easier handling of the file transfer to and from UniOP operator panels. The program supports the transfer of recipe data and UniOP firmware files.

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Tn175
Ver. 1.04
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1 Introduction

The UniDataExchanger is a stand-alone tool not included in the standard Designer software and developed to easily handle file transfers to and from UniOP operator panels.

Recipe data, alarms and events list stored in the UniOP memory can be uploaded to a CSV file format; the file can be stored for archival purposes or can be easily modified and later downloaded again to the panel memory.

Also, UniDataExchanger supports the firmware upgrade of the panels and the transfer of project files without the need of the Designer software. Using the files generated by Designer in binary format (ROM Format), UniDataExchanger can transfer them the UniOP project memory media.

To install UniDataExchanger, just copy the files to an empty directory. To start the program locate the file “UniDataExchanger.exe” and run it.

The UniDataExchanger main window is shown in Figure 1.

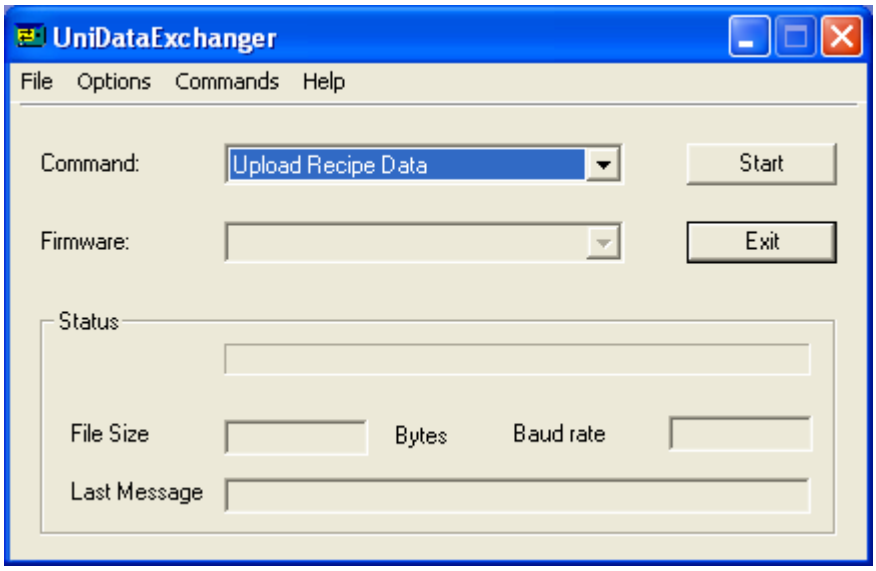


Figure 1

2 Using UniDataExchanger

The UniOP Firmware is composed by two parts: one is called **Boot,** the second one is called **Firmware**. The Boot part support only the basic functionality of the panel and it is not sufficient to run a Designer project.
The Boot version present in one panel is visible switching the panel to Configuration Mode and holding the Enter key pressed for one second: the first information line will show the Boot version.

The Firmware part is the real “engine” and it handles most of the functionality of the product. “Upgrading the firmware” in a panel usually means to change only the second part (the Firmware), but in some specific cases it will required also replacing the Boot.

For panels that runs Firmware Type 58/60/61 the firmware is composed by four parts: other than Firmware and Boot there are the MIPS Code and the MIPS Service files.

The “Command” list box allows you to select the operation type.
The “Firmware” list box specifies the firmware type of the target operator panel.
UniOP panels can be organized in several different classes depending on the firmware type.
Current UniOP firmware can be divided in the following categories:

- Firmware Type 32
- Firmware Type 33
- Firmware Type 37
- Firmware Type 52
- Firmware Type 53
- Firmware Type 38 – Boot 38
- Firmware Type 38 – Boot 39
- Firmware Type 58
- Firmware Type 60
- Firmware Type 61

The information regarding the Firmware Type is always available in the panel identification plate in the back cover of every operator panel.
The Firmware Type is indicated as “S/W V. …”.

The operator panels of the type FW38 can be equipped with two different CPU boards. Due to some differences in the hardware, the newer CPU board does not support Boot type 38, but a different one called **Boot 39**".
Panels using Boot 38 and Boot 39 machines are both operating with the same **FW type 38**.

The panels can be recognized from the label on the rear:

Boot 38 + Firmware 38	hardware **38A**
Boot 39 + Firmware 38	hardware **38B**

Note: *Using a serial connection UniDataExchanger can connect to a panel only if it is in Configuration Mode. When connecting with Ethernet, panels can respond to UniDataExchanger also when they are in Operation Mode.*

The Firmware files are normally stored using a naming convention as described in Table 1.

Hardware Type	Firmware Type	Boot Filename	Firmware Filename
33A	32	FWT3BL32.BIN	FWT3DL32.BIN
33A	33	FWT3BL33.BIN	FWT3DL33.BIN
33A	37	FWT3BL37.BIN	FWT3DL37.BIN
52A	52	FWT3BL52.BIN	FWT3DL52.BIN
53A	53	FWT3BL53.BIN	FWT3DL53.BIN
38A	38 with Boot Type 38	FWT3BL38.BIN	FWT3DL38.BIN
38B	38 with Boot Type 39	FWT3BL39.BIN	FWT3DL38.BIN

Table 1

For Hardware Type 58/60/61 the firmware files format is the same prepared for use by Designer (long filename), those files are normally stored using a different naming convention as described in Table 1A.

Firmware Type	58	60	61
Boot Filename	Boot59-530-00-05.bin	Boot60-540L00-05.bin	Boot61-540L00-05.bin
Firmware Filename	Firm58-530-00-05.bin	Firm60-540L00-05.bin	Firm60-540L00-05.bin
MIPS Code Filename	Mips58-530-00-05.bin	Mips60-540L00-05.bin	Mips60-540L00-05.bin
MIPS Service Filename	Mser58-530-00-05.bin		

Table 1A

The Firmware Type information is reported in the Product ID Label on all panels, for panels that uses Boot 60 and 61 the Firmware version reported is the same: 60.

The general rule used to recognize the Boot type that have to be downloaded into Fw 60 panels is:

TFT display = Boot 60
STN or B&W display = Boot 61

Actually the only models produced that uses Boot type 61 are:

eTOP05EB
eTOP11EB
eTOP32B
eTOP21EB (Obsolete model, not produced anymore)

Note: *The long filename naming convention includes in the firmware name also the firmware version. For example in the string Boot59-530-00-05.bin the number 530-00-05 indicates the firmware version, 5.30 for this case.*

Note: *MIPS Service file for firmware versions 60 and 61 is included into the Boot file so these files are not available.*

Note: *UniDataExchanger does not support transfer of firmware files to SSFDC memory media.*

2.1 UniDataExchanger Menu

The “Options” Menu contains some general settings of the program.
This menu is shown in Figure 2.

The “Communication…” item allows the definition of the communication port of the computer used to connect to the panel.
Shown in Figure 3.

You can select the COM port; to connect to one serial port you will need one of the standard communication cables CA2 or CA114.

The second choice is the Ethernet communication, to select a specific machine you need to click on "Pick UniOP" button, and then a list of all the IP addresses of the panels connected via Ethernet will be shown. Now you can select the panel you need to work with.
See Figure 4

Note: *To use the Ethernet connection you must have a TCM10 or a SCM11 module on board and a firmware version 5.30 or newer.*

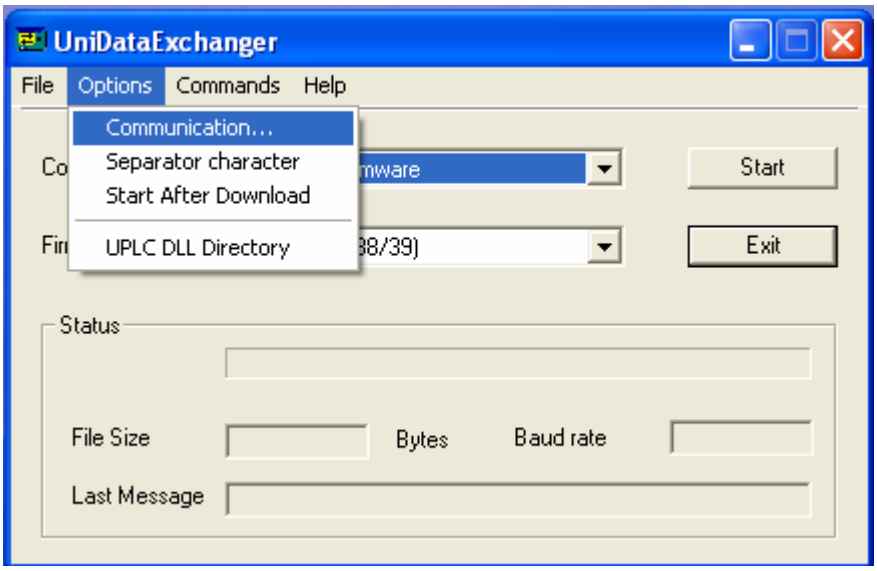


Figure 2

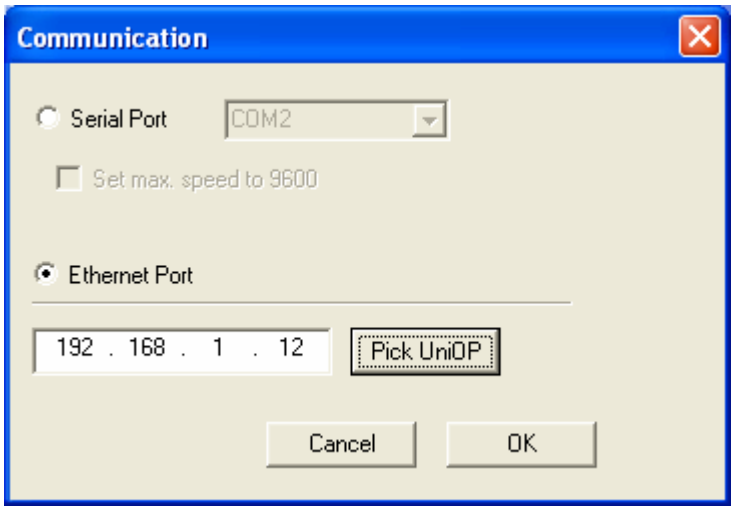


Figure 3

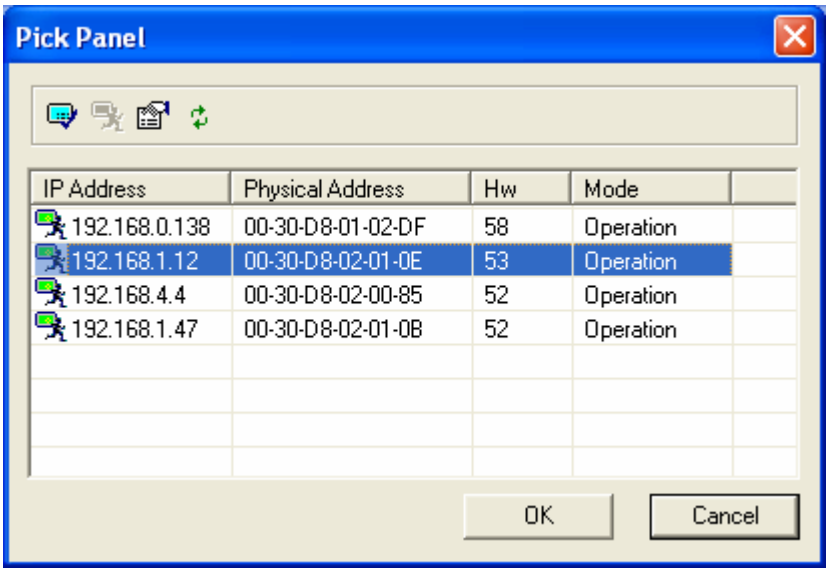


Figure 4

The “Separator Character” entry allows defining the character used as a separator when preparing the recipe data file in CSV format. Figure 5 shows the “Define Separator character” dialog box.

Figure 5

The “Start After Download” option defines if a start command must be sent to UniOP panel after a file download.
It is the option equivalent to the one available in the Designer “Transfer/Option” dialog.

In order to properly upload Recipe Data Items from the panel and displaying the addresses of the data items, UniDataExchanger needs the reference to a directory where the Designer D32UPLCxxx.DLL files are installed.

The “UPLCDL Directory” entry in the “Preferences” menu may be used to specify where the Designer D32UPLCxxx.DLL files are located in the computer.

If the computer running UniDataExchanger does not include Designer, the information included in the CSV file could not be completed.

2.2 Handling Recipe Data

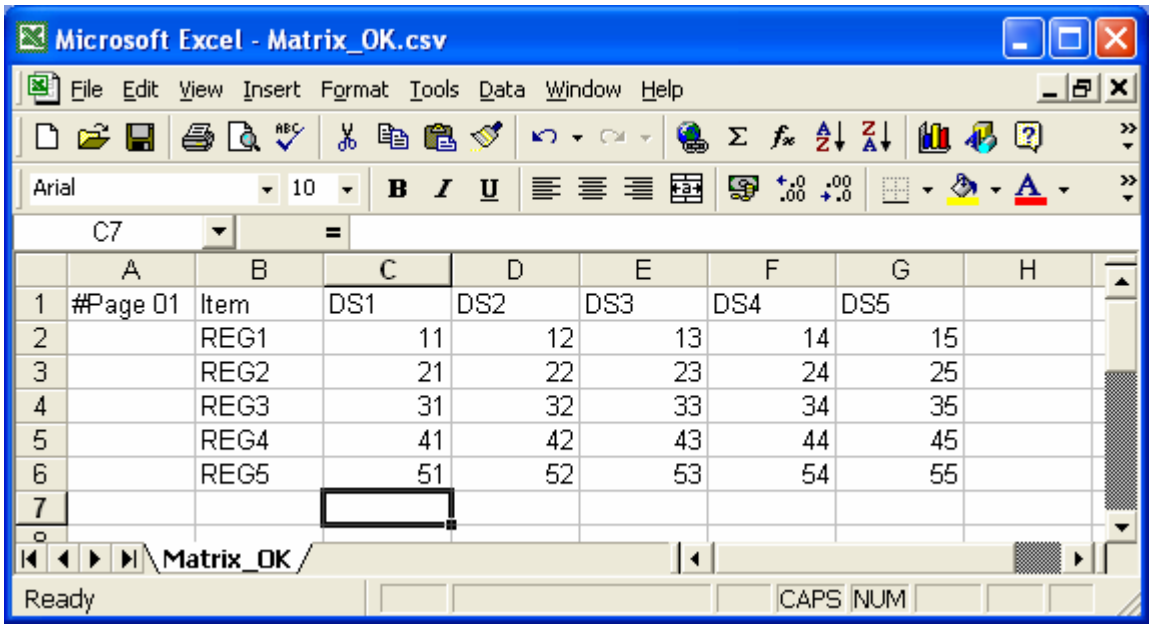
Recipe data is uploaded from the RAM memory storage in the panel; this means that if the user has already changed the recipe default values defined in the Designer project, the upload process retrieves the changed values.
Recipe data is downloaded to the RAM memory storage in the panel.

Note: *Recipe data handling with UniDataExchanger is supported by UniOP firmware version 4.44 and higher.*

2.2.1 Upload

From the “Commands” list box select the “Recipe Data Upload from Panel” and click the “Start” button.
The UniDataExchanger will prompt you for a target directory where the CSV files has to be stored and for a filename.

An example of the result is shown in Figure 3; the example is made using the Modbus Slave communication driver. The Recipe Data is configured in Page 1, there are 5 recipe variables and 5 parameter sets.



	A	B	C	D	E	F	G	H
1	#Page 01	Item	DS1	DS2	DS3	DS4	DS5	
2		REG1	11	12	13	14	15	
3		REG2	21	22	23	24	25	
4		REG3	31	32	33	34	35	
5		REG4	41	42	43	44	45	
6		REG5	51	52	53	54	55	
7								

Figure 3

Microsoft Excel can support a maximum of 256 columns. This it means that when you make an upload from panel that has a recipe with 255 parameter sets, the last set is truncated.
As a workaround, you should use another program to modify your recipe data.

2.2.2 Download

From the “Commands” list box select the “Recipe Data Download to Panel” and click the “Start” button.
The UniDataExchanger will ask you the location of the source CSV file. This file must be in the same format as the one shown in the Figure 3.

2.3 Boot to Boot

The Boot-to-Boot feature allows upgrading the Boot part of the panel firmware by overwriting the same memory area already occupied by the existing Boot.

Note: *Boot to Boot is supported by the panel if the existing boot is version V4.24 or newer for all firmware types except FW37. Firmware Type 37 only supports instead Boot to Boot starting from Boot version V4.40*

The proper firmware type must be selected in the “Firmware” list box.
When the “Start” button is pressed the UniDataExchanger asks for the source file.

Note: *Boot-to-Boot transfer is a **critical** operation. Since the file will be copied overwriting the existing Boot, if a power down occurs during the transfer, the panel could become unusable. At the end of the Boot download the panel will automatically restarts itself; do not cycle the power of the unit in this phase and **wait for the completion of the automatic panel restart**.*

The Boot-to-Boot command operates directly on the Firmware Flash in the part already occupied by the existing Boot.

2.4 Download Firmware

The Firmware download command transfers to the panels a Firmware file. This command requires only the proper selection of the firmware type in the “Firmware” list box and the selection of the proper binary file.

2.5 Download MIPS Code (SSFDC)

The MIPS Code download command transfers to the SSFDC a MIPS Code file. This command requires the proper selection of the firmware type in the “Firmware” list box and the selection of the proper binary file.

Note: *The MIPS Code file is needed only into the HW58/60/61 machines, and only with firmware version 5.30 or newer.*

2.6 Download MIPS Service

The MIPS Service download command transfers to the panels a MIPS Service file. This command requires the proper selection of the firmware type in the “Firmware” list box and the selection of the proper binary file.

Note: *The MIPS Service file is needed only into the HW58/60/61 machines, for HW60/61 and only with firmware versions 5.40 or newer this file is included into the Boot file so the MIPS Service binary files version 5.40 or newer are not available individually.*

2.7 Download to Second Flash

The “Download to Second Flash” command downloads any binary file to the UniOP project Flash located in its “project” Flash socket.
This command is useful when the project Flash socket is used like a “programmer”.
Selection of the correct Firmware type in the “Firmware” list box is fundamental for proper operation.

2.7.1 Upgrading Boot in Panels with Boot Version Older than 4.24

In case the panel has Boot version older than V4.24, it does not support the Boot-to-Boot feature.

If a Boot upgrade is required in this case, the only way to proceed it is preparing a new memory chip using the panel like a “flash programmer” to load to a new 512KB memory with the necessary files.

For example, using the “Download to Second Flash” command is possible to load to the memory inserted in the project memory socket of the panel, a certain Boot file. This memory can then be used as Firmware memory of the UniOP; at power up the panel will start in Boot Mode showing the Boot version in its first line; in this status UniOP is ready to accept the Firmware file download through the “Download Firmware” command.

2.8 Download Project

The “Download Project” command can be used to download to the UniOP panel a ROM file prepared with the Designer software.
The ROM file must be created specifying in Designer the memory media and the inclusion of Project and Protocol as shown in the example of Figure 4. The dialog box below is part of Designer Transfer options.

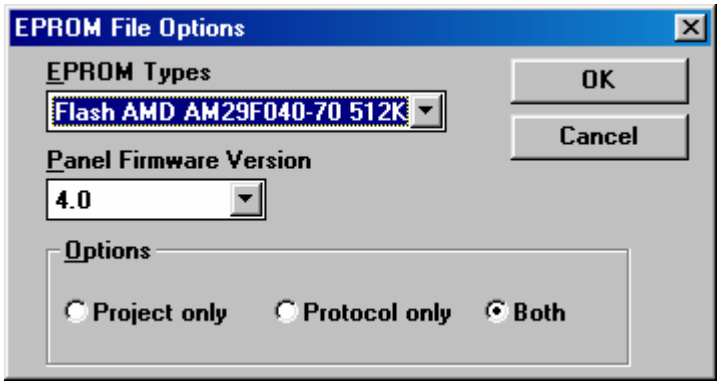


Figure 4

Note: *In this case it is very important to choose the correct memory type and size.*

2.9 Download Graphics File

The “Download Graphics File” Command transfers the Designer XRM file produced together with the ROM file when the Project is made for a Firmware Type 37 panels.
In this case the graphics information are in fact not included in the project and they have to be downloaded to the memory in the panel separately.

2.10 Trend Buffer Upload

The “Trend Buffer Upload” command allows retrieving from the panel the trend buffer information stored in its internal RAM Memory and generates a CSV file with the timestamp and data information.

Note: *Trend Buffer Upload commands requires firmware V5.00 or above*

2.11 Download SVG Files

The "Download SVG Files" command allows transferring to a FW58 unit the SVG components of its Designer application. SVG files are normally temporary created by Designer at the download time and later deleted.
SVG files can be created by Designer using the "Save as…" command available from the file menu and selecting the "ROM" file option in the "File Type" combo box.
When saving the ROM file, Designer creates a directory named with the project name and adding to it the extension ".rom". Inside this directory Designer stores all the SVG files programmed in the project (files with .svg extension) and an additional ASCII file (with extension ".svg-proj") which contains the list of all the SVG components of the current project.
When starting the SVG download, UDE needs this ASCII file to perform the SVG file download.

Note: *The support in Designer for the ".svg-proj" file is included starting from version 6.01(07) and above.*

2.12 Upload Event List

The "Upload Event List" command creates a CSV file containing the following information:

- Event type
- Number of the alarm
- Time

From the "Commands" list box select the "Upload Event List" and click the "Start" button.
The UniDataExchanger will prompt you for a target directory where the CSV files has to be stored and for a filename.

Note: *With Serial connection this command can be used only when the panel is in Configuration Mode, returning into Operation Mode by pressing the enter key, will clear the event list. To preserve the list, the panel must be reset with a power cycle.*

2.13 Upload Alarm List

The "Upload Alarm List" command creates a CSV file within the following information:

- Alarm number
- Static flags
- Dynamic flags
- On time
- Off time
- Link flags
- Log flags

From the "Commands" list box select the "Upload Alarm List" and click the "Start" button.

The UniDataExchanger will prompt you for a target directory where the CSV files has to be stored and for a filename.
If some alarms are currently active you can choose if you want to upload all the alarms actually configured or only the active alarms.

Note: *The alarm list is only available in Operation Mode; this command works only with the Ethernet connection.*

3 UniDataExchanger command line options

Starting from version 1.07.15.01, the UniDataExchanger utility supports some command line options; the software can be launched and operated using batch files.

The command line syntax is the following:

```
UniDataExchanger
[/h][/port:x][/9600][tcpip:a.b.c.d][/cmd:x][/file:filename][/trend:b
uffer][/fw:x][/quit][/start]
```

The table shows the list of supported command line options:

`/h`	Displays the help page
`/port:x`	Specifies the COM port number to be used for serial transfers where x is 1, 2, 3, …
`/9600`	Forces the maximum baud rate to 9600 baud
`/tcpip:a.b.c.d`	Specifies the IP address of the panel for Ethernet transfers
`/cmd:x`	Specifies the command to be execute where x is the ordinal number of the command as specified in the UniDataExchanger.ini file
`/file:filename`	Specifies the name of the file to be downloaded or the name assigned to the uploaded file
`/trend:buffer`	Specifies the trend buffer number to be uploaded
`/fw:x`	Specifies the firmware type according to the following list: 0 – unknown 32 – FW32, FW52, FW53 33 – FW33 37 – FW37 38 – FW38 (Boot 38/39) 58 – FW58, FW60
`/start`	Specifies to send the start command at the end of the file transfer
`/quit`	Specifies to close the UniDataExchanger application after command has been completed.

Table 2

Command line syntax

```
Command line syntax:
UniDataExchanger [/h][/port:x][/cmd:x][/file:filename][/quit][/start]
/h               Display help page
/port:x          Specify COM port where x is 1,2,3...
/9600            Force max baud rate speed to 9600...
/tcpip:a.b.c.d   Specify TCP/IP address of panel...
/cmd:x           Specify command to be executed (command code from INI)
/file:filename   Specify filename which will be downloaded/uploaded
/trend:buffer    Specify trend buffer which will be downloaded/uploaded
                 If buffer is ALL then all trend buffers will be used
/fw:x            Set firmware type where 'x' can be:
                         0 - Unknown firmware
                         32 - FW32, FW52, FW53
                         33 - FW33
                         37 - FW37
                         38 - FW38 (Boot 38/39)
                         58 - FW58
/start           Switch panel to operation mode after the download
/quit            Quit upon command execution
```

OK