UNI-PRO

DEVELOPMENT ENVIRONMENT FOR PROGRAMMABLE CONTROLLERS

UPDATE FUNCTIONS VIA USB

CODE 114UPROUFUE114

Important notice

This Instruction Manual should be read carefully before use, and all warnings should be observed; the Manual should then be kept for future reference.

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1 Abstract

A special fail safe procedure to update the controller parameters via USB is implemented starting since Uni-Pro 3.15 version. The required features are as follows:

- The parameters must be exported to a USB key in Text format. The file will also save a series of control information about the machine itself, serial number type, machine code, etc ...
- The exported txt file must be handled by the operator.
- There should be the possibility to edit the file
- Parameters import only occurs if the control information is the same as stored on the controller.

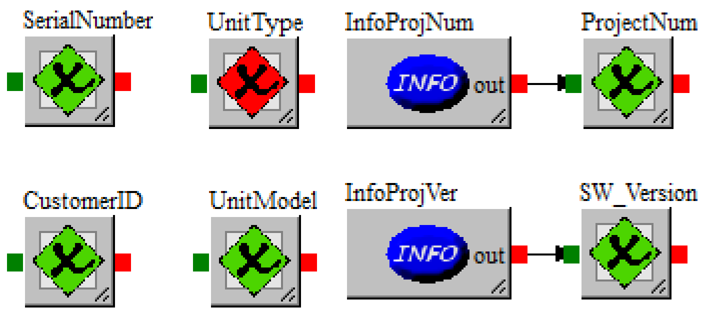
1.1 *How to use this function*

This new feature supports in alternative two types of files that can be read by the controller in a USB pen drive:

- **importParam.txt** for importing the parameters, see below for explanation.
- **exportParam.txt** for exporting the parameters, see below for explanation.

All files must be written by a well-defined structure and are based on a checksum system to verify the compatibility with the application in the controller.
This means that initially when one of these files is found, N values written in a special section of the file are compared with N exported values from the application. The process continues only if match values are found.
For example, 6 checksums can be used, 3 to identify the installer, and 3 to identify the type of application inside it. In this way, who writes the file should be careful to write it exactly for that machine / application.

Example of Entities used like checksum on a project:



2 Parameters Import

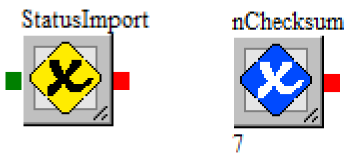
The import of the parameters is done using an "importParam.txt" file stored in the root of a USB key. The procedure will generate an "importDone.txt" file containing the successful code or an error code with the appropriated description.

The **importParam.txt** file should be structured as follows:

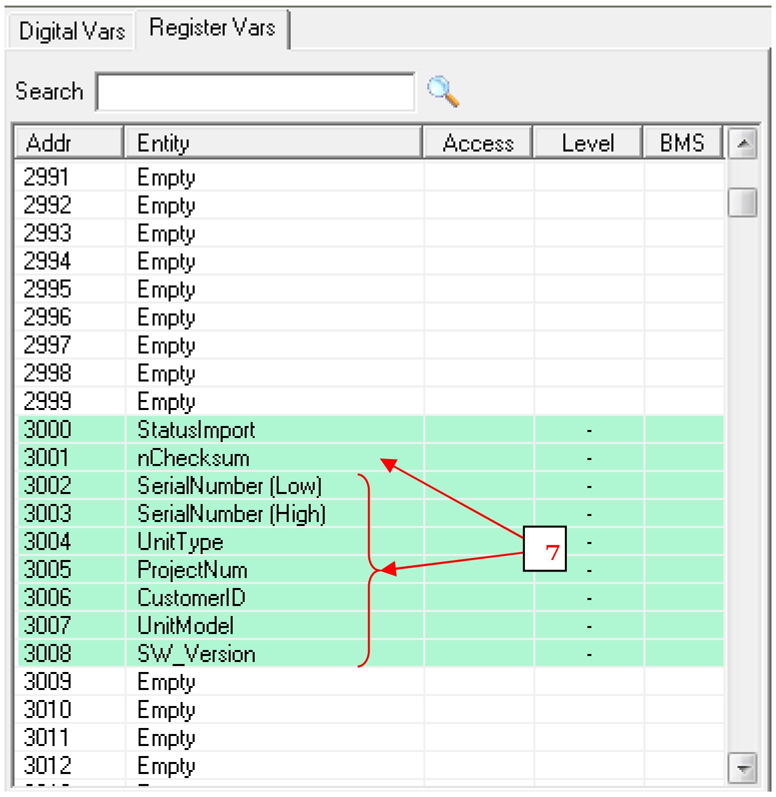
```
[START]             # Start tag, to verify file integrity
3000                # Address where the result code will be written
3001                # Number of checksums
 [CHECKSUM]                # Checksum tag
1345                # Checksum1, compared with the value exported at address 3000+2
7023                # Checksum2, compared with the value exported at address 3000+3
1                   # Checksum3, compared with the value exported at address 3000+4
0                   # …
0                   # No checksum limit is required but must be contiguous registers
[VALUES]            # Value tag. From this tag there will be “idx: value” pairs
140:2               # At address 140, the number 2 is written
75:14               # At address 75, the number 14 is written
10:3
1258:100            # The fomat is: address:value\r\n without spaces!
1274:5
[END]               # End tag for the End of File. Is necessary to verify the file integrity
```

ATTENTION: Each line of the file must have the format "xxxxxxxxxxxxxxxxxx\r\n"

In the register indicated as START address has to be exported the variable to check in the application for the operation status.
Moreover in the next register there must be indicated the “number of checksum” registers to verify, for example:



NOTE: if one checksum (e.g. SerialNumber) is a 32bit entity, it occupies two consecutive registers



Addr	Entity	Access	Level	BMS
2991	Empty			
2992	Empty			
2993	Empty			
2994	Empty			
2995	Empty			
2996	Empty			
2997	Empty			
2998	Empty			
2999	Empty			
3000	StatusImport		-	
3001	nChecksum		-	
3002	SerialNumber (Low)		-	
3003	SerialNumber (High)		-	
3004	UnitType		-	
3005	ProjectNum		-	
3006	CustomerID		-	
3007	UnitModel		-	
3008	SW_Version		-	
3009	Empty			
3010	Empty			
3011	Empty			
3012	Empty			

2.1 Import operations

The controller, when the key is inserted, verifies the presence of a file named "importParam.txt" and that there is no file named "ImportDone.txt", that will be the report file.
If these requirements are met, the checksums are compared and if also these requirements are met, the internal writing is executed.
Once you write, the file "ImportDone.txt" will be generated containing the report of the operation in the following format:

Error Code : Error Description.

Also, the same error code written in the report will be returned to the status register (address 3000 in the previous example).
This makes it possible to check when the operation is completed and perform a more accurate diagnosis in case of an error.

The file will contain "0: OK" if the operation is successful.

If the operator wants to repeat the Import operation on another machine, he must first delete the "ImportDone.txt" file manually. If this file is present, no action is performed (so there will be no Feedback).

2.2 Error Codes

The report file may contain the following error codes (values reported on the status log) with its diagnostic messages:

0 : Import Done.
xx Registers written successfully.

1 : Checksum Error.
Check the Checksum registers position in Export Entities.
They should be right after the address written in the [START] tag.

2 : Write Error.
Error while writing registers. Check their position in Export Entities.
Error at Register n. xxxx.

3 : Generic Error.
Something went wrong during the Import Process.
Keep this file and contact the support.

4 : Format Error.
Check the Format of the importParam.txt file.

5 : Operation in Progress.
This value is not written in the report file, but is written in the Status Register, allowing the application to check when the operation is completed.

Note 1: In the case of "Format Error", the register in which the status is to be written is not yet known, so the application will have no feedback.

Note 2: If one of the registers is not found (eg not exported to the application), a report file with “Write Error” is generated and the procedure stops with a message indicating which position (of the text file) is present the indicted register. Warning: The parameters before the "wrong" log are still written!

3 Parameters Export

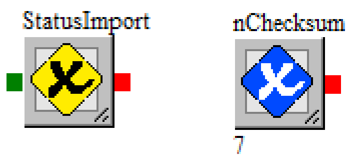
The export of the parameters is done using an "exportParam.txt" file stored in the root of a USB key. The procedure will generate an "exportDone.txt" file containing the successful code or an error code with the appropriated description and an "exportedValues.txt" containing the value of the exported parameters.

The **exportParam.txt** file should be structured as follows:

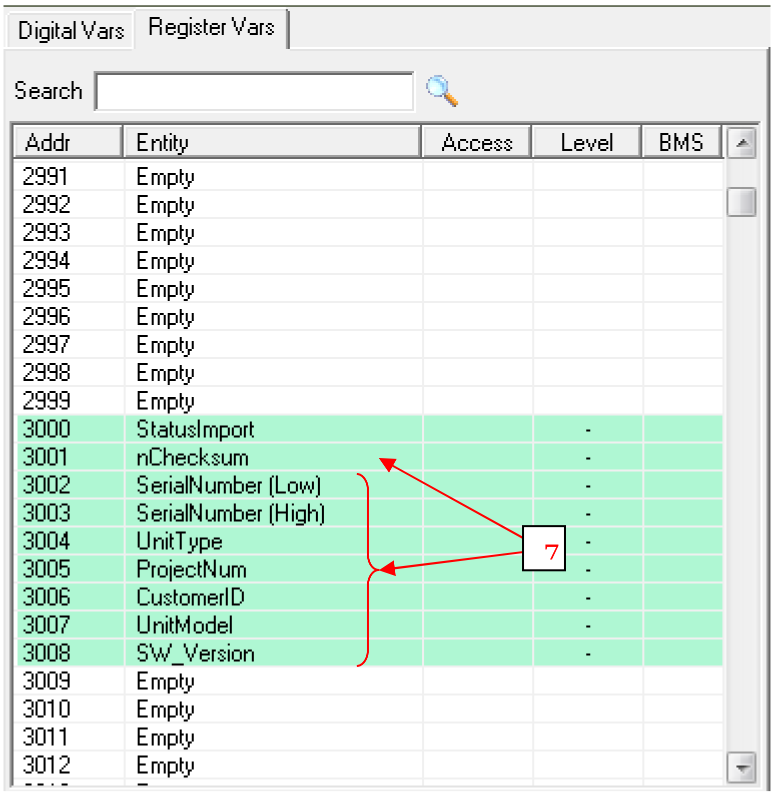
```
[START]             # Start tag, to verify file integrity
3000                # Address where the result code will be written
[CHECKSUM]                 # Checksum tag
1345                # Checksum1, compared with the value exported at address 3000+1
7023                # Checksum1, compared with the value exported at address 3000+2
1                   # Checksum1, compared with the value exported at address 3000+3
0                   # …
0                   # No checksum limit is required but must be contiguous registers
[VALUES]            # Value tag. From this tag there will be the addresses of the values to export
140                 # Request to export the value to address 140
75                  # Request to export the value to address 75
10
1258                # The fomat is: address\r\n without spaces!
1274
[END]               # End tag for the End of File. Is necessary to verify the file integrity
```

ATTENTION: Each line of the file must have the format "xxxxxxxxxxxxxxxxxx\r\n"

In the register indicated as START address has to be exported the variable to check in the application for the operation status.
Moreover in the next register there must be indicated the “number of checksum” registers to verify, for example:



NOTE: one checksum (SerialNumber) is a 32bit entity, so occupies two consecutive registers



Addr	Entity	Access	Level	BMS
2991	Empty			
2992	Empty			
2993	Empty			
2994	Empty			
2995	Empty			
2996	Empty			
2997	Empty			
2998	Empty			
2999	Empty			
3000	StatusImport		-	
3001	nChecksum		-	
3002	SerialNumber (Low)		-	
3003	SerialNumber (High)		-	
3004	UnitType		-	
3005	ProjectNum		-	
3006	CustomerID		-	
3007	UnitModel		-	
3008	SW_Version		-	
3009	Empty			
3010	Empty			
3011	Empty			
3012	Empty			

3.1 Export Operation

The controller, when the key is inserted, verifies the presence of a file named "exportParam.txt" and that there is no file named "exportDone.txt", that will be the report file.
If these requirements are met, the checksum is compared and if these requirements are met, the various addresses are read and the report is written, which will have the following structure:

Error Code : Error Description.

Also, the same error code written in the report will be returned to the status register (address 3000 in the previous example).
This makes it possible to check when the operation is completed and perform a more accurate diagnosis in case of an error.

The file will contain "0: OK" if the operation is successful.

In this case it will be created a ExportedValues.txt with the following structure:

address1:value1
address2:value2
address3:value3
address4:value4
address5:value5
address6:value6
address7:value7
…
addressN:valueN

If the operator wants to repeat the export operation on another machine, he must first delete the "exportDone.txt" file and also the "ExportedValues.txt" file by hand (otherwise the latter will be overwritten).

3.2 Error Codes

The report file may contain the following error codes (values reported on the status log) with its diagnostic messages:

0 : Import Done.
xx Registers exported successfully.

1 : Checksum Error.
Check the Checksum registers position in Export Entities.
They should be right after the address written in the [START] tag.

2 : Write Error.
Error while writing registers. Check their position in Export Entities.
Error at Register n. xxxx.

3 : Generic Error.
Something went wrong during the Export Process.
Keep this file and contact the support.

4 : Format Error.
Check the Format of the exportParam.txt file.

5 : Operation in Progress.
This value is not written in the report file, but is written in the Status Register, allowing the application to check when the operation is completed.

Note 1: In the case of "Format Error", the register in which the status is to be written is not yet known, so the application will have no feedback.

Note 2: If one of the registers is not found (eg not exported to the application), a report file with “Write Error” is generated and the procedure stops with a message indicating which position (of the text file) is present the indicted register. Warning: The parameters before the "wrong" log are still written in the "ExportedValues.txt" file!

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