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1. Introduction

Sysapps.csv is a URCap which enable to save in a CSV file any variables of the UR program. It is only compatible with **UR e-series**.

Needed equipment for the installation:

- 1 Computer, 1 USB drive (FAT32 format), web connexion
- 1 UR e-series

2. URCap installation

2.1.1. Downloading of Sysapps.csv URCap

The following link will enable you to download the last version of the URCap:


<https://sysaxes.com/produits/URCap-Sysapps.csv/>

Versions compatibility:

URCaps	UR CB3.1	UR e-series
Sysapps_csv-1.0.2.urcap	Not supported	>= 5.12

2.1.2. URCap Installation (UR e-series)

For the installation proceed with the following:

1. Copy the .urcap file on your USB drive then insert it in the USB port of the robot.
2. On the top of the Teach Pendant, open the quick menu (icon ).
3. Select the setting tab. Then under System select URCaps.
4. Press the « + » button, select the URCap on your USB drive and press open.
5. Select Reboot.
6. After the reboot of the robot, the URCap is installed and ready to use.

NOTE: To remove an installed URCap, select it on the active URCap tab and press the « - » button and reboot the system to apply the changes.

3. Configuration

Do not forget to save your UR installation file after this process to save the changes. If you are using several installation files, copy this installation file as a reference (to conserve the licence key) or activate the licence in the other installation files.

3.1. Protection tab

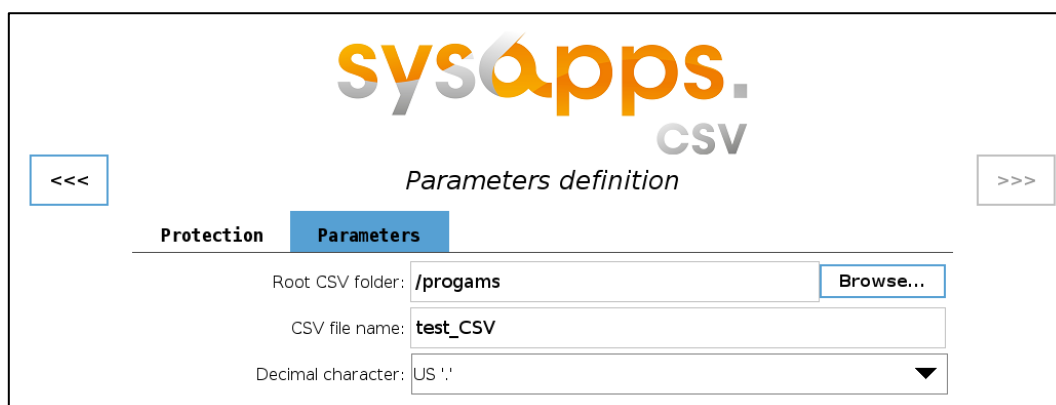
The URcap is protect against abusive copies. A licence key is needed for the activation of the URcap and must be asked to SYSAXES. When you are in programming mode, go to the installation tab and then select the URcaps – sysapps.csv tab.



The first line informs you of the current protection status (green = OK, red = not OK). To validate the protection, proceed with the following:

1. Insert a USB drive on the USB port of the Teach Pendant.
2. Select the Write button and choose your USB drive. This enable to save a info.txt file on your USB drive which is needed to generate the licence key.
3. Send the info.txt file to contact@sysaxes.com with the reference of your order.
4. Sysaxes will give you a protect.txt file to copy on your USB drive.
5. Insert the USB drive on the USB port of the Teach Pendant.
6. Select the Read button and choose the protect.txt file on your USB drive.

3.2. Parameters tab

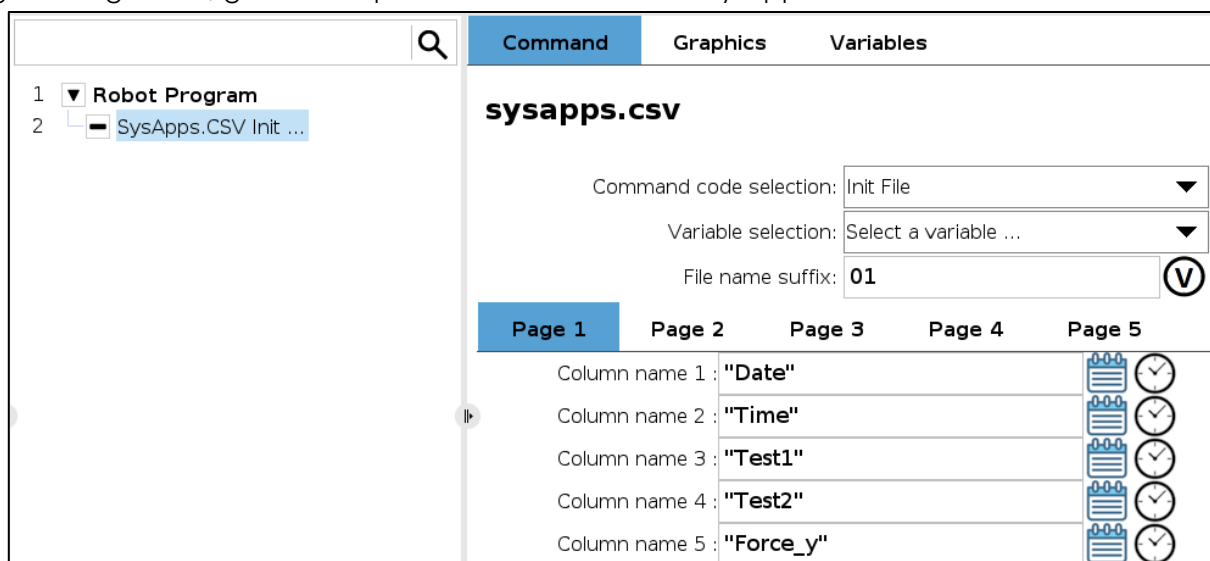


This tab enables to configure:

- The location to save the CSV files. It is advised to choose an external device such as a USB drive.
- The name of the CSV file.
- The type of decimal character « . » or « , ».

4. Use of the URCap

In programming mode, go to URCaps and insert the function Sysapps.csv:



There are three available commands: Init File, Append new line, Close file. Each one is described below.

4.1. Init file

The init phase enables to:

- Define the complementary name of the CSV file
- Define the names of the columns of the CSV file

This command must be only called once in the UR program.

The CSV file name will be as the following:

Base name (defined in the installation tab) + « _ » + complementary name + « .csv ».

For instance, if in the installation tab you have defined « Force_measure » for the base name, and if you put « 01 » for the complementary name, the CSV file will be named:


Force_measure_01.csv

If you would like the program to save different files during the execution of the program (1 file per execution) you can use a variable for the complementary name. For instance, if you have a « counter » variable which is increased in your program, your files will be named:

Force_measure_1.csv

Force_measure_2.csv

Force_measure_3.csv

To select a variable, type its name or select it in the variable list and press the  button. It is also possible to type a complex expression (counter*10, counter -1, ...).

The bottom part of the screen is used to name the columns of the CSV file. The calendar and clock buttons are shortcut to insert the words "Date" and "Time".

You can define up to 50 columns for the CSV files.

4.2. Append new line

The screenshot shows the 'sysapps.csv' configuration window. On the left, a tree view shows the 'Robot Program' with 'SysApps.CSV Write ...' selected. The main area has 'Command code selection' set to 'Append new line' and 'Variable selection' set to 'Select a variable ...'. Below, five value fields are shown: 'Date', 'Time', 'Test1_var', 'Test2_var', and 'force_y', each with a 'V' button, a calendar icon, and a clock icon.

The append new line command enable to add a line inside the current CSV file each time the UR program is executing the command. It can be inserted in a Thread to save data frequently.

To save the data, select for each column you have defined before what data you want to save. It can be a number, a variable, or a complex expression. To select a variable, type its name or select it in the variable list and press the **V** button

The calendar and clock buttons are shortcut to insert the current date and time. The current date is in linux format. The time is the number of milliseconds to add to the date.

4.3. Close file

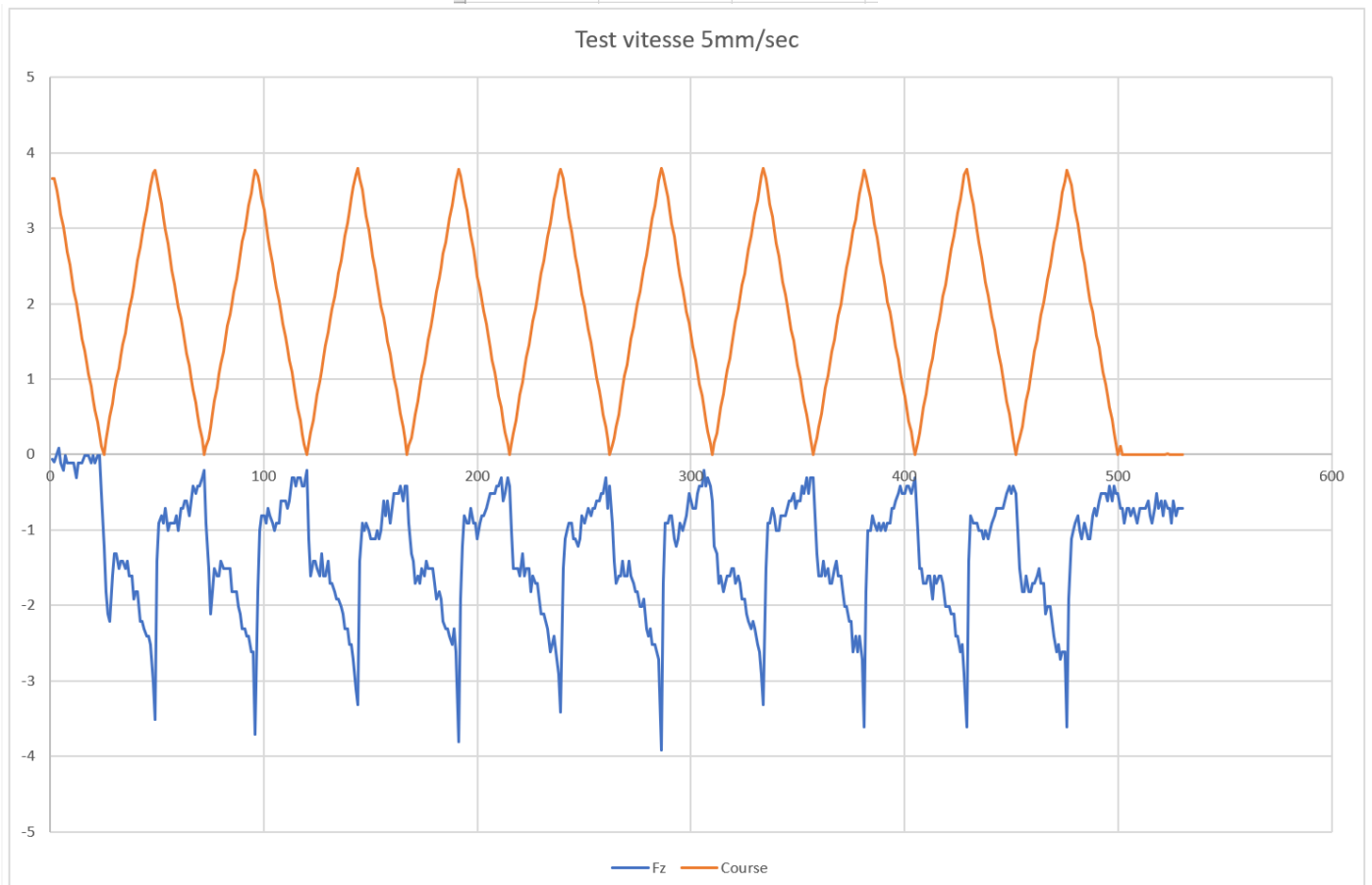
The screenshot shows the 'sysapps.csv' configuration window. On the left, a tree view shows the 'Robot Program' with 'SysApps.CSV Close' selected. The main area has 'Command code selection' set to 'Close File'.

This command closes the access to the current CSV file.

5. Example of use

Here are some saved CSV data opened and processed with Excel:

Nb valeurs	Fz	Course
1	-0,05625	3,65702
2	-0,1	3,66145
3	0,012499	3,5039
4	0,088282	3,34764
5	-0,111719	3,18433
6	-0,211718	3,01995
7	-0,011719	2,86392
8	-0,111719	2,68934
9	-0,111719	2,51656
10	-0,111719	2,34503
11	-0,111719	2,17664
12	-0,311718	2,01547
13	-0,111719	1,8532
14	-0,111719	1,70353
15	-0,111719	1,53536
16	-0,011719	1,37371
17	-0,011719	1,22324
18	-0,011719	1,0624
19	-0,111719	0,905994
20	-0,011719	0,740751
21	-0,111719	0,587696
22	-0,011719	0,432718
23	-0,011719	0,263754



6. Contact

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