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Subject: How to transfer a Motion Perfect 2 Project

APPLICATION NOTE

1. Introduction

Sometimes it is necessary to read all the programs and data from a Motion Coordinator so that they can be transferred to a replacement controller. This document shows in a step-by-step way how to save all the programs, known as the “project”, and all the data from the Motion Coordinator to a PC and then how to load them into a new controller.

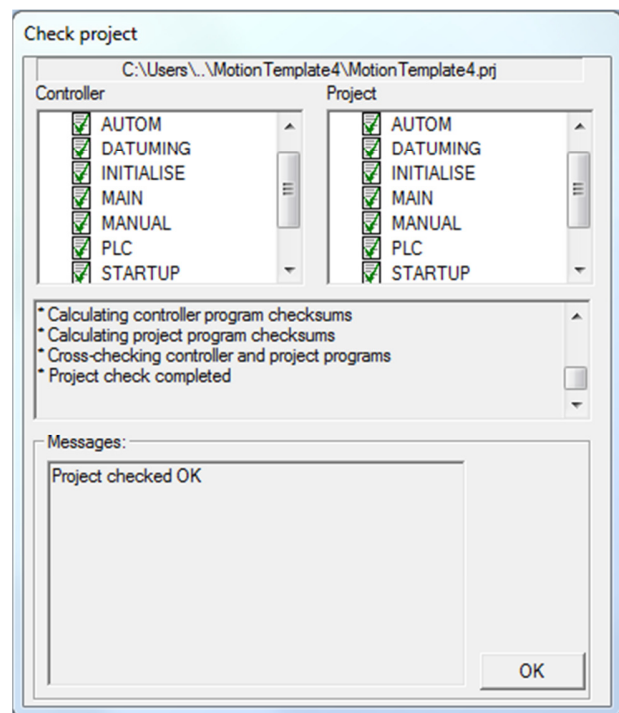
It is assumed that the reader has a basic understanding of how to open and connect Motion Perfect to the Motion Coordinator.

2. Connection

Connect the PC to the Motion Coordinator via the programming cable. This may be RS232, USB or Ethernet. When Motion Perfect is opened, it will try to synchronise the project in the Motion Coordinator with the back-up copy in the PC, if there is one. If the synchronisation shows differences, then select the SAVE button so that Motion Perfect will save all the programs into a Project Folder on the PC.

At the end of this process, the project check window should show that the PC and Motion Coordinator are synchronised as shown.

The programs are now backed up and can be loaded into a new Motion Coordinator, but the data stored in TABLE and VR battery backed RAM needs to be stored as well. See sections 4 and 5.

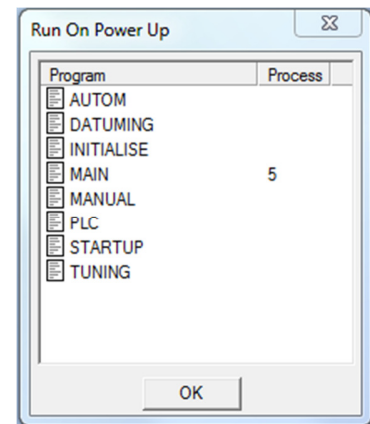


3. Autorun on power up

Check which programs are set to run on power up. Click the Motion Perfect 2 Menu *Program* -> *Set Powerup Mode*. At least one program must be set to run on power-up. Make a note of which one(s) are listed and their Process Number(s).

In this example, the program called MAIN is set to run on power up as process number 5.

This information will be automatically transferred to the new Motion Coordinator, so this is just a manual check that can be done to make sure all is OK.



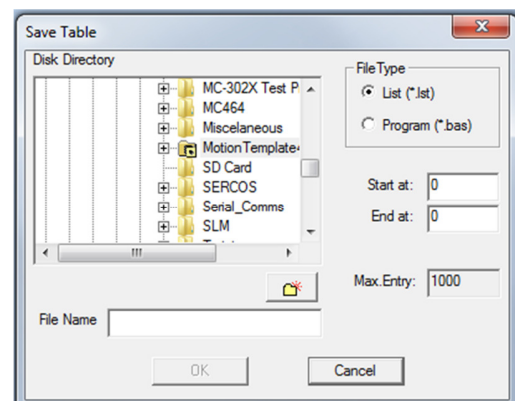
4. TABLE memory

Some data may be stored in the TABLE memory. Exactly how much data and how it is used will depend on the application programs. This guide shows how to transfer all the data that is currently loaded to the TABLE area of the Motion Coordinator, but in reality, only a small portion of the TABLE may be needed.

If only some of the TABLE has been used by the application programs, then it is possible that there are un-initialised values in the TABLE. Trying to save un-initialised values will generate an error in Motion Perfect. If that happens, you will need to select very carefully which TABLE index ranges to transfer.

Here is an example to save all the TABLE up to TSIZE-1 in the MC206X.

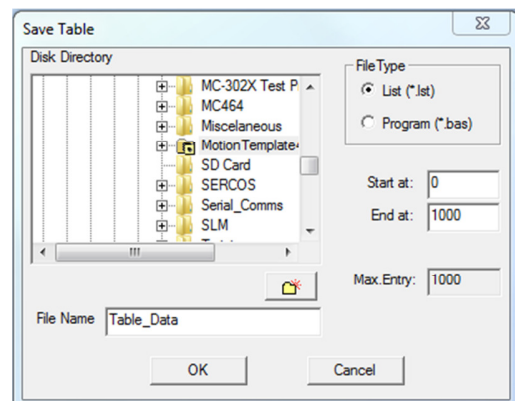
- In the Motion Perfect 2 menu click *Project* -> *Save Table File*.
- Note the value in Max Entry. This indicates the total TABLE in use. (Note in MC224 and MC464 the table is fixed, so Max Entry is not an indicator of the TABLE memory actually used.)
- Set the Start at and End at values in the boxes above Max Entry.
- Enter a suitable file name for the TABLE data to be stored as.
- Select the required File Type. .lst is recommended for transferring data from one controller to another.



Here is how the dialogue box looks after entering the values:

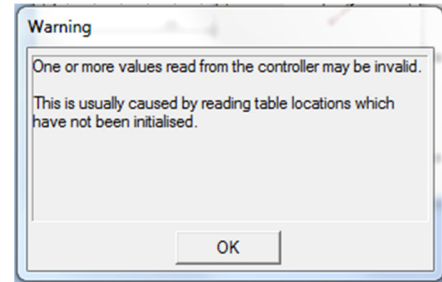
Note that the default folder used for saving the file is the Project Folder.

Click the OK button to start saving the data.



If this warning is seen, it may be necessary to save small parts of the table. Target the TABLE values that are definitely used by the programs.

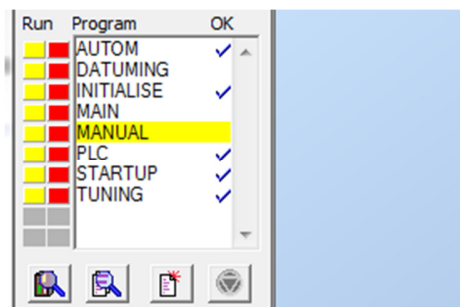
The Table_Data file is a text file and can be inspected with Notepad or any suitable text editor.



5. VR (global variable) data

In order to explicitly save the VR data, it is necessary to convert the data into a BASIC program. The BASIC program then becomes part of the project and is therefore automatically saved.

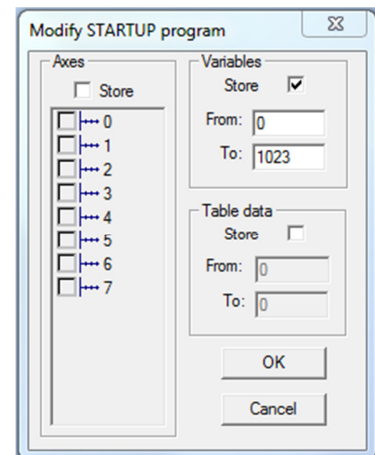
Before starting to save the VR data, it is a good idea to look for, and change the name of, a program called STARTUP if it exists.



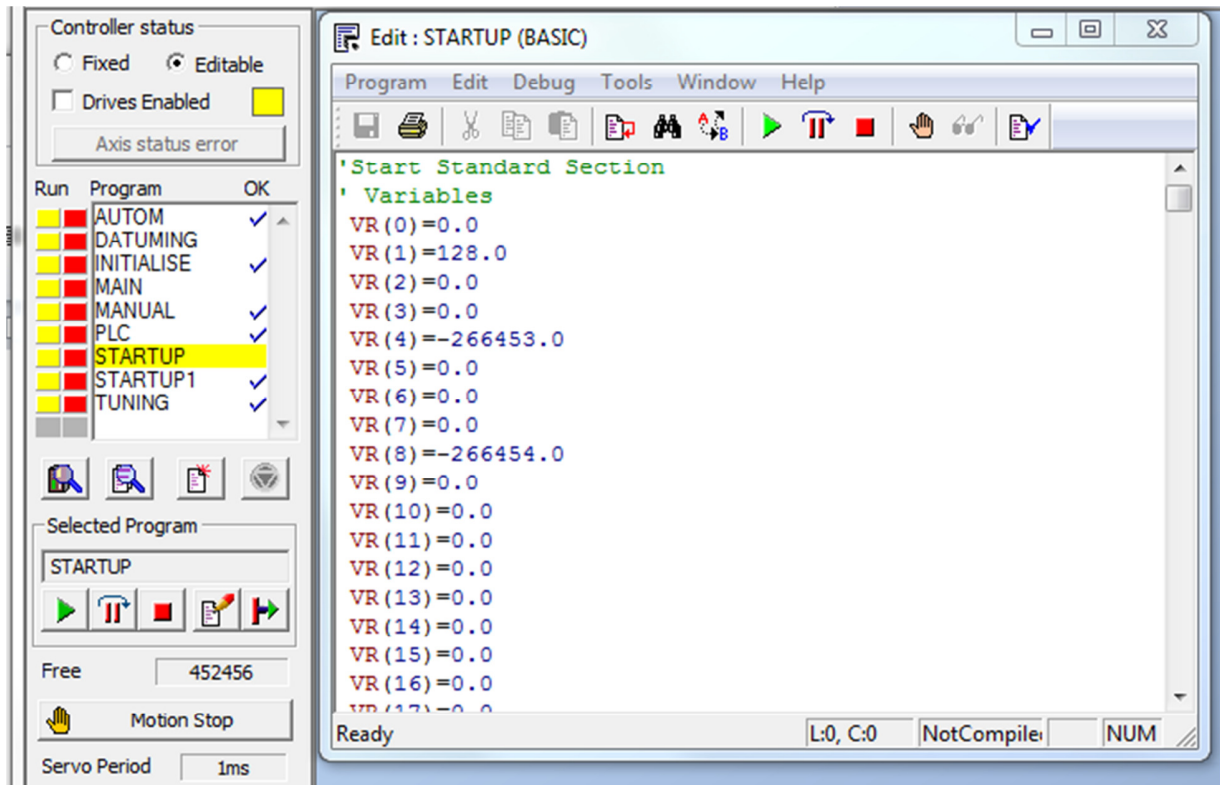
In the control panel on the left, “right click” the program STARTUP and select Rename. Enter the new name, for example STARTUP1 and click OK.

In the Motion Perfect 2 menu, click **Project -> Modify Startup Program**.

- Tick the Variables Store box
- Put in the VR range that is required to be stored. The example here shows all the VRs for a MC206X selected. VR(0) to VR(1023). Note that the more VRs you store, the bigger the program size will be. Make sure there is enough free memory to store it.
- Click OK. The VR data will be read and a program called STARTUP will be created, or if it already exists, the VR data will be appended to it. (This is why we re-named the original STARTUP)
- Now you have a program with all the VR data in it.



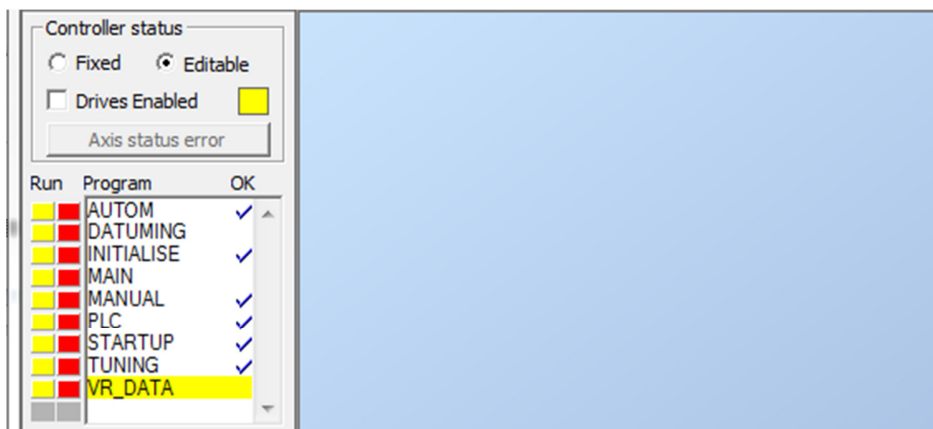
Program with VR data:



Now rename the STARTUP program to VR_DATA.

If there was an original STARTUP program in the project, rename the STARTUP1 program back to STARTUP.

The project now looks something like this:



You have now saved all the programs, the TABLE data and the VR data, and are ready to load it all into a new Motion Coordinator.

Before you finally disconnect from the old Motion Coordinator, make sure to FIX the Project again. Click the Fixed button in the control panel and respond to the dialogues so as to leave the programs stored securely in the Flash memory.

6. Loading to a new Motion Coordinator.

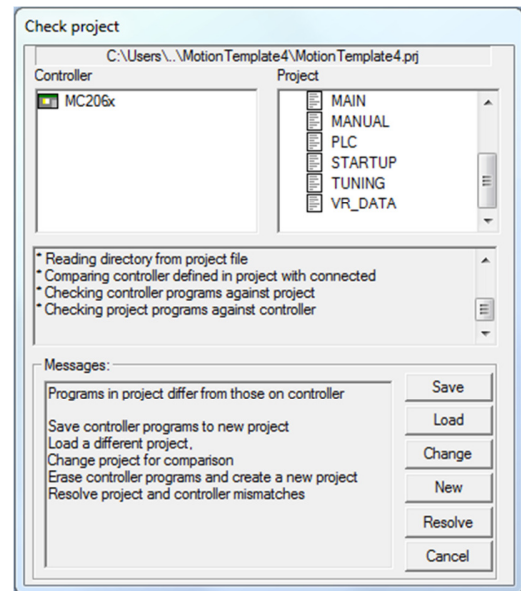
Connect to the new Motion Coordinator in the usual way. When the project check is done, select LOAD.

Once the project is loaded, the project check will then repeat and you will see the list of programs on the left side as well as the right, and all should have a TICK next to the program name.

If there are any crosses, then it is either that the programs are being loaded to a different Model of Motion Coordinator, or the system software is different.

To see the differences in programs that are marked with the X, click the RESOLVE button and then select the EXAMINE function in the resolve project dialogue.

Each difference may need to be resolved by making a change to either the system software version or by editing the program to suit the new firmware.



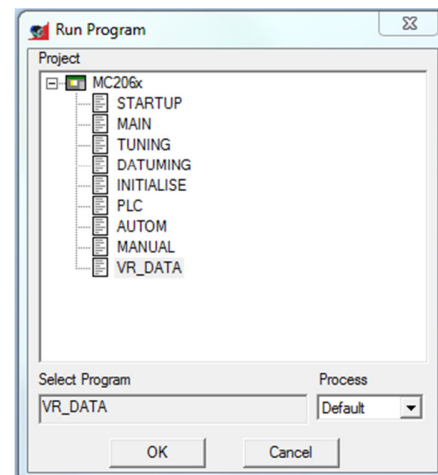
Assuming that the project check was OK, we now need to load the VRs and TABLE.

Load the VRs;

In the Motion Perfect 2 menu, select **Program -> Run**.

Select the program VR_DATA and click OK.

It is only necessary to run the VT_DATA program once. After that, the programs will have access to the same VR values as there were in the old Motion Coordinator.

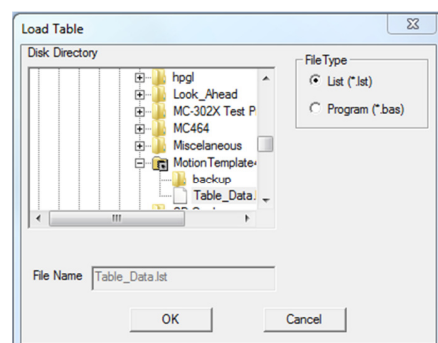


Load the TABLE;

In the Motion Perfect 2 menu, select **Project -> Load Table**.

Select the saved table data file and click OK.

If there were data errors when the table was saved, and they were not corrected in the text file, then table data will not load.

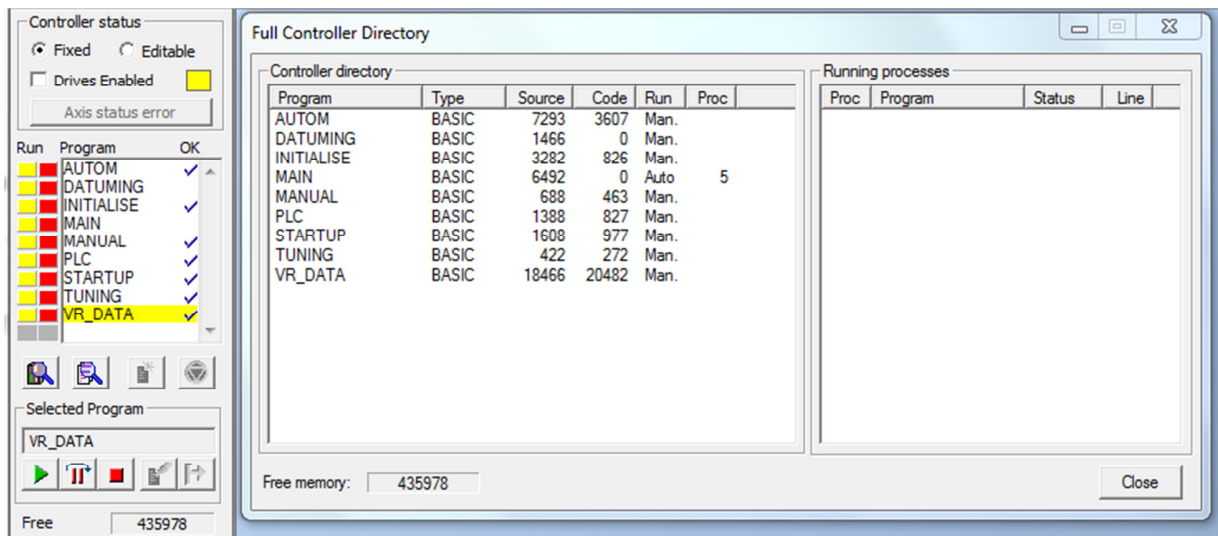


7. Final set-up

When everything is loaded, check that the correct program(s) are set to run on power up. Select **Controller -> Full Directory** in Motion Perfect 2.

Click the FIX button in Motion Perfect.

In the example below, you can see that the project is FIXed and that MAIN is set to run on power up as process number 5.



The screenshot shows the 'Full Controller Directory' window in Motion Perfect 2. The window is divided into two main sections: 'Controller directory' and 'Running processes'.

Controller directory:

Program	Type	Source	Code	Run	Proc
AUTOM	BASIC	7293	3607	Man.	
DATUMING	BASIC	1466	0	Man.	
INITIALISE	BASIC	3282	826	Man.	
MAIN	BASIC	6492	0	Auto	5
MANUAL	BASIC	688	463	Man.	
PLC	BASIC	1388	827	Man.	
STARTUP	BASIC	1608	977	Man.	
TUNING	BASIC	422	272	Man.	
VR_DATA	BASIC	18466	20482	Man.	

Running processes:

Proc	Program	Status	Line

At the bottom of the window, the 'Free memory' is displayed as 435978. A 'Close' button is located in the bottom right corner.

If all is satisfactory, disconnect Motion Perfect 2 and in the terminal type EX. (software reset)

You should see the programs compiling and running in the terminal text.

For example:

```
Compiling STARTUP
Linking STARTUP
Pass=4
Compiling MAIN
Linking MAIN
Pass=4
Compiling TUNING
Linking TUNING
Pass=4
Compiling DATUMING
Linking DATUMING
Pass=4
Compiling INITIALISE
Linking INITIALISE
Pass=4
Compiling PLC
Linking PLC
Pass=4
Compiling AUTOM
Linking AUTOM
Pass=4
Compiling MANUAL
Linking MANUAL
Pass=4
Compiling VR_DATA
Linking VR_DATA
Pass=4
>>[%[Process 5:Program MAIN] - Running
%[Process 5:Program INITIALISE] - Include
%[Process 5:Program MAIN] - Include
%[Process 1:Program PLC] - Running
%[Process 1:Program INITIALISMachin
E] - Include
%[Process 1:Program PLC] - Include
```

If everything seems to run correctly then you are good to go.