EasyMotion Studio Application Instruction Set
TILL Photonics application

1. Introduction

EasyMotion Studio is an integrated development environment for the setup of Technosoft intelligent drives and motors. The output of the EasyMotion Studio is an application which can be downloaded to the drive/motor EEPROM or saved on your PC for later use.

The application ***P368 - TILL Photonics v1909*** will allow you to set and configure the specific mode (time or distance) and the specific parameters (time and distance periods, output polarity, output activation during the acceleration and the decelerations).

This document will explain how to:

1. Install EasySetUp Studio, the software tool necessary for setting the active mode and the specific parameters. Update the software on the internet.
2. Download the specific firmware
3. Start the communication with the board via RS232
4. Download the application and use the Control Panel features in order to set the active mode and the specific parameters.
5. Set via RS232 the active mode and change the values of the parameters.

2. PC Software Tool installation and update

Download and install EasySetUp Studio from our web page:

http://www.technosoftmotion.com/products/OEM_PROD_EasyMotion.htm

Update the product on the internet, by choosing “Help/ Check Updates” command and press the “Start” button.

After the complete installation of the program copy the self-extract archive (**"ESM.P368.TILLPhotonics.Patch.v1.exe"**) into the ESM Motion Studio main folder (the default path is C:\Program Files\Technosoft\ESM\)

Execute the self-extract archive in order to copy your specific application to the PC.

3. Download the specific firmware

Lunch the Firmware Programmer tool from ESM root directory.

To download the specific firmware on the drive follow the next steps:

1. Configure the Serial Settings:
    a. Select at “**Port**” the serial port of your PC, where you have connected the serial cable. By default the selected port is COM1
    b. Select the desired baud rate from “**Baud Rate**” list. Default value is 115200 kbaud.
    c. Select the **Axis ID of the drive/motor connected to PC** – option “autodetected”

2. Choose from the **Select firmware** list, the firmware **F442A**.
3. Press the **Start Programming** button to launch the firmware programming process.

If the operation is successful, it is signalled with an OK inside a green disk and a message with the firmware version programmed and drive/motor axis ID. If the operation fails, the Firmware Programmer displays ERROR inside a red disk and a message explaining the error type.

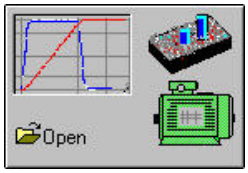
4. Getting Started with EasyMotion Studio

4.1. Set EasyMotion for communication via RS-232 with the drive

1. In order to use the RS-232 communication, you need to connect your PC with the Technosoft drive through an RS-232 serial cable. Use a 9-wire standard serial cable: male-female, non-inverting (e.g. one-to-one).
2. Power-on the drive.
3. From EasyMotion Studio, select menu command "**Communication | Setup**"
    1. Select at "**Channel Type**" RS-232 (default).
    2. Select at "**Port**" the serial port of your PC, where you have connected the serial cable. By default the selected port is COM1
    3. In "**CAN Protocol"** field choose **TMLCAN (CAN2.0B, 29-bit identifier)**.
    4. Select the desired baud rate from "**Baud Rate**" list. Default value is 115200 kbaud.
    5. Set the "**Axis ID of the drive/motor connected to PC**" to 255
    6. At "**Communicate with drive/motor**", set the axis ID of the drive/motor you want to discuss, in this case will be the one: "**connected to PC**"
    7. Press the OK button

If the communication works properly, you'll see displayed on the status bar (the bottom line) of the EasyMotion the text "**Online**", the axis ID of the drive/motor and the firmware version read from the drive.

4.2. Open an EasyMotion Studio Project

From the first window of the EasyMotion press 

Open button for opening a previously created Project which was saved on your PC.

Chose from the list the ***P368 - TILL Photonics v1909*** project. The specific project will open.

5. TILL Photonics Project File

5.1. Downloading the application on the drive

The opened project contains the application *SOL application1* which you have to download on the drive.

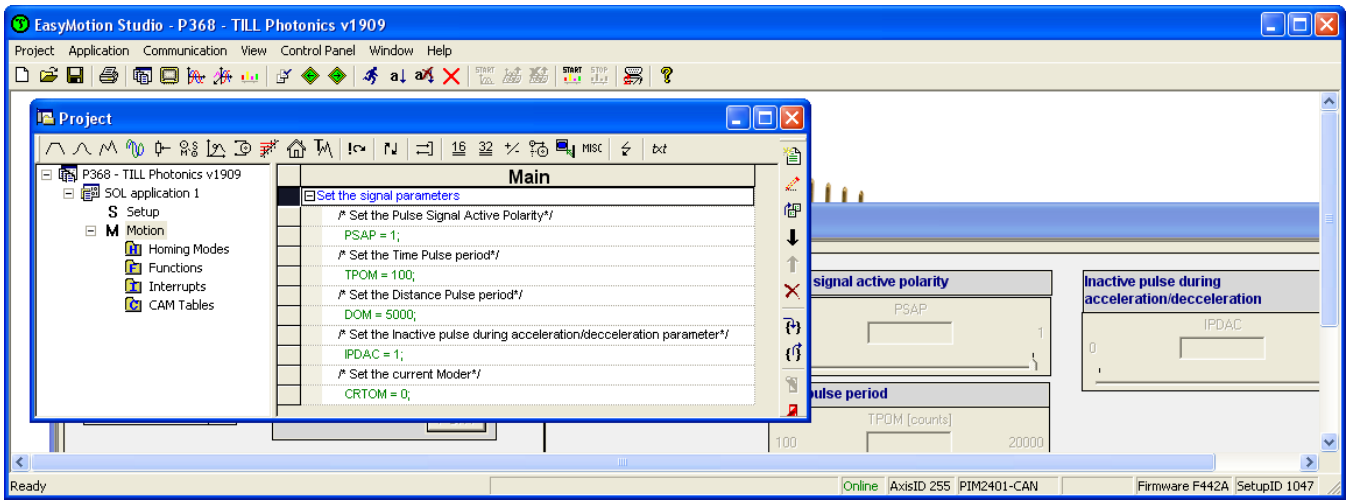


Figure 1. *EasyMotion Studio - P368 - TILL Photonics v1909 project*

Before downloading a new application on the drive you have to *build* it, by choosing "Application/Motion/Build" command. **You must build the application every time you make a change on it**.

After building the application press the  "Run" button on the upper toolbar.

5.2. Changing the Mode Parameters

The mode parameters that can be changed by the user are:

TML variable	***Type***	***Address***	***Parameter***	***Units***	***Range***	***Resolution***
PSAP	INT	0x888	Pulse Signal Active Polarity	-	0-1	-
TPOM	INT	0x889	Time Pulse Period	100 usec	100-20000	100 usec
DOM	LONG	0x88A	Distance Pulse Period	usteps	5000 - 650000	10usteps or usteps executed in one fast loop
IPDAC	INT	0x88C	Inactive Pulse During Acceleration/Decceleration	-	0-1	-
CRTOM	INT	0x886	Set the Current Mode 0 – NO MODE 1 – TIME MODE 2 – DISTANCE MODE	-	0-1-2	-

TML variable	*Type*	*Address*	*Parameter*	*Units*	*Range*	*Resolution*
APW	INT	0x88D	Active Pulse Width	100 usec	1-90	1

Remark:

1. TML variable are the Technosoft Motion Language variables.

2. The Active Pulse Width variable (APW), has the default value set at 1msec (10) and can be changed if necessary introducing in the main application a new parameter set instruction.

3. If the present PWM, loops period configuration is changed the units for the time parameters also will be changed..

By default the application set the parameters to the following default values:

TML variable	*Default value*
PSAP	1
TPOM	100
DOM	5000
IPDAC	0
CRTOM	0
APW	10

You have several ways to modify the mode parameters:

- Changing the values from the main application, build it and run it again (see chapter 5.1)
- Changing the values from the dedicated Control Panel **4_TILL Photonics variables.cp** (see chapter 5.2.1)
- Sending online commands through the Command Interpreter tool. (see chapter 5.2.2)
- Sending RS232 commands from a serial host. For composing the serial messages you will use the Binary Code Viewer tool. (see chapter 5.2.3)

5.2.1 Using Control Panels tool

The project contains the Control Panel **4_TILL Photonics variables** that allows to the user to:

- Set the active mode. In the left area of the control panel press the OK button from the desired mode. The active mode is displayed with green **1**. If no mode is active the displays will show red **0**.
- Set and read the mode parameters trough the specific slider (writing the desired value, or using the slider bar).

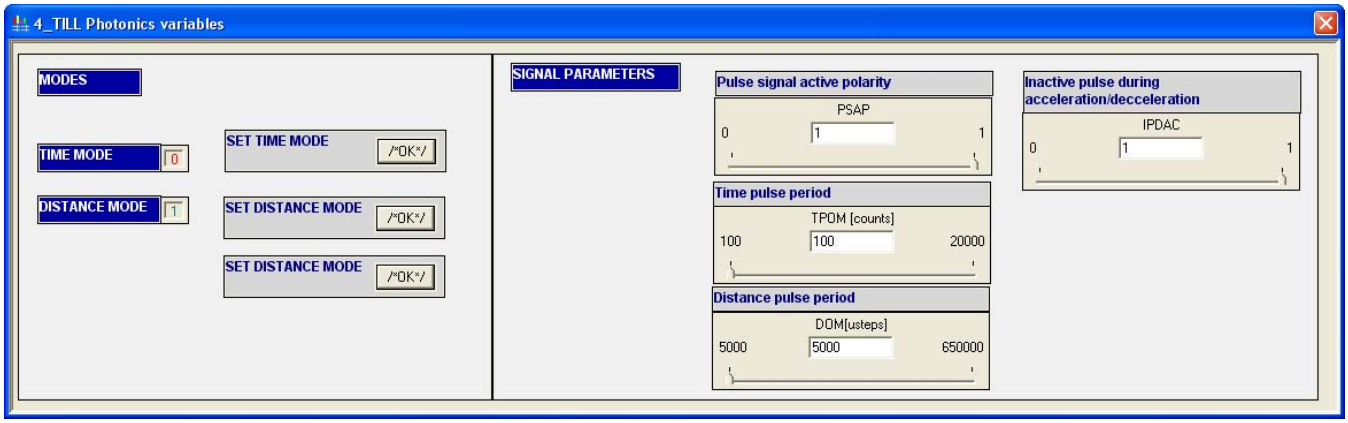


Figure 2. *Control Panel - 4_TILL Photonics variables*

In order to see the list of the currently defined control panels use the “View | Control Panel” command menu,. Click on a list item in order to alternatively change its display status (show or hide).

For activating the control panels of an application use the 

“Start Control Panel” button or the “Control Panel | Start” menu command to start the control panels of an application. From this moment, all the contents of all the objects contained in the visible control panels of that application will be updated and displayed on the screen.

5.2.2 Using Command Interpreter tool

The Command Interpreter allows you to send on-line TML commands to your drive/motor. You can use this tool to set/get TML data like the mode parameters.

You can open the Command Interpreter using the "View | Command Interpreter" menu command, or by selecting the associated toolbar icon  on the upper toolbar.

To find the value of a TML data, type in the question mark character "?" followed by the TML data name and press the [Enter] key. The command interpreter displays the TML data type and address as type@address and its value in decimal and hexadecimal format (see the figure 3).

To set the value of a TML data, type its name followed by equal and the value, then press the [Enter] key (see the figure 3).

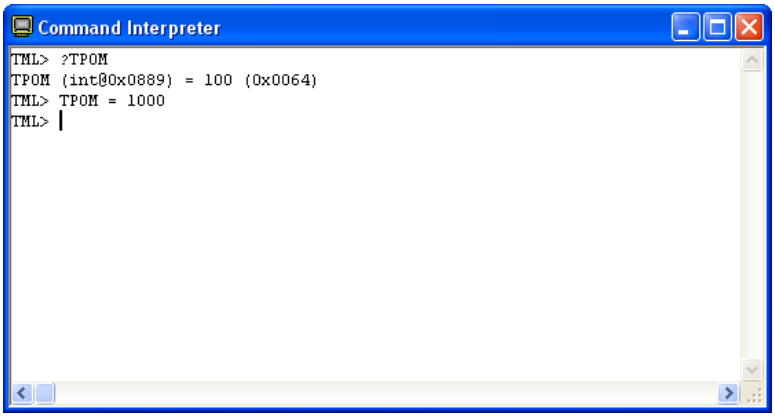


Figure 3. *Command Interpreter tool*

5.2.3 Using Binary Code Viewer tool

The Binary Code Viewer offers you a quick way to program your host for exchanging messages with a Technosoft drive/motor. Through this tool, you can find how to encapsulate a TML command for the RS232 communication type. You get the both the contents of the messages you have to send and the expected answers from the drive/motor, if it is the case.

For activating the Binary Code Viewer choose the Application/ Binary Code Viewer commands.

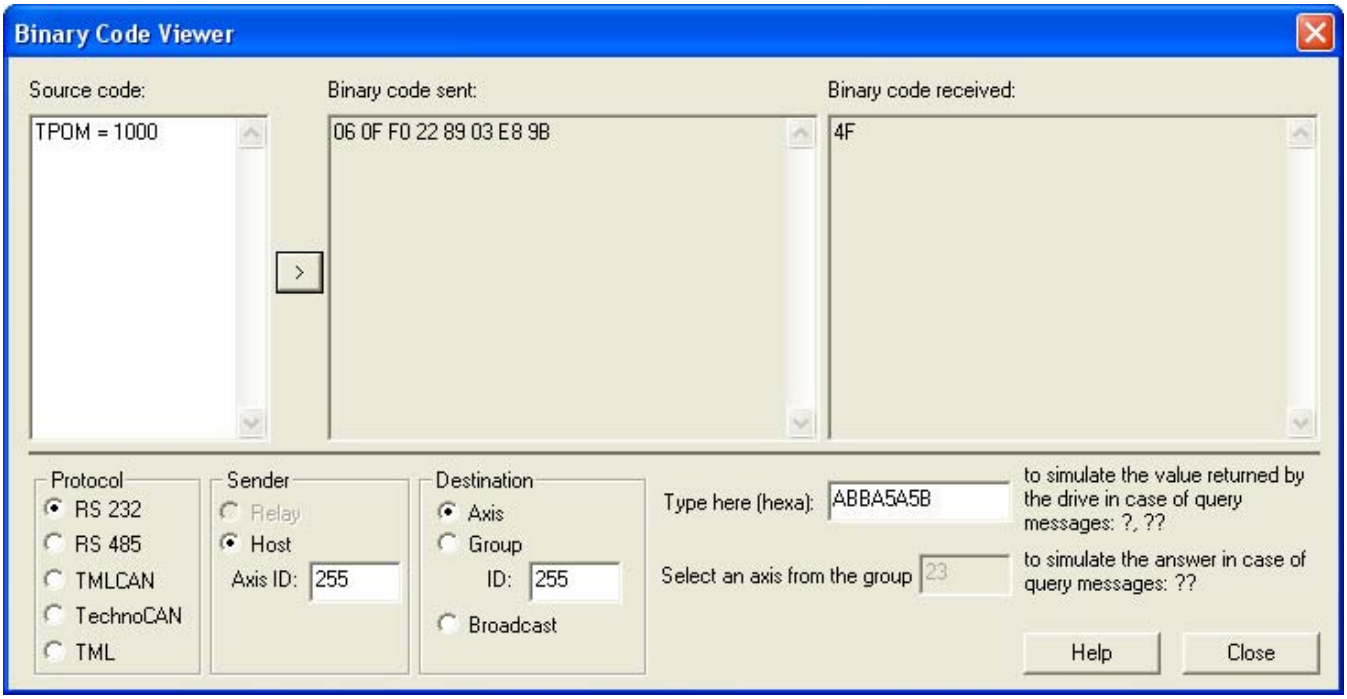


Figure 4. *Binary Code Viewer*

First select the communication *Protocol*: serial RS 232.

At *Sender* select the *Axis ID* of the message sender. In the case of RS-232, the sender is always your *Host*, as 2 drives/motors may not be connected between them using RS-232.

At *Destination* choose *Axis* and type the specific ID.

At the *Source code* type the desired TML instruction, and see the encapsulated message in the *Binary code sent*.

6. Conclusions

The EasyMotion Studio application presented in this document allows you to set the desired mode: time or distance and the specific parameters: time and distance periods, output polarity, output activation during the acceleration and the decelerations.

From the tests performed in both time and distance mode the jitter was less than 10 microseconds.

In distance mode if the speed imposed is not a multiple of slow loops period of time (meaning 8 in the actual configuration), one fast loop jitter will appear.