PROJECT

FISCHERTECHNIK TX-C

FOR

.NET FRAMEWORK

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VERSIE 1.1

FTMSCLIBEXNET USER GUIDE

FtMscLibExNet project

INTRODUCTION

- The FtMscLibExNet.dll is an assembly which offers FtMscLibEx functionality, including event driven support, at .NET framework (managed code) level.
- The event driven part is native and makes responding on sensor changes faster than polling.
- The FtMscLibExNet is an .NET assembly and can directly be used in VB.NET, C# or other .NET dialects.

SYSTEM REQUIREMENTS

We suppose that the user is familiar with:

- The FtMscLib API,
- The basics of .NET and VB.NET or C#,
- The event mechanism in .NET and VB.NET or C#,
- The notion of event driven programming ,

The help is part of MS-Visual Studio, we assume that you are able to make use of the stand alone (.chm) help or you are able to add the FTMscLibExNet help to the Help viewer.
(See the MS-Visual Studio documentation.

Question, remarks and bug reports can be sent to ft.info@inter.nl.net

OPERATING SYSTEM

FtMscLinExNet is supported on and has been tested on:
- MS-Windows sp1 7 x64 or x86
- MS-Windows 8(.1) x64 or x86

It is not tested on MS-Windows Vista but it can probably work.

THE LIBRARIES

- FtMscLibEx has been compiled with MS-Visual Studio 2012 update 4
- FtMscLinExNet has been compiled for .Net framework 4

In some case the loading of the FtMscLibEx is not working.

- The C++ redistributable 2012 (x86) is missing

In some case the loading of the FtMscLibExNET is not working.

- On MS-Windows 7 sp1: .Net framework 4 is missing.
- On MS-Windows 8(.1).: Net framework 4 has been included in installation.
  Check if it has been installed?

ABOUT C++ REDISTRIBUTABLE

Visual C++ Redistributable for Visual Studio 2012 Update 4 can be found here:
http://www.microsoft.com/en-us/download/details.aspx?id=30679
Click on download a choose the file which are needed.

- On a x64 you need to install both the x64 and x86 C++ redistributable:
  VSU_4\vcredist_x64.exe and *VSU_4\vcredist_x86.exe*
- On a x86 you need to install the x86 C++ redistributable:
  VSU_4\vcredist_x86.exe

General information page : http://support.microsoft.com/kb/2019667

ABOUT .NET FRAMEWORK

This version is using .NET framework 4, it needs to be present on your system, if not your can download and install it from:

- Web installer .Net framework 4 for both x86 and x64, only needed on MS-Windows 7
  http://www.microsoft.com/en-us/download/details.aspx?id=17718
- Alternative:
  Web installer .Net framework 4.5.2 for both x86 and x64 needed on Windows 7 or 8(.1)
  http://www.microsoft.com/en-us/download/details.aspx?id=42643

Notes:
- .Net framework 4 installed (Net framework 4.5 is a replacement for .Net framework 4)
- .Net framework 4 is part of the Windows 8(.1) installation.
- MS-Visual Studio 2010 covers only the .NET framework 4.0 and not 4.5.X functionality.
- See also for additional .NET 4.0 info: http://support.microsoft.com/kb/2468871

WHAT IS NEW IN VERSION 1 (2014-05-22)

1. The .NET interface is build on top of the FtMscLibEx.dll
2. It implements the native events from the Universal Inputs, Display buttons and Counters.
3. Most of the API of chapter 2 and 3 FtMscLib and FtMscLibEx description are implemented.
   The chapter 4, 5 and 6 API's will follow.
4. See also FtMscLib and FtMscLibEx functional specification description.
5. The FtMscLibExNet is a .NET Framework 4 library.
   This to support MS-Visual Studio 2010.
   The next version will be based on .NET Framework 4.5.
   Advice, start with using MS-VS2012 or higher for your new projects.

WHAT IS IN THE PACKAGE?

The x64 versions of both the libraries are add for experimental use.

The x86 versions in **VB.NET example** project will run under x64.

Warning: Don't mix up x86 and x64 libraries.

/Documentation	API documentation
/Documentation/Help	The FtMscLibExNet documentation, in several Microsoft formats :HTML help 1 (.chm), MS-Help Viewer (mshc) and Web site (HTML and ASP.NET). This enables you to integrate the Help into VS2010 of 2012. The HELP'S have been generated with Sandcastle, see also: http://shfb.codeplex.com/ .
/FtMscLibEx	Both the x86 and x64 version Version 01.05.14 (2014-05-16). Normally the X86 version will do because x86 project will run on a x64 system. Warning: Don't mix up x86 and x64. See for the search path for unmanged dll's: http://msdn.microsoft.com/en-us/library/7d83bc18(v=vs.110).aspx prerequisite: x86 version: C++ redistributable 2012 (x86) on both x86 and x64 operating system. x64 version: C++ redistributable 2012 (x64), works only on a x64 operating system.
/FtMscLibExNet	Both the x86 and x64 version. Assembly version 1.0.1.x File version 1.0.1.x Normally the X86 version will do because x86 project will run on a x64 system. This is a .Net assembly, the lib is also usable with C# or other .NET based languages. This assembly can be placed in the GAC as well. Assembly has been signed. prerequisite: Presents of .NET framework 4 (or 4.5, 4.51 or 4.5.2 ; this higher versions are replacements for version 4.0:)
/VB.NET example	Example
/VB.NET example/exe	Example, precompiled versions
/VB.NET example exe/x86	Is containing a 32 bits precompiled version of the **RoboTXctrl example that's run under Windows 7 and 8(.1) both x86 and x64.** http://social.msdn.microsoft.com/Forums/en-US/d4fa83dc-eed1-4ead-96a1-78bbd9ba6d3a/vb-express-target-x86-platform?forum=vblanguage
/VB.NET example exe/x64	Is containing a 64 bits precompiled version of the **RoboTXctrl example that's only usable under Windows 7 and 8(.1) x64.**
/VB.NET example/ VS2010project	The solution file **RoboTXctrl.sln** can be use with MS-Visual Studio 2010. 2012 and 2013 VB.NET examples of how to use the FtMscLibExNet assembly. The compiler needs to compile this example as a .NET framework 4.

Additional info:

http://stackoverflow.com/questions/270531/how-to-determine-if-a-net-assembly-was-built-for-x86-or-x64

THE ROBOTXCTR EXAMPLE

This **RoboTXctr** example has as objective to show the functionality.
It has not the pretention to be a good example of a HMI (Human Machine interaction) or GUI (Graphical User Interface).
We has the intention to improve the examples in the near future.

CONFIGURATION FOR THE TX-C IN THE EXAMPLE:

INTRODUCTION

The setup for the pinball machine has been used for the example.

ACTUATORS

M1 encoder motor M1

O3, O4, O5, O6   actuator (one direction only) compressor motor, lamp, etc.

SENSORS

I1, i2   Switches

C1 for the encoder motor M1

WORKING WITH EVENTS

The sensors (Universal inputs, fast counter inputs and Display Buttons) can be used by polling or as native events.

Polling is the way that the C API in the FtMscLib is offering.
Callbacks for the sensors has been added in the FtMscLibEx.
In the FtMscLibEx this has been extended to the Event mechanism as available in .NET.

Each kind of sensor input has its own Event.
The Events are only generated when it is enabled. All the events are default disabled.
This mechanism is present to avoid the generation of unneeded events.

Remarks:

Remember that in the analogue mode, each change in the value will generate an event.
        Most of the time it makes no sense to activate the event mechanism for an analogue input, polling will be better.
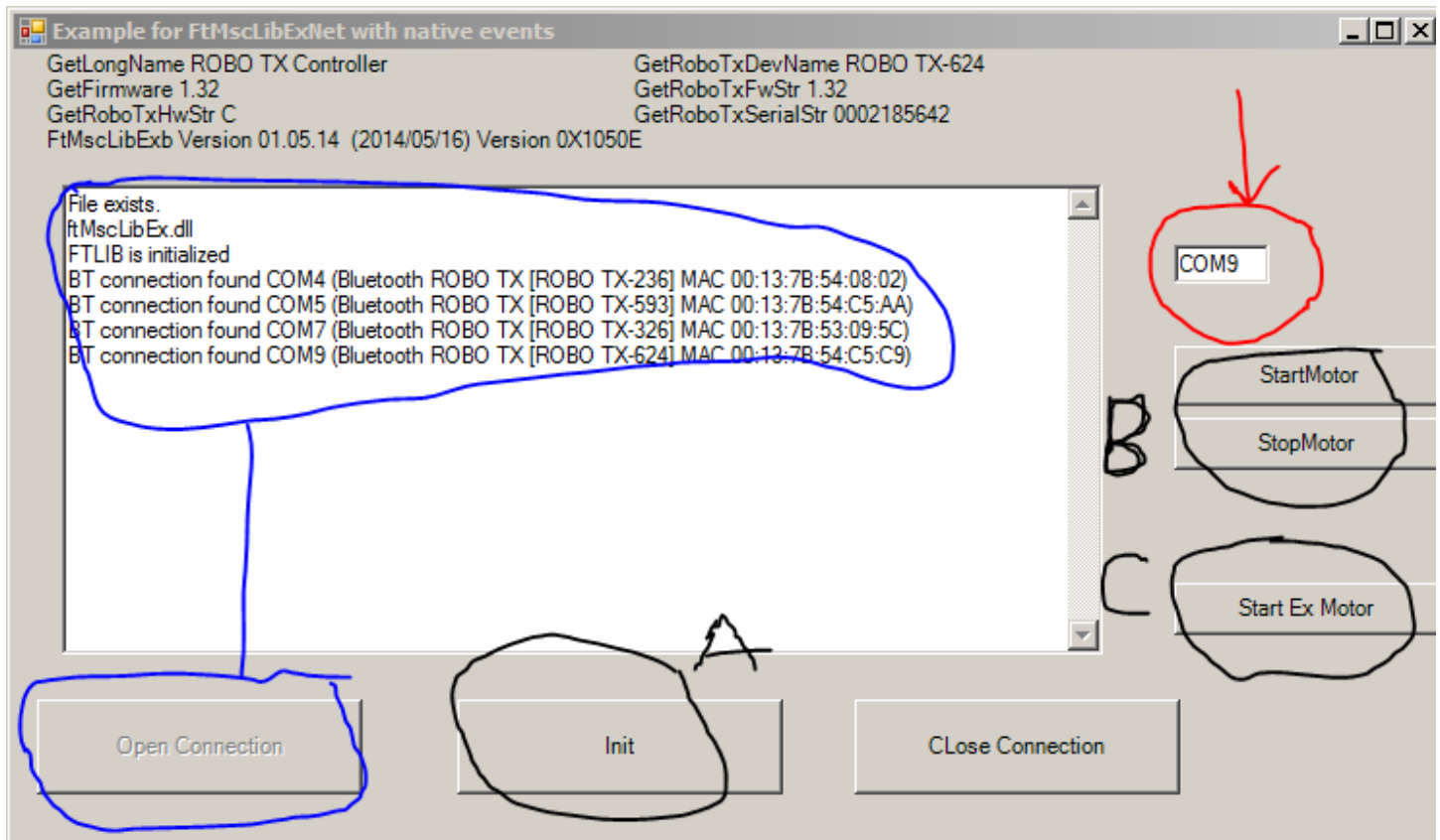   This to avoid the generation of too many events.

Take care that the event handler does not blocked or consume too much time.

HOW TO PROGRAM AN EVENT?

1. Configurate the sensor input.
2. Install the event handler(s)
3. Enable the sensor input event.

A sensor input can be (dis)enabled more times during the program live cycle.

1. Fill in your connection (use Robo Pro to test it)
2. Open Connection
3. Init

When you are compiling for x64 only, you will need to change the lib in use to x64