TWN4

AppBlaster User Guide

Elatec GmbH

Contents

1 Installation

You received the program AppBlaster as part of the developer pack for TWN4, which is distributed as a zip file. In order to install the package, please follow these steps:

- Create an empty directory on your hard disk

- Unzip the entire content of the zip file into this empty directory

- The program AppBlaster can be found in the top directory of the TWN4 developer pack.

2 System Requirements

There are the minimum system requirements for a serious use of the TWN4 Developer Pack:

- Operating system: Microsoft Windows XP or later, 32 or 64 bit

- Microsoft .NET Framework 3.5

- Processor (CPU): 2 GHz
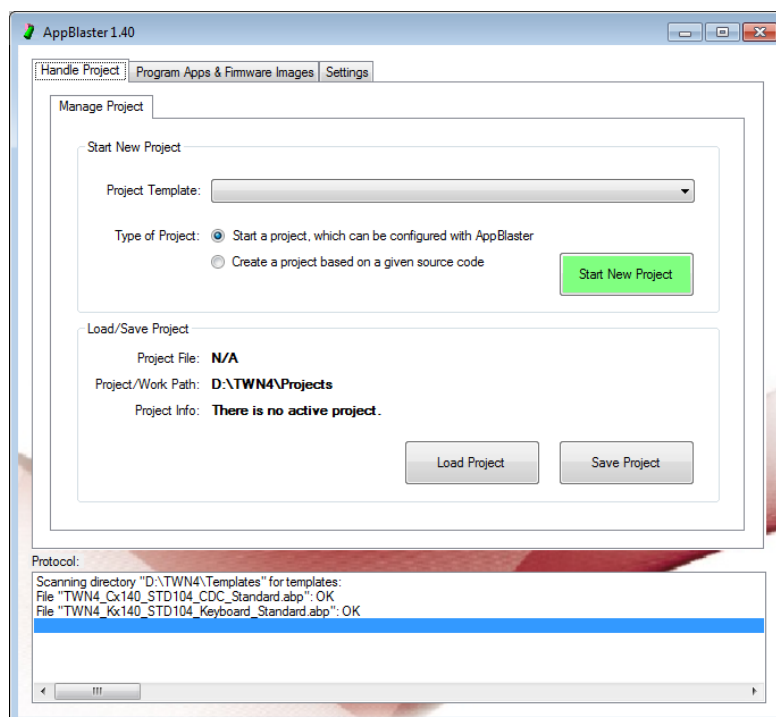
- Hard Disk: 200 MB

- RAM: 2 GB

3 Preparing TWN4 for Operation

There are several ways to prepare TWN4 for operation:

- Interactive configuration of TWN4 with AppBlaster
- Write an App for TWN4 in programming language C
- Directly program an appropriate firmware image into TWN4

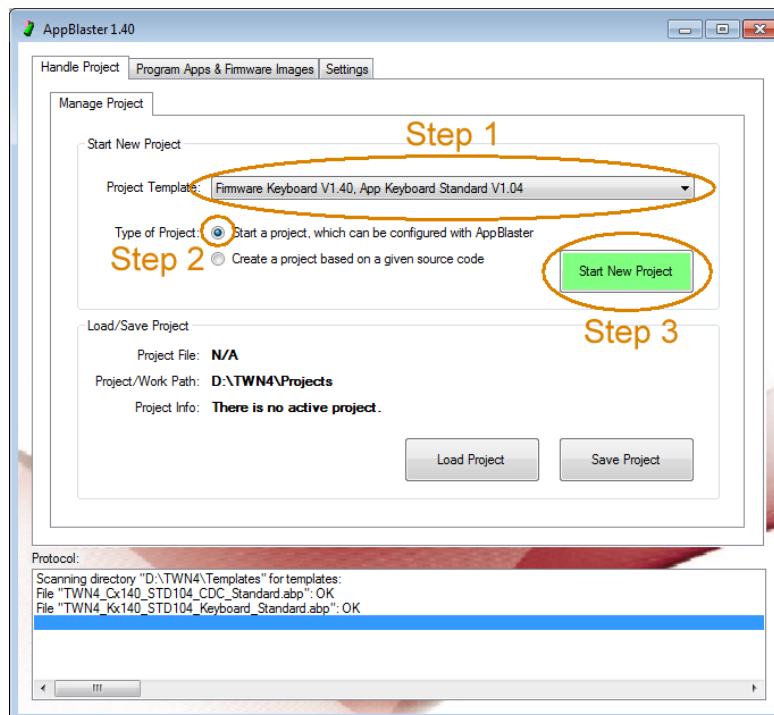The following sections describe, how this can be achieved.

Please start AppBlaster. After startup, the following dialog appears:

4 Interactive Configuration of TWN4
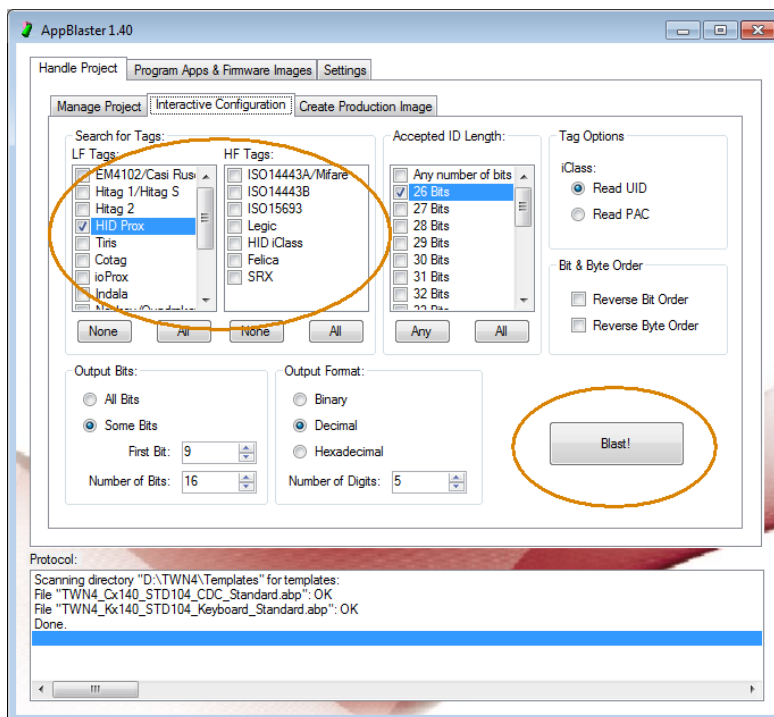
4.1 Steps: Start a New Project

- Select the tab sheet "Handle Project - Manage Project"

- Step 1: From the combo box "Project Template" select the appropriate template for your project. Currently there are two templates, which can be selected: USB CDC (virtual COM port) and USB keyboard. If you would like to operate TWN4 via RS232, it makes no difference if you choose CDC or keyboard. You at least have to select one of both.

- Step 2: Specify, if you would like to configure the project template or specify your own source for an App. As we would like to do interactive configuration, select "Start a project, which can be configured with AppBlaster". This is also the item, which is selected by default.

- Step 3: Click the button "Start New Project".

4.2 Steps: Setup Configuration for TWN4

The minimum requirement for a working configuration is to select the types of transponders, which are used in the project. This might be either transponders in the frequency range 125kHz (LF) and/or 13.56MHz (HF).

- Select appropriate types of transponders.

- The remaining controls of the dialog allow to do a detailed configuration of the output format.

- After having made all configurations you can now do a test of the configuration. The button "Blast!" will do the necessary steps to transfer the configuration to a connected TWN4.

4.3 Optionally: Create a Production Image

AppBlaster offers the possibility to create a production image. The production image is a file, which can be used for batch programming of many TWN4.
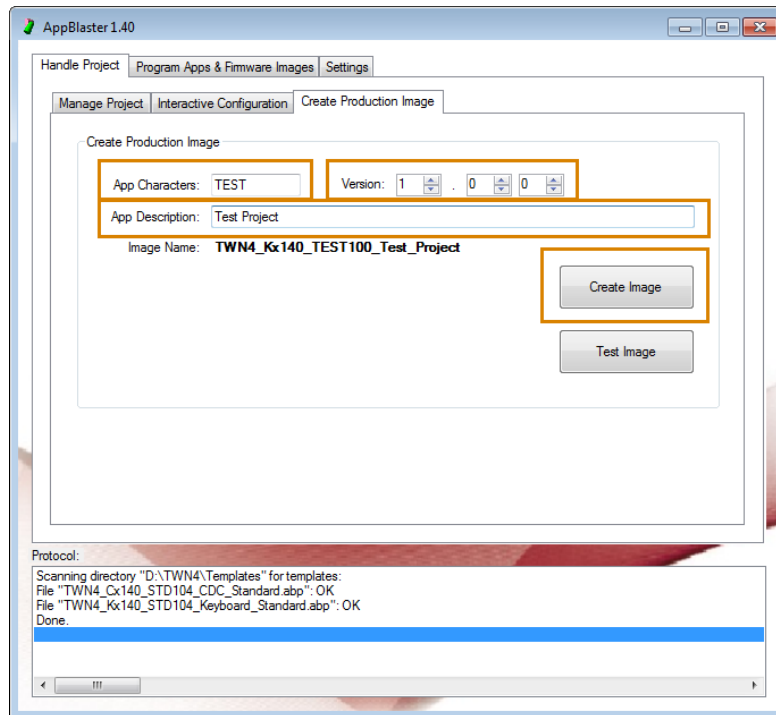
Elatec recommends to use a standard naming scheme for the production image. The information contained in the filename of the production image will be used at several places and allow save recognition of correct version of a production image or TWN4.

Version information of TWN4 is therefore identical under following conditions:

- The name of the production image file itself.

- Information contained on the type shield of TWN4.

- Version information returned byte the application running on TWN4. This is applicable for firmware, which allows request for the firmware version and is achieved via the system function `GetVersionString`.

AppBlaster supports to create the recommended naming scheme by use of a dedicated dialog. This dialog allows to enter all required information:

- App Characters: These characters are 1 to 4 letters ('A'-'Z') or digits ('0'-'9'). Please use at least 2 characters which identify the project.

- Version: The version always consists out of 3 digits, which can be set up here.

- App Description: You may do a short description of the project here.
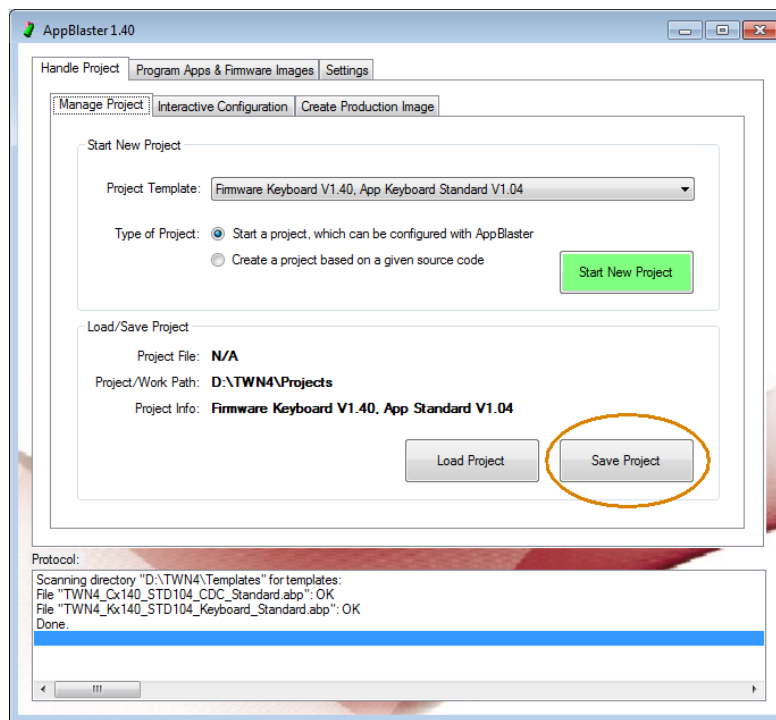

In order to create the production image, click button "Create Image". If the project never was saved before, the project will be created in the sub directory "Projects". Otherwise, it will be created, where the project file resides.

You may directly test that image by clicking button "Test Image". This requires a connected TWN4.

4.4 Optionally: Save Project

After finishing work, you may save entire information in a project file. Compared to the production image, the project file allows to modify settings of the configuration later, the production image does not.

As a suggestion, AppBlaster will chose the name for the project file identical to the name of the production image.
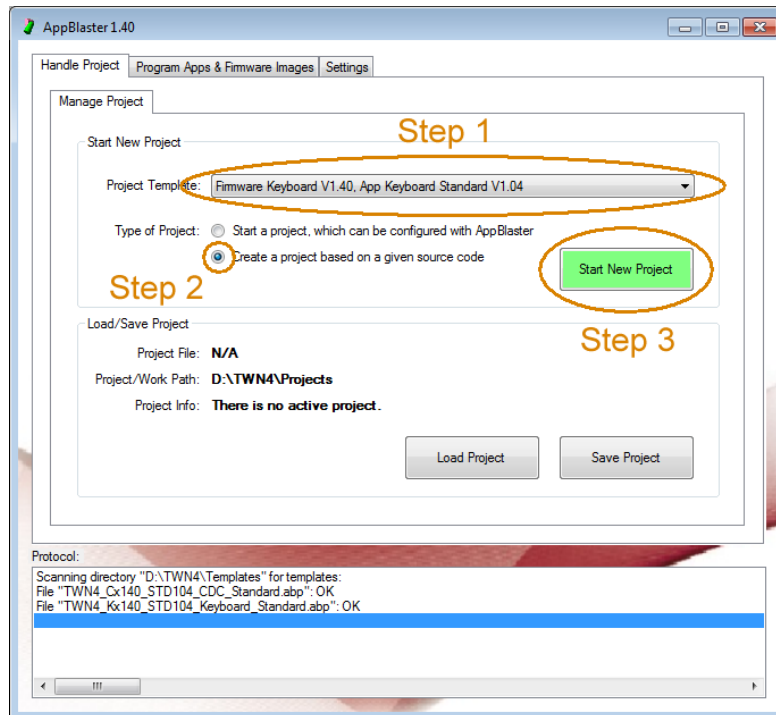
5 Create App Based on Source Code

5.1 Steps: Start a New Project

For several reasons, there might be a need for creating a custom App:
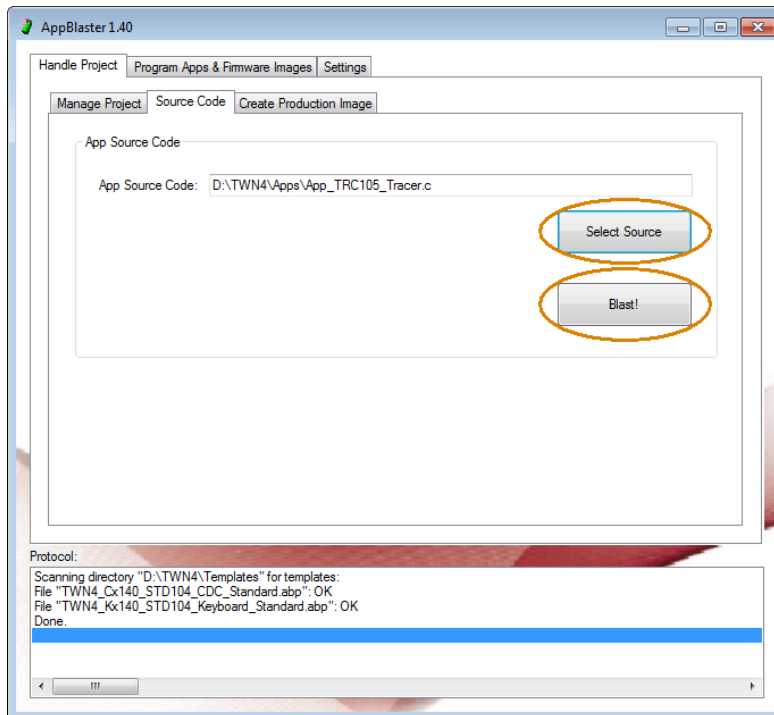
- There is some source code, you got from 3rd party.

- You have some specific requirements for reading data from a transponder, where data is in a data section of the transponder or some kind of authentication is required to do reading of data.

- There is a requirement to change entire behaviour of TWN4. This could be e.g. implementing some kind of host based communication, modifying behaviour of beeper, LEDs or doing input/output via other interfaces of TWN4.

- Select the tab sheet "Handle Project - Manage Project"

- Step 1: From the combo box "Project Template" select the appropriate template for your project. Currently there are two templates, which can be selected: USB CDC (virtual COM port) and USB keyboard. If you would like to operate TWN4 via RS232, it makes no difference if you choose CDC or keyboard. You at least have to select one of both.

- Step 2: Select "Create a project based on a given source code".

- Step 3: Click the button "Start New Project".

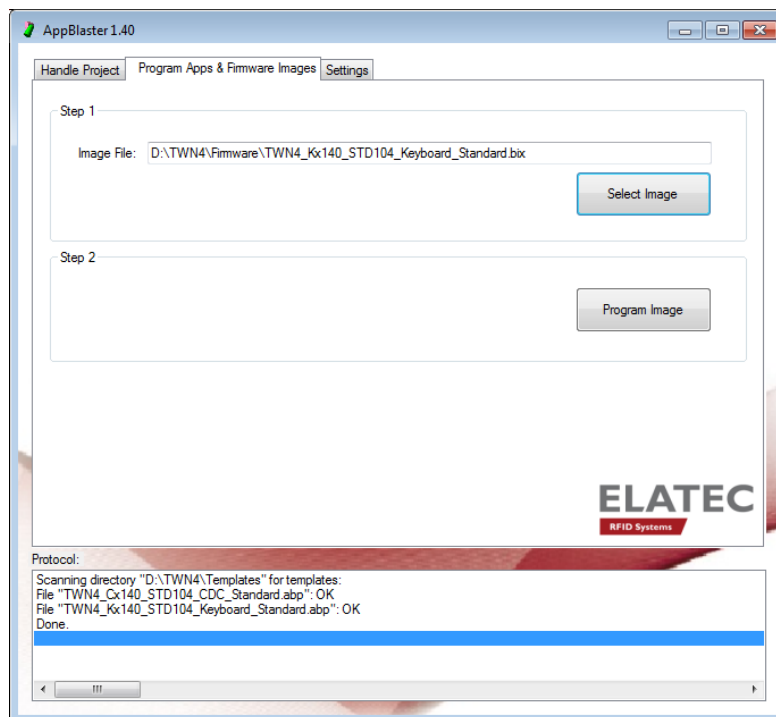## 5.2 Steps: Select and Test Source Code

- Click button "Select Source" to select the file, which contains the source code in question.

- Click button "Blast!". This will compile the source code and program the resulting image into a connected TWN4.

6 Programming Apps & Firmware Images

If you have a compiled App or a firmware image, you have the possibility to program such files from within AppBlaster into a TWN4 device. In order to do this select tab sheet "Program Apps & Firmware Images" and follow these steps:

1. In "Step 1" choose the file of interest: This might be either a firmware image (file extension ".bix") or a compiled App for TWN4 (file extension ".twn4.app" or ".t4a")

2. In "Step 2" click button "Program Image". This will immediately start the programming sequence. After a few seconds, the step should be completed.

7 Creation of Apps with make

Within AppBlaster there are limitations, which might not be acceptable by advanced users, such as:

- Only one file which contains the source code for the entire App. Especially bigger projects do have a demand for splitting source code into several source and header files.

- Requirement to compile entire source code even in case of small changes.

- AppBlaster is a solution, which is away from well-known programming environments such as Eclipse.

The tools for creation of an App from a command line are part of the TWN4 developer pack. AppBlaster is a graphical user interface (GUI) for the tool chain which resides in the subdirectory Tools\. In order to become more convenient with how an App is built, there is a option to display the command line parameters during creation of an App. This option can be found in "Settings" of AppBlaster.

8 Setting Up AppBlaster

There are a few settings, which can be made for AppBlaster:

1. "Command Execution - Show Command Line": By activating this option, the commands, which are used for creation of images are displayed in the protocol section. This is helpful, if you plan to set up a project using make.

2. "Command Execution - Delete Temporary Files": Turn this option off, if you are interested in temporary files, which are part of the compilation process.

3. "Connection - Port": Use USB as long as TWN4 is connected via USB to the host (even virtual COM port). If you are using TWN4 RS232, please select appropriate COM port here.