TBarCode .NET
Barcode Library for .NET

Version 10

Developer Manual

WWW.TEC-IT.COM

1   Content

2   Disclaimer

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3   Introduction

3.1   What is TBarCode?

TBarCode is a set of professional tools for the generation of barcodes. More than 100 different symbologies (linear barcodes, 2D barcodes and stacked barcode variants) can be printed or exported as graphics files. All industry formats are supported. The barcodes can be generated in the highest possible resolution and quality.

TBarCode is available in several versions for different operating systems, applications and pro-gramming environments.

The following versions are included in this setup:

TBarCode .NET	A barcode .NET library for software developers. It includes a bar code class and barcode controls for Windows Forms and ASP.NET 2.0.
TBarCode OCX	A Microsoft® ActiveX® compliant barcode control. It can be used with Microsoft® Office applications and for software development.
TBarCode Library	A bar code DLL for Windows platforms for software developers. (A DLL for Windows CE/Windows Mobile is available on request. Please contact us with your platform details.)

3.2   What is TBarCode .NET?

TBarCode .NET is .NET library for barcode generation. This library contains

- a .NET class for creating or printing bar codes
- a Barcode Control for Windows Forms
- a Barcode Control for ASP.NET 2.0 Web Applications

3.3   Scope of this Document

This document explains how you can add barcodes to your .NET projects with **TBarCode .NET**.

The complete API (application programming interface) is described in the *TBarCode .NET Developer Reference.*

3.4   Restrictions of the Demo Version

In the demo version the barcodes will be drawn with a demo-hint. That means that the word "Demo" or the phrase "www.tec-it.com" is drawn partially over the barcode. The demo-hint does not influ-ence the readability of the barcode in a negative way.

> ► In special cases (e.g. very small or high-resolution barcodes) you may want to test the pro-duct without demo restrictions. Please contact sales@tec-it.com for a temporary license key.
> ► For enabling the full-featured version (without the demo hints) you can obtain a license key from TEC-IT (http://www.tec-it.com/order/).
> ► For more information on licensing **TBarCode,** please refer to chapter 8.

4 Installation

4.1 Requirements

4.1.1 Operating Systems

The following operating systems are supported:

- Microsoft Windows 2000 SP3
- Microsoft Windows XP SP2
- Microsoft Windows Server 2003
- Microsoft Windows Vista
- Microsoft Windows Server 2008 / 2008R2 / 2011
- Microsoft Windows 7

4.1.2 .NET Version / IDEs

TBarCode .NET requires .NET Framework 2.0 or higher. It can be used with all IDEs supporting .NET 2.x (like Microsoft Visual Studio 2005[1] or newer).

4.2 Download and Setup

Download **TBarCode** from http://www.tec-it.com/Download ► *TBarCode* and execute the setup application. Depending on your selection one or more of the following components are installed – along with documentations and sample applications:

- **TBarCode .NET**
  For .NET developers. Developer manual and API reference are included in the setup.
- **TBarCode OCX**
  A barcode ActiveX control for Microsoft Office users and for software developers. User manual and API reference are included in the setup.
- **TBarCode Library**
  For software developers. Developer manual and API reference are included in the setup.

► Administrative rights are required to install **TBarCode**.

► **TBarCode OCX** is an ActiveX control. ActiveX controls must be registered within the Microsoft Windows operating system before they can be used. This registration is executed automatically by the setup application. On demand you can register the OCX file manually with the command line tool *"regsvr32.exe"*.

4.2.1 Installation Path

The default installation path of the library files is:

```
C:\Program Files\Common Files\TEC-IT\TBarCode\10.0
```

Please note that the x64 setup installs also a 32 bit version of the Barcode Library to

```
C:\Program Files (x64)\Common Files\TEC-IT\TBarCode\10.0
```

---

[1] VS2003 is not supported because it uses .NET 1.1

5 Barcode Form Control

5.1 Introduction

This chapter explains how to insert a barcode into a .NET Windows Form. **TBarCode** contains a Windows Form control called *BarcodeControl*, which can easily be added to any .NET form.

Requirements to work through the tutorial:

- **TBarCode 10** installed.
- Visual Studio 2005 or a Visual Studio 2005 Express Edition[2] or newer versions.
- Basic knowledge about any .NET language (VB.NET, C#, etc.)

5.2 Create or Open a Project

Start Visual Studio and open an existing Windows Forms project or create a new project:

1. Select *File ► New Project…*
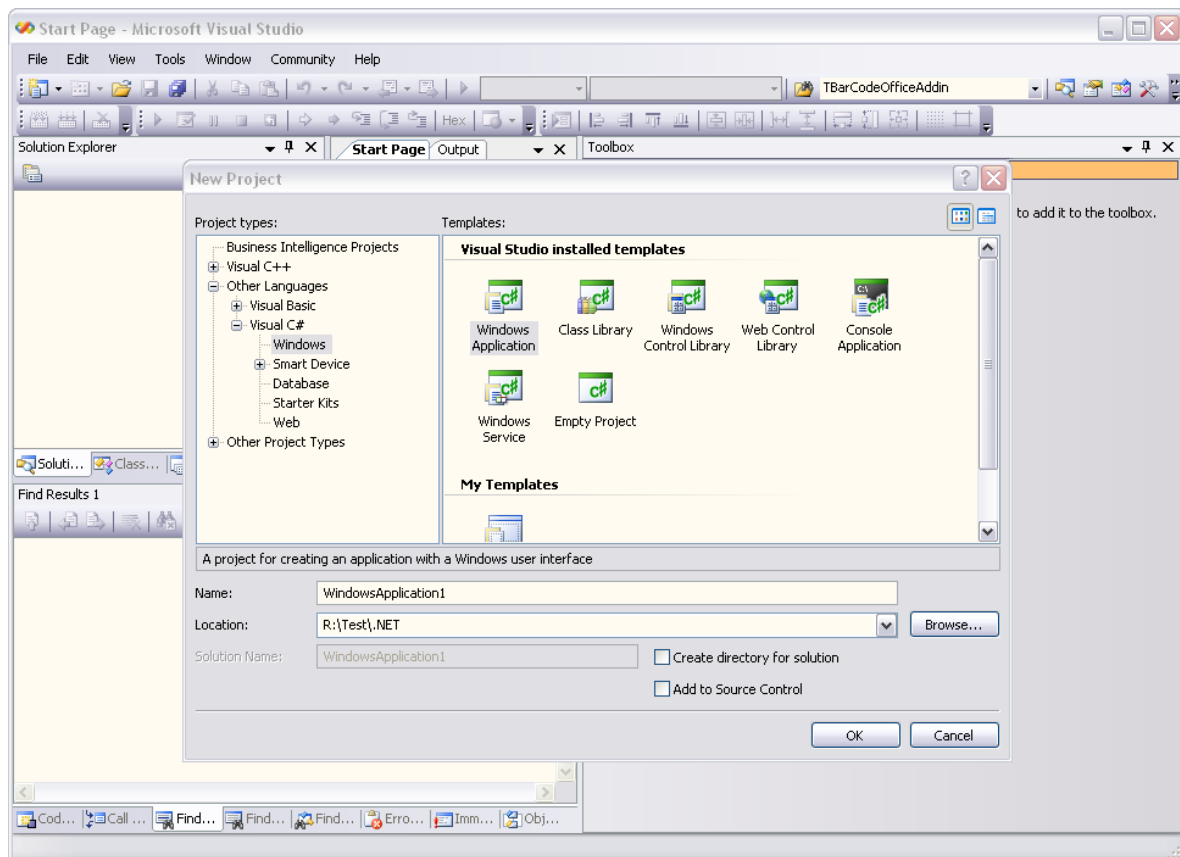2. Choose *Windows Application* and click *Ok*.

Figure 1: Create a New Project

---

[2] The Visual Studio Express Editions are free development environments form Microsoft. Visit http://msdn.microsoft.com/vstudio/express/default.aspx to find out more.

5.3 Reference the Barcode Controls

To work with the barcode controls, you first need to add them into Visual Studio:

1. Open the Toolbox 🛠.
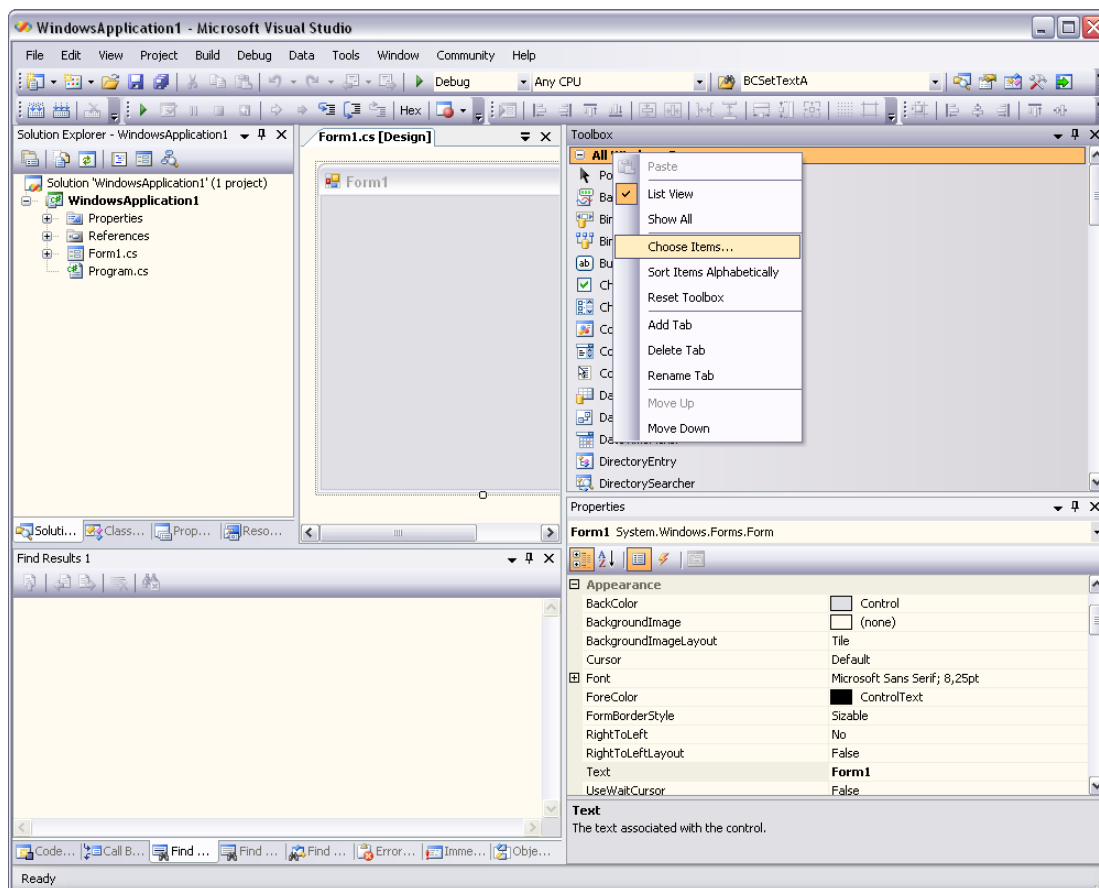2. Right-click *All Windows Forms* and select *Choose Items…*

Figure 2: The Toolbox Context Menu.

3. In the *Choose Toolbox Items* dialog click the *Browse…* button.
4. In the *Open* dialog navigate to *C:\Program Files\Common Files\TEC-IT\TBarCode\10.x* (or the path you have chosen during setup).
   On Windows x64 systems you should add the 32 bit version of TBarCode in *C:\Program Files (x86)\Common Files\TEC-IT\TBarCode\10.x* – otherwise you may get the error "not a Microsoft .Net module"[3].
5. Select *TECIT.TBarCode.dll* and click *Open*.
6. Two new controls named *BarcodeControl* should now show up in the *Choose Toolbox Items* dialog. Make sure they are checked and click *Ok*.

---

[3] Since Visual Studio itself is compiled as a 32 bit application you should reference the x86 version of TBarCode when adding TBarCode to the Toolbox. This limitation applies to the Windows Forms Control in the Toolbox only.
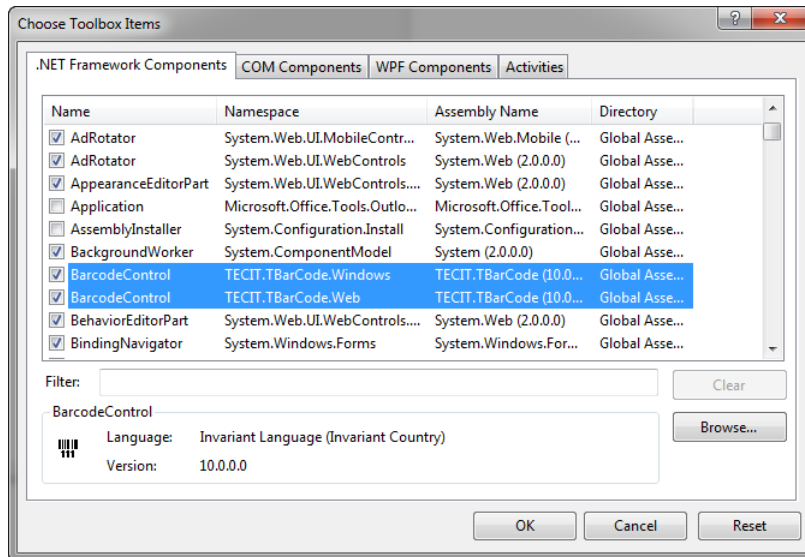
Figure 3: The Choose Toolbox Items Dialog with BarcodeControls.

5.4 Add Barcode to a Form

Now, simply drag and drop the *BarcodeControl* from the *Toolbox* onto your Windows form.
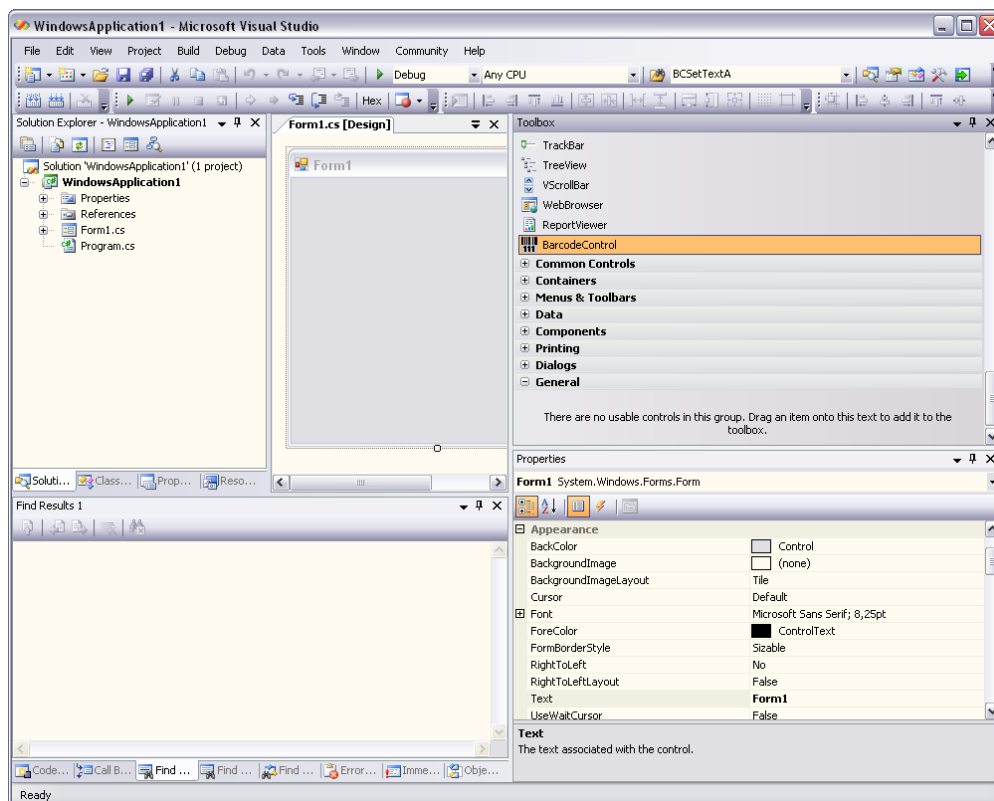

Figure 4: Toolbox with BarcodeControl.

5.5 Adjust Properties

The barcode is now visible on your Windows Form. You can change the appearance (position and size) in the design view.

To change more barcode properties:

1. Right-click the barcode control and select *Properties*.
2. Visual Studio's *Properties* dialog appears. In the *Properties* dialog you can adjust the barcode properties, such as barcode type, check digit method, module width, etc.
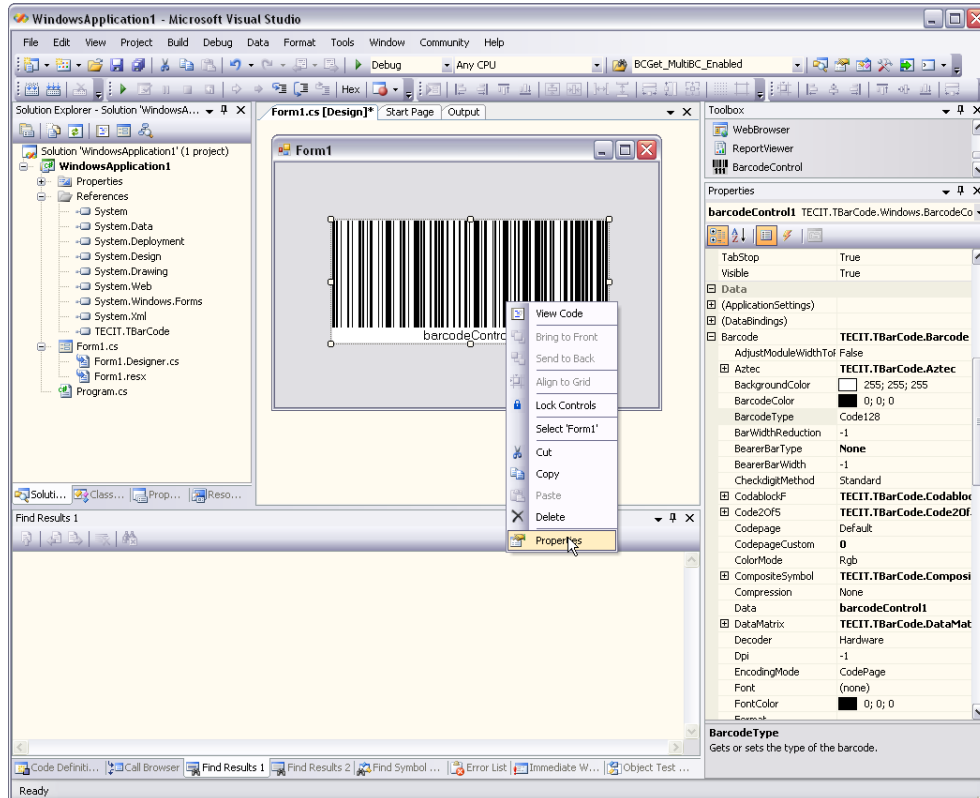

Figure 5: Windows Form with Barcode Control.

5.6 Finally – Run the application

You have to click *Start Debugging* ▶ to run the application.

5.7 API Reference

The API documentation of the *BarcodeControl* can be found in the „*TBarCode .NET 10 Developer Reference*". The Windows Form control is contained in the namespace *TECIT.TBarCode.Windows*.
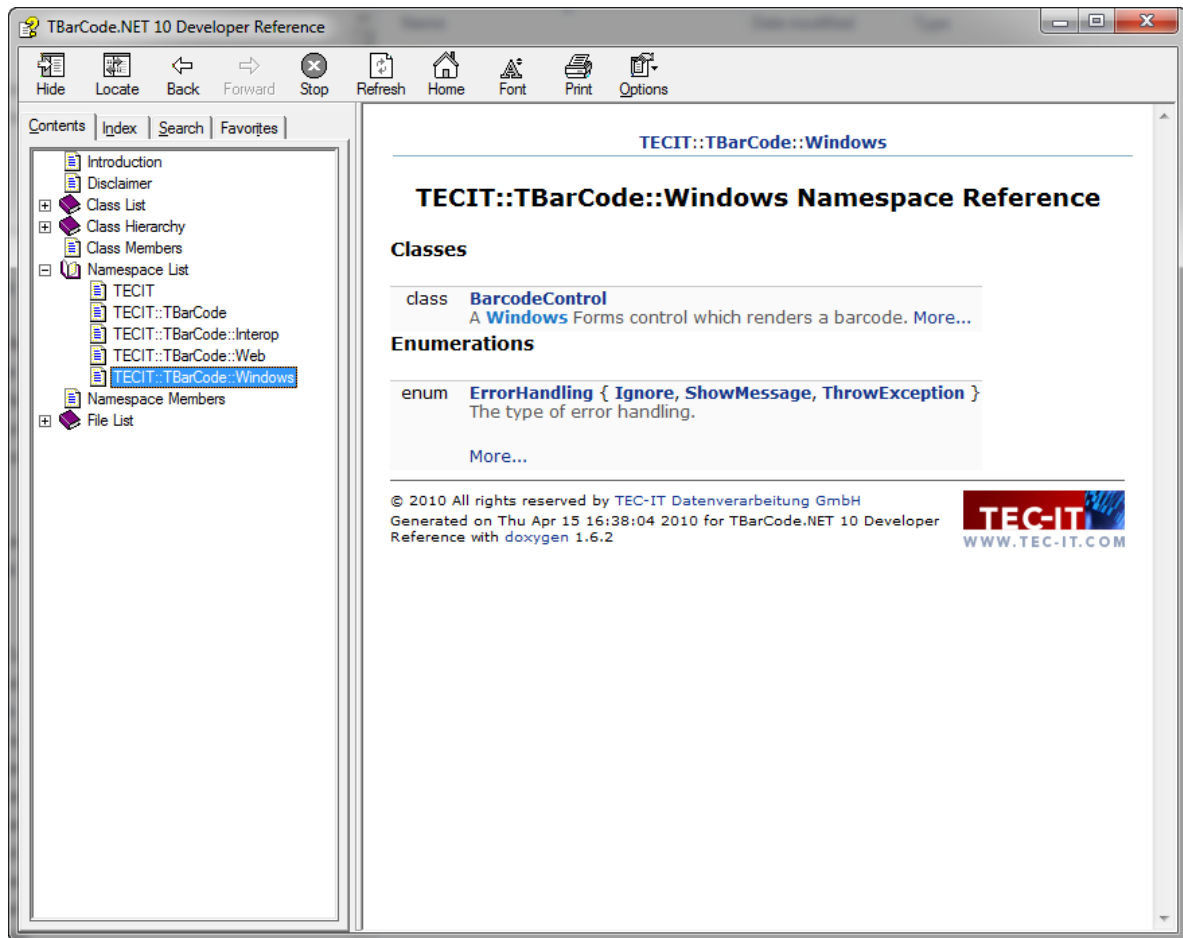
Figure 6: Screenshot of TBarCode .NET 10 Developer Reference.

6 Barcode Web-Control

6.1 Introduction

This chapter explains how to insert a barcode into an ASP.NET web site. **TBarCode** contains a web control called *BarcodeControl*, which can easily be added to any ASP.NET page.

Requirements to work through the tutorial:

- **TBarCode 10** installed.
- Visual Studio 2005 or a Visual Studio 2005 Express Edition or newer versions.
- Basic knowledge about any .NET language (VB.NET, C#, etc.)

6.2 Create/Open a Website

Start Visual Studio and open an existing ASP.NET web site or create a new web site:

1. Select *File ► New Web Site…*
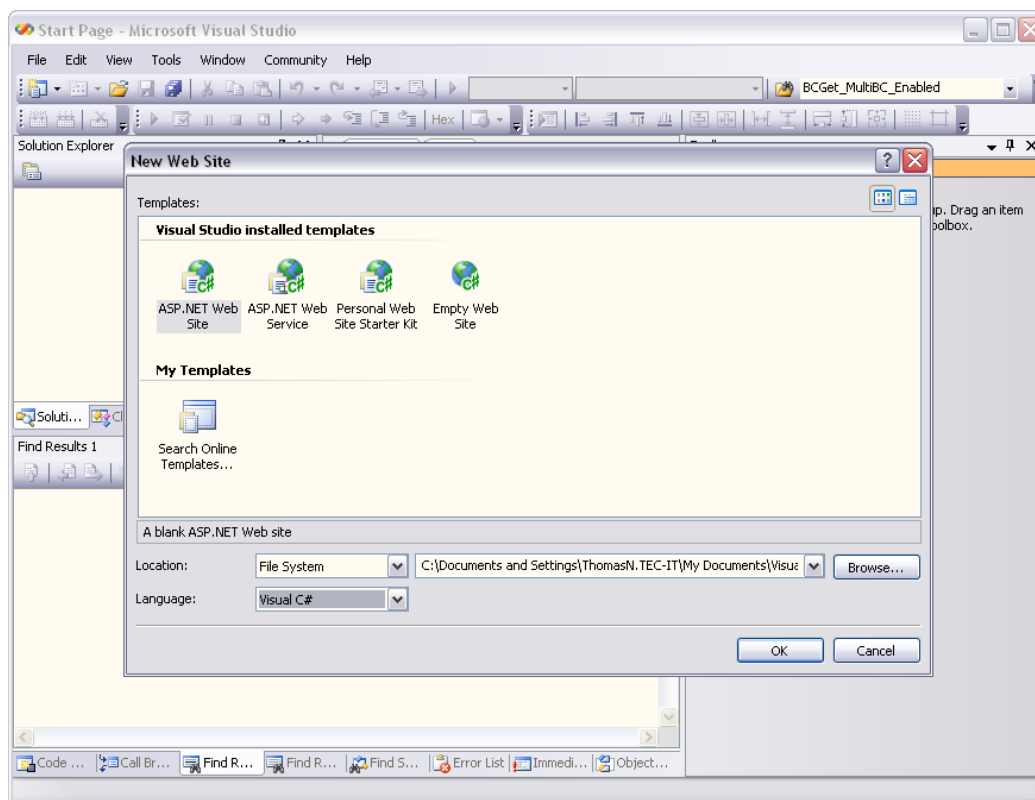2. Choose *ASP.NET Web Site* and click *OK*.

Figure 7: Create a New Project

6.3 Reference the Barcode Controls

To work with the barcode controls, you first need to add them into Visual Studio:

1. Open the Toolbox 🛠.
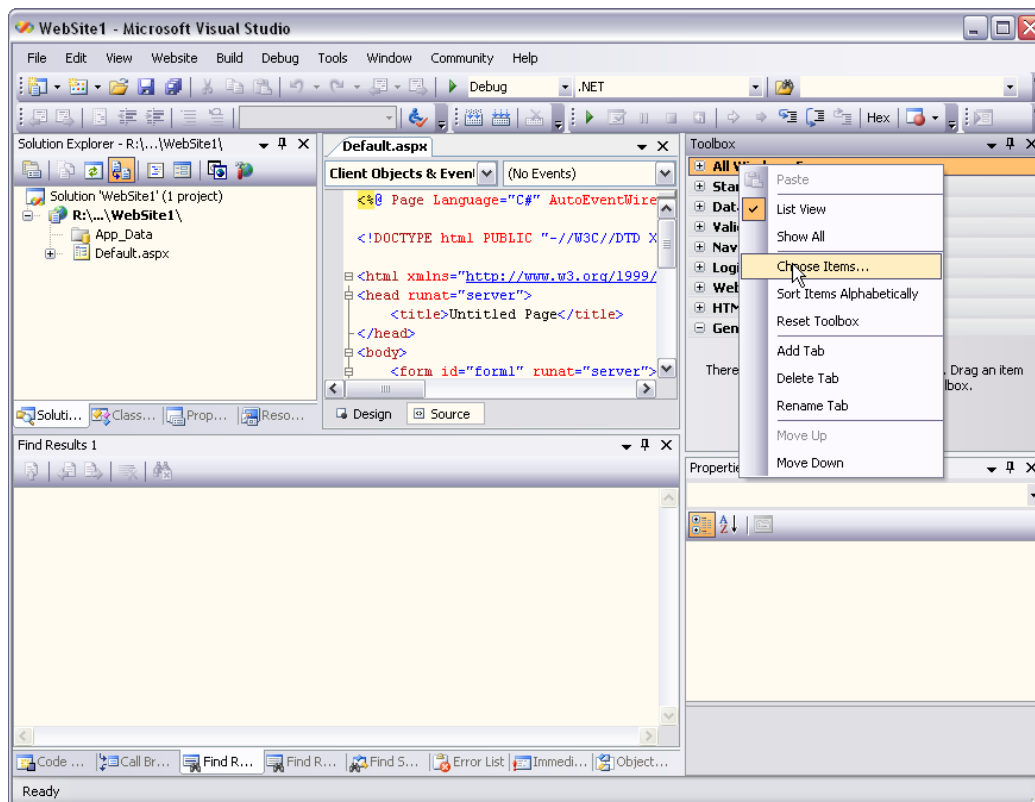2. Right-click *Standard* and select *Choose Items…*

Figure 8: The Toolbox Context Menu.

3. In the *Choose Toolbox Items* dialog click the *Browse…* button.
4. In the *Open* dialog navigate to *C:\Program Files\Common Files\TEC-IT\TBarCode\10.x* (or the path you have chosen during setup).
   On Windows x64 systems you should add the 32 bit version of TBarCode in *C:\Program Files (x86)\Common Files\TEC-IT\TBarCode\10.x* – otherwise you may get the error "not a Microsoft .Net module"[4].
5. Select *TECIT.TBarCode.dll* and click *Open*.
6. Two new controls named *BarcodeControl* should show up in the *Choose Toolbox Items* dialog. Make sure they are checked and click *OK*.

---

[4] Since Visual Studio itself is compiled as a 32 bit application you should reference the x86 version of TBarCode when adding TBarCode to the Toolbox. This limitation applies to the Web Control in the Toolbox only.
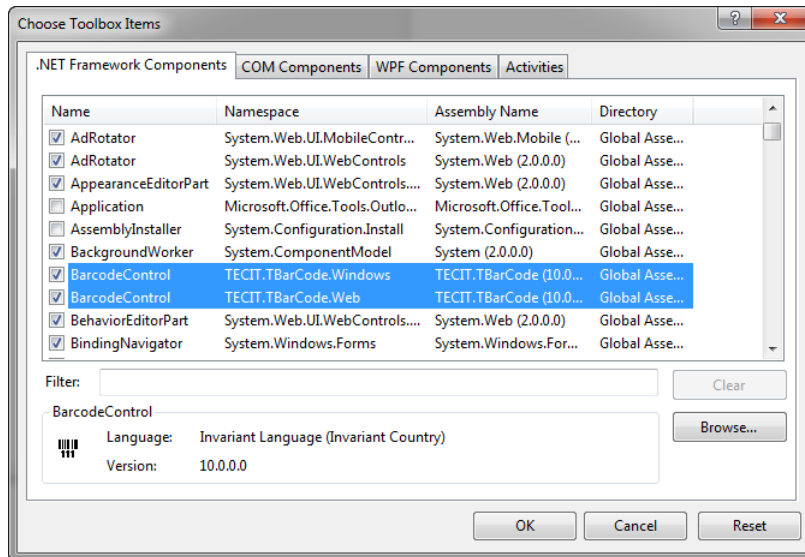
Figure 9: The Choose Toolbox Items Dialog with BarcodeControls.

6.4 Add Barcode to Form

Now, simply drag and drop the *BarcodeControl* from the *Toolbox* onto your ASPX page. A place-holder appears where the barcode will be rendered.
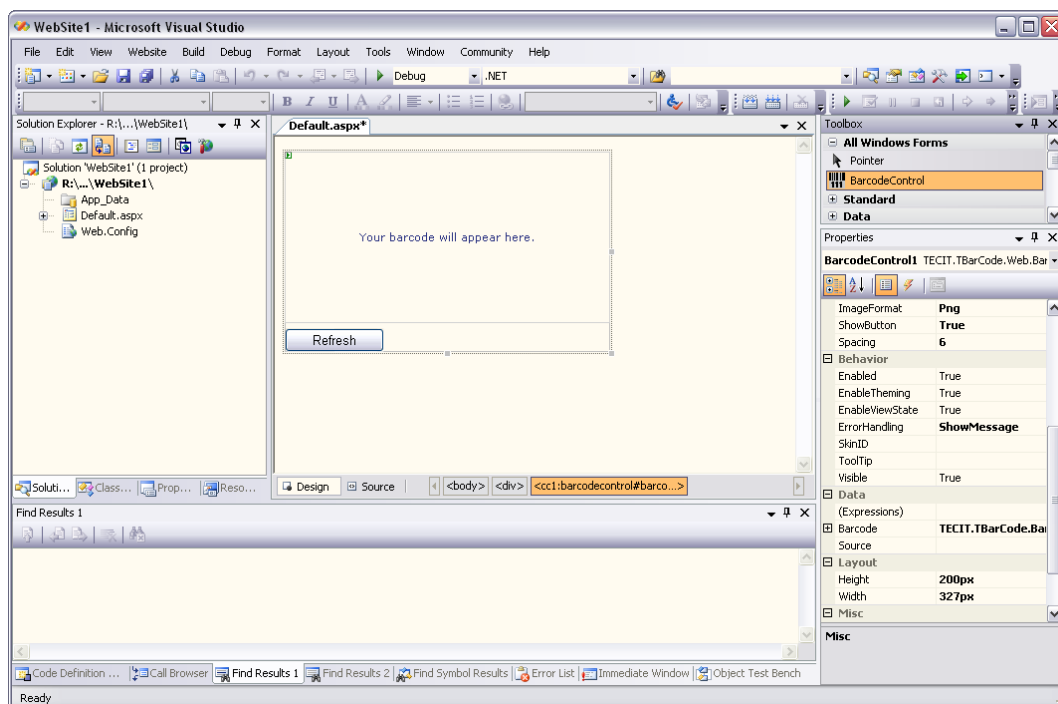

Figure 10: BarcodeControl (Place-Holder) on ASPX page.

6.5 Adjust Properties

The barcode placeholder is now visible on your ASPX page. You can change the appearance (position and size) in the design view.

To change more barcode properties:

1. Right-click the barcode control and select *Properties*.
2. Visual Studio's *Properties* dialog appears. In the *Properties* dialog you can adjust the barcode properties, such as barcode type, check digit method, module width, etc.
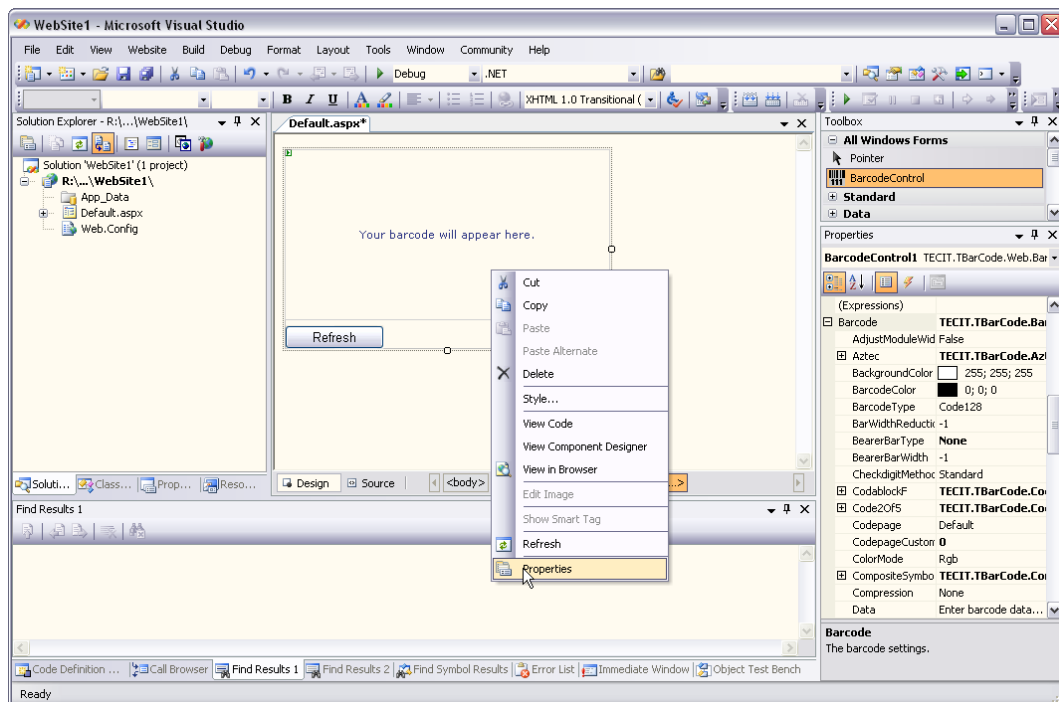

Figure 11: Properties of Barcode Control.

6.6   Finally – Preview Web Page in Browser

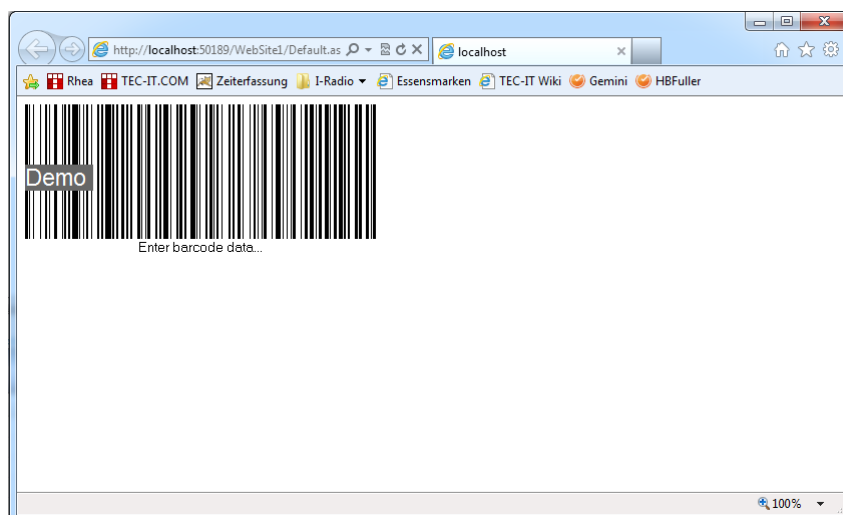Please click *Start Debugging* ▶ to preview the web page in the browser.

Figure 12: Web-Page with Barcode Control.

6.7 Known Problems

6.7.1 Error when resizing the control or changing a property

When resizing the control in design mode or changing a property of the bar code control you may receive the following error message when building or running the project:

```
Parser Error Message: Cannot create an object of type 'System.Drawing.RectangleF' from its
string representation '{X=0,Y=0,Width=0,Height=0}' for the 'TextPosition' property.
```

As a workaround you have to **remove** the TextPosition attribute from the controls ASPX markup.

```
<Barcode … TextPosition="{X=0,Y=0,Width=0,Height=0}"
```

6.8 API Reference

The API documentation of the *BarcodeControl* can be found in the „*TBarCode .NET 10 Developer Reference*". The web control is contained in the namespace *TECIT.TBarCode.Windows*.
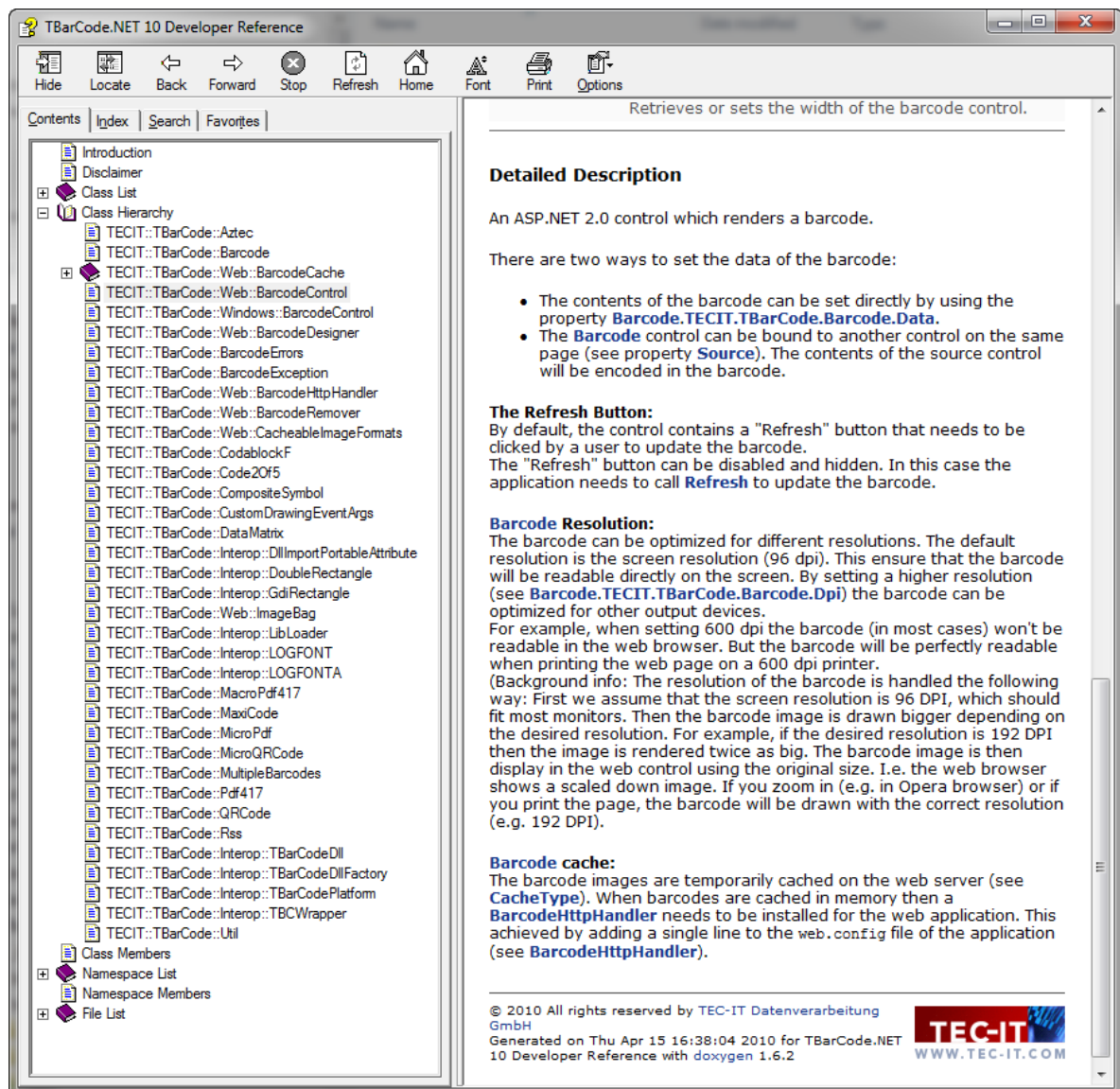

Figure 13: Screenshot of TBarCode .NET 10 Developer Reference.

7   Barcode Class

7.1   Introduction

TBarCode not only provides a Windows Form Control and a Web Control to generate barcodes. The core functions are implemented in the *Barcode* class. This class can be used to generate barcodes in any type of application (e.g. in a Windows Forms application, on web site, in console applications, etc.).

Here is a brief tutorial on how to render a barcode using the *Barcode* class.

Requirements to work through the tutorial:

- **TBarCode 10** installed.
- Visual Studio 2005 or a Visual Studio 2005 Express Edition or newer versions.
- Basic knowledge about the C# language.

7.2   Create a new Project

Start Visual Studio and create a new project:

1. Select *File ► New Project…*
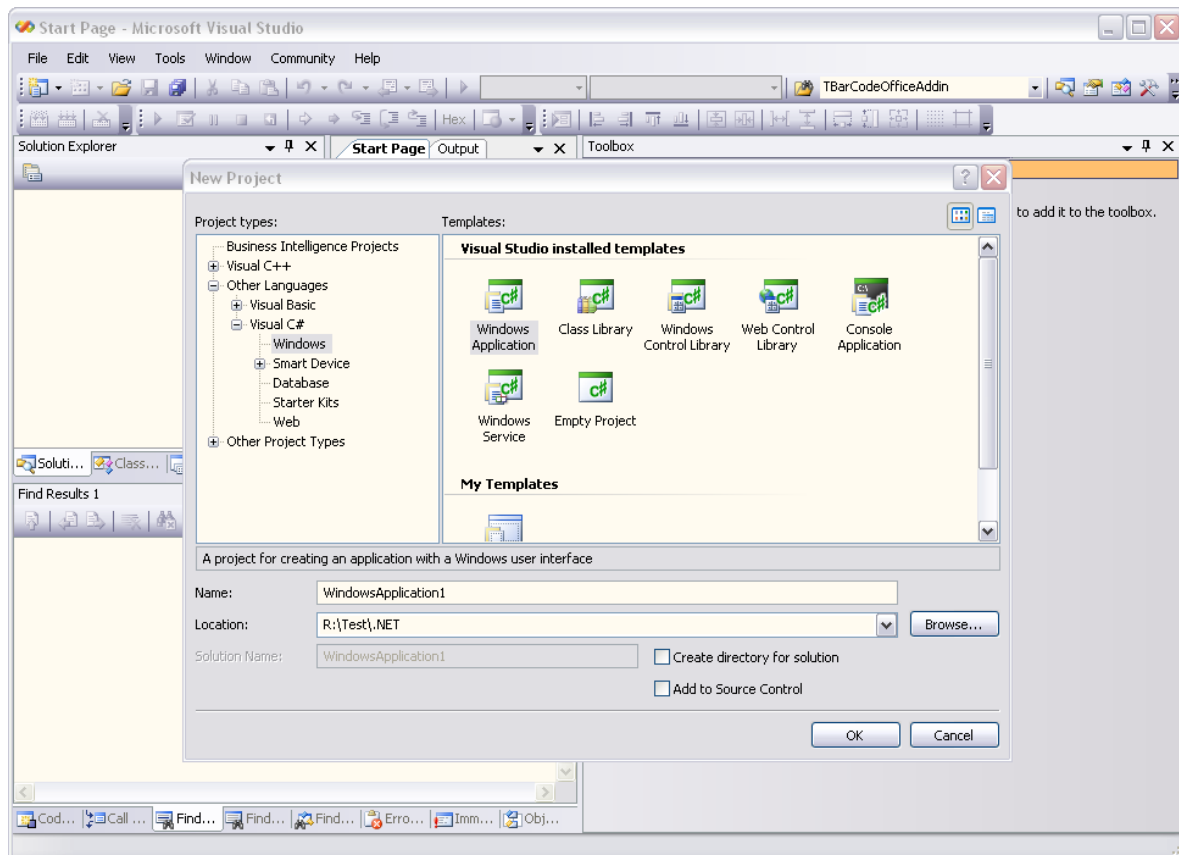2. Choose *Windows Application* and click *Ok*.

Figure 14: Create a New Project

7.3   Add Reference to TBarCode

In order to use the Barcode class, the project needs to reference the **TECIT.TBarCode.dll**:

1.   In the *Solution Explorer* right-click *References* and choose *Add Reference…*
2.   In the *Add Reference* dialog switch to the page *Browse*.
3.   Navigate to the installation folder of **TBarCode** (usually *C:\Program Files\Common Files\TEC-IT\TBarCode\10.x – see also 4.2.1*).
     Note: The Windows x64 setup installs both versions, the 32 bit component and the 64 bit component. For x64 target platforms please reference the 64 bit component[5].
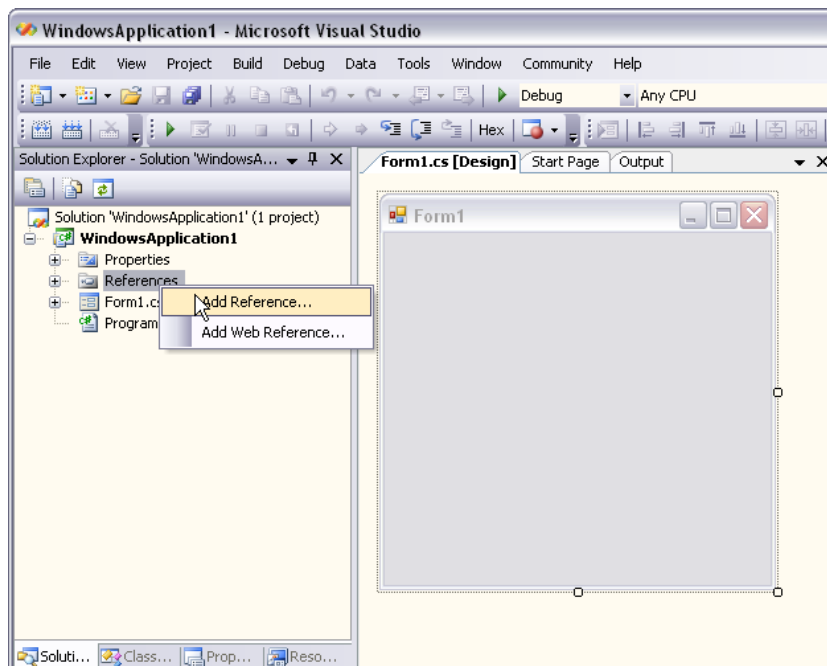4.   Select **TECIT.TBarCode.dll** and click *OK*.
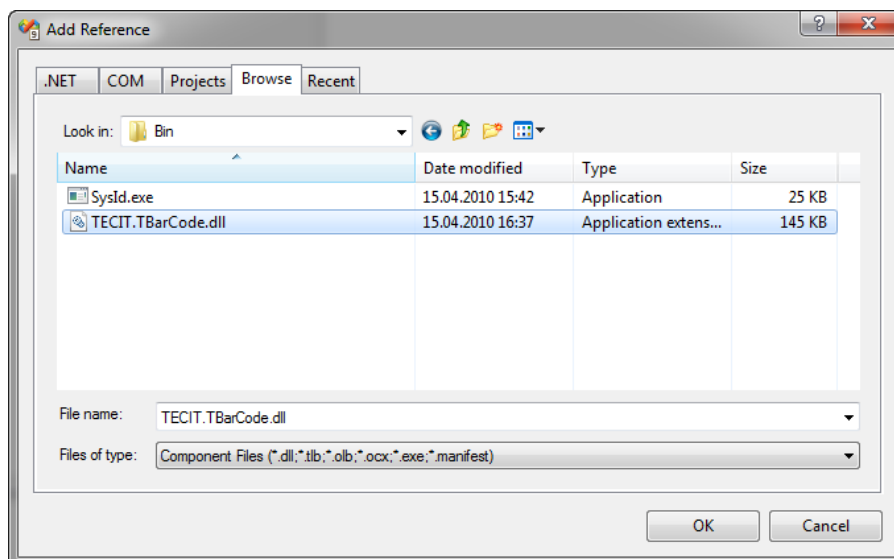

Figure 15: Add Reference in Solution Explorer

Figure 16: Add TECIT.TBarCode.dll as Reference

---

[5] Please make sure to reference the correct version according to your platform target (see also 9.2.3).

7.4 Render Barcodes

There are various ways to render a barcode using **TBarCode**. Here we will create a custom *Paint()*-method that draws a barcode.

7.4.1 Add Barcode Object

7.4.2 Write custom OnPaint-Method

1. Right-click the form in Design View and select Properties.
2. In the *Properties* dialog select Events ⚡ and double-click *Paint* (in the category *Appearance*) to create a custom Paint-method.
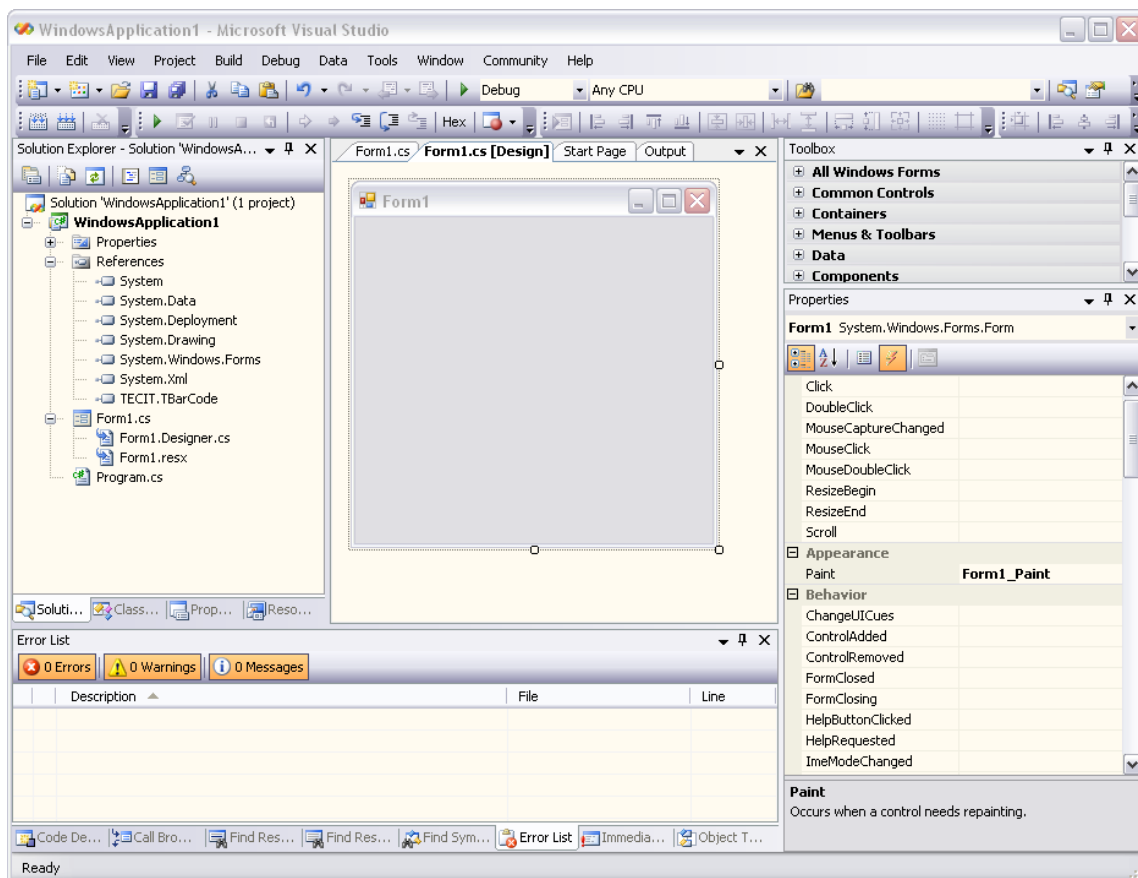

Figure 17: Adding a Custom Paint-Event-Handler.

3. Now, we can use a Barcode object to render a barcode. Add the following lines of code (marked as **bold**):

```csharp
// C# Sample

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;
using TECIT.TBarCode;
```

```
namespace WindowsApplication1
{
  public partial class Form1 : Form
  {
    Barcode barcode;

    public Form1()
    {
      InitializeComponent();
      SetStyle(ControlStyles.ResizeRedraw, true);
      MinimumSize = new Size(100, 100);

      // Initialize barcode
      barcode = new Barcode();
      barcode.BarcodeType = BarcodeType.DataMatrix;
      barcode.Data = "Here is some random context for my sample barcode.";
    }

    private void Form1_Paint(object sender, PaintEventArgs e)
    {
      // Define the position and size of the barcode.
      Rectangle rectangle = this.ClientRectangle;
      rectangle.Inflate(-20, -20);
      barcode.BoundingRectangle = rectangle;

      // Draw the barcode
      barcode.Draw(e.Graphics);
    }
  }
}
```

In this sample we create a Data Matrix barcode, which is a 2-dimensional barcode variant.

7.5   Finally – Run the application

Please click *Start Debugging* ▶ to run the application. The result can be seen in Figure 18.
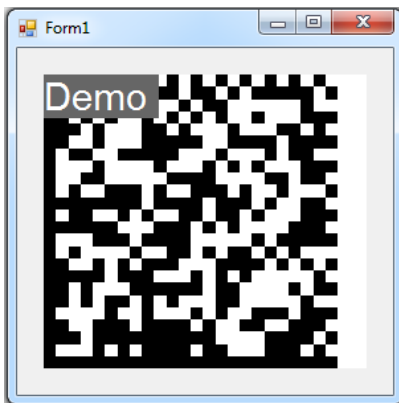

Figure 18: A Windows Form that renders a Barcode.

7.6   Build Errors

7.6.1   Visual Studio 2010 with .NET 4 Client Profile

You may see an error that the TECIT namespace could not be found with the following warning:

```
The referenced assembly "TECIT.TBarCode, Version=10.2.0.0, Culture=neutral,
PublicKeyToken=1b5f4306b234b83d, processorArchitecture=x86" could not be resolved because
it has a dependency on "System.Web, Version=4.0.0.0, Culture=neutral,
PublicKeyToken=b03f5f7f11d50a3a" which is not in the currently targeted framework
".NETFramework,Version=v4.0,Profile=Client".
```

This is because your project is using the .NET 4.0 *client profile* which does not include *System.Web*. Why is there a dependency on *System.Web*? The referenced TBarCode assembly file in your project contains also the *Barcode Web Control.*

You actually need to reference the *full* framework to solve this issue. Change your target framework to .NET framework 4 in the project settings.
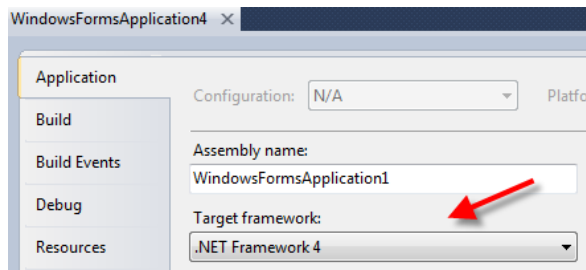

Figure 19: Visual Studio Target framework settings

See also MSDN

- How to: Target a Specific .NET Framework Version or Profile
- Troubleshooting .NET Framework Targeting Errors

7.7 API Reference

The API documentation about the *Barcode* class can be found in the „*TBarCode .NET 10 Developer Reference*". The class is contained in the namespace *TECIT.TBarCode*.
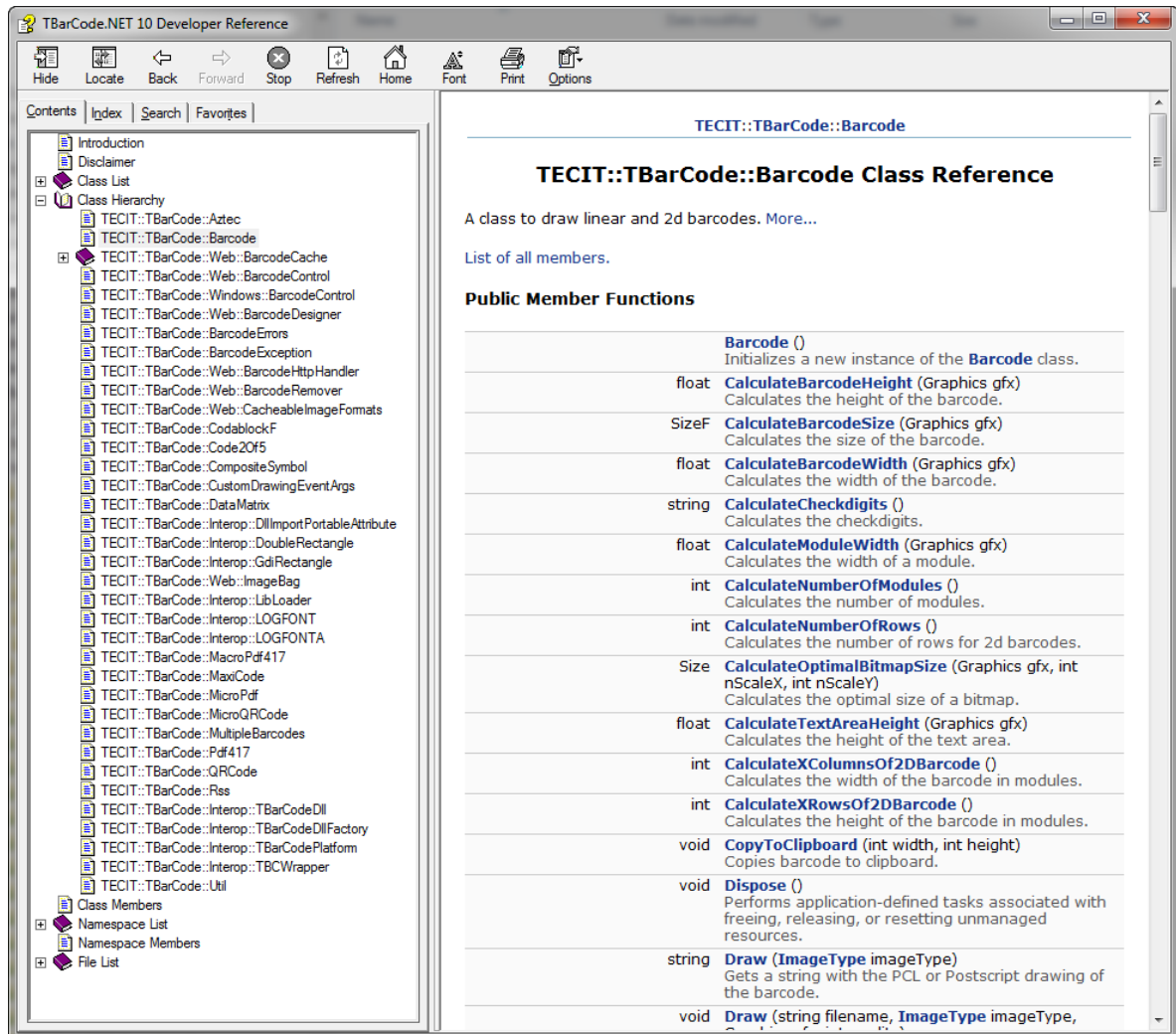

Figure 20: Screenshot of TBarCode .NET 10 API Reference.

8   How to license TBarCode

8.1   License Types

Please check out http://www.tec-it.com/order for available license types and pricing.

8.2   License TBarCode

Without a valid license an additional text "Demo" is drawn across the barcode as shown in Figure 21.

As soon as you have acquired a license, you can pass the license data to **TBarCode**, for example:

```
barcode.License("John Smith", LicenseType.DeveloperOrWeb, 1, "00000000",
                TBarCodeProduct.Barcode1D); // 1D License

barcode.License("John Smith", LicenseType.DeveloperOrWeb, 1, "00000000",
                TBarCodeProduct.Barcode2D); // 2D License
```

Alternatively, you can set the license by using the license-properties of the barcode object. For example:

```
barcode.Licensee = "John Smith";
barcode.LicenseType = LicenseType.DeveloperOrWeb;
barcode.LicenseCount = 1;
barcode.LicenseKey = "00000000";
barcode.LicensedProduct = TBarCodeProduct.Barcode1D;
```


*Figure 21: Barcode rendered **without** a valid License (Demo mode).*

Figure 22: Barcode rendered with a valid License.

9 Redistributing TBarCode

This chapter explains what is important when redistributing a custom application that uses the **TBarCode** .NET controls.

9.1 Dependencies

A .NET application that uses **TBarCode** requires the following files:

- **TECIT.TBarCode.dll**
  This is a .NET assembly that contains the .NET controls. This file is mandatory.
- **TBarCode10.dll**
  This is a native Win32 (x86) library that performs barcode generation. This file is mandatory for 32-Bit applications (platform x86 or Any CPU on x86 systems).
- **TBarCode10_x64.dll**
  This is a native Win64 (x64) library that performs barcode generation. This file is mandatory for 64-Bit applications (platform x64 or Any CPU on x64 systems).
- **zlib1.dll**
  This is a 3rd-party library that performs data compression. This file is optional. It is only required, when data compression in barcodes is enabled.

These files are located in the folder[6] *C:\Program Files\Common Files\TEC-IT\TBarCode\10.0* (or in the folder you have chosen during setup).

Because we rely on native code, also the **Visual C++ 2008 SP1** runtime components have to be installed on the computer. See next section how to distribute them with your application.

The target .NET framework (.NET 2.0, 3.0, 3.5, 4) must be available on the target system.

9.2 Redistribution

When redistributing a custom application the files described above need to be redistributed together with the application. The DLLs should be located in the same folder as the executable. Other files than those listed above must not be redistributed.

For web applications, the DLLs should be placed in the *bin* directory of the web site.

9.2.1 Visual C++ 2008 SP1 Runtime

You may also have to deploy the runtime components of Visual C++ 2008 SP1 along with your application and/or ensure they are installed on the target computer.

There are two options to install them:

- You can install these components with the *Microsoft Visual C++ 2008 SP1 Redistributable Package* available at
  - 32 Bit (x86) version: http://www.microsoft.com/en-us/download/details.aspx?id=5582
  - 64 Bit (x64) version: http://www.microsoft.com/en-us/download/details.aspx?id=2092

  The package installs all required runtime DLLs. The exact version of the required CRT Runtime DLLs is: *9.0.30729.4148.*

---

[6] On Windows x64 this path contains the 64 Bit component. For the 32 Bit component see *C:\Program Files (x86)\...*

- If you use a setup tool and your installer supports merge modules (*.msm files) you can add the required msm packages to your setup:

  - 32 Bit (x86)
    - *Microsoft_VC90_CRT_x86.msm*
    - *policy_9_0_Microsoft_VC90_CRT_x86.msm*
  - 64 Bit (x64)
    - *Microsoft_VC90_CRT_x86_x64.msm*
    - *policy_9_0_Microsoft_VC90_CRT_x86_x64.msm*

9.2.2   Using the MSI installer from TEC-IT

As an alternative for distributing the required files along with your application you can install TBarCode .NET from the TBarCode SDK MSI installer available from our web site.

When using the MSI installer from TEC-IT you also have the option for a silent setup – see FAQ TBarCode SDK Distribution - How To Create a Silent Setup.

The MSI installer contains also the Visual C++ 2008 SP1 runtime files (but no .NET framework!). It registers the .NET assemblies in the GAC and extends the PATH environment variable so that all native DLL dependencies are found.

> ► At least for web applications the MSI installer may be a convenient option. Make sure to restart IIS (admin console command "iisreset") in order to update the DLL search path.
>
> ► Please contact TEC-IT Support if you need further assistance.

9.2.3   Why Platform Specific Versions?

Why do we use or offer two different TEC-IT.TBarCode.dll files, one with platform x86 and one with platform x64? Why is there no version with platform "Any CPU"?

TBarCode .NET internally relies on the TBarCode Library, which is a native code DLL - it is loaded on demand in the background. In order to support both 32 bit and 64 bit platforms we have two different versions of TBarCode Library (TBarCode10.dll and TBarcode10_x64.dll) and therefore also two different platform targets for the TEC-IT.TBarCode.dll .NET assembly.

10 Contact and Support Information

TEC-IT Datenverarbeitung GmbH

Address:	Hans-Wagnerstr. 6
	AT-4400 Steyr
	Austria/Europe
Phone:	+43 / (0)7252 / 72 72 0
Fax:	+43 / (0)7252 / 72 72 0 – 77
Email:	office@tec-it.com
Web:	http://www.tec-it.com
FAQ:	http://www.tec-it.com/support/faq/tbarcode/Default.aspx

Appendix A: Related Downloads

A.1   Barcode Reference

The document "*Barcode Reference*" provides an overview over supported barcode types and gives additional information on how to use them.

The following issues are discussed:

- Supported barcode symbologies (with detailed information on each barcode type)
- Check digits (general information and available check digits methods)
- Print ratio and ratio hints (or Ratio Format)
- Format strings
- Escape sequences and control characters
- Application Identifiers
- MaxiCode and UPS standards

The *Barcode Reference* is available as separate document on the TEC-IT web-site http://www.tec-it.com ► Support ► Knowledge Base

The direct URL is as follows:

http://www.tec-it.com/download/PDF/Barcode_Reference_EN.pdf.

A.2   Samples

TEC-IT provides a number of sample applications which allow customers to start with the development of their own applications and/or documents as fast as possible.

Sample applications are included in the **TBarCode10** setup (Start Menu: *TEC-IT TBarCode 10 ► Examples)* or can be downloaded from the TEC-IT web site http://www.tec-it.com (download area).

> ►   Make sure **TBarCode** was installed before trying to run any sample application!

A.3   User Manual

For user of Microsoft Office one additional document Is provided:

- User Manual
  A description on how to use **TBarCode OCX** (the Microsoft ActiveX compliant Barcode Control) in applications which are part of Microsoft Office. Microsoft Word, Microsoft Excel, Microsoft Access and Microsoft InfoPath are discussed
- API Reference
  A detailed description of the **TBarCode** interface (methods, properties, enumerations and events).

These documents are included in the setup (Start Menu: *TEC-IT TBarCode 10 ► Manuals).*

A.4   FAQ – Frequently Asked Questions

Check out the FAQ on our web site http://www.tec-it.com/support/faq/tbarcode/Default.aspx.