

TCR1000 PC Card Sample Project



Table of Contents

Introduction	3
Abbreviations Used	3
Use of API Limitation due to Masterclock TCR1000 service.....	4
32-bit versus 64-bit applications.....	4
Theory of Operation	5
Legal Information	5
API/Document Revision History	5
Contacting Us	5

Introduction

The TCR1000 Monitor sample application provides the user with a Visual Studio 2010 C++ project which communicates with the Masterclock TCR1000 service.

The Masterclock TCR1000 service uses the Masterclock .dll to communicate with the TCR1000. When the TCR1000 is locked to a time code input (SMPTE, IRIG-B, IRIG-B1) the TCR1000 service accurately sets the PC time to within +/- 2 msec of the time code input.

The TCR1000 Monitor sample application reads the TCR1000 status information using the TCR1000 service and displays the status in a dialog box. The project has 32-bit and 64-bit versions. It is compatible with Windows XP, Windows 7, Server 2003, and Server 2008.

Abbreviations Used

The following abbreviations are used in this documentation:

API – The application programming interface services provided by the TCR.DLL library

TCR1000 – Refers to the TCR1000 time code reader card

SMPTE – Society of Motion Picture & Television Engineers-defined time code format

IRIG – Range Commander's Council/Interrange Instrumentation Group-defined time code format

Windows – One of the Microsoft Windows operating systems (XP, Windows 7, Server 2003, Server 2008)

Driver – The TCR1000 time code reader card driver for the Windows operation system.

Suggested reading:

- SMPTE 12M - Time and Control Code Standard
- Range Commander's Council IRIG Standard 200-95 – Serial Time Code Formats
- IEEE 1344-1995 – Time zone & date encoding for IRIG-B and IRIG-B1 time codes
- LeitchTM Application Note – Time Code Tutorial-Longitudinal SMPTE Time Code for NTSC Color Video Systems

Use of API Limitation due to Masterclock TCR1000 service

Only one application at a time is allowed to load the tcr1000_rev_a.dll (for x64 system, tcr1000_x64_rev_a.dll). The Masterclock TCR1000 service, TCR1000Sync_REV_A, loads the TCR1000.dll. If the Masterclock service is running the user **CANNOT** load the TCR1000.dll. Doing so will cause the Masterclock TCR1000 service (and probably the user application) to fail. If the user wishes to monitor the TCR1000 status, time code status, current time, etc., the user must query the Masterclock service to get this information and NOT use the .dll API calls. The TCR1000 Monitor sample application shows how to monitor the TCR1000 via the Masterclock service using a construct called pipes.

32-bit versus 64-bit applications

In general, 32-bit Microsoft applications will run without any issues on 64-bit operating systems. An exception is registry access. For 32-bit applications running on 64-bit operating systems, Microsoft may create Wow6432Node in HKEY_LOCAL_MACHINE/SOFTWARE. The 32-bit applications' registry accesses to HKEY_LOCAL_MACHINE/SOFTWARE automatically get routed to this folder. What this means is when a 32-bit application accesses HKEY_LOCAL_MACHINE/SOFTWARE, it is actually accessing HKEY_LOCAL_MACHINE/SOFTWARE/Wow6432Node. Therefore, a 32-bit access to a registry key in HKEY_LOCAL_MACHINE/SOFTWARE WILL NOT get the same value as a 64-bit access to a key of the same name. Some of the Masterclock applications use the registry. For Masterclock applications which interact with each other via the registry, it is recommended to always use 64-bit versions on 64-bit operating systems, and 32-bit versions on 32-bit operating systems. An example of this would be a configuration utility which sets registry entries used by a service.

Theory of Operation

The monitor application is a C++ project built using Visual Studio 2010. To use with older versions of Visual Studio the user must create their own project and copy the C++ files and dialog objects into their application. Pipes and other constructs used in this project are compatible with older versions of Visual Studio.

This application assumes the Masterclock TCR1000 service is installed and running (Service name TCR1000Sync_x64_REV_A or TCR1000Sync_REV_A, Display name 'TCR1000Sync Service x64' or 'TCR1000Sync Service'). If debugging, a log file is created (C:\Temp\TCRDEBUG.TXT). The Temp directory must already exist. The user may select the type of information placed in the log file by changing the defines in DebugOutput.h . The instance of the application is created in CTcr1000MonitorApp::InitInstance() . The Masterclock TCR1000 service has a named pipe server implemented. To communicate with the TCR1000 service this monitor application uses the following Masterclock functions: PipeConnect(),PipeTransaction(), and PipeShutdown(). These functions use file commands to interact with the named pipe server in the Masterclock TCR1000 service. It is strongly suggested the user closely follows the example in these functions when interacting with the TCR1000 service. For more information on using pipes in Windows see [http://msdn.microsoft.com/en-us/library/aa365780\(v=VS.85\).aspx](http://msdn.microsoft.com/en-us/library/aa365780(v=VS.85).aspx)

Legal Information

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Contacting Us

Masterclock, Inc.
2484 West Clay Street
St. Charles, MO 63301 USA

website
www.masterclock.com

USA and Canada
1-800-940-2248
1-636-724-3666
1-636-724-3776 (fax)

International
1-636-724-3666
1-636-724-3776 (fax)

Sales
sales@masterclock.com

Technical Support
support@masterclock.com

Masterclock, Inc.
2484 West Clay St.
St. Charles, MO 63301
+1-(636)-724-3666
1-800-724-1778
support@masterclock.com
sales@masterclock.com