

# **BINLOG DLL**

## Manual

Version 1.5

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## 1 Introduction

This document describes the usage of the binlog.dll provided with CANoe/CANalyzer.

The BL package is installed in the folder `Programming\BLF_Logging` of the CANoe/CANalyzer installation.

Besides the binlog header file in the `Include` folder, a sample VisualStudio project is provided in the subfolder `VS_Project`, which demonstrates the usage of the binlog.dll. The resulting sample program `bl.exe` creates the BL file `test.blf`.

In the subfolder `Demo` CANoe/CANalyzer configurations are provided, which make use of the generated sample BL file.

## 2 BL Functions

### 2.1 Overview

```
BLAPI ( HANDLE) BLCreateFile( LPCTSTR lpFileName,  
                               DWORD dwDesiredAccess);  
  
BLAPI ( BOOL)   BLCloseHandle( HANDLE hFile);  
  
BLAPI ( BOOL)   BLWriteObject( HANDLE hFile,  
                               VBLObjectHeaderBase* pBase);  
  
BLAPI ( BOOL)   BLPeekObject( HANDLE hFile,  
                              VBLObjectHeaderBase* pBase);  
  
BLAPI ( BOOL)   BLSkipObject( HANDLE hFile,  
                              VBLObjectHeaderBase* pBase);  
  
BLAPI ( BOOL)   BLReadObject( HANDLE hFile,  
                              VBLObjectHeaderBase* pBase);  
  
BLAPI ( BOOL)   BLReadObjectSecure( HANDLE hFile,  
                                    VBLObjectHeaderBase* pBase,  
                                    size_t expectedSize);  
  
BLAPI ( BOOL)   BLFreeObject( HANDLE hFile,  
                              VBLObjectHeaderBase* pBase);  
  
BLAPI ( BOOL)   BLSetApplication( HANDLE hFile, BYTE appID,  
                                   BYTE appMajor,  
                                   BYTE appMinor,  
                                   BYTE appBuild);  
  
BLAPI ( BOOL)   BLSetWriteOptions( HANDLE hFile,  
                                    DWORD dwCompression,  
                                    DWORD dwReserved);
```

---

```
BLAPI ( BOOL)    BLSetMeasurementStartTime
                  ( HANDLE hFile,
                    const LPSYSTEMTIME lpStartTime);

BLAPI ( BOOL)    BLGetFileStatistics
                  ( HANDLE hFile,
                    VBLFileStatistics* pStatistics);

BLAPI ( BOOL)    BLGetFileStatisticsEx
                  ( HANDLE hFile,
                    VBLFileStatisticsEx* pStatistics);

BLAPI ( BOOL)    BLFlushFileBuffers( HANDLE hFile,
                                      DWORD dwFlags);
```

## 2.2 BLCreatFile

Syntax	BLAPI( HANDLE) BLCreatFile( LPCTSTR lpFileName, DWORD dwDesiredAccess)
Description	Use this function to open a BL file with the desired access.
Parameters	<p>LPCTSTR lpFileName            Pointer to a null-terminated string that specifies the name of the file to create or open.</p> <p>DWORD dwDesiredAccess            Specifies the type of access to the file. An application can obtain read access or write access. This parameter can be GENERIC_READ or GENERIC_WRITE.</p>
Return values	If the function succeeds, the return value is an open handle to the specified file. If the function fails, the return value is INVALID_HANDLE_VALUE.

## 2.3 BLCloseHandle

Syntax	BLAPI( BOOL) BLCloseHandle( HANDLE hFile)
Description	Use this function to close a BL file opened with BLCreatFile.
Parameters	<p>HANDLE hFile            The file handle returned by BLCreatFile.</p>
Return values	If the function succeeds, the return value is nonzero. If the function fails, the return value is zero.

## 2.4 BLWriteObject

Syntax	BLAPI( BOOL) BLWriteObject( HANDLE hFile, VBLOBJECTHEADERBASE* pBase)
Description	Use this function to write a BL object to the file.
Parameters	<p>HANDLE hFile            The file handle returned by BLCreatFile. The file handle must have been created with GENERIC_WRITE access to the file.</p> <p>VBLOBJECTHEADERBASE* pBase            Pointer to a BL object structure containing the data to be</p>

	written to the file.
Return values	If the function succeeds, the return value is nonzero. If the function fails, the return value is zero.

## 2.5 BLPeekObject

Syntax	BLAPI ( BOOL) BLPeekObject ( HANDLE hFile, VBLObjectHeaderBase* pBase)
Description	Use this function to read the base header part of a BL object.
Parameters	HANDLE hFile  The file handle returned by BLCreateFile. The file handle must have been created with GENERIC_READ access to the file.  VBLObjectHeaderBase* pBase  Pointer to a BL object structure that receives the object header description.
Return values	If the function succeeds, the return value is nonzero. If the function fails, the return value is zero.

## 2.6 BLSkipObject

Syntax	BLAPI ( BOOL) BLSkipObject ( HANDLE hFile, VBLObjectHeaderBase* pBase)
Description	Use this function to skip a BL object.
Parameters	HANDLE hFile  The file handle returned by BLCreateFile. The file handle must have been created with GENERIC_READ access to the file.  VBLObjectHeaderBase* pBase  Pointer to a BL object structure that describes the object to be skipped.
Return values	If the function succeeds, the return value is nonzero. If the function fails, the return value is zero.

## 2.7 BLReadObject (Obsolete)

Obsolete: This function has been replaced by BLReadObjectSecure.

Syntax	BLAPI ( BOOL) BLReadObject ( HANDLE hFile, VBLObjectHeaderBase* pBase)
Description	Use this function to read a BL object.
Parameters	<p>HANDLE hFile The file handle returned by BLCreateFile. The file handle must have been created with GENERIC_READ access to the file.</p> <p>VBLObjectHeaderBase* pBase Pointer to a BL object structure that describes the object to be read.</p>
Return values	If the function succeeds, the return value is nonzero. If the function fails, the return value is zero.

## 2.8 BLReadObjectSecure

Syntax	BLAPI ( BOOL) BLReadObjectSecure ( HANDLE hFile, VBLObjectHeaderBase* pBase, size_t expectedSize)
Description	Use this function to read a BL object.
Parameters	<p>HANDLE hFile The file handle returned by BLCreateFile. The file handle must have been created with GENERIC_READ access to the file.</p> <p>VBLObjectHeaderBase* pBase Pointer to a BL object structure that describes the object to be read</p> <p>size_t expectedSize Size of BL object structure which is provided by pointer pBase.</p>
Return values	If the function succeeds, the return value is nonzero. If the function fails, the return value is zero.

## 2.9 BLFreeObject

Syntax	BLAPI ( BOOL) BLFreeObject ( HANDLE hFile, VBLObjectHeaderBase* pBase)
Description	Use this function to free the memory which has been allocated for a previously read BL object. Although this is only required for dy-

	<p>namic sized objects such as environment variables it doesn't harm to call this method for fixed sized objects like CAN messages as well.</p>
Parameters	<p><code>HANDLE hFile</code>  The file handle returned by <code>BLCreateFile</code>. The file handle must have been created with <code>GENERIC_READ</code> access to the file.</p> <p><code>VBLObjectHeaderBase* pBase</code>  Pointer to a BL object structure that describes the object to be freed.</p>
Return values	<p>If the function succeeds, the return value is nonzero.  If the function fails, the return value is zero.</p>

## 2.10 BLSetApplication

Syntax	<pre>BLAPI ( BOOL ) BLSetApplication ( HANDLE hFile,                                 BYTE appID,                                 BYTE appMajor,                                 BYTE appMinor,                                 BYTE appBuild )</pre>
Description	<p>Use this function to specify the application which writes the file.</p>
Parameters	<p><code>HANDLE hFile</code>  The file handle returned by <code>BLCreateFile</code>. The file handle must have been created with <code>GENERIC_WRITE</code> access to the file.</p> <p><code>BYTE appID</code>  The application identifier.</p> <p><code>BYTE appMajor</code>  The application major version number.</p> <p><code>BYTE appMinor</code>  The application minor version number.</p> <p><code>BYTE appBuild</code>  The application build version number.</p>
Return values	<p>If the function succeeds, the return value is nonzero.  If the function fails, the return value is zero.</p>

## 2.11 BLSetWriteOptions

Syntax	<pre>BLAPI( BOOL) BLSetWriteOptions( HANDLE hFile,                                 DWORD dwCompression,                                 DWORD dwReserved)</pre>
Description	Use this function to set the compression.
Parameters	<p>HANDLE hFile</p> <p>The file handle returned by BLCreatFile. The file handle must have been created with GENERIC_WRITE access to the file.</p> <p>DWORD dwCompression</p> <p>The compression to be used during write. Valid values range from 0 (no compression) to 10 (maximum compression).</p> <p>DWORD dwReserved</p> <p>Reserved. Must be zero.</p>
Return values	<p>If the function succeeds, the return value is nonzero.</p> <p>If the function fails, the return value is zero.</p>

## 2.12 BLSetMeasurementStartTime

Syntax	<pre>BLAPI( BOOL) BLSetMeasurementStartTime ( HANDLE hFile,   const LPSYSTEMTIME lpStartTime);</pre>
Description	Use this function to set the measurement start time
Parameters	<p>HANDLE hFile</p> <p>The file handle returned by BLCreatFile. The file handle must have been created with GENERIC_WRITE access to the file.</p> <p>LPSYSTEMTIME lpStartTime</p> <p>The pointer to the windows system time structure</p>
Return values	<p>If the function succeeds, the return value is nonzero.</p> <p>If the function fails, the return value is zero.</p>

### 2.13 BLGetFileStatistics

Syntax	BLAPI( BOOL) BLGetFileStatistics( HANDLE hFile, VBLFileStatistics* pStatistics)
Description	Use this function to retrieve the file statistics.
Parameters	HANDLE hFile The file handle returned by BLCreateFile. The file handle must have been created with GENERIC_READ access to the file. VBLFileStatistics* pStatistics The pointer to the file statistics structure.
Return values	If the function succeeds, the return value is nonzero. If the function fails, the return value is zero.

### 2.14 BLGetFileStatisticsEx

Syntax	BLAPI( BOOL) BLGetFileStatisticsEx ( HANDLE hFile, VBLFileStatisticsEx* pStatistics)
Description	Use this function to retrieve the extended file statistics.
Parameters	HANDLE hFile The file handle returned by BLCreateFile. The file handle must have been created with GENERIC_READ access to the file. VBLFileStatisticsEx* pStatistics The pointer to the extended file statistics structure.
Return values	If the function succeeds, the return value is nonzero. If the function fails, the return value is zero.

### 2.15 BLFlushFileBuffers

Syntax	BLAPI( BOOL) BLFlushFileBuffers( HANDLE hFile, DWORD dwFlags)
Description	
Parameters	HANDLE hFile The file handle returned by BLCreateFile. The file handle must have been created with GENERIC_WRITE access to the file. DWORD dwFlags

	<p>Flag indicating how to flush. Valid values are:</p> <p><code>BL_FLUSH_STREAM</code> - flushes all internal streams</p> <p><code>BL_FLUSH_FILE</code> - flushes the file and combinations thereof.</p>
Return values	<p>If the function succeeds, the return value is nonzero.</p> <p>If the function fails, the return value is zero.</p>

## 2.16 BLSeekTime

Syntax	<pre>BLAPI( BOOL) BLSeekTime ( HANDLE hFile,                           ULONGLONG timeStamp,                           void* arg,                           BOOL (*pProgressCallback)(void*, FLOAT),                           WORD callbackRate)</pre>
Description	<p>Use this function to seek forward in a BLF file to the first object with a certain time stamp.</p>
Parameters	<p><code>HANDLE hFile</code></p> <p>The file handle returned by <code>BLCreateFile</code>. The file handle must have been created with <code>GENERIC_READ</code> access to the file.</p> <p><code>ULONGLONG timeStamp</code></p> <p>The time stamp value you are searching for.</p> <p><code>void* arg</code></p> <p>Argument which is passed back to the <code>pProgressCallback</code> call. It can be used as a bridge between the C-Style binlog interface and C++ (by passing the class this pointer).</p> <p><code>BOOL (*pProgressCallback)(void*, FLOAT)</code></p> <p>Callback function, which passes back the <code>arg</code> pointer and the progress value (between 0 and 1.0).</p> <p><code>WORD callbackRate</code></p> <p>Rate how often <code>pProgressCallback</code> is called (in ms).</p>
Return values	<p>If the function succeeds, the return value is nonzero.</p> <p>If the function fails, the return value is zero.</p>

### 3 BL structures

#### 3.1 Overview

VBLObjectHeaderBase

VBLFileStatistics

#### 3.2 VBLObjectHeaderBase

```
typedef struct VBLObjectHeaderBase_t
{
    DWORD mSignature; /* signature (BL_OBJ_SIGNATURE) */
    WORD mHeaderSize; /* sizeof object header */
    WORD mHeaderVersion; /* header version (1) */
    DWORD mObjectSize; /* object size */
    DWORD mObjectType; /* object type (BL_OBJ_TYPE_XXX) */
} VBLObjectHeaderBase;
```

#### 3.3 VBLFileStatistics

```
typedef struct VBLFileStatistics_t
{
    DWORD mStatisticsSize; /* sizeof (VBLFileStatistics) */
    BYTE mApplicationID; /* application ID */
    BYTE mApplicationMajor; /* application major number */
    BYTE mApplicationMinor; /* application minor number */
    BYTE mApplicationBuild; /* application build number */
    ULONGLONG mFileSize; /* file size in bytes */
    ULONGLONG mUncompressedFileSize;
    /* uncompressed file size in bytes */
    DWORD mObjectCount; /* number of objects */
    DWORD mObjectsRead; /* number of objects read */
} VBLFileStatistics;
```

### 3.4 VBLFileStatisticsEx

```
typedef struct VBLFileStatisticsEx_t
{
    DWORD mStatisticsSize; /* sizeof (VBLFileStatisticsEx) */
    BYTE mApplicationID; /* application ID */
    BYTE mApplicationMajor; /* application major number */
    BYTE mApplicationMinor; /* application minor number */
    BYTE mApplicationBuild; /* application build number */
    ULONGLONG mFileSize; /* file size in bytes */
    ULONGLONG mUncompressedFileSize;
        /* uncompressed file size in bytes */
    DWORD mObjectCount; /* number of objects */
    DWORD mObjectsRead; /* number of objects read */
    SYSTEMTIME mMeasurementStartTime;
        /* measurement start time */
    SYSTEMTIME mLastObjectTime; /* last object time */
    DWORD mReserved[18]; /* reserved */
} VBLFileStatisticsEx;
```

## 4 Additional informations

### 4.1 Extended CAN identifiers

The following structure is used to write CAN frames:

```
typedef struct VBLCANMessage_t
{
    VBLObjectHeader mHeader;    /* object header */
    WORD            mChannel;    /* application channel */
    BYTE           mFlags;      /* CAN dir & rtr */
    BYTE           mDLC;        /* CAN dlc */
    DWORD          mID;         /* CAN ID */
    BYTE           mData[8];    /* CAN data */
} VBLCANMessage;
```

The member `mID` is used for the numeric identifier of the frame. If you want to write an extended frame identifier, you have to set the highest bit of the `mID` field. E.g. if you want to write a frame with the extended identifier `0x100`, you have to do the following:

```
message.mID = 0x80000100
```

For the same frame with a standard identifier you would use the field `mID` in the following way:

```
message.mID = 0x00000100
```

## 5 License

### 5.1 Acknowledgement

The compression routines used in the BL library derive from the zlib library.

### 5.2 The zlib Software License

zlib (<http://www.gzip.org/zlib/>) Copyright (C) 1995-2002 Jean-loup Gailly and Mark Adler

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The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files <ftp://ds.internic.net/rfc/rfc1950.txt> (zlib format), [rfc1951.txt](ftp://ds.internic.net/rfc/rfc1951.txt) (deflate format) and [rfc1952.txt](ftp://ds.internic.net/rfc/rfc1952.txt) (gzip format).