CC Pilot™ XS

GPS interface description

CC SYSTEMS

Table of Contents

Introduction

Purpose

This document describes the software interface to the GPS API.

References

-

History

Rev	Date	Author	Remarks
1.0	08-04-15	Lars Gustafsson	First version.

GPS Services

The GPS API enables the user to access GPS data received from a GPS-antenna. The GPS data is contained within a C++-struct defined in the file GPS_API.h. At initialization you send in a pointer to this struct. Then you access the different data members of this struct. If you intend to use this API from C#, use the wrapper dll. The interop functionality of the Compact Framework was not sufficient to interface the GPS.dll directly.

Summary of interface functions.

INIT_GPS	Initializes the GPS struct. (GPS.dll)
StartReceiveThread	Initializes the GPS struct. (GPSWrapper.dll)
StopReceiveThread	Stops the GPS receiving thread (GPSWrapper.dll)
GetLATITUDE	Retrieves the latitude (GPSWrapper.dll)
GetLONGITUDE	Retrieves the longitude (GPSWrapper.dll)
GetALTITUDE	Retrieves the altitude (GPSWrapper.dll)
GetDIFFWGS84REF	Retrieves the struct field GPS_GGA.DIFFWGS84REF (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm) (GPSWrapper.dll)
GetEASTWEST	Retrieves the struct field GPS_GGA. EASTWEST (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm) (GPSWrapper.dll)
GetFIXVALID	Retrieves the struct field GPS_GGA. FIXVALID (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm) (GPSWrapper.dll)
GetHORIZONTALDILUTIONOFPRES	Retrieves the struct field GPS_GGA. HORIZONTALDILUTIONOFPRES (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm) (GPSWrapper.dll)
GetNORTHSOUTH	Retrieves the struct field GPS_GGA. NORTHSOUTH (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm) (GPSWrapper.dll)
GetNUMBEROFRECEIVEDMSGS	Retrieves the struct field GPS_GGA. NUMBEROFRECEIVEDMSGS (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm) (GPSWrapper.dll)
GetNUMBEROFSATELLITESUSED	Retrieves the struct field GPS_GGA. NUMBEROFSATELLITESUSED (For information of

the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm) (GPSWrapper.dll)

GetUTC_TIME   Retrieves the struct field GPS_GGA. UTC_TIME (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm) (GPSWrapper.dll)

INIT_GPS

Description

Initializes the GPS struct and starts the GPS receive thread. It's important to allocate memory for the GPS struct before calling this method. Otherwise it will not function properly.

Include files

#include "GPS_API.h"

Syntax

```
extern "C" __declspec(dllexport)

DWORD __stdcall INIT_GPS(

GPS_DATAtyp* GPSDATAPOINTERparam

)
```

Parameters

GPSDATAPOINTERparam   A pointer to the GPS struct defined in GPS_API.h. The struct is too large to be fully described here. For details refer to GPS_API.h.

Return value

A handle to a semaphore

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

GPS_DATAtyp* pGPSDataStruct;
...
pGPSDataStruct = (GPS_DATAtyp*)malloc(sizeof(GPS_DATAtyp));
INIT_GPS(pGPSDataStruct);

StartReceiveThread

Description

Initializes the GPS struct and starts the GPS receive thread. The memory allocation is handled internally in this method.

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

long __stdcall StartReceiveThread()
```

Parameters

-

Return value

-

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

```
[DllImport("GPSWrapper", CharSet = CharSet.Auto)]
public static extern int StartReceiveThread();

…
StartReceiveThread();
```

StopReceiveThread

Description

Stops the receive thread.

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)
```

```
long __stdcall StopReceiveThread()
```

Parameters

-

Return value

-

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

```
[DllImport("GPSWrapper", CharSet = CharSet.Auto)]
public static extern int StopReceiveThread();

…

StopReceiveThread();
```

GetLATITUDE

Description

Retrieves the latitude

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

DWORD __stdcall GetLATITUDE()
```

Parameters

-

Return value

The latitude in degrees, minutes and seconds with four decimals

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

```
[DllImport("GPSWrapper", CharSet = CharSet.Auto)]
public static extern uint GetLATITUDE();

...
uint latitude;
latitude = GetLATITUDE();
```

GetLONGITUDE

Description

Retrieves the longitude

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

DWORD __stdcall GetLATITUDE()
```

Parameters

-

Return value

The longitude in degrees, minutes and seconds with four decimals

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

```
[DllImport("GPSWrapper", CharSet = CharSet.Auto)]
public static extern uint GetLONGITUDE();

...
uint latitude;
latitude = GetLONGITUDE();
```

GetALTITUDE

Description

Retreives the altitude

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

float __stdcall GetALTITUDE()
```

Parameters

-

Return value

The altitude in meters above the sea level.

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

-

GetDIFFWGS84REF

Description

Retrieves the struct field GPS_GGA.DIFFWGS84REF (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm)

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

float __stdcall GetDIFFWGS84REF()
```

Parameters

-

Return value

-

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

-

GetEASTWEST

Description

Retrieves the struct field GPS_GGA.EASTWEST (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm)

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

char* __stdcall GetEASTWEST()
```

Parameters

-

Return value

-

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

-

GetFIXVALID

Description

Retrieves the struct field GPS_GGA.GetFIXVALID (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm)

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

BYTE __stdcall GetFIXVALID
```

Parameters

-

Return value

-

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

-

GetHORIZONTALDILUTIONOFPRES

Description

Retrieves the struct field GPS_GGA.GetHORIZONTALDILUTIONOFPRES (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm)

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

float __stdcall GetHORIZONTALDILUTIONOFPRES()
```

Parameters

-

Return value

-

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

-

GetNORTHSOUTH

Description

Retrieves the struct field GPS_GGA.GetNORTHSOUTH (For information of the contents of this data member see documentation on GPS data like
http://www.gpsinformation.org/dale/nmea.htm)

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

char* __stdcall GetNORTHSOUTH()
```

Parameters

-

Return value

-

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

-

GetNUMBEROFRECEIVEDMSGS

Description

Retrieves the struct field GPS_GGA.GetNUMBEROFRECEIVEDMSGS (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm)

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

DWORD __stdcall GetNUMBEROFRECEIVEDMSGS()
```

Parameters

-

Return value

-

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

-

GetNUMBEROFSATELLITESUSED

Description

Retrieves the struct field GPS_GGA.GetNUMBEROFSATELLITESUSED (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm)

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

WORD __stdcall GetNUMBEROFSATELLITESUSED()
```

Parameters

-

Return value

-

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

-

GetUTC_TIME

Description

Retrieves the struct field GPS_GGA.GetUTC_TIME (For information of the contents of this data member see documentation on GPS data like http://www.gpsinformation.org/dale/nmea.htm)

Include files

using System.Runtime.InteropServices;

Syntax

```
extern "C" __declspec(dllexport)

char* __stdcall GetUTC_TIME()
```

Parameters

-

Return value

-

Restrictions (Windows 2000/XP)

-

Restrictions (Windows CE)

-

Example

-

Configuration common

Summary of common configuration values

Name: [1]	Type:	Description:

---

[1] Values in bold are required.

Configuration (Windows 2000/XP)

Summary of Windows 2000/XP configuration values

Name:	Type:	Description:

Configuration (Windows CE)

Summary of Windows CE configuration values

Name:[2]	Type:	Description:

---

[2] Values in bold are required