PCAN-OBD-2 API

API Implementation of the OBD-2 Standard
(ISO 15765-4)

Documentation

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Contents

1 PCAN-OBD-2 API

Welcome to the documentation of PCAN-OBD-2 API, a PEAK CAN API that implements ISO 15765-4, Diagnostics on CAN - Requirements for emissions-related system, an international standard that specifies the type of diagnostic connector and its pinout, the electrical signaling protocols available, the messaging format and a candidate list of vehicle parameters to monitor (along with information how to encode the data for each).

In the following chapters you will find all the information needed to take advantage of this API.

2 Introduction

PCAN-OBD-2 is a simple programming interface intended to support windows automotive applications that use PEAK-Hardware to communicate with Electronic Control Units (ECU) connected to the bus systems of a car, for maintenance purpose.

2.1 Understanding PCAN-OBD-2

OBD-II stands for On-Board Diagnostics. It is a standard that specifies the type of diagnostic connector and its pinout, the electrical signaling protocols available, the messaging format and a candidate list of vehicle parameters to monitor along with information how to encode the data for each.

The OBD communication protocol is defined in SAE J1979 / ISO 15031-5 and the specific implementation for CAN bus is described in ISO 15765-4. It is a Client/Server oriented protocol:

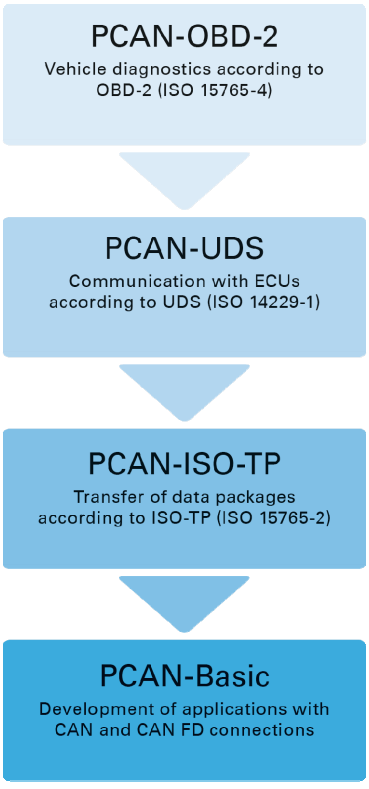
- External test equipment has the role of the client,
- Electronic Control Units (ECUs) connected inside the vehicle are servers.

Note: There are five signaling protocols that are permitted with the OBD-II interface. PCAN-OBD-2 is only valid with ISO 15765 CAN signals. PCAN-OBD-2 is the collection of the following standards: ISO 15765-4, ISO 15765-3 (known as Diagnostic/UDS on CAN), and ISO 15765-2 (known as ISO-TP).

Client always starts the communication by sending a request. If a server supports this request, it will reply with a positive or negative response, otherwise it can just ignore request. As the client cannot choose which server should reply to his request, and that request can be supported by multiple servers, client should be aware of receiving more than one response to a request.

Since the transport protocol of OBD-II on CAN is done using ISO-TP, an international standard for sending data packets over a CAN Bus, the maximum data length that can be transmitted in a single data-block is 4095 bytes.

PCAN-OBD-2 API is an implementation of the OBD-II on CAN standard. The physical communication is carried out by PCAN-Hardware (PCAN-USB, PCAN-PCI etc.) through the PCAN-UDS, PCAN-ISO-TP and PCAN-Basic API (free CAN APIs from PEAK-System). Because of this it is necessary to have also the PCAN-UDS, PCAN-ISO-TP and PCAN-Basic APIs (PCAN-UDS.dll, PCAN-ISO-TP.dll and PCANBasic.dll) present on the working computer where PCAN-OBD-2 is intended to be used. PCAN-OBD-2, PCAN-UDS, PCAN-ISO-TP and PCAN-Basic APIs are free and available for all people that acquire a PCAN-Hardware.



2.2 Using PCAN-OBD-2

Since PCAN-OBD-2 API is built on top of the PCAN-UDS API, PCAN-ISO-TP API and PCAN-Basic APIs, it shares similar functions. It offers the possibility to use several PCAN-OBD-2 (POBDII) Channels within the same application in an easy way. The communication process is divided in 3 phases: initialization, interaction and finalization of a POBDII-Channel.

Initialization: In order to do OBD-II on CAN communication using a channel, it is necessary to initialize it first. This is done by making a call to the function OBDII_Initialize (**class-method:** Initialize).

Interaction: After a successful initialization, a channel is ready to communicate with the connected CAN bus. Further configuration is not needed. The 9 functions starting with OBDII_Request (**class-methods:** starting with Request) can be used to transmit legislated-OBD requests and receive the responses of the ECUs.

Finalization: When the communication is finished, the function OBDII_Uninitialize (**class-method:** Uninitialize) should be called in order to release the POBDII-Channel and the resources allocated for it. In this way the channel is marked as "Free" and can be used from other applications.

2.3 License Regulations

The interface DLLs of this API, PCAN-Basic, device drivers, and further files needed for linking are property of the PEAK-System Technik GmbH and may be used only in connection with a hardware component purchased from PEAK-System or one of its partners. If a CAN hardware component of third-party suppliers should be compatible to one of PEAK-System, then you are not allowed to use or to pass on the APIs and driver software of PEAK-System.

If a third-party supplier develops software based on the PCAN-OBD-II API and problems occur during the use of this software, consult the software provider.

2.4 Features

- Implementation of the OBD-2 protocol (ISO 15765-4) as on-board diagnostics standard
- Windows DLLs for the development of applications for the platforms Windows® 11 (x64/ARM64), 10 (x86/x64)
- Thread-safe API
- Physical communication via CAN using a CAN interface of the PCAN series
- Uses the PCAN-Basic programming interface to access the CAN hardware in the computer
- Uses the PCAN-ISO-TP programming interface (ISO 15765-2) for the transfer of data packages up to 4095 bytes via the CAN bus
- Uses the PCAN-UDS programming interface (ISO 14229-1) for the communication with control units

2.5 System Requirements

- Windows 11 (x64/ARM64), Windows 10 (x64)
- For the CAN bus connection: PC CAN interface from PEAK-System
- PCAN-Basic API
- PCAN-ISO-TP API
- PCAN-UDS API

2.6 Scope of Supply

- Interface DLLs for Windows (x86/x64/ARM64)
- Examples and header files for all common programming languages
- Documentation in PDF format

3 DLL API Reference

This section contains information about the data types (classes, structures, types, defines, enumerations) and API functions which are contained in the PCAN-OBD-2 API.

3.1 Namespaces

PEAK offers the implementation of some specific programming interfaces as namespaces for the .NET Framework programming environment. The following namespaces are available:

Namespaces

	Name	Description
{}	Peak	Contains all namespaces that are part of the managed programming environment from PEAK-System
{}	Peak.Can	Contains types and classes for using the PCAN API from PEAK-System
{}	Peak.Can.Light	Contains types and classes for using the PCAN-Light API from PEAK-System
{}	Peak.Can.Basic	Contains types and classes for using the PCAN-Basic API from PEAK-System
{}	Peak.Can.Ccp	Contains types and classes for using the CCP API implementation from PEAK-System
{}	Peak.Can.Xcp	Contains types and classes for using the XCP API implementation from PEAK-System
{}	Peak.Can.Iso.Tp	Contains types and classes for using the PCAN-ISO-TP API implementation from PEAK-System
{}	Peak.Can.Uds	Contains types and classes for using the PCAN-UDS API implementation from PEAK-System
{}	Peak.Can.ObdII	Contains types and classes for using the PCAN-OBD-2 API implementation from PEAK-System
{}	Peak.Lin	Contains types and classes used to handle with LIN devices from PEAK-System
{}	Peak.RP1210A	Contains types and classes used to handle with CAN devices from PEAK-System through the TMC Recommended Practices 1210, version A, as known as RP1210(A)

3.1.1 Peak.Can.ObdII

The Peak.Can.ObdII namespace contains types and classes to use the PCAN-OBD-2 API within the .NET Framework programming environment and handle PCAN devices from PEAK-System.

Remarks: Under the Delphi environment, these elements are enclosed in the POBDII-Unit. The functionality of all elements included here is just the same. The difference between this namespace and the Delphi unit consists in the fact that Delphi accesses the Windows API directly (it is not Managed Code).

Aliases

	Alias	Description
	TPOBDIICANHandle	Represents a PCAN-OBD-2 channel handle
	TPOBDIIPid	Represents a Parameter Identication (PID), a parameter used by OBD-II service $01 and $02
	TPOBDIIOBDMid	Represents an On-Board Diagnostic Monitor ID (OBDMID), a parameter used by OBD-II service $06
	TPOBDIITid	Represents a Test ID (TID), a parameter used by OBD-II service $08
	TPOBDIIInfoType	Represents an InfoType, a parameter used by OBD-II service $09

Classes

	Class	Description
	OBDIIApi	Defines a class which represents the PCAN-OBD-2 API

Structures

	Class	Description
	TPOBDIIResponse	Represents the generic data returned by OBD services
	TPOBDIIParamData	Represents the data returned by OBD service $01, $02
	TPOBDIIDTCText	Represents a DTC as a string of 6 bytes
	TPOBDIIDTCData	Represents the data returned by OBD service $03, $07, $0A
	TPOBDIIMonitorData	Represents the data returned by OBD service $06
	TPOBDIIInfoData	Represents the data returned by OBD service $09
	TPOBDIIUnitAndScaling	Represents a Unit and Scaling definition

Enumerations

	Name	Description
	TPOBDIIBaudrateInfo	Represents a legislated OBD-II Baud rate
	TPOBDIIAddress	Represents a legislated OBD-II address for ECUs
	TPOBDIIService	Represents an OBD-II Service
	TPOBDIIParameter	Represents a PCAN-OBD-2 parameter to be read or set
	TPOBDIIHwType	Represents the type of CAN hardware to be initialized
	TPOBDIIStatus	Represents an OBD-II status/error code
	TPOBDIIError	Represents an OBD-II Response codes
	TPOBDIIInfoDataType	Represents the type of returned data in TPOBDIIInfoData (OBD service $09)

3.2 Units

PEAK offers the implementation of some specific programming interfaces as Units for the Delphi's programming environment. The following units are available to be used:

Namespaces

	Name	Description
{}	POBDII Unit	Delphi unit for using the PCAN-OBD-2 API from PEAK-System

3.2.1 POBDII Unit

The POBDII-Unit contains types and classes to use the PCAN-OBD-2 API within Delphi's programming environment and handle PCAN devices from PEAK-System.

Remarks: For the .NET Framework, these elements are enclosed in the Peak.Can.Obdii namespace. The functionality of all elements included here is just the same. The difference between this Unit and the .NET namespace consists in the fact that Delphi accesses the Windows API directly (it is not Managed Code).

Aliases

	Alias	Description
	TPOBDIICANHandle	Represents a PCAN-OBD-2 channel handle
	TPOBDIIPid	Represents a Parameter Identication (PID), a parameter used by OBD-II service $01 and $02
	TPOBDIIOBDMid	Represents an On-Board Diagnostic Monitor ID (OBDMID), a parameter used by OBD-II service $06
	TPOBDIITid	Represents a Test ID (TID), a parameter used by OBD-II service $08
	TPOBDIIInfoType	Represents an InfoType, a parameter used by OBD-II service $09

Classes

	Class	Description
	OBDIIApi	Defines a class which represents the PCAN-OBD-2 API

Structures

	Class	Description
	TPOBDIIResponse	Represents the generic data returned by OBD services
	TPOBDIIParamData	Represents the data returned by OBD service $01, $02
	TPOBDIIDTCText	Represents a DTC as a string of 6 bytes
	TPOBDIIDTCData	Represents the data returned by OBD service $03, $07, $0A
	TPOBDIIMonitorData	Represents the data returned by OBD service $06
	TPOBDIIInfoData	Represents the data returned by OBD service $09
	TPOBDIIUnitAndScaling	Represents a Unit and Scaling definition

Enumerations

	Name	Description
	TPOBDIIBaudrateInfo	Represents a legislated OBD-II Baud rate
	TPOBDIIAddress	Represents a legislated OBD-II address for ECUs
	TPOBDIIService	Represents an OBD-II Service
	TPOBDIIParameter	Represents a PCAN-OBD-2 parameter to be read or set
	TPOBDIIHwType	Represents the type of CAN hardware to be initialized
	TPOBDIIStatus	Represents an OBD-II status/error code
	TPOBDIIError	Represents an OBD-II Response codes
	TPOBDIIInfoDataType	Represents the type of returned data in TPOBDIIInfoData (OBD service $09)

3.3 Classes

The following classes are offered to make use of the PCAN-OBD-2 API in a managed or unmanaged way.

Classes

	Class	Description
	OBDII Api	Defines a class to use the PCAN-OBD-2 API within the Microsoft's .NET Framework programming environment
	TObdiiApi	Defines a class to use the PCAN-OBD-2 API within the Delphi programming environment

3.3.1 OBDIIApi

Defines a class which represents the PCAN-OBD-2 API to be used within the Microsoft's .NET Framework.

Syntax

C#

```
public static class OBDIIApi
```

C++ / CLR

```
public ref class OBDIIApi abstract sealed
```

Visuel Basic

```
Public NotInheritable Class OBDIIApi
```

Remarks: The OBDIIApi class collects and implements the PCAN-OBD-2 API functions. Each method is called just like the API function with the exception that the prefix "OBDII_" is not used. The structure and functionality of the methods and API functions are the same.

Within the .NET Framework from Microsoft, the OBDIIApi class is a static, not inheritable, class. It can (must) directly be used, without any instance of it, e.g.:

```
TPOBDIIStatus res;
// Static use, without any instance
//
res = OBDIIApi.Initialize(OBDIIApi.POBDII_USBBUS1);
```

Note: This class under Delphi is called TObdiiApi.

See also: Methods on page 44, Definitions on page 123.

3.3.2 TObdiiApi

Defines a class which represents the PCAN-OBD-2 API to be used within the Delphi programming environment.

Syntax

Pascal OO

```
TObdiiApi = class
```

Remarks: TObdiiApi is a class containing only class-methods and constant members, allowing their use without the creation of any object, just like a static class of another programming language. It collects and implements the PCAN-OBD-2 API functions. Each method is called just like the API function with the exception that the prefix "OBDII_" is not used. The structure and functionality of the methods and API functions are the same.

Note: This class under .NET framework is called OBDIIApi.

See also: Methods on page 44, Definitions on page 123.

3.4 Structures

The PCAN-OBD-2 API defines the following structures:

Name	Description
TPOBDIIResponse	Represents the generic data returned by OBD services
TPOBDIIParamData	Represents the data returned by OBD service $01, $02
TPOBDIIDTCText	Represents a DTC as a string of 6 bytes
TPOBDIIDTCData	Represents the data returned by OBD service $03, $07, $0A
TPOBDIIMonitorData	Represents the data returned by OBD service $06
TPOBDIIInfoData	Represents the data returned by OBD service $09
TPOBDIIUnitAndScaling	Represents a Unit and Scaling definition

3.4.1 TOBDIIResponse

Defines a generic response structure to any OBD services. Such structure contains the raw data.

Syntax

C++

```
typedef struct tagTPOBDIIResponse
{
      BYTE              SOURCE;
      TPOBDIIError      ERRORNR;
      BYTE              DATA[4095];
      WORD              LEN;
      BYTE              SID;
      BYTE              PID;
      BYTE              FRAME;
} TPOBDIIResponse;
```

Pascal OO

```
TPOBDIIResponse = record
  SOURCE: Byte;
  ERRORNR: TPOBDIIError;
  DATA: array[0..4094] of Byte;
  LEN: WORD;
  SID: Byte;
  PID: Byte;
  FRAME: Byte;
end;
PTPOBDIIResponse = ^TPOBDIIResponse;
```

C#

```
[StructLayout(LayoutKind.Sequential)]
public struct TPOBDIIResponse
{

    public byte SOURCE;
    [MarshalAs(UnmanagedType.U1)]
    public TPOBDIIError ERRORNR;
    [MarshalAs(UnmanagedType.ByValArray, SizeConst = 4095)]
    public byte[] DATA;
    public ushort LEN;
```

```
    public byte SID;
    public byte PID;
    public byte FRAME;
}
```

C++ / CLR

```
[StructLayout(LayoutKind::Sequential)]
public value struct TPOBDIIResponse
{
      Byte SOURCE;
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIError ERRORNR;
      [MarshalAs(UnmanagedType::ByValArray, SizeConst = 4095)]
      array<Byte>^ DATA;
      unsigned short LEN;
      Byte SID;
      Byte PID;
      Byte FRAME;
};
```

Visual Basic

```
<StructLayout(LayoutKind.Sequential)> _
Public Structure TPOBDIIResponse
    Public SOURCE As Byte
    <MarshalAs(UnmanagedType.U1)> _
    Public ERRORNR As TPOBDIIError
    <MarshalAs(UnmanagedType.ByValArray, SizeConst:=4095)> _
    Public DATA As Byte()
    Public LEN As UShort
    Public SID As Byte
    Public PID As Byte
    Public FRAME As Byte
End Structure
```

Fields

Name	Description
SOURCE	Source address of the response (usually the ECU number).
ERRORNR	Network error code (see TPOBDIIError).
DATA	Buffer containing the raw data of the response, note that SID and parameters have been removed.
LEN	Number of bytes stored in the DATA buffer.
SID	Requested Service ID.
PID	Requested Parameter ID if present (only with OBD services $01, $02, $08 and $09).
FRAME	Requested frame number if present (only with OBD service $02).

See also: TPOBDIIError on page 41, TPOBDIIAddress on page 28.

3.4.2 TPOBDIIParamData

Represents the responses returned by OBD services $01 and $02: respectively RequestCurrentData and RequestFreezeFrameData.

Syntax

C++

```
typedef struct tagTPOBDIIParamData
{
      TPOBDIIResponse   RESPONSE;
      BYTE              BUFFER[41];
      double            DOUBLES[10];
      WORD              BYTEMASK;
      BYTE              BLEN;
      BYTE              DLEN;
      char              DTC[6];
} TPOBDIIParamData;
```

Pascal OO

```
TPOBDIIParamData = record
  RESPONSE: TPOBDIIResponse;
  BUFFER: array[0..40] of Byte;
  DOUBLES: array[0..9] of Double;
  BYTEMASK: Word;
  BLEN: Byte;
  DLEN: Byte;
  DTC: array[0..5] of Char;
end;
PTPOBDIIParamData = ^TPOBDIIParamData;
```

C#

```
public struct TPOBDIIParamData
{
    [MarshalAs(UnmanagedType.Struct)]
    public TPOBDIIResponse RESPONSE;
    [MarshalAs(UnmanagedType.ByValArray, SizeConst = 41)]
    public byte[] BUFFER;
    [MarshalAs(UnmanagedType.ByValArray, SizeConst = 10)]
    public double[] DOUBLES;
    public ushort BYTEMASK;
    public byte BLEN;
    public byte DLEN;
    [MarshalAs(UnmanagedType.ByValTStr, SizeConst = 6)]
    public string DTC;
}
```

C++ / CLR

```
public value struct TPOBDIIParamData
{
      TPOBDIIResponse RESPONSE;
      [MarshalAs(UnmanagedType::ByValArray, SizeConst = 41)]
      array<Byte>^ BUFFER;
      [MarshalAs(UnmanagedType::ByValArray, SizeConst = 10)]
      array<double>^ DOUBLES;
      unsigned short BYTEMASK;
      Byte BLEN;
      Byte DLEN;
      [MarshalAs(UnmanagedType::ByValTStr, SizeConst = 6)]
      String^ DTC;
};
```

Visual Basic

```
Public Structure TPOBDIIParamData
    <MarshalAs(UnmanagedType.Struct)> _
    Public RESPONSE As TPOBDIIResponse
    <MarshalAs(UnmanagedType.ByValArray, SizeConst:=41)> _
    Public BUFFER As Byte()
    <MarshalAs(UnmanagedType.ByValArray, SizeConst:=10)> _
    Public DOUBLES As Double()
    Public BYTEMASK As UShort
    Public BLEN As Byte
    Public DLEN As Byte
    <MarshalAs(UnmanagedType.ByValTStr, SizeConst:=6)> _
    Public DTC As String
End Structure
```

Fields

Name	Description
RESPONSE	The generic raw response
BUFFER	Data as an array of Bytes (up to 41 values)
DOUBLES	Data as an array of Doubles (up to 10 values)
BYTEMASK	Mask for bytes that are bit encoded (depending on the PID requested)
BLEN	Number of bytes stored in buffer BUFFER (0 to 41)
DLEN	Number of doubles stored in buffer DOUBLES (0 to 41)
DTC	A single DTC (as a string including the '\0' character)

Remarks: Depending on the request, buffers (BUFFER or DOUBLES) may have data or not; check the BLEN, DLEN, and DTC parameters to see if the size is greater than zero.

Note: Non-standard (i.e. vehicle-specific) data are not handle and will not be parsed successfully, in those cases user will have to check the RESPONSE field to get the raw data.

See also: TOBDIIResponse on page 13,
OBDII_RequestCurrentData on page 110 (**class-method:** RequestCurrentData),
OBDII_RequestFreezeFrameData on page 111 (**class-method:** RequestFreezeFrameData)

3.4.3 TPOBDIIDTCText

Defines a string to store a Diagnostic Trouble Code (DTC).

Pascal OO

```
TPOBDIIDTCText = record
  ErrorText: String;
end;
```

C#

```
public struct TPOBDIIDTCText
{
    [MarshalAs(UnmanagedType.ByValTStr, SizeConst = 6)]
    public string ErrorText;
}
```

C++ / CLR

```
public value struct TPOBDIIDTCText
{
      [MarshalAs(UnmanagedType::ByValTStr, SizeConst = 6)]
      String^ ErrorText;
};
```

Visual Basic

```
Public Structure TPOBDIIDTCText
    <MarshalAs(UnmanagedType.ByValTStr, SizeConst:=6)> _
    Public ErrorText As String
End Structure
```

Fields

Name	Description
ErrorText	The DTC (Diagnostic Trouble Code) as a string. Default length of DTC is 5

Remarks: In plain C++, this structure is not used and is replaced by an array of char (see TPOBDIIDTCData).

See also: TPOBDIIDTCData below.

3.4.4 TPOBDIIDTCData

Represents the responses returned by OBD services $03 and $07 and $0A: respectively RequestStoredTroubleCodes, RequestPendingTroubleCodes, and RequestPermanentTroubleCodes.

Syntax

C++

```
typedef struct tagTPOBDIIDTCData
{
      TPOBDIIResponse   RESPONSE;
      char              DTC[10][6];
      BYTE              DLEN;
} TPOBDIIDTCData;
```

Pascal OO

```
TPOBDIIDTCData = record
  RESPONSE: TPOBDIIResponse;
  DTC: array[0..9] of array[0..5] of Char;
  DLEN: Byte;
end;
PTPOBDIIDTCData = ^TPOBDIIDTCData;
```

C#

```
public struct TPOBDIIDTCData
{
    [MarshalAs(UnmanagedType.Struct)]
    public TPOBDIIResponse RESPONSE;
    [MarshalAs(UnmanagedType.ByValArray, SizeConst = 10)]
    public TPOBDIIDTCText[] DTC;
    public byte DLEN;
}
```

C++ / CLR

```
public value struct TPOBDIIDTCData
{
      TPOBDIIResponse RESPONSE;
      [MarshalAs(UnmanagedType::ByValArray, SizeConst = 10)]
      array<TPOBDIIDTCText>^ DTC;
      Byte DLEN;
};
```

Visual Basic

```
Public Structure TPOBDIIDTCData
    <MarshalAs(UnmanagedType.Struct)> _
    Public RESPONSE As TPOBDIIResponse
    <MarshalAs(UnmanagedType.ByValArray, SizeConst:=10)> _
    Public DTC As TPOBDIIDTCText()
    Public DLEN As Byte
End Structure
```

Fields

Name	Description
RESPONSE	The generic raw response
DTC	Buffer to store an array of TOBDIIDTCText (note: in plain C++, DTC field is a two-dimensional array)
DLEN	Number of DTCs stored in the buffer

Note: Non-standard (i.e. vehicle-specific) data are not handle and will not be parsed successfully, in those cases user will have to check the RESPONSE field to get the raw data.

See also: TPOBDIIDTCText on page 16,
OBDII_RequestStoredTroubleCodes on page 113 (**class-method:** RequestStoredTroubleCodes),
OBDII_RequestPendingTroubleCodes on page 117 (**class-method:** RequestPendingTroubleCodes),
OBDII_RequestPermanentTroubleCodes on page 121 (**class-method:** RequestPermanentTroubleCodes)

3.4.5 TPOBDIIMonitorData

Represents the responses returned by OBD service $06: RequestTestResults.

Syntax

C++

```
typedef struct tagTPOBDIIMonitorData
{
      TPOBDIIResponse   RESPONSE;
      BYTE              TID;
      BYTE              UNITANDSCALING;
      double            TESTVALUE;
      double            MINLIMIT;
      double            MAXLIMIT;
} TPOBDIIMonitorData;
```

Pascal OO

```
TPOBDIIMonitorData = record
  RESPONSE: TPOBDIIResponse;
  TID: Byte;
```

```
  UNITANDSCALING: Byte;
  TESTVALUE: Double;
  MINLIMIT: Double;
  MAXLIMIT: Double;
end;
PTPOBDIIMonitorData = ^TPOBDIIMonitorData;
```

C#

```
public struct TPOBDIIMonitorData
{
    [MarshalAs(UnmanagedType.Struct)]
    public TPOBDIIResponse RESPONSE;
    public byte TID;
    public byte UNITANDSCALING;
    public double TESTVALUE;
    public double MINLIMIT;
    public double MAXLIMIT;
}
```

C++ / CLR

```
public value struct TPOBDIIMonitorData
{
      TPOBDIIResponse RESPONSE;
      Byte TID;
      Byte UNITANDSCALING;
      double TESTVALUE;
      double MINLIMIT;
      double MAXLIMIT;
};
```

Visual Basic

```
Public Structure TPOBDIIMonitorData
    <MarshalAs(UnmanagedType.Struct)> _
    Public RESPONSE As TPOBDIIResponse
    Public TID As Byte
    Public UNITANDSCALING As Byte
    Public TESTVALUE As Double
    Public MINLIMIT As Double
    Public MAXLIMIT As Double
End Structure
```

Fields

Name	Description
RESPONSE	The generic raw response
TID	Test Identifier
UNITANDSCALING	Unit and Scaling Identifier (see GetUnitAndScaling or SAE J1979 Appendix E for definitions)
TESTVALUE	Test value (result, calculated based on the Unit and Scaling Id)
MINLIMIT	Minim Test Limit (calculated based on the Unit and Scaling Id)
MAXLIMIT	Maximum Test Limit (calculated based on the Unit and Scaling Id)

Remarks: Use the GetUnitAndScaling method to retrieve Unit and Scaling information based on an identifier.

Note: Non-standard (i.e. vehicle-specific) data are not handle and will not be parsed successfully, in those cases user will have to check the RESPONSE field to get the raw data.

See also: OBDII_GetUnitAndScaling on page 109 (**class-method:** GetUnitAndScaling), OBDII_RequestTestResults on page 115 (**class-method:** RequestTestResults)

3.4.6 TPOBDIIInfoData

Represents the responses returned by OBD service $09: RequestVehicleInformation.

Syntax

C++

```
typedef struct tagTPOBDIIInfoData
{
      TPOBDIIResponse         RESPONSE;
      BYTE                    INDEXNR;
      TPOBDIIInfoDataType     DATATYPE;
      WORD                    COUNTER;
      BYTE                    CALDATA[4];
      char                    TEXT[21];
} TPOBDIIInfoData;
```

Pascal OO

```
TPOBDIIInfoData = record
  RESPONSE: TPOBDIIResponse;
  INDEXNR: Byte;
  DATATYPE: TPOBDIIInfoDataType;
  COUNTER: Word;
  CALDATA: array[0..3] of Byte;
  TEXT: array[0..20] of char;
end;
PTPOBDIIInfoData = ^TPOBDIIInfoData;
```

C#

```
public struct TPOBDIIInfoData
{
    [MarshalAs(UnmanagedType.Struct)]
    public TPOBDIIResponse RESPONSE;
    public byte INDEXNR;
    [MarshalAs(UnmanagedType.U1)]
    public TPOBDIIInfoDataType DATATYPE;
    public ushort COUNTER;
    [MarshalAs(UnmanagedType.ByValArray, SizeConst = 4)]
    public byte[] CALDATA;
    [MarshalAs(UnmanagedType.ByValTStr, SizeConst = 21)]
    public string TEXT;
}
```

C++ / CLR

```
[StructLayout(LayoutKind::Sequential)]
public value struct TPOBDIIInfoData
{
      TPOBDIIResponse RESPONSE;
```

```
      Byte INDEXNR;
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIInfoDataType DATATYPE;
      unsigned short COUNTER;
      [MarshalAs(UnmanagedType::ByValArray, SizeConst = 4)]
      array<Byte>^ CALDATA;
      [MarshalAs(UnmanagedType::ByValTStr, SizeConst = 21)]
      String^ TEXT;
};
```

Visual Basic

```
Public Structure TPOBDIIInfoData
    <MarshalAs(UnmanagedType.Struct)> _
    Public RESPONSE As TPOBDIIResponse
    Public INDEXNR As Byte
    <MarshalAs(UnmanagedType.U1)> _
    Public DATATYPE As TPOBDIIInfoDataType
    Public COUNTER As UShort
    <MarshalAs(UnmanagedType.ByValArray, SizeConst:=4)> _
    Public CALDATA As Byte()
    <MarshalAs(UnmanagedType.ByValTStr, SizeConst:=21)> _
    Public TEXT As String
End Structure
```

Fields

Name	Description
RESPONSE	The generic raw response
INDEXNR	Index number of the data (depending on the type of the data
DATATYPE	Type of the data (see TPOBDIIInfoDataType)
COUNTER	Data as a Counter value
CALDATA	Data as Calibration data
TEXT	Data as a String value

Remarks: TPOBDIIInfoData can store different data types, make sure to check the DATATYPE field to read the correct value.

Note: Non-standard (i.e. vehicle-specific) data are not handle and will not be parsed successfully, in those cases user will have to check the RESPONSE field to get the raw data.

See also: TPOBDIIInfoDataType on page 42
OBDII_RequestVehicleInformation on page 119 (**class-method:** RequestVehicleInformation)

3.4.7 TPOBDIIUnitAndScaling

Defines a Unit and Scaling structure ad defined in SAE J1979 Appendix E.

Syntax

C++

```
typedef struct tagTPOBDIIUnitAndScaling
{
      double      MIN;
      double      MAX;
      CHAR        UNIT[16];
} TPOBDIIUnitAndScaling;
```

Pascal OO

```
TPOBDIIUnitAndScaling = record
   MIN: Double;
   MAX: Double;
   UNIT_TXT: array[0..15] of Char;
end;
PTPOBDIIUnitAndScaling = ^TPOBDIIUnitAndScaling;
```

C#

```
public struct TPOBDIIUnitAndScaling
{
    public double MIN;
    public double MAX;
    [MarshalAs(UnmanagedType.ByValTStr, SizeConst = 16)]
    public String UNIT;
};
```

C++ / CLR

```
public value struct TPOBDIIUnitAndScaling
{
      double MIN;
      double MAX;
      [MarshalAs(UnmanagedType::ByValTStr, SizeConst = 16)]
      String^ UNIT;
};
```

Visual Basic

```
Public Structure TPOBDIIUnitAndScaling
    Public MIN As Double
    Public MAX As Double
    <MarshalAs(UnmanagedType.ByValTStr, SizeConst:=16)> _
    Public UNIT As String
End Structure
```

Fields

Name	Description
MIN	Minimum value for that unit
MAX	Maximum value for that unit
UNIT	Unit abbreviation as a string. Note that in Delphi as UNIT is a reserved keyword, it is replaced with UNIT_TXT

See also: OBDII_GetUnitAndScaling on page 109 (**class-method:** GetUnitAndScaling)

3.5 Types

The PCAN-ISO-TP API defines the following types:

Name	Description
TPOBDIICANHandle	Represents a PCAN-OBD-2 channel handle
TPOBDIIPid	Represents a Parameter Identication (PID), a parameter used by OBD-II service $01 and $02
TPOBDIIOBDMid	Represents an On-Board Diagnostic Monitor ID (OBDMID), a parameter used by OBD-II service $06
TPOBDIITid	Represents a Test ID (TID), a parameter used by OBD-II service $08
TPOBDIIInfoType	Represents an InfoType, a parameter used by OBD-II service $09
TPOBDIIBaudrateInfo	Represents a legislated OBD-II Baud rate
TPOBDIIAddress	Represents a legislated OBD-II address for ECUs
TPOBDIIService	Represents an OBD-II Service
TPOBDIIParameter	Represents a PCAN-OBD-2 parameter to be read or set
TPOBDIIHwType	Represents the type of CAN hardware to be initialized
TPOBDIIStatus	Represents an OBD-II status/error code
TPOBDIIError	Represents an OBD-II Response codes
TPOBDIIInfoDataType	Represents the type of returned data in TPOBDIIInfoData (OBD service $09)

3.5.1 TPOBDIICANHandle

Represents a PCAN-OBD-2 channel handle.

Syntax

C++

```
#define TPOBDIICANHandle WORD
```

C++ / CLR

```
#define TPOBDIICANHandle System::Int16
```

C#

```
using TPOBDIICANHandle = System.Int16;
```

Visual Basic

```
Imports TPOBDIICANHandle = System.Int16
```

Remarks: TPOBDIICANHandle is defined for the PCAN-OBD-2 API but it is identical to a TPOBDIICANHandle from PCAN-UDS API, a TPCANTPCANHandle from PCAN-ISO-TP API or TPCANHandle from PCAN-Basic API.

.NET Framework Programming Languages

An alias is used to represent a Channel handle under Microsoft .NET in order to originate a homogeneity between all programming languages listed above.

Aliases are defined in the Peak.Can.Obdii namespace for C# and VB .NET. However, including a namespace does not include the defined aliases.

If it is wished to work with aliases, those must be copied to the working file, right after the inclusion of the Peak.Can.Obdii namespace. Otherwise, just use the native type, which in this case is a Byte.

C#

```
using System;
using Peak.Can.Obdii;
using TPPBDIICANHandle = System.Int16; // Alias's declaration for System.Byte
```

Visual Basic

```
Imports System
Imports Peak.Can.Obdii
Imports TPOBDIICANHandle = System.Int16 ' Alias' declaration for System.Byte
```

See also: PCAN-OBD-2 Handle Definitions on page 123

3.5.2 TPOBDIIPid

Represents a Parameter Identication (PID), a parameter used by OBD-II service $01 and $02.

Syntax

C++

```
#define TPOBDIIPid BYTE
```

C++ / CLR

```
#define TPOBDIIPid System::Byte
```

C#

```
using TPOBDIIPid = System.Byte;
```

Visual Basic

```
Imports TPOBDIIPid = System.Byte
```

.NET Framework Programming Languages

An alias is used to represent a Parameter Identifier under Microsoft .NET in order to originate a homogeneity between all programming languages listed above.

Aliases are defined in the `Peak.Can.Obdii` namespace for C# and VB .NET. However, including a namespace does not include the defined aliases.

If it is wished to work with aliases, those must be copied to the working file, right after the inclusion of the `Peak.Can.Obdii` namespace. Otherwise, just use the native type, which in this case is a Byte.

C#

```
using System;
using Peak.Can.Obdii;
using TPOBDIIPid = System.Byte; // Alias's declaration for System.Byte
```

Visual Basic

```
Imports System
```

```
Imports Peak.Can.Obdii
Imports TPOBDIIPid = System.Byte ' Alias' declaration for System.Byte
```

See also: OBDII_RequestCurrentData on page 110 (**class-method:** RequestCurrentData)
OBDII_RequestFreezeFrameData on page 111 (**class-method:** RequestFreezeFrameData)

3.5.3 TPOBDIIOBDMid

Represents an On-Board Diagnostic Monitor ID (OBDMID), a parameter used by OBD-II service $06.

Syntax

C++

```
#define TPOBDIIOBDMid BYTE
```

C++ / CLR

```
#define TPOBDIIOBDMid System::Byte
```

C# Syntax

```
using TPOBDIIOBDMid = System.Byte;
```

Visual Basic

```
Imports TPOBDIIOBDMid = System.Byte
```

.NET Framework Programming Languages

An alias is used to represent an OBDM Identifier under Microsoft .NET in order to originate a homogeneity between all programming languages listed above.

Aliases are defined in the Peak.Can.Obdii namespace for C# and VB .NET. However, including a namespace does not include the defined aliases.

If it is wished to work with aliases, those must be copied to the working file, right after the inclusion of the Peak.Can.Obdii namespace. Otherwise, just use the native type, which in this case is a Byte.

C#

```
using System;
using Peak.Can.Obdii;
using TPOBDIIOBDMid = System.Byte; // Alias's declaration for System.Byte
```

Visual Basic

```
Imports System
Imports Peak.Can.Obdii
Imports TPOBDIIOBDMid = System.Byte ' Alias' declaration for System.Byte
```

See also: OBDII_RequestTestResults on page 115 (**class-method:** RequestTestResults)

3.5.4 TPOBDIITid

Represents a Test ID (TID), a parameter used by OBD-II service $08.

Syntax

C++

```
#define TPOBDIITid BYTE
```

C++ / CLR

```
#define TPOBDIITid System::Byte
```

C#

```
using TPOBDIITid = System.Byte;
```

Visual Basic

```
Imports TPOBDIITid = System.Byte
```

.NET Framework Programming Languages

An alias is used to represent a Test Identifier under Microsoft .NET in order to originate a homogeneity between all programming languages listed above.

Aliases are defined in the Peak.Can.Obdii namespace for C# and VB .NET. However, including a namespace does not include the defined aliases.

If it is wished to work with aliases, those must be copied to the working file, right after the inclusion of the Peak.Can.Obdii namespace. Otherwise, just use the native type, which in this case is a Byte.

C#

```
using System;
using Peak.Can.Obdii;
using TPOBDIITid = System.Byte; // Alias's declaration for System.Byte
```

Visual Basic

```
Imports System
Imports Peak.Can.Obdii
Imports TPOBDIITid = System.Byte ' Alias' declaration for System.Byte
```

See also: OBDII_RequestControlOperation on page 118 (**class-method:** RequestControlOperation)

3.5.5 TPOBDIIInfoType

Represents an InfoType, a parameter used by OBD-II service $09.

Syntax

C++

```
#define TPOBDIIInfoType BYTE
```

C++ / CLR

```
#define TPOBDIIInfoType System::Byte
```

C#

```
using TPOBDIIInfoType = System.Byte;
```

Visual Basic

```
Imports TPOBDIIInfoType = System.Byte
```

.NET Framework Programming Languages

An alias is used to represent an InfoType identifier under Microsoft .NET in order to originate an homogeneity between all programming languages listed above.

Aliases are defined in the Peak.Can.Obdii namespace for C# and VB .NET. However, including a namespace does not include the defined aliases.

If it is wished to work with aliases, those must be copied to the working file, right after the inclusion of the Peak.Can.Obdii namespace. Otherwise, just use the native type, which in this case is a Byte.

C#

```
using System;
using Peak.Can.Obdii;
using TPOBDIIInfoType = System.Byte; // Alias's declaration for System.Byte
```

Visual Basic

```
Imports System
Imports Peak.Can.Obdii
Imports TPOBDIIInfoType = System.Byte ' Alias' declaration for System.Byte
```

See also: OBDII_RequestVehicleInformation on page 119 (**class-method:** RequestVehicleInformation).

3.5.6 TPOBDIIBaudrateInfo

Represents a legislated OBD-II Baud rate. According with the programming language, this type can be a group of defined values or an enumeration.

Syntax

C++

```
#define TPOBDIIBaudrateInfo        BYTE

#define POBDII_BAUDRATE_NON_LEGISLATED    0x00
#define POBDII_BAUDRATE_250K              0x01
#define POBDII_BAUDRATE_500K              0x02
#define POBDII_BAUDRATE_AUTODETECT        0xFF
```

C++ / CLR

```
public enum TPOBDIIBaudrateInfo : Byte
{
      POBDII_BAUDRATE_NON_LEGISLATED = 0x00,
      POBDII_BAUDRATE_250K = 0x01,
      POBDII_BAUDRATE_500K = 0x02,
      POBDII_BAUDRATE_AUTODETECT = 0xFF,
};
```

C#

```
public enum TPOBDIIBaudrateInfo : byte
{
    POBDII_BAUDRATE_NON_LEGISLATED = 0x00,
    POBDII_BAUDRATE_250K = 0x01,
    POBDII_BAUDRATE_500K = 0x02,
    POBDII_BAUDRATE_AUTODETECT = 0xFF,
}
```

Pascal OO

```
TPOBDIIBaudrateInfo = (
  POBDII_BAUDRATE_NON_LEGISLATED = $00,
  POBDII_BAUDRATE_250K = $01,
  POBDII_BAUDRATE_500K = $02,
  POBDII_BAUDRATE_AUTODETECT = $FF
);
```

Visual Basic

```
Public Enum TPOBDIIBaudrateInfo As Byte
    POBDII_BAUDRATE_NON_LEGISLATED = &H0
    POBDII_BAUDRATE_250K = &H1
    POBDII_BAUDRATE_500K = &H2
    POBDII_BAUDRATE_AUTODETECT = &HFF
End Enum
```

Values

Name	Value	Description
POBDII_BAUDRATE_NON_LEGISLATED	0	Non legislated-OBD baudrate (note: this is used only as a returned value of GetValue function with parameter POBDII_PARAM_BAUDRATE)
POBDII_BAUDRATE_250K	1	250 kBit/s
POBDII_BAUDRATE_500K	2	500 kBit/s
POBDII_BAUDRATE_AUTODETECT	0xFF (255)	Auto-detect OBD-II baudrate (note: used only with the Initialize function)

See also: OBDII_Initialize on page 103 (**class-method:** Initialize).

3.5.7 TPOBDIIAddress

Represents a legislated OBD-II address for ECUs. According with the programming language, this type can be a group of defined values or an enumeration.

Snytax

C++

```
#define TPOBDIIAddress BYTE

#define POBDII_ECU_1 0x01
#define POBDII_ECU_2 0x02
#define POBDII_ECU_3 0x03
#define POBDII_ECU_4 0x04
#define POBDII_ECU_5 0x05
#define POBDII_ECU_6 0x06
#define POBDII_ECU_7 0x07
#define POBDII_ECU_8 0x08
#define POBDII_ECU_9 0x09
```

Pascal OO

```
{$Z1}
TPOBDIIAddress = (
  POBDII_ECU_1 = $01,
  POBDII_ECU_2 = $02,
  POBDII_ECU_3 = $03,
  POBDII_ECU_4 = $04,
  POBDII_ECU_5 = $05,
  POBDII_ECU_6 = $06,
  POBDII_ECU_7 = $07,
  POBDII_ECU_8 = $08
);
```

C#

```
public enum TPOBDIIAddress : byte
{
    POBDII_ECU_1 = 0x01,
    POBDII_ECU_2 = 0x02,
    POBDII_ECU_3 = 0x03,
    POBDII_ECU_4 = 0x04,
    POBDII_ECU_5 = 0x05,
    POBDII_ECU_6 = 0x06,
    POBDII_ECU_7 = 0x07,
    POBDII_ECU_8 = 0x08,
}
```

C++ / CLR

```
public enum TPOBDIIAddress : Byte
{
      POBDII_ECU_1 = 0x01,
      POBDII_ECU_2 = 0x02,
      POBDII_ECU_3 = 0x03,
      POBDII_ECU_4 = 0x04,
      POBDII_ECU_5 = 0x05,
      POBDII_ECU_6 = 0x06,
      POBDII_ECU_7 = 0x07,
      POBDII_ECU_8 = 0x08,
};
```

Visual Basic

```
Public Enum TPOBDIIAddress As Byte
    POBDII_ECU_1 = &H1
    POBDII_ECU_2 = &H2
    POBDII_ECU_3 = &H3
    POBDII_ECU_4 = &H4
    POBDII_ECU_5 = &H5
    POBDII_ECU_6 = &H6
    POBDII_ECU_7 = &H7
    POBDII_ECU_8 = &H8
End Eum
```

Values

Name	Value	Description
POBDII_ECU_1	1	ECU #1
POBDII_ECU_2	2	ECU #2
POBDII_ECU_3	3	ECU #3
POBDII_ECU_4	4	ECU #4
POBDII_ECU_5	5	ECU #5
POBDII_ECU_6	6	ECU #6
POBDII_ECU_7	7	ECU #7
POBDII_ECU_8	8	ECU #8
POBDII_ECU_9	9	ECU #9

3.5.8 TPOBDIIService

Represents an OBD-II Service. According with the programming language, this type can be a group of defined values or an enumeration.

Syntax

C++

```
#define TPOBDIIService BYTE

#define POBDII_SERVICE_01 0x01
#define POBDII_SERVICE_02 0x02
#define POBDII_SERVICE_03 0x03
#define POBDII_SERVICE_04 0x04
#define POBDII_SERVICE_06 0x06
#define POBDII_SERVICE_07 0x07
#define POBDII_SERVICE_08 0x08
#define POBDII_SERVICE_09 0x09
#define POBDII_SERVICE_0A 0x0A
```

Pascal OO

```
{$Z1}
TPOBDIIService = (
    POBDII_SERVICE_01 = $01,
    POBDII_SERVICE_02 = $02,
    POBDII_SERVICE_03 = $03,
    POBDII_SERVICE_04 = $04,
    POBDII_SERVICE_06 = $06,
    POBDII_SERVICE_07 = $07,
    POBDII_SERVICE_08 = $08,
    POBDII_SERVICE_09 = $09,
    POBDII_SERVICE_0A = $0A
);
```

C#

```
public enum TPOBDIIService : byte
{
    POBDII_SERVICE_01 = 0x01,
    POBDII_SERVICE_02 = 0x02,
    POBDII_SERVICE_03 = 0x03,
    POBDII_SERVICE_04 = 0x04,
    POBDII_SERVICE_06 = 0x06,
    POBDII_SERVICE_07 = 0x07,
```

```
    POBDII_SERVICE_08 = 0x08,
    POBDII_SERVICE_09 = 0x09,
    POBDII_SERVICE_0A = 0x0A,
}
```

C++ / CLR

```
public enum TPOBDIIService : Byte
{
      POBDII_SERVICE_01 = 0x01,
      POBDII_SERVICE_02 = 0x02,
      POBDII_SERVICE_03 = 0x03,
      POBDII_SERVICE_04 = 0x04,
      POBDII_SERVICE_06 = 0x06,
      POBDII_SERVICE_07 = 0x07,
      POBDII_SERVICE_08 = 0x08,
      POBDII_SERVICE_09 = 0x09,
      POBDII_SERVICE_0A = 0x0A,
};
```

Visual Basic

```
Public Enum TPOBDIIService As Byte
    POBDII_SERVICE_01 = &H1
    POBDII_SERVICE_02 = &H2
    POBDII_SERVICE_03 = &H3
    POBDII_SERVICE_04 = &H4
    POBDII_SERVICE_06 = &H6
    POBDII_SERVICE_07 = &H7
    POBDII_SERVICE_08 = &H8
    POBDII_SERVICE_09 = &H9
    POBDII_SERVICE_0A = &HA
End Enum
```

Values

Name	Value	Description
POBDII_SERVICE_01	1	Service $01: RequestCurrentData
POBDII_SERVICE_02	2	Service $02: RequestFreezeFrameData
POBDII_SERVICE_03	3	Service $03: RequestStoredTroubleCodes
POBDII_SERVICE_04	4	Service $04: ClearTroubleCodes
POBDII_SERVICE_06	6	Service $06: RequestTestResults
POBDII_SERVICE_07	7	Service $07: RequestPendingTroubleCodes
POBDII_SERVICE_08	8	Service $08: RequestControlOperation
POBDII_SERVICE_09	9	Service $09: RequestVehicleInformation
POBDII_SERVICE_0A	0x0A (10)	Service $0A: RequestPermanentTroubleCodes

Remarks: Service $05 is not supported for ISO 15765-4. The functionality of Service $05 is implemented in Service $06.

3.5.9 TPOBDIIParameter

Represents a PCAN-OBD-2 parameter to be read or set. According with the programming language, this type can be a group of defined values or an enumeration. With some exceptions, a channel must first be initialized before their parameters can be read or set.

Syntax

C++

```
#define TPOBDIIParameter      BYTE

#define POBDII_PARAM_LOGGING                    0xB1
#define POBDII_PARAM_AVAILABLE_ECUS             0xB2
#define POBDII_PARAM_SUPPORTMASK_PIDS           0xB3
#define POBDII_PARAM_SUPPORTMASK_FFPIDS         0xB4
#define POBDII_PARAM_SUPPORTMASK_OBDMIDS        0xB5
#define POBDII_PARAM_SUPPORTMASK_TIDS           0xB6
#define POBDII_PARAM_SUPPORTMASK_INFOTYPES      0xB7
#define POBDII_PARAM_API_VERSION                0xB8
#define POBDII_PARAM_BAUDRATE                   0xB9
#define POBDII_PARAM_CAN_ID                     0xBA
#define POBDII_PARAM_DEBUG                      0xE3
#define POBDII_PARAM_CHANNEL_CONDITION          0xE4
```

Pascal OO

```
{$Z1}
TPOBDIIParameter = (
    POBDII_PARAM_LOGGING = $B1,
    POBDII_PARAM_AVAILABLE_ECUS = $B2,
    POBDII_PARAM_SUPPORTMASK_PIDS = $B3,
    POBDII_PARAM_SUPPORTMASK_FFPIDS = $B4,
    POBDII_PARAM_SUPPORTMASK_OBDMIDS = $B5,
    POBDII_PARAM_SUPPORTMASK_TIDS = $B6,
    POBDII_PARAM_SUPPORTMASK_INFOTYPES = $B7,
    POBDII_PARAM_API_VERSION = $B8,
    POBDII_PARAM_BAUDRATE = $B9,
    POBDII_PARAM_CAN_ID = $BA,
    POBDII_PARAM_DEBUG = $E3,
    POBDII_PARAM_CHANNEL_CONDITION =$E4
);
```

C#

```
public enum TPOBDIIParameter : byte
{
    POBDII_PARAM_LOGGING = 0xB1,
    POBDII_PARAM_AVAILABLE_ECUS = 0xB2,
    POBDII_PARAM_SUPPORTMASK_PIDS = 0xB3,
    POBDII_PARAM_SUPPORTMASK_FFPIDS = 0xB4,
    POBDII_PARAM_SUPPORTMASK_OBDMIDS = 0xB5,
    POBDII_PARAM_SUPPORTMASK_TIDS = 0xB6,
    POBDII_PARAM_SUPPORTMASK_INFOTYPES = 0xB7,
    POBDII_PARAM_API_VERSION = 0xB8,
    POBDII_PARAM_BAUDRATE = 0xB9,
    POBDII_PARAM_CAN_ID = 0xBA,
    POBDII_PARAM_DEBUG = 0xE3,
    POBDII_PARAM_CHANNEL_CONDITION = 0xE4
}
```

C++ / CLR

```
public enum TPOBDIIParameter : Byte
{
      POBDII_PARAM_LOGGING = 0xB1,
      POBDII_PARAM_AVAILABLE_ECUS = 0xB2,
      POBDII_PARAM_SUPPORTMASK_PIDS = 0xB3,
```

```
        POBDII_PARAM_SUPPORTMASK_FFPIDS = 0xB4,
        POBDII_PARAM_SUPPORTMASK_OBDMIDS = 0xB5,
        POBDII_PARAM_SUPPORTMASK_TIDS = 0xB6,
        POBDII_PARAM_SUPPORTMASK_INFOTYPES = 0xB7,
        POBDII_PARAM_API_VERSION = 0xB8,
        POBDII_PARAM_BAUDRATE = 0xB9,
        POBDII_PARAM_CAN_ID = 0xBA,
        POBDII_PARAM_DEBUG = 0xE3,
        POBDII_PARAM_CHANNEL_CONDITION =0xE4
};
```

Visual Basic

```
Public Enum TPOBDIIParameter As Byte
    POBDII_PARAM_LOGGING = &HB1
    POBDII_PARAM_AVAILABLE_ECUS = &HB2
    POBDII_PARAM_SUPPORTMASK_PIDS = &HB3
    POBDII_PARAM_SUPPORTMASK_FFPIDS = &HB4
    POBDII_PARAM_SUPPORTMASK_OBDMIDS = &HB5
    POBDII_PARAM_SUPPORTMASK_TIDS = &HB6
    POBDII_PARAM_SUPPORTMASK_INFOTYPES = &HB7
    POBDII_PARAM_BAUDRATE = &HB9
    POBDII_PARAM_CAN_ID = &HBA
    POBDII_PARAM_API_VERSION = &HB8
    POBDII_PARAM_DEBUG = &HE3
    POBDII_PARAM_CHANNEL_CONDITION = &HE4
End Enum
```

Values

Name	Value	Data Type	Description
POBDII_PARAM_LOGGING	177 (0xB1)	Byte	Logging mode
POBDII_PARAM_AVAILABLE_ECUS	178 (0xB2)	Byte	Number of available ECUs
POBDII_PARAM_SUPPORTMASK_PIDS	179 (0xB3)	Array of Byte (256)	Supported PIDs for Service 01: Current Data
POBDII_PARAM_SUPPORTMASK_FFPIDS	180 (0xB4)	Array of Byte (257)	Supported PIDs of Frame (identified by the first BYTE in the buffer) for Service 02: Freeze Frame Data
POBDII_PARAM_SUPPORTMASK_OBDMIDS	181 (0xB5)	Array of Byte (256)	Supported OBDMIDs for Service 06: Test Results
POBDII_PARAM_SUPPORTMASK_TIDS	182 (0xB6)	Array of Byte (256)	Supported TIDs for Service 08: Control Operation
POBDII_PARAM_SUPPORTMASK_INFOTYPES	183 (0xB7)	Array of Byte (256)	Supported InfoTypes for Service 09: Vehicle Information
POBDII_PARAM_BAUDRATE	185 (0xB9)	Byte	Baudrate of the channel (see TPOBDIIBaudrateInfo)
POBDII_PARAM_CAN_ID	186 (0xBA)	Byte	CAN identifier length (11 or 29 bits)
POBDII_PARAM_API_VERSION	184 (0xB8)	String	API version of the PCAN-OBD-2 API
POBDII_PARAM_DEBUG	227 (0xE3)	Byte	Debug mode
POBDII_PARAM_CHANNEL_CONDITION	228 (0xE4)	Byte	PCAN-OBD-2 channel condition

Characteristics

POBDII_PARAM_LOGGING

Access: R W

Description: This value is used to control logging mode.

Possible values: POBDII_LOGGING_NONE disables logging mode, POBDII_LOGGING_TO_FILE enables it and logs data to file, POBDII_LOGGING_TO_STDOUT enables it and logs data to the standard output.

Default value: POBDII_LOGGING_NONE.

PCAN-Device: All PCAN devices (excluding POBDII_NONEBUS channel).

POBDII_PARAM_AVAILABLE_ECUS

Access: R

Description: This value is used to get the number of known ECUs.

Possible values: A positive numeric value (0 to 8 for legislated-OBD-compliant vehicle).

Default value: NA.

PCAN-Device: All PCAN devices (excluding POBDII_NONEBUS channel).

POBDII_PARAM_SUPPORTMASK_PIDS

Access: R

Description: This value is used to retrieve the list of supported Parameter Identifiers (PIDs) by the connected ECUs.

Possible values: The list is represented by an array of 256 bytes where each row corresponds to the support of a specific PID (i.e. row 0 is PID #0, row 1 is PID 1, etc.). The values of the array are bit-encoded and each bit corresponds to an ECU where:

- bit #0 corresponds to ECU#1 and bit #7 to ECU#8,
- a bit set to 1 states that the PID is supported by the ECU

For instance, if the variable 'array' contains the list of supported identifiers and 'array'[12] = 5, then PID#12 is supported by ECU #1 and #3.

Default value: NA.

PCAN-Device: All PCAN devices (excluding POBDII_NONEBUS channel).

POBDII_PARAM_SUPPORTMASK_FFPIDS

Access: R

Description: This value is used to retrieve the list of supported FreezeFrame Parameter Identifiers (FFPIDs) by the connected ECUs.

Possible values: The list is represented by an array of 257 bytes where the first byte is the Frame number indicator and each following row corresponds to the support of a specific FFPID (i.e. row 0 is the frame number, row 1 is FFPID #0, row 2 is FFPID #1, etc.). The values of the array are bit-encoded and each bit corresponds to an ECU where:

- bit #0 corresponds to ECU #1 and bit #7 to ECU #8,
- a bit set to 1 states that the FFPID is supported by the ECU

For instance, if the variable 'array' contains the list of supported identifiers and 'array'[12] = 5, then FFPID#11 is supported by ECU #1 and #3.

Default value: NA.

PCAN-Device: All PCAN devices (excluding POBDII_NONEBUS channel).

POBDII_PARAM_SUPPORTMASK_OBDMIDS

Access: R

Description: This value is used to retrieve the list of On-Board Monitoring Identifiers (OBDMIDs) by the connected ECUs.

Possible values: The list is represented by an array of 256 bytes where each row corresponds to the support of a specific OBDMID (i.e. row 0 is OBDMID #0, row 1 is OBDMID #1, etc.). The values of the array are bit-encoded and each bit corresponds to an ECU where:

- bit #0 corresponds to ECU #1 and bit #7 to ECU #8,
- a bit set to 1 states that the OBDMID is supported by the ECU

For instance, if the variable 'array' contains the list of supported identifiers and 'array'[12] = 5, then OBDMID#12 is supported by ECU #1 and #3.

Default value: NA.

PCAN-Device: All PCAN devices (excluding POBDII_NONEBUS channel).

POBDII_PARAM_SUPPORTMASK_TIDS

Access: R

Description: This value is used to retrieve the list of supported Test Identifiers (TIDs) by the connected ECUs.

Possible values: The list is represented by an array of 256 bytes where each row corresponds to the support of a specific TID (i.e. row 0 is TID #0, row 1 is TID #1, etc.). The values of the array are bit-encoded and each bit corresponds to an ECU where:

- bit #0 corresponds to ECU #1 and bit #7 to ECU #8,
- a bit set to 1 states that the TID is supported by the ECU

For instance, if the variable 'array' contains the list of supported identifiers and 'array'[12] = 5, then TID#12 is supported by ECU #1 and #3.

Default value: NA.

PCAN-Device: All PCAN devices (excluding POBDII_NONEBUS channel).

POBDII_PARAM_SUPPORTMASK_INFOTYPES

Access: R

Description: This value is used to retrieve the list of supported InfoTypes by the connected ECUs.

Possible values: The list is represented by an array of 256 bytes where each row corresponds to the support of a specific InfoType (i.e. row 0 is InfoType #0, row 1 is InfoType #1, etc.). The values of the array are bit-encoded and each bit corresponds to an ECU where:

- bit #0 corresponds to ECU #1 and bit #7 to ECU #8,
- a bit set to 1 states that the InfoType is supported by the ECU

For instance, if the variable 'array' contains the list of supported identifiers and 'array'[12] = 5, then InfoType #12 is supported by ECU #1 and #3.

Default value: NA.

PCAN-Device: All PCAN devices (excluding POBDII_NONEBUS channel).

POBDII_PARAM_BAUDRATE

Access: R

Description: This value is used to get the initialized or detected baudrate of the POBDII channel.

Possible values: POBDII_BAUDRATE_NON_LEGISLATED, POBDII_BAUDRATE_250K or POBDII_BAUDRATE_500K.

Default value: NA.

PCAN-Device: All PCAN devices (excluding POBDII_NONEBUS channel).

POBDII_PARAM_CAN_ID

Access: R

Description: This value is used to get the bit length of the CAN identifiers used during the communication with the ECUs.

Possible values: POBDII_CAN_ID_11BIT or POBDII_CAN_ID_29BIT.

Default value: NA.

PCAN-Device: All PCAN devices (excluding POBDII_NONEBUS channel).

POBDII_PARAM_API_VERSION

Access: R

Description: This parameter is used to get information about the PCAN-OBD-2 API implementation version.

Possible values: The value is a null-terminated string indication the version number of the API implementation. The returned text has the following form: **x,x,x,x** for major, minor, release and build. It represents the binary version of the API, within two 32-bit integers, defined by four 16-bit integers. The length of this text value will have a maximum length of 24 bytes, 5 bytes for represent each 16-bit value, three separator characters (, or .) and the null-termination.

Default value: NA.

PCAN-Device: NA. Any PCAN device can be used, including the POBDII_NONEBUS channel.

POBDII_PARAM_DEBUG

Access: R W

Description: This parameter is used to control debug mode. If enabled, any received or transmitted CAN frames will be printed to the standard output.

Possible values: POBDII_DEBUG_NONE disables debug mode and POBDII_DEBUG_CAN enables it.

Default value: POBDII_DEBUG_NONE.

PCAN-Device: All PCAN devices (excluding POBDII_NONEBUS channel).

POBDII_PARAM_CHANNEL_CONDITION

Access: R

Description: This parameter is used to check and detect available PCAN hardware on a computer, even before trying to connect any of them. This is useful when an application wants the user to select which hardware should be using in a communication session.

Possible values: This parameter can have one of these values: POBDII_CHANNEL_UNAVAILABLE, POBDII_CHANNEL_AVAILABLE, and POBDII_CHANNEL_OCCUPIED.

Default value: NA.

PCAN-Device: All PCAN devices (excluding PCAN_NONEBUS channel).

Note: It is not needed to have a PCAN channel initialized before asking for its condition.

3.5.10 TPOBDIIHwType

Represents the type of CAN hardware to be initialized. According with the programming language, this type can be a group of defined values or an enumeration.

Syntax

C++

```
#define TPOBDIIHWType BYTE

#define POBDII_HWTYPE_ISA           0x01
#define POBDII_HWTYPE_ISA_SJA       0x09
#define POBDII_HWTYPE_ISA_PHYTEC    0x04
#define POBDII_HWTYPE_DNG           0x02
#define POBDII_HWTYPE_DNG_EPP       0x03
#define POBDII_HWTYPE_DNG_SJA       0x05
#define POBDII_HWTYPE_DNG_SJA_EPP   0x06
```

Pascal OO

```
{$Z1}
TPOBDIIHwType = (
    POBDII_HWTYPE_ISA = $01,
    POBDII_HWTYPE_ISA_SJA = $09,
    POBDII_HWTYPE_ISA_PHYTEC = $04,
    POBDII_HWTYPE_DNG = $02,
    POBDII_HWTYPE_DNG_EPP = $03,
    POBDII_HWTYPE_DNG_SJA = $05,
    POBDII_HWTYPE_DNG_SJA_EPP = $06
);
```

C#

```
public enum TPOBDIIHwType : byte
{
    POBDII_HWTYPE_ISA = 0x01,
    POBDII_HWTYPE_ISA_SJA = 0x09,
    POBDII_HWTYPE_ISA_PHYTEC = 0x04,
    POBDII_HWTYPE_DNG = 0x02,
    POBDII_HWTYPE_DNG_EPP = 0x03,
    POBDII_HWTYPE_DNG_SJA = 0x05,
    POBDII_HWTYPE_DNG_SJA_EPP = 0x06,
}
```

C++ / CLR

```
public enum TPOBDIIHwType : Byte
{
      POBDII_HWTYPE_ISA = 0x01,
      POBDII_HWTYPE_ISA_SJA = 0x09,
      POBDII_HWTYPE_ISA_PHYTEC = 0x04,
      POBDII_HWTYPE_DNG = 0x02,
      POBDII_HWTYPE_DNG_EPP = 0x03,
      POBDII_HWTYPE_DNG_SJA = 0x05,
      POBDII_HWTYPE_DNG_SJA_EPP = 0x06,
};
```

Visual Basic

```
Public Enum TPOBDIIHwType As Byte
    POBDII_HWTYPE_ISA = &H1
    POBDII_HWTYPE_ISA_SJA = &H9
    POBDII_HWTYPE_ISA_PHYTEC = &H4
    POBDII_HWTYPE_DNG = &H2
    POBDII_HWTYPE_DNG_EPP = &H3
    POBDII_HWTYPE_DNG_SJA = &H5
    POBDII_HWTYPE_DNG_SJA_EPP = &H6
End Enum
```

Values

Name	Value	Description
POBDII_HWTYPE_ISA	1	PCAN-ISA 82C200
POBDII_HWTYPE_ISA_SJA	9	PCAN-ISA SJA1000
POBDII_HWTYPE_ISA_PHYTEC	4	PHYTEC ISA
POBDII_HWTYPE_DNG	2	PCAN-Dongle 82C200
POBDII_HWTYPE_DNG_EPP	3	PCAN-Dongle EPP 82C200
POBDII_HWTYPE_DNG_SJA	5	PCAN-Dongle SJA1000
POBDII_HWTYPE_DNG_SJA_EPP	6	PCAN-Dongle EPP SJA1000

See also: POBDII_Initialize (**class-method:** Initialize)

3.5.11 TPOBDIIStatus

Represents an OBD-II status/error code. According with the programming language, this type can be a group of defined values or an enumeration.

Syntax

C++

```
#define TPOBDIIStatus               DWORD

#define POBDII_ERROR_OK                             0x00000
#define POBDII_ERROR_NOT_INITIALIZED                0x00001
#define POBDII_ERROR_ALREADY_INITIALIZED            0x00002
#define POBDII_ERROR_NO_MEMORY                      0x00003
#define POBDII_ERROR_OVERFLOW                       0x00004
#define POBDII_ERROR_TIMEOUT                        0x00006
#define POBDII_ERROR_NO_MESSAGE                     0x00007
#define POBDII_ERROR_WRONG_PARAM                    0x00008
#define POBDII_ERROR_NOT_SUPPORTED                  0x00009
#define POBDII_ERROR_PARSE_ERROR                    0x0000A
#define POBDII_ERROR_BUSLIGHT                       0x0000B
#define POBDII_ERROR_BUSHEAVY                       0x0000C
#define POBDII_ERROR_BUSOFF                         0x0000D
#define POBDII_ERROR_UNSUPPORTED_ECUS               0x0000E
#define POBDII_CAN_ERROR                            0x10000
```

Pascal OO

```
{$Z4}
TPOBDIIStatus = (
    POBDII_ERROR_OK                     = $00000,
    POBDII_ERROR_NOT_INITIALIZED        = $00001,
    POBDII_ERROR_ALREADY_INITIALIZED    = $00002,
    POBDII_ERROR_NO_MEMORY              = $00003,
    POBDII_ERROR_OVERFLOW               = $00004,
    POBDII_ERROR_TIMEOUT                = $00006,
    POBDII_ERROR_NO_MESSAGE             = $00007,
    POBDII_ERROR_WRONG_PARAM            = $00008,
    POBDII_ERROR_NOT_SUPPORTED          = $00009,
    POBDII_ERROR_PARSE_ERROR            = $0000A,
    POBDII_ERROR_BUSLIGHT               = $0000B,
    POBDII_ERROR_BUSHEAVY               = $0000C,
    POBDII_ERROR_BUSOFF                 = $0000D,
    POBDII_ERROR_UNSUPPORTED_ECUS       = $0000E,
    POBDII_ERROR_CAN_ERROR              = $10000
);
```

C#

```
public enum TPOBDIIStatus : uint
{
    POBDII_ERROR_OK = 0x00000,
    POBDII_ERROR_NOT_INITIALIZED = 0x00001,
    POBDII_ERROR_ALREADY_INITIALIZED = 0x00002,
    POBDII_ERROR_NO_MEMORY = 0x00003,
    POBDII_ERROR_OVERFLOW = 0x00004,
    POBDII_ERROR_TIMEOUT = 0x00006,
    POBDII_ERROR_NO_MESSAGE = 0x00007,
    POBDII_ERROR_WRONG_PARAM = 0x00008,
    POBDII_ERROR_NOT_SUPPORTED = 0x00009,
    POBDII_ERROR_PARSE_ERROR = 0x0000A,
    POBDII_ERROR_BUSLIGHT = 0x0000B,
    POBDII_ERROR_BUSHEAVY = 0x0000C,
    POBDII_ERROR_BUSOFF = 0x0000D,
    POBDII_ERROR_UNSUPPORTED_ECUS = 0x0000E,
    POBDII_ERROR_CAN_ERROR = 0x10000,
}
```

C++ / CLR

```
public enum TPOBDIIStatus : UInt32
{
      POBDII_ERROR_OK                    = 0x00000,
      POBDII_ERROR_NOT_INITIALIZED       = 0x00001,
      POBDII_ERROR_ALREADY_INITIALIZED   = 0x00002,
      POBDII_ERROR_NO_MEMORY             = 0x00003,
      POBDII_ERROR_OVERFLOW              = 0x00004,
      POBDII_ERROR_TIMEOUT               = 0x00006,
      POBDII_ERROR_NO_MESSAGE            = 0x00007,
      POBDII_ERROR_WRONG_PARAM           = 0x00008,
      POBDII_ERROR_NOT_SUPPORTED         = 0x00009,
      POBDII_ERROR_PARSE_ERROR           = 0x0000A,
      POBDII_ERROR_BUSLIGHT              = 0x0000B,
      POBDII_ERROR_BUSHEAVY              = 0x0000C,
      POBDII_ERROR_BUSOFF                = 0x0000D,
      POBDII_ERROR_UNSUPPORTED_ECUS      = 0x0000E,
      POBDII_ERROR_CAN_ERROR             = 0x10000,
};
```

Visual Basic

```
Public Enum TPOBDIIStatus : UInt32
    POBDII_ERROR_OK = &H0
    POBDII_ERROR_NOT_INITIALIZED = &H1
    POBDII_ERROR_ALREADY_INITIALIZED = &H2
    POBDII_ERROR_NO_MEMORY = &H3
    POBDII_ERROR_OVERFLOW = &H4
    POBDII_ERROR_TIMEOUT = &H6
    POBDII_ERROR_NO_MESSAGE = &H7
    POBDII_ERROR_WRONG_PARAM = &H8
    POBDII_ERROR_NOT_SUPPORTED = &H9
    POBDII_ERROR_PARSE_ERROR = &HA
    POBDII_ERROR_BUSLIGHT = &HB
    POBDII_ERROR_BUSHEAVY = &HC
    POBDII_ERROR_BUSOFF = &HD
    POBDII_ERROR_UNSUPPORTED_ECUS = &HE
    POBDII_ERROR_CAN_ERROR = &H10000
End Enum
```

Remarks: The POBDII_ERROR_CAN_ERROR status is a generic error code that is used to identify PCAN-Basic errors (as PCAN-Basic API is used internally by the PCAN-OBD-2 API). When a PCAN-Basic error occurs, the API performs a bitwise combination of the POBDII_ERROR_CAN_ERROR and the PCAN-Basic (TPCANStatus) error.

Values

Name	Value	Description
POBDII_ERROR_OK	0x00000 (000000)	No error. Success
POBDII_ERROR_NOT_INITIALIZED	0x00001 (000001)	Not initialized
POBDII_ERROR_ALREADY_INITIALIZED	0x00002 (000002)	Already initialized
POBDII_ERROR_NO_MEMORY	0x00003 (000003)	Failed to allocate memory
POBDII_ERROR_OVERFLOW	0x00004 (000004)	Buffer overflow occurred (too many channels initialized or too many messages in queue)
POBDII_ERROR_TIMEOUT	0x00006 (000006)	Timeout while trying to access the PCAN-OBD-2 API

Name	Value	Description
POBDII_ERROR_NO_MESSAGE	0x00007 (000007)	No message available
POBDII_ERROR_WRONG_PARAM	0x00008 (000008)	Invalid parameter
POBDII_ERROR_NOT_SUPPORTED	0x00009 (000009)	The OBDII response contains vehicle specific parameters that are not supported
POBDII_ERROR_PARSE_ERROR	0x0000A (000010)	Failed to parse OBDII response
POBDII_ERROR_BUSLIGHT	0x0000B (000011)	Bus error: an error counter reached the 'light' limit
POBDII_ERROR_BUSHEAVY	0x0000C (000012)	Bus error: an error counter reached the 'heavy' limit
POBDII_ERROR_BUSOFF	0x0000D (000013)	Bus error: the CAN controller is in bus-off state
POBDII_ERROR_UNSUPPORTED_ECUS	0x0000E (000014)	No connected ECUs, or ECU found is not supported
POBDII_ERROR_CAN_ERROR	0x80000000 (2147483648)	PCAN-Basic error flag (remove the flag to get a TPCANStatus error code)

3.5.12 TPOBDIIError

Represents an OBD-II Response codes. According with the programming language, this type can be a group of defined values or an enumeration.

Syntax

C++

```
#define TPOBDIIError BYTE

#define POBDII_R_NO_ERROR                  0x00
#define POBDII_R_BUSY_REPEAT_REQUEST       0x21
#define POBDII_R_CONDITIONS_NOT_CORRECT    0x22
#define POBDII_R_RESPONSE_PENDING          0x78
#define POBDII_R_NOT_USED                  0xFF
```

Pascal OO

```
{$Z1}
TPOBDIIError = (
    POBDII_R_NO_ERROR = 0,
    POBDII_R_BUSY_REPEAT_REQUEST = $21,
    POBDII_R_CONDITIONS_NOT_CORRECT = $22,
    POBDII_R_RESPONSE_PENDING = $78,
    POBDII_R_NOT_USED = $FF
);
```

C#

```
public enum TPOBDIIError : byte
{
    POBDII_R_NO_ERROR = 0,
    POBDII_R_BUSY_REPEAT_REQUEST = 0x21,
    POBDII_R_CONDITIONS_NOT_CORRECT = 0x22,
    POBDII_R_RESPONSE_PENDING = 0x78,
    POBDII_R_NOT_USED = 0xFF,
}
```

C++ / CLR

```
public enum TPOBDIIError : Byte
{
      POBDII_R_NO_ERROR = 0,
      POBDII_R_BUSY_REPEAT_REQUEST = 0x21,
      POBDII_R_CONDITIONS_NOT_CORRECT = 0x22,
      POBDII_R_RESPONSE_PENDING = 0x78,
      POBDII_R_NOT_USED = 0xFF,
};
```

Visual Basic

```
Public Enum TPOBDIIError As Byte
    POBDII_R_NO_ERROR = &H0
    POBDII_R_BUSY_REPEAT_REQUEST = &H21
    POBDII_R_CONDITIONS_NOT_CORRECT = &H22
    POBDII_R_RESPONSE_PENDING = &H78
    POBDII_R_NOT_USED = &HFF
End Enum
```

Values

Name	Value	Description
POBDII_R_NO_ERROR	0	No error, Positive response
POBDII_R_BUSY_REPEAT_REQUEST	0x21(33)	Server is busy
POBDII_R_CONDITIONS_NOT_CORRECT	0x22 (34)	Conditions not correct
POBDII_R_RESPONSE_PENDING	0x78 (120)	Server needs more time
POBDII_R_NOT_USED	0xFF (255)	Not a response, invalid value

3.5.13 TPOBDIIInfoDataType

Represents the type of returned data in TPOBDIIInfoData (OBD service $09). According with the programming language, this type can be a group of defined values or an enumeration.

Syntax

C++

```
#define TPOBDIIInfoDataType BYTE

#define POBDII_INFOTYPE_COUNTER     0x00
#define POBDII_INFOTYPE_CALDATA     0x01
#define POBDII_INFOTYPE_STRING      0x02
#define POBDII_INFOTYPE_NONE        0x03
```

Pascal OO

```
{$Z1}
TPOBDIIInfoDataType = (
    POBDII_INFOTYPE_COUNTER = $00,
    POBDII_INFOTYPE_CALDATA = $01,
    POBDII_INFOTYPE_STRING = $02,
    POBDII_INFOTYPE_NONE = $03
);
```

C#

```
public enum TPOBDIIInfoDataType : byte
{
    POBDII_INFOTYPE_COUNTER = 0x00,
    POBDII_INFOTYPE_CALDATA = 0x01,
    POBDII_INFOTYPE_STRING = 0x02,
    POBDII_INFOTYPE_NONE = 0x03
}
```

C++ / CLR

```
public enum TPOBDIIInfoDataType : Byte
{
      POBDII_INFOTYPE_COUNTER = 0x00,
      POBDII_INFOTYPE_CALDATA = 0x01,
      POBDII_INFOTYPE_STRING = 0x02,
      POBDII_INFOTYPE_NONE = 0x03
};
```

Visual Basic

```
Public Enum TPOBDIIInfoDataType As Byte
    POBDII_INFOTYPE_COUNTER = &H0
    POBDII_INFOTYPE_CALDATA = &H1
    POBDII_INFOTYPE_STRING = &H2
    POBDII_INFOTYPE_NONE = &H3
End Enum
```

Values

Name	Value	Description
POBDII_INFOTYPE_COUNTER	0	Data is a numeric value (2 bytes)
POBDII_INFOTYPE_CALDATA	1	Data corresponds to Calibration data (4 bytes)
POBDII_INFOTYPE_STRING	2	Data is a string (buffer containing up to 20 characters)
POBDII_INFOTYPE_NONE	3	Data is not an InfoType, this type is used when response contains bit encoded data describing InfoType Support

3.6 Methods

The methods defined for the classes OBDIIApi and TobdiiApi are divided in 4 groups of functionality. Note that these methods are static and can be called in the name of the class, without instantiation.

Connection

	Function	Description
	Initialize	Initializes a POBDII Channel
	Uninitialize	Uninitializes a POBDII Channel

Configuration

	Function	Description
	SetValue	Sets a configuration or information value within a POBDII Channel

Information

	Function	Description
	GetValue	Retrieves information from a POBDII Channel
	GetStatus	Retrieves the current BUS status of a POBDII Channel
	GetUnitAndScaling	Retrieves the unit and scaling information for a specified Unit and Scaling ID

Communication

	Function	Description
	Reset	Resets the receive and transmit queues of a POBDII Channel
	RequestCurrentData	Sends an OBDII Service $01 request into queue and waits to receive the responses
	RequestFreezeFrameData	Sends an OBDII Service $02 request into queue and waits to receive the responses
	RequestStoredTroubleCodes	Sends an OBDII Service $03 request into queue and waits to receive the responses
	ClearTroubleCodes	Sends an OBDII Service $04 request into queue and waits to receive the responses
	RequestTestResults	Sends an OBDII Service $06 request into queue and waits to receive the responses
	RequestPendingTroubleCodes	Sends an OBDII Service $07 request into queue and waits to receive the responses
	RequestControlOperation	Sends an OBDII Service $08 request into queue and waits to receive the responses
	RequestVehicleInformation	Sends an OBDII Service $09 request into queue and waits to receive the responses
	RequestPermanentTroubleCodes	Sends an OBDII Service $0A request into queue and waits to receive the responses

3.6.1 Initialize

Initializes a POBDII Channel.

Overloads

	Function	Description
	Initialize (TPOBDIICANHandle)	Initializes a POBDII Channel using baudrate autodetection
	Initialize (TPOBDIICANHandle, TPOBDIIBaudrateInfo, TPOBDIIHwType, UInt32, UInt16)	Initializes a POBDII Channel

3.6.2 Initialize (TPOBDIICANHandle)

Initializes a POBDII Channel which represents a Plug & Play PCAN-Device using a baudrate autodetection mechanism.

Syntax

Pascal OO

```
class function Initialize(
    CanChannel: TPOBDIICANHandle
    ): TPOBDIIStatus; overload;
```

C#

```
public static TPOBDIIStatus Initialize(
            TPOBDIICANHandle CanChannel);
```

C++ / CLR

```
static TPOBDIIStatus Initialize(
      TPOBDIICANHandle CanChannel);
```

Visual Basic

```
Public Shared Function Initialize( _
    ByVal CanChannel As TPOBDIICANHandle) As TPOBDIIStatus
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_ALREADY_INITIALIZED	Indicates that the desired POBDII Channel is already in use
POBDII_ERROR_UNSUPPORTED_ECUS	Indicates that no ECUs where found during the autodetection mechanism
POBDII_ERROR_OVERFLOW	Maximum number of initialized channels reached
POBDII_ERROR_CAN_ERROR	This error flag states that the error is composed of a more precise PCAN-Basic error

Remarks: As indicated by its name, the Initialize method initiates a POBDII Channel, preparing it for communication within the CAN bus connected to it. Calls to the other methods will fail if they are used with a Channel handle, different than PCBDII_NONEBUS, that has not been initialized yet. Each initialized channel should be released when it is not needed anymore.

Initializing a POBDII Channel means:

- to reserve the Channel for the calling application/process
- to detect the baudrate of the CAN bus
- to allocate channel resources, like receive and transmit queues
- to forward initialization to PCAN-UDS, PCAN-ISO-TP API, and PCAN-Basic API, hence registering/connecting the Hardware denoted by the channel handle

The Initialization process will fail if an application tries to initialize a POBDII-Channel that has already been initialized within the same process.

Take in consideration that initializing a channel causes a reset of the CAN hardware. In this way errors like BUSOFF, BUSHEAVY, and BUSLIGHT, are removed.

Example

The following example shows the initialize and uninitialize processes for a Plug-And-Play channel (channel 2 of a PCAN-PCI hardware).

C#

```
TPOBDIIStatus result;

// The Plug & Play Channel (PCAN-PCI) is initialized
result = OBDIIApi.Initialize(OBDIIApi.POBDII_PCIBUS2);
if (result != TPOBDIIStatus.POBDII_ERROR_OK)
    MessageBox.Show("Initialization failed");
else
    MessageBox.Show("PCAN-PCI (Ch-2) was initialized");

// All initialized channels are released
OBDIIApi.Uninitialize(OBDIIApi.POBDII_NONEBUS);
```

C++ / CLR

```
TPOBDIIStatus result;

// The Plug & Play Channel (PCAN-PCI) is initialized
result = OBDIIApi::Initialize(OBDIIApi::POBDII_PCIBUS2);
if (result != POBDII_ERROR_OK)
      MessageBox::Show("Initialization failed");
else
      MessageBox::Show("PCAN-PCI (Ch-2) was initialized");

// All initialized channels are released
OBDIIApi::Uninitialize(OBDIIApi::POBDII_NONEBUS;
```

Visual Basic

```
Dim result As TPOBDIIStatus

' The Plug & Play Channel (PCAN-PCI) is initialized
result = OBDIIApi.Initialize(OBDIIApi.POBDII_PCIBUS2)
If result <> TPOBDIIStatus.POBDII_ERROR_OK Then
    MessageBox.Show("Initialization failed")
Else
    MessageBox.Show("PCAN-PCI (Ch-2) was initialized")
End If

' All initialized channels are released
OBDIIApi.Uninitialize(OBDIIApi.POBDII_NONEBUS;
```

Pascal OO

```
var
  result: TPOBDIIStatus;

begin
  // The Plug & Play Channel (PCAN-PCI) is initialized
  result := TObdiiApi.Initialize(TObdiiApi.POBDII_PCIBUS2);
```

```
  if (result <> POBDII_ERROR_OK) then
    MessageBox(0, 'Initialization failed', 'Error', MB_OK)
  else
    MessageBox(0, 'PCAN-PCI (Ch-2) was initialized', 'Success', MB_OK);

  // All initialized channels are released
  TObdiiApi.Uninitialize(TObdiiApi.POBDII_NONEBUS);
End;
```

See also: Uninitialize on page 50, GetValue on page 55, Understanding PCAN-OBD-2 on page 6

Plain function version: OBDII_Initialize

3.6.3 Initialize (TPOBDIICANHandle, TPOBDIIBaudrateInfo, TPOBDIIHwType, UInt32, UInt16)

Initializes a POBDII Channel.

Syntax

Pascal OO

```
class function Initialize(
    CanChannel: TPOBDIICANHandle;
    Baudrate: TPOBDIIBaudrateInfo;
    HwType: TPOBDIIHwType;
    IOPort: LongWord;
    Interrupt: Word): TPOBDIIStatus; overload;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_Initialize")]
public static extern TPOBDIIStatus Initialize(
    [MarshalAs(UnmanagedType.U2)]
    TPOBDIICANHandle CanChannel,
    [MarshalAs(UnmanagedType.U1)]
      TPOBDIIBaudrateInfo Baudrate,
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIIHwType HwType,
    UInt32 IOPort,
    UInt16 Interrupt);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_Initialize")]
static TPOBDIIStatus Initialize(
      [MarshalAs(UnmanagedType::U2)]
      TPOBDIICANHandle CanChannel,
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIBaudrateInfo     Baudrate,
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIHwType HwType,
      UInt32 IOPort,
      UInt16 Interrupt);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_Initialize")> _
```

```
Public Shared Function Initialize( _
    <MarshalAs(UnmanagedType.U2)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal Baudrate As TPOBDIIBaudrateInfo, _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal HwType As TPOBDIIHwType, _
    ByVal IOPort As UInt32, _
    ByVal Interrupt As UInt16) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Baudrate	The speed for the communication (see TPOBDIIBaudrateInfo on page 27). The speed is limited to legislated-OBD baudrate or the autodetection value
HwType	The type of hardware (see TPOBDIIHwType on page 37)
IOPort	The I/O address for the parallel port
Interrupt	Interrupt number of the parallel port

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_ALREADY_INITIALIZED	Indicates that the desired POBDII Channel is already in use
POBDII_ERROR_UNSUPPORTED_ECUS	Indicates that no ECUs where found during the autodetection mechanism
POBDII_ERROR_OVERFLOW	Maximum number of initialized channels reached
POBDII_ERROR_CAN_ERROR	This error flag states that the error is composed of a more precise PCAN-Basic error

Remarks: As indicated by its name, the Initialize method initiates a POBDII Channel, preparing it for communication within the CAN bus connected to it. Calls to the other methods will fail if they are used with a Channel handle, different than POBDII_NONEBUS, that has not been initialized yet. Each initialized channel should be released when it is not needed anymore.

Initializing a POBDII Channel means:

- to reserve the Channel for the calling application/process
- to detect the baudrate of the CAN bus (if requested with TPOBDIIBaudrateInfo. POBDII_BAUDRATE_AUTODETECT value)
- to allocate channel resources, like receive and transmit queues
- to forward initialization to PCAN-UDS, PCAN-ISO-TP API, and PCAN-Basic API, hence registering/connecting the Hardware denoted by the channel handle

The Initialization process will fail if an application tries to initialize a POBDII-Channel that has already been initialized within the same process.

Take in consideration that initializing a channel causes a reset of the CAN hardware. In this way errors like BUSOFF, BUSHEAVY, and BUSLIGHT, are removed.

Example

The following example shows the initialize and uninitialize processes for a Non-Plug-And-Play channel (channel 1 of the PCAN-DNG).

Note: The initialization specifies a baudrate thus skipping the autodetection mechanism.

C#

```
TPOBDIIStatus result;

// The Non-Plug & Play Channel (PCAN-DNG) is initialized
result = OBDIIApi.Initialize(OBDIIApi.POBDII_DNGBUS1,
TPOBDIIBaudrateInfo.POBDII_BAUDRATE_500K, TPOBDIIHwType.POBDII_HWTYPE_DNG_SJA,
0x378, 7);
if (result != TPOBDIIStatus.POBDII_ERROR_OK)
    MessageBox.Show("Initialization failed");
else
    MessageBox.Show("PCAN-PCI (Ch-2) was initialized");

// All initialized channels are released
OBDIIApi.Uninitialize(OBDIIApi.POBDII_NONEBUS);
```

C++ / CLR

```
TPOBDIIStatus result;

// The Non-Plug & Play Channel (PCAN-DNG) is initialized
result = OBDIIApi::Initialize(OBDIIApi::POBDII_DNGBUS1, POBDII_BAUDRATE_500K,
POBDII_HWTYPE_DNG_SJA, 0x378, 7);
if (result != POBDII_ERROR_OK)
      MessageBox::Show("Initialization failed");
else
      MessageBox::Show("PCAN-PCI (Ch-2) was initialized");

// All initialized channels are released
OBDIIApi::Uninitialize(OBDIIApi::POBDII_NONEBUS);
```

Visual Basic

```
Dim result As TPOBDIIStatus

' The Non-Plug & Play Channel (PCAN-DNG) is initialized
result = OBDIIApi.Initialize(OBDIIApi.POBDII_DNGBUS1,
TPOBDIIBaudrateInfo.POBDII_BAUDRATE_500K, TPOBDIIHwType.POBDII_HWTYPE_DNG_SJA,
&H378, 7)
If result <> TPOBDIIStatus.POBDII_ERROR_OK Then
    MessageBox.Show("Initialization failed")
Else
    MessageBox.Show("PCAN-PCI (Ch-2) was initialized")
End If

' All initialized channels are released
OBDIIApi.Uninitialize(OBDIIApi.POBDII_NONEBUS)
```

Pascal OO

```
var
  result: TPOBDIIStatus;

begin
  // The Non-Plug & Play Channel (PCAN-PCI) is initialized
  result := TObdiiApi.Initialize(TObdiiApi.POBDII_DNGBUS1, POBDII_BAUDRATE_500K,
POBDII_HWTYPE_DNG_SJA, $378, 7);
  if (result <> POBDII_ERROR_OK) then
    MessageBox(0, 'Initialization failed', 'Error', MB_OK)
```

```
  else
    MessageBox(0, 'PCAN-PCI (Ch-2) was initialized', 'Error', MB_OK);

  // All initialized channels are released
  TObdiiApi.Uninitialize(TObdiiApi.POBDII_NONEBUS);
end;
```

See also: Uninitialize below, GetValue on page 55, Understanding PCAN-OBD-2 on page 6

Plain function version: OBDII_Initialize

3.6.4 Uninitialize

Uninitializes a POBDII Channel.

Syntax

Pascal OO

```
class function Uninitialize(
    CanChannel: TPOBDIICANHandle
): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_Uninitialize")]
public static extern TPOBDIIStatus Uninitialize(
    [MarshalAs(UnmanagedType.U2)]
    TPOBDIICANHandle CanChannel);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_Uninitialize")]
static TPOBDIIStatus Uninitialize(
      [MarshalAs(UnmanagedType::U2)]
      TPOBDIICANHandle CanChannel);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_Uninitialize")> _
Public Shared Function Uninitialize( _
    <MarshalAs(UnmanagedType.U2)> _
    ByVal CanChannel As TPOBDIICANHandle) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel cannot be uninitialized because it was not found in the list of reserved channels of the calling application

Remarks: A POBDII Channel can be released using one of this possibilities:

- **Single-Release:** Given a handle of a POBDII channel initialized before with the method initialize. If the given channel can not be found then an error is returned
- **Multiple-Release:** Giving the handle value `POBDII_NONEBUS` which instructs the API to search for all channels initialized by the calling application and release them all. This option cause no errors if no hardware were uninitialized

Example

The following example shows the initialize and uninitialize processes for a Plug-And-Play channel (channel 2 of a PCAN-PCI hardware).

C#

```
TPOBDIIStatus result;

// The Plug & Play Channel (PCAN-PCI) is initialized
result = OBDIIApi.Initialize(OBDIIApi.POBDII_PCIBUS2,
TPOBDIIBaudrateInfo.POBDII_BAUDRATE_500K, (TPOBDIIHwType)0, 0, 0);
if (result != TPOBDIIStatus.POBDII_ERROR_OK)
    MessageBox.Show("Initialization failed");
else
    MessageBox.Show("PCAN-PCI (Ch-2) was initialized");

// Release channel
OBDIIApi.Uninitialize(OBDIIApi.POBDII_PCIBUS2);
```

C++ / CLR

```
TPOBDIIStatus result;

// The Plug & Play Channel (PCAN-PCI) is initialized
result = OBDIIApi::Initialize(OBDIIApi::POBDII_PCIBUS2, POBDII_BAUDRATE_500K,
(TPOBDIIHwType) 0, 0, 0);
if (result != POBDII_ERROR_OK)
      MessageBox::Show("Initialization failed");
else
      MessageBox::Show("PCAN-PCI (Ch-2) was initialized");

// Release channel
OBDIIApi::Uninitialize(OBDIIApi::POBDII_PCIBUS2);
```

Visual Basic

```
Dim result As TPOBDIIStatus

' The Plug & Play Channel (PCAN-PCI) is initialized
result = OBDIIApi.Initialize(OBDIIApi.POBDII_PCIBUS2,
TPOBDIIBaudrateInfo.POBDII_BAUDRATE_500K, 0, 0, 0)
If result <> TPOBDIIStatus.POBDII_ERROR_OK Then
    MessageBox.Show("Initialization failed")
Else
    MessageBox.Show("PCAN-PCI (Ch-2) was initialized")
End If

' Release channel
OBDIIApi.Uninitialize(OBDIIApi.POBDII_PCIBUS2)
```

Pascal OO

```
var
  result: TPOBDIIStatus;

begin
  // The Plug & Play Channel (PCAN-PCI) is initialized
  result := TObdiiApi.Initialize(TObdiiApi.POBDII_PCIBUS2, POBDII_BAUDRATE_500K, TPOBDIIHwType(0), $378,
7);
  if (result <> POBDII_ERROR_OK) then
    MessageBox(0, 'Initialization failed', 'Error', MB_OK)
  else
    MessageBox(0, 'PCAN-PCI (Ch-2) was initialized', 'Error', MB_OK);

  // Release channel
  TObdiiApi.Uninitialize(TObdiiApi.POBDII_PCIBUS2);
end;
```

See also: Initialize on page 44

Plain function version: OBDII_Uninitialize

3.6.5 SetValue

Set a configuration or information numeric value within a POBDII Channel.

Syntax

Pascal OO

```
class function SetValue(
    CanChannel: TPOBDIICANHandle;
    Parameter: TPOBDIIParameter;
    NumericBuffer: PLongWord;
    BufferLength: LongWord
): TPOBDIIStatus; overload;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_SetValue")]
public static extern TPOBDIIStatus SetValue(
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIICANHandle CanChannel,
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIIParameter Parameter,
    ref UInt32 NumericBuffer,
    UInt32 BufferLength);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_SetValue")]
static TPOBDIIStatus SetValue(
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIICANHandle CanChannel,
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIParameter Parameter,
      UInt32% NumericBuffer,
      UInt32 BufferLength);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_SetValue")> _
Public Shared Function SetValue( _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal Parameter As TPOBDIIParameter, _
    ByRef NumericBuffer As UInt32, _
    ByVal BufferLength As UInt32) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Parameter	The code of the value to be set (see TPOBDIIParameter on page 31)
NumericBuffer	The buffer containing the numeric value to be set
BufferLength	The length in bytes of the given buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel cannot be uninitialized because it was not found in the list of reserved channels of the calling application
POBDII_ERROR_WRONG_PARAM	Indicates that the parameters passed to the method are invalid. Check the value of 'Parameter' and assert it is compatible with an integer buffer

Remarks: Use the method SetValue to set configuration information or environment values of a POBDII Channel. Note that any calls with non OBDII parameters (ie. TPOBDIIParameter) will be forwarded to PCAN-UDS, PCAN-ISO-TP API, and PCAN-Basic API.

More information about the parameters and values that can be set can be found in Parameter Value Definitions.

Example

The following example shows the use of the method SetValue on the channel POBDII_PCIBUS2 to enable debug mode.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;
UInt32 iBuffer = 0;
```

```
// Enable CAN DEBUG mode
iBuffer = OBDIIApi.POBDII_DEBUG_CAN;
result = OBDIIApi.SetValue(OBDIIApi.POBDII_PCIBUS2,
TPOBDIIParameter.POBDII_PARAM_DEBUG, ref iBuffer, sizeof(UInt32));
if (result != TPOBDIIStatus.POBDII_ERROR_OK)
    MessageBox.Show("Failed to set value");
else
    MessageBox.Show("Value changed successfully ");
```

C++/CLR

```
TPOBDIIStatus result;
UInt32 iBuffer = 0;

// Enable CAN DEBUG mode
iBuffer = OBDIIApi::POBDII_DEBUG_CAN;
result = OBDIIApi::SetValue(OBDIIApi::POBDII_PCIBUS2, POBDII_PARAM_DEBUG, iBuffer,
sizeof(UInt32));
if (result != POBDII_ERROR_OK)
      MessageBox::Show("Failed to set value");
else
      MessageBox::Show("Value changed successfully ");
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim iBuffer As UInt32 = 0

' Enable CAN DEBUG mode
iBuffer = OBDIIApi.POBDII_DEBUG_CAN
result = OBDIIApi.SetValue(OBDIIApi.POBDII_PCIBUS2,
TPOBDIIParameter.POBDII_PARAM_DEBUG, iBuffer, Convert.ToUInt32(Len(iBuffer)))
If result <> TPOBDIIStatus.POBDII_ERROR_OK Then
    MessageBox.Show("Failed to set value")
Else
  MessageBox.Show("Value changed successfully ")
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  iBuffer: UINT;

begin
  // Enable CAN DEBUG mode
  iBuffer := TObdiiApi.POBDII_DEBUG_CAN;
  result := TObdiiApi.SetValue(TObdiiApi.POBDII_PCIBUS2, POBDII_PARAM_DEBUG, PLongWord(@iBuffer),
sizeof(iBuffer));
  if (result <> POBDII_ERROR_OK) then
    MessageBox(0, 'Failed to set value', 'Error', MB_OK)
  else
    MessageBox(0, 'Value changed successfully ', 'Error', MB_OK);
end;
```

See also: GetValue on page 55

Plain function version: OBDII_GetValue

3.6.6 GetValue

Retrieves information from a POBDII Channel.

Overloads

	Function	Description
	GetValue(TPOBDIICANHandle, TPOBDIIParameter, StringBuilder, UInt32);	Retrieves information from a POBDII channel in text form
	GetValue(TPOBDIICANHandle, TPOBDIIParameter, UInt32, UInt32);	Retrieves information from a POBDII channel in numeric form
	GetValue(TPOBDIICANHandle, TPOBDIIParameter, Byte[], UInt32);	Retrieves information from a POBDII channel in a byte array form

3.6.7 GetValue (TPOBDIICANHandle, TPOBDIIParameter, StringBuilder, UInt32)

Retrieves information from a POBDII channel in text form.

Syntax

Pascal OO

```
class function GetValue(
    CanChannel: TPOBDIICANHandle;
    Parameter: TPOBDIIParameter;
    StringBuffer: PAnsiChar;
    BufferLength: LongWord
): TPOBDIIStatus; overload;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_GetValue")]
public static extern TPOBDIIStatus GetValue(
    [MarshalAs(UnmanagedType.U2)]
    TPOBDIICANHandle CanChannel,
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIIParameter Parameter,
    StringBuilder StringBuffer,
    UInt32 BufferLength);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_GetValue")]
static TPOBDIIStatus GetValue(
      [MarshalAs(UnmanagedType::U2)]
      TPOBDIICANHandle CanChannel,
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIParameter Parameter,
      StringBuilder^ StringBuffer,
      UInt32 BufferLength);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_GetValue")> _
Public Shared Function GetValue( _
    <MarshalAs(UnmanagedType.U2)> _
    ByVal CanChannel As TPOBDIICANHandle, _
```

```
    <MarshalAs(UnmanagedType.U1)> _
    ByVal Parameter As TPOBDIIParameter, _
    ByVal StringBuffer As StringBuilder, _
    ByVal BufferLength As UInt32) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Parameter	The code of the value to be set (see TPOBDIIParameter on page 31)
StringBuffer	The buffer to return the required string value
BufferLength	The length in bytes of the given buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel cannot be uninitialized because it was not found in the list of reserved channels of the calling application
POBDII_ERROR_WRONG_PARAM	Indicates that the parameters passed to the method are invalid. Check the value of 'Parameter' and assert it is compatible with an integer buffer

Example

The following example shows the use of the method GetValue to retrieve the version of the OBDII API. Depending on the result, a message will be shown to the user.

C#

```
TPOBDIIStatus result;
StringBuilder BufferString;

// Get API version
BufferString = new StringBuilder(255);
result = OBDIIApi.GetValue(OBDIIApi.POBDII_NONEBUS,
TPOBDIIParameter.POBDII_PARAM_API_VERSION, BufferString, 255);
if (result != TPOBDIIStatus.POBDII_ERROR_OK)
    MessageBox.Show("Failed to get value");
else
    MessageBox.Show(BufferString.ToString());
```

C++ / CLR

```
TPOBDIIStatus result;
StringBuilder^ BufferString;

// Get API version
BufferString = gcnew StringBuilder(255);
result = OBDIIApi::GetValue(OBDIIApi::POBDII_NONEBUS,
      POBDII_PARAM_API_VERSION, BufferString, 255);
if (result != POBDII_ERROR_OK)
      MessageBox::Show("Failed to get value");
else
      MessageBox::Show(BufferString->ToString());
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim BufferString As StringBuilder

' Get API version
BufferString = New StringBuilder(255)
result = OBDIIApi.GetValue(OBDIIApi.POBDII_NONEBUS, _
    TPOBDIIParameter.POBDII_PARAM_API_VERSION, BufferString, 255)
If result <> TPOBDIIStatus.POBDII_ERROR_OK Then
    MessageBox.Show("Failed to get value")
Else
    MessageBox.Show(BufferString.ToString())
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  BufferString: array [0..256] of Char;

begin
  // Get API version
  result := TObdiiApi.GetValue(TObdiiApi.POBDII_NONEBUS, POBDII_PARAM_API_VERSION, BufferString, 255);
  if (result <> POBDII_ERROR_OK) then
    MessageBox(0, 'Failed to get value', 'Error', MB_OK)
  else
    MessageBox(0, BufferString, 'Success', MB_OK);
end;
```

See also: SetValue on page 52, TPOBDIIParameter on page 31, Parameter Value Definitions on page 124

Plain function version: OBDII_GetValue

3.6.8 GetValue (TPOBDIICANHandle, TPOBDIIParameter, UInt32, UInt32)

Retrieves information from a POBDII Channel in numeric form.

Syntax

Pascal OO

```
class function GetValue(
    CanChannel: TPOBDIICANHandle;
    Parameter: TPOBDIIParameter;
    NumericBuffer: PLongWord;
    BufferLength: LongWord
): TPOBDIIStatus; overload;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_GetValue")]
public static extern TPOBDIIStatus GetValue(
    [MarshalAs(UnmanagedType.U2)]
    TPOBDIICANHandle CanChannel,
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIIParameter Parameter,
    out UInt32 NumericBuffer,
          UInt32 BufferLength);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_GetValue")]
static TPOBDIIStatus GetValue(
      [MarshalAs(UnmanagedType::U2)]
      TPOBDIICANHandle CanChannel,
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIParameter Parameter,
      UInt32% NumericBuffer,
      UInt32 BufferLength);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_GetValue")> _
Public Shared Function GetValue( _
    <MarshalAs(UnmanagedType.U2)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal Parameter As TPOBDIIParameter, _
    ByRef NumericBuffer As UInt32, _
    ByVal BufferLength As UInt32) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Parameter	The code of the value to be set (see TPOBDIIParameter on page 31)
NumericBuffer	The buffer to return the required numeric value
BufferLength	The length in bytes of the given buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel cannot be uninitialized because it was not found in the list of reserved channels of the calling application
POBDII_ERROR_WRONG_PARAM	Indicates that the parameters passed to the method are invalid. Check the value of 'Parameter' and assert it is compatible with a string buffer

Example

The following example shows the use of the method GetValue on the channel POBDII_USBBUS1 to retrieve the number of connected and responding ECUs on the CAN bus. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPCANTPHandle CanChannel = OBDIIApi.POBDII_USBBUS1;
TPOBDIIStatus result;
UInt32 iBuffer = 0;

// Get the number of connected ECUs
result = OBDIIApi.GetValue(CanChannel,
TPOBDIIParameter.POBDII_PARAM_AVAILABLE_ECUS,
out iBuffer, sizeof(UInt32));
if (result != TPOBDIIStatus.POBDII_ERROR_OK)
```

```
    MessageBox.Show("Failed to get value");
else
    MessageBox.Show(iBuffer.ToString());
```

C++ / CLR

```
TPUDSCANHandle CanChannel = OBDIIApi::POBDII_USBBUS1;
TPOBDIIStatus result;
UInt32 iBuffer = 0;

// Get the number of connected ECUs
result = OBDIIApi::GetValue(CanChannel, POBDII_PARAM_AVAILABLE_ECUS, iBuffer,
sizeof(UInt32));
if (result != POBDII_ERROR_OK)
      MessageBox::Show("Failed to get value");
else
      MessageBox::Show(iBuffer.ToString());
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim BufferString As StringBuilder

' Get API version
BufferString = New StringBuilder(255)
result = OBDIIApi.GetValue(OBDIIApi.POBDII_NONEBUS, _
    TPOBDIIParameter.POBDII_PARAM_API_VERSION, BufferString, 255)
If result <> TPOBDIIStatus.POBDII_ERROR_OK Then
    MessageBox.Show("Failed to get value")
Else
    MessageBox.Show(BufferString.ToString())
End If
```

Pascal OO

```
var
  CanChannel: TPOBDIICANHandle;
  result: TPOBDIIStatus;
  iBuffer: UINT;

begin
  CanChannel := TObdiiApi.POBDII_USBBUS1;
  // Get the number of connected ECUs
  result := TObdiiApi.GetValue(CanChannel, POBDII_PARAM_AVAILABLE_ECUS, PLongWord(@iBuffer),
sizeof(iBuffer));
  if (result <> POBDII_ERROR_OK) then
    MessageBox(0, 'Failed to get value', 'Error', MB_OK)
  else
    MessageBox(0, PAnsiChar(AnsiString(Format('#ECU = %d', [Integer(iBuffer)]))), 'Success', MB_OK);
end;
```

See also: SetValue on page 52, TPOBDIIParameter on page 31, Parameter Value Definitions on page 124.

Plain function version: OBDII_GetValue.

3.6.9 GetValue (TPOBDIICANHandle, TPOBDIIParameter, Byte[], UInt32)

Retrieves information from a POBDII Channel in a byte array.

Syntax

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_GetValue")]
public static extern TPOBDIIStatus GetValue(
    [MarshalAs(UnmanagedType.U2)]
    TPOBDIICANHandle CanChannel,
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIIParameter Parameter,
    [MarshalAs(UnmanagedType.LPArray)]
    [Out] Byte[] Buffer,
    UInt32 BufferLength);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_GetValue")]
static TPOBDIIStatus GetValue(
      [MarshalAs(UnmanagedType::U2)]
      TPOBDIICANHandle CanChannel,
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIParameter Parameter,
      [MarshalAs(UnmanagedType::LPArray)]
      array<Byte>^ Buffer,
      UInt32 BufferLength);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_GetValue")> _
Public Shared Function GetValue( _
    <MarshalAs(UnmanagedType.U2)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal Parameter As TPOBDIIParameter, _
    <MarshalAs(UnmanagedType.LPArray)> _
    ByVal Buffer As Byte(), _
    ByVal BufferLength As UInt32) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Parameter	The code of the value to be set (see TPOBDIIParameter on page 31)
Buffer	The buffer containing the array value to retrieve
BufferLength	The length in bytes of the given buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel cannot be uninitialized because it was not found in the list of reserved channels of the calling application
POBDII_ERROR_WRONG_PARAM	Indicates that the parameters passed to the method are invalid. Check the value of 'Parameter' and assert it is compatible with a string buffer

Example

The following example shows the use of the method GetValue on the channel POBDII_USBBUS1 to retrieve the supported Parameter Identifiers (PIDs) by the connected ECUs. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPCANTPHandle CanChannel = OBDIIApi.POBDII_USBBUS1;
TPOBDIIStatus result;
uint bufferLength = 256;
byte[] bufferArray = new byte[bufferLength];

// Get the supported PIDs list
result = OBDIIApi.GetValue(CanChannel,
TPOBDIIParameter.POBDII_PARAM_SUPPORTMASK_PIDS,
bufferArray, sizeof(byte) * bufferLength);
if (result != TPOBDIIStatus.POBDII_ERROR_OK)
    MessageBox.Show("Failed to get value");
else
    MessageBox.Show("Successfully retrieved supported PIDs");
```

C++ / CLR

```
TPUDSCANHandle CanChannel = OBDIIApi::POBDII_USBBUS1;
TPOBDIIStatus result;
UInt32 bufferLength = 256;
array<Byte>^ bufferArray = gcnew array<Byte>(bufferLength);

// Get the supported PIDs list
result = OBDIIApi::GetValue(CanChannel, POBDII_PARAM_SUPPORTMASK_PIDS,
      bufferArray, sizeof(Byte) * bufferLength);
if (result != POBDII_ERROR_OK)
      MessageBox::Show("Failed to get value");
else
      MessageBox::Show("Successfully retrieved supported PIDs");
```

Visual Basic

```
Dim CanChannel As TPCANTPHandle = OBDIIApi.POBDII_USBBUS1
Dim result As TPOBDIIStatus
Dim bufferLength As UInt32 = 256
Dim bufferArray(bufferLength) As Byte

' Get the supported PIDs list
result = OBDIIApi.GetValue(CanChannel,
TPOBDIIParameter.POBDII_PARAM_SUPPORTMASK_PIDS, _
    bufferArray, Convert.ToUInt32(bufferArray.Length))
If result <> TPOBDIIStatus.POBDII_ERROR_OK Then
    MessageBox.Show("Failed to get value")
Else
    MessageBox.Show("Successfully retrieved supported PIDs")
End If
```

Pascal OO

```
var
  CanChannel: TPOBDIICANHandle;
```

```
  result: TPOBDIIStatus;
  bufferArray: array [0..255] of Byte;

begin
  CanChannel := TObdiiApi.POBDII_USBBUS1;

  // Get the Supported Parameter IDs
  result := TObdiiApi.GetValue(CanChannel, POBDII_PARAM_SUPPORTMASK_PIDS, PLongWord(@bufferArray),
Length(bufferArray));
  if (result <> POBDII_ERROR_OK) then
    MessageBox(0, 'Failed to get value', 'Error', MB_OK)
  else
    MessageBox(0, 'Successfully retrieved supported PIDs', 'Success', MB_OK)
end;
```

See also: SetValue on page 52, TPOBDIIParameter on page 31 , Parameter Value Definitions on page 124

Plain function version: OBDII_GetValue

3.6.10 GetStatus

Gets the current BUS status of a POBDII Channel.

Syntax

Pascal OO

```
class function GetStatus(
    CanChannel: TPOBDIICANHandle
): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_GetStatus")]
public static extern TPOBDIIStatus GetStatus(
    [MarshalAs(UnmanagedType.U2)]
    TPOBDIICANHandle CanChannel);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_GetStatus")]
static TPOBDIIStatus GetStatus(
      [MarshalAs(UnmanagedType::U2)]
      TPOBDIICANHandle CanChannel);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_GetStatus")> _
Public Shared Function GetStatus( _
    <MarshalAs(UnmanagedType.U2)> _
    ByVal CanChannel As TPOBDIICANHandle) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_OK	Indicates that the status of the given POBDII channel is OK
POBDII_ERROR_BUSLIGHT	Indicates a bus error within the given POBDII Channel. The hardware is in bus-light status
POBDII_ERROR_BUSHEAVY	Indicates a bus error within the given POBDII Channel. The hardware is in bus-heavy status
POBDII_ERROR_BUSOFF	Indicates a bus error within the given POBDII Channel. The hardware is in bus-off status
POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel cannot be used because it was not found in the list of reserved channels of the calling application

Remarks: When the hardware status is bus-off, an application cannot communicate anymore. Consider using the PCAN-Basic property PCAN_BUSOFF_AUTORESET which instructs the API to automatically reset the CAN controller when a bus-off state is detected.

Another way to reset errors like bus-off, bus-heavy and bus-light, is to uninitialize and initialize again the channel used. This causes a hardware reset.

Example

The following example shows the use of the method GetStatus on the channel POBDII_PCIBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;

// Check the status of the PCI Channel
result = OBDIIApi.GetStatus(OBDIIApi.POBDII_PCIBUS1);
switch (result)
{
    case TPOBDIIStatus.POBDII_ERROR_BUSLIGHT:
        MessageBox.Show("PCAN-PCI (Ch-1): Handling a BUS-LIGHT status...");
        break;
    case TPOBDIIStatus.POBDII_ERROR_BUSHEAVY:
        MessageBox.Show("PCAN-PCI (Ch-1): Handling a BUS-HEAVY status...");
        break;
    case TPOBDIIStatus.POBDII_ERROR_BUSOFF:
        MessageBox.Show("PCAN-PCI (Ch-1): Handling a BUS-OFF status...");
        break;
    case TPOBDIIStatus.POBDII_ERROR_OK:
        MessageBox.Show("PCAN-PCI (Ch-1): Status is OK");
        break;
    default:
        // An error occurred);
        MessageBox.Show("Failed to retrieve status");
        break;
}
```

C++ / CLR

```
TPOBDIIStatus result;

// Check the status of the PCI Channel
result = OBDIIApi::GetStatus(OBDIIApi::POBDII_PCIBUS1);
```

```
switch (result)
{
case POBDII_ERROR_BUSLIGHT:
      MessageBox::Show("PCAN-PCI (Ch-1): Handling a BUS-LIGHT status...");
      break;
case POBDII_ERROR_BUSHEAVY:
      MessageBox::Show("PCAN-PCI (Ch-1): Handling a BUS-HEAVY status...");
      break;
case POBDII_ERROR_BUSOFF:
      MessageBox::Show("PCAN-PCI (Ch-1): Handling a BUS-OFF status...");
      break;
case POBDII_ERROR_OK:
      MessageBox::Show("PCAN-PCI (Ch-1): Status is OK");
      break;
default:
      // An error occurred);
      MessageBox::Show("Failed to retrieve status");
      break;
}
```

Visual Basic

```
Dim result As TPOBDIIStatus

' Check the status of the PCI Channel
result = OBDIIApi.GetStatus(OBDIIApi.POBDII_PCIBUS1)
Select Case (result)
    Case TPOBDIIStatus.POBDII_ERROR_BUSLIGHT
        MessageBox.Show("PCAN-PCI (Ch-1): Handling a BUS-LIGHT status...")
    Case TPOBDIIStatus.POBDII_ERROR_BUSHEAVY
        MessageBox.Show("PCAN-PCI (Ch-1): Handling a BUS-HEAVY status...")
    Case TPOBDIIStatus.POBDII_ERROR_BUSOFF
        MessageBox.Show("PCAN-PCI (Ch-1): Handling a BUS-OFF status...")
    Case TPOBDIIStatus.POBDII_ERROR_OK
        MessageBox.Show("PCAN-PCI (Ch-1): Status is OK")
    Case Else
        ' An error occurred
        MessageBox.Show("Failed to retrieve status")
End Select
```

Pascal OO

```
var
  result: TPOBDIIStatus;

begin
  // Check the status of the PCI Channel
  result := TObdiiApi.GetStatus(TObdiiApi.POBDII_PCIBUS1);
  Case (result) of
    POBDII_ERROR_BUSLIGHT:
      MessageBox(0, 'PCAN-PCI (Ch-1): Handling a BUS-LIGHT status...', 'Error', MB_OK);
    POBDII_ERROR_BUSHEAVY:
      MessageBox(0, 'PCAN-PCI (Ch-1): Handling a BUS-HEAVY status...', 'Error', MB_OK);
    POBDII_ERROR_BUSOFF:
      MessageBox(0, 'PCAN-PCI (Ch-1): Handling a BUS-OFF status...', 'Error', MB_OK);
    POBDII_ERROR_OK:
      MessageBox(0, 'PCAN-PCI (Ch-1): Status is OK', 'Error', MB_OK);
  else
      // An error occurred);
      MessageBox(0, 'Failed to retrieve status', 'Error', MB_OK);
  end;
end;
```

Plain function version: OBDII_GetStatus

3.6.11 Reset

Resets the receive and transmit queues of a POBDII Channel.

Syntax

Pascal OO

```
class function Reset(
    CanChannel: TPOBDIICANHandle
): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_Reset")]
public static extern TPOBDIIStatus Reset(
    [MarshalAs(UnmanagedType.U2)]
    TPOBDIICANHandle CanChannel);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_Reset")]
static TPOBDIIStatus Reset(
      [MarshalAs(UnmanagedType::U2)]
      TPOBDIICANHandle CanChannel);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_Reset")> _
Public Shared Function Reset( _
    <MarshalAs(UnmanagedType.U2)> _
    ByVal CanChannel As TPOBDIICANHandle) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel cannot be used because it was not found in the list of reserved channels of the calling application

Remarks: Calling this method ONLY clears the queues of a Channel. A reset of the CAN controller doesn't take place.

Example

The following example shows the use of the method Reset on the channel POBDII_PCIBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;

// The PCI Channel is reset
result = OBDIIApi.Reset(OBDIIApi.POBDII_PCIBUS1);
if (result != TPOBDIIStatus.POBDII_ERROR_OK)
{
    // An error occurred
    MessageBox.Show("An error occured");
}
else
    MessageBox.Show("PCAN-PCI (Ch-1) was reset");
```

C++/CLR

```
TPOBDIIStatus result;

// The PCI Channel is reset
result = OBDIIApi::Reset(OBDIIApi::POBDII_PCIBUS1);
if (result != POBDII_ERROR_OK)
{
      // An error occurred
      MessageBox::Show("An error occured");
}
else
      MessageBox::Show("PCAN-PCI (Ch-1) was reset");
```

Visual Basic

```
Dim result As TPOBDIIStatus

' The PCI Channel is reset
result = OBDIIApi.Reset(OBDIIApi.POBDII_PCIBUS1)
If result <> TPOBDIIStatus.POBDII_ERROR_OK Then
    ' An error occurred
    MessageBox.Show("An error occured")
Else
    MessageBox.Show("PCAN-PCI (Ch-1) was reset")
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;

begin
  // The PCI Channel is reset
  result := TObdiiApi.Reset(TObdiiApi.POBDII_PCIBUS1);
  if (result <> POBDII_ERROR_OK) then
    // An error occurred
    MessageBox(0, 'An error occured', 'Error', MB_OK)
  else
    MessageBox(0, 'PCAN-PCI (Ch-1) was reset', 'Error', MB_OK);
end;
```

See also: Uninitialize on page 50

Plain function version: OBDII_Reset

3.6.12 GetUnitAndScaling

Retrieves information from a Unit and Scaling Identifier.

Syntax

Pascal OO

```
class function GetUnitAndScaling(
    id: Byte;
    unitAndScaling: PTPOBDIIUnitAndScaling): TPOBDIIStatus; stdcall;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_GetUnitAndScaling")]
public static extern TPOBDIIStatus GetUnitAndScaling(
    Byte id,
    out TPOBDIIUnitAndScaling unitAndScaling);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_GetUnitAndScaling")]
static TPOBDIIStatus GetUnitAndScaling(
      Byte id,
      [Out] TPOBDIIUnitAndScaling %unitAndScaling);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_GetUnitAndScaling")> _
Public Shared Function GetUnitAndScaling( _
    ByVal id As Byte, _
    ByRef unitAndScaling As TPOBDIIUnitAndScaling) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
Id	The Unit and Scaling Identifier to retrieve information from
UnitAndScanling	A buffer to store the TPOBDIIUnitAndScaling information

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel cannot be used because it was not found in the list of reserved channels of the calling application

Example

The following example shows the use of the method GetUnitAndScaling with the Voltage ID (0x0A). Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;
TPOBDIIUnitAndScaling unitAndScaling;

// Get Unit and Scaling information
result = OBDIIApi.GetUnitAndScaling(0x0A, out unitAndScaling);
if (result != TPOBDIIStatus.POBDII_ERROR_OK)
{
    // An error occurred
    MessageBox.Show("An error occured");
}
else
    MessageBox.Show("Unit: " + unitAndScaling.UNIT);
```

C++/CLR

```
TPOBDIIStatus result;
TPOBDIIUnitAndScaling unitAndScaling;

// Get Unit and Scaling information
result = OBDIIApi::GetUnitAndScaling(0x0A, unitAndScaling);
if (result != POBDII_ERROR_OK)
{
    // An error occurred
      MessageBox::Show("An error occured");
}
else
      MessageBox::Show("Unit: " + unitAndScaling.UNIT);
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim unitAndScaling As TPOBDIIUnitAndScaling

' Get Unit and Scaling information
result = OBDIIApi.GetUnitAndScaling(&HA, unitAndScaling)
If (result <> TPOBDIIStatus.POBDII_ERROR_OK) Then
    ' An error occurred
    MessageBox.Show("An error occured")
Else
    MessageBox.Show(String.Format("Unit: {0}", unitAndScaling.UNIT))
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  unitAndScaling: TPOBDIIUnitAndScaling;
begin
  // The PCI Channel is reset
  result := TObdiiApi.GetUnitAndScaling($0A, @unitAndScaling);
  if (result <> POBDII_ERROR_OK) then
    // An error occurred
    MessageBox(0, 'An error occured', 'Error', MB_OK)
  else
    MessageBox(0, PAnsiChar(AnsiString(Format('Unit = %s', [unitAndScaling.UNIT_TXT]))), 'Success', MB_OK);
end;
```

See also: RequestTestResults on page 83

Plain function version: OBDII_GetUnitAndScaling

3.6.13 RequestCurrentData

Sends an OBDII Service “Request Current Powertrain Diagnostic Data” ($01) request into queue and waits to receive the responses. The purpose of this service is to allow access to current emission-related data values, including analogue inputs and outputs, digital inputs and outputs, and system status information.

Syntax

Pascal OO

```
class function RequestCurrentData(
    CanChannel: TPOBDIICANHandle;
    Pid: TPOBDIIPid;
    Data: PTPOBDIIParamData;
    DataLen: Byte
): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestCurrentData")]
public static extern TPOBDIIStatus RequestCurrentData(
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIICANHandle CanChannel,
    [MarshalAs(UnmanagedType.U1)]
```

```
    TPOBDIIPid Pid,
    [In, Out]
    TPOBDIIParamData[] Data,
    byte DataLen);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestCurrentData")]
static TPOBDIIStatus RequestCurrentData(
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIICANHandle CanChannel,
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIPid Pid,
      [Out] array<TPOBDIIParamData>^ Data,
      Byte DataLen);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_RequestCurrentData")> _
Public Shared Function RequestCurrentData( _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal Pid As TPOBDIIPid, _
    <[In](), Out()> ByVal Data As TPOBDIIParamData(), _
    ByVal DataLen As Byte) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Pid	The Parameter Identifier to request
Data	An array of TPOBDIIParamData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the method RequestCurrentData on the channel POBDII_USBBUS1 with PID 01. Depending on the result, a message will be shown to the user. If responses are received, a loop is set to handle valid responses.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;
byte bufferLength = 8;
TPOBDIIParamData[] buffer = new TPOBDIIParamData[8];

// Send OBDII Service $01 request
result = OBDIIApi.RequestCurrentData(OBDIIApi.POBDII_USBBUS1, 0x01, buffer,
bufferLength);
if (result == TPOBDIIStatus.POBDII_ERROR_OK)
{
    MessageBox.Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == TPOBDIIError.POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE)
    MessageBox.Show("Request received no response.");
else
    // An error occurred
    MessageBox.Show("An error occured.");
```

C++/CLR

```
TPOBDIIStatus result;
Byte bufferLength = 8;
array<TPOBDIIParamData>^ buffer = gcnew array<TPOBDIIParamData>(8);

// Send OBDII Service $01 request
result = OBDIIApi::RequestCurrentData(OBDIIApi::POBDII_USBBUS1, 0x01, buffer,
bufferLength);
if (result == POBDII_ERROR_OK)
{
      MessageBox::Show("Request received responses.");
    // loop through responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
      MessageBox::Show("Request received no response.");
else
```

```
    // An error occurred
      MessageBox::Show("An error occured.");
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim bufferLength As Byte = 8
Dim buffer(bufferLength) As TPOBDIIParamData

' Send OBDII Service $01 request
result = OBDIIApi.RequestCurrentData(OBDIIApi.POBDII_USBBUS1, &H1, buffer,
bufferLength)
If (result = TPOBDIIStatus.POBDII_ERROR_OK) Then
    MessageBox.Show("Request received responses.")
    ' search and remove unused responses
    For j As Integer = 0 To bufferLength - 1
        If (buffer(j).RESPONSE.ERRORNR = TPOBDIIError.POBDII_R_NOT_USED) Then
            ' unused response, stop
            Exit For
        Else
            ' process response
        End If
    Next
ElseIf (result = TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE) Then
    MessageBox.Show("Request received no response.")
Else
    ' An error occurred
    MessageBox.Show("An error occured.")
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  bufferLength: byte;
  buffer: array [0..7] of TPOBDIIParamData;
  j: integer;

begin
  bufferLength := 8;
  // Send OBDII Service $01 request
  result := TObdiiApi.RequestCurrentData(TObdiiApi.POBDII_USBBUS1, $01, @buffer, bufferLength);
  if (result = POBDII_ERROR_OK) then
  begin
    MessageBox(0, 'Request received responses.', 'Success', MB_OK);
    // search and remove unused responses
    for j := 0 To bufferLength - 1 do
    begin
      if (buffer[j].RESPONSE.ERRORNR = POBDII_R_NOT_USED) then
        // unused response, stop
        break
      else
        // process response
        ;
    end
  end
```

```
  else if (result = POBDII_ERROR_NO_MESSAGE) then
    MessageBox(0, 'Request received no response.', 'Success', MB_OK)
  else
    // An error occurred
    MessageBox(0, 'An error occured', 'Error', MB_OK)
end;
```

See also: TPOBDIIParamData on page 14

Plain function version: OBDII_RequestCurrentData

3.6.14 RequestFreezeFrameData

Sends an OBDII Service “Request Powertrain Freeze Frame Data” ($02) request into queue and waits to receive the responses. The purpose of this service is to allow access to emission-related data values in a freeze frame.

Syntax

Pascal OO

```
class function RequestFreezeFrameData(
    CanChannel: TPOBDIICANHandle;
    Pid: TPOBDIIPid;
    Frame: Byte;
    Data: PTPOBDIIParamData;
    DataLen: Byte
): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestFreezeFrameData")]
public static extern TPOBDIIStatus RequestFreezeFrameData(
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIICANHandle CanChannel,
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIIPid Pid,
    byte Frame,
    [In, Out]
    TPOBDIIParamData[] Data,
    byte DataLen);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestFreezeFrameData")]
static TPOBDIIStatus RequestFreezeFrameData(
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIICANHandle CanChannel,
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIPid Pid,
      Byte Frame,
      [Out] array<TPOBDIIParamData>^ Data,
      Byte DataLen);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_RequestFreezeFrameData")> _
Public Shared Function RequestFreezeFrameData( _
    <MarshalAs(UnmanagedType.U1)> _
```

```
    ByVal CanChannel As TPOBDIICANHandle, _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal Pid As TPOBDIIPid, _
    ByVal Frame As Byte, _
    <[In](), Out()> ByVal Data As TPOBDIIParamData(), _
    ByVal DataLen As Byte) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Pid	The Parameter Identifier to request
Frame	The Freeze Frame number
Data	An array of TPOBDIIParamData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the method RequestFreezeFrameData on the channel POBDII_USBBUS1 with PID 02 and Freeze Frame 00 (i.e. read the DTC that caused the freeze frame data to be stored). Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;
byte bufferLength = 8;
TPOBDIIParamData[] buffer = new TPOBDIIParamData[8];

// Send OBDII Service $02 request (PID 02 and with frame 00)
result = OBDIIApi.RequestFreezeFrameData(OBDIIApi.POBDII_USBBUS1, 0x02, 0x00,
buffer, bufferLength);
if (result == TPOBDIIStatus.POBDII_ERROR_OK)
{
    MessageBox.Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == TPOBDIIError.POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
```

```
            // process response
        }
    }
}
else if (result == TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE)
    MessageBox.Show("Request received no response.");
else
    // An error occurred
    MessageBox.Show("An error occured.");
```

C++/CLR

```
TPOBDIIStatus result;
Byte bufferLength = 8;
array<TPOBDIIParamData>^ buffer = gcnew array<TPOBDIIParamData>(8);

// Send OBDII Service $02 request (PID 02 and with frame 00)
result = OBDIIApi::RequestFreezeFrameData(OBDIIApi::POBDII_USBBUS1, 0x02, 0x00,
buffer, bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox::Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox::Show("Request received no response.");
else
    // An error occurred
    MessageBox::Show("An error occured.");
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim bufferLength As Byte = 8
Dim buffer(bufferLength) As TPOBDIIParamData

' Send OBDII Service $02 request (PID 02 and with frame 00)
result = OBDIIApi.RequestFreezeFrameData(OBDIIApi.POBDII_USBBUS1, &H02, &H00,
buffer, bufferLength)
If (result = TPOBDIIStatus.POBDII_ERROR_OK) Then
    MessageBox.Show("Request received responses.")
    ' search and remove unused responses
    For j As Integer = 0 To bufferLength - 1
        If (buffer(j).RESPONSE.ERRORNR = TPOBDIIError.POBDII_R_NOT_USED) Then
            ' unused response, stop
            Exit For
        Else
            ' process response
        End If
```

```
    Next
ElseIf (result = TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE) Then
    MessageBox.Show("Request received no response.")
Else
    ' An error occurred
    MessageBox.Show("An error occured.")
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  bufferLength: byte;
  buffer: array [0..7] of TPOBDIIParamData;
  j: integer;

begin
  bufferLength := 8;

  // Send OBDII Service $02 request (PID 02 and with frame 00)
  result := TObdiiApi.RequestFreezeFrameData(TObdiiApi.POBDII_USBBUS1, $02, $00, @buffer, bufferLength);
  if (result = POBDII_ERROR_OK) then
  begin
    MessageBox(0, 'Request received responses.', 'Success', MB_OK);
    // search and remove unused responses
    for j := 0 To bufferLength - 1 do
    begin
      if (buffer[j].RESPONSE.ERRORNR = POBDII_R_NOT_USED) then
        // unused response, stop
        break
      else
        // process response
        ;
    end
  end
  else if (result = POBDII_ERROR_NO_MESSAGE) then
    MessageBox(0, 'Request received no response.', 'Success', MB_OK)
  else
    // An error occurred
    MessageBox(0, 'An error occured', 'Error', MB_OK)
end;
```

See also: TPOBDIIParamData on page 14

Plain function version: OBDII_RequestFreezeFrameData

3.6.15 RequestStoredTroubleCodes

Sends an OBDII Service “Request Emission-Related Diagnostic Information” ($03) request into queue and waits to receive the responses. The purpose of this service is to enable the external test equipment to obtain “confirmed” emission-related DTCs.

Syntax

Pascal OO

```
class function RequestStoredTroubleCodes(
    CanChannel: TPOBDIICANHandle;
    Data: PTPOBDIIDTCData;
    DataLen: Byte
): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestStoredTroubleCodes")]
public static extern TPOBDIIStatus RequestStoredTroubleCodes(
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIICANHandle CanChannel,
    [In, Out]
    TPOBDIIDTCData[] Data,
    byte DataLen);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestStoredTroubleCodes")]
static TPOBDIIStatus RequestStoredTroubleCodes(
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIICANHandle CanChannel,
      [Out] array<TPOBDIIDTCData>^ Data,
      Byte DataLen);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_RequestStoredTroubleCodes")> _
Public Shared Function RequestStoredTroubleCodes( _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <[In](), Out()> ByVal Data As TPOBDIIDTCData(), _
   ByVal DataLen As Byte) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Data	An array of TPOBDIIDTCData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the method RequestStoredTroubleCodes on the channel POBDII_USBBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;
byte bufferLength = 8;
TPOBDIIDTCData[] buffer = new TPOBDIIDTCData[8];

// Send OBDII Service $03 request
result = OBDIIApi.RequestStoredTroubleCodes(OBDIIApi.POBDII_USBBUS1, buffer,
bufferLength);
if (result == TPOBDIIStatus.POBDII_ERROR_OK)
{
    MessageBox.Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == TPOBDIIError.POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE)
    MessageBox.Show("Request received no response.");
else
    // An error occurred
    MessageBox.Show("An error occured.");
```

C++/CLR

```
TPOBDIIStatus result;
Byte bufferLength = 8;
array<TPOBDIIDTCData>^ buffer = gcnew array<TPOBDIIDTCData>(8);

// Send OBDII Service $03 request
result = OBDIIApi::RequestStoredTroubleCodes(OBDIIApi::POBDII_USBBUS1, buffer,
bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox::Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
```

```
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox::Show("Request received no response.");
else
    // An error occurred
    MessageBox::Show("An error occured.");
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim bufferLength As Byte = 8
Dim buffer(bufferLength) As TPOBDIIDTCData

' Send OBDII Service $03 request
result = OBDIIApi.RequestStoredTroubleCodes(OBDIIApi.POBDII_USBBUS1, buffer,
bufferLength)
If (result = TPOBDIIStatus.POBDII_ERROR_OK) Then
    MessageBox.Show("Request received responses.")
    ' search and remove unused responses
    For j As Integer = 0 To bufferLength - 1
        If (buffer(j).RESPONSE.ERRORNR = TPOBDIIError.POBDII_R_NOT_USED) Then
            ' unused response, stop
            Exit For
        Else
            ' process response
        End If
    Next
ElseIf (result = TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE) Then
    MessageBox.Show("Request received no response.")
Else
    ' An error occurred
    MessageBox.Show("An error occured.")
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  bufferLength: byte;
  buffer: array [0..7] of TPOBDIIDTCData;
  j: integer;

begin
  bufferLength := 8;

  // Send OBDII Service $03 request
  result := TObdiiApi.RequestStoredTroubleCodes(TObdiiApi.POBDII_USBBUS1, @buffer, bufferLength);
  if (result = POBDII_ERROR_OK) then
  begin
    MessageBox(0, 'Request received responses.', 'Success', MB_OK);
    // search and remove unused responses
    for j := 0 To bufferLength - 1 do
    begin
      if (buffer[j].RESPONSE.ERRORNR = POBDII_R_NOT_USED) then
```

```
          // unused response, stop
          break
        else
          // process response
          ;
      end
    end
    else if (result = POBDII_ERROR_NO_MESSAGE) then
      MessageBox(0, 'Request received no response.', 'Success', MB_OK)
    else
      // An error occurred
      MessageBox(0, 'An error occured', 'Error', MB_OK)
end;
```

See also: TPOBDIIDTCData on page 17

Plain function version: OBDII_RequestStoredTroubleCodes

3.6.16 ClearTroubleCodes

Sends an OBDII Service "Clear/Reset Emission-Related Diagnostic Information" ($04) request into queue and waits to receive the responses. The purpose of this service is to provide a means for the external test equipment to command ECUs to clear all emission-related diagnostic information.

Syntax

Pascal OO

```
class function ClearTroubleCodes(
    CanChannel: TPOBDIICANHandle;
    Data: PTPOBDIIResponse;
    DataLen: Byte
): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_ClearTroubleCodes")]
public static extern TPOBDIIStatus ClearTroubleCodes(
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIICANHandle CanChannel,
    [In, Out]
    TPOBDIIResponse[] Data,
    byte DataLen);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_ClearTroubleCodes")]
static TPOBDIIStatus ClearTroubleCodes(
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIICANHandle CanChannel,
      [Out] array<TPOBDIIResponse>^ Data,
      Byte DataLen);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_ClearTroubleCodes")> _
Public Shared Function ClearTroubleCodes( _
```

```
    <MarshalAs(UnmanagedType.U1)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <[In](), Out()> ByVal Data As TPOBDIIResponse(), _
    ByVal DataLen As Byte) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Data	An array of TPOBDIIResponse structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the method ClearTroubleCodes on the channel POBDII_USBBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;
byte bufferLength = 8;
TPOBDIIResponse[] buffer = new TPOBDIIResponse[8];

// Send OBDII Service $04 request
result = OBDIIApi.ClearTroubleCodes(OBDIIApi.POBDII_USBBUS1, buffer, bufferLength);
if (result == TPOBDIIStatus.POBDII_ERROR_OK)
{
    MessageBox.Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].ERRORNR == TPOBDIIError.POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE)
    MessageBox.Show("Request received no response.");
else
```

```
    // An error occurred
    MessageBox.Show("An error occured.");
```

C++/CLR

```
TPOBDIIStatus result;
Byte bufferLength = 8;
array<TPOBDIIResponse>^ buffer = gcnew array<TPOBDIIResponse>(8);

// Send OBDII Service $04 request
result = OBDIIApi::ClearTroubleCodes(OBDIIApi::POBDII_USBBUS1, buffer,
bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox::Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox::Show("Request received no response.");
else
    // An error occurred
    MessageBox::Show("An error occured.");
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim bufferLength As Byte = 8
Dim buffer(bufferLength) As TPOBDIIResponse

' Send OBDII Service $04 request
result = OBDIIApi.ClearTroubleCodes(OBDIIApi.POBDII_USBBUS1, buffer, bufferLength)
If (result = TPOBDIIStatus.POBDII_ERROR_OK) Then
    MessageBox.Show("Request received responses.")
    ' search and remove unused responses
    For j As Integer = 0 To bufferLength - 1
        If (buffer(j).ERRORNR = TPOBDIIError.POBDII_R_NOT_USED) Then
            ' unused response, stop
            Exit For
        Else
            ' process response
        End If
    Next
ElseIf (result = TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE) Then
    MessageBox.Show("Request received no response.")
Else
    ' An error occurred
    MessageBox.Show("An error occured.")
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  bufferLength: byte;
  buffer: array [0..7] of TPOBDIIResponse;
  j: integer;

begin
  bufferLength := 8;

  // Send OBDII Service $04 request
  result := TObdiiApi.ClearTroubleCodes(TObdiiApi.POBDII_USBBUS1, @buffer, bufferLength);
  if (result = POBDII_ERROR_OK) then
  begin
    MessageBox(0, 'Request received responses.', 'Success', MB_OK);
    // search and remove unused responses
    for j := 0 To bufferLength - 1 do
    begin
      if (buffer[j].ERRORNR = POBDII_R_NOT_USED) then
        // unused response, stop
        break
      else
        // process response
        ;
    end
  end
  else if (result = POBDII_ERROR_NO_MESSAGE) then
    MessageBox(0, 'Request received no response.', 'Success', MB_OK)
  else
    // An error occurred
    MessageBox(0, 'An error occured', 'Error', MB_OK)
end;
```

See also: TOBDIIResponse on page 13

Plain function version: OBDII_ClearTroubleCodes

3.6.17 RequestTestResults

Sends an OBDII Service “Request On-Board Monitoring Results for Specific Monitored Systems” ($06) request into queue and waits to receive the responses. The purpose of this service is to allow access to the results for on-board diagnostic monitoring tests of specific components/systems that are continuously monitored (e.g. misfire monitoring for gasoline vehicles) and non-continuously monitored (e.g. catalyst system).

Note: This service includes functionality of service $05 “Request Oxygen Sensor Monitoring Test Results”.

Syntax

Pascal OO

```
class function RequestTestResults(
    CanChannel: TPOBDIICANHandle;
    OBDMid: TPOBDIIOBDMid;
    Data: PTPOBDIIMonitorData;
    DataLen: Byte
): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestTestResults")]
public static extern TPOBDIIStatus RequestTestResults(
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIICANHandle CanChannel,
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIIOBDMid OBDMid,
    [In, Out]
    TPOBDIIMonitorData[] Data,
    byte DataLen);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestTestResults")]
static TPOBDIIStatus RequestTestResults(
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIICANHandle CanChannel,
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIOBDMid OBDMid,
      [Out] array<TPOBDIIMonitorData>^ Data,
      Byte DataLen);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_RequestTestResults")> _
Public Shared Function RequestTestResults( _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal OBDMid As TPOBDIIOBDMid, _
    <[In](), Out()> ByVal Data As TPOBDIIMonitorData(), _
    ByVal DataLen As Byte) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Obdmid	The On-Board Monitoring Identifier to request.
Data	An array of TPOBDIIMonitoringData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application

POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the method RequestTestResults on the channel POBDII_USBBUS1 with the OBDMID 01. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;
byte bufferLength = 8;
TPOBDIIMonitorData[] buffer = new TPOBDIIMonitorData[8];

// Send OBDII Service $06 request with OBDMID 01
result = OBDIIApi.RequestTestResults(OBDIIApi.POBDII_USBBUS1, 0x01, buffer,
bufferLength);
if (result == TPOBDIIStatus.POBDII_ERROR_OK)
{
    MessageBox.Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == TPOBDIIError.POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE)
    MessageBox.Show("Request received no response.");
else
    // An error occurred
    MessageBox.Show("An error occured.");
```

C++/CLR

```
TPOBDIIStatus result;
Byte bufferLength = 8;
array<TPOBDIIMonitorData>^ buffer = gcnew array<TPOBDIIMonitorData>(8);

// Send OBDII Service $06 request with OBDMID 01
result = OBDIIApi::RequestTestResults(OBDIIApi::POBDII_USBBUS1, 0x01, buffer,
bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox::Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
```

```
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox::Show("Request received no response.");
else
    // An error occurred
    MessageBox::Show("An error occured.");
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim bufferLength As Byte = 8
Dim buffer(bufferLength) As TPOBDIIMonitorData

' Send OBDII Service $06 request with OBDMID 01
result = OBDIIApi.RequestTestResults(OBDIIApi.POBDII_USBBUS1, &H1, buffer,
bufferLength)
If (result = TPOBDIIStatus.POBDII_ERROR_OK) Then
    MessageBox.Show("Request received responses.")
    ' search and remove unused responses
    For j As Integer = 0 To bufferLength - 1
        If (buffer(j).RESPONSE.ERRORNR = TPOBDIIError.POBDII_R_NOT_USED) Then
            ' unused response, stop
            Exit For
        Else
            ' process response
        End If
    Next
ElseIf (result = TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE) Then
    MessageBox.Show("Request received no response.")
Else
    ' An error occurred
    MessageBox.Show("An error occured.")
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  bufferLength: byte;
  buffer: array [0..7] of TPOBDIIMonitorData;
  j: integer;

begin
  bufferLength := 8;

  // Send OBDII Service $06 request with OBDMID 01
  result := TObdiiApi.RequestTestResults(TObdiiApi.POBDII_USBBUS1, $01, @buffer, bufferLength);
  if (result = POBDII_ERROR_OK) then
  begin
```

```
    MessageBox(0, 'Request received responses.', 'Success', MB_OK);
    // search and remove unused responses
    for j := 0 To bufferLength - 1 do
    begin
      if (buffer[j].RESPONSE.ERRORNR = POBDII_R_NOT_USED) then
        // unused response, stop
        break
      else
        // process response
        ;
    end
  end
  else if (result = POBDII_ERROR_NO_MESSAGE) then
    MessageBox(0, 'Request received no response.', 'Success', MB_OK)
  else
    // An error occurred
    MessageBox(0, 'An error occured', 'Error', MB_OK)
end;
```

See also: TPOBDIIMonitorData on page 18

Plain function version: OBDII_RequestTestResults

3.6.18 RequestPendingTroubleCodes

Sends an OBDII Service “Request Emission-Related Diagnostic Trouble Codes Detected During Current or Last Completed Driving Cycle” ($07) request into queue and waits to receive the responses. The purpose of this service is to enable the external test equipment to obtain “pending” diagnostic trouble codes detected during current or last completed driving cycle for emission-related components/systems.

Syntax

Pascal OO

```
class function RequestPendingTroubleCodes(
    CanChannel: TPOBDIICANHandle;
    Data: PTPOBDIIDTCData;
    DataLen: Byte
): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestPendingTroubleCodes")]
public static extern TPOBDIIStatus RequestPendingTroubleCodes(
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIICANHandle CanChannel,
    [In, Out]
    TPOBDIIDTCData[] Data,
    byte DataLen);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestPendingTroubleCodes")]
static TPOBDIIStatus RequestPendingTroubleCodes(
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIICANHandle CanChannel,
      [Out] array<TPOBDIIDTCData>^ Data,
      Byte DataLen);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_RequestPendingTroubleCodes")> _
Public Shared Function RequestPendingTroubleCodes( _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <[In](), Out()> ByVal Data As TPOBDIIDTCData(), _
    ByVal DataLen As Byte) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Data	An array of TPOBDIIDTC structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the method RequestPendingTroubleCodes on the channel POBDII_USBBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;
byte bufferLength = 8;
TPOBDIIDTCData[] buffer = new TPOBDIIDTCData[8];

// Send OBDII Service $07 request
result = OBDIIApi.RequestPendingTroubleCodes(OBDIIApi.POBDII_USBBUS1, buffer,
bufferLength);
if (result == TPOBDIIStatus.POBDII_ERROR_OK)
{
    MessageBox.Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
```

```
    {
        if (buffer[j].RESPONSE.ERRORNR == TPOBDIIError.POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE)
    MessageBox.Show("Request received no response.");
else
    // An error occurred
    MessageBox.Show("An error occured.");
```

C++/CLR

```
TPOBDIIStatus result;
Byte bufferLength = 8;
array<TPOBDIIDTCData>^ buffer = gcnew array<TPOBDIIDTCData>(8);

// Send OBDII Service $07 request
result = OBDIIApi::RequestPendingTroubleCodes(OBDIIApi::POBDII_USBBUS1, buffer,
bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox::Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox::Show("Request received no response.");
else
    // An error occurred
    MessageBox::Show("An error occured.");
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim bufferLength As Byte = 8
Dim buffer(bufferLength) As TPOBDIIDTCData

' Send OBDII Service $07 request
result = OBDIIApi.RequestPendingTroubleCodes(OBDIIApi.POBDII_USBBUS1, buffer,
bufferLength)
If (result = TPOBDIIStatus.POBDII_ERROR_OK) Then
    MessageBox.Show("Request received responses.")
```

```
    ' search and remove unused responses
    For j As Integer = 0 To bufferLength - 1
        If (buffer(j).RESPONSE.ERRORNR = TPOBDIIError.POBDII_R_NOT_USED) Then
            ' unused response, stop
            Exit For
        Else
            ' process response
        End If
    Next
ElseIf (result = TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE) Then
    MessageBox.Show("Request received no response.")
Else
    ' An error occurred
    MessageBox.Show("An error occured.")
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  bufferLength: byte;
  buffer: array [0..7] of TPOBDIIDTCData;
  j: integer;

begin
  bufferLength := 8;

  // Send OBDII Service $07 request
  result := TObdiiApi.RequestPendingTroubleCodes(TObdiiApi.POBDII_USBBUS1, @buffer, bufferLength);
  if (result = POBDII_ERROR_OK) then
  begin
    MessageBox(0, 'Request received responses.', 'Success', MB_OK);
    // search and remove unused responses
    for j := 0 To bufferLength - 1 do
    begin
      if (buffer[j].RESPONSE.ERRORNR = POBDII_R_NOT_USED) then
        // unused response, stop
        break
      else
        // process response
        ;
    end
  end
  else if (result = POBDII_ERROR_NO_MESSAGE) then
    MessageBox(0, 'Request received no response.', 'Success', MB_OK)
  else
    // An error occurred
    MessageBox(0, 'An error occured', 'Error', MB_OK)
end;
```

See also: TPOBDIIDTCData on page 17

Plain function version: OBDII_RequestPendingTroubleCodes

3.6.19 RequestControlOperation

Sends an OBDII Service “Request Control of On-Board System, Test or Component” ($08) request into queue and waits to receive the responses. The purpose of this service is to enable the external test equipment to control the operation of an on-board system, test or component.

Syntax

Pascal OO

```
class function RequestControlOperation(
    CanChannel: TPOBDIICANHandle;
    Tid: TPOBDIITid;
    Data: PTPOBDIIResponse;
    DataLen: Byte
): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestControlOperation")]
public static extern TPOBDIIStatus RequestControlOperation(
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIICANHandle CanChannel,
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIITid Tid,
    [In, Out]
    TPOBDIIResponse[] Data,
    byte DataLen);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestControlOperation")]
static TPOBDIIStatus RequestControlOperation(
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIICANHandle CanChannel,
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIITid Tid,
      [Out] array<TPOBDIIResponse>^ Data,
      Byte DataLen);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_RequestControlOperation")> _
Public Shared Function RequestControlOperation( _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal Tid As TPOBDIITid, _
   <[In](), Out()> ByVal Data As TPOBDIIResponse(), _
    ByVal DataLen As Byte) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Tid	The Test Identifier to request
Data	An array of TPOBDIIMonitoringData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the method RequestControlOperation on the channel POBDII_USBBUS1 with TID 01. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;
byte bufferLength = 8;
TPOBDIIResponse[] buffer = new TPOBDIIResponse[8];

// Send OBDII Service $08 request with TID 01
result = OBDIIApi.RequestControlOperation(OBDIIApi.POBDII_USBBUS1, 0x01, buffer,
bufferLength);
if (result == TPOBDIIStatus.POBDII_ERROR_OK)
{
    MessageBox.Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].ERRORNR == TPOBDIIError.POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE)
    MessageBox.Show("Request received no response.");
else
    // An error occurred
    MessageBox.Show("An error occured.");
```

C++/CLR

```
TPOBDIIStatus result;
Byte bufferLength = 8;
array<TPOBDIIResponse>^ buffer = gcnew array<TPOBDIIResponse>(8);

// Send OBDII Service $08 request with TID 01
result = OBDIIApi::RequestControlOperation(OBDIIApi::POBDII_USBBUS1, 0x01, buffer,
bufferLength);
```

```
if (result == POBDII_ERROR_OK)
{
    MessageBox::Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox::Show("Request received no response.");
else
    // An error occurred
    MessageBox::Show("An error occured.");
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim bufferLength As Byte = 8
Dim buffer(bufferLength) As TPOBDIIResponse

' Send OBDII Service $08 request with TID 01
result = OBDIIApi.RequestControlOperation(OBDIIApi.POBDII_USBBUS1, &H1, buffer,
bufferLength)
If (result = TPOBDIIStatus.POBDII_ERROR_OK) Then
    MessageBox.Show("Request received responses.")
    ' search and remove unused responses
    For j As Integer = 0 To bufferLength - 1
        If (buffer(j).ERRORNR = TPOBDIIError.POBDII_R_NOT_USED) Then
            ' unused response, stop
            Exit For
        Else
            ' process response
        End If
    Next
ElseIf (result = TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE) Then
    MessageBox.Show("Request received no response.")
Else
    ' An error occurred
    MessageBox.Show("An error occured.")
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  bufferLength: byte;
  buffer: array [0..7] of TPOBDIIResponse;
  j: integer;

begin
  bufferLength := 8;

  // Send OBDII Service $08 request with TID 01
  result := TObdiiApi.RequestControlOperation(TObdiiApi.POBDII_USBBUS1, $01, @buffer, bufferLength);
  if (result = POBDII_ERROR_OK) then
  begin
    MessageBox(0, 'Request received responses.', 'Success', MB_OK);
    // search and remove unused responses
    for j := 0 To bufferLength - 1 do
    begin
      if (buffer[j].ERRORNR = POBDII_R_NOT_USED) then
        // unused response, stop
        break
      else
        // process response
        ;
    end
  end
  else if (result = POBDII_ERROR_NO_MESSAGE) then
    MessageBox(0, 'Request received no response.', 'Success', MB_OK)
  else
    // An error occurred
    MessageBox(0, 'An error occured', 'Error', MB_OK)
end;
```

See also: TOBDIIResponse on page 13

Plain function version: OBDII_RequestControlOperation

3.6.20 RequestVehicleInformation

Sends an OBDII Service “RequestVehicleInformation” ($09) request into queue and waits to receive the responses. The purpose of this service is to enable the external test equipment to request vehicle-specific vehicle information such as Vehicle Identification Number (VIN) and Calibration IDs.

Syntax

Pascal OO

```
class function RequestVehicleInformation(
    CanChannel: TPOBDIICANHandle;
    InfoType: TPOBDIIInfoType;
    Data: PTPOBDIIInfoData;
    DataLen: Byte): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestVehicleInformation")]
public static extern TPOBDIIStatus RequestVehicleInformation(
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIICANHandle CanChannel,
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIIInfoType InfoType,
    [In, Out]
    TPOBDIIInfoData[] Data,
    byte DataLen);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestVehicleInformation")]
static TPOBDIIStatus RequestVehicleInformation(
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIICANHandle CanChannel,
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIIInfoType InfoType,
      [Out] array<TPOBDIIInfoData>^ Data,
      Byte DataLen);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_RequestVehicleInformation")> _
Public Shared Function RequestVehicleInformation( _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal InfoType As TPOBDIIInfoType, _
    <[In](), Out()> ByVal Data As TPOBDIIInfoData(), _
    ByVal DataLen As Byte) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
InfoType	The InfoType Identifier to request
Data	An array of TPOBDIIMonitoringData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the method RequestVehicleInformation on the channel POBDII_USBBUS1 with Infotype 02 (i.e. request Vehicle Identification Number). Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;
byte bufferLength = 8;
TPOBDIIInfoData[] buffer = new TPOBDIIInfoData[8];

// Send OBDII Service $09 request with InfoType 02
result = OBDIIApi.RequestVehicleInformation(OBDIIApi.POBDII_USBBUS1, 0x02, buffer,
bufferLength);
if (result == TPOBDIIStatus.POBDII_ERROR_OK)
{
    MessageBox.Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == TPOBDIIError.POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE)
    MessageBox.Show("Request received no response.");
else
    // An error occurred
    MessageBox.Show("An error occured.");
```

C++/CLR

```
TPOBDIIStatus result;
Byte bufferLength = 8;
array<TPOBDIIInfoData>^ buffer = gcnew array<TPOBDIIInfoData>(8);

// Send OBDII Service $09 request with InfoType 02
result = OBDIIApi::RequestVehicleInformation(OBDIIApi::POBDII_USBBUS1, 0x02,
buffer, bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox::Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
```

```
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox::Show("Request received no response.");
else
    // An error occurred
    MessageBox::Show("An error occured.");
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim bufferLength As Byte = 8
Dim buffer(bufferLength) As TPOBDIIInfoData

' Send OBDII Service $09 request with InfoType 02
result = OBDIIApi.RequestVehicleInformation(OBDIIApi.POBDII_USBBUS1, &H2, buffer,
bufferLength)
If (result = TPOBDIIStatus.POBDII_ERROR_OK) Then
    MessageBox.Show("Request received responses.")
    ' search and remove unused responses
    For j As Integer = 0 To bufferLength - 1
        If (buffer(j).RESPONSE.ERRORNR = TPOBDIIError.POBDII_R_NOT_USED) Then
            ' unused response, stop
            Exit For
        Else
            ' process response
        End If
    Next
ElseIf (result = TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE) Then
    MessageBox.Show("Request received no response.")
Else
    ' An error occurred
    MessageBox.Show("An error occured.")
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  bufferLength: byte;
  buffer: array [0..7] of TPOBDIIInfoData;
  j: integer;

begin
  bufferLength := 8;

  // Send OBDII Service $09 request with InfoType 02
  result := TObdiiApi.RequestVehicleInformation(TObdiiApi.POBDII_USBBUS1, $02, @buffer, bufferLength);
  if (result = POBDII_ERROR_OK) then
  begin
    MessageBox(0, 'Request received responses.', 'Success', MB_OK);
    // search and remove unused responses
    for j := 0 To bufferLength - 1 do
    begin
```

```
        if (buffer[j].RESPONSE.ERRORNR = POBDII_R_NOT_USED) then
          // unused response, stop
          break
        else
          // process response
          ;
      end
    end
    else if (result = POBDII_ERROR_NO_MESSAGE) then
      MessageBox(0, 'Request received no response.', 'Success', MB_OK)
    else
      // An error occurred
      MessageBox(0, 'An error occured', 'Error', MB_OK)
end;
```

See also: TPOBDIIInfoData on page 20

Plain function version: OBDII_RequestVehicleInformation

3.6.21 RequestPermanentTroubleCodes

Sends an OBDII Service “Request Emission-Related Diagnostic Trouble Codes with Permanent Status” ($0A) request into queue and waits to receive the responses. The purpose of this service is to enable the external test equipment to obtain all DTCs with “permanent DTC” status.

Syntax

Pascal OO

```
class function RequestPermanentTroubleCodes(
    CanChannel: TPOBDIICANHandle;
    Data: PTPOBDIIDTCData;
    DataLen: Byte): TPOBDIIStatus;
```

C#

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestPermanentTroubleCodes")]
public static extern TPOBDIIStatus RequestPermanentTroubleCodes(
    [MarshalAs(UnmanagedType.U1)]
    TPOBDIICANHandle CanChannel,
    [In, Out]
    TPOBDIIDTCData[] Data,
    byte DataLen);
```

C++ / CLR

```
[DllImport("PCAN-OBDII.dll", EntryPoint = "OBDII_RequestPermanentTroubleCodes")]
static TPOBDIIStatus RequestPermanentTroubleCodes(
      [MarshalAs(UnmanagedType::U1)]
      TPOBDIICANHandle CanChannel,
      [Out] array<TPOBDIIDTCData>^ Data,
      Byte DataLen);
```

Visual Basic

```
<DllImport("PCAN-OBDII.dll", EntryPoint:="OBDII_RequestPermanentTroubleCodes")> _
Public Shared Function RequestPermanentTroubleCodes( _
    <MarshalAs(UnmanagedType.U1)> _
    ByVal CanChannel As TPOBDIICANHandle, _
    <[In](), Out()> ByVal Data As TPOBDIIDTCData(), _
    ByVal DataLen As Byte) As TPOBDIIStatus
End Function
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Data	An array of TPOBDIIDTCData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the method RequestPermanentTroubleCodes on the channel POBDII_USBBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C#

```
TPOBDIIStatus result;
byte bufferLength = 8;
TPOBDIIDTCData[] buffer = new TPOBDIIDTCData[8];

// Send OBDII Service $0A
result = OBDIIApi.RequestPermanentTroubleCodes(OBDIIApi.POBDII_USBBUS1, buffer,
bufferLength);
if (result == TPOBDIIStatus.POBDII_ERROR_OK)
{
    MessageBox.Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == TPOBDIIError.POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
```

```
    }
}
else if (result == TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE)
    MessageBox.Show("Request received no response.");
else
    // An error occurred
    MessageBox.Show("An error occured.");
```

C++/CLR

```
TPOBDIIStatus result;
Byte bufferLength = 8;
array<TPOBDIIDTCData>^ buffer = gcnew array<TPOBDIIDTCData>(8);

// Send OBDII Service $0A
result = OBDIIApi::RequestPermanentTroubleCodes(OBDIIApi::POBDII_USBBUS1, buffer,
bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox::Show("Request received responses.");
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox::Show("Request received no response.");
else
    // An error occurred
    MessageBox::Show("An error occured.");
```

Visual Basic

```
Dim result As TPOBDIIStatus
Dim bufferLength As Byte = 8
Dim buffer(bufferLength) As TPOBDIIDTCData

' Send OBDII Service $0A
result = OBDIIApi.RequestPermanentTroubleCodes(OBDIIApi.POBDII_USBBUS1, buffer,
bufferLength)
If (result = TPOBDIIStatus.POBDII_ERROR_OK) Then
    MessageBox.Show("Request received responses.")
    ' search and remove unused responses
    For j As Integer = 0 To bufferLength - 1
        If (buffer(j).RESPONSE.ERRORNR = TPOBDIIError.POBDII_R_NOT_USED) Then
            ' unused response, stop
            Exit For
        Else
            ' process response
        End If
    Next
ElseIf (result = TPOBDIIStatus.POBDII_ERROR_NO_MESSAGE) Then
```

```
    MessageBox.Show("Request received no response.")
Else
    ' An error occurred
    MessageBox.Show("An error occured.")
End If
```

Pascal OO

```
var
  result: TPOBDIIStatus;
  bufferLength: byte;
  buffer: array [0..7] of TPOBDIIDTCData;
  j: integer;

begin
  bufferLength := 8;

  // Send OBDII Service $0A
  result := TObdiiApi.RequestPermanentTroubleCodes(TObdiiApi.POBDII_USBBUS1, @buffer, bufferLength);
  if (result = POBDII_ERROR_OK) then
  begin
    MessageBox(0, 'Request received responses.', 'Success', MB_OK);
    // search and remove unused responses
    for j := 0 To bufferLength - 1 do
    begin
      if (buffer[j].RESPONSE.ERRORNR = POBDII_R_NOT_USED) then
        // unused response, stop
        break
      else
        // process response
        ;
    end
  end
  else if (result = POBDII_ERROR_NO_MESSAGE) then
    MessageBox(0, 'Request received no response.', 'Success', MB_OK)
  else
    // An error occurred
    MessageBox(0, 'An error occured', 'Error', MB_OK)
end;
```

See also: TPOBDIIDTCData on page 17

Plain function version: OBDII_RequestPermanentTroubleCodes

3.7 Functions

The functions of the PCAN OBDII API are divided in 4 groups of functionality.

Connection

	Function	Description
	OBDII_Initialize	Initializes a POBDII Channel
	OBDII_Uninitialize	Uninitializes a POBDII Channel

Configuration

	Function	Description
	OBDII_SetValue	Sets a configuration or information value within a POBDII Channel

Information

	Function	Description
	OBDII_GetValue	Retrieves information from a POBDII Channel
	OBDII_GetStatus	Retrieves the current BUS status of a POBDII Channel
	OBDII_GetUnitAndScaling	Retrieves the unit and scaling information for a specified Unit and Scaling ID

Communication

	Function	Description
	OBDII_Reset	Resets the receive and transmit queues of a POBDII Channel
	OBDII_RequestCurrentData	Sends an OBDII Service $01 request into queue and waits to receive the responses
	OBDII_RequestFreezeFrameData	Sends an OBDII Service $02 request into queue and waits to receive the responses
	OBDII_RequestStoredTroubleCodes	Sends an OBDII Service $03 request into queue and waits to receive the responses
	OBDII_ClearTroubleCodes	Sends an OBDII Service $04 request into queue and waits to receive the responses
	OBDII_RequestTestResults	Sends an OBDII Service $06 request into queue and waits to receive the responses
	OBDII_RequestPendingTroubleCodes	Sends an OBDII Service $07 request into queue and waits to receive the responses
	OBDII_RequestControlOperation	Sends an OBDII Service $08 request into queue and waits to receive the responses
	OBDII_RequestVehicleInformation	Sends an OBDII Service $09 request into queue and waits to receive the responses
	OBDII_RequestPermanentTroubleCodes	Sends an OBDII Service $0A request into queue and waits to receive the responses

3.7.1 OBDII_Initialize

Initializes a POBDII Channel.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_Initialize(
      TPOBDIICANHandle CanChannel,
      TPOBDIIBaudrateInfo Baudrate = POBDII_BAUDRATE_AUTODETECT,
      TPOBDIIHWType HwType _DEF_ARG,
      DWORD IOPort _DEF_ARG,
      WORD Interrupt _DEF_ARG);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Baudrate	The speed for the communication (see TPOBDIIBaudrateInfo on page 27). The speed is limited to legislated-OBD baudrate or the autodetection value
HwType	The type of hardware (see TPOBDIIHwType on page 37)
IOPort	The I/O address for the parallel port
Interrupt	Interrupt number of the parallel port

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_ALREADY_INITIALIZED:	Indicates that the desired POBDII Channel is already in use.
POBDII_ERROR_UNSUPPORTED_ECUS:	Indicates that no ECUs where found during the autodetection mechanism.
POBDII_ERROR_OVERFLOW:	Maximum number of initialized channels reached.
POBDII_ERROR_CAN_ERROR:	This error flag states that the error is composed of a more precise PCAN-Basic error.

Remarks: As indicated by its name, the OBDII_Initialize function initiates a POBDII Channel, preparing it for communication within the CAN bus connected to it. Calls to the other functions will fail if they are used with a Channel handle, different than POBDII_NONEBUS, that has not been initialized yet. Each initialized channel should be released when it is not needed anymore.

Initializing a POBDII Channel means:

- to reserve the Channel for the calling application/process
- to detect the baudrate of the CAN bus (if requested with TPOBDIIBaudrateInfo. POBDII_BAUDRATE_AUTODETECT value)
- to allocate channel resources, like receive and transmit queues
- to forward initialization to PCAN-UDS, PCAN-ISO-TP API, and PCAN-Basic API, hence registering/connecting the Hardware denoted by the channel handle

The Initialization process will fail if an application tries to initialize a POBDII-Channel that has already been initialized within the same process.

Take in consideration that initializing a channel causes a reset of the CAN hardware. In this way errors like BUSOFF, BUSHEAVY, and BUSLIGHT, are removed.

The PCAN-OBD-2 API use the same function for initializations of both, Plug-And-Play and Not-Plug-And-Play hardware. The OBDII_Initialize function has three additional parameters that are only for the connection

of Non-Plug-And-Play hardware. With Plug-And-Play hardware, however, only two parameters are to be supplied. The remaining three are not evaluated.

Example

The following example shows the initialize and uninitialize processes for a Non-Plug-And-Play channel (channel 1 of the PCAN-DNG).

Note: The initialization specifies a baudrate thus skipping the auto-detection mechanism.

C++ / CLR

```
TPOBDIIStatus result;

// The Plug & Play Channel (PCAN-PCI) is initialized
result = OBDII_Initialize(POBDII_PCIBUS2);
if (result != POBDII_ERROR_OK)
      MessageBox(NULL, "Initialization failed", "Error", MB_OK);
else
      MessageBox(NULL, "PCAN-PCI (Ch-2) was initialized", "Success", MB_OK);

// All initialized channels are released
OBDII_Uninitialize(POBDII_NONEBUS);
```

See also: OBDII_Uninitialize below, OBDII_GetValue on page 106, Understanding PCAN-OBD-2 on page 6

Class-method: Initialize

3.7.2 OBDII_Uninitialize

Uninitializes a POBDII Channel.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_Uninitialize(
        TPOBDIICANHandle CanChannel);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel cannot be uninitialized because it was not found in the list of reserved channels of the calling application

Remarks: A POBDII Channel can be released using one of these possibilities:

- **Single-Release**: Given a handle of a POBDII channel initialized before with the function OBDII_Initialize. If the given channel can not be found then an error is returned
- **Multiple-Release**: Giving the handle value POBDII_NONEBUS which instructs the API to search for all channels initialized by the calling application and release them all. This option cause no errors if no hardware were uninitialized

Example

The following example shows the initialize and uninitialize processes for a Plug-And-Play channel (channel 2 of a PCAN-PCI hardware).

C++:

```
TPOBDIIStatus result;

// The Non-Plug & Play Channel (PCAN-DNG) is initialized
result = OBDII_Initialize(POBDII_PCIBUS2, POBDII_BAUDRATE_500K, 0, 0, 0);
if (result != POBDII_ERROR_OK)
      MessageBox(NULL, "Initialization failed", "Error", MB_OK);
else
      MessageBox(NULL, "PCAN-PCI (Ch-2) was initialized", "Success", MB_OK);

// Release channel
OBDII_Uninitialize(POBDII_PCIBUS2);
```

See also: OBDII_Initialize on page 103

Class-method: Uninitialize

3.7.3 OBDII_SetValue

Sets a configuration or information value within a POBDII Channel.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_SetValue(
      TPOBDIICANHandle CanChannel,
      TPOBDIIParameter Parameter,
      void* Buffer,
      DWORD BufferLength);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Parameter	The code of the value to be set (see TPOBDIIParameter on page 31)
Buffer	The buffer containing the value to be set
BufferLength	The length in bytes of the given buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel cannot be uninitialized because it was not found in the list of reserved channels of the calling application
POBDII_ERROR_WRONG_PARAM	Indicates that the parameters passed to the method are invalid. Check the value of 'Parameter' and assert it is compatible with an integer buffer

Remarks: Use the method SetValue to set configuration information or environment values of a POBDII Channel. Note that any calls with non OBDII parameters (ie. TPOBDIIParameter) will be forwarded to PCAN-UDS, PCAN-ISO-TP API, and PCAN-Basic API.

More information about the parameters and values that can be set can be found in Parameter Value Definitions.

Example

The following example shows the use of the function OBDII_SetValue on the channel POBDII_PCIBUS2 to enable debug mode.

Note: It is assumed that the channel was already initialized.

C++:

```
TPOBDIIStatus result;
unsigned int iBuffer = 0;

// Enable CAN DEBUG mode
iBuffer = POBDII_DEBUG_CAN;
result = OBDII_SetValue(POBDII_PCIBUS2, POBDII_PARAM_DEBUG, &iBuffer,
sizeof(unsigned int));
if (result != POBDII_ERROR_OK)
      MessageBox(NULL, "Failed to set value", "Error", MB_OK);
else
      MessageBox(NULL, "Value changed successfully ", "Success", MB_OK);
```

See also: OBDII_GetValue below

Class-method: GetValue

3.7.4 OBDII_GetValue

Retrieves information from a POBDII Channel.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_GetValue(
        TPOBDIICANHandle CanChannel,
        TPOBDIIParameter Parameter,
        void* Buffer,
        DWORD BufferLength);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Parameter	The code of the value to be set (see TPOBDIIParameter on page 31)
Buffer	The buffer to return the required value
BufferLength	The length in bytes of the given buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_WRONG_PARAM	Indicates that the parameters passed to the method are invalid. Check the value of 'Parameter' and assert it is compatible with a string buffer

Example

The following example shows the use of the function OBDII_GetValue on the channel POBDII_USBBUS1 to retrieve the number of connected and responding ECUs on the CAN bus. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIICANHandle CanChannel = POBDII_USBBUS1;
TPOBDIIStatus result;
unsigned int iBuffer = 0;
char strMsg[256];

// Get the number of connected ECUs
result = OBDII_GetValue(CanChannel, POBDII_PARAM_AVAILABLE_ECUS, &iBuffer,
sizeof(unsigned int));
if (result != POBDII_ERROR_OK)
      MessageBox(NULL, "Failed to get value", "Error", MB_OK);
else
{
      sprintf(strMsg, "%d", iBuffer);
      MessageBox(NULL, strMsg, "Success", MB_OK);
}
```

See also: OBDII_SetValue on page 105, TPOBDIIParameter on page 31, Parameter Value Definitions on page 124

Class-method: GetValue

3.7.5 OBDII_GetStatus

Gets the current BUS status of a POBDII Channel.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_GetStatus(
              TPOBDIICANHandle CanChannel);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_OK	Indicates that the status of the given POBDII channel is OK
POBDII_ERROR_BUSLIGHT	Indicates a bus error within the given POBDII Channel. The hardware is in bus-light status
POBDII_ERROR_BUSHEAVY	Indicates a bus error within the given POBDII Channel. The hardware is in bus-heavy status
POBDII_ERROR_BUSOFF	Indicates a bus error within the given POBDII Channel. The hardware is in bus-off status
POBDII_ERROR_NOT_INITIALIZED:	Indicates that the given POBDII channel cannot be used because it was not found in the list of reserved channels of the calling application

Remarks: When the hardware status is bus-off, an application cannot communicate anymore. Consider using the PCAN-Basic property PCAN_BUSOFF_AUTORESET which instructs the API to automatically reset the CAN controller when a bus-off state is detected.

Another way to reset errors like bus-off, bus-heavy and bus-light, is to uninitialize and initialize again the channel used. This causes a hardware reset.

Example

The following example shows the use of the function OBDII_GetStatus on the channel POBDII_PCIBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;

// Check the status of the PCI Channel
result = OBDII_GetStatus(POBDII_PCIBUS1);
switch (result)
{
case POBDII_ERROR_BUSLIGHT:
      MessageBox(NULL, "PCAN-PCI (Ch-1): Handling a BUS-LIGHT status...",
"Success", MB_OK);
      break;
case POBDII_ERROR_BUSHEAVY:
      MessageBox(NULL, "PCAN-PCI (Ch-1): Handling a BUS-HEAVY status...",
"Success", MB_OK);
      break;
case POBDII_ERROR_BUSOFF:
      MessageBox(NULL, "PCAN-PCI (Ch-1): Handling a BUS-OFF status...", "Success",
MB_OK);
      break;
case POBDII_ERROR_OK:
      MessageBox(NULL, "PCAN-PCI (Ch-1): Status is OK", "Success", MB_OK);
      break;
default:
      // An error occurred);
      MessageBox(NULL, "Failed to retrieve status", "Error", MB_OK);
      break;
}
```

Class-method: GetStatus

3.7.6 OBDII_Reset

Resets the receive and transmit queues of a POBDII Channel.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_Reset(
        TPOBDIICANHandle CanChannel);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application

Remarks: Calling this function ONLY clears the queues of a Channel. A reset of the CAN controller doesn't take place.

Example

The following example shows the use of the function OBDII_Reset on the channel POBDII_PCIBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;

// The PCI Channel is reset
result = OBDII_Reset(POBDII_PCIBUS1);
if (result != POBDII_ERROR_OK)
{
      // An error occurred
      MessageBox(NULL, "An error occured", "Error", MB_OK);
}
else
      MessageBox(NULL, "PCAN-PCI (Ch-1) was reset", "Success", MB_OK);
```

See also: OBDII_Uninitialize on page 104

Class-method: Reset

3.7.7 OBDII_GetUnitAndScaling

Retrieves information from a Unit and Scaling Identifier.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_GetUnitAndScaling(
      BYTE id,
      TPOBDIIUnitAndScaling * unitAndScaling);
```

Parameters

Parameters	Description
Id	The Unit and Scaling Identifier to retrieve information from
UnitAndScanling	A buffer to store the TPOBDIIUnitAndScaling information

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application

Example

The following example shows the use of the function OBDII_GetUnitAndScaling with the Voltage ID (0x0A). Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;
TPOBDIIUnitAndScaling unitAndScaling;
char strMsg[256];

// Get Unit and Scaling information
result = OBDII_GetUnitAndScaling(0x0A, &unitAndScaling);
if (result != POBDII_ERROR_OK)
{
      // An error occurred
      MessageBox(NULL, "An error occured", "Error", MB_OK);
}
else
{
      sprintf(strMsg, "Unit: %s", unitAndScaling.UNIT);
      MessageBox(NULL, strMsg, "Success", MB_OK);
}
```

See also: OBDII_RequestTestResults on page 115

Class-method: GetUnitAndScaling

3.7.8 OBDII_RequestCurrentData

Sends an OBDII Service “Request Current Powertrain Diagnostic Data” ($01) request into queue and waits to receive the responses. The purpose of this service is to allow access to current emission-related data values, including analogue inputs and outputs, digital inputs and outputs, and system status information.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_RequestCurrentData(
      TPOBDIICANHandle CanChannel,
      TPOBDIIPid Pid,
      TPOBDIIParamData* Data,
      BYTE DataLen);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Pid	The Parameter Identifier to request
Data	An array of TPOBDIIParamData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the method function OBDII_RequestCurrentData on the channel POBDII_USBBUS1 with PID 01. Depending on the result, a message will be shown to the user. If responses are received, a loop is set to handle valid responses.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;
BYTE bufferLength = 8;
TPOBDIIParamData buffer[8];

// Send OBDII Service $01 request
result = OBDII_RequestCurrentData(POBDII_USBBUS1, 0x01, buffer, bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox(NULL, "Request received responses.", "Success", MB_OK);
    // loop through responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
                  // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
      MessageBox(NULL, "Request received no response.", "Success", MB_OK);
else
    // An error occurred
      MessageBox(NULL, "An error occured", "Error", MB_OK);
```

See also: TPOBDIIParamData on page 14

Class-method: RequestCurrentData

3.7.9 OBDII_RequestFreezeFrameData

Sends an OBDII Service “Request Powertrain Freeze Frame Data” ($02) request into queue and waits to receive the responses. The purpose of this service is to allow access to emission-related data values in a freeze frame.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_RequestFreezeFrameData(
      TPOBDIICANHandle CanChannel,
      TPOBDIIPid Pid,
      BYTE Frame,
      TPOBDIIParamData* Data,
      BYTE DataLen);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Pid	The Parameter Identifier to request
Frame	The Freeze Frame number
Data	An array of TPOBDIIParamData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the function OBDII_RequestFreezeFrameData on the channel POBDII_USBBUS1 with PID 02 and Freeze Frame 00 (i.e. read the DTC that caused the freeze frame data to be stored). Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;
BYTE bufferLength = 8;
TPOBDIIParamData buffer[8];

// Send OBDII Service $02 request (PID 02 and with frame 00)
result = OBDII_RequestFreezeFrameData(POBDII_USBBUS1, 0x02, 0x00, buffer,
bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox(NULL, "Request received responses.", "Success", MB_OK);
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
```

```
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox(NULL, "Request received no response.", "Success", MB_OK);
else
    // An error occurred
    MessageBox(NULL, "An error occured", "Error", MB_OK);
```

See also: TPOBDIIParamData on page 14

Class-method: RequestFreezeFrameData

3.7.10 OBDII_RequestStoredTroubleCodes

Sends an OBDII Service “Request Emission-Related Diagnostic Information” ($03) request into queue and waits to receive the responses. The purpose of this service is to enable the external test equipment to obtain “confirmed” emission-related DTCs.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_RequestStoredTroubleCodes(
      TPOBDIICANHandle CanChannel,
      TPOBDIIDTCData* Data,
      BYTE DataLen);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Data	An array of TPOBDIIDTCData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the function OBDII_RequestStoredTroubleCodes on the channel POBDII_USBBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;
BYTE bufferLength = 8;
TPOBDIIDTCData buffer[8];

// Send OBDII Service $03 request
result = OBDII_RequestStoredTroubleCodes(POBDII_USBBUS1, buffer, bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox(NULL, "Request received responses.", "Success", MB_OK);
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox(NULL, "Request received no response.", "Success", MB_OK);
else
    // An error occurred
    MessageBox(NULL, "An error occured", "Error", MB_OK);
```

See also: TPOBDIIDTCData on page 17

Class-method: RequestStoredTroubleCodes

3.7.11 OBDII_ClearTroubleCodes

Sends an OBDII Service “Clear/Reset Emission-Related Diagnostic Information” ($04) request into queue and waits to receive the responses. The purpose of this service is to provide a means for the external test equipment to command ECUs to clear all emission-related diagnostic information.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_ClearTroubleCodes(
        TPOBDIICANHandle CanChannel,
        TPOBDIIResponse* Response,
        BYTE DataLen);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Data	An array of TPOBDIIResponse structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the function OBDII_ClearTroubleCodes on the channel POBDII_USBBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;
BYTE bufferLength = 8;
TPOBDIIResponse buffer[8];

// Send OBDII Service $04 request
result = OBDII_ClearTroubleCodes(POBDII_USBBUS1, buffer, bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox(NULL, "Request received responses.", "Success", MB_OK);
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox(NULL, "Request received no response.", "Success", MB_OK);
else
    // An error occurred
    MessageBox(NULL, "An error occured", "Error", MB_OK);
```

See also: TOBDIIResponse on page 13

Class-method: ClearTroubleCodes

3.7.12 OBDII_RequestTestResults

Sends an OBDII Service “Request On-Board Monitoring Results for Specific Monitored Systems” ($06) request into queue and waits to receive the responses. The purpose of this service is to allow access to the results for on-board diagnostic monitoring tests of specific components/systems that are

continuously monitored (e.g. misfire monitoring for gasoline vehicles) and non-continuously monitored (e.g. catalyst system).

Note: This service includes functionality of service $05 “Request Oxygen Sensor Monitoring Test Results”.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_RequestTestResults(
        TPOBDIICANHandle CanChannel,
        TPOBDIIOBDMid OBDMid,
        TPOBDIIMonitorData* Data,
        BYTE DataLen);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Obdmid	The On-Board Monitoring Identifier to request
Data	An array of TPOBDIIMonitoringData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the function OBDII_RequestTestResults on the channel POBDII_USBBUS1 with the OBDMID 01. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;
BYTE bufferLength = 8;
TPOBDIIMonitorData buffer[8];

// Send OBDII Service $06 request with OBDMID 01
result = OBDII_RequestTestResults(POBDII_USBBUS1, 0x01, buffer, bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox(NULL, "Request received responses.", "Success", MB_OK);
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
```

```
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox(NULL, "Request received no response.", "Success", MB_OK);
else
    // An error occurred
    MessageBox(NULL, "An error occured", "Error", MB_OK);
```

See also: TPOBDIIMonitorData on page 18

Class-method: RequestTestResults

3.7.13 OBDII_RequestPendingTroubleCodes

Sends an OBDII Service “Request Emission-Related Diagnostic Trouble Codes Detected During Current or Last Completed Driving Cycle” ($07) request into queue and waits to receive the responses. The purpose of this service is to enable the external test equipment to obtain “pending” diagnostic trouble codes detected during current or last completed driving cycle for emission-related components/systems.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_RequestPendingTroubleCodes(
      TPOBDIICANHandle CanChannel,
      TPOBDIIDTCData* Data,
      BYTE DataLen);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Obdmid	The On-Board Monitoring Identifier to request
Data	An array of TPOBDIIDTC structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the function OBDII_RequestPendingTroubleCodes on the channel POBDII_USBBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;
BYTE bufferLength = 8;
TPOBDIIDTCData buffer[8];

// Send OBDII Service $07 request
result = OBDII_RequestPendingTroubleCodes(POBDII_USBBUS1, buffer, bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox(NULL, "Request received responses.", "Success", MB_OK);
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox(NULL, "Request received no response.", "Success", MB_OK);
else
    // An error occurred
    MessageBox(NULL, "An error occured", "Error", MB_OK);
```

See also: TPOBDIIDTCData on page 17

Class-method: RequestPendingTroubleCodes

3.7.14 OBDII_RequestControlOperation

Sends an OBDII Service “Request Control of On-Board System, Test or Component” ($08) request into queue and waits to receive the responses. The purpose of this service is to enable the external test equipment to control the operation of an on-board system, test or component.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_RequestControlOperation(
        TPOBDIICANHandle CanChannel,
        TPOBDIITid Tid,
        TPOBDIIResponse* Response,
        BYTE DataLen);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Tid	The Test Identifier to request
Data	An array of TPOBDIIMonitoringData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the function OBDII_RequestControlOperation on the channel POBDII_USBBUS1 with TID 01. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;
BYTE bufferLength = 8;
TPOBDIIResponse buffer[8];

// Send OBDII Service $08 request with TID 01
result = OBDII_RequestControlOperation(POBDII_USBBUS1, 0x01, buffer, bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox(NULL, "Request received responses.", "Success", MB_OK);
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox(NULL, "Request received no response.", "Success", MB_OK);
else
    // An error occurred
    MessageBox(NULL, "An error occured", "Error", MB_OK);
```

See also: TOBDIIResponse on page 13

Class-method: RequestControlOperation

3.7.15 OBDII_RequestVehicleInformation

Sends an OBDII Service “Request Vehicle Information” ($09) request into queue and waits to receive the responses. The purpose of this service is to enable the external test equipment to request vehicle-specific vehicle information such as Vehicle Identification Number (VIN) and Calibration IDs.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_RequestVehicleInformation(
        TPOBDIICANHandle CanChannel,
            TPOBDIIInfoType InfoType,
        TPOBDIIInfoData* Data,
            BYTE DataLen);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
InfoType	The InfoType Identifier to request
Data	An array of TPOBDIIMonitoringData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the function OBDII_RequestVehicleInformation on the channel POBDII_USBBUS1 with Infotype 02 (i.e. request Vehicle Identification Number). Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;
BYTE bufferLength = 8;
TPOBDIIInfoData buffer[8];

// Send OBDII Service $09 request with InfoType 02
result = OBDII_RequestVehicleInformation(POBDII_USBBUS1, 0x02, buffer,
bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox(NULL, "Request received responses.", "Success", MB_OK);
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
```

```
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox(NULL, "Request received no response.", "Success", MB_OK);
else
    // An error occurred
    MessageBox(NULL, "An error occured", "Error", MB_OK);
```

See also: TPOBDIIInfoData on page 20

Class-method: RequestVehicleInformation

3.7.16 OBDII_RequestPermanentTroubleCodes

Sends an OBDII Service "Request Emission-Related Diagnostic Trouble Codes with Permanent Status" ($0A) request into queue and waits to receive the responses. The purpose of this service is to enable the external test equipment to obtain all DTCs with "permanent DTC" status.

Syntax

C++

```
TPOBDIIStatus __stdcall OBDII_RequestPermanentTroubleCodes(
      TPOBDIICANHandle CanChannel,
      TPOBDIIDTCData* Data,
      BYTE DataLen);
```

Parameters

Parameters	Description
CanChannel	The handle of a POBDII Channel (see TPOBDIICANHandle on page 23)
Data	An array of TPOBDIIDTCData structure to store the OBDII responses
DataLen	Number of elements that can be stored in the Data buffer

Returns

The return value is a TPOBDIIStatus code. POBDII_ERROR_OK is returned on success. The typical errors in case of failure are:

POBDII_ERROR_NOT_INITIALIZED	Indicates that the given POBDII channel was not found in the list of initialized channels of the calling application
POBDII_ERROR_NO_MESSAGE	Indicates that no matching message was received
POBDII_ERROR_NO_MEMORY	Failed to allocate a buffer to store the expected responses

Remarks: User should always check the error code of the generic response to assert that the response data is valid.

Example

The following example shows the use of the function OBDII_RequestPermanentTroubleCodes on the channel POBDII_USBBUS1. Depending on the result, a message will be shown to the user.

Note: It is assumed that the channel was already initialized.

C++

```
TPOBDIIStatus result;
BYTE bufferLength = 8;
```

```
TPOBDIIDTCData buffer[8];

// Send OBDII Service $0A
result = OBDII_RequestPermanentTroubleCodes(POBDII_USBBUS1, buffer, bufferLength);
if (result == POBDII_ERROR_OK)
{
    MessageBox(NULL, "Request received responses.", "Success", MB_OK);
    // search and remove unused responses
    for (int j = 0; j < bufferLength; j++)
    {
        if (buffer[j].RESPONSE.ERRORNR == POBDII_R_NOT_USED)
        {
            // unused response, stop
            break;
        }
        else
        {
            // process response
        }
    }
}
else if (result == POBDII_ERROR_NO_MESSAGE)
    MessageBox(NULL, "Request received no response.", "Success", MB_OK);
else
    // An error occurred
    MessageBox(NULL, "An error occured", "Error", MB_OK);
```

See also: TPOBDIIDTCData on page 17

Class-method: RequestPermanentTroubleCodes

3.8 Definitions

The PCAN-Basic API defines the following values.

Name	Description
PCAN-OBD-2Handle Definitions	Defines the handles for the different PCAN channels
Parameter Value Definitions	Defines the possible values for setting and getting PCAN's environment information with the functions ODBII_SetValue and ODBII_GetValue

3.8.1 PCAN-OBD-2 Handle Definitions

Defines the handles for the different PCAN buses (Channels) within a class. This values are used as parameter where a TPOBDIICANHandle is needed.

Default/Undefined handle:

	Type	Constant	Value	Description
	TPOBDIICANHandle	POBDII_NONEBUS	0x0	Undefined/default value for a PCAN-ISO-TP Channel

Handles for the ISA Bus (Not Plug & Play):

	Type	Constant	Value	Description
	TPOBDIICANHandle	POBDII_ISABUS1	0x21	PCAN-ISA interface, channel 1
	TPOBDIICANHandle	POBDII_ISABUS2	0x22	PCAN-ISA interface, channel 2
	TPOBDIICANHandle	POBDII_ISABUS3	0x23	PCAN-ISA interface, channel 3
	TPOBDIICANHandle	POBDII_ISABUS4	0x24	PCAN-ISA interface, channel 4
	TPOBDIICANHandle	POBDII_ISABUS5	0x25	PCAN-ISA interface, channel 5
	TPOBDIICANHandle	POBDII_ISABUS6	0x26	PCAN-ISA interface, channel 6
	TPOBDIICANHandle	POBDII_ISABUS7	0x27	PCAN-ISA interface, channel 7
	TPOBDIICANHandle	POBDII_ISABUS8	0x28	PCAN-ISA interface, channel 8

Handles for the Dongle Bus (Not Plug & Play):

	Type	Constant	Value	Description
	TPOBDIICANHandle	POBDII_DNGBUS1	0x31	PCAN-Dongle/LPT interface, channel 1

Handles for the PCI Bus:

	Type	Constant	Value	Description
	TPOBDIICANHandle	POBDII_PCIBUS1	0x41	PCAN-PCI interface, channel 1
	TPOBDIICANHandle	POBDII_PCIBUS2	0x42	PCAN-PCI interface, channel 2
	TPOBDIICANHandle	POBDII_PCIBUS3	0x43	PCAN-PCI interface, channel 3
	TPOBDIICANHandle	POBDII_PCIBUS4	0x44	PCAN-PCI interface, channel 4
	TPOBDIICANHandle	POBDII_PCIBUS5	0x45	PCAN-PCI interface, channel 5

	TPOBDIICANHandle	POBDII_PCIBUS6	0x46	PCAN-PCI interface, channel 6
	TPOBDIICANHandle	POBDII_PCIBUS7	0x47	PCAN-PCI interface, channel 7
	TPOBDIICANHandle	POBDII_PCIBUS8	0x48	PCAN-PCI interface, channel 8

Handles for the USB Bus:

	Type	Constant	Value	Description
	TPOBDIICANHandle	POBDII_USBBUS1	0x51	PCAN-USB interface, channel 1
	TPOBDIICANHandle	POBDII_USBBUS2	0x52	PCAN-USB interface, channel 2
	TPOBDIICANHandle	POBDII_USBBUS3	0x53	PCAN-USB interface, channel 3
	TPOBDIICANHandle	POBDII_USBBUS4	0x54	PCAN-USB interface, channel 4
	TPOBDIICANHandle	POBDII_USBBUS5	0x55	PCAN-USB interface, channel 5
	TPOBDIICANHandle	POBDII_USBBUS6	0x56	PCAN-USB interface, channel 6
	TPOBDIICANHandle	POBDII_USBBUS7	0x57	PCAN-USB interface, channel 7
	TPOBDIICANHandle	POBDII_USBBUS8	0x58	PCAN-USB interface, channel 8

Handles for the PC_Card Bus:

	Type	Constant	Value	Description
	TPOBDIICANHandle	POBDII_PCCBUS1	0x61	PCAN-PC Card interface, channel 1
	TPOBDIICANHandle	POBDII_PCCBUS2	0x62	PCAN-PC Card interface, channel 2

Note: These definitions are constants values in an object oriented environment (Delphi, .NET Framework) and declared as defines in C++ and Pascal (plain API).

Hardware Type and Channels:

Not Plug & Play: The hardware channels of this kind are used as registered. This mean, for example, it is allowed to register the POBDII_ISABUS3 without having registered POBDII_ISA1 and POBDII_ISA2. It is a decision of each user, how to associate a POBDII-Channel (logical part) and a port/interrupt pair (physical part).

Plug & Play: For hardware handles of PCI, USB and PC-Card, the availability of the channels is determined by the count of hardware connected to a computer in a given moment, in conjunction with their internal handle. This means that having four PCAN-USB connected to a computer will let the user to connect the channels POBDII_USBBUS1 to POBDII_USBBUS4. The association of each channel with hardware is managed internally using the handle of hardware.

See also: Parameter Value Definitions below.

3.8.2 Parameter Value Definitions

Defines the possible values for setting and getting PCAN-OBD-2 environment information with the functions POBDII_SetValue and POBDII_GetValue.

Debug-Configuration Values

	Type	Constant	Value	Description
	Int32	POBDII_DEBUG_NONE	0	No CAN debug messages are being generated
	Int32	POBDII_DEBUG_CAN	1	CAN debug messages are written to the stdout output

Channel Availability Values

	Type	Constant	Value	Description
	Int32	POBDII_CHANNEL_UNAVAILABLE	0	The OBDII PCAN-Channel handle is illegal, or its associated hardware is not available
	Int32	POBDII_CHANNEL_AVAILABLE	1	The OBDII PCAN-Channel handle is valid to connect/initialize. Furthermore, for plug&play hardware, this means that the hardware is plugged-in
	Int32	POBDII_CHANNEL_OCCUPIED	2	The OBDII PCAN-Channel handle is valid, and is currently being used

Logging-Configuration Values

	Type	Constant	Value	Description
	Int32	POBDII_LOGGING_NONE	0	Disable logging
	Int32	POBDII_LOGGING_TO_FILE	1	Log to a file (log file is automatically with the current local time)
	Int32	POBDII_LOGGING_TO_STDOUT	2	Log to standard output

Baudrate-Configuration Values

	Type	Constant	Value	Description
	Int32	POBDII_BAUDRATE_NON_LEGISLATED	0	CAN BUS is initialized with a non legislated-OBDII baudrate. Note this is used only when returned by OBDII_GetValue function with parameter POBDII_PARAM_BAUDRATE
	Int32	POBDII_BAUDRATE_250K	1	250 kbit/s
	Int32	POBDII_BAUDRATE_500K	2	500 kbit/s
	Int32	POBDII_BAUDRATE_AUTODETECT	255 (0xFF)	Use autodetection to detect baudrate (used for initialization only)

CAN Identifier Length Values

	Type	Constant	Value	Description
	Int32	POBDII_CAN_ID_11BIT	11	11 Bit CAN Identifier length
	Int32	POBDII_CAN_ID_29BIT	29	29 Bit CAN Identifier length

Note: These definitions are constants values in an object oriented environment (Delphi, .NET Framework) and declared as defines in C++ and Pascal (plain API).

See also: TPOBDIIParameter on page 31, PCAN-OBD-2 Handle Definitions on page 123

4 Additional Information

PCAN is the platform for PCAN-OBD-2, PCAN-UDS and PCAN-Basic. In the following topics there is an overview of PCAN and the fundamental practice with the interface DLL CanApi2 (PCAN-API).

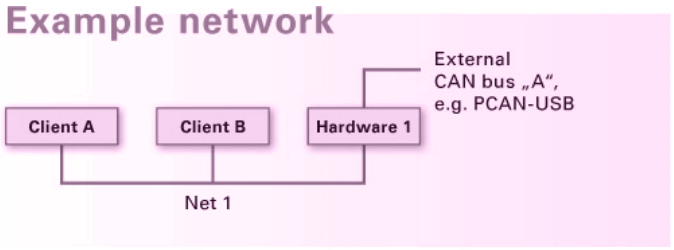
Name	Description
PCAN Fundamentals	This section contains an introduction to PCAN
PCAN-Basic	This section contains general information about the PCAN-Basic API
UDS und ISO-TP network addressing information	This section contains general information about the ISO-TP network addressing format

4.1 PCAN Fundamentals

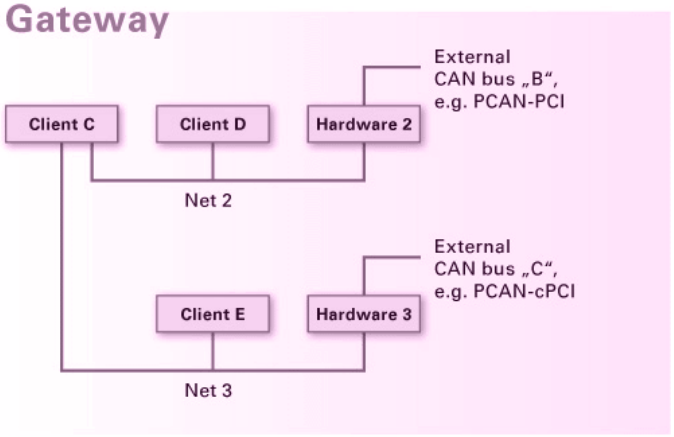
PCAN is a synonym for PEAK CAN APPLICATIONS and is a flexible system for planning, developing, and using a CAN Bus System. Developers as well as end users are getting a helpful and powerful product.

Basis for the communication between PCs and external hardware via CAN is a series of Windows Kernel Mode Drivers (Virtual Device Drivers) e.g. `PCAN_USB.SYS`, `PCAN_PCI.SYS`, `PCAN_xxx.SYS`. These drivers are the core of a complete CAN environment on a PC running Windows and work as interfaces between CAN software and PC-based CAN hardware. The drivers manage the entire data flow of every CAN device connected to the PC.

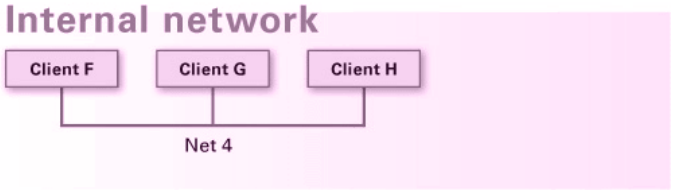
A user or administrator of a CAN installation gets access via the PCAN-Clients (short: Clients). Several parameters of processes can be visualized and changed with their help. The drivers allow the connection of several Clients at the same time.



Furthermore, several hardware components based on the SJA1000 CAN controller are supported by a PCAN driver. So-called Nets provide the logical structure for CAN busses, which are virtually extended into the PC. On the hardware side, several Clients can be connected, too. The following figures demonstrate different possibilities of Net configurations (also realizable at the same time):



Following rules apply to PCAN clients, nets and hardware:



- One Client can be connected to several Nets
- One Net provides several Clients
- One piece of hardware belongs to one Net
- One Net can include none or one piece of hardware
- A message from a transmitting Client is carried on to every other connected Client, and to the external bus via the connected CAN hardware
- A message received by the CAN hardware is received by every connected Client. However, Clients react only on those messages that pass their acceptance filter

Users of PCAN-View 3 do not have to define and manage Nets. If PCAN-View is instructed to connect directly to PCAN hardware, the application automatically creates a Net for the selected hardware, and automatically establishes a connection with this Net.

See also: PCAN-Basic below, ISO-TP Network Addressing Format on page 129

4.2 PCAN-Basic

PCAN-Basic is an Application Programming Interface for the use of a collection of Windows Device Drivers from PEAK-System, which allow the real-time connection of Windows applications to all CAN busses physically connected to a PC.

PCAN-Basic principal characteristics are:

- Information about the receive time of a CAN message
- Easy switching between different PCAN-Channels (PCAN-PC hardware)
- The possibility to control some parameters in the hardware, e.g. "Listen-Only" mode, automatic reset of the CAN controller, etc.
- The use of event notifications, for faster processing of incoming CAN messages
- An improved system for debugging operations
- The use of only one Dynamic Link Library (`PCANBasic.DLL`) for all supported hardware
- The possibility to connect more than 2 channels per PCAN-Device. The following list shows the PCAN-Channels that can be connected per PCAN-Device:

	PCAN-ISA	PCAN-Dongle	PCAN-PCI	PCAN-USB	PCAN-PC-Card	PCAN-LAN
Number of channels	8	1	16	16	2	16

Using the PCAN-Basic

The PCAN-basic offers the possibility to use several PCAN-Channels within the same application in an easy way. The communication process is divided in 3 phases: initialization, interaction and finalization of a PCAN-Channel.

Initialization: In order to do CAN communication using a channel, it is necessary to first initialize it. This is done making a call to the function CAN_Initialize (**class-method**: Initialize) or CAN_InitializeFD (**class-method**: InitializeFD) in case FD communication is desired.

Interaction: After a successful initialization, a channel is ready to communicate with the connected CAN bus. Further configuration is not needed. The functions CAN_Read and CAN_Write (**class-methods**: Read and Write) can be then used to read and write CAN messages. If the channel being used is FD capable and it was initialized using CAN_InitializedFD, then the functions to use are CAN_ReadFD and CAN_WriteFD (**class-methods**: ReadFD and WriteFD). If desired, extra configuration can be made to improve a communication session, like changing the message filter to target specific messages.

Finalization: When the communication is finished, the function CAN_Uninitialize (**class-method**: Uninitialize) should be called in order to release the PCAN-Channel and the resources allocated for it. In this way the channel is marked as "Free" and can be used from other applications.

Hardware and Drivers

Overview of the current PCAN hardware and device drivers:

Hardware	Plug-and-Play Hardware	Driver
PCAN-Dongle	No	Pcan_dng.sys
PCAN-ISA	No	Pcan_isa.sys
PCAN-PC/104	No	Pcan_isa.sys
PCAN-PCI	Yes	Pcan_pci.sys
PCAN-PCI Express	Yes	Pcan_pci.sys
PCAN-cPCI	Yes	Pcan_pci.sys
PCAN-miniPCI	Yes	Pcan_pci.sys
PCAN-PC/104-Plus	Yes	Pcan_pci.sys
PCAN-USB	Yes	Pcan_usb.sys
PCAN-USB Pro	Yes	Pcan_usb.sys
PCAN-USB Pro FD	Yes	Pcan_usb.sys
PCAN-PC Card	Yes	Pcan_pcc.sys
PCAN-Ethernet Gateway DR	Yes	Pcan_lan.sys
PCAN-Wireless Gateway DR	Yes	Pcan_lan.sys
PCAN- Wireless Gateway	Yes	Pcan_lan.sys
PCAN- Wireless Automotive Gateway DR	Yes	Pcan_lan.sys

See also: PCAN Fundamentals on page 126, ISO-TP Network Addressing Format on page 129.

4.3 OBDII, UDS, and ISO-TP Network Addressing Information

The PCAN-OBD-2 API is built on top of the UDS/ISO-TP API, the following configuration is automatically set when the API is loaded in order to do legislated OBD-communication:

- Only the normal addressing format is used in the case of 11 bit CAN identifiers
- Only the normal fixed addressing format is used in the case of 29 bit CAN identifiers
- ISO-TP blocksize parameter is defined to 0,
- ISO-TP SeperationTime parameter is defined to 0,
- ISO-TP WaitForTransmission parameter is defined to 0
- Since UDS API is already configured to allow legislated-OBD communication, no extra configuration is made (see UDS and ISO-TP Network Addressing Information)

4.3.1 UDS and ISO-TP Network Addressing Information

The UDS API makes use of the PCAN-ISO-TP API to receive and transmit UDS messages. When a PCAN-UDS Channel is initialized, the ISO-TP API is configured to allow the following communications:

- Functional request using 11 bits CAN identifier and normal addressing, from External Test Equipment address (PUDS_ISO_15765_4_ADDR_TEST_EQUIPMENT) to OBD functional address (PUDS_ISO_15765_4_ADDR_OBD_FUNCTIONAL),
- Physical requests and responses using 11 bits CAN identifier and normal addressing, between the External Test Equipment address (PUDS_ISO_15765_4_ADDR_TEST_EQUIPMENT) and standard ECU addresses (ECU #1 to #8)
- Communications with 29 bits CAN identifier and FIXED NORMAL addressing format
- Communications with 29 bits CAN identifier and MIXED addressing format
- Communications with 29 bits CAN identifier and ENHANCED addressing format

If an application requires other communication settings, it will have to be set with through the PCAN-ISO-TP API. Although PCAN-UDS and PCAN-ISO-TP define different types for CAN channels (respectively TPUDSCANHandle and TPCANTPHandle), they are both the same type. Once a PCAN-UDS channel is initialized, PCAN-ISO-TP specific functions (like CANTP_AddMapping) can be called with this PCAN-UDS channel.

4.3.2 ISO-TP Network Addressing Format

ISO-TP specifies three addressing formats to exchange data: normal, extended and mixed addressing. Each addressing requires a different number of CAN frame data bytes to encapsulate the addressing information associated with the data to be exchanged.

The following table sums up the mandatory configuration to the ISO-TP API for each addressing format:

Addressing Format	CAN ID Length	Mandatory Configuration Steps
Normal addressing PCANTP_FORMAT_NORMAL	11 bits	Define mappings with CANTP_AddMapping
	29 bits	Define mappings with CANTP_AddMapping
Normal fixed addressing PCANTP_FORMAT_FIXED_NORMAL	11 bits	Addressing is invalid
	29 bits	-
Extended addressing PCANTP_FORMAT_EXTENDED	11 bits	Define mappings with CANTP_AddMapping
	29 bits	Define mappings with CANTP_AddMapping
Mixed addressing PCANTP_FORMAT_MIXED	11 bits	Define mappings with CANTP_AddMapping
	29 bits	-

Addressing Format	CAN ID Length	Mandatory Configuration Steps
Enhanced addressing PCANTP_FORMAT_ENHANCED	11 bits	Addressing is invalid
	29 bits	-

A mapping allows an ISO-TP node to identify and decode CAN Identifiers, it binds a CAN ID to an ISO-TP network address information. CAN messages that cannot be identified are ignored by the API.

Mappings involving physically addressed communication are most usually defined in pairs: the first mapping defines outgoing communication (i.e. request messages from node A to node B) and the second to match incoming communication (i.e. responses from node B to node A).

Functionally addressed communication requires one mapping to transmit functionally addressed messages (i.e. request messages from node A to any node) and as many mappings as responding nodes.