

EDIABAS — API USER MANUAL

EDIABAS

Electronic Diagnostic Basic System

API User Manual

VERSION 6c

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APIUSER.DOC

Contents

- Contents2**
- 1. Revision history3**
- 2. Introduction4**
 - 2.1. About this manual.....4
 - 2.2. Notational conventions4
 - 2.3. Special features, terms, acronyms5
 - 2.4. Trademarks5
- 3. General Information6**
 - 3.1. API INCLUDE file6
 - 3.2. API Library7
- 4. Using the INCLUDE File and Library8**
 - 4.1. WIN32/16/CE Application Programs8
 - 4.1.1. Microsoft Visual C++ 6.08
 - 4.1.2. Microsoft Visual C++ 1.528
 - 4.1.3. Microsoft Visual Basic 6.0, 4.0, 3.09
 - 4.1.4. Microsoft eMbedded Visual C++ 4.0 SP2, 3.09
 - 4.1.5. DLL (Dynamic Link Library) Interface.....10
 - 4.2. SCO-UNIX Application Programs.....10
 - 4.3. QNX Application Programs10
- A. REFERENCES.....12**

1. Revision history

Version 3.0 First release

Version 4.1 Revised for EDIABAS V4.1.0

Version 5 Revised for EDIABAS V5.1.0

Version 5a Description of Borland C 4.5 interface

Version 5b Description of Visual Basic 4.0 interface

Version 5c Revised for WIN32 interface

Version 5d Extended for QNX

Version 6 EDIABAS V6.0.0

Version 6c Revised for EDIABAS V6.4.4

2. Introduction

2.1. About this manual

This manual describes how application, programs can be created and maintained with access to the Electronic Diagnostic Basic System (EDIABAS). It describes the use of the tools and the various options available. A general description of the interface is contained in [3]. A detailed description of all API functions can be found in [4]. General information about EDIABAS and about the ECU (Electronic Control Unit) description files (SGBDs) is described in [2].

2.2. Notational conventions

The following typographical conventions are used throughout this manual:

| Example | Description |
|--|--|
| SAMPLE.C | Uppercase denotes file names and operating system commands. |
| apiJob, APIREADY | Bold-faced type identifies keywords and operators of the language C/C++ as well as API functions and definitions These words must be written exactly as specified in syntax descriptions. |
| <i>expression</i> | Italics designate placeholders for values to be entered by the programmer; e.g., file names. |
| [option] | Words enclosed in square brackets may be optionally specified. |
| { result argument } | Curvy braces and vertical strokes characterize entries from which only one must be selected, except when in square brackets. |
| [constant...] job... | An ellipsis (three dots) which directly follows an expression indicates that several expressions of the same type can follow. |
| hallo="Test"; | This syntax designates examples, user entries, program outputs and error messages. |
| while() { . .} | A column or a row comprising three dots indicates that a section of an example was intentionally omitted. |
| [1] | Reference to a document in References. |

2.3. Special features, terms, acronyms

An explanation of all the abbreviations used in this and all other EDIABAS documentation can be found in the publication "EDIABAS User Manual", chapter "GLOSSARY".

2.4. Trademarks

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3. General Information

The API (Application Programming Interface) programming interface of EDIABAS can be seen by the application program as a collection of functions, the API functions. ANSI C is used as the programming language .

Ready-to-use API libraries are available from Softing for the EDIABAS target system. These libraries must be included in the application programs.

All files necessary for creating application programs with access to EDIABAS are supplied on the diskette APPLICATION DEVELOPMENT KIT.

3.1. API INCLUDE file

In order to call an API function in an application program, the C/C++ compiler requires the prototypes of the corresponding API function. The prototypes of all API functions are contained in INCLUDE file API.H. In addition to the prototypes, the INCLUDE file contains all constants and type definitions which EDIABAS uses and which are required by the application program.

Instruction for inclusion of INCLUDE file API.H in a C source file:

```
#include "api.h"
```

Instructions for inclusion of INCLUDE file API.H in a C++ source file:

```
extern "C" {  
#include "api.h"  
}
```

These instructions are to be specified in every C/C++ source file of the application program in which API functions are called or constants (or type definitions) are required from API.H are required.

The API.H search path is to be specified so that the C/C++ compiler can find the INCLUDE file. The corresponding compiler option is compiler dependent and can be found in the description of the compiler being used.

3.2. API Library

All API functions of a target system are contained in a library. This library is to be specified to the linker during linking for inclusion of the files. This is linker-dependent and usually accomplished in a MAKE file.

4. Using the INCLUDE File and Library

4.1. WIN32/16/CE Application Programs

SOFTING supports the following development environments for creating application programs with EDIABAS access:

- Microsoft Visual C++ 6.0 (WIN32)
- Microsoft Visual C++ 1.52 (WIN16)

- Microsoft Visual Basic 6.0 (WIN32)
- Microsoft Visual Basic 4.0 (WIN32 and WIN16)
- Microsoft Visual Basic 3.0 (WIN16)

INCLUDE file API.H resides in EDIABAS directory API.

4.1.1. Microsoft Visual C++ 6.0

In addition to the project-specific compiler options, the compiler is to be called with the following options for every source file having access to API functions:

```
/I<path for api.h>
```

Compiler option `/I` determines the search path for API.H.

Microsoft Visual C++ 6.0 is supported for single- and multi-thread-mode. The API libraries APIW32.LIB (single-thread) and APIW32MT.LIB (multi-thread) resides in EDIABAS directory APIWIN32.

Example for creating an application program EXAMPLE.EXE:

```
cl /Ic:\ediabas\api example.c /link  
c:\ediabas\api\win32\apiw32.lib
```

4.1.2. Microsoft Visual C++ 1.52

In addition to the project-specific compiler options, the compiler is to be called with the following options for every source file having access to API functions:

```
/AL /G2 /GA /I<path for api.h>
```


Compiler option **/I** determines the search path for API.H. Compiler option **/AL** determines the memory model LARGE. Options **/G2 /GA** determine the generation.

Microsoft Visual C++ 1.52 is supported in the memory model LARGE. The API library resides in the EDIABAS directory API\WIN.

Example for creating an application program EXAMPLE.EXE:

```
cl /AL /G2 /GA /Ic:\ediabas\api example.c /link c:\ediabas\api\win\apiw.lib
```

4.1.3. Microsoft Visual Basic 6.0, 4.0, 3.0

The corresponding application program can access EDIABAS by adding the module API.BAS in a Visual Basic project.

The module API.BAS resides in the EDIABAS directories:

- API\WIN32\VB60 (for Visual Basic 6.0)
- API\WIN32\VB40 (for Visual Basic 4.0)
- API\WIN16\VB40 (for Visual Basic 4.0)
- API\WIN16\VB30 (for Visual Basic 3.0)

and offers an API interface limited in functional scope. The APIVB.DLL (WIN16) or APIVB32.DLL (WIN32) contained in the RUNTIME SYSTEM is required at runtime for accessing EDIABAS.

4.1.4. Microsoft eMbedded Visual C++ 4.0 SP2, 3.0

In addition to the project-specific compiler options, the compiler is to be called with the following options for every source file having access to API functions:

```
/I<path of api.h>
```

Compiler option **/I** determines the search path for API.H.

Microsoft eMbedded Visual C++ is only supported for Pocket PC 2002 and 2003 (API library APICE.LIB):

- APICE.LIB / Windows CE 4.2 (for eMbedded Visual C++ 4.0 SP2)
- APICE.LIB / Windows CE 3.0 (for eMbedded Visual C++ 3.0)

4.1.5.DLL (Dynamic Link Library) Interface

EDIABAS can also be accessed directly via the DLL interface from API.DLL or API32.DLL/APICE.DLL with every development tool suitable for this purpose. The DLL interface, however, does not offer the complete scope of functions for the API interface.

The C functional declarations of the DLL interface are contained in INCLUDE file APIDLL.H.

File APICALLS.C contains the source code of the libraries APIW32.LIB/APICE.LIB and APIW.LIB, in which the complete API functionality is also available under other C/C++ development tools.

Files APIDLL.H and APICALLS.C are contained in the EDIABAS directories API\WIN32 and API\WIN.

4.2. SCO-UNIX Application Programs

SOFTING supports the compiler cc for creating application programs with EDIABAS access.

INCLUDE file API.H is contained in catalog /USR/EDIABAS/API/INCLUDE.

In addition to the project-specific compiler options, the compiler must be executed with the following option for every source file having access to API functions:

```
-I /usr/ediabas/api/include
```

Compiler option **-I** determines the search path for API.H.

API library LIBAPI.A is contained in catalog /USR/EDIABAS/API/LIB.

Example for creating an application program:

```
cc -I /usr/ediabas/api/include example.c  
/usr/ediabas/api/lib/libapi.a
```

4.3. QNX Application Programs

SOFTING supports the compiler cc for creating application programs with EDIABAS access.

EDIABAS — API USER MANUAL

The INCLUDE file API.H resides in catalog /USR/EDIABAS/API/INCLUDE.

In addition to the project-specific compiler options, use the following compiler options for each source file with access to API functions:

```
-j -I /usr/ediabas/api/include
```

Compiler option **-I** defines the search path for API.H.

The API library LIBAPI.A is to be specified for the linker and the library MQUEUE for the message queue server. The API library LIBAPI.A resides in catalog /USR/EDIABAS/API/LIB.

Example how to create an application program:

```
cc -j -I /usr/ediabas/api/include beispiel.c  
/usr/ediabas/api/lib/libapi.a -l mqueue
```

A. REFERENCES

- [1] EDIABAS: BEST User Manual
- [2] EDIABAS: User Manual
- [3] EDIABAS: API Interface Description
- [4] EDIABAS: API Function Reference