VS1000/Interfacing Reference Manual

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4 VS1000/Interfacing Data Structure Documentation

4.1 __sfpos Struct Reference

`#include <stdio.h>`

Data Fields

- short **_pos** [4]

4.1.1 Detailed Description

Definition at line 17 of file stdio.h.

4.1.2 Field Documentation

4.1.2.1 short __sfpos::_pos[4]

Definition at line 18 of file stdio.h.

The documentation for this struct was generated from the following file:

- **stdio.h**

4.2 AUDIOPTR Struct Reference

`#include <audio.h>`

Data Fields

- __y **s_int16** * **wr**
- __y **s_int16** * **rd**
- **u_int16 forwardModulo**
- **s_int16 leftVol**
- **s_int16 rightVol**
- **s_int16 underflow**

4.2.1 Detailed Description

Definition at line 61 of file audio.h.

4.2.2 Field Documentation

4.2.2.1 u_int16 AUDIOPTR::forwardModulo

Definition at line 64 of file audio.h.

4.2.2.2 s_int16 AUDIOPTR::leftVol

Definition at line 65 of file audio.h.

4.2.2.3 __y s_int16* AUDIOPTR::rd

Definition at line 63 of file audio.h.

4.2.2.4 s_int16 AUDIOPTR::rightVol

Definition at line 66 of file audio.h.

4.2.2.5 s_int16 AUDIOPTR::underflow

Definition at line 67 of file audio.h.

4.2.2.6 __y s_int16* AUDIOPTR::wr

Definition at line 62 of file audio.h.

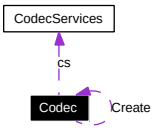
The documentation for this struct was generated from the following file:

- **audio.h**

4.3 Codec Struct Reference

`#include <codec.h>`

Collaboration diagram for Codec:



Data Fields

- **u_int16 version**
- **Codec** *(* **Create**)(void)
- enum **CodecError**(* **Decode**)(struct **Codec** *cod, struct **CodecServices** ***cs**, const char **errorString)
- void(* **Delete**)(struct **Codec** *cod)
- **CodecServices** * **cs**

4.3.1 Detailed Description

Standard Codec wrap-up structure

Definition at line 154 of file codec.h.

4.3.2 Field Documentation

4.3.2.1 struct Codec*(* Codec::Create)(void)

Create and allocate space for codec.

4.3.2.2 struct CodecServices* Codec::cs

A pointer that the codec may or may not fill or use.

Definition at line 168 of file codec.h.

4.3.2.3 enum CodecError(* Codec::Decode)(struct Codec *cod, struct CodecServices *cs, const char **errorString)

Decode file. Upon success or a negative number, Codec has succeeded. With a positive number, there has been an error. Upon return, an error string is also returned.

4.3.2.4 void(* Codec::Delete)(struct Codec *cod)

Free all resources allocated for codec.

4.3.2.5 u_int16 Codec::version

Version number. 8 MSBs contain version number, 8 LSBs size of the structure in words.

Definition at line 157 of file codec.h.

The documentation for this struct was generated from the following file:

- **codec.h**

4.4 CodecServices Struct Reference

`#include <codec.h>`

Data Fields

- **u_int16 version**
- **u_int16**(* **Read**)(struct **CodecServices** *cs, **u_int16** *ptr, **u_int16** firstOdd, **u_int16** bytes)
- **u_int32**(* **Skip**)(struct **CodecServices** *cs, **u_int32** bytes)

- **s_int16**(* **Seek**)(struct **CodecServices** *cs, **s_int32** offset, **s_int16** whence)
- **s_int32**(* **Tell**)(struct **CodecServices** *cs)
- **s_int16**(* **Output**)(struct **CodecServices** *cs, **s_int16** *data, **s_int16** n)
- void(* **Comment**)(struct **CodecServices** *cs, **u_int16** c)
- void(* **Spectrum**)(struct **CodecServices** *cs, **s_int16** __y *data, **s_int16** n, **s_int16** ch)
- **u_int32 fileSize**
- **u_int32 fileLeft**
- **u_int16 goTo**
- **s_int16 cancel**
- **s_int32 playTimeSeconds**
- **s_int32 playTimeSamples**
- **u_int32 playTimeTotal**
- **u_int32 sampleRate**
- **u_int16 channels**
- enum ChannelMatrix **matrix** [MAX_SOURCE_CHANNELS]
- **u_int32 avgBitRate**
- **u_int32 currBitRate**
- **u_int32 peakBitRate**
- **s_int16 gain**
- **u_int16 fastForward**

4.4.1 Detailed Description

Codec(p. 5) Services structure. The caller must provide values for elements *Read*, *Seek*, *Tell* and *fileSize*. The caller may also set *move* and *cancel* for control operations. Note that the prototypes for *Read*, *Seek* and *Tell* are on purpose the same as they are for **stdio.h**(p. 113) functions **fread()**(p. 117), **fseek()**(p. 117) and **ftell()**(p. 117).

Definition at line 53 of file codec.h.

4.4.2 Field Documentation

4.4.2.1 u_int32 CodecServices::avgBitRate

Average bitrate. Updated by the codec. May change during playback.

Definition at line 123 of file codec.h.

4.4.2.2 s_int16 CodecServices::cancel

Request codec to cancel playing current file. To request cancellation, set this to a positive value. When the codec has finished cancelling, it will clear this value and return ceCancelled.

Definition at line 105 of file codec.h.

4.4.2.3 u_int16 CodecServices::channels

Number of channels. Updated by the codec.

Definition at line 119 of file codec.h.

4.4.2.4 void(* CodecServices::Comment)(struct CodecServices *cs, u_int16 c)

Offers comments fields one character at the time. Special code 0x4000U is reserved for end-of-line. 0xC000U means end of comments.

4.4.2.5 u_int32 CodecServices::currBitRate

Current bitrate. Updated by the codec. May change during playback.

Definition at line 125 of file codec.h.

4.4.2.6 u_int16 CodecServices::fastForward

Request codec to fast forward current file. If set, playback is requested at fastForward times normal playback speed. To stop fast forwarding, set value to 1 or 0.

Definition at line 134 of file codec.h.

4.4.2.7 u_int32 CodecServices::fileLeft

Bytes left in a file. If set to 0xFFFFFFFFU, then the file is a stream and never ends.

Definition at line 87 of file codec.h.

4.4.2.8 u_int32 CodecServices::fileSize

File size in bytes. If set to 0xFFFFFFFFU, then the file is a stream and the file size is not known.

Definition at line 84 of file codec.h.

4.4.2.9 s_int16 CodecServices::gain

Volume gain recommended by codec in 1/2 dB steps. Updated by the codec.

Definition at line 130 of file codec.h.

4.4.2.10 u_int16 CodecServices::goTo

Point to move to in an audio file in seconds. When set to anything other than 0xFFFFU, the codec has the responsibility to jump to that point. The codec has the freedom of deciding for itself the actual landing point in the file. When the codec has reached its destination it will clear this variable, and the actual position in the file can be read from *playTimeSeconds*. If the codec cannot

jump to a given point (e.g. the file is a stream and the jump point would require jumping backwards), goTo is silently cleared to 0xFFFFU.

Definition at line 99 of file codec.h.

4.4.2.11 enum ChannelMatrix CodecServices::matrix[MAX_SOURCE_CHANNELS]

Channel matrix. Updated by the codec.

Definition at line 121 of file codec.h.

4.4.2.12 s_int16(* CodecServices::Output)(struct CodecServices *cs, s_int16 *data, s_int16 n)

Output to audio file. *data* is a pointer to the data. There are *n chan* channel samples (Example: $n = 32$, *cs->chan* $= 2$, there are a total of 64 samples in *data*).

4.4.2.13 u_int32 CodecServices::peakBitRate

Peak bitrate of the file. Updated by the codec. May change during playback.

Definition at line 128 of file codec.h.

4.4.2.14 s_int32 CodecServices::playTimeSamples

Samples played since last full second. Updated by the codec. If set to -1, the codec doesn't know where it is in the file.

Definition at line 111 of file codec.h.

4.4.2.15 s_int32 CodecServices::playTimeSeconds

Playback time from beginning of file in seconds. Updated by the codec. If set to -1, the codec doesn't know where it is in the file.

Definition at line 108 of file codec.h.

4.4.2.16 u_int32 CodecServices::playTimeTotal

Total playback time in seconds. Updated by the codec. May be a changing estimate if an exact figure isn't available. 0xFFFFFFFFU if there is no information available.

Definition at line 115 of file codec.h.

4.4.2.17 u_int16(* CodecServices::Read)(struct CodecServices *cs, u_int16 *ptr, u_int16 firstOdd, u_int16 bytes)

Read data from a file. If *firstOdd* is set, only the LSB of the first word is filled. If the last word is not completely filled (either *firstOdd* set or *bytes* is odd, but not both), only the MSB is changed.

4.4.2.18 u_int32 CodecServices::sampleRate

Sample rate. Updated by the codec. 0 if unknown.

Definition at line 117 of file codec.h.

4.4.2.19 s_int16(* CodecServices::Seek)(struct CodecServices *cs, s_int32 offset, s_int16 whence)

Seek in a file. *offset* and *whence* are equivalent with their **fseek()**(p. 117) counterparts. If *Seek* is NULL, the input is a stream and cannot be seeked.

4.4.2.20 u_int32(* CodecServices::Skip)(struct CodecServices *cs, u_int32 bytes)

Skip data in a file. This should also be supported for streams.

4.4.2.21 void(* CodecServices::Spectrum)(struct CodecServices *cs, s_int16 __y *data, s_int16 n, s_int16 ch)

Spectrum analyzer hook.

4.4.2.22 s_int32(* CodecServices::Tell)(struct CodecServices *cs)

Tell location in a file (in bytes).

4.4.2.23 u_int16 CodecServices::version

Version number. 8 MSBs contain version number, 8 LSBs size of the structure in words.

Definition at line 56 of file codec.h.

The documentation for this struct was generated from the following file:

- **codec.h**

4.5 EARSPEAKER Struct Reference

`#include <audio.h>`

Data Fields

- **u_int16 Freq**
- **u_int16 Disable**

- **u_int16 Setting**
- **s_int16 Old**
- **u_int16 longFrames**

4.5.1 Detailed Description

Definition at line 92 of file audio.h.

4.5.2 Field Documentation

4.5.2.1 u_int16 EARSPEAKER::Disable

Definition at line 94 of file audio.h.

4.5.2.2 u_int16 EARSPEAKER::Freq

Definition at line 93 of file audio.h.

4.5.2.3 u_int16 EARSPEAKER::longFrames

Definition at line 97 of file audio.h.

4.5.2.4 s_int16 EARSPEAKER::Old

Definition at line 96 of file audio.h.

4.5.2.5 u_int16 EARSPEAKER::Setting

Definition at line 95 of file audio.h.

The documentation for this struct was generated from the following file:

- **audio.h**

4.6 FATINFO Struct Reference

`#include <fat.h>`

Data Fields

- **u_int16 IS_FAT_32**
- **u_int32 fatStart**
- **u_int32 rootStart**
- **u_int32 dataStart**
- **u_int32 currentSector**
- **u_int32 fileSize**
- **u_int16 fatSectorsPerCluster**

- **u_int16 BPB_RootEntCnt**
- **u_int16 FilSysType**
- **s_int32 totSize**
- **u_int16 fileName** [6]
- **u_int16 gFileNum** [2]
- **s_int32 filePos**
- **s_int32 parentDir**
- const **u_int32** * **supportedSuffixes**
- **u_int16 longFileName** [FAT_LFN_SIZE/2]

4.6.1 Detailed Description

Definition at line 44 of file fat.h.

4.6.2 Field Documentation

4.6.2.1 u_int16 FATINFO::BPB_RootEntCnt

Definition at line 52 of file fat.h.

4.6.2.2 u_int32 FATINFO::currentSector

Sector in minifatBuffer

Definition at line 49 of file fat.h.

4.6.2.3 u_int32 FATINFO::dataStart

File Allocation Table start

Definition at line 48 of file fat.h.

4.6.2.4 u_int16 FATINFO::fatSectorsPerCluster

Definition at line 51 of file fat.h.

4.6.2.5 u_int32 FATINFO::fatStart

Fat start sector number

Definition at line 46 of file fat.h.

4.6.2.6 u_int16 FATINFO::fileName[6]

Current file name

Definition at line 55 of file fat.h.

4.6.2.7 s_int32 FATINFO::filePos

Current file byte read position

Definition at line 57 of file fat.h.

4.6.2.8 u_int32 FATINFO::fileSize

Current file size

Definition at line 50 of file fat.h.

4.6.2.9 u_int16 FATINFO::FilSysType

"\p21" for FAT12

Definition at line 53 of file fat.h.

4.6.2.10 u_int16 FATINFO::gFileNum[2]

File number counters

Definition at line 56 of file fat.h.

4.6.2.11 u_int16 FATINFO::IS_FAT_32

FAT32 or FAT16/FAT12

Definition at line 45 of file fat.h.

4.6.2.12 u_int16 FATINFO::longFileName[FAT_LFN_SIZE/2]

Long filename, if exists

Definition at line 61 of file fat.h.

4.6.2.13 s_int32 FATINFO::parentDir

Parent directory start sector

Definition at line 58 of file fat.h.

4.6.2.14 u_int32 FATINFO::rootStart

Root director start

Definition at line 47 of file fat.h.

4.6.2.15 const u_int32* FATINFO::supportedSuffixes

NULL or list of supported suffixes.

Definition at line 59 of file fat.h.

4.6.2.16 s_int32 FATINFO::totSize

Total sectors

Definition at line 54 of file fat.h.

The documentation for this struct was generated from the following file:

- **fat.h**

4.7 FmfMeta Struct Reference

`#include <mapperflash.h>`

Data Fields

- **u_int16 ecc01**
- **u_int16 ecc2AndType**
- **u_int16 reservedAndBadBlock**
- **u_int16 unused**
- **u_int32 logicalPageNo**
- **s_int32 newBranch**

4.7.1 Detailed Description

Meta data

Definition at line 30 of file mapperflash.h.

4.7.2 Field Documentation

4.7.2.1 u_int16 FmfMeta::ecc01

Definition at line 31 of file mapperflash.h.

4.7.2.2 u_int16 FmfMeta::ecc2AndType

Definition at line 32 of file mapperflash.h.

4.7.2.3 u_int32 FmfMeta::logicalPageNo

Definition at line 35 of file mapperflash.h.

4.7.2.4 s_int32 FmfMeta::newBranch

Definition at line 36 of file mapperflash.h.

4.7.2.5 u_int16 FmfMeta::reservedAndBadBlock

Definition at line 33 of file mapperflash.h.

4.7.2.6 u_int16 FmfMeta::unused

Definition at line 34 of file mapperflash.h.

The documentation for this struct was generated from the following file:

- **mapperflash.h**

4.8 FRAGMENT Struct Reference

`#include <fat.h>`

Data Fields

- **u_int32 start**
- **u_int16 size**

4.8.1 Detailed Description

Definition at line 67 of file fat.h.

4.8.2 Field Documentation

4.8.2.1 u_int16 FRAGMENT::size

fragment size in sectors

Definition at line 69 of file fat.h.

4.8.2.2 u_int32 FRAGMENT::start

high bit set if last fragment

Definition at line 68 of file fat.h.

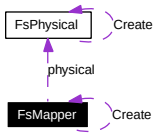
The documentation for this struct was generated from the following file:

- **fat.h**

4.9 FsMapper Struct Reference

`#include <mapper.h>`

Collaboration diagram for FsMapper:



Data Fields

- **u_int16 version**
- **u_int16 blockSize**
- **u_int32 blocks**
- **u_int16 cacheBlocks**
- **FsMapper** *(* **Create**)(struct **FsPhysical** *__physical__, **u_int16** cacheSize)
- **s_int16**(* **Delete**)(struct **FsMapper** *map)
- **s_int16**(* **Read**)(struct **FsMapper** *map, **u_int32** firstBlock, **u_int16 blocks**, **u_int16** *data)
- **s_int16**(* **Write**)(struct **FsMapper** *map, **u_int32** firstBlock, **u_int16 blocks**, **u_int16** *data)
- **s_int16**(* **Free**)(struct **FsMapper** *map, **u_int32** firstBlock, **u_int32 blocks**)
- **s_int16**(* **Flush**)(struct **FsMapper** *map, **u_int16** hard)
- **FsPhysical** * **physical**

4.9.1 Detailed Description

File system Mapper layer structure. Each Mapper should begin its own internal structure with this common structure.

Definition at line 38 of file mapper.h.

4.9.2 Field Documentation

4.9.2.1 u_int32 FsMapper::blocks

How many usable blocks in the whole system

Definition at line 45 of file mapper.h.

4.9.2.2 u_int16 FsMapper::blockSize

How many 16-bit words in a block

Definition at line 43 of file mapper.h.

4.9.2.3 u_int16 FsMapper::cacheBlocks

How many blocks can be cached by the mapper

Definition at line 47 of file mapper.h.

4.9.2.4 struct FsMapper*(* FsMapper::Create)(struct FsPhysical *physical, u_int16 cacheSize)

Create a mapper.

4.9.2.5 s_int16(* FsMapper::Delete)(struct FsMapper *map)

Delete a mapper

4.9.2.6 s_int16(* FsMapper::Flush)(struct FsMapper *map, u_int16 hard)

Flush all data. if *hard* is non-zero, all potential journals are also flushed.

4.9.2.7 s_int16(* FsMapper::Free)(struct FsMapper *map, u_int32 firstBlock, u_int32 blocks)

Free blocks (implementation must be able to go fastly through large free areas.

4.9.2.8 struct FsPhysical* FsMapper::physical

Pointer to this Mapper's Physical layer.

Definition at line 65 of file mapper.h.

4.9.2.9 s_int16(* FsMapper::Read)(struct FsMapper *map, u_int32 firstBlock, u_int16 blocks, u_int16 *data)

Read blocks

4.9.2.10 u_int16 FsMapper::version

Version number. 8 MSBs contain version number, 8 LSBs size of the structure in words.

Definition at line 41 of file mapper.h.

4.9.2.11 s_int16(* FsMapper::Write)(struct FsMapper *map, u_int32 firstBlock, u_int16 blocks, u_int16 *data)

Write blocks

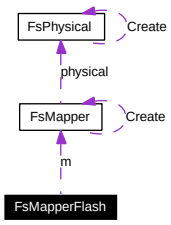
The documentation for this struct was generated from the following file:

- **mapper.h**

4.10 FsMapperFlash Struct Reference

`#include <mapperflash.h>`

Collaboration diagram for FsMapperFlash:



Data Fields

- **FsMapper m**
- **u_int32 root**
- **s_int16 blocksPerErase**
- **s_int32 lastUsed**
- FmfCache * **cache**
- **s_int32 physPages**
- **s_int32 emptyBlock** [FS_MAP_NON_FULL]
- **s_int16 nonFullLimit**
- **s_int32 skipped**
- **s_int32 freed**

4.10.1 Detailed Description

A Flash Mapper specific structure that contains required extensions to the basic Mapper structure.

Definition at line 46 of file mapperflash.h.

4.10.2 Field Documentation

4.10.2.1 s_int16 FsMapperFlash::blocksPerErase

Logical blocks in erase unit.

Definition at line 52 of file mapperflash.h.

4.10.2.2 struct FmfCache* FsMapperFlash::cache

Internal cache.

Definition at line 56 of file mapperflash.h.

4.10.2.3 s_int32 FsMapperFlash::emptyBlock[FS_MAP_NON_FULL]

Blocks that are not (almost) completely full with FMF_TYPE_DATA

Definition at line 60 of file mapperflash.h.

4.10.2.4 s_int32 FsMapperFlash::freed

How many blocks have been cleaned

Definition at line 66 of file mapperflash.h.

4.10.2.5 s_int32 FsMapperFlash::lastUsed

Last new physical address.

Definition at line 54 of file mapperflash.h.

4.10.2.6 struct FsMapper FsMapperFlash::m

Public structure that is common to all mappers.

Definition at line 48 of file mapperflash.h.

4.10.2.7 s_int16 FsMapperFlash::nonFullLimit

How many pages in a block must be free for the block to be non-full

Definition at line 62 of file mapperflash.h.

4.10.2.8 s_int32 FsMapperFlash::physPages

Total of physical pages.

Definition at line 58 of file mapperflash.h.

4.10.2.9 u_int32 FsMapperFlash::root

Root node physical address.

Definition at line 50 of file mapperflash.h.

4.10.2.10 s_int32 FsMapperFlash::skipped

How many blocks have been skipped while cleaning.

Definition at line 64 of file mapperflash.h.

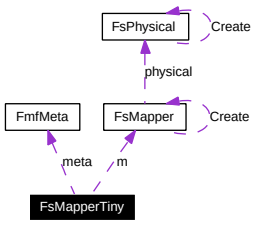
The documentation for this struct was generated from the following file:

- **mapperflash.h**

4.11 FsMapperTiny Struct Reference

`#include <mappertiny.h>`

Collaboration diagram for FsMapperTiny:



Data Fields

- **FsMapper m**
- **s_int32 root**
- **s_int16 blocksPerErase**
- **s_int32 firstBlock**
- **s_int32 lastBlock**
- **s_int32 logToPhys**
- **FmfMeta meta**

4.11.1 Detailed Description

A Tiny Flash Mapper specific structure that contains required extensions to the basic Tiny Flash Mapper structure. The Tiny Flash Mapper is a read-only system that has been optimized to access consecutive blocks using only a few words of memory. For such a file performance is very good, but if several file are open, performance may be slow.

Definition at line 36 of file mappertiny.h.

4.11.2 Field Documentation

4.11.2.1 s_int16 FsMapperTiny::blocksPerErase

Logical blocks in erase unit.

Definition at line 42 of file mappertiny.h.

4.11.2.2 s_int32 FsMapperTiny::firstBlock

First logical in access list.

Definition at line 44 of file mappertiny.h.

4.11.2.3 s_int32 FsMapperTiny::lastBlock

Last logical in access list.

Definition at line 46 of file mappertiny.h.

4.11.2.4 s_int32 FsMapperTiny::logToPhys

Logical block to physical page conversion number.

Definition at line 48 of file mappertiny.h.

4.11.2.5 struct FsMapper FsMapperTiny::m

Public structure that is common to all mappers.

Definition at line 38 of file mappertiny.h.

4.11.2.6 struct FmfMeta FsMapperTiny::meta

Meta info (buffer space)

Definition at line 50 of file mappertiny.h.

4.11.2.7 s_int32 FsMapperTiny::root

Root node physical address.

Definition at line 40 of file mappertiny.h.

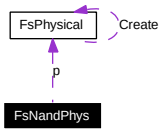
The documentation for this struct was generated from the following file:

- **mappertiny.h**

4.12 FsNandPhys Struct Reference

`#include <vsNand.h>`

Collaboration diagram for FsNandPhys:



Data Fields

- **FsPhysical p**
- **u_int16 nandType**
- **u_int16 waitns**

4.12.1 Detailed Description

Definition at line 33 of file vsNand.h.

4.12.2 Field Documentation

4.12.2.1 u_int16 FsNandPhys::nandType

NAND type, small/large-page, number of address bytes

Definition at line 37 of file vsNand.h.

4.12.2.2 struct FsPhysical FsNandPhys::p

Physical basic structure

Definition at line 35 of file vsNand.h.

4.12.2.3 u_int16 FsNandPhys::waitns

read/write time in ns

Definition at line 38 of file vsNand.h.

The documentation for this struct was generated from the following file:

- **vsNand.h**

4.13 FsPhysical Struct Reference

`#include <physical.h>`

Collaboration diagram for FsPhysical:

Data Fields

- **u_int16 version**
- **u_int16 pageSize**
- **u_int16 eraseBlockSize**
- **u_int16 eraseBlocks**
- **FsPhysical** *(* **Create**)(**u_int16** param)
- **s_int16**(* **Delete**)(struct **FsPhysical** *p)
- **s_int16**(* **Read**)(struct **FsPhysical** *p, **s_int32** firstPage, **u_int16** pages, **u_int16** *data, **u_int16** *meta)
- **s_int16**(* **Write**)(struct **FsPhysical** *p, **s_int32** firstPage, **u_int16** pages, **u_int16** *data, **u_int16** *meta)
- **s_int16**(* **Erase**)(struct **FsPhysical** *p, **s_int32** page)
- **s_int16**(* **FreeBus**)(struct **FsPhysical** *p)
- **s_int16**(* **Reinitialize**)(struct **FsPhysical** *p)

4.13.1 Detailed Description

File system Physical layer basic structure. Each Physical layer internal structure should begin with this.

Definition at line 28 of file physical.h.

4.13.2 Field Documentation

4.13.2.1 struct FsPhysical*(* FsPhysical::Create)(u_int16 param)

Creates a physical layer. param is a device-specific parameter, usually 0.

4.13.2.2 s_int16(* FsPhysical::Delete)(struct FsPhysical *p)

Delete a physical layer

4.13.2.3 s_int16(* FsPhysical::Erase)(struct FsPhysical *p, s_int32 page)

Erase block. *firsPage* is the page number of the first page in the block.

4.13.2.4 u_int16 FsPhysical::eraseBlocks

The size of the memory unit in erasable blocks

Definition at line 37 of file physical.h.

4.13.2.5 u_int16 FsPhysical::eraseBlockSize

In pages

Definition at line 35 of file physical.h.

4.13.2.6 s_int16(* FsPhysical::FreeBus)(struct FsPhysical *p)

Frees the bus for other devices

4.13.2.7 u_int16 FsPhysical::pageSize

In 16-bit words

Definition at line 33 of file physical.h.

4.13.2.8 s_int16(* FsPhysical::Read)(struct FsPhysical *p, s_int32 firstPage, u_int16 pages, u_int16 *data, u_int16 *meta)

Read pages. meta is physical-specific data and not necessarily used. If either data or meta is NULL, that information is not returned. Setting both pointers to NULL is an error condition.

4.13.2.9 s_int16(* FsPhysical::Reinitialize)(struct FsPhysical *p)

Re-initializes bus after a fatal error (eg memory card removal)

4.13.2.10 u_int16 FsPhysical::version

Version number. 8 MSBs contain version number, 8 LSBs size of the structure in words.

Definition at line 31 of file physical.h.

4.13.2.11 s_int16(* FsPhysical::Write)(struct FsPhysical *p, s_int32 firstPage, u_int16 pages, u_int16 *data, u_int16 *meta)

Write pages. meta is physical-specific data and not necessarily used. If either data or meta is NULL, that information is not written. Setting both pointers to NULL is an error condition.

The documentation for this struct was generated from the following file:

- **physical.h**

4.14 KeyMapping Struct Reference

`#include <player.h>`

Data Fields

- **u_int16 key**
- enum **keyEvent event**

4.14.1 Detailed Description

Definition at line 53 of file player.h.

4.14.2 Field Documentation

4.14.2.1 enum keyEvent KeyMapping::event

event to trigger when key detected

Definition at line 55 of file player.h.

4.14.2.2 u_int16 KeyMapping::key

bitmask for key combination

Definition at line 54 of file player.h.

The documentation for this struct was generated from the following file:

- **player.h**

4.15 Player Struct Reference

`#include <player.h>`

Data Fields

- **s_int16 totalFiles**
- **s_int16 currentFile**
- **s_int16 nextFile**
- **s_int16 nextStep**
- **s_int16 pauseOn**
- **s_int16 randomOn**
- **s_int16 volume**
- **s_int16 volumeOffset**
- **u_int16 offDelay**
- **u_int16 ffCount**
- **u_int16 maxClock**

4.15.1 Detailed Description

Structure used by the default firmwares play loop.

Definition at line 14 of file player.h.

4.15.2 Field Documentation

4.15.2.1 s_int16 Player::currentFile

current playing file

Definition at line 16 of file player.h.

4.15.2.2 u_int16 Player::ffCount

fast forward/rewind counter

Definition at line 24 of file player.h.

4.15.2.3 u_int16 Player::maxClock

max clock used by player: 7=3.5x, 6=3.0x etc. Default = 7, depends on core voltage.

Definition at line 25 of file player.h.

4.15.2.4 s_int16 Player::nextFile

next file to play, changed by key events like ke_next

Definition at line 17 of file player.h.

4.15.2.5 s_int16 Player::nextStep

skip direction, 1 = next, -1 = previous

Definition at line 18 of file player.h.

4.15.2.6 u_int16 Player::offDelay

pause timeout in 5 sec increments -> power off

Definition at line 23 of file player.h.

4.15.2.7 s_int16 Player::pauseOn

non-zero for pause mode

Definition at line 19 of file player.h.

4.15.2.8 s_int16 Player::randomOn

non-zero for random play mode

Definition at line 20 of file player.h.

4.15.2.9 s_int16 Player::totalFiles

total number of matching files

Definition at line 15 of file player.h.

4.15.2.10 s_int16 Player::volume

volume -24 to 180 in 0.5dB steps

Definition at line 21 of file player.h.

4.15.2.11 s_int16 Player::volumeOffset

volume offset, set by replayGain, default -12

Definition at line 22 of file player.h.

The documentation for this struct was generated from the following file:

- **player.h**

4.16 scsicdb10variant1 Struct Reference

`#include <scsi.h>`

Data Fields

- **u_int16 length__opcode**
- **u_int16 res__lbab3**
- **u_int16 lbab2__lbab1**
- **u_int16 lbab0__res**
- **u_int16 wLength**
- **u_int16 control__null**

4.16.1 Detailed Description

Definition at line 43 of file scsi.h.

4.16.2 Field Documentation

4.16.2.1 u_int16 scsicdb10variant1::control__null

Definition at line 49 of file scsi.h.

4.16.2.2 u_int16 scsicdb10variant1::lbab0__res

Definition at line 47 of file scsi.h.

4.16.2.3 u_int16 scsicdb10variant1::lbab2__lbab1

Definition at line 46 of file scsi.h.

4.16.2.4 u_int16 scsicdb10variant1::length__opcode

Definition at line 44 of file scsi.h.

4.16.2.5 u_int16 scsicdb10variant1::res__lbab3

Definition at line 45 of file scsi.h.

4.16.2.6 u_int16 scsicdb10variant1::wLength

Definition at line 48 of file scsi.h.

The documentation for this struct was generated from the following file:

- **scsi.h**

4.17 scsicdb10variant2 Struct Reference

`#include <scsi.h>`

Data Fields

- **u_int16 length__opcode**
- **u_int16 flags__lbab3**
- **u_int16 lbab2__lbab1**
- **u_int16 lbab0__res**
- **u_int16 wLength**
- **u_int16 control__null**

4.17.1 Detailed Description

Definition at line 52 of file scsi.h.

4.17.2 Field Documentation

4.17.2.1 u_int16 scsicdb10variant2::control__null

Definition at line 58 of file scsi.h.

4.17.2.2 u_int16 scsicdb10variant2::flags__lbab3

Definition at line 54 of file scsi.h.

4.17.2.3 u_int16 scsicdb10variant2::lbab0__res

Definition at line 56 of file scsi.h.

4.17.2.4 u_int16 scsicdb10variant2::lbab2__lbab1

Definition at line 55 of file scsi.h.

4.17.2.5 u_int16 scsicdb10variant2::length__opcode

Definition at line 53 of file scsi.h.

4.17.2.6 u_int16 scsicdb10variant2::wLength

Definition at line 57 of file scsi.h.

The documentation for this struct was generated from the following file:

- **scsi.h**

4.18 scsicdb6variant1 Struct Reference

`#include <scsi.h>`

Data Fields

- **u_int16 length__opcode**
- **u_int16 flags__pageCode**
- **u_int16 allocationLength**
- **u_int16 control__null**

4.18.1 Detailed Description

Definition at line 22 of file scsi.h.

4.18.2 Field Documentation

4.18.2.1 u_int16 scsicdb6variant1::allocationLength

Definition at line 25 of file scsi.h.

4.18.2.2 u_int16 scsicdb6variant1::control__null

Definition at line 26 of file scsi.h.

4.18.2.3 u_int16 scsicdb6variant1::flags__pageCode

Definition at line 24 of file scsi.h.

4.18.2.4 u_int16 scsicdb6variant1::length__opcode

Definition at line 23 of file scsi.h.

The documentation for this struct was generated from the following file:

- **scsi.h**

4.19 scsicdb6variant2 Struct Reference

`#include <scsi.h>`

Data Fields

- **u_int16 length__opcode**
- **u_int16 flags__pageCode**
- **u_int16 res__allocationLength**
- **u_int16 control__null**

4.19.1 Detailed Description

Definition at line 29 of file scsi.h.

4.19.2 Field Documentation

4.19.2.1 u_int16 scsicdb6variant2::control__null

Definition at line 33 of file scsi.h.

4.19.2.2 u_int16 scsicdb6variant2::flags__pageCode

Definition at line 31 of file scsi.h.

4.19.2.3 u_int16 scsicdb6variant2::length__opcode

Definition at line 30 of file scsi.h.

4.19.2.4 u_int16 scsicdb6variant2::res__allocationLength

Definition at line 32 of file scsi.h.

The documentation for this struct was generated from the following file:

- **scsi.h**

4.20 scsicdb6variant3 Struct Reference

`#include <scsi.h>`

Data Fields

- **u_int16 length__opcode**
- **u_int16 flags__res**
- **u_int16 res__allocationLength**
- **u_int16 control__null**

4.20.1 Detailed Description

Definition at line 36 of file scsi.h.

4.20.2 Field Documentation

4.20.2.1 u_int16 scsicdb6variant3::control__null

Definition at line 40 of file scsi.h.

4.20.2.2 u_int16 scsicdb6variant3::flags__res

Definition at line 38 of file scsi.h.

4.20.2.3 u_int16 scsicdb6variant3::length__opcode

Definition at line 37 of file scsi.h.

4.20.2.4 u_int16 scsicdb6variant3::res__allocationLength

Definition at line 39 of file scsi.h.

The documentation for this struct was generated from the following file:

- **scsi.h**

4.21 usbpkt Struct Reference

`#include <usblowlib.h>`

Data Fields

- **u_int16 length**
- **u_int16 payload** [(ENDPOINT_SIZE_1+1)>>1]

4.21.1 Detailed Description

Holding space for one received USB packet.

Definition at line 136 of file usblowlib.h.

4.21.2 Field Documentation

4.21.2.1 u_int16 usbpkt::length

packet length in bytes

Definition at line 137 of file usblowlib.h.

4.21.2.2 u_int16 usbpkt::payload[(ENDPOINT_SIZE_1+1)>>1]

packet data

Definition at line 138 of file usblowlib.h.

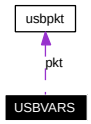
The documentation for this struct was generated from the following file:

- **usblowlib.h**

4.22 USBVARS Struct Reference

`#include <usblowlib.h>`

Collaboration diagram for USBVARS:



Data Fields

- const **u_int16** * **descriptorTable** [6]
- **u_int16 configurationDescriptorSize**
- **USBPacket pkt**
- **u_int32 totbytes**
- **u_int16 ExtraZeroLengthPacketNeeded** [4]
- const **u_int16** * **XmitBuf** [4]
- **u_int16 XmitLength** [4]
- **u_int16 EPReady** [4]
- **u_int16 lastSofTimeout**
- **u_int16 configuration**
- **u_int16 interfaces**
- **u_int16 lastSofFill**
- **u_int32 lastSofTime**

4.22.1 Detailed Description

Definition at line 149 of file usblowlib.h.

4.22.2 Field Documentation

4.22.2.1 u_int16 USBVARS::configuration

Stores current configuration. Only used for USB_REQUEST_GET_CONFIGURATION.

Definition at line 189 of file usblowlib.h.

4.22.2.2 u_int16 USBVARS::configurationDescriptorSize

Length of Configuration Descriptor. (needed because configuration descriptor is actually a collection of many descriptors so the first octet does not specify length of the entire descriptor)

Definition at line 168 of file usblowlib.h.

4.22.2.3 const u_int16* USBVARS::descriptorTable[6]

Descriptor Pointer Table Members are:

- *stringDescriptor0
- *stringDescriptor1
- *stringDescriptor2,
- *stringDescriptor3,
- *deviceDescriptor,
- *configurationDescriptor

For others than configurationDescriptor, descriptor size is first octet of descriptor.

Definition at line 162 of file usblowlib.h.

4.22.2.4 u_int16 USBVARS::EPReady[4]

Is endpoint ready to transmit new block?

Definition at line 185 of file usblowlib.h.

4.22.2.5 u_int16 USBVARS::ExtraZeroLengthPacketNeeded[4]

Is an extra zero-length packet needed after transmission?

Definition at line 176 of file usblowlib.h.

4.22.2.6 u_int16 USBVARS::interfaces

Stores current and alternate setting. Only used for USB_REQUEST_GET_-INTERFACE.

Definition at line 190 of file usblowlib.h.

4.22.2.7 u_int16 USBVARS::lastSofFill

Audio buf fullness at last SOF

Definition at line 191 of file usblowlib.h.

4.22.2.8 u_int32 USBVARS::lastSofTime

When last SOF was received

Definition at line 192 of file usblowlib.h.

4.22.2.9 u_int16 USBVARS::lastSofTimeout

Used for suspend detection, although a bit inaccurate.

Definition at line 187 of file usblowlib.h.

4.22.2.10 USBPacket USBVARS::pkt

Holding space for one received USB packet.

Definition at line 171 of file usblowlib.h.

4.22.2.11 u_int32 USBVARS::totbytes

Total transferred bytes.

Definition at line 173 of file usblowlib.h.

4.22.2.12 const u_int16* USBVARS::XmitBuf[4]

Current USB Endpoint transmit buffer pointers

Definition at line 179 of file usblowlib.h.

4.22.2.13 u_int16 USBVARS::XmitLength[4]

Current USB Endpoints' bytes left to transmit

Definition at line 182 of file usblowlib.h.

The documentation for this struct was generated from the following file:

- **usblowlib.h**

5 VS1000/Interfacing File Documentation

5.1 assert.h File Reference

Defines

- #define **assert**(exp) ((exp) ? 0 : __assert(#exp,__FILE__, __LINE__))

5.1.1 Detailed Description

Standard C header file.

Definition in file **assert.h**.

5.1.2 Define Documentation

5.1.2.1 #define assert(exp) ((exp) ? 0 : __assert(#exp,__FILE__, __LINE__))

Definition at line 9 of file assert.h.

5.2 audio.h File Reference

```
#include "vs1000.h"
```

Include dependency graph for audio.h:

Data Structures

- struct **AUDIOPTR**
- struct **EARSPEAKER**

Defines

- #define **WITH_EARSPEAKER**
- #define **DIRECT_VORBIS_BLOCKSIZE**
- #define **USE_TIMER**
- #define **TIMER_TICKS** 100
- #define **DEFAULT_AUDIO_BUFFER_SAMPLES** 2048
- #define **DAC_DEFAULT_SAMPLERATE** 8000
- #define **DAC_DRIVER_ON_DELAY** (DAC_DEFAULT_SAMPLERATE/10)
- #define **APPL_RESET** 0
- #define **APPL_AUDIO** 1
- #define **APPL_BITSTREAM** 10

Functions

- **u_int32 ReadTimeCount** (void)
- void **InitAudio** (void)
- auto void **StereoCopy** (register __i2 **s_int16** *s, register __a0 **u_int16** n)
- **s_int16 AudioBufFill** (void)
- **s_int16 AudioBufFree** (void)
- auto void **SetRate** (register __c1 **u_int16** rate)
- auto void **RealSetRate** (register __c1 **u_int16** rate)
- auto void **SetVolume** (void)
- auto void **RealSetVolume** (void)

- auto void **AudioOutputSamples** (**s_int16** *p, **s_int16** samples)
- **u_int16 UartDiv** (void)

Variables

- __y volatile **u_int32 timeCount**
- **s_int16**(* **applAddr**)(**s_int16** register __i0 **d, **s_int16** register __a1 mode, **s_int16** register __a0 n)
- __y **s_int16 audioBuffer** [2 *DEFAULT_AUDIO_BUFFER_SAMPLES]
- __y struct **AUDIOPTR audioPtr**
- **u_int16 earSpeakerReg**
- __y **u_int16 earSpeakerDisable**
- **u_int16 volumeReg**
- **u_int16 bassReg**
- __y **u_int16 extClock4KHz**
- __y **u_int16 clockX**
- **u_int32** __y **curFctl**
- __y **u_int16 hwSampleRate**
- __y **u_int16 uiTime**
- __y **u_int16 uiTrigger**
- **s_int16** __y **timeToRemovePDown2**
- **u_int32** __y **haltTime**
- __y **u_int16 uartByteSpeed**
- __y struct **EARSPEAKER earSpeaker**

5.2.1 Detailed Description

Routines related to audio.

Definition in file **audio.h**.

5.2.2 Define Documentation

5.2.2.1 #define APPL_AUDIO 1

Definition at line 30 of file audio.h.

5.2.2.2 #define APPL_BITSTREAM 10

Definition at line 31 of file audio.h.

5.2.2.3 #define APPL_RESET 0

Definition at line 29 of file audio.h.

5.2.2.4 #define DAC_DEFAULT_SAMPLERATE 8000

Definition at line 26 of file audio.h.

5.2.2.5 #define DAC_DRIVER_ON_DELAY (DAC_DEFAULT_SAMPLERATE/10)

Definition at line 27 of file audio.h.

5.2.2.6 #define DEFAULT_AUDIO_BUFFER_SAMPLES 2048

Definition at line 25 of file audio.h.

5.2.2.7 #define DIRECT_VORBIS_BLOCKSIZE

Definition at line 10 of file audio.h.

5.2.2.8 #define TIMER_TICKS 100

Definition at line 14 of file audio.h.

5.2.2.9 #define USE_TIMER

Definition at line 12 of file audio.h.

5.2.2.10 #define WITH_EARSPEAKER

Definition at line 9 of file audio.h.

5.2.3 Function Documentation

5.2.3.1 s_int16 AudioBufFill (void)

Tells the fill state of audio buffer in stereo samples.

5.2.3.2 s_int16 AudioBufFree (void)

Tells how many stereo samples still fits into the audio buffer without waiting. Note: the buffer should never be completely filled because the same state means empty.

5.2.3.3 auto void AudioOutputSamples (s_int16 * *p*, s_int16 *samples*)

High-level audio output routine. If the samples do not fit into the audio buffer, this routine automatically waits for some room (calls **Sleep()**(p. 178)).

Parameters:

p Pointer to interleaved stereo samples.

samples The number of stereo samples.

5.2.3.4 void InitAudio (void)

Initializes audio structures and configures the PLL.

5.2.3.5 u_int32 ReadTimeCount (void)

ReadTimeCount Reads the timecount variable safely, no interrupt disable is needed.

5.2.3.6 auto void RealSetRate (register __c1 u_int16 *rate*)

Sets new samplerate and/or new PLL setting (according to clockX variable).

Parameters:

rate New samplerate.

5.2.3.7 auto void RealSetVolume (void)

Sets the hardware volume according to volumeReg.

5.2.3.8 auto void SetRate (register __c1 u_int16 *rate*)

Hook: Sets new samplerate and/or new PLL setting. Default: RealSetRate.

Parameters:

rate New samplerate.

5.2.3.9 auto void SetVolume (void)

Hook: Sets the hardware volume according to volumeReg. Default: RealSetVolume

5.2.3.10 auto void StereoCopy (register __i2 s_int16 * *s*, register __a0 u_int16 *n*)

Internal low-level audio output routine that puts samples into the audio buffer. Applies audioPtr.leftVol and audioPtr.rightVol to the data. Setting audioPtr.rightVol to -audioPtr.leftVol after **InitAudio()**(p. 38) has been called activates differential output mode, where the phase of right channel is inverted compared to the left channel. This routine does not check the buffer fullness.

Parameters:

s Pointer to interleaved stereo samples

n The number of stereo samples

5.2.3.11 u_int16 UartDiv (void)

Calculates UART divider from clockX and uartByteSpeed. When **SetRate()**(p. 38) changes PLL settings, the uart divider is automatically changed.

Returns:
UART divider for the current clockX and uartByteSpeed.

5.2.4 Variable Documentation

5.2.4.1 s_int16(* applAddr)(s_int16 register __i0 **d, s_int16 register __a1 mode, s_int16 register __a0 n)

applAddr A hook function to process samples before they are put into the audio buffer.

Parameters:
d A pointer to pointer to interleaved stereo samples

mode If APPL_AUDIO, samples available

n Number of stereo samples

Returns:
For APPL_AUDIO the number of output stereo samples, return n otherwise.

5.2.4.2 __y s_int16 audioBuffer[2 *DEFAULT_AUDIO_BUFFER_SAMPLES]

Audio FIFO. The length of the area used for audio can change depending on the state of the earSpeaker setting. Earspeaker can not be active when long vorbis frames are used.

5.2.4.3 __y struct AUDIOPTR audioPtr

Audio structure containing the audio FIFO read and write pointers, FIFO size, software volume settings, and the FIFO underflow flag. By negating the other volume field you can get mono differential drive from the DAC for connecting a speaker between LEFT and RIGHT outputs.

5.2.4.4 u_int16 bassReg

Bass and treble controls, not used by rom firmware. See VS10xx datasheets for details.

5.2.4.5 __y u_int16 clockX

Current clock multiplier in 0.5x steps. Is used to program the PLL at the next **SetRate()**(p. 38).

5.2.4.6 u_int32 __y curFctl

Current DAC adder value.

5.2.4.7 __y struct EARSPEAKER earSpeaker

5.2.4.8 __y u_int16 earSpeakerDisable

Long vorbis frames disable EarSpeaker automatically.

5.2.4.9 u_int16 earSpeakerReg

Current EarSpeaker setting.

5.2.4.10 __y u_int16 extClock4KHz

Crystal/4000. Normally 3000 (for 12MHz).

5.2.4.11 u_int32 __y haltTime

The number of cycles spent in HALT since last check. Used for automatic clock management.

5.2.4.12 __y u_int16 hwSampleRate

Current samplerate.

5.2.4.13 __y volatile u_int32 timeCount

timeCount counts TIMER_TICKS regardless of clockX.

5.2.4.14 s_int16 __y timeToRemovePDown2

Delay until analog drivers are enabled.

5.2.4.15 __y u_int16 uartByteSpeed

UART speed in bps / 10. UART divider is automatically updated when PLL value is changed.

5.2.4.16 __y u_int16 uiTime

Free-running counter for UI.

5.2.4.17 __y u_int16 uiTrigger

Is non-zero 16 times per second when audio is played.

5.2.4.18 u_int16 volumeReg

Left and right volume 0x00(loudest)..0xff (off).

5.3 c-nand.s File Reference

5.3.1 Detailed Description

Startup module for programs booting from NAND-FLASH or UART. This startup does not touch stack pointer or other registers. This makes it possible to return to the caller. This is useful when the default player main loop can be used but some routines need to be patched. The user can perform the patches and return to the caller.

Definition in file **c-nand.s**.

5.4 c-restart.s File Reference

5.4.1 Detailed Description

Startup module for flashing programs. If the user program returns, execution restarts the firmware.

Definition in file **c-restart.s**.

5.5 c-spi.s File Reference

5.5.1 Detailed Description

Startup module for programs loaded from SPI EEPROM. If the user program returns, execution continues from the point just after the spi boot command.

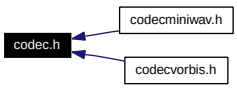
Definition in file **c-spi.s**.

5.6 codec.h File Reference

```
#include <vstypes.h>
```

Include dependency graph for codec.h:

This graph shows which files directly or indirectly include this file:



Data Structures

- struct **CodecServices**
- struct **Codec**

Defines

- #define **MAX_SOURCE_CHANNELS** 6
- #define **CODEC_VERSION** 0x0105
- #define **FS_CODEC_SERVICES_VERSION** 0x0125
- #define **FS_CODSER_COMMENT_END_OF_LINE** 0x4000U
- #define **FS_CODSER_COMMENT_END_OF_COMMENTS** ((**u_int16**)(0x8000U))
- #define **CS_VERSION_OFFSET** 0
- #define **CS_READ_OFFSET** 1
- #define **CS_SKIP_OFFSET** 2
- #define **CS_SEEK_OFFSET** 3
- #define **CS_TELL_OFFSET** 4
- #define **CS_OUTPUT_OFFSET** 5
- #define **CS_COMMENT_OFFSET** 6
- #define **CS_SPECTRUM_OFFSET** 7
- #define **CS_FILE_SIZE_OFFSET** 8
- #define **CS_FILE_LEFT_OFFSET** 10
- #define **CS_GO_TO_OFFSET** 12
- #define **CS_CANCEL_OFFSET** 13
- #define **CS_PLAY_TIME_SECONDS_OFFSET** 14
- #define **CS_PLAY_TIME_SAMPLES_OFFSET** 16
- #define **CS_PLAY_TIME_TOTAL_OFFSET** 18
- #define **CS_SAMPLE_RATE_OFFSET** 20
- #define **CS_CHANNELS_OFFSET** 22
- #define **CS_MATRIX_OFFSET** 23
- #define **CS_AVG_BIT_RATE_OFFSET** 29
- #define **CS_CURR_BIT_RATE_OFFSET** 31
- #define **CS_PEAK_BIT_RATE_OFFSET** 33
- #define **CS_GAIN_OFFSET** 35
- #define **CS_FAST_FORWARD_OFFSET** 36
- #define **CODEC_VERSION_OFFSET** 0
- #define **CODEC_CREATE_OFFSET** 1
- #define **CODEC_DECODE_OFFSET** 2
- #define **CODEC_DELETE_OFFSET** 3
- #define **CODEC_CS_OFFSET** 4

Enumerations

- enum **CodecError** {
  ceFastForward = -1, **ceOk** = 0, **ceFormatNotFound**, **ceFormatNotSupported**,
  ceUnexpectedFileEnd, **ceCancelled**, **ceOtherError** }

5.6.1 Detailed Description

Codec(p. 5) interfaces.

Definition in file **codec.h**.

5.6.2 Define Documentation

5.6.2.1 #define CODEC_CREATE_OFFSET 1

Definition at line 198 of file codec.h.

5.6.2.2 #define CODEC_CS_OFFSET 4

Definition at line 201 of file codec.h.

5.6.2.3 #define CODEC_DECODE_OFFSET 2

Definition at line 199 of file codec.h.

5.6.2.4 #define CODEC_DELETE_OFFSET 3

Definition at line 200 of file codec.h.

5.6.2.5 #define CODEC_VERSION 0x0105

Current version number. 8 MSBs contain version number, 8 LSBs size of the structure in words.

Version number history:

1. 0x0105 First version

Definition at line 26 of file codec.h.

5.6.2.6 #define CODEC_VERSION_OFFSET 0

Definition at line 197 of file codec.h.

5.6.2.7 #define CS_AVG_BIT_RATE_OFFSET 29

Definition at line 191 of file codec.h.

5.6.2.8 #define CS_CANCEL_OFFSET 13

Definition at line 184 of file codec.h.

5.6.2.9 #define CS_CHANNELS_OFFSET 22

Definition at line 189 of file codec.h.

5.6.2.10 #define CS_COMMENT_OFFSET 6

Definition at line 179 of file codec.h.

5.6.2.11 #define CS_CURR_BIT_RATE_OFFSET 31

Definition at line 192 of file codec.h.

5.6.2.12 #define CS_FAST_FORWARD_OFFSET 36

Definition at line 195 of file codec.h.

5.6.2.13 #define CS_FILE_LEFT_OFFSET 10

Definition at line 182 of file codec.h.

5.6.2.14 #define CS_FILE_SIZE_OFFSET 8

Definition at line 181 of file codec.h.

5.6.2.15 #define CS_GAIN_OFFSET 35

Definition at line 194 of file codec.h.

5.6.2.16 #define CS_GO_TO_OFFSET 12

Definition at line 183 of file codec.h.

5.6.2.17 #define CS_MATRIX_OFFSET 23

Definition at line 190 of file codec.h.

5.6.2.18 #define CS_OUTPUT_OFFSET 5

Definition at line 178 of file codec.h.

5.6.2.19 #define CS_PEAK_BIT_RATE_OFFSET 33

Definition at line 193 of file codec.h.

5.6.2.20 #define CS_PLAY_TIME_SAMPLES_OFFSET 16

Definition at line 186 of file codec.h.

5.6.2.21 #define CS_PLAY_TIME_SECONDS_OFFSET 14

Definition at line 185 of file codec.h.

5.6.2.22 #define CS_PLAY_TIME_TOTAL_OFFSET 18

Definition at line 187 of file codec.h.

5.6.2.23 #define CS_READ_OFFSET 1

Definition at line 174 of file codec.h.

5.6.2.24 #define CS_SAMPLE_RATE_OFFSET 20

Definition at line 188 of file codec.h.

5.6.2.25 #define CS_SEEK_OFFSET 3

Definition at line 176 of file codec.h.

5.6.2.26 #define CS_SKIP_OFFSET 2

Definition at line 175 of file codec.h.

5.6.2.27 #define CS_SPECTRUM_OFFSET 7

Definition at line 180 of file codec.h.

5.6.2.28 #define CS_TELL_OFFSET 4

Definition at line 177 of file codec.h.

5.6.2.29 #define CS_VERSION_OFFSET 0

Definition at line 173 of file codec.h.

5.6.2.30 #define FS_CODEC_SERVICES_VERSION 0x0125

Current version number. 8 MSBs contain version number, 8 LSBs size of the structure in words.

Version number history:

1. 0x0125 First version

Definition at line 37 of file codec.h.

5.6.2.31 #define FS_CODSER_COMMENT_END_OF_COMMENTS ((u_int16)(0x8000U))

Definition at line 41 of file codec.h.

5.6.2.32 #define FS_CODSER_COMMENT_END_OF_LINE 0x4000U

Definition at line 40 of file codec.h.

5.6.2.33 #define MAX_SOURCE_CHANNELS 6

Definition at line 13 of file codec.h.

5.6.3 Enumeration Type Documentation

5.6.3.1 enum CodecError

Codec(p. 5) error codes.

Enumerator:

ceFastForward Fast forwarded through file end

ceOk No errors.

ceFormatNotFound Data file was not in known format for the codec

ceFormatNotSupported Data file subformat is not supported.

ceUnexpectedFileEnd Unexpectedly early end of file

ceCancelled Playback cancel was requested

ceOtherError Unspecific error

Definition at line 142 of file codec.h.

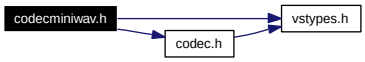
```
142                {
143   ceFastForward = -1,
144   ceOk = 0,
145   ceFormatNotFound,
146   ceFormatNotSupported,
147   ceUnexpectedFileEnd,
148   ceCancelled,
149   ceOtherError
150 };
```

5.7 codecminiwav.h File Reference

```
#include <vstypes.h>
```

```
#include <codec.h>
```

Include dependency graph for codecminiwav.h:



Functions

- **Codec** * **CodMiniWavCreate** (void)
- void **CodMiniWavDelete** (struct **Codec** *cod)
- enum **CodecError CodMiniWavDecode** (struct **Codec** *cod, struct **CodecServices** *cs, const char **errorString)

5.7.1 Detailed Description

MinimalWav **Codec**(p. 5). At this moment the Wav **Codec**(p. 5) supports 8-bit and 16-bit stereo and mono files. Randon access for seekable supported for all audio formats.

Definition in file **codecminiwav.h**.

5.7.2 Function Documentation

5.7.2.1 struct Codec* CodMiniWavCreate (void)

Create and allocate space for codec.

Returns:
A Wav **Codec**(p. 5) structure.

5.7.2.2 enum CodecError CodMiniWavDecode (struct Codec * *cod*, struct CodecServices * *cs*, const char ** *errorString*)

Decode file. Upon success or a negative number, **Codec**(p. 5) has succeeded. With a positive number, there has been an error. Upon return, an error string is also returned.

Parameters:
cod A Wav **Codec**(p. 5) structure.

cs User-supplied codec services with appropriate fields filled. The fields that are not to be filled by the user should be zero initialized.

errorString A pointer to a char pointer. The codec may return its error status here.

Returns:
Error code.

5.7.2.3 void CodMiniWavDelete (struct Codec * *cod*)

Free all resources allocated for codec.

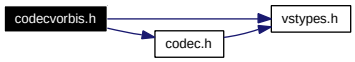
Parameters:
cod A Wav **Codec**(p. 5) structure.

5.8 codecvorbis.h File Reference

`#include <vstypes.h>`

`#include <codec.h>`

Include dependency graph for codecvorbis.h:



Defines

- #define **USE_COMMENTS**

Functions

- **Codec** * **CodVorbisCreate** (void)
- void **CodVorbisDelete** (struct **Codec** *cod)
- enum **CodecError CodVorbisDecode** (struct **Codec** *cod, struct **CodecServices** *cs, const char **errorString)
- auto **s_int16 CodVBlockSize** (register __i0 struct **Codec** *c, register __a0 **s_int16** bType)

5.8.1 Detailed Description

Vorbis 1.0 **Codec**(p. 5). The Vorbis **Codec**(p. 5) supports windows upto 4096 samples (8192 sample windows are NOT supported). Also random access is not supported.

Definition in file **codecvorbis.h**.

5.8.2 Define Documentation

5.8.2.1 #define USE_COMMENTS

Definition at line 13 of file codecvorbis.h.

5.8.3 Function Documentation

5.8.3.1 auto s_int16 CodVBlockSize (register __i0 struct Codec * *c*, register __a0 s_int16 *bType*)

5.8.3.2 struct Codec* CodVorbisCreate (void)

Create and allocate space for codec.

Returns:
A Vorbis **Codec**(p. 5) structure.

5.8.3.3 enum CodecError CodVorbisDecode (struct Codec * *cod*, struct CodecServices * *cs*, const char ** *errorString*)

Decode file. Upon success or a negative number, **Codec**(p. 5) has succeeded. With a positive number, there has been an error. Upon return, an error string is also returned.

Parameters:
cod A Vorbis **Codec**(p. 5) structure.

cs User-supplied codec services with appropriate fields filled. The fields that are not to be filled by the user should be zero initialized.

errorString A pointer to a char pointer. The codec may return its error status here.

Returns:
Error code.

5.8.3.4 void CodVorbisDelete (struct Codec * *cod*)

Free all resources allocated for codec.

Parameters:
cod A Vorbis **Codec**(p. 5) structure.

5.9 ctype.h File Reference

Functions

- int **isalnum** (int register __i0 c)
- int **isalpha** (int register __i0 c)
- int **iscntrl** (int register __i0 c)
- int **isdigit** (int register __i0 c)
- int **isgraph** (int register __i0 c)
- int **islower** (int register __i0 c)
- int **isprint** (int register __i0 c)
- int **ispunct** (int register __i0 c)
- int **isspace** (int register __i0 c)
- int **isupper** (int register __i0 c)
- int **isxdigit** (int register __i0 c)
- int register __i0 **tolower** (int register __i0 c)
- int register __i0 **toupper** (int register __i0 c)

5.9.1 Detailed Description

Standard C header file.

Definition in file **ctype.h**.

5.9.2 Function Documentation

5.9.2.1 int isalnum (int register __i0 *c*)

return TRUE for alphanumerical.

5.9.2.2 int isalpha (int register __i0 *c*)

return TRUE for alphabetic character.

5.9.2.3 int iscntrl (int register __i0 *c*)

return TRUE for control characters.

5.9.2.4 int isdigit (int register __i0 *c*)

return TRUE for digits 0-9.

5.9.2.5 int isgraph (int register __i0 *c*)

return TRUE for printable characters except space.

5.9.2.6 int islower (int register __i0 *c*)

return TRUE for lowercase characters.

5.9.2.7 int isprint (int register __i0 *c*)

return TRUE for printable characters, including space.

5.9.2.8 int ispunct (int register __i0 *c*)

return TRUE for printable characters that is not a space or alphanumeric.

5.9.2.9 int isspace (int register __i0 *c*)

return TRUE for white-space characters.

5.9.2.10 int isupper (int register __i0 *c*)

return TRUE for uppercase characters.

5.9.2.11 int isxdigit (int register __i0 c)

return TRUE for hexadecimal digits.

5.9.2.12 int register __i0 tolower (int register __i0 c)

convert letter c to lower case if possible.

5.9.2.13 int register __i0 toupper (int register __i0 c)

convert letter c to upper case if possible.

5.10 dev1000.h File Reference

```
#include <vstypes.h>
```

Include dependency graph for dev1000.h:

Defines

- #define **PATCH_TEST_UNIT_READY**
- #define **MMC_MISO_BIT** 8
- #define **MMC_MOSI_BIT** 12
- #define **MMC_CLK** (1<<9)
- #define **MMC_MOSI** (1<<MMC_MOSI_BIT)
- #define **MMC_MISO** (1<<MMC_MISO_BIT)
- #define **MMC_XCS** (1<<11)
- #define **MMC_GO_IDLE_STATE** 0
- #define **MMC_SEND_OP_COND** 1
- #define **MMC_SEND_IF_COND** 8
- #define **MMC_SEND_CSD** 9
- #define **MMC_SEND_CID** 10
- #define **MMC_SEND_STATUS** 13
- #define **MMC_SET_BLOCKLEN** 16
- #define **MMC_READ_SINGLE_BLOCK** 17
- #define **MMC_WRITE_BLOCK** 24
- #define **MMC_PROGRAM_CSD** 27
- #define **MMC_SET_WRITE_PROT** 28
- #define **MMC_CLR_WRITE_PROT** 29
- #define **MMC_SEND_WRITE_PROT** 30
- #define **MMC_TAG_SECTOR_START** 32
- #define **MMC_TAG_SECTOR_END** 33
- #define **MMC_UNTAG_SECTOR** 34
- #define **MMC_TAG_ERASE_GROUP_START** 35

- #define **MMC_TAG_ERARE_GROUP_END** 36
- #define **MMC_UNTAG_ERASE_GROUP** 37
- #define **MMC_ERASE** 38
- #define **MMC_READ_OCR** 58
- #define **MMC_CRC_ON_OFF** 59
- #define **MMC_R1_BUSY** 0x80
- #define **MMC_R1_PARAMETER** 0x40
- #define **MMC_R1_ADDRESS** 0x20
- #define **MMC_R1_ERASE_SEQ** 0x10
- #define **MMC_R1_COM_CRC** 0x08
- #define **MMC_R1_ILLEGAL_COM** 0x04
- #define **MMC_R1_ERASE_RESET** 0x02
- #define **MMC_R1_IDLE_STATE** 0x01
- #define **MMC_STARTBLOCK_READ** 0xFE
- #define **MMC_STARTBLOCK_WRITE** 0xFE
- #define **MMC_STARTBLOCK_MWRITE** 0xFC
- #define **MMC_STOPTRAN_WRITE** 0xFD
- #define **MMC_DE_MASK** 0x1F
- #define **MMC_DE_ERROR** 0x01
- #define **MMC_DE_CC_ERROR** 0x02
- #define **MMC_DE_ECC_FAIL** 0x04
- #define **MMC_DE_OUT_OF_RANGE** 0x04
- #define **MMC_DE_CARD_LOCKED** 0x04
- #define **MMC_DR_MASK** 0x1F
- #define **MMC_DR_ACCEPT** 0x05
- #define **MMC_DR_REJECT_CRC** 0x0B
- #define **MMC_DR_REJECT_WRITE_ERROR** 0x0D
- #define **KEY_6** (1<<5)
- #define **RC5_SYS_TVSET** 0
- #define **RC5_SYS_TELETEXT** 2
- #define **RC5_SYS_VCR** 5
- #define **RC5_SYS_EXPERIMENTAL7** 7
- #define **RC5_SYS_PREAMP** 16
- #define **RC5_SYS_RECEIVERTUNER** 17
- #define **RC5_SYS_TAPERECORDER** 18
- #define **RC5_SYS_EXPERIMENTAL19** 19
- #define **RC5_SYS_CDPLAYER** 20
- #define **RC5_CMD_0** 0
- #define **RC5_CMD_1** 1
- #define **RC5_CMD_2** 2
- #define **RC5_CMD_3** 3
- #define **RC5_CMD_4** 4
- #define **RC5_CMD_5** 5
- #define **RC5_CMD_6** 6
- #define **RC5_CMD_7** 7
- #define **RC5_CMD_8** 8

- #define **RC5_CMD_9** 9
- #define **RC5_CMD_ONETWODIGITS** 10
- #define **RC5_CMD_STANDBY** 12
- #define **RC5_CMD_MUTE** 13
- #define **RC5_CMD_PRESET** 14
- #define **RC5_CMD_DISPLAY** 15
- #define **RC5_CMD_VOLUME_UP** 16
- #define **RC5_CMD_VOLUME_DOWN** 17
- #define **RC5_CMD_BRIGHT_UP** 18
- #define **RC5_CMD_BRIGHT_DOWN** 19
- #define **RC5_CMD_COLOR_UP** 20
- #define **RC5_CMD_COLOR_DOWN** 21
- #define **RC5_CMD_BASS_UP** 22
- #define **RC5_CMD_BASS_DOWN** 23
- #define **RC5_CMD_TREBLE_UP** 24
- #define **RC5_CMD_TREBLE_DOWN** 25
- #define **RC5_CMD_BALANCE_LEFT** 26
- #define **RC5_CMD_BALANCE_RIGHT** 27
- #define **RC5_CMD_CONTRAST_UP** 28
- #define **RC5_CMD_CONTRAST_DOWN** 29
- #define **RC5_CMD_PROGRAM_UP** 32
- #define **RC5_CMD_PROGRAM_DOWN** 33
- #define **RC5_CMD_ALTERNATE** 34
- #define **RC5_CMD_LANGUAGE** 35
- #define **RC5_CMD_EXPAND** 36
- #define **RC5_CMD_TIMER** 38
- #define **RC5_CMD_STORE** 41
- #define **RC5_CMD_CLOCK** 42
- #define **RC5_CMD_FINETUNE_PLUS** 43
- #define **RC5_CMD_FINETUNE_MINUS** 44
- #define **RC5_CMD_CROSS** 45
- #define **RC5_CMD_MIX** 46
- #define **RC5_CMD_PAUSE** 48
- #define **RC5_CMD_FAST_REVERSE** 50
- #define **RC5_CMD_FAST_FORWARD** 52
- #define **RC5_CMD_PLAY** 53
- #define **RC5_CMD_STOP** 54
- #define **RC5_CMD_RECORD** 55
- #define **RC5_CMD_SWITCH** 56
- #define **RC5_CMD_MENU** 59
- #define **RC5_CMD_TEXT** 60
- #define **RC5_CMD_SYSTEM_SELECT** 63

Functions

- auto **u_int16 SpiSendReceiveMmc** (register __a0 **u_int16** dataTop-Aligned, register __a1 bits)
- auto void **SpiSendClocks** (void)
- auto **u_int16 MmcCommand** (register __b0 **s_int16** cmd, register __d **u_int32** arg)
- void **PatchMSCPacketFromPC** (void *)
- void **ScsiTestUnitReady** (void)
- auto **u_int16 Fat12OpenFile** (register __c0 **u_int16** fileNum)
- auto **u_int16 OpenFileBaseName** (register __i2 const **u_int16** *packedName)
- void **PlayRangeSet** (**u_int32** start, **u_int32** end)
- void **PlayRange** (void)
- void **puthex** (**u_int16** d)
- void **KeyScan7** (void)
- void **Suspend7** (void)
- auto **u_int16 MapperlessReadDiskSector** (register __i0 **u_int16** *buffer, register __reg_a **u_int32** sector)
- void **NandPutCommand** (register __a0 **u_int16** command)
- void **NandPutAddressOctet** (register __a0 **u_int16** address)
- void **NandGetOctets** (register __c0 **s_int16** length, register __i2 **u_-int16** *buf)
- void **NandPutOctets** (register __c0 **s_int16** length, register __i2 **u_-int16** *buf)
- void **NandSetWaits** (register __a0 **u_int16** waitns)
- **u_int32 ReadIRam** (register __i0 **u_int16** addr)
- void **WriteIRam** (register __i0 **u_int16** addr, register __a **u_int32** ins)
- void **InterruptStub0** (void)
- void **InterruptStub1** (void)
- void **InterruptStub2** (void)
- void **InterruptStub3** (void)
- auto void **Interrupt0** (void)
- auto void **Interrupt1** (void)
- auto void **Interrupt2** (void)
- auto void **Interrupt3** (void)
- void **Rc5Init** (**u_int16** vector)
- **u_int16 Rc5GetFIFO** (void)

5.10.1 Detailed Description

Development library header file.

Definition in file **dev1000.h**.

5.10.2 Define Documentation

5.10.2.1 #define KEY_6 (1<<5)

Definition at line 122 of file dev1000.h.

5.10.2.2 #define MMC_CLK (1<<9)

Definition at line 12 of file dev1000.h.

5.10.2.3 #define MMC_CLR_WRITE_PROT 29

Definition at line 28 of file dev1000.h.

5.10.2.4 #define MMC_CRC_ON_OFF 59

Definition at line 38 of file dev1000.h.

5.10.2.5 #define MMC_DE_CARD_LOCKED 0x04

Definition at line 56 of file dev1000.h.

5.10.2.6 #define MMC_DE_CC_ERROR 0x02

Definition at line 53 of file dev1000.h.

5.10.2.7 #define MMC_DE_ECC_FAIL 0x04

Definition at line 54 of file dev1000.h.

5.10.2.8 #define MMC_DE_ERROR 0x01

Definition at line 52 of file dev1000.h.

5.10.2.9 #define MMC_DE_MASK 0x1F

Definition at line 51 of file dev1000.h.

5.10.2.10 #define MMC_DE_OUT_OF_RANGE 0x04

Definition at line 55 of file dev1000.h.

5.10.2.11 #define MMC_DR_ACCEPT 0x05

Definition at line 58 of file dev1000.h.

5.10.2.12 #define MMC_DR_MASK 0x1F

Definition at line 57 of file dev1000.h.

5.10.2.13 #define MMC_DR_REJECT_CRC 0x0B

Definition at line 59 of file dev1000.h.

5.10.2.14 #define MMC_DR_REJECT_WRITE_ERROR 0x0D

Definition at line 60 of file dev1000.h.

5.10.2.15 #define MMC_ERASE 38

Definition at line 36 of file dev1000.h.

5.10.2.16 #define MMC_GO_IDLE_STATE 0

Definition at line 17 of file dev1000.h.

5.10.2.17 #define MMC_MISO (1<<MMC_MISO_BIT)

Definition at line 14 of file dev1000.h.

5.10.2.18 #define MMC_MISO_BIT 8

Definition at line 10 of file dev1000.h.

5.10.2.19 #define MMC_MOSI (1<<MMC_MOSI_BIT)

Definition at line 13 of file dev1000.h.

5.10.2.20 #define MMC_MOSI_BIT 12

Definition at line 11 of file dev1000.h.

5.10.2.21 #define MMC_PROGRAM_CSD 27

Definition at line 26 of file dev1000.h.

5.10.2.22 #define MMC_R1_ADDRESS 0x20

Definition at line 41 of file dev1000.h.

5.10.2.23 #define MMC_R1_BUSY 0x80

Definition at line 39 of file dev1000.h.

5.10.2.24 #define MMC_R1_COM_CRC 0x08

Definition at line 43 of file dev1000.h.

5.10.2.25 #define MMC_R1_ERASE_RESET 0x02

Definition at line 45 of file dev1000.h.

5.10.2.26 #define MMC_R1_ERASE_SEQ 0x10

Definition at line 42 of file dev1000.h.

5.10.2.27 #define MMC_R1_IDLE_STATE 0x01

Definition at line 46 of file dev1000.h.

5.10.2.28 #define MMC_R1_ILLEGAL_COM 0x04

Definition at line 44 of file dev1000.h.

5.10.2.29 #define MMC_R1_PARAMETER 0x40

Definition at line 40 of file dev1000.h.

5.10.2.30 #define MMC_READ_OCR 58

Definition at line 37 of file dev1000.h.

5.10.2.31 #define MMC_READ_SINGLE_BLOCK 17

Definition at line 24 of file dev1000.h.

5.10.2.32 #define MMC_SEND_CID 10

Definition at line 21 of file dev1000.h.

5.10.2.33 #define MMC_SEND_CSD 9

Definition at line 20 of file dev1000.h.

5.10.2.34 #define MMC_SEND_IF_COND 8

Definition at line 19 of file dev1000.h.

5.10.2.35 #define MMC_SEND_OP_COND 1

Definition at line 18 of file dev1000.h.

5.10.2.36 #define MMC_SEND_STATUS 13

Definition at line 22 of file dev1000.h.

5.10.2.37 #define MMC_SEND_WRITE_PROT 30

Definition at line 29 of file dev1000.h.

5.10.2.38 #define MMC_SET_BLOCKLEN 16

Definition at line 23 of file dev1000.h.

5.10.2.39 #define MMC_SET_WRITE_PROT 28

Definition at line 27 of file dev1000.h.

5.10.2.40 #define MMC_STARTBLOCK_MWRITE 0xFC

Definition at line 49 of file dev1000.h.

5.10.2.41 #define MMC_STARTBLOCK_READ 0xFE

Definition at line 47 of file dev1000.h.

5.10.2.42 #define MMC_STARTBLOCK_WRITE 0xFE

Definition at line 48 of file dev1000.h.

5.10.2.43 #define MMC_STOPTRAN_WRITE 0xFD

Definition at line 50 of file dev1000.h.

5.10.2.44 #define MMC_TAG_ERARE_GROUP_END 36

Definition at line 34 of file dev1000.h.

5.10.2.45 #define MMC_TAG_ERASE_GROUP_START 35

Definition at line 33 of file dev1000.h.

5.10.2.46 #define MMC_TAG_SECTOR_END 33

Definition at line 31 of file dev1000.h.

5.10.2.47 #define MMC_TAG_SECTOR_START 32

Definition at line 30 of file dev1000.h.

5.10.2.48 #define MMC_UNTAG_ERASE_GROUP 37

Definition at line 35 of file dev1000.h.

5.10.2.49 #define MMC_UNTAG_SECTOR 34

Definition at line 32 of file dev1000.h.

5.10.2.50 #define MMC_WRITE_BLOCK 24

Definition at line 25 of file dev1000.h.

5.10.2.51 #define MMC_XCS (1<<11)

Definition at line 15 of file dev1000.h.

5.10.2.52 #define PATCH_TEST_UNIT_READY

Definition at line 9 of file dev1000.h.

5.10.2.53 #define RC5_CMD_0 0

Definition at line 205 of file dev1000.h.

5.10.2.54 #define RC5_CMD_1 1

Definition at line 206 of file dev1000.h.

5.10.2.55 #define RC5_CMD_2 2

Definition at line 207 of file dev1000.h.

5.10.2.56 #define RC5_CMD_3 3

Definition at line 208 of file dev1000.h.

5.10.2.57 #define RC5_CMD_4 4

Definition at line 209 of file dev1000.h.

5.10.2.58 #define RC5_CMD_5 5

Definition at line 210 of file dev1000.h.

5.10.2.59 #define RC5_CMD_6 6

Definition at line 211 of file dev1000.h.

5.10.2.60 #define RC5_CMD_7 7

Definition at line 212 of file dev1000.h.

5.10.2.61 #define RC5_CMD_8 8

Definition at line 213 of file dev1000.h.

5.10.2.62 #define RC5_CMD_9 9

Definition at line 214 of file dev1000.h.

5.10.2.63 #define RC5_CMD_ALTERNATE 34

Definition at line 236 of file dev1000.h.

5.10.2.64 #define RC5_CMD_BALANCE_LEFT 26

Definition at line 230 of file dev1000.h.

5.10.2.65 #define RC5_CMD_BALANCE_RIGHT 27

Definition at line 231 of file dev1000.h.

5.10.2.66 #define RC5_CMD_BASS_DOWN 23

Definition at line 227 of file dev1000.h.

5.10.2.67 #define RC5_CMD_BASS_UP 22

Definition at line 226 of file dev1000.h.

5.10.2.68 #define RC5_CMD_BRIGHT_DOWN 19

Definition at line 223 of file dev1000.h.

5.10.2.69 #define RC5_CMD_BRIGHT_UP 18

Definition at line 222 of file dev1000.h.

5.10.2.70 #define RC5_CMD_CLOCK 42

Definition at line 241 of file dev1000.h.

5.10.2.71 #define RC5_CMD_COLOR_DOWN 21

Definition at line 225 of file dev1000.h.

5.10.2.72 #define RC5_CMD_COLOR_UP 20

Definition at line 224 of file dev1000.h.

5.10.2.73 #define RC5_CMD_CONTRAST_DOWN 29

Definition at line 233 of file dev1000.h.

5.10.2.74 #define RC5_CMD_CONTRAST_UP 28

Definition at line 232 of file dev1000.h.

5.10.2.75 #define RC5_CMD_CROSS 45

Definition at line 244 of file dev1000.h.

5.10.2.76 #define RC5_CMD_DISPLAY 15

Definition at line 219 of file dev1000.h.

5.10.2.77 #define RC5_CMD_EXPAND 36

Definition at line 238 of file dev1000.h.

5.10.2.78 #define RC5_CMD_FAST_FORWARD 52

Definition at line 248 of file dev1000.h.

5.10.2.79 #define RC5_CMD_FAST_REVERSE 50

Definition at line 247 of file dev1000.h.

5.10.2.80 #define RC5_CMD_FINETUNE_MINUS 44

Definition at line 243 of file dev1000.h.

5.10.2.81 #define RC5_CMD_FINETUNE_PLUS 43

Definition at line 242 of file dev1000.h.

5.10.2.82 #define RC5_CMD_LANGUAGE 35

Definition at line 237 of file dev1000.h.

5.10.2.83 #define RC5_CMD_MENU 59

Definition at line 253 of file dev1000.h.

5.10.2.84 #define RC5_CMD_MIX 46

Definition at line 245 of file dev1000.h.

5.10.2.85 #define RC5_CMD_MUTE 13

Definition at line 217 of file dev1000.h.

5.10.2.86 #define RC5_CMD_ONETWODIGITS 10

Definition at line 215 of file dev1000.h.

5.10.2.87 #define RC5_CMD_PAUSE 48

Definition at line 246 of file dev1000.h.

5.10.2.88 #define RC5_CMD_PLAY 53

Definition at line 249 of file dev1000.h.

5.10.2.89 #define RC5_CMD_PRESET 14

Definition at line 218 of file dev1000.h.

5.10.2.90 #define RC5_CMD_PROGRAM_DOWN 33

Definition at line 235 of file dev1000.h.

5.10.2.91 #define RC5_CMD_PROGRAM_UP 32

Definition at line 234 of file dev1000.h.

5.10.2.92 #define RC5_CMD_RECORD 55

Definition at line 251 of file dev1000.h.

5.10.2.93 #define RC5_CMD_STANDBY 12

Definition at line 216 of file dev1000.h.

5.10.2.94 #define RC5_CMD_STOP 54

Definition at line 250 of file dev1000.h.

5.10.2.95 #define RC5_CMD_STORE 41

Definition at line 240 of file dev1000.h.

5.10.2.96 #define RC5_CMD_SWITCH 56

Definition at line 252 of file dev1000.h.

5.10.2.97 #define RC5_CMD_SYSTEM_SELECT 63

Definition at line 255 of file dev1000.h.

5.10.2.98 #define RC5_CMD_TEXT 60

Definition at line 254 of file dev1000.h.

5.10.2.99 #define RC5_CMD_TIMER 38

Definition at line 239 of file dev1000.h.

5.10.2.100 #define RC5_CMD_TREBLE_DOWN 25

Definition at line 229 of file dev1000.h.

5.10.2.101 #define RC5_CMD_TREBLE_UP 24

Definition at line 228 of file dev1000.h.

5.10.2.102 #define RC5_CMD_VOLUME_DOWN 17

Definition at line 221 of file dev1000.h.

5.10.2.103 #define RC5_CMD_VOLUME_UP 16

Definition at line 220 of file dev1000.h.

5.10.2.104 #define RC5_SYS_CDPLAYER 20

Definition at line 203 of file dev1000.h.

5.10.2.105 #define RC5_SYS_EXPERIMENTAL19 19

Definition at line 202 of file dev1000.h.

5.10.2.106 #define RC5_SYS_EXPERIMENTAL7 7

Definition at line 198 of file dev1000.h.

5.10.2.107 #define RC5_SYS_PREAMP 16

Definition at line 199 of file dev1000.h.

5.10.2.108 #define RC5_SYS_RECEIVERTUNER 17

Definition at line 200 of file dev1000.h.

5.10.2.109 #define RC5_SYS_TAPERECORDER 18

Definition at line 201 of file dev1000.h.

5.10.2.110 #define RC5_SYS_TELETEXT 2

Definition at line 196 of file dev1000.h.

5.10.2.111 #define RC5_SYS_TVSET 0

Definition at line 195 of file dev1000.h.

5.10.2.112 #define RC5_SYS_VCR 5

Definition at line 197 of file dev1000.h.

5.10.3 Function Documentation

5.10.3.1 auto u_int16 Fat12OpenFile (register __c0 u_int16 *fileNum*)

Replacement for FatOpenFile that is normally in OpenFile hook. This version disables subdirectories for FAT12 partitions so OpenFile will not go into infinite recursion trying to handle it. Is not needed for VS1000d, but is compatible with it.

SetHookFunction((u_int16)OpenFile, Fat12OpenFile);

Parameters:
fileNum the same as for OpenFile

Returns:
the same as OpenFile

5.10.3.2 auto void Interrupt0 (void)

Called by InterruptStub0.

5.10.3.3 auto void Interrupt1 (void)

Called by InterruptStub1.

5.10.3.4 auto void Interrupt2 (void)

Called by InterruptStub2.

5.10.3.5 auto void Interrupt3 (void)

Called by InterruptStub3.

5.10.3.6 void InterruptStub0 (void)

Four interrupt stubs that the programmer can use without using ASM. For example to set up the first interrupt stub to GPIO0 interrupt, use the following:

```
WriteIRam(0x20+INTV_GPIO0, ReadIRam((u_int16)InterruptStub0));
```

Then you can enable GPIO0 interrupt and it will call your routine **Interrupt0()**(p. 64) whenever GPIO0 interrupt request is generated.

```
PERIP(GPIO0_INT_FALL) |= DISPLAY_XCS;
PERIP(INT_ENABLEL) |= INTF_GPIO0;
```

5.10.3.7 void InterruptStub1 (void)

Stub function that can be plugged to any interrupt vector. Calls **Interrupt1()**(p. 64), which must be provided by the user.

5.10.3.8 void InterruptStub2 (void)

Stub function that can be plugged to any interrupt vector. Calls **Interrupt2()**(p. 64), which must be provided by the user.

5.10.3.9 void InterruptStub3 (void)

Stub function that can be plugged to any interrupt vector. Calls **Interrupt3()**(p. 64), which must be provided by the user.

5.10.3.10 void KeyScan7 (void)

Replacement routine for **KeyScan()**(p. 99) to read GPIO[5:0] and power button instead of just GPIO[4:0] and power button. See also **Suspend7()**(p. 68).

5.10.3.11 auto u_int16 MapperlessReadDiskSector (register __i0 u_int16 * *buffer*, register __reg_a u_int32 *sector*)

5.10.3.12 auto u_int16 MmcCommand (register __b0 s_int16 *cmd*, register __d u_int32 *arg*)

Send MMC/SD command. The CRC that is sent will always be 0x95.

Parameters:

cmd The MMC command, must include the start bit (0x40).

arg The command argument.

Returns:

the result code or 0xff (8th bit set) for timeout.

5.10.3.13 void NandGetOctets (register __c0 s_int16 *length*, register __i2 u_int16 * *buf*)

Writes packed data to NFIO. You must handle NFCS yourself.

5.10.3.14 void NandPutAddressOctet (register __a0 u_int16 *address*)

writes 8 bits with ALE=1. You must handle NFCS yourself.

5.10.3.15 void NandPutCommand (register __a0 u_int16 *command*)

Writes 8 bits with CLE=1. You must handle NFCS yourself.

5.10.3.16 void NandPutOctets (register __c0 s_int16 *length*, register __i2 u_int16 * *buf*)

Reads packed data from NFIO. You must handle NFCS yourself.

5.10.3.17 void NandSetWaits (register __a0 u_int16 *waitns*)

Sets NAND-interface waitstates in nanoseconds. Uses current clockX value for calculation.

5.10.3.18 auto u_int16 OpenFileBaseName (register __i2 const u_int16 * *packedName*)

Open a file based on the name. The suffix is not changed, the caller must select the right suffix and restore the original after the call.

Parameters:

packedName The 8-character name must be in upper case and in packed format.

Returns:

The file index or 0xffffU if file is not found.

5.10.3.19 void PatchMSCPacketFromPC (void *)

LBAB patch – removes 4G restriction from USB (SCSI). Is not needed for VS1000d, but is compatible with it.

5.10.3.20 void PlayRange (void)

Plays from a previously set start position to end position. Handles player and cs structure initialization. You must call **PlayRangeSet()**(p. 67) before calling **PlayRange()**(p. 66).

5.10.3.21 void PlayRangeSet (u_int32 *start*, u_int32 *end*)

Sets the start and end positions for the **PlayRange()**(p. 66) function.

Parameters:

start Play start time in 1/65536th of a second resolution.

end Play end time in 1/65536th of a second resolution. Set to 0x7fffffffUL to disable end time.

5.10.3.22 void puthex (u_int16 *d*)

For debugging with vs3emu: print 4-digit hex number.

5.10.3.23 u_int16 Rc5GetFIFO (void)

Returns 0 if no values are available, received 14-bit value otherwise.

5.10.3.24 void Rc5Init (u_int16 *vector*)

Initializes RC5 structure and installs interrupt handler. RC5 receiver uses one of the interruptable GPIO pins as input. Interrupt must be generated on both edges. The polarity of the receiver does not matter. Currently receives only codes that have two start bits.

```
Rc5Init(INTV_GPIO0);
PERIP(GPIO0_INT_FALL) |= (1<<14);
PERIP(GPIO0_INT_RISE) |= (1<<14);
PERIP(INT_ENABLEL) |= INTF_GPIO0;
while (1) {
    register u_int16 t = Rc5GetFIFO();
    if (t) {
        puthex(t);
        puts("=got");
    }
}
```

See also example code rc5.c .

5.10.3.25 u_int32 ReadIRam (register __i0 u_int16 *addr*)

Reads instruction RAM.

5.10.3.26 void ScsiTestUnitReady (void)

Hook called by **PatchMSCPacketFromPC()**(p. 66).

5.10.3.27 auto void SpiSendClocks (void)

Send MMC clocks with XCS high.

5.10.3.28 auto u_int16 SpiSendReceiveMmc (register __a0 u_int16 *dataTopAligned*, register __a1 *bits*)

Send and receive bits from MMC/SD.

Parameters:

dataTopAligned The first bit to send must be in the most-significant bit.

bits The number of bits to send/receive.

Returns:

If less than 16 bits are sent, the high bits of the result will be the low bits of the dataTopAligned parameter.

5.10.3.29 void Suspend7 (void)

Replacement routine for **USBSuspend()**(p. 101) to wake up from GPIO[5:0] and power button (and USB pins) instead of just GPIO[4:0] and power button (and USB pins). Also puts the analog to powerdown for the duration of USB suspend/low-power pause. See also **KeyScan7()**(p. 65).

5.10.3.30 void WriteIRam (register __i0 u_int16 *addr*, register __a u_int32 *ins*)

Writes instruction RAM.

5.11 errno.h File Reference

Defines

- #define **EPERM** 1
- #define **ENOENT** 2
- #define **ESRCH** 3
- #define **EINTR** 4
- #define **EIO** 5
- #define **ENXIO** 6
- #define **E2BIG** 7
- #define **ENOEXEC** 8
- #define **EBADF** 9
- #define **ECHILD** 10
- #define **EDEADLK** 11
- #define **ENOMEM** 12
- #define **EACCES** 13
- #define **EFAULT** 14
- #define **ENOTBLK** 15
- #define **EBUSY** 16
- #define **EEXIST** 17
- #define **EXDEV** 18

- #define **ENODEV** 19
- #define **ENOTDIR** 20
- #define **EISDIR** 21
- #define **EINVAL** 22
- #define **ENFILE** 23
- #define **EMFILE** 24
- #define **ENOTTY** 25
- #define **ETXTBSY** 26
- #define **EFBIG** 27
- #define **ENOSPC** 28
- #define **ESPIPE** 29
- #define **EROFS** 30
- #define **EMLINK** 31
- #define **EPIPE** 32
- #define **EDOM** 33
- #define **ERANGE** 34
- #define **EAGAIN** 35
- #define **EWOULDBLOCK** EAGAIN
- #define **EINPROGRESS** 36
- #define **EALREADY** 37

Variables

- __near int **errno**

5.11.1 Detailed Description

Standard C header file. Used with stdio functions and some math and strto* functions.

Definition in file **errno.h**.

5.11.2 Define Documentation

5.11.2.1 #define E2BIG 7

Definition at line 14 of file errno.h.

5.11.2.2 #define EACCES 13

Definition at line 21 of file errno.h.

5.11.2.3 #define EAGAIN 35

Definition at line 47 of file errno.h.

5.11.2.4 #define EALREADY 37

Definition at line 50 of file errno.h.

5.11.2.5 #define EBADF 9

Definition at line 16 of file errno.h.

5.11.2.6 #define EBUSY 16

Definition at line 24 of file errno.h.

5.11.2.7 #define ECHILD 10

Definition at line 17 of file errno.h.

5.11.2.8 #define EDEADLK 11

Definition at line 18 of file errno.h.

5.11.2.9 #define EDOM 33

Definition at line 43 of file errno.h.

5.11.2.10 #define EEXIST 17

Definition at line 25 of file errno.h.

5.11.2.11 #define EFAULT 14

Definition at line 22 of file errno.h.

5.11.2.12 #define EFBIG 27

Definition at line 35 of file errno.h.

5.11.2.13 #define EINPROGRESS 36

Definition at line 49 of file errno.h.

5.11.2.14 #define EINTR 4

Definition at line 11 of file errno.h.

5.11.2.15 #define EINVAL 22

Definition at line 30 of file errno.h.

5.11.2.16 #define EIO 5

Definition at line 12 of file errno.h.

5.11.2.17 #define EISDIR 21

Definition at line 29 of file errno.h.

5.11.2.18 #define EMFILE 24

Definition at line 32 of file errno.h.

5.11.2.19 #define EMLINK 31

Definition at line 39 of file errno.h.

5.11.2.20 #define ENFILE 23

Definition at line 31 of file errno.h.

5.11.2.21 #define ENODEV 19

Definition at line 27 of file errno.h.

5.11.2.22 #define ENOENT 2

Definition at line 9 of file errno.h.

5.11.2.23 #define ENOEXEC 8

Definition at line 15 of file errno.h.

5.11.2.24 #define ENOMEM 12

Definition at line 20 of file errno.h.

5.11.2.25 #define ENOSPC 28

Definition at line 36 of file errno.h.

5.11.2.26 #define ENOTBLK 15

Definition at line 23 of file errno.h.

5.11.2.27 #define ENOTDIR 20

Definition at line 28 of file errno.h.

5.11.2.28 #define ENOTTY 25

Definition at line 33 of file errno.h.

5.11.2.29 #define ENXIO 6

Definition at line 13 of file errno.h.

5.11.2.30 #define EPERM 1

Definition at line 8 of file errno.h.

5.11.2.31 #define EPIPE 32

Definition at line 40 of file errno.h.

5.11.2.32 #define ERANGE 34

Definition at line 44 of file errno.h.

5.11.2.33 #define EROFS 30

Definition at line 38 of file errno.h.

5.11.2.34 #define ESPIPE 29

Definition at line 37 of file errno.h.

5.11.2.35 #define ESRCH 3

Definition at line 10 of file errno.h.

5.11.2.36 #define ETXTBSY 26

Definition at line 34 of file errno.h.

5.11.2.37 #define EWOULDBLOCK EAGAIN

Definition at line 48 of file errno.h.

5.11.2.38 #define EXDEV 18

Definition at line 26 of file errno.h.

5.11.3 Variable Documentation

5.11.3.1 __near int errno

5.12 fat.h File Reference

This graph shows which files directly or indirectly include this file:

Data Structures

- struct **FATINFO**
- struct **FRAGMENT**

Defines

- #define **FATINFO_IN_Y**
- #define **MAX_FRAGMENTS** 35
- #define **FAT_LFN_SIZE** (2*13 *2)
- #define **FAT_MKID**(a, b, c) ((a)|((b)<<8)|((**u_int32**)(c)<<16))
- #define **LAST_FRAGMENT** 0x80000000UL

Variables

- __y struct **FRAGMENT minifatFragments** [MAX_FRAGMENTS]
- __y struct **FATINFO minifatInfo**
- **u_int16 minifatBuffer** [256]

5.12.1 Detailed Description

FAT definitions.

Definition in file **fat.h**.

5.12.2 Define Documentation

5.12.2.1 #define FAT_LFN_SIZE (2*13 *2)

Definition at line 10 of file fat.h.

5.12.2.2 #define FAT_MKID(a, b, c) ((a)|((b)<<8)|((u_int32)(c)<<16))

Definition at line 41 of file fat.h.

5.12.2.3 #define FATINFO_IN_Y

Definition at line 7 of file fat.h.

5.12.2.4 #define LAST_FRAGMENT 0x80000000UL

Definition at line 66 of file fat.h.

5.12.2.5 #define MAX_FRAGMENTS 35

Definition at line 8 of file fat.h.

5.12.3 Variable Documentation

5.12.3.1 u_int16 minifatBuffer[256]

holds one sector of data

5.12.3.2 __y struct FRAGMENT minifatFragments[MAX_FRAGMENTS]

5.12.3.3 __y struct FATINFO minifatInfo

5.13 float.h File Reference

Defines

- #define **FLT_RADIX** 2
- #define **FLT_ROUNDS** -1
- #define **FLT_MANT_DIG** 15
- #define **FLT_EPSILON** 6.10351562E-5F
- #define **FLT_DIG** 4
- #define **FLT_MIN_EXP** (-1021)
- #define **FLT_MIN** 2.2250738585072014E-308
- #define **FLT_MIN_10_EXP** (-307)
- #define **FLT_MAX_EXP** 1024
- #define **FLT_MAX** 1.7976931348623157E+308
- #define **FLT_MAX_10_EXP** 308
- #define **DBL_MANT_DIG** 31
- #define **DBL_EPSILON** 4.6566128752458E-10
- #define **DBL_DIG** 9
- #define **DBL_MIN_EXP** (-1021)
- #define **DBL_MIN** 4.45014771494214E-308
- #define **DBL_MIN_10_EXP** (-307)
- #define **DBL_MAX_EXP** 1024
- #define **DBL_MAX** 1.79769313486232E+308
- #define **DBL_MAX_10_EXP** 308
- #define **LDBL_MANT_DIG** DBL_MANT_DIG
- #define **LDBL_EPSILON** DBL_EPSILON
- #define **LDBL_DIG** DBL_DIG

- #define **LDBL_MIN_EXP** DBL_MIN_EXP
- #define **LDBL_MIN** DBL_MIN
- #define **LDBL_MIN_10_EXP** DBL_MIN_10_EXP
- #define **LDBL_MAX_EXP** DBL_MAX_EXP
- #define **LDBL_MAX** DBL_MAX
- #define **LDBL_MAX_10_EXP** DBL_MAX_10_EXP

5.13.1 Detailed Description

Standard C header file. The float type should not be use with VCC (only 15-bit accuracy).

Definition in file **float.h**.

5.13.2 Define Documentation

5.13.2.1 #define DBL_DIG 9

Definition at line 25 of file float.h.

5.13.2.2 #define DBL_EPSILON 4.6566128752458E-10

Definition at line 24 of file float.h.

5.13.2.3 #define DBL_MANT_DIG 31

Definition at line 23 of file float.h.

5.13.2.4 #define DBL_MAX 1.79769313486232E+308

Definition at line 30 of file float.h.

5.13.2.5 #define DBL_MAX_10_EXP 308

Definition at line 31 of file float.h.

5.13.2.6 #define DBL_MAX_EXP 1024

Definition at line 29 of file float.h.

5.13.2.7 #define DBL_MIN 4.45014771494214E-308

Definition at line 27 of file float.h.

5.13.2.8 #define DBL_MIN_10_EXP (-307)

Definition at line 28 of file float.h.

5.13.2.9 #define DBL_MIN_EXP (-1021)

Definition at line 26 of file float.h.

5.13.2.10 #define FLT_DIG 4

Definition at line 15 of file float.h.

5.13.2.11 #define FLT_EPSILON 6.10351562E-5F

Definition at line 14 of file float.h.

5.13.2.12 #define FLT_MANT_DIG 15

Definition at line 13 of file float.h.

5.13.2.13 #define FLT_MAX 1.7976931348623157E+308

Definition at line 20 of file float.h.

5.13.2.14 #define FLT_MAX_10_EXP 308

Definition at line 21 of file float.h.

5.13.2.15 #define FLT_MAX_EXP 1024

Definition at line 19 of file float.h.

5.13.2.16 #define FLT_MIN 2.2250738585072014E-308

Definition at line 17 of file float.h.

5.13.2.17 #define FLT_MIN_10_EXP (-307)

Definition at line 18 of file float.h.

5.13.2.18 #define FLT_MIN_EXP (-1021)

Definition at line 16 of file float.h.

5.13.2.19 #define FLT_RADIX 2

Definition at line 10 of file float.h.

5.13.2.20 #define FLT_ROUNDS -1

Definition at line 11 of file float.h.

5.13.2.21 #define LDBL_DIG DBL_DIG

Definition at line 35 of file float.h.

5.13.2.22 #define LDBL_EPSILON DBL_EPSILON

Definition at line 34 of file float.h.

5.13.2.23 #define LDBL_MANT_DIG DBL_MANT_DIG

Definition at line 33 of file float.h.

5.13.2.24 #define LDBL_MAX DBL_MAX

Definition at line 40 of file float.h.

5.13.2.25 #define LDBL_MAX_10_EXP DBL_MAX_10_EXP

Definition at line 41 of file float.h.

5.13.2.26 #define LDBL_MAX_EXP DBL_MAX_EXP

Definition at line 39 of file float.h.

5.13.2.27 #define LDBL_MIN DBL_MIN

Definition at line 37 of file float.h.

5.13.2.28 #define LDBL_MIN_10_EXP DBL_MIN_10_EXP

Definition at line 38 of file float.h.

5.13.2.29 #define LDBL_MIN_EXP DBL_MIN_EXP

Definition at line 36 of file float.h.

5.14 mapper.h File Reference

```
#include <vstypes.h>
```

Include dependency graph for mapper.h:

This graph shows which files directly or indirectly include this file:

Data Structures

- struct **FsMapper**

Defines

- #define **FS_MAPPER_VERSION** 0x010C
- #define **MAP_VERSION_OFFSET** 0
- #define **MAP_BLOCK_SIZE_OFFSET** 1
- #define **MAP_BLOCKS_OFFSET** 2
- #define **MAP_CACHE_BLOCKS_OFFSET** 4
- #define **MAP_CREATE_OFFSET** 5
- #define **MAP_DELETE_OFFSET** 6
- #define **MAP_READ_OFFSET** 7
- #define **MAP_WRITE_OFFSET** 8
- #define **MAP_FREE_OFFSET** 9
- #define **MAP_FLUSH_OFFSET** 10
- #define **MAP_PHYSICAL_OFFSET** 11

5.14.1 Detailed Description

File system layer 5: Mapper layer. The mapper layer takes care of mapping between logical and physical blocks. Also, if there is a difference between read/write block size and erase page size, it is hidden by the mapper. Also caching is performed by the mapper.

With simple file systems, like MMC, where the MMC card itself takes care of mapping and erasing, caching is the only operation needed by the mapper.

Definition in file **mapper.h**.

5.14.2 Define Documentation

5.14.2.1 #define FS_MAPPER_VERSION 0x010C

Current version number. 8 MSBs contain version number, 8 LSBs size of the structure in words.

Version number history:

1. 0x010C First version

Definition at line 28 of file mapper.h.

5.14.2.2 #define MAP_BLOCK_SIZE_OFFSET 1

Definition at line 70 of file mapper.h.

5.14.2.3 #define MAP_BLOCKS_OFFSET 2

Definition at line 71 of file mapper.h.

5.14.2.4 #define MAP_CACHE_BLOCKS_OFFSET 4

Definition at line 72 of file mapper.h.

5.14.2.5 #define MAP_CREATE_OFFSET 5

Definition at line 73 of file mapper.h.

5.14.2.6 #define MAP_DELETE_OFFSET 6

Definition at line 74 of file mapper.h.

5.14.2.7 #define MAP_FLUSH_OFFSET 10

Definition at line 78 of file mapper.h.

5.14.2.8 #define MAP_FREE_OFFSET 9

Definition at line 77 of file mapper.h.

5.14.2.9 #define MAP_PHYSICAL_OFFSET 11

Definition at line 79 of file mapper.h.

5.14.2.10 #define MAP_READ_OFFSET 7

Definition at line 75 of file mapper.h.

5.14.2.11 #define MAP_VERSION_OFFSET 0

Definition at line 69 of file mapper.h.

5.14.2.12 #define MAP_WRITE_OFFSET 8

Definition at line 76 of file mapper.h.

5.15 mapperflash.h File Reference

```
#include <vstypes.h>
#include <mapper.h>
```

Include dependency graph for mapperflash.h:

This graph shows which files directly or indirectly include this file:

Data Structures

- struct **FmfMeta**
- struct **FsMapperFlash**

Defines

- #define **FS_MAP_FLASH_PAGE_SIZE** 256
- #define **FS_MAP_FLASH_MAX_ERASE_PAGES** 256
- #define **FS_MAP_NON_FULL** 4
- #define **memcpyXY** memcpy
- #define **memcpyYX** memcpy
- #define **memcpyYY** memcpy
- #define **memsetY** memset
- #define **qsorty** qsort

Functions

- **FsMapper** * **FsMapFlCreate** (struct **FsPhysical** *physical, **u_int16** format)
- **s_int16 FsMapFlDelete** (struct **FsMapper** *map)
- **s_int16 FsMapFlRead** (struct **FsMapper** *map, **u_int32** firstLogicalBlock, **u_int16** logicalBlocks, **u_int16** *data)
- **s_int16 FsMapFlWrite** (struct **FsMapper** *map, **u_int32** firstLogicalBlock, **u_int16** logicalBlocks, **u_int16** *data)
- **s_int16 FsMapFlFlush** (struct **FsMapper** *map, **u_int16** hard)
- **s_int16 FsMapFlFree** (struct **FsMapper** *m, **u_int32** logicalBlockNo, **u_int32** logicalBlocks)
- void **FsMapFlDump** (struct **FsMapper** *map, **s_int32** maxBlocks)
- void **FsMapFlCacheDump** (struct **FsMapper** *map)
- void **FsMapFlPrint** (**s_int32** page)

5.15.1 Detailed Description

File System: Flash Mapper.

5.15.2 Introduction

The Flash Mapper creates a wear-levelling buffer between a file system and a Flash memory physical layer.

Version:
1.0

Date:
2006-xx-xx

Author:
Henrik Herranen

Definition in file **mapperflash.h**.

5.15.3 Define Documentation

5.15.3.1 #define FS_MAP_FLASH_MAX_ERASE_PAGES 256

4 x FS_MAP_FLASH_MAX_ERASE_PAGES + 1 words of memory is required

Definition at line 21 of file mapperflash.h.

5.15.3.2 #define FS_MAP_FLASH_PAGE_SIZE 256

Definition at line 19 of file mapperflash.h.

5.15.3.3 #define FS_MAP_NON_FULL 4

Definition at line 40 of file mapperflash.h.

5.15.3.4 #define memcpyXY memcpy

Definition at line 97 of file mapperflash.h.

5.15.3.5 #define memcpyYX memcpy

Definition at line 98 of file mapperflash.h.

5.15.3.6 #define memcpyYY memcpy

Definition at line 99 of file mapperflash.h.

5.15.3.7 #define memsetY memset

Definition at line 100 of file mapperflash.h.

5.15.3.8 #define qsorty qsort

Definition at line 101 of file mapperflash.h.

5.15.4 Function Documentation

5.15.4.1 void FsMapFlCacheDump (struct FsMapper * *map*)

5.15.4.2 struct FsMapper* FsMapFlCreate (struct FsPhysical * *physical*, u_int16 *format*)

Create a mapper

5.15.4.3 s_int16 FsMapFlDelete (struct FsMapper * *map*)

Delete a mapper

5.15.4.4 void FsMapFlDump (struct FsMapper * *map*, s_int32 *maxBlocks*)

5.15.4.5 s_int16 FsMapFlFlush (struct FsMapper * *map*, u_int16 *hard*)

Flush all cached data. if *hard* is non-zero, all potential journals are also flushed.

5.15.4.6 s_int16 FsMapFlFree (struct FsMapper * *m*, u_int32 *logicalBlockNo*, u_int32 *logicalBlocks*)

Free blocks.

5.15.4.7 void FsMapFlPrint (s_int32 *page*)

5.15.4.8 s_int16 FsMapFlRead (struct FsMapper * *map*, u_int32 *firstLogicalBlock*, u_int16 *logicalBlocks*, u_int16 * *data*)

Read blocks

5.15.4.9 s_int16 FsMapFlWrite (struct FsMapper * *map*, u_int32 *firstLogicalBlock*, u_int16 *logicalBlocks*, u_int16 * *data*)

Write blocks

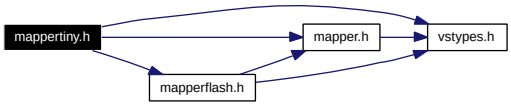
5.16 mappertiny.h File Reference

```
#include <vstypes.h>
```

```
#include <mapper.h>
```

```
#include <mapperflash.h>
```

Include dependency graph for mappertiny.h:



Data Structures

- struct **FsMapperTiny**

Functions

- **FsMapper** * **FsMapTnCreate** (struct **FsPhysical** *physical, **u_int16** cacheSize)
- **s_int16 FsMapTnDelete** (struct **FsMapper** *map)
- **s_int16 FsMapTnRead** (struct **FsMapper** *map, **u_int32** firstLogicalBlock, **u_int16** logicalBlocks, **u_int16** *data)
- **s_int16 FsMapTnWrite** (struct **FsMapper** *map, **u_int32** firstLogicalBlock, **u_int16** logicalBlocks, **u_int16** *data)
- **s_int16 FsMapTnFlush** (struct **FsMapper** *map, **u_int16** hard)
- **s_int16 FsMapTnFree** (struct **FsMapper** *m, **u_int32** logicalBlockNo, **u_int32** logicalBlocks)
- **s_int16 FsMapFlNullFail** ()
- **s_int16 FsMapFlNullOk** ()

5.16.1 Detailed Description

File System: Tiny Flash Mapper.

5.16.2 Introduction

The Tiny Flash Mapper is a read-only mapper that reads a wear-levelled buffers created by the Flash Mapper (**mapperflash.h**(p. 79)). It acts as a converter tool between a file system logical and Flash physical layers.

This tiny mapper is not a very efficient implementation. For every logical block read there are max five physical read operations.

Version:
1.0

Date:
2006-08-25

Definition in file **mappertiny.h**.

5.16.3 Function Documentation

5.16.3.1 s_int16 FsMapFlNullFail ()

5.16.3.2 s_int16 FsMapFlNullOk ()

5.16.3.3 struct FsMapper* FsMapTnCreate (struct FsPhysical * *physical*, u_int16 *cacheSize*)

Create a tiny mapper

5.16.3.4 s_int16 FsMapTnDelete (struct FsMapper * *map*)

Delete a tiny mapper

5.16.3.5 s_int16 FsMapTnFlush (struct FsMapper * *map*, u_int16 *hard*)

Flush all cached data. if *hard* is non-zero, all potential journals are also flushed.

5.16.3.6 s_int16 FsMapTnFree (struct FsMapper * *m*, u_int32 *logicalBlockNo*, u_int32 *logicalBlocks*)

Free blocks.

5.16.3.7 s_int16 FsMapTnRead (struct FsMapper * *map*, u_int32 *firstLogicalBlock*, u_int16 *logicalBlocks*, u_int16 * *data*)

Read blocks

5.16.3.8 s_int16 FsMapTnWrite (struct FsMapper * *map*, u_int32 *firstLogicalBlock*, u_int16 *logicalBlocks*, u_int16 * *data*)

Write blocks

5.17 math.h File Reference

Defines

- #define **frexp** __builtin_frexp
- #define **ldexp** __builtin_ldexp
- #define **fabs** __builtin_fabs
- #define **modf**(v, p) _modf(v,p)
- #define **_oldmodf**(v, p) (*(p)=(long)(v),(v)-(double)(long)(v))

- #define **HUGE_VAL** 3.402823466385288598e38
- #define **EDOM** 33
- #define **ERANGE** 34
- #define **log2**(x) (log(x)/log(2.))
- #define **logdb**(x) (x ? (int)(log(x)/log(2.)*6.0)-96 : -96)
- #define **MulSh24**(a, b) ((long)((long long)(a) * (b) >> 24))
- #define **MulSh20**(a, b) ((long)((long long)(a) * (b) >> 20))

Functions

- __near double **frexp** (double value, __near int *eptr)
- __near double **ldexp** (double value, int exp)
- __near double **fabs** (double value)
- __near double **_modf** (double value, __near double *iptr)
- __near double **fmod** (double x, double y)
- __near double **acos** (double)
- __near double **asin** (double)
- __near double **atan** (double)
- __near double **cos** (double)
- __near double **cosh** (double)
- __near double **exp** (double)
- __near double **log10** (double)
- __near double **log** (double)
- __near double **sin** (double)
- __near double **sinh** (double)
- __near double **sqrt** (double)
- __near double **tan** (double)
- __near double **tanh** (double)
- __near double **floor** (double)
- __near double **ceil** (double)
- __near double **pow** (double, double)
- __near double **atan2** (double, double)
- __near auto double **SqrtF** (double)
- __near auto unsigned short **SqrtI** (register __c unsigned long x)
- __near auto double **SqrtF32** (double)
- __near auto unsigned long **SqrtI32** (register __c unsigned long x)
- __near double **ISqrt** (double x)
- __near unsigned short **LongLog2** (register __a long x)
- unsigned long **_divide16unsigned** (register __b0 unsigned short dividend, register __a0 unsigned short D)
- unsigned long **_divide16signed** (register __b0 unsigned short dividend, register __a0 unsigned short D)

5.17.1 Define Documentation

5.17.1.1 #define _oldmodf(v, p) (*(p)=(long)(v),(v)-(double)(long)(v))

Definition at line 13 of file math.h.

5.17.1.2 #define EDOM 33

Definition at line 19 of file math.h.

5.17.1.3 #define ERANGE 34

Definition at line 20 of file math.h.

5.17.1.4 #define fabs __builtin_fabs

Definition at line 9 of file math.h.

5.17.1.5 #define frexp __builtin_frexp

Definition at line 7 of file math.h.

5.17.1.6 #define HUGE_VAL 3.402823466385288598e38

Definition at line 17 of file math.h.

5.17.1.7 #define ldexp __builtin_ldexp

Definition at line 8 of file math.h.

5.17.1.8 #define log2(x) (log(x)/log(2.))

Definition at line 52 of file math.h.

5.17.1.9 #define logdb(x) (x ? (int)(log(x)/log(2.)*6.0)-96 : -96)

Definition at line 53 of file math.h.

5.17.1.10 #define modf(v, p) _modf(v,p)

Definition at line 12 of file math.h.

5.17.1.11 #define MulSh20(a, b) ((long)((long long)(a) * (b) >> 20))

Definition at line 58 of file math.h.

5.17.1.12 #define MulSh24(a, b) ((long)((long long)(a) * (b) >> 24))

Definition at line 57 of file math.h.

5.17.2 Function Documentation

5.17.2.1 unsigned long _divide16signed (register __b0 unsigned short *dividend*, register __a0 unsigned short *D*)

5.17.2.2 unsigned long _divide16unsigned (register __b0 unsigned short *dividend*, register __a0 unsigned short *D*)

5.17.2.3 __near double _modf (double *value*, __near double * *iptr*)

5.17.2.4 __near double acos (double)

5.17.2.5 __near double asin (double)

5.17.2.6 __near double atan (double)

5.17.2.7 __near double atan2 (double, double)

5.17.2.8 __near double ceil (double)

5.17.2.9 __near double cos (double)

5.17.2.10 __near double cosh (double)

5.17.2.11 __near double exp (double)

5.17.2.12 __near double fabs (double *value*)

5.17.2.13 __near double floor (double)

5.17.2.14 __near double fmod (double *x*, double *y*)

5.17.2.15 __near double frexp (double *value*, __near int * *eptr*)

5.17.2.16 __near double ISqrt (double *x*)

5.17.2.17 __near double ldexp (double *value*, int *exp*)

5.17.2.18 __near double log (double)

5.17.2.19 __near double log10 (double)

5.17.2.20 __near unsigned short LongLog2 (register __a long *x*)

5.17.2.21 __near double pow (double, double)

5.17.2.22 __near double sin (double)

5.17.2.23 __near double sinh (double)

5.17.2.24 __near double sqrt (double)

5.17.2.25 __near auto double SqrtF (double)

5.17.2.26 __near auto double SqrtF32 (double)

5.17.2.27 __near auto unsigned short SqrtI (register __c unsigned long *x*)

5.17.2.28 __near auto unsigned long SqrtI32 (register __c unsigned long *x*)

5.17.2.29 __near double tan (double)

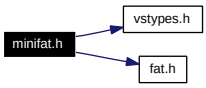
5.17.2.30 __near double tanh (double)

5.18 minifat.h File Reference

```
#include <vstypes.h>
```

```
#include "fat.h"
```

Include dependency graph for minifat.h:



Defines

- #define **MINIFAT_H**

Typedefs

- typedef **s_int16**(* **freeSectorCallback**)(void *private, **u_int32** sector, **u_int32** numSecs)

Functions

- auto **u_int16 FatGetByte** (register __c0 **u_int16** n)
- auto **u_int16 FatGetWord** (register __c0 **u_int16** n)
- auto **u_int32 FatGetLong** (register __c0 **u_int16** n)
- auto **u_int16 FatInitFileSystem** (void)
- auto __y struct **FRAGMENT** * **FatFragmentList** (register __i2 __y struct **FRAGMENT** *frag, register __reg_b **u_int32** fatCluster)
- auto **s_int16 FatHandleDir** (register __y struct **FRAGMENT** *curFragment, __y struct **FRAGMENT** *nextFragment)
- auto **s_int16 FatOpenFile** (register __c0 **u_int16** fileNum)
- auto **s_int16 FatReadFile** (register __i3 **u_int16** *buf, register __c1 **s_int16** byteOff, register __c0 **s_int16** byteSize)
- **u_int32 FatTell** (void)
- **u_int32 FatSeek** (register __reg_a **u_int32** pos)
- auto **u_int32 FatFindSector** (register __reg_d **u_int32** pos)
- auto **s_int16 FatCheckFileType** (register __reg_a **u_int32** suffix)
- void **MemCopyPackedBigEndian** (register __i0 **u_int16** *dst, register __a0 **u_int16** dstidx, register __i1 **u_int16** *src, register __a1 **u_int16** srcidx, register __b0 **u_int16** byteSize)
- void **MemCopyPackedLittleEndian** (register __i0 **u_int16** *dst, register __a0 **u_int16** dstidx, register __i1 **u_int16** *src, register __a1 **u_int16** srcidx, register __b0 **u_int16** byteSize)
- void **MemWritePacked** (register __a0 void *dst, register __a1 **u_int16** dstidx, register __b0 **u_int16** dat)
- **u_int16 MemReadPacked** (register __a0 const void *src, register __a1 **u_int16** srcidx)
- void **MemWritePackedY** (register __a0 __y void *dst, register __a1 **u_int16** dstidx, register __b0 **u_int16** dat)
- **u_int16 MemReadPackedY** (register __a0 __y const void *src, register __a1 **u_int16** srcidx)
- **s_int16 FatIterateOverFreeSectors** (**freeSectorCallback** callBackFunction, void *private)

- auto **u_int16 ReadDiskSector** (register __i0 **u_int16** *buffer, register __reg_a **u_int32** sector)

5.18.1 Detailed Description

MiniFAT contains functions to handle one simultaneous open file.

Definition in file **minifat.h**.

5.18.2 Define Documentation

5.18.2.1 #define MINIFAT_H

Definition at line 7 of file minifat.h.

5.18.3 Typedef Documentation

5.18.3.1 typedef s_int16(* freeSectorCallback)(void *private, u_int32 sector, u_int32 numSecs)

Definition at line 126 of file minifat.h.

5.18.4 Function Documentation

5.18.4.1 auto s_int16 FatCheckFileType (register __reg_a u_int32 *suffix*)

Internal function to compare the 24-bit parameter to allowed suffixes.

Parameters:
suffix The suffix to compare.

Returns:
non-zero if suffix matches, or minifatInfo.supportedSuffixes is NULL.

5.18.4.2 auto u_int32 FatFindSector (register __reg_d u_int32 *pos*)

Internal function to locate the right sector for the current read position.

Parameters:
pos Byte position to find.

Returns:
the FAT sector that corresponds to the pos.

5.18.4.3 auto __y struct FRAGMENT* FatFragmentList (register __i2 __y struct FRAGMENT * *frag*, register __reg_b u_int32 *fatCluster*)

Creates a list of fragments in a file, starting from a specified FAT cluster.

Parameters:

frag fragment array entry to start filling information from.

fatCluster fat cluster to start from.

Returns:

the next free fragment array entry.

5.18.4.4 auto u_int16 FatGetByte (register __c0 u_int16 *n*)

Reads byte values from minifatBuffer.

Parameters:

n byte offset of the value inside minifatBuffer

Returns:

byte value

5.18.4.5 auto u_int32 FatGetLong (register __c0 u_int16 *n*)

Reads 32-bit long values from minifatBuffer.

Parameters:

n byte offset of the little-endian value inside minifatBuffer

Returns:

long value

5.18.4.6 auto u_int16 FatGetWord (register __c0 u_int16 *n*)

Reads 16-bit word values from minifatBuffer.

Parameters:

n byte offset of the little-endian value inside minifatBuffer

Returns:

word value

5.18.4.7 auto s_int16 FatHandleDir (register __y struct FRAGMENT * *curFragment*, __y struct FRAGMENT * *nextFragment*)

Internal function that scans files until the right file is found. Uses minifatInfo.gFileNum[0] and minifatInfo.gFileNum[1] for file number counts.

Parameters:

curFragment The clusters in the directory to scan.

nextFragment The first free fragment table entry, used for recursion.

Returns:

< 0 for file found, otherwise the total number of files (can be 0).

5.18.4.8 auto u_int16 FatInitFileSystem (void)

Initializes the file system and checks if FAT present.

Returns:

0 for success.

5.18.4.9 s_int16 FatIterateOverFreeSectors (freeSectorCallback *callBackFunction*, void * *private*)

Finds free areas from the FAT disk and executes a callback function.

Parameters:

callBackFunction Is called for each free area. If callback returns non-zero, the iteration is ended prematurely.

private a private parameter to be passed to the callBackFunction.

5.18.4.10 auto s_int16 FatOpenFile (register __c0 u_int16 *fileNum*)

Opens the specified file for reading. Only counts files that match a suffix set in the array set to minifatInfo.supportedSuffixes, or all files if minifatInfo.supportedSuffixes is NULL.

Parameters:

fileNum The number of file to open, starting from 0.

Returns:

< 0 for file found, otherwise the total number of files (can be 0).

5.18.4.11 auto s_int16 FatReadFile (register __i3 u_int16 * *buf*, register __c1 s_int16 *byteOff*, register __c0 s_int16 *byteSize*)

5.18.4.12 u_int32 FatSeek (register __reg_a u_int32 *pos*)

Changes the current read byte position of the file.

Parameters:
pos Absolute position for the new read byte position.

Returns:
The old read position.

5.18.4.13 u_int32 FatTell (void)

Returns the current read byte position of the file.

Returns:
Current read position.

5.18.4.14 void MemCopyPackedBigEndian (register __i0 u_int16 * *dst*, register __a0 u_int16 *dstidx*, register __i1 u_int16 * *src*, register __a1 u_int16 *srcidx*, register __b0 u_int16 *byteSize*)

Copies big-endian packed byte strings with arbitrary alignments (in X memory).

Parameters:
dst destination word pointer
dstidx destination byte offset
src source word pointer
srcidx source byte offset
byteSize the number of bytes to copy

5.18.4.15 void MemCopyPackedLittleEndian (register __i0 u_int16 * *dst*, register __a0 u_int16 *dstidx*, register __i1 u_int16 * *src*, register __a1 u_int16 *srcidx*, register __b0 u_int16 *byteSize*)

Not in VS1000B ROM!

5.18.4.16 u_int16 MemReadPacked (register __a0 const void * *src*, register __a1 u_int16 *srcidx*)

Not in VS1000B ROM!

5.18.4.17 u_int16 MemReadPackedY (register __a0 __y const void * *src*, register __a1 u_int16 *srcidx*)

Not in VS1000B ROM!

5.18.4.18 void MemWritePacked (register __a0 void * *dst*, register __a1 u_int16 *dstidx*, register __b0 u_int16 *dat*)

Not in VS1000B ROM!

5.18.4.19 void MemWritePackedY (register __a0 __y void * *dst*, register __a1 u_int16 *dstidx*, register __b0 u_int16 *dat*)

Writes bytes to big-endian packed byte array in Y memory.

Parameters:

dst destination word pointer

dstidx destination byte offset

dat byte to write, the value should be 0..255

5.18.4.20 auto u_int16 ReadDiskSector (register __i0 u_int16 * *buffer*, register __reg_a u_int32 *sector*)

Outside service that must be provided for minifat. VS1000 provides this function through IRAM hook ReadDiskSector. The default value for it is **MapperReadDiskSector()**(p. 176), which uses map->Read() to implement the sector read.

Parameters:

buffer the buffer for the sector data.

sector the sector to read.

5.19 physical.h File Reference

```
#include <vstypes.h>
```

Include dependency graph for physical.h:

This graph shows which files directly or indirectly include this file:

Data Structures

- struct **FsPhysical**

Defines

- #define **FS_PHYSICAL_VERSION** 0x010B

5.19.1 Detailed Description

File system layer 6: Physical layer. This is the lowest layer of a file system. This layer takes care of the actual, physical connection to a device.

Definition in file **physical.h**.

5.19.2 Define Documentation

5.19.2.1 #define FS_PHYSICAL_VERSION 0x010B

Current version number. 8 MSBs contain version number, 8 LSBs size of the structure in words.

Version number history:

1. 0x010B

Definition at line 21 of file physical.h.

5.20 player.h File Reference

```
#include <vstypes.h>
```

Include dependency graph for player.h:

Data Structures

- struct **Player**
- struct **KeyMapping**

Defines

- #define **LED1** 4
- #define **LED2** 8
- #define **KEY_1** 1
- #define **KEY_2** 2
- #define **KEY_3** 4
- #define **KEY_4** 8
- #define **KEY_5** 16
- #define **KEY_POWER** 256
- #define **KEY_RELEASED** 0x4000
- #define **KEY_LONG_PRESS** 0x8000
- #define **KEY_LONG_ONESHOT** 0x8000
- #define **SHORT_LIMIT** 16
- #define **OFF_LIMIT** 32

Enumerations

- enum **keyEvent** {
  ke_null = 0, **ke_previous**, **ke_next**, **ke_rewind**,
  ke_forward, **ke_volumeUp**, **ke_volumeDown**, **ke_earSpeaker**,
  ke_earSpeakerToggle, **ke_randomToggle**, **ke_randomToggle-NewSong**, **ke_pauseToggle**,
  ke_powerOff, **ke_ff_faster**, **ke_ff_slower**, **ke_ff_off**,
  ke_volumeUp2, **ke_volumeDown2** }

Functions

- void **putch** (register __a0 short dat)
- void **KeyScan** (void)
- auto void **CleanDisk** (register __c1 **u_int16** tryBoot)
- void **PlayerVolume** (void)
- auto **u_int16 USBIsAttached** (void)
- auto void **MassStorage** (void)
- auto void **RealMassStorage** (void)
- void **KeyEventHandler** (enum **keyEvent** event)
- void **RealKeyEventHandler** (enum **keyEvent** event)
- auto **u_int16 ReadGPIO** (void)
- void **USBSuspend** (**u_int16** timeOut)
- void **RealUSBSuspend** (**u_int16** timeOut)
- void **UserInterfaceIdleHook** (void)
- **u_int16 CsRead** (struct **CodecServices** *cs, **u_int16** *data, **u_int16** firstOdd, **u_int16** bytes)
- **s_int16 CsSeek** (struct **CodecServices** *cs, **s_int32** offset, **s_int16** whence)
- **s_int16 CsOutput** (struct **CodecServices** *cs, **s_int16** *data, **s_int16** n)

Variables

- **s_int16 tmpBuf** [2 *32]
- **Player player**
- const struct **KeyMapping** * **currentKeyMap**
- const struct **KeyMapping sixKeyMap** []
- const struct **KeyMapping fiveKeyMap** []
- const struct **KeyMapping shiftFourKeyMap** []
- const struct **KeyMapping threeKeyMap** []
- **u_int16 keyOld**
- **s_int16 keyOldTime**
- __y **u_int16 mallocAreaY** []
- **u_int16 mallocAreaX** []

- const **u_int32** * **supportedFiles**
- const **u_int32 defSupportedFiles** [ ]
- **u_int16 keyCheck**
- __y **u_int16 vs1000d_BitReverse** [256]
- __y **u_int16 vs1000d_Latin1** [256 *3]

5.20.1 Detailed Description

Routines related to the default player implementation.

Definition in file **player.h**.

5.20.2 Define Documentation

5.20.2.1 #define KEY_1 1

Definition at line 63 of file player.h.

5.20.2.2 #define KEY_2 2

Definition at line 64 of file player.h.

5.20.2.3 #define KEY_3 4

Definition at line 65 of file player.h.

5.20.2.4 #define KEY_4 8

Definition at line 66 of file player.h.

5.20.2.5 #define KEY_5 16

Definition at line 67 of file player.h.

5.20.2.6 #define KEY_LONG_ONESHOT 0x8000

Definition at line 71 of file player.h.

5.20.2.7 #define KEY_LONG_PRESS 0x8000

Definition at line 70 of file player.h.

5.20.2.8 #define KEY_POWER 256

Definition at line 68 of file player.h.

5.20.2.9 #define KEY_RELEASED 0x4000

Definition at line 69 of file player.h.

5.20.2.10 #define LED1 4

Definition at line 28 of file player.h.

5.20.2.11 #define LED2 8

Definition at line 29 of file player.h.

5.20.2.12 #define OFF_LIMIT 32

Definition at line 76 of file player.h.

5.20.2.13 #define SHORT_LIMIT 16

Definition at line 75 of file player.h.

5.20.3 Enumeration Type Documentation

5.20.3.1 enum keyEvent

Actions for keypresses.

Enumerator:

ke_null

ke_previous skip to previous song or start of song (if >= 5 seconds played)

ke_next goto next song

ke_rewind skip 5 seconds back

ke_forward skip 5 seconds forward

ke_volumeUp increase volume by 0.5dB

ke_volumeDown decrease volume by 0.5dB

ke_earSpeaker rotate earSpeaker setting: 0, 16000U, 38000U, 54000U

ke_earSpeakerToggle toggle earSpeaker setting: 0, 38000U

ke_randomToggle toggle random play mode

ke_randomToggleNewSong toggle random play mode, start new song immediately when activated

ke_pauseToggle toggle pause mode

ke_powerOff power off the unit

ke_ff_faster increase play speed (needs ke_ff_off as release event)

ke_ff_slower decrease play speed (needs ke_ff_off as release event)

ke_ff_off back to normal play speed

ke_volumeUp2 increase volume by 1.0dB

ke_volumeDown2 decrease volume by 1.0dB

Definition at line 32 of file player.h.

```
32              {
33   ke_null = 0,
34   ke_previous,
35   ke_next,
36   ke_rewind,
37   ke_forward,
38   ke_volumeUp,
39   ke_volumeDown,
40   ke_earSpeaker,
41   ke_earSpeakerToggle,
42   ke_randomToggle,
43   ke_randomToggleNewSong,
44   ke_pauseToggle,
45   ke_powerOff,
46   ke_ff_faster,
47   ke_ff_slower,
48   ke_ff_off,
49   ke_volumeUp2,
50   ke_volumeDown2,
51 };
```

5.20.4 Function Documentation

5.20.4.1 auto void CleanDisk (register __c1 u_int16 *tryBoot*)

Cleans unused sectors from FAT16/FAT32 disks. If tryBoot is non-zero, checks for VS1000_B.RUN.

5.20.4.2 s_int16 CsOutput (struct CodecServices * *cs*, s_int16 * *data*, s_int16 *n*)

Implements codec service Output function. Implements pause mode (player.pauseOn) by inserting zero samples, and low-power pause mode (**USB-Suspend()**(p. 101)) between key presses. Updates audio sample rate. Converts mono input to stereo for **AudioOutputSamples()**(p. 37).

5.20.4.3 u_int16 CsRead (struct CodecServices * *cs*, u_int16 * *data*, u_int16 *firstOdd*, u_int16 *bytes*)

Implements codec service Read function. Uses the Read() hook function.

5.20.4.4 s_int16 CsSeek (struct CodecServices * *cs*, s_int32 *offset*, s_int16 *whence*)

Implements codec service Seek function. Uses **Seek()**(p. 177) and **Tell()**(p. 178) hook functions.

5.20.4.5 void KeyEventHandler (enum keyEvent *event*)

Hook: performs actions for key events. Default: RealKeyEventHandler.

5.20.4.6 void KeyScan (void)

Performs key scanning of 5 keys on GPIO0 and the power key. Processes the results to generate short and long key press events, then calls the KeyEvent-Handler with the appropriate key events. Short press is generated if press was shorter than 16 ui ticks (1 second). Long presses are generated when press lasts longer than 16 ui ticks. Long press generates events 16 times a second unless the KEY_LONG_ONESHOT is added. Any key combination containing power key requires longer press (2 seconds).

KeyScan also cancels play and resets pause mode if USB is attached.

5.20.4.7 auto void MassStorage (void)

Hook: Implements MassStorage. Default: RealMassStorage.

5.20.4.8 void PlayerVolume (void)

Updates volume using player.volume and player.volumeOffset.

5.20.4.9 void putch (register __a0 short *dat*)

Waits for UART TX ready, then writes next byte.

5.20.4.10 auto u_int16 ReadGPIO (void)

Read GPIO0[0:7] values. Turns the bits to GPIO mode and restores the state afterwards.

5.20.4.11 void RealKeyEventHandler (enum keyEvent *event*)

Performs actions for key events.

5.20.4.12 auto void RealMassStorage (void)

Implements MassStorage.

5.20.4.13 void RealUSBSuspend (u_int16 *timeOut*)

Activates low-power mode. Wakes up if changes in USB pin or GPIO0[0:4] pins are detected. Restores USB voltages.

Parameters:

timeOut 0, or calls **PowerOff()**(p. 176) when timeout reached.

5.20.4.14 auto u_int16 USBIsAttached (void)

Non-zero if USBN is low for at least two cycles in 20000 cycles. Note: this routine may be too slow in some applications, so you can check (**PERIP(SCI_-STATUS)**(p. 167) & SCISTF_USB_DN) == 0 directly.

5.20.4.15 void USBSuspend (u_int16 *timeOut*)

Hook: Activate low-power mode. Default: RealUSBSuspend.

Parameters:

timeOut 0, or calls **PowerOff()**(p. 176) when timeout reached.

5.20.4.16 void UserInterfaceIdleHook (void)

The default idle hook function that scans keys 16 timer per second.

5.20.5 Variable Documentation

5.20.5.1 const struct KeyMapping* currentKeyMap

5.20.5.2 const u_int32 defSupportedFiles[]

5.20.5.3 const struct KeyMapping fiveKeyMap[]

5.20.5.4 u_int16 keyCheck

5.20.5.5 u_int16 keyOld

5.20.5.6 s_int16 keyOldTime

5.20.5.7 u_int16 mallocAreaX[]

5.20.5.8 __y u_int16 mallocAreaY[]

5.20.5.9 struct Player player

Structure used by the default firmwares play loop.

5.20.5.10 const struct KeyMapping shiftFourKeyMap[]

5.20.5.11 const struct KeyMapping sixKeyMap[]

5.20.5.12 const u_int32* supportedFiles

5.20.5.13 const struct KeyMapping threeKeyMap[]

5.20.5.14 s_int16 tmpBuf[2 *32]

5.20.5.15 __y u_int16 vs1000d_BitReverse[256]

Helper array to quickly reverse bits in a byte.

5.20.5.16 __y u_int16 vs1000d_Latin1[256 *3]

Latin1-compatible font stored in Vertical format, LSb is the top pixel. 3 words (6 bytes) per character, high 8 bits first, add one empty line as space between characters. Contains block characters and special symbols in codes 0..31 and 128..159.

5.21 romfont.h File Reference

Defines

- #define **SYMBOL_SPACE** 32
- #define **SYMBOL_NUMBER** 48
- #define **SYMBOL_ALPHA** 65
- #define **SYMBOL_ALPHA_LOW** 97
- #define **SYMBOL_LEFTSPK** 128
- #define **SYMBOL_RIGHTSPK** 129
- #define **SYMBOL_USB** 130
- #define **SYMBOL_DISKDRIVE** 131
- #define **SYMBOL_PU** 132
- #define **SYMBOL_KATAKANA** 133
- #define **SYMBOL_DIGIT** 197
- #define **SYMBOL_NOTE** 207
- #define **SYMBOL_PLAY** 208
- #define **SYMBOL_PAUSE** 209
- #define **SYMBOL_STOP** 210

Variables

- const **u_int16 fontPtrs** [ ]
- const **u_int16 fontData** [ ]

5.21.1 Define Documentation

5.21.1.1 #define SYMBOL_ALPHA 65

Definition at line 9 of file romfont.h.

5.21.1.2 #define SYMBOL_ALPHA_LOW 97

Definition at line 10 of file romfont.h.

5.21.1.3 #define SYMBOL_DIGIT 197

Definition at line 17 of file romfont.h.

5.21.1.4 #define SYMBOL_DISKDRIVE 131

Definition at line 14 of file romfont.h.

5.21.1.5 #define SYMBOL_KATAKANA 133

Definition at line 16 of file romfont.h.

5.21.1.6 #define SYMBOL_LEFTSPK 128

Definition at line 11 of file romfont.h.

5.21.1.7 #define SYMBOL_NOTE 207

Definition at line 18 of file romfont.h.

5.21.1.8 #define SYMBOL_NUMBER 48

Definition at line 8 of file romfont.h.

5.21.1.9 #define SYMBOL_PAUSE 209

Definition at line 20 of file romfont.h.

5.21.1.10 #define SYMBOL_PLAY 208

Definition at line 19 of file romfont.h.

5.21.1.11 #define SYMBOL_PU 132

Definition at line 15 of file romfont.h.

5.21.1.12 #define SYMBOL_RIGHTSPK 129

Definition at line 12 of file romfont.h.

5.21.1.13 #define SYMBOL_SPACE 32

Definition at line 7 of file romfont.h.

5.21.1.14 #define SYMBOL_STOP 210

Definition at line 21 of file romfont.h.

5.21.1.15 #define SYMBOL_USB 130

Definition at line 13 of file romfont.h.

5.21.2 Variable Documentation

5.21.2.1 const u_int16 fontData[]

5.21.2.2 const u_int16 fontPtrs[]

5.22 scsi.h File Reference

Common SCSI definitions.

Data Structures

- struct **scsicdb6variant1**
- struct **scsicdb6variant2**
- struct **scsicdb6variant3**
- struct **scsicdb10variant1**
- struct **scsicdb10variant2**

Defines

- #define **OPERATION_CODE** 0
- #define **SCSI_INQUIRY** 0x12
- #define **SCSI_FORMAT_UNIT** 0x04
- #define **SCSI_READ_6** 0x08
- #define **SCSI_READ_10** 0x28
- #define **SCSI_READ_12** 0xa8
- #define **ATAPI_READ_FORMAT_CAPACITIES** 0x23
- #define **SCSI_READ_CAPACITY_10** 0x25
- #define **SCSI_READ_CAPACITY_16** 0x9e
- #define **SCSI_READ_CAPACITY_16_2** 0x10
- #define **SCSI_RECEIVE_DIAGNOSTIC_RESULTS** 0x1c
- #define **SCSI_REPORT_LUNS** 0xA0
- #define **SCSI_REQUEST_SENSE** 0x03
- #define **SCSI_SEND_DIAGNOSTIC** 0x1d
- #define **SCSI_TEST_UNIT_READY** 0x00
- #define **SCSI_WRITE_6** 0x0a
- #define **SCSI_WRITE_10** 0x2a
- #define **SCSI_WRITE_12** 0xaa
- #define **SCSI_MODE_SENSE_6** 0x1a
- #define **SCSI_MODE_SENSE_10** 0x5a
- #define **SCSI_SYNCHRONIZE_CACHE** 0x35

- #define **SCSI_PREVENT_ALLOW_MEDIUM_REMOVAL** 0x1e
- #define **SCSI_VERIFY** 0x2f
- #define **SCSI_START_STOP_UNIT** 0x1b
- #define **SCSI_MODE_SELECT** 0x15
- #define **SK_NO_SENSE** 0
- #define **SK_RECOVERED_ERROR** 1
- #define **SK_NOT_READY** 2
- #define **SK_MEDIUM_ERROR** 3
- #define **SK_HARDWARE_ERROR** 4
- #define **SK_ILLEGAL_REQUEST** 5
- #define **SK_UNIT_ATTENTION** 6
- #define **SK_DATA_PROTECT** 7
- #define **SK_BLANK_CHECK** 8
- #define **SK_VENDOR_SPECIFIC** 9
- #define **SK_COPY_ABORTED** 10
- #define **SK_ABORTED_COMMAND** 11
- #define **SK_EQUAL** 12
- #define **SK_VOLUME_OVERFLOW** 13
- #define **SK_MISCOMPARE** 14

Typedefs

- typedef **scsicdb6variant1 ScsiInquiryCdb**
- typedef **scsicdb6variant2 ScsiModeSense6Cdb**
- typedef **scsicdb6variant3 ScsiRequestSenseCdb**
- typedef **scsicdb10variant1 ScsiRead10Cdb**
- typedef **scsicdb10variant2 ScsiWrite10Cdb**

Enumerations

- enum **SCSIStageEnum** {

  SCSI_UNINITIALIZED = -1, **SCSI_READY_FOR_COMMAND** = 0, **SCSI_DATA_TO_HOST**, **SCSI_TRANSMITTING**,

  SCSI_DATA_FROM_HOST, **SCSI_SEND_STATUS**, **SCSI_INVALID_CBW** }
- enum **SCSIStatusEnum** { **SCSI_OK** = 0, **SCSI_REQUEST_ERROR** = 1, **SCSI_PHASE_ERROR** = 2 }

Functions

- void **ScsiTaskHandler** (void)
- void **RealScsiTaskHandler** (void)
- void **DiskProtocolCommand** (**u_int16** *cmd)
- void **ScsiReset** ()
- void **DiskDataReceived** (int length, **u_int16** *datablock)
- enum **SCSIStageEnum ScsiState** (void)
- **u_int16 ScsiOrBlock** (register __i0 **u_int16** *buffer, register __a0 **s_int16** size)

5.22.1 Detailed Description

Common SCSI definitions.

Definition in file **scsi.h**.

5.22.2 Define Documentation

5.22.2.1 #define ATAPI_READ_FORMAT_CAPACITIES 0x23

Definition at line 88 of file scsi.h.

5.22.2.2 #define OPERATION_CODE 0

Definition at line 79 of file scsi.h.

5.22.2.3 #define SCSI_FORMAT_UNIT 0x04

Definition at line 84 of file scsi.h.

5.22.2.4 #define SCSI_INQUIRY 0x12

Definition at line 83 of file scsi.h.

5.22.2.5 #define SCSI_MODE_SELECT 0x15

Definition at line 106 of file scsi.h.

5.22.2.6 #define SCSI_MODE_SENSE_10 0x5a

Definition at line 101 of file scsi.h.

5.22.2.7 #define SCSI_MODE_SENSE_6 0x1a

Definition at line 100 of file scsi.h.

5.22.2.8 #define SCSI_PREVENT_ALLOW_MEDIUM_REMOVAL 0x1e

Definition at line 103 of file scsi.h.

5.22.2.9 #define SCSI_READ_10 0x28

Definition at line 86 of file scsi.h.

5.22.2.10 #define SCSI_READ_12 0xa8

Definition at line 87 of file scsi.h.

5.22.2.11 #define SCSI_READ_6 0x08

Definition at line 85 of file scsi.h.

5.22.2.12 #define SCSI_READ_CAPACITY_10 0x25

Definition at line 89 of file scsi.h.

5.22.2.13 #define SCSI_READ_CAPACITY_16 0x9e

Definition at line 90 of file scsi.h.

5.22.2.14 #define SCSI_READ_CAPACITY_16_2 0x10

Definition at line 91 of file scsi.h.

5.22.2.15 #define SCSI_RECEIVE_DIAGNOSTIC_RESULTS 0x1c

Definition at line 92 of file scsi.h.

5.22.2.16 #define SCSI_REPORT_LUNS 0xA0

Definition at line 93 of file scsi.h.

5.22.2.17 #define SCSI_REQUEST_SENSE 0x03

Definition at line 94 of file scsi.h.

5.22.2.18 #define SCSI_SEND_DIAGNOSTIC 0x1d

Definition at line 95 of file scsi.h.

5.22.2.19 #define SCSI_START_STOP_UNIT 0x1b

Definition at line 105 of file scsi.h.

5.22.2.20 #define SCSI_SYNCHRONIZE_CACHE 0x35

Definition at line 102 of file scsi.h.

5.22.2.21 #define SCSI_TEST_UNIT_READY 0x00

Definition at line 96 of file scsi.h.

5.22.2.22 #define SCSI_VERIFY 0x2f

Definition at line 104 of file scsi.h.

5.22.2.23 #define SCSI_WRITE_10 0x2a

Definition at line 98 of file scsi.h.

5.22.2.24 #define SCSI_WRITE_12 0xaa

Definition at line 99 of file scsi.h.

5.22.2.25 #define SCSI_WRITE_6 0x0a

Definition at line 97 of file scsi.h.

5.22.2.26 #define SK_ABORTED_COMMAND 11

Definition at line 120 of file scsi.h.

5.22.2.27 #define SK_BLANK_CHECK 8

Definition at line 117 of file scsi.h.

5.22.2.28 #define SK_COPY_ABORTED 10

Definition at line 119 of file scsi.h.

5.22.2.29 #define SK_DATA_PROTECT 7

Definition at line 116 of file scsi.h.

5.22.2.30 #define SK_EQUAL 12

Definition at line 121 of file scsi.h.

5.22.2.31 #define SK_HARDWARE_ERROR 4

Definition at line 113 of file scsi.h.

5.22.2.32 #define SK_ILLEGAL_REQUEST 5

Definition at line 114 of file scsi.h.

5.22.2.33 #define SK_MEDIUM_ERROR 3

Definition at line 112 of file scsi.h.

5.22.2.34 #define SK_MISCOMPARE 14

Definition at line 123 of file scsi.h.

5.22.2.35 #define SK_NO_SENSE 0

Definition at line 109 of file scsi.h.

5.22.2.36 #define SK_NOT_READY 2

Definition at line 111 of file scsi.h.

5.22.2.37 #define SK_RECOVERED_ERROR 1

Definition at line 110 of file scsi.h.

5.22.2.38 #define SK_UNIT_ATTENTION 6

Definition at line 115 of file scsi.h.

5.22.2.39 #define SK_VENDOR_SPECIFIC 9

Definition at line 118 of file scsi.h.

5.22.2.40 #define SK_VOLUME_OVERFLOW 13

Definition at line 122 of file scsi.h.

5.22.3 Typedef Documentation

5.22.3.1 typedef struct scsicdb6variant1 ScsiInquiryCdb

5.22.3.2 typedef struct scsicdb6variant2 ScsiModeSense6Cdb

5.22.3.3 typedef struct scsicdb10variant1 ScsiRead10Cdb

5.22.3.4 typedef struct scsicdb6variant3 ScsiRequestSenseCdb

5.22.3.5 typedef struct scsicdb10variant2 ScsiWrite10Cdb

5.22.4 Enumeration Type Documentation

5.22.4.1 enum SCSIStageEnum

Enumerator:

SCSI_UNINITIALIZED

SCSI_READY_FOR_COMMAND

SCSI_DATA_TO_HOST

SCSI_TRANSMITTING

SCSI_DATA_FROM_HOST

SCSI_SEND_STATUS

SCSI_INVALID_CBW

Definition at line 6 of file scsi.h.

```
6             {
7   SCSI_UNINITIALIZED = -1,
8   SCSI_READY_FOR_COMMAND = 0,
9   SCSI_DATA_TO_HOST,
10   SCSI_TRANSMITTING,
11   SCSI_DATA_FROM_HOST,
12   SCSI_SEND_STATUS,
13   SCSI_INVALID_CBW
14 } SCSIStageEnum;
```

5.22.4.2 enum SCSIStatusEnum

Enumerator:

SCSI_OK

SCSI_REQUEST_ERROR

SCSI_PHASE_ERROR

Definition at line 16 of file scsi.h.

```
16             {
17   SCSI_OK = 0,
18   SCSI_REQUEST_ERROR = 1,
19   SCSI_PHASE_ERROR = 2
20 } SCSIStatusEnum;
```

5.22.5 Function Documentation

5.22.5.1 void DiskDataReceived (int *length*, u_int16 * *datablock*)

Process data from host.

5.22.5.2 void DiskProtocolCommand (u_int16 * *cmd*)

Process a SCSI command block.

5.22.5.3 void RealScsiTaskHandler (void)

RealScsiTaskHandler

5.22.5.4 u_int16 ScsiOrBlock (register __i0 u_int16 * *buffer*, register __a0 s_int16 *size*)

5.22.5.5 void ScsiReset ()

Reset SCSI state.

5.22.5.6 enum SCSIStageEnum ScsiState (void)

5.22.5.7 void ScsiTaskHandler (void)

Handle any pending SCSI operation.

ScsiTaskHandler

5.23 stdarg.h File Reference

Defines

- #define **va_start**(ap, last) (ap = ((**va_list**)&(last)))
- #define **va_arg**(ap, type) ((type *)(ap -= sizeof(type)))[0]
- #define **va_end**(ap)

Typedefs

- typedef char * **va_list**

5.23.1 Define Documentation

5.23.1.1 #define va_arg(ap, type) ((type *)(ap -= sizeof(type)))[0]

Definition at line 6 of file stdarg.h.

5.23.1.2 #define va_end(ap)

Definition at line 7 of file stdarg.h.

5.23.1.3 #define va_start(ap, last) (ap = ((va_list)&(last)))

Definition at line 5 of file stdarg.h.

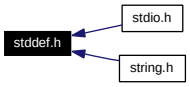
5.23.2 Typedef Documentation

5.23.2.1 typedef char* va_list

Definition at line 3 of file stdarg.h.

5.24 stddef.h File Reference

This graph shows which files directly or indirectly include this file:



Defines

- #define **NULL** 0
- #define **offsetof**(type, member) ((**size_t**)(&((type *)0) → member))

Typedefs

- typedef unsigned int **size_t**
- typedef signed int **ptrdiff_t**
- typedef short **wchar_t**

5.24.1 Define Documentation

5.24.1.1 #define NULL 0

Definition at line 12 of file stddef.h.

5.24.1.2 #define offsetof(type, member) ((size_t)(&((type *)0) → member))

Definition at line 15 of file stddef.h.

5.24.2 Typedef Documentation

5.24.2.1 typedef signed int ptrdiff_t

Definition at line 8 of file stddef.h.

5.24.2.2 typedef unsigned int size_t

Definition at line 6 of file stddef.h.

5.24.2.3 typedef short wchar_t

Definition at line 9 of file stddef.h.

5.25 stdio.h File Reference

```
#include <stddef.h>
```

Include dependency graph for stdio.h:

Data Structures

- struct **__sfpos**

Defines

- #define **EOF** (-1)
- #define **FOPEN_MAX** 20
- #define **FILENAME_MAX** 256
- #define **SEEK_SET** 0
- #define **SEEK_CUR** 1
- #define **SEEK_END** 2
- #define **stdin** (**FILE** *)1
- #define **stdout** (**FILE** *)2
- #define **stderr** (**FILE** *)3

Typedefs

- typedef **__sfpos fpos_t**
- typedef void **FILE**

Functions

- __near **FILE** register __a0 * **fopen** (__near const char register __i0 *filename, __near const char register __i1 *mode)
- __near **FILE** register __a0 * **freopen** (__near const char register __i0 *filename, __near const char register __i1 *mode, __near **FILE** register __a0 *stream)
- int register __a0 **fflush** (__near **FILE** register __a0 *stream)
- int register __a0 **fclose** (__near **FILE** register __a0 *stream)

- int register __a0 **remove** (__near const char register __i0 *filename)
- int register __a0 **rename** (__near const char register __i0 *oldname, __near const char register __i1 *newname)
- int register __a0 **fgetc** (__near **FILE** register __a1 *stream)
- __near char register __a0 * **fgets** (__near char register __i0 *s, int register __a0 n, __near **FILE** register __a1 *stream)
- int register __a0 **fputc** (int register __a0 c, __near **FILE** register __a1 *stream)
- int register __a0 **fputs** (__near const char register __i0 *s, __near **FILE** register __a1 *stream)
- int register __a0 **getc** (__near **FILE** register __a1 *stream)
- int register __a0 **getchar** (void)
- __near char register __a0 * **gets** (__near char register __i0 *s)
- int register __a0 **putc** (int register __a0 c, __near **FILE** register __a1 *stream)
- int register __a0 **putchar** (int register __a0 c)
- int register __a0 **puts** (__near const char register __i0 *s)
- int register __a0 **ungetc** (int register __a0 c, __near **FILE** register __a1 *stream)
- **size_t** register __a0 **fread** (__near void register __i0 *ptr, **size_t** register __b0 size, **size_t** register __b1 nobj, __near **FILE** register __a1 *stream)
- **size_t** register __a0 **fwrite** (__near const void register __i0 *ptr, **size_t** register __b0 size, **size_t** register __b1 nobj, __near **FILE** register __a1 *stream)
- int register __a0 **fseek** (__near **FILE** register __a0 *stream, long register __b offset, int register __a1 origin)
- long register __a **ftell** (__near **FILE** register __a0 *stream)
- void **rewind** (__near **FILE** register __a0 *stream)
- int register __a0 **fgetpos** (__near **FILE** register __a0 *stream, __near **fpos_t** register __i0 *ptr)
- int register __a0 **fsetpos** (__near **FILE** register __a0 *stream, __near const **fpos_t** register __i0 *ptr)
- void **clearerr** (__near **FILE** register __a0 *stream)
- int register __a0 **feof** (__near **FILE** register __a0 *stream)
- int register __a0 **ferror** (__near **FILE** register __a0 *stream)
- void **perror** (__near const char register __i0 *s)
- int **fprintf** (__near **FILE** *stream, __near const char *fmt,...)
- int **printf** (__near const char *fmt,...)
- int **sprintf** (__near char *s, __near const char *fmt,...)
- int **sscanf** (const char *str, const char *fmt,...)
- int **tinysprintf** (char *str, const char *fmt,...)
- int **tinyprintf** (const char *fmt,...)
- int **tinyfprintf** (**FILE** *fp, const char *fmt,...)

5.25.1 Define Documentation

5.25.1.1 #define EOF (-1)

Definition at line 22 of file stdio.h.

5.25.1.2 #define FILENAME_MAX 256

Definition at line 27 of file stdio.h.

5.25.1.3 #define FOPEN_MAX 20

Definition at line 26 of file stdio.h.

5.25.1.4 #define SEEK_CUR 1

Definition at line 34 of file stdio.h.

5.25.1.5 #define SEEK_END 2

Definition at line 37 of file stdio.h.

5.25.1.6 #define SEEK_SET 0

Definition at line 31 of file stdio.h.

5.25.1.7 #define stderr (FILE *)3

Definition at line 42 of file stdio.h.

5.25.1.8 #define stdin (FILE *)1

Definition at line 40 of file stdio.h.

5.25.1.9 #define stdout (FILE *)2

Definition at line 41 of file stdio.h.

5.25.2 Typedef Documentation

5.25.2.1 typedef void FILE

Definition at line 20 of file stdio.h.

5.25.2.2 typedef struct __sfpos fpos_t

5.25.3 Function Documentation

5.25.3.1 void clearerr (__near FILE register __a0 * *stream*)

5.25.3.2 int register __a0 fclose (__near FILE register __a0 * *stream*)

5.25.3.3 int register __a0 feof (__near FILE register __a0 * *stream*)

5.25.3.4 int register __a0 ferror (__near FILE register __a0 * *stream*)

5.25.3.5 int register __a0 fflush (__near FILE register __a0 * *stream*)

5.25.3.6 int register __a0 fgetc (__near FILE register __a1 * *stream*)

5.25.3.7 int register __a0 fgetpos (__near FILE register __a0 * *stream*, __near fpos_t register __i0 * *ptr*)

5.25.3.8 __near char register __a0* fgets (__near char register __i0 * *s*, int register __a0 *n*, __near FILE register __a1 * *stream*)

reads in at most one less than n from stream to buffer s. Reading stops at a newline or EOF. Newline is stored into the buffer. A NUL is stored after the last character in the buffer.

5.25.3.9 __near FILE register __a0* fopen (__near const char register __i0 * *filename*, __near const char register __i1 * *mode*)

5.25.3.10 int fprintf (__near FILE * *stream*, __near const char * *fmt*, ...)

5.25.3.11 int register __a0 fputc (int register __a0 *c*, __near FILE register __a1 * *stream*)

writes the character c to stream.

5.25.3.12 int register __a0 fputs (__near const char register __i0 * *s*, __near FILE register __a1 * *stream*)

writes the string s to stream without the trailing NUL.

5.25.3.13 size_t register __a0 fread (__near void register __i0 * *ptr*, size_t register __b0 *size*, size_t register __b1 *nobj*, __near FILE register __a1 * *stream*)

Reads pairs of bytes from the stream and stores them into the word buffer. The first byte goes to the high bits of a word.

5.25.3.14 __near FILE register __a0* freopen (__near const char register __i0 * *filename*, __near const char register __i1 * *mode*, __near FILE register __a0 * *stream*)

5.25.3.15 int register __a0 fseek (__near FILE register __a0 * *stream*, long register __b *offset*, int register __a1 *origin*)

5.25.3.16 int register __a0 fsetpos (__near FILE register __a0 * *stream*, __near const fpos_t register __i0 * *ptr*)

5.25.3.17 long register __a ftell (__near FILE register __a0 * *stream*)

5.25.3.18 size_t register __a0 fwrite (__near const void register __i0 * *ptr*, size_t register __b0 *size*, size_t register __b1 *nobj*, __near FILE register __a1 * *stream*)

Writes pairs of bytes to the stream. The high bits of a word are written to the first byte.

5.25.3.19 int register __a0 getc (__near FILE register __a1 * *stream*)

equivalent to **fgetc()**(p. 116), but may be macro.

5.25.3.20 int register __a0 getchar (void)

5.25.3.21 __near char register __a0* gets (__near char register __i0 * *s*)

5.25.3.22 void perror (__near const char register __i0 * *s*)

5.25.3.23 int printf (__near const char * *fmt*, ...)

5.25.3.24 int register __a0 putc (int register __a0 *c*, __near FILE register __a1 * *stream*)

5.25.3.25 int register __a0 putchar (int register __a0 *c*)

5.25.3.26 int register __a0 puts (__near const char register __i0 * *s*)

5.25.3.27 int register __a0 remove (__near const char register __i0 * *filename*)

5.25.3.28 int register __a0 rename (__near const char register __i0 * *oldname*, __near const char register __i1 * *newname*)

5.25.3.29 void rewind (__near FILE register __a0 * *stream*)

5.25.3.30 int sprintf (__near char * *s*, __near const char * *fmt*, ...)

5.25.3.31 int sscanf (const char * *str*, const char * *fmt*, ...)

5.25.3.32 int tinyfprintf (FILE * *fp*, const char * *fmt*, ...)

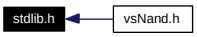
5.25.3.33 int tinyprintf (const char * *fmt*, ...)

5.25.3.34 int tinysprintf (char * *str*, const char * *fmt*, ...)

5.25.3.35 int register __a0 ungetc (int register __a0 *c*, __near FILE register __a1 * *stream*)

5.26 stdlib.h File Reference

This graph shows which files directly or indirectly include this file:



Defines

- #define **NULL** 0
- #define **RAND_MAX** 0x7fff
- #define **abort**() exit(-1)
- #define **EXIT_FAILURE** 1
- #define **EXIT_SUCCESS** 0
- #define **abs**(a) __builtin_abs(a)
- #define **labs**(a) __builtin_labs(a)
- #define **strtoul**(a, b, c) (unsigned long)strtol(a,b,c)
- #define **RANDOM_MAX** 0x7fffffffL
- #define **qsorty**(b, n, s, c) qsort((b),(n),-(s),(c))

Typedefs

- typedef unsigned int **size_t**

Functions

- int **rand** (void)
- void **srand** (register __a0 unsigned int seed)
- void **exit** (register __a0 int exitValue)
- __near int **atoi** (__near const char *s)
- __near long **strtol** (__near const char *s, __near char *__near *endp, int base)
- __near long **random** (void)
- __near void **srandom** (register __a unsigned long x)
- unsigned short **QsortLog2** (register __a0 short x)
- void **qsort** (void *base, int nmemb, int size, int(*compar)(const void *, const void *))
- short **CountBitsLong** (register __a unsigned long val)

Variables

- __y short **rand_seed**
- __near long **random_state**

5.26.1 Define Documentation

5.26.1.1 #define abort() exit(-1)

Definition at line 19 of file stdlib.h.

5.26.1.2 #define abs(a) __builtin_abs(a)

Definition at line 24 of file stdlib.h.

5.26.1.3 #define EXIT_FAILURE 1

Definition at line 21 of file stdlib.h.

5.26.1.4 #define EXIT_SUCCESS 0

Definition at line 22 of file stdlib.h.

5.26.1.5 #define labs(a) __builtin_labs(a)

Definition at line 25 of file stdlib.h.

5.26.1.6 #define NULL 0

Definition at line 10 of file stdlib.h.

5.26.1.7 #define qsorty(b, n, s, c) qsort((b),(n),-(s),(c))

Definition at line 40 of file stdlib.h.

5.26.1.8 #define RAND_MAX 0x7fff

Definition at line 13 of file stdlib.h.

5.26.1.9 #define RANDOM_MAX 0x7fffffffL

Definition at line 31 of file stdlib.h.

5.26.1.10 #define strtoul(a, b, c) (unsigned long)strtol(a,b,c)

Definition at line 29 of file stdlib.h.

5.26.2 Typedef Documentation

5.26.2.1 typedef unsigned int size_t

Definition at line 6 of file stdlib.h.

5.26.3 Function Documentation

5.26.3.1 __near int atoi (__near const char * *s*)

5.26.3.2 short CountBitsLong (register __a unsigned long *val*)

Counts the number of 1-bits in a 32-bit value. Takes 12 to 84 cycles.

5.26.3.3 void exit (register __a0 int *exitValue*)

5.26.3.4 void qsort (void * *base*, int *nmemb*, int *size*, int(*)(const void *, const void *) *compar*)

5.26.3.5 unsigned short QsortLog2 (register __a0 short *x*)

5.26.3.6 int rand (void)

5.26.3.7 __near long random (void)

5.26.3.8 void srand (register __a0 unsigned int *seed*)

5.26.3.9 __near void srandom (register __a unsigned long *x*)

5.26.3.10 __near long strtol (__near const char * *s*, __near char *__near * *endp*, int *base*)

5.26.4 Variable Documentation

5.26.4.1 __y short rand_seed

5.26.4.2 __near long random_state

5.27 string.h File Reference

`#include <stddef.h>`

Include dependency graph for string.h:

Defines

- #define **strcoll** strcmp

Functions

- __near char register __i0 * **strcpy** (__near char register __i0 *s, __near const char register __i1 *ct)
- __near char register __i0 * **strncpy** (__near char register __i0 *s, __near const char register __i1 *ct, **size_t** register __a0 n)
- __near char register __i0 * **strcat** (__near char register __i0 *s, __near const char register __i1 *ct)

- __near char register __i0 * **strncat** (__near char register __i0 *s, __near const char register __i1 *ct, **size_t** register __a0 n)
- int register __a0 **strcmp** (__near const char register __i0 *cs, __near const char register __i1 *ct)
- int register __a0 **strncmp** (__near const char register __i0 *cs, __near const char register __i1 *ct, **size_t** register __a0 n)
- __near char register __i0 * **strchr** (__near const char register __i0 *cs, int register __a0 c)
- __near char register __i0 * **strrchr** (__near const char register __i0 *cs, int register __a0 c)
- **size_t** register __a0 **strspn** (__near const char register __i0 *cs, __near const char register __i1 *ct)
- **size_t** register __a0 **strcspn** (__near const char register __i0 *cs, __near const char register __i1 *ct)
- __near char register __i0 * **strpbrk** (__near const char register __i0 *cs, __near const char register __i1 *ct)
- __near char register __i0 * **strstr** (__near const char register __i0 *cs, __near const char register __i1 *ct)
- **size_t** register __a0 **strlen** (__near const char register __i0 *cs)
- __near char register __i0 * **strerror** (int register __a0 n)
- __near char register __i0 * **strtok** (__near char register __i0 *s, __near const char register __i1 *ct)
- __near void register __i0 * **memcpy** (__near void register __i0 *d, __near const void register __i1 *s, **size_t** register __a0 n)
- __near __y void register __i0 * **memcpyXY** (__near __y void register __i0 *d, __near const void register __i1 *s, **size_t** register __a0 n)
- __near void register __i0 * **memcpyYX** (__near void register __i0 *s, __near __y const void register __i1 *ct, **size_t** register __a0 n)
- __near __y void register __i0 * **memcpyYY** (__near __y void register __i0 *s, __near __y const void register __i1 *ct, **size_t** register __a0 n)
- __near void register __i0 * **memmove** (__near void register __i0 *s, const __near void register __i1 *ct, unsigned short register __a0 n)
- int register __a0 **memcmp** (__near const void register __i0 *cs, __near const void register __i1 *ct, **size_t** register __a0 n)
- int register __a0 **memcmpY** (__near const void register __i0 *cs, __near const void register __i1 *ct, **size_t** register __a0 n)
- __near void register __i0 * **memchr** (__near const void register __i0 *cs, int register __a0 c, **size_t** register __a1 n)
- __near void register __i0 * **memset** (__near void register __i0 *s, int register __a1 c, **size_t** register __a0 n)
- __near void register __i0 * **memsetY** (__near __y void register __i0 *s, int register __a1 c, **size_t** register __a0 n)
- __near void **memclearXY** (register __i0 unsigned short *p, register __a0 short c)
- **size_t** register __a0 **strxfrm** (__near char register __i0 *s1, __near const char register __i1 *s2, **size_t** register __a0 n)

- void **memswap** (register __i0 void *a, register __i1 void *b, register __a0 **size_t** size)
- void **memswapy** (register __i0 __y void *a, register __i1 __y void *b, register __a0 **size_t** size)
- void **memswapxy** (register __i0 void *a, register __i1 __y void *b, register __a0 **size_t** size)
- __near void **MemCopyPackedBigEndian** (register __i0 __near unsigned short *dst, register __a0 unsigned short dstidx, register __i1 __near unsigned short *src, register __a1 unsigned short srcidx, register __b0 unsigned short byteSize)

5.27.1 Define Documentation

5.27.1.1 #define strcoll strcmp

Definition at line 7 of file string.h.

5.27.2 Function Documentation

5.27.2.1 __near void register __i0* memchr (__near const void register __i0 * *cs*, int register __a0 *c*, size_t register __a1 *n*)

5.27.2.2 __near void memclearXY (register __i0 unsigned short * *p*, register __a0 short *c*)

Clears c words in both X and Y memory starting from p.

5.27.2.3 int register __a0 memcmp (__near const void register __i0 * *cs*, __near const void register __i1 * *ct*, size_t register __a0 *n*)

5.27.2.4 int register __a0 memcmpY (__near const void register __i0 * *cs*, __near const void register __i1 * *ct*, size_t register __a0 *n*)

5.27.2.5 __near void MemCopyPackedBigEndian (register __i0 __near unsigned short * *dst*, register __a0 unsigned short *dstidx*, register __i1 __near unsigned short * *src*, register __a1 unsigned short *srcidx*, register __b0 unsigned short *byteSize*)

Copies bytes from one word buffer to another. The bytes are packed in big-endian format, i.e. the first byte to the high bits of the word and the next byte to the low bits of the word.

5.27.2.6 __near void register __i0* memcpy (__near void register __i0 * *d*, __near const void register __i1 * *s*, size_t register __a0 *n*)

Copies n words from s to d. The memory areas should not overlap. Returns a pointer to d.

5.27.2.7 __near __y void register __i0* memcpyXY (__near __y void register __i0 * d, __near const void register __i1 * s, size_t register __a0 n)

Copies n words from s to d, where the destination is in Y memory. Returns a pointer to d.

5.27.2.8 __near void register __i0* memcpyYX (__near void register __i0 * s, __near __y const void register __i1 * ct, size_t register __a0 n)

Copies n words from s to d, where the source is in Y memory. Returns a pointer to d.

5.27.2.9 __near __y void register __i0* memcpyYY (__near __y void register __i0 * s, __near __y const void register __i1 * ct, size_t register __a0 n)

Copies n words from s to d, where both the source and the destination is in Y memory. The memory areas should not overlap. Returns a pointer to d.

5.27.2.10 __near void register __i0* memmove (__near void register __i0 * s, const __near void register __i1 * ct, unsigned short register __a0 n)

5.27.2.11 __near void register __i0* memset (__near void register __i0 * s, int register __a1 c, size_t register __a0 n)

5.27.2.12 __near void register __i0* memsetY (__near __y void register __i0 * s, int register __a1 c, size_t register __a0 n)

5.27.2.13 void memswap (register __i0 void * a, register __i1 void * b, register __a0 size_t size)

Swaps two memory areas. The size gives the length of the area.

5.27.2.14 void memswapxy (register __i0 void * a, register __i1 __y void * b, register __a0 size_t size)

Swaps two memory ares, the secondis in Y memory. The size gives the length of the area.

5.27.2.15 void memswapy (register __i0 __y void * *a*, register __i1 __y void * *b*, register __a0 size_t *size*)

Swaps two memory ares, both are in Y memory. The size gives the length of the area.

5.27.2.16 __near char register __i0* strcat (__near char register __i0 * *s*, __near const char register __i1 * *ct*)

5.27.2.17 __near char register __i0* strchr (__near const char register __i0 * *cs*, int register __a0 *c*)

5.27.2.18 int register __a0 strcmp (__near const char register __i0 * *cs*, __near const char register __i1 * *ct*)

5.27.2.19 __near char register __i0* strcpy (__near char register __i0 * *s*, __near const char register __i1 * *ct*)

5.27.2.20 size_t register __a0 strcspn (__near const char register __i0 * *cs*, __near const char register __i1 * *ct*)

5.27.2.21 __near char register __i0* strerror (int register __a0 *n*)

5.27.2.22 size_t register __a0 strlen (__near const char register __i0 * *cs*)

5.27.2.23 __near char register __i0* strncat (__near char register __i0 * *s*, __near const char register __i1 * *ct*, size_t register __a0 *n*)

5.27.2.24 int register __a0 strncmp (__near const char register __i0 * *cs*, __near const char register __i1 * *ct*, size_t register __a0 *n*)

5.27.2.25 __near char register __i0* strncpy (__near char register __i0 * *s*, __near const char register __i1 * *ct*, size_t register __a0 *n*)

5.27.2.26 __near char register __i0* strpbrk (__near const char register __i0 * *cs*, __near const char register __i1 * *ct*)

5.27.2.27 __near char register __i0* strrchr (__near const char register __i0 * *cs*, int register __a0 *c*)

5.27.2.28 size_t register __a0 strspn (__near const char register __i0 * *cs*, __near const char register __i1 * *ct*)

5.27.2.29 __near char register __i0* strstr (__near const char register __i0 * *cs*, __near const char register __i1 * *ct*)

5.27.2.30 __near char register __i0* strtok (__near char register __i0 * *s*, __near const char register __i1 * *ct*)

5.27.2.31 size_t register __a0 strxfrm (__near char register __i0 * *s1*, __near const char register __i1 * *s2*, size_t register __a0 *n*)

5.28 usb.h File Reference

Defines

- #define **USB_SET_ADDRESS_ENA** 0xD0
- #define **USB_SET_ENDP_ENA** 0xD8
- #define **USB_SET_MODE** 0xF3
- #define **USB_SET_DMA** 0xFB
- #define **USB_READ_INT** 0xF4
- #define **USB_SELECT_ENDP_CO** 0x00
- #define **USB_SELECT_ENDP_CI** 0x01
- #define **USB_SELECT_ENDP_E1O** 0x02
- #define **USB_SELECT_ENDP_E1I** 0x03
- #define **USB_SELECT_ENDP_E2O** 0x04
- #define **USB_SELECT_ENDP_E2I** 0x05
- #define **USB_ENDP_ST_CO** 0x40
- #define **USB_ENDP_ST_CI** 0x41
- #define **USB_ENDP_ST_E1O** 0x42
- #define **USB_ENDP_ST_E1I** 0x43
- #define **USB_ENDP_ST_E2O** 0x44
- #define **USB_ENDP_ST_E2I** 0x45
- #define **USB_ACCESS_BUF** 0xF0
- #define **USB_ACK_SETUP** 0xF1
- #define **USB_CLEAR_BUF** 0xF2
- #define **USB_VALIDATE_BUF** 0xFA
- #define **USB_SEND_RESUME** 0xF6
- #define **USB_READ_FRAME_NUMBER** 0xF5
- #define **D12_INT_EOT** 0x100
- #define **D12_INT_SUSPENDCHANGE** 0x80

- #define **D12_INT_BUSRESET** 0x40
- #define **D12_INT_ENDP2IN** 0x20
- #define **D12_INT_ENDP2OUT** 0x10
- #define **D12_INT_ENDP1IN** 0x08
- #define **D12_INT_ENDP1OUT** 0x04
- #define **D12_INT_ENDP0IN** 0x02
- #define **D12_INT_ENDP0OUT** 0x01
- #define **USB_ENDPOINT_HALT** 0
- #define **USB_ENDPOINT_DIRECTION_MASK** 0x80
- #define **USB_MAX_ENDPOINTS** 0x03
- #define **D12_FULLEMPTY** 0x01
- #define **D12_STALL** 0x02
- #define **D12_SETUPPACKET** 0x20
- #define **EP0_TX_FIFO_SIZE** 16
- #define **EP0_RX_FIFO_SIZE** 16
- #define **EP0_PACKET_SIZE** 16
- #define **EP1_TX_FIFO_SIZE** 16
- #define **EP1_RX_FIFO_SIZE** 16
- #define **EP1_PACKET_SIZE** 16
- #define **EP2_TX_FIFO_SIZE** 64
- #define **EP2_RX_FIFO_SIZE** 64
- #define **EP2_PACKET_SIZE** 64
- #define **USB_REQUEST_MASK** 0x0F
- #define **USB_REQUEST_GET_STATUS** 0x00
- #define **USB_REQUEST_CLEAR_FEATURE** 0x01
- #define **USB_REQUEST_SET_FEATURE** 0x03
- #define **USB_REQUEST_SET_ADDRESS** 0x05
- #define **USB_REQUEST_GET_DESCRIPTOR** 0x06
- #define **USB_REQUEST_SET_DESCRIPTOR** 0x07
- #define **USB_REQUEST_GET_CONFIGURATION** 0x08
- #define **USB_REQUEST_SET_CONFIGURATION** 0x09
- #define **USB_REQUEST_GET_INTERFACE** 0x0A
- #define **USB_REQUEST_SET_INTERFACE** 0x0B
- #define **USB_REQUEST_SYNC_FRAME** 0x0C
- #define **USB_REQUEST_TYPE_MASK** 0x60
- #define **USB_STANDARD_REQUEST** 0x00
- #define **USB_INTERFACE_REQUEST** 0x01
- #define **USB_ENDPOINT_REQUEST** 0x02
- #define **USB_CLASS_REQUEST** 0x20
- #define **USB_VENDOR_REQUEST** 0x40
- #define **USB_DEVICE_DESCRIPTOR_TYPE** 0x01
- #define **USB_CONFIGURATION_DESCRIPTOR_TYPE** 0x02
- #define **USB_STRING_DESCRIPTOR_TYPE** 0x03
- #define **USB_INTERFACE_DESCRIPTOR_TYPE** 0x04
- #define **USB_ENDPOINT_DESCRIPTOR_TYPE** 0x05
- #define **USB_POWER_DESCRIPTOR_TYPE** 0x06

- #define **USB_CLASS_CODE_TEST_CLASS_DEVICE** 0xDC
- #define **USB_SUBCLASS_CODE_TEST_CLASS_D12** 0xA0
- #define **USB_PROTOCOL_CODE_TEST_CLASS_D12** 0xB0
- #define **USB_RECIPIENT** 0x1f
- #define **USB_RECIPIENT_DEVICE** 0x00
- #define **USB_RECIPIENT_INTERFACE** 0x01
- #define **USB_RECIPIENT_ENDPOINT** 0x02
- #define **USB_SP_REQUEST** 0
- #define **USB_SP_VALUE** 1
- #define **USB_SP_INDEX** 2
- #define **USB_SP_LENGTH** 3

5.28.1 Detailed Description

Miscellaneous USB-related definitions. Not all seem to be VS1000-related.

Definition in file **usb.h**.

5.28.2 Define Documentation

5.28.2.1 #define D12_FULLEMPTY 0x01

Definition at line 47 of file usb.h.

5.28.2.2 #define D12_INT_BUSRESET 0x40

Definition at line 33 of file usb.h.

5.28.2.3 #define D12_INT_ENDP0IN 0x02

Definition at line 38 of file usb.h.

5.28.2.4 #define D12_INT_ENDP0OUT 0x01

Definition at line 39 of file usb.h.

5.28.2.5 #define D12_INT_ENDP1IN 0x08

Definition at line 36 of file usb.h.

5.28.2.6 #define D12_INT_ENDP1OUT 0x04

Definition at line 37 of file usb.h.

5.28.2.7 #define D12_INT_ENDP2IN 0x20

Definition at line 34 of file usb.h.

5.28.2.8 #define D12_INT_ENDP2OUT 0x10

Definition at line 35 of file usb.h.

5.28.2.9 #define D12_INT_EOT 0x100

Definition at line 31 of file usb.h.

5.28.2.10 #define D12_INT_SUSPENDCHANGE 0x80

Definition at line 32 of file usb.h.

5.28.2.11 #define D12_SETUPPACKET 0x20

Definition at line 50 of file usb.h.

5.28.2.12 #define D12_STALL 0x02

Definition at line 48 of file usb.h.

5.28.2.13 #define EP0_PACKET_SIZE 16

Definition at line 54 of file usb.h.

5.28.2.14 #define EP0_RX_FIFO_SIZE 16

Definition at line 53 of file usb.h.

5.28.2.15 #define EP0_TX_FIFO_SIZE 16

Definition at line 52 of file usb.h.

5.28.2.16 #define EP1_PACKET_SIZE 16

Definition at line 58 of file usb.h.

5.28.2.17 #define EP1_RX_FIFO_SIZE 16

Definition at line 57 of file usb.h.

5.28.2.18 #define EP1_TX_FIFO_SIZE 16

Definition at line 56 of file usb.h.

5.28.2.19 #define EP2_PACKET_SIZE 64

Definition at line 62 of file usb.h.

5.28.2.20 #define EP2_RX_FIFO_SIZE 64

Definition at line 61 of file usb.h.

5.28.2.21 #define EP2_TX_FIFO_SIZE 64

Definition at line 60 of file usb.h.

5.28.2.22 #define USB_ACCESS_BUF 0xF0

Definition at line 24 of file usb.h.

5.28.2.23 #define USB_ACK_SETUP 0xF1

Definition at line 25 of file usb.h.

5.28.2.24 #define USB_CLASS_CODE_TEST_CLASS_DEVICE 0xDC

Definition at line 93 of file usb.h.

5.28.2.25 #define USB_CLASS_REQUEST 0x20

Definition at line 83 of file usb.h.

5.28.2.26 #define USB_CLEAR_BUF 0xF2

Definition at line 26 of file usb.h.

5.28.2.27 #define USB_CONFIGURATION_DESCRIPTOR_TYPE 0x02

Definition at line 87 of file usb.h.

5.28.2.28 #define USB_DEVICE_DESCRIPTOR_TYPE 0x01

Definition at line 86 of file usb.h.

5.28.2.29 #define USB_ENDP_ST_CI 0x41

Definition at line 19 of file usb.h.

5.28.2.30 #define USB_ENDP_ST_CO 0x40

Definition at line 18 of file usb.h.

5.28.2.31 #define USB_ENDP_ST_E1I 0x43

Definition at line 21 of file usb.h.

5.28.2.32 #define USB_ENDP_ST_E1O 0x42

Definition at line 20 of file usb.h.

5.28.2.33 #define USB_ENDP_ST_E2I 0x45

Definition at line 23 of file usb.h.

5.28.2.34 #define USB_ENDP_ST_E2O 0x44

Definition at line 22 of file usb.h.

5.28.2.35 #define USB_ENDPOINT_DESCRIPTOR_TYPE 0x05

Definition at line 90 of file usb.h.

5.28.2.36 #define USB_ENDPOINT_DIRECTION_MASK 0x80

Definition at line 42 of file usb.h.

5.28.2.37 #define USB_ENDPOINT_HALT 0

Definition at line 41 of file usb.h.

5.28.2.38 #define USB_ENDPOINT_REQUEST 0x02

Definition at line 81 of file usb.h.

5.28.2.39 #define USB_INTERFACE_DESCRIPTOR_TYPE 0x04

Definition at line 89 of file usb.h.

5.28.2.40 #define USB_INTERFACE_REQUEST 0x01

Definition at line 80 of file usb.h.

5.28.2.41 #define USB_MAX_ENDPOINTS 0x03

Definition at line 43 of file usb.h.

5.28.2.42 #define USB_POWER_DESCRIPTOR_TYPE 0x06

Definition at line 91 of file usb.h.

5.28.2.43 #define USB_PROTOCOL_CODE_TEST_CLASS_-D12 0xB0

Definition at line 95 of file usb.h.

5.28.2.44 #define USB_READ_FRAME_NUMBER 0xF5

Definition at line 29 of file usb.h.

5.28.2.45 #define USB_READ_INT 0xF4

Definition at line 11 of file usb.h.

5.28.2.46 #define USB_RECIPIENT 0x1f

Definition at line 97 of file usb.h.

5.28.2.47 #define USB_RECIPIENT_DEVICE 0x00

Definition at line 98 of file usb.h.

5.28.2.48 #define USB_RECIPIENT_ENDPOINT 0x02

Definition at line 100 of file usb.h.

5.28.2.49 #define USB_RECIPIENT_INTERFACE 0x01

Definition at line 99 of file usb.h.

5.28.2.50 #define USB_REQUEST_CLEAR_FEATURE 0x01

Definition at line 67 of file usb.h.

5.28.2.51 #define USB_REQUEST_GET_-CONFIGURATION 0x08

Definition at line 72 of file usb.h.

5.28.2.52 #define USB_REQUEST_GET_DESCRIPTOR 0x06

Definition at line 70 of file usb.h.

5.28.2.53 #define USB_REQUEST_GET_INTERFACE 0x0A

Definition at line 74 of file usb.h.

5.28.2.54 #define USB_REQUEST_GET_STATUS 0x00

Definition at line 66 of file usb.h.

5.28.2.55 #define USB_REQUEST_MASK 0x0F

Definition at line 65 of file usb.h.

5.28.2.56 #define USB_REQUEST_SET_ADDRESS 0x05

Definition at line 69 of file usb.h.

5.28.2.57 #define USB_REQUEST_SET_CONFIGURATION 0x09

Definition at line 73 of file usb.h.

5.28.2.58 #define USB_REQUEST_SET_DESCRIPTOR 0x07

Definition at line 71 of file usb.h.

5.28.2.59 #define USB_REQUEST_SET_FEATURE 0x03

Definition at line 68 of file usb.h.

5.28.2.60 #define USB_REQUEST_SET_INTERFACE 0x0B

Definition at line 75 of file usb.h.

5.28.2.61 #define USB_REQUEST_SYNC_FRAME 0x0C

Definition at line 76 of file usb.h.

5.28.2.62 #define USB_REQUEST_TYPE_MASK 0x60

Definition at line 78 of file usb.h.

5.28.2.63 #define USB_SELECT_ENDP_CI 0x01

Definition at line 13 of file usb.h.

5.28.2.64 #define USB_SELECT_ENDP_CO 0x00

Definition at line 12 of file usb.h.

5.28.2.65 #define USB_SELECT_ENDP_E1I 0x03

Definition at line 15 of file usb.h.

5.28.2.66 #define USB_SELECT_ENDP_E1O 0x02

Definition at line 14 of file usb.h.

5.28.2.67 #define USB_SELECT_ENDP_E2I 0x05

Definition at line 17 of file usb.h.

5.28.2.68 #define USB_SELECT_ENDP_E2O 0x04

Definition at line 16 of file usb.h.

5.28.2.69 #define USB_SEND_RESUME 0xF6

Definition at line 28 of file usb.h.

5.28.2.70 #define USB_SET_ADDRESS_ENA 0xD0

Definition at line 7 of file usb.h.

5.28.2.71 #define USB_SET_DMA 0xFB

Definition at line 10 of file usb.h.

5.28.2.72 #define USB_SET_ENDP_ENA 0xD8

Definition at line 8 of file usb.h.

5.28.2.73 #define USB_SET_MODE 0xF3

Definition at line 9 of file usb.h.

5.28.2.74 #define USB_SP_INDEX 2

Definition at line 104 of file usb.h.

5.28.2.75 #define USB_SP_LENGTH 3

Definition at line 105 of file usb.h.

5.28.2.76 #define USB_SP_REQUEST 0

Definition at line 102 of file usb.h.

5.28.2.77 #define USB_SP_VALUE 1

Definition at line 103 of file usb.h.

5.28.2.78 #define USB_STANDARD_REQUEST 0x00

Definition at line 79 of file usb.h.

5.28.2.79 #define USB_STRING_DESCRIPTOR_TYPE 0x03

Definition at line 88 of file usb.h.

5.28.2.80 #define USB_SUBCLASS_CODE_TEST_CLASS_-D12 0xA0

Definition at line 94 of file usb.h.

5.28.2.81 #define USB_VALIDATE_BUF 0xFA

Definition at line 27 of file usb.h.

5.28.2.82 #define USB_VENDOR_REQUEST 0x40

Definition at line 84 of file usb.h.

5.29 usblowlib.h File Reference

This graph shows which files directly or indirectly include this file:

Data Structures

- struct **usbpkt**
- struct **USBVARS**

Defines

- #define **AUDIO_ISOC_OUT_EP** 0x01
- #define **MSC_BULK_OUT_ENDPOINT** 0x03
- #define **MSC_BULK_IN_ENDPOINT** 0x02
- #define **ENDPOINT_SIZE_0** 64
- #define **ENDPOINT_SIZE_1** 512
- #define **BRESET_INT** 0x8000
- #define **SOF_INT** 0x4000
- #define **RX_INT** 0x2000
- #define **TX_HOLD_INT** 0x1000
- #define **TX_INT** 0x0800
- #define **NAK_SENT_INT** 0x0400
- #define **SETUP_INFO** 0x0080
- #define **P_SETUP** 0x10
- #define **P_DATA** 0x20
- #define **PID_SOF** 0x05
- #define **PID_SETUP** 0x0D

- #define **PID_IN** 0x09
- #define **PID_OUT** 0x01
- #define **PID_DATA0** 0x03
- #define **PID_DATA1** 0x0B
- #define **PID_ACK** 0x02
- #define **PID_NACK** 0x0A
- #define **PID_STALL** 0x0E
- #define **USB_CONFIG** (USB_BASE)
- #define **USB_CONTROL** (USB_BASE+1)
- #define **USB_STATUS** (USB_BASE+2)
- #define **USB_STF_BUS_RESET** (1<<15)
- #define **USB_STF_SOF** (1<<14)
- #define **USB_STF_RX** (1<<13)
- #define **USB_STF_TX_READY** (1<<12)
- #define **USB_STF_TX_EMPTY** (1<<11)
- #define **USB_STF_NAK** (1<<10)
- #define **USB_STF_SETUP** (1<<7)
- #define **USB_STM_LAST_EP** (15<<0)
- #define **USB_RDPTR** (USB_BASE+3)
- #define **USB_WRPTR** (USB_BASE+4)
- #define **USB_EP_SEND0** (USB_BASE+8)
- #define **USB_EP_SEND1** (USB_BASE+9)
- #define **USB_EP_SEND2** (USB_BASE+10)
- #define **USB_EP_SEND3** (USB_BASE+11)
- #define **USB_EP_ST0** (USB_BASE+16)
- #define **USB_EP_ST1** (USB_BASE+17)
- #define **USB_EP_ST2** (USB_BASE+18)
- #define **USB_EP_ST3** (USB_BASE+19)
- #define **USB_STF_OUT_BULK** (0<<14)
- #define **USB_STF_OUT_INT** (1<<14)
- #define **USB_STF_OUT_ISO** (3<<14)
- #define **USB_STF_OUT_ENABLE** (1<<13)
- #define **USB_STF_OUT_STALL** (1<<12)
- #define **USB_STF_OUT_STALL_SENT** (1<<11)
- #define **USB_STF_OUT_EP_SIZE** (1<<8)
- #define **USB_STF_IN_BULK** (0<<6)
- #define **USB_STF_IN_INT** (1<<6)
- #define **USB_STF_IN_ISO** (3<<6)
- #define **USB_STF_IN_ENABLE** (1<<5)
- #define **USB_STF_IN_STALL** (1<<4)
- #define **USB_STF_IN_STALL_SENT** (1<<3)
- #define **USB_STF_IN_NACK_SENT** (1<<2)
- #define **USB_STF_IN_EMPTY** (1<<1)
- #define **USB_STF_IN_FORCE_NACK** (1<<0)
- #define **RING_BUF_SIZE** 1024
- #define **DT_LANGUAGES** 0

- #define **DT_VENDOR** 1
- #define **DT_MODEL** 2
- #define **DT_SERIAL** 3
- #define **DT_DEVICE** 4
- #define **DT_CONFIGURATION** 5
- #define **USB_MASS_STORAGE** 1
- #define **USB_AUDIO** 2
- #define **AUDIO_DELAY_FRAMES** 12
- #define **AUDIO_DELAY_FRAMES_STR** "\x0c"

Typedefs

- typedef **usbpkt USBPacket**

Functions

- auto void **RingBufCopyX** (register __i2 **u_int16** *d, register __i0 const **u_int16** *s, register __a0 **u_int16** n)
- int **USBStartTransmission** (**u_int16** ep, const void *buf, **u_int16** length, **u_int16** requestedLength)
- void **USBContinueTransmission** (**u_int16** ep)
- void **InitUSBDescriptors** (**u_int16** initDescriptors)
- void **RealInitUSBDescriptors** (**u_int16** initDescriptors)
- void **InitUSB** (**u_int16** initDescriptors)
- void **USBResetEndpoint** (register __c0 int ep)
- **u_int16 USBReceivePacket** (**USBPacket** *packet)
- void **USBSendZeroLengthPacketToEndpoint0** (void)
- void **USBHandler** (void)
- void **RealUSBHandler** ()
- void **DecodeSetupPacket** (void)
- void **RealDecodeSetupPacket** (void)
- void **USBCheckForSetupPacket** (void)
- **u_int16 USBXmitLeft** (**u_int16** endpoint)
- void **USBSingleStallEndpoint** (register __c0 **u_int16** ep)
- void **USBStallEndpoint** (register __c0 int ep)
- void **USBResetStall** (register __c0 int ep)
- **u_int16 USBIsEndpointStalled** (register int ep)
- **u_int16 SwapWord** (register __a1 **u_int16** d)
- auto **u_int16 USBIsAttached** (void)
- auto **u_int16 USBIsDetached** (void)
- auto **u_int16 USBWantsSuspend** (void)
- void **MSCPacketFromPC** (**USBPacket** *setupPacket)
- void **RealMSCPacketFromPC** (**USBPacket** *setupPacket)
- **u_int16 MscSendCsw** (**u_int16** status)
- void **DiskProtocolError** (char errorcode)
- void **AudioPacketFromUSB** (**u_int16** *data, **s_int16** words)

Variables

- **USBVARS USB**

5.29.1 Detailed Description

VS1000 low-level USB definitions.

Definition in file **usblowlib.h**.

5.29.2 Define Documentation

5.29.2.1 #define AUDIO_DELAY_FRAMES 12

Definition at line 311 of file usblowlib.h.

5.29.2.2 #define AUDIO_DELAY_FRAMES_STR "\x0c"

Definition at line 312 of file usblowlib.h.

5.29.2.3 #define AUDIO_ISOC_OUT_EP 0x01

OUT endpoint used for audio.

Definition at line 8 of file usblowlib.h.

5.29.2.4 #define BRESET_INT 0x8000

Bus reset interrupt

Definition at line 18 of file usblowlib.h.

5.29.2.5 #define DT_CONFIGURATION 5

Definition at line 147 of file usblowlib.h.

5.29.2.6 #define DT_DEVICE 4

Definition at line 146 of file usblowlib.h.

5.29.2.7 #define DT_LANGUAGES 0

Definition at line 142 of file usblowlib.h.

5.29.2.8 #define DT_MODEL 2

Definition at line 144 of file usblowlib.h.

5.29.2.9 #define DT_SERIAL 3

Definition at line 145 of file usblowlib.h.

5.29.2.10 #define DT_VENDOR 1

Definition at line 143 of file usblowlib.h.

5.29.2.11 #define ENDPOINT_SIZE_0 64

The endpoint size supported for IN.

Definition at line 12 of file usblowlib.h.

5.29.2.12 #define ENDPOINT_SIZE_1 512

The max OUT packet size, mainly for audio.

Definition at line 13 of file usblowlib.h.

5.29.2.13 #define MSC_BULK_IN_ENDPOINT 0x02

IN endpoint used for SCSI.

Definition at line 10 of file usblowlib.h.

5.29.2.14 #define MSC_BULK_OUT_ENDPOINT 0x03

OUT endpoint used for SCSI.

Definition at line 9 of file usblowlib.h.

5.29.2.15 #define NAK_SENT_INT 0x0400

Packet NAKed

Definition at line 23 of file usblowlib.h.

5.29.2.16 #define P_DATA 0x20

Definition at line 30 of file usblowlib.h.

5.29.2.17 #define P_SETUP 0x10

Definition at line 29 of file usblowlib.h.

5.29.2.18 #define PID_ACK 0x02

Definition at line 37 of file usblowlib.h.

5.29.2.19 #define PID_DATA0 0x03

Definition at line 35 of file usblowlib.h.

5.29.2.20 #define PID_DATA1 0x0B

Definition at line 36 of file usblowlib.h.

5.29.2.21 #define PID_IN 0x09

Definition at line 33 of file usblowlib.h.

5.29.2.22 #define PID_NACK 0x0A

Definition at line 38 of file usblowlib.h.

5.29.2.23 #define PID_OUT 0x01

Definition at line 34 of file usblowlib.h.

5.29.2.24 #define PID_SETUP 0x0D

Definition at line 32 of file usblowlib.h.

5.29.2.25 #define PID_SOF 0x05

Definition at line 31 of file usblowlib.h.

5.29.2.26 #define PID_STALL 0x0E

Definition at line 39 of file usblowlib.h.

5.29.2.27 #define RING_BUF_SIZE 1024

Definition at line 97 of file usblowlib.h.

5.29.2.28 #define RX_INT 0x2000

OUT packet received

Definition at line 20 of file usblowlib.h.

5.29.2.29 #define SETUP_INFO 0x0080

Setup packet

Definition at line 24 of file usblowlib.h.

5.29.2.30 #define SOF_INT 0x4000

Start of Frame interrupt

Definition at line 19 of file usblowlib.h.

5.29.2.31 #define TX_HOLD_INT 0x1000

Copied packet to IN registers

Definition at line 21 of file usblowlib.h.

5.29.2.32 #define TX_INT 0x0800

Successfully transmitted packet

Definition at line 22 of file usblowlib.h.

5.29.2.33 #define USB_AUDIO 2

Definition at line 298 of file usblowlib.h.

5.29.2.34 #define USB_CONFIG (USB_BASE)

Definition at line 45 of file usblowlib.h.

5.29.2.35 #define USB_CONTROL (USB_BASE+1)

Definition at line 46 of file usblowlib.h.

5.29.2.36 #define USB_EP_SEND0 (USB_BASE+8)

Definition at line 61 of file usblowlib.h.

5.29.2.37 #define USB_EP_SEND1 (USB_BASE+9)

Definition at line 62 of file usblowlib.h.

5.29.2.38 #define USB_EP_SEND2 (USB_BASE+10)

Definition at line 63 of file usblowlib.h.

5.29.2.39 #define USB_EP_SEND3 (USB_BASE+11)

Definition at line 64 of file usblowlib.h.

5.29.2.40 #define USB_EP_ST0 (USB_BASE+16)

Definition at line 70 of file usblowlib.h.

5.29.2.41 #define USB_EP_ST1 (USB_BASE+17)

Definition at line 71 of file usblowlib.h.

5.29.2.42 #define USB_EP_ST2 (USB_BASE+18)

Definition at line 72 of file usblowlib.h.

5.29.2.43 #define USB_EP_ST3 (USB_BASE+19)

Definition at line 73 of file usblowlib.h.

5.29.2.44 #define USB_MASS_STORAGE 1

Definition at line 297 of file usblowlib.h.

5.29.2.45 #define USB_RDPTR (USB_BASE+3)

USB receive buffer read pointer.

Definition at line 58 of file usblowlib.h.

5.29.2.46 #define USB_STATUS (USB_BASE+2)

Definition at line 47 of file usblowlib.h.

5.29.2.47 #define USB_STF_BUS_RESET (1<<15)

Definition at line 49 of file usblowlib.h.

5.29.2.48 #define USB_STF_IN_BULK (0<<6)

Definition at line 86 of file usblowlib.h.

5.29.2.49 #define USB_STF_IN_EMPTY (1<<1)

Definition at line 93 of file usblowlib.h.

5.29.2.50 #define USB_STF_IN_ENABLE (1<<5)

Definition at line 89 of file usblowlib.h.

5.29.2.51 #define USB_STF_IN_FORCE_NACK (1<<0)

Definition at line 94 of file usblowlib.h.

5.29.2.52 #define USB_STF_IN_INT (1<<6)

Definition at line 87 of file usblowlib.h.

5.29.2.53 #define USB_STF_IN_ISO (3<<6)

Definition at line 88 of file usblowlib.h.

5.29.2.54 #define USB_STF_IN_NACK_SENT (1<<2)

Definition at line 92 of file usblowlib.h.

5.29.2.55 #define USB_STF_IN_STALL (1<<4)

Definition at line 90 of file usblowlib.h.

5.29.2.56 #define USB_STF_IN_STALL_SENT (1<<3)

Definition at line 91 of file usblowlib.h.

5.29.2.57 #define USB_STF_NAK (1<<10)

Definition at line 54 of file usblowlib.h.

5.29.2.58 #define USB_STF_OUT_BULK (0<<14)

Definition at line 79 of file usblowlib.h.

5.29.2.59 #define USB_STF_OUT_ENABLE (1<<13)

Definition at line 82 of file usblowlib.h.

5.29.2.60 #define USB_STF_OUT_EP_SIZE (1<<8)

Definition at line 85 of file usblowlib.h.

5.29.2.61 #define USB_STF_OUT_INT (1<<14)

Definition at line 80 of file usblowlib.h.

5.29.2.62 #define USB_STF_OUT_ISO (3<<14)

Definition at line 81 of file usblowlib.h.

5.29.2.63 #define USB_STF_OUT_STALL (1<<12)

Definition at line 83 of file usblowlib.h.

5.29.2.64 #define USB_STF_OUT_STALL_SENT (1<<11)

Definition at line 84 of file usblowlib.h.

5.29.2.65 #define USB_STF_RX (1<<13)

Definition at line 51 of file usblowlib.h.

5.29.2.66 #define USB_STF_SETUP (1<<7)

Definition at line 55 of file usblowlib.h.

5.29.2.67 #define USB_STF_SOF (1<<14)

Definition at line 50 of file usblowlib.h.

5.29.2.68 #define USB_STF_TX_EMPTY (1<<11)

Definition at line 53 of file usblowlib.h.

5.29.2.69 #define USB_STF_TX_READY (1<<12)

Definition at line 52 of file usblowlib.h.

5.29.2.70 #define USB_STM_LAST_EP (15<<0)

Definition at line 56 of file usblowlib.h.

5.29.2.71 #define USB_WRPTR (USB_BASE+4)

USB receive buffer write pointer.

Definition at line 59 of file usblowlib.h.

5.29.3 Typedef Documentation

5.29.3.1 typedef struct usbpkt USBPacket

Holding space for one received USB packet.

5.29.4 Function Documentation

5.29.4.1 void AudioPacketFromUSB (u_int16 * *data*, s_int16 *words*)

Called each time a packet is received to the audio endpoint. The function must be provided.

5.29.4.2 void DecodeSetupPacket (void)

Hook: handles setup packets. Default: DecodeSetupPacket.

5.29.4.3 void DiskProtocolError (char *errorcode*)

5.29.4.4 void InitUSB (u_int16 *initDescriptors*)

Initializes USB subsystem.

Parameters:
initDescriptors 0=no init, 1=Mass Storage, 2=Audio

5.29.4.5 void InitUSBDescriptors (u_int16 *initDescriptors*)

Hook: Initializes USB descriptor table. Default: RealInitUSBDescriptors.

Parameters:
initDescriptors 0=no init, 1=Mass Storage, 2=Audio

5.29.4.6 void MSCPacketFromPC (USBPacket * *setupPacket*)

Hook: handle a mass storage packet. Default: RealMSCPacketFromPC.

5.29.4.7 u_int16 MscSendCsw (u_int16 *status*)

5.29.4.8 void RealDecodeSetupPacket (void)

Processes setup packets.

5.29.4.9 void RealInitUSBDescriptors (u_int16 *initDescriptors*)

Initializes USB descriptor table.

Parameters:
initDescriptors 0=no init, 1=Mass Storage, 2=Audio

5.29.4.10 void RealMSCPacketFromPC (USBPacket * *setupPacket*)

Handles a mass storage packet.

5.29.4.11 void RealUSBHandler ()

Polled handling of USB packets. Both Mass Storage and Audio are processed, but the descriptor decides which one the host uses.

5.29.4.12 auto void RingBufCopyX (register __i2 u_int16 * *d*, register __i0 const u_int16 * *s*, register __a0 u_int16 *n*)

Copies packet from USB receive memory ring buffer to X memory buffer. The data is in big-endian format, i.e. the high 8 bits of a word are the first byte, the low 8 bits the second byte. Does not touch USB peripheral registers.

Parameters:

d Destination pointer.

s Source pointer, must point to the USB receive memory.

n The number of words to copy.

5.29.4.13 u_int16 SwapWord (register __a1 u_int16 *d*)

Swaps byte order

5.29.4.14 void USBCheckForSetupPacket (void)

Checks if any setup packets are waiting and discards any packets that appear before it in the input queue.

5.29.4.15 void USBContinueTransmission (u_int16 *ep*)

Continues sending a packet.

Parameters:

ep The endpoint.

5.29.4.16 void USBHandler (void)

Hook: polled handling of USB packets. Default: RealUSBHandler.

5.29.4.17 auto u_int16 USBIsAttached (void)

Uses USB pull-up enable and USB_DN to detect if USB is attached. USB is attached if the USB pull-up is enabled. USB is not attached if USB_DN is high for every sampling in 20000 clock cycles, and is attached if USB_DN is low for even one sampling.

Returns:

0 is USB is not attached, non-zero if USB is attached.

5.29.4.18 auto u_int16 USBIsDetached (void)

Checks USB_DP and USB_DN. If both are high, the unit is probably detached. You MUST also use the **USBWantsSuspend()**(p. 148) function to see that there has not been SOF's for a while. Otherwise you will get false detections.

Returns:

0 is USB is still attached, non-zero if it might be detached.

5.29.4.19 u_int16 USBIsEndpointStalled (register int *ep*)

Returns the stall state of an endpoint.

Parameters:
ep 0x80|endpoint for IN endpoints.

Returns:
non-zero if endpoint is stalled.

5.29.4.20 u_int16 USBReceivePacket (USBPacket * *packet*)

Fetches a packet from USB receive FIFO. Also clears RX_INT and SETUP_-INFO.

Parameters:
packet pointer to the packet structure

Returns:
endpoint number

5.29.4.21 void USBResetEndpoint (register __c0 int *ep*)

Resets an endpoint. Data toggles are also reset and possible IN packets waiting for transmit are discarded.

Parameters:
ep 0 for control endpoint, 0x80|endpoint for IN.

5.29.4.22 void USBResetStall (register __c0 int *ep*)

Resets the stall state of an endpoint.

Parameters:
ep 0x80|endpoint for IN endpoints.

5.29.4.23 void USBSendZeroLengthPacketToEndpoint0 (void)

Sends an empty packet to the control endpoint. Returns when the packet has been sent or a bus reset is received.

Bug
: currently is satisfied if any active IN is finished.

5.29.4.24 void USBSingleStallEndpoint (register __c0 u_int16 *ep*)

Sends (at least) one STALL to the specified endpoint.

Parameters:
ep 0x80|endpoint for IN endpoints.

5.29.4.25 void USBStallEndpoint (register __c0 int *ep*)

Sets the endpoint to stall state.

Parameters:
ep Endpoint number for OUT endpoint, 0x80|endpoint for IN endpoints.

5.29.4.26 int USBStartTransmission (u_int16 *ep*, const void * *buf*, u_int16 *length*, u_int16 *requestedLength*)

Starts transmission of data in endpoint-size -sized parts. Internall calls USBContinueTransmission once to start the transfer.

Parameters:
ep The endpoint to use.

buf Data to send.

length Length of data to send in bytes.

requestedLength Data size that was requested in bytes.

Returns:
0 if successful, non-zero if endpoint was busy.

5.29.4.27 auto u_int16 USBWantsSuspend (void)

Checks if there has been no SOF for 10..20ms.

Bug
USB suspend time is 3ms. Because of our software timer accurary we detect suspend when there has been no SOF for 10..20ms.
This routine requires that the unit is configured before returning non-zero.
Returns:
0 if the communication is proceeding normally, non-zero if suspend state is detected.

5.29.4.28 u_int16 USBXmitLeft (u_int16 *endpoint*)

Checks how many bytes of a packet are waiting to be sent.

Parameters:
endpoint the endpoint to check.

Returns:
the number of bytes left

5.29.5 Variable Documentation

5.29.5.1 struct USBVARS USB

5.30 vectors.h File Reference

```
#include "usblowlib.h"
```

Include dependency graph for vectors.h:

Functions

- void **USBHandler** (void)
- void **RealUSBHandler** (void)
- void **DecodeSetupPacket** (void)
- void **RealDecodeSetupPacket** (void)
- void **MSCPacketFromPC** (**USBPacket** *inPacket)
- void **RealMSCPacketFromPC** (**USBPacket** *inPacket)

5.30.1 Function Documentation

5.30.1.1 void DecodeSetupPacket (void)

5.30.1.2 void MSCPacketFromPC (USBPacket * *inPacket*)

5.30.1.3 void RealDecodeSetupPacket (void)

5.30.1.4 void RealMSCPacketFromPC (USBPacket * *inPacket*)

5.30.1.5 void RealUSBHandler (void)

5.30.1.6 void USBHandler (void)

5.31 vs1000.h File Reference

```
#include <vstypes.h>
```

Include dependency graph for vs1000.h:

This graph shows which files directly or indirectly include this file:

Defines

- #define **IROM_START** 0x4000
- #define **IROM_SIZE** 0x4a80
- #define **XROM_START** 0x4000
- #define **XROM_SIZE** 0x0c00
- #define **YROM_START** 0x4000
- #define **YROM_SIZE** 0x2800
- #define **XRAM_START** 0x0
- #define **XRAM_SIZE** 0x3400
- #define **YRAM_START** 0x0
- #define **YRAM_SIZE** 0x4000
- #define **IRAM_START** 0x0
- #define **IRAM_SIZE** 0x800
- #define **DCT_START** 0x1000
- #define **STACK_START** 0x1800
- #define **STACK_SIZE** 0x200
- #define **DEBUG_STACK** (STACK_START+STACK_SIZE-32)
- #define **OTHERS_START** 0x0800
- #define **YPREV0_START** 0x0000
- #define **YPREV1_START** 0x0400
- #define **AUDIO_START** 0x0000
- #define **INTV_GPIO1** 10
- #define **INTV_GPIO0** 9
- #define **INTV_REGU** 8
- #define **INTV_TIM1** 7
- #define **INTV_TIM0** 6
- #define **INTV_RX** 5
- #define **INTV_TX** 4
- #define **INTV_NFLSH** 3
- #define **INTV_USB** 2
- #define **INTV_SPI** 1

- #define **INTV_DAC** 0
- #define **INTF_GPIO1** (1<<INTV_GPIO1)
- #define **INTF_GPIO0** (1<<INTV_GPIO0)
- #define **INTF_REGU** (1<<INTV_REGU)
- #define **INTF_TIM1** (1<<INTV_TIM1)
- #define **INTF_TIM0** (1<<INTV_TIM0)
- #define **INTF_RX** (1<<INTV_RX)
- #define **INTF_TX** (1<<INTV_TX)
- #define **INTF_NFLSH** (1<<INTV_NFLSH)
- #define **INTF_USB** (1<<INTV_USB)
- #define **INTF_SPI** (1<<INTV_SPI)
- #define **INTF_DAC** (1<<INTV_DAC)
- #define **INT_EN_NONE** 0
- #define **INT_EN_GPIO1** INTV_GPIO1
- #define **INT_EN_GPIO0** INTV_GPIO0
- #define **INT_EN_REGU** INTV_REGU
- #define **INT_EN_TIM1** INTV_TIM1
- #define **INT_EN_TIM0** INTV_TIM0
- #define **INT_EN_RX** INTV_RX
- #define **INT_EN_TX** INTV_TX
- #define **INT_EN_NFLSH** INTV_NFLSH
- #define **INT_EN_USB** INTV_USB
- #define **INT_EN_SPI** INTV_SPI
- #define **INT_EN_DAC** INTV_DAC
- #define **SCI_SYSTEM** 0xC000
- #define **SCISYSF_CLKDIV** 0x8000
- #define **SCISYSF_AVDD** (1<<10)
- #define **SCISYSF_IOVDD** (1<<5)
- #define **SCISYSF_CVDD** (1<<0)
- #define **SCI_STATUS** 0xC001
- #define **SCISTF_SLOW_CLKMODE** (1<<15)
- #define **SCISTF_USB_DN_OUT** (1<<14)
- #define **SCISTF_USB_DP_OUT** (1<<13)
- #define **SCISTF_USB_DDR** (1<<12)
- #define **SCISTF_VCM_OVERLOAD** (1<<11)
- #define **SCISTF_VCM_DISABLE** (1<<10)
- #define **SCISTF_USB_DP** (1<<9)
- #define **SCISTF_USB_DN** (1<<8)
- #define **SCISTF_USB_DIFF_ENA** (1<<7)
- #define **SCISTF_USB_PULLUP_ENA** (1<<6)
- #define **SCISTF_REGU_POWERLOW** (1<<5)
- #define **SCISTF_REGU_POWERBUT** (1<<4)
- #define **SCISTF_ANADRV_PDOWN** (1<<3)
- #define **SCISTF_ANA_PDOWN** (1<<2)
- #define **SCISTF_REGU_CLOCK** (1<<1)
- #define **SCISTF_REGU_SHUTDOWN** (1<<0)

- #define **SCI_DEBUG** 0xC002
- #define **GPIO0_MODE** 0xC010
- #define **GPIO1_MODE** 0xC011
- #define **DAC_VOL** 0xC012
- #define **FREQCTLL** 0xC013
- #define **FREQCTLH** 0xC014
- #define **FCH_MUL0_B** 4
- #define **FCH_MUL1_B** 5
- #define **FCH_MUL2_B** 6
- #define **FCH_MUL3_B** 7
- #define **FCH_DIV_INCLK_B** 8
- #define **FCH_FORCE_PLL_B** 9
- #define **FCH_VCO_OUT_ENA_B** 11
- #define **FCH_PLL_SET_LOCK_B** 12
- #define **FCH_PLL_LOCKED_B** 13
- #define **FCH_MUL0** (1<<FCH_MUL0_B)
- #define **FCH_MUL1** (1<<FCH_MUL1_B)
- #define **FCH_MUL2** (1<<FCH_MUL2_B)
- #define **FCH_MUL3** (1<<FCH_MUL3_B)
- #define **FCH_DIV_INCLK** (1<<FCH_DIV_INCLK_B)
- #define **FCH_FORCE_PLL** (1<<FCH_FORCE_PLL_B)
- #define **FCH_VCO_OUT_ENA** (1<<FCH_VCO_OUT_ENA_B)
- #define **FCH_PLL_SET_LOCK** (1<<FCH_PLL_SET_LOCK_-B)
- #define **FCH_PLL_LOCKED** (1<<FCH_PLL_LOCKED_B)
- #define **DAC_LEFT** 0xC015
- #define **DAC_RIGHT** 0xC016
- #define **WDOG_CONFIG** 0xC020
- #define **WDOG_RESET** 0xC021
- #define **WDOG_DUMMY** 0xC022
- #define **WDOG_RESET_VAL** 0x4ea9
- #define **UART_STATUS** 0xC028
- #define **UART_DATA** 0xC029
- #define **UART_DATAH** 0xC02A
- #define **UART_DIV** 0xC02B
- #define **UART_ST_RXORUN** (1<<3)
- #define **UART_ST_RXFULL** (1<<2)
- #define **UART_ST_TXFULL** (1<<1)
- #define **UART_ST_TXRUNNING** (1<<0)
- #define **TIMER_CONFIG** 0xC030
- #define **TIMER_ENABLE** 0xC031
- #define **TIMER_T0L** 0xC034
- #define **TIMER_T0H** 0xC035
- #define **TIMER_T0CNTL** 0xC036
- #define **TIMER_T0CNTH** 0xC037
- #define **TIMER_T1L** 0xC038

- #define **TIMER_T1H** 0xC039
- #define **TIMER_T1CNTL** 0xC03A
- #define **TIMER_T1CNTH** 0xC03B
- #define **GPIO0_DDR** 0xC040
- #define **GPIO0_ODATA** 0xC041
- #define **GPIO0_IDATA** 0xC042
- #define **GPIO0_INT_FALL** 0xC043
- #define **GPIO0_INT_RISE** 0xC044
- #define **GPIO0_INT_PEND** 0xC045
- #define **GPIO0_SET_MASK** 0xC046
- #define **GPIO0_CLEAR_MASK** 0xC047
- #define **GPIO0_BIT_CONF** 0xC048
- #define **GPIO0_BIT_ENG0** 0xC049
- #define **GPIO0_BIT_ENG1** 0xC04A
- #define **GPIO0_READY** 0x0100
- #define **GPIO0_RD** 0x0200
- #define **GPIO0_CS1** 0x0400
- #define **GPIO0_WR** 0x0800
- #define **GPIO0_CLE** 0x1000
- #define **GPIO0_ALE** 0x2000
- #define **GPIO1_DDR** 0xC050
- #define **GPIO1_ODATA** 0xC051
- #define **GPIO1_IDATA** 0xC052
- #define **GPIO1_INT_FALL** 0xC053
- #define **GPIO1_INT_RISE** 0xC054
- #define **GPIO1_INT_PEND** 0xC055
- #define **GPIO1_SET_MASK** 0xC056
- #define **GPIO1_CLEAR_MASK** 0xC057
- #define **GPIO1_BIT_CONF** 0xC058
- #define **GPIO1_BIT_ENG0** 0xC059
- #define **GPIO1_BIT_ENG1** 0xC05A
- #define **SPI0_CONFIG** 0xC068
- #define **SPI0_CLKCONFIG** 0xC069
- #define **SPI0_STATUS** 0xC06A
- #define **SPI0_DATA** 0xC06B
- #define **SPI0_FSYNC** 0xC06C
- #define **SPI_CF_INTXCS** (0<<6)
- #define **SPI_CF_FALLXCS** (2<<6)
- #define **SPI_CF_RISEXCS** (3<<6)
- #define **SPI_CF_MASTER** (1<<5)
- #define **SPI_CF_SLAVE** (0<<5)
- #define **SPI_CF_DLEN** (1<<1)
- #define **SPI_CF_DLEN8** (7<<1)
- #define **SPI_CF_DLEN16** (15<<1)
- #define **SPI_CF_FSIDLE1** (1<<0)
- #define **SPI_CF_FSIDLE0** (0<<0)

- #define **SPI_CC_CLKDIV** (1<<2)
- #define **SPI_ST_BREAK** (1<<5)
- #define **SPI_ST_RXORUN** (1<<4)
- #define **SPI_ST_RXFULL** (1<<3)
- #define **SPI_ST_TXFULL** (1<<2)
- #define **SPI_ST_TXRUNNING** (1<<1)
- #define **SPI_ST_TXURUN** (1<<0)
- #define **NFLSH_CTRL** 0xC060
- #define **NFLSH_CF_LCD_CE_MODE** (1<<8)
- #define **NFLSH_CF_INT_ENABLE** (1<<7)
- #define **NFLSH_CF_NF_RESET** (1<<6)
- #define **NFLSH_CF_WAITSTATES** (1<<0)
- #define **NFLSH_LPL** 0xC061
- #define **NFLSH_CP_LPH** 0xC062
- #define **NFLSH_DATA** 0xC063
- #define **NFLSH_NFIF** 0xC064
- #define **NFLSH_NB_BYTECNT** (8)
- #define **NFLSH_NF_BYTECNT** (1<<NFLSH_NB_BYTECNT)
- #define **NFLSH_NF_USE_DBUF** (1<<7)
- #define **NFLSH_NF_POINTER** (1<<2)
- #define **NFLSH_NF_START** (1<<1)
- #define **NFLSH_NF_READ** (1<<0)
- #define **NFLSH_DSPIF** 0xC065
- #define **NFLSH_DB_POINTER** (4)
- #define **NFLSH_DF_POINTER** (1<<NFLSH_DB_POINTER)
- #define **NFLSH_DF_ENA_DBUF** (1<<3)
- #define **NFLSH_DF_READ** (1<<2)
- #define **NFLSH_DF_ECC_CALC** (1<<1)
- #define **NFLSH_DF_ECC_RESET** (1<<0)
- #define **NFLSH_ECC_CNT** 0xC066
- #define **INT_ENABLE** 0xC070
- #define **INT_ENABLEL** 0xC070
- #define **INT_ENABLEH** 0xC072
- #define **INT_ORIGIN** 0xC074
- #define **INT_VECTOR** 0xC076
- #define **INT_ENCOUNT** 0xC077
- #define **INT_GLOB_DIS** 0xC078
- #define **INT_GLOB_EN** 0xC079
- #define **USB_BASE** 0xC080U
- #define **USB_RECV_MEM** 0x2C00
- #define **USB_SEND_MEM** 0x3000
- #define **PERIP_IN_X**
- #define **PERIP**(x) USEX(x)

Enumerations

- enum **voltIdx** {
  voltCorePlayer = 0, **voltIoPlayer**, **voltAnaPlayer**, **voltCoreUSB**,
  voltIoUSB, **voltAnaUSB**, **voltCoreSuspend**, **voltIoSuspend**,
  voltAnaSuspend, **voltCoreUser**, **voltIoUser**, **voltAnaUser**,
  voltEnd }

Functions

- void **SpiBoot** (register __a0 short clkConf, register __i2 short addr, register __i0 short m24)
- void **SpiLoad** (register __i2 short startAddr, register __i0 short m24)
- void **SpiDelay** (register __a0 **u_int16** wait)
- auto **u_int16 SpiSendReceive** (register __a0 **u_int16** data)
- void **Restart** (void)
- void **IdleHook** (void)
- auto **u_int16 InitFileSystem** (void)
- auto **s_int16 OpenFile** (register __c0 **u_int16** fileNum)
- auto **s_int16 ReadFile** (register __i3 **u_int16** *buf, register __c1 **s_int16** byteOff, register __c0 **s_int16** byteSize)
- **u_int32 Seek** (register __reg_a **u_int32** pos)
- **u_int32 Tell** (void)
- auto **u_int16 ReadDiskSector** (register __i0 **u_int16** *buffer, register __a **u_int32** sector)
- auto **u_int16 MapperReadDiskSector** (register __i0 **u_int16** *buffer, register __a **u_int32** sector)
- void **Disable** (void)
- void **Enable** (void)
- void **Sleep** (void)
- void **NullHook** (void)
- void * **SetHookFunction** (register __i0 **u_int16** hook, register __a0 void *newFunc)
- void **BootFromX** (register __i0 **u_int16** *start)
- void **SinTest** (void)
- void **MemTests** (register short __b0 muxTestResult)
- void **BusyWait10** (void)
- void **PowerSetVoltages** (**u_int16** volt[3])
- void **PowerOff** (void)
- void **RealPowerOff** (void)
- **u_int16 PlayCurrentFile** (void)
- **u_int16 RealPlayCurrentFile** (void)
- void **LoadCheck** (struct **CodecServices** *cs, **s_int16** n)
- void **RealLoadCheck** (struct **CodecServices** *cs, **s_int16** n)
- **u_int16 UnsupportedFile** (struct **CodecServices** *cs)
- **u_int16 DefUnsupportedFile** (struct **CodecServices** *cs)

- **FsMapper** * **FsMapRamCreate** (struct **FsPhysical** *physical, **u_int16** cacheSize)
- void **putch** (register __a0 **s_int16** ch)
- **s_int16 getch** (void)

Variables

- **u_int16 voltages** [voltEnd]
- **u_int16 g_dctlo** [2048]
- __y **u_int16 g_dcthi** [2048]
- **s_int16 g_others** [2048]
- **s_int16 g_yprev0** [1024]
- **s_int16 g_yprev1** [1024]

5.31.1 Detailed Description

VS1000 hardware register definitions and general functions.

Definition in file **vs1000.h**.

5.31.2 Define Documentation

5.31.2.1 #define AUDIO_START 0x0000

Definition at line 45 of file vs1000.h.

5.31.2.2 #define DAC_LEFT 0xC015

Definition at line 145 of file vs1000.h.

5.31.2.3 #define DAC_RIGHT 0xC016

Definition at line 146 of file vs1000.h.

5.31.2.4 #define DAC_VOL 0xC012

Definition at line 117 of file vs1000.h.

5.31.2.5 #define DCT_START 0x1000

Definition at line 38 of file vs1000.h.

5.31.2.6 #define DEBUG_STACK (STACK_START+STACK_SIZE-32)

Definition at line 41 of file vs1000.h.

5.31.2.7 #define FCH_DIV_INCLK (1<<FCH_DIV_INCLK_B)

Definition at line 137 of file vs1000.h.

5.31.2.8 #define FCH_DIV_INCLK_B 8

Definition at line 126 of file vs1000.h.

5.31.2.9 #define FCH_FORCE_PLL (1<<FCH_FORCE_PLL_B)

Definition at line 138 of file vs1000.h.

5.31.2.10 #define FCH_FORCE_PLL_B 9

Definition at line 127 of file vs1000.h.

5.31.2.11 #define FCH_MUL0 (1<<FCH_MUL0_B)

Definition at line 133 of file vs1000.h.

5.31.2.12 #define FCH_MUL0_B 4

Definition at line 122 of file vs1000.h.

5.31.2.13 #define FCH_MUL1 (1<<FCH_MUL1_B)

Definition at line 134 of file vs1000.h.

5.31.2.14 #define FCH_MUL1_B 5

Definition at line 123 of file vs1000.h.

5.31.2.15 #define FCH_MUL2 (1<<FCH_MUL2_B)

Definition at line 135 of file vs1000.h.

5.31.2.16 #define FCH_MUL2_B 6

Definition at line 124 of file vs1000.h.

5.31.2.17 #define FCH_MUL3 (1<<FCH_MUL3_B)

Definition at line 136 of file vs1000.h.

5.31.2.18 #define FCH_MUL3_B 7

Definition at line 125 of file vs1000.h.

5.31.2.19 #define FCH_PLL_LOCKED (1<<FCH_PLL_LOCKED_B)

Definition at line 142 of file vs1000.h.

5.31.2.20 #define FCH_PLL_LOCKED_B 13

Definition at line 131 of file vs1000.h.

5.31.2.21 #define FCH_PLL_SET_LOCK (1<<FCH_PLL_SET_LOCK_B)

Definition at line 141 of file vs1000.h.

5.31.2.22 #define FCH_PLL_SET_LOCK_B 12

Definition at line 130 of file vs1000.h.

5.31.2.23 #define FCH_VCO_OUT_ENA (1<<FCH_VCO_OUT_ENA_B)

Definition at line 140 of file vs1000.h.

5.31.2.24 #define FCH_VCO_OUT_ENA_B 11

Definition at line 129 of file vs1000.h.

5.31.2.25 #define FREQCTLH 0xC014

Definition at line 120 of file vs1000.h.

5.31.2.26 #define FREQCTLL 0xC013

Definition at line 119 of file vs1000.h.

5.31.2.27 #define GPIO0_ALE 0x2000

Definition at line 192 of file vs1000.h.

5.31.2.28 #define GPIO0_BIT_CONF 0xC048

Definition at line 183 of file vs1000.h.

5.31.2.29 #define GPIO0_BIT_ENG0 0xC049

Definition at line 184 of file vs1000.h.

5.31.2.30 #define GPIO0_BIT_ENG1 0xC04A

Definition at line 185 of file vs1000.h.

5.31.2.31 #define GPIO0_CLE 0x1000

Definition at line 191 of file vs1000.h.

5.31.2.32 #define GPIO0_CLEAR_MASK 0xC047

Definition at line 182 of file vs1000.h.

5.31.2.33 #define GPIO0_CS1 0x0400

Definition at line 189 of file vs1000.h.

5.31.2.34 #define GPIO0_DDR 0xC040

Definition at line 175 of file vs1000.h.

5.31.2.35 #define GPIO0_IDATA 0xC042

Definition at line 177 of file vs1000.h.

5.31.2.36 #define GPIO0_INT_FALL 0xC043

Definition at line 178 of file vs1000.h.

5.31.2.37 #define GPIO0_INT_PEND 0xC045

Definition at line 180 of file vs1000.h.

5.31.2.38 #define GPIO0_INT_RISE 0xC044

Definition at line 179 of file vs1000.h.

5.31.2.39 #define GPIO0_MODE 0xC010

Definition at line 114 of file vs1000.h.

5.31.2.40 #define GPIO0_ODATA 0xC041

Definition at line 176 of file vs1000.h.

5.31.2.41 #define GPIO0_RD 0x0200

Definition at line 188 of file vs1000.h.

5.31.2.42 #define GPIO0_READY 0x0100

Definition at line 187 of file vs1000.h.

5.31.2.43 #define GPIO0_SET_MASK 0xC046

Definition at line 181 of file vs1000.h.

5.31.2.44 #define GPIO0_WR 0x0800

Definition at line 190 of file vs1000.h.

5.31.2.45 #define GPIO1_BIT_CONF 0xC058

Definition at line 202 of file vs1000.h.

5.31.2.46 #define GPIO1_BIT_ENG0 0xC059

Definition at line 203 of file vs1000.h.

5.31.2.47 #define GPIO1_BIT_ENG1 0xC05A

Definition at line 204 of file vs1000.h.

5.31.2.48 #define GPIO1_CLEAR_MASK 0xC057

Definition at line 201 of file vs1000.h.

5.31.2.49 #define GPIO1_DDR 0xC050

Definition at line 194 of file vs1000.h.

5.31.2.50 #define GPIO1_IDATA 0xC052

Definition at line 196 of file vs1000.h.

5.31.2.51 #define GPIO1_INT_FALL 0xC053

Definition at line 197 of file vs1000.h.

5.31.2.52 #define GPIO1_INT_PEND 0xC055

Definition at line 199 of file vs1000.h.

5.31.2.53 #define GPIO1_INT_RISE 0xC054

Definition at line 198 of file vs1000.h.

5.31.2.54 #define GPIO1_MODE 0xC011

Definition at line 115 of file vs1000.h.

5.31.2.55 #define GPIO1_ODATA 0xC051

Definition at line 195 of file vs1000.h.

5.31.2.56 #define GPIO1_SET_MASK 0xC056

Definition at line 200 of file vs1000.h.

5.31.2.57 #define INT_EN_DAC INTV_DAC

Definition at line 82 of file vs1000.h.

5.31.2.58 #define INT_EN_GPIO0 INTV_GPIO0

Definition at line 73 of file vs1000.h.

5.31.2.59 #define INT_EN_GPIO1 INTV_GPIO1

Definition at line 72 of file vs1000.h.

5.31.2.60 #define INT_EN_NFLSH INTV_NFLSH

Definition at line 79 of file vs1000.h.

5.31.2.61 #define INT_EN_NONE 0

Definition at line 71 of file vs1000.h.

5.31.2.62 #define INT_EN_REGU INTV_REGU

Definition at line 74 of file vs1000.h.

5.31.2.63 #define INT_EN_RX INTV_RX

Definition at line 77 of file vs1000.h.

5.31.2.64 #define INT_EN_SPI INTV_SPI

Definition at line 81 of file vs1000.h.

5.31.2.65 #define INT_EN_TIM0 INTV_TIM0

Definition at line 76 of file vs1000.h.

5.31.2.66 #define INT_EN_TIM1 INTV_TIM1

Definition at line 75 of file vs1000.h.

5.31.2.67 #define INT_EN_TX INTV_TX

Definition at line 78 of file vs1000.h.

5.31.2.68 #define INT_EN_USB INTV_USB

Definition at line 80 of file vs1000.h.

5.31.2.69 #define INT_ENABLE 0xC070

Definition at line 263 of file vs1000.h.

5.31.2.70 #define INT_ENABLEH 0xC072

Definition at line 265 of file vs1000.h.

5.31.2.71 #define INT_ENABLEL 0xC070

Definition at line 264 of file vs1000.h.

5.31.2.72 #define INT_ENCOUNT 0xC077

Definition at line 268 of file vs1000.h.

5.31.2.73 #define INT_GLOB_DIS 0xC078

Definition at line 269 of file vs1000.h.

5.31.2.74 #define INT_GLOB_EN 0xC079

Definition at line 270 of file vs1000.h.

5.31.2.75 #define INT_ORIGIN 0xC074

Definition at line 266 of file vs1000.h.

5.31.2.76 #define INT_VECTOR 0xC076

Definition at line 267 of file vs1000.h.

5.31.2.77 #define INTF_DAC (1<<INTV_DAC)

Definition at line 69 of file vs1000.h.

5.31.2.78 #define INTF_GPIO0 (1<<INTV_GPIO0)

Definition at line 60 of file vs1000.h.

5.31.2.79 #define INTF_GPIO1 (1<<INTV_GPIO1)

Definition at line 59 of file vs1000.h.

5.31.2.80 #define INTF_NFLSH (1<<INTV_NFLSH)

Definition at line 66 of file vs1000.h.

5.31.2.81 #define INTF_REGU (1<<INTV_REGU)

Definition at line 61 of file vs1000.h.

5.31.2.82 #define INTF_RX (1<<INTV_RX)

Definition at line 64 of file vs1000.h.

5.31.2.83 #define INTF_SPI (1<<INTV_SPI)

Definition at line 68 of file vs1000.h.

5.31.2.84 #define INTF_TIM0 (1<<INTV_TIM0)

Definition at line 63 of file vs1000.h.

5.31.2.85 #define INTF_TIM1 (1<<INTV_TIM1)

Definition at line 62 of file vs1000.h.

5.31.2.86 #define INTF_TX (1<<INTV_TX)

Definition at line 65 of file vs1000.h.

5.31.2.87 #define INTF_USB (1<<INTV_USB)

Definition at line 67 of file vs1000.h.

5.31.2.88 #define INTV_DAC 0

Definition at line 57 of file vs1000.h.

5.31.2.89 #define INTV_GPIO0 9

Definition at line 48 of file vs1000.h.

5.31.2.90 #define INTV_GPIO1 10

Definition at line 47 of file vs1000.h.

5.31.2.91 #define INTV_NFLSH 3

Definition at line 54 of file vs1000.h.

5.31.2.92 #define INTV_REGU 8

Definition at line 49 of file vs1000.h.

5.31.2.93 #define INTV_RX 5

Definition at line 52 of file vs1000.h.

5.31.2.94 #define INTV_SPI 1

Definition at line 56 of file vs1000.h.

5.31.2.95 #define INTV_TIM0 6

Definition at line 51 of file vs1000.h.

5.31.2.96 #define INTV_TIM1 7

Definition at line 50 of file vs1000.h.

5.31.2.97 #define INTV_TX 4

Definition at line 53 of file vs1000.h.

5.31.2.98 #define INTV_USB 2

Definition at line 55 of file vs1000.h.

5.31.2.99 #define IRAM_SIZE 0x800

Definition at line 31 of file vs1000.h.

5.31.2.100 #define IRAM_START 0x0

Definition at line 30 of file vs1000.h.

5.31.2.101 #define IROM_SIZE 0x4a80

Definition at line 20 of file vs1000.h.

5.31.2.102 #define IROM_START 0x4000

Definition at line 19 of file vs1000.h.

5.31.2.103 #define NFLSH_CF_INT_ENABLE (1<<7)

Definition at line 240 of file vs1000.h.

5.31.2.104 #define NFLSH_CF_LCD_CE_MODE (1<<8)

Definition at line 239 of file vs1000.h.

5.31.2.105 #define NFLSH_CF_NF_RESET (1<<6)

Definition at line 241 of file vs1000.h.

5.31.2.106 #define NFLSH_CF_WAITSTATES (1<<0)

Definition at line 242 of file vs1000.h.

5.31.2.107 #define NFLSH_CP_LPH 0xC062

Definition at line 244 of file vs1000.h.

5.31.2.108 #define NFLSH_CTRL 0xC060

Definition at line 238 of file vs1000.h.

5.31.2.109 #define NFLSH_DATA 0xC063

Definition at line 245 of file vs1000.h.

5.31.2.110 #define NFLSH_DB_POINTER (4)

Definition at line 254 of file vs1000.h.

5.31.2.111 #define NFLSH_DF_ECC_CALC (1<<1)

Definition at line 258 of file vs1000.h.

5.31.2.112 #define NFLSH_DF_ECC_RESET (1<<0)

Definition at line 259 of file vs1000.h.

5.31.2.113 #define NFLSH_DF_ENA_DBUF (1<<3)

Definition at line 256 of file vs1000.h.

5.31.2.114 #define NFLSH_DF_POINTER (1<<NFLSH_DB_-POINTER)

Definition at line 255 of file vs1000.h.

5.31.2.115 #define NFLSH_DF_READ (1<<2)

Definition at line 257 of file vs1000.h.

5.31.2.116 #define NFLSH_DSPIF 0xC065

Definition at line 253 of file vs1000.h.

5.31.2.117 #define NFLSH_ECC_CNT 0xC066

Definition at line 260 of file vs1000.h.

5.31.2.118 #define NFLSH_LPL 0xC061

Definition at line 243 of file vs1000.h.

5.31.2.119 #define NFLSH_NB_BYTECNT (8)

Definition at line 247 of file vs1000.h.

5.31.2.120 #define NFLSH_NF_BYTECNT (1<<NFLSH_NB_BYTECNT)

Definition at line 248 of file vs1000.h.

5.31.2.121 #define NFLSH_NF_POINTER (1<<2)

Definition at line 250 of file vs1000.h.

5.31.2.122 #define NFLSH_NF_READ (1<<0)

Definition at line 252 of file vs1000.h.

5.31.2.123 #define NFLSH_NF_START (1<<1)

Definition at line 251 of file vs1000.h.

5.31.2.124 #define NFLSH_NF_USE_DBUF (1<<7)

Definition at line 249 of file vs1000.h.

5.31.2.125 #define NFLSH_NFIF 0xC064

Definition at line 246 of file vs1000.h.

5.31.2.126 #define OTHERS_START 0x0800

Definition at line 42 of file vs1000.h.

5.31.2.127 #define PERIP(x) USEX(x)

Definition at line 284 of file vs1000.h.

5.31.2.128 #define PERIP_IN_X

Definition at line 281 of file vs1000.h.

5.31.2.129 #define SCI_DEBUG 0xC002

Definition at line 112 of file vs1000.h.

5.31.2.130 #define SCI_STATUS 0xC001

Definition at line 91 of file vs1000.h.

5.31.2.131 #define SCI_SYSTEM 0xC000

Definition at line 86 of file vs1000.h.

5.31.2.132 #define SCISTF_ANA_PDOWN (1<<2)

Definition at line 108 of file vs1000.h.

5.31.2.133 #define SCISTF_ANADRV_PDOWN (1<<3)

Definition at line 107 of file vs1000.h.

5.31.2.134 #define SCISTF_REGU_CLOCK (1<<1)

Definition at line 109 of file vs1000.h.

5.31.2.135 #define SCISTF_REGU_POWERBUT (1<<4)

Definition at line 106 of file vs1000.h.

5.31.2.136 #define SCISTF_REGU_POWERLOW (1<<5)

Definition at line 105 of file vs1000.h.

5.31.2.137 #define SCISTF_REGU_SHUTDOWN (1<<0)

Definition at line 110 of file vs1000.h.

5.31.2.138 #define SCISTF_SLOW_CLKMODE (1<<15)

Definition at line 93 of file vs1000.h.

5.31.2.139 #define SCISTF_USB_DDR (1<<12)

Definition at line 96 of file vs1000.h.

5.31.2.140 #define SCISTF_USB_DIFF_ENA (1<<7)

Definition at line 103 of file vs1000.h.

5.31.2.141 #define SCISTF_USB_DN (1<<8)

Definition at line 102 of file vs1000.h.

5.31.2.142 #define SCISTF_USB_DN_OUT (1<<14)

Definition at line 94 of file vs1000.h.

5.31.2.143 #define SCISTF_USB_DP (1<<9)

Definition at line 101 of file vs1000.h.

5.31.2.144 #define SCISTF_USB_DP_OUT (1<<13)

Definition at line 95 of file vs1000.h.

5.31.2.145 #define SCISTF_USB_PULLUP_ENA (1<<6)

Definition at line 104 of file vs1000.h.

5.31.2.146 #define SCISTF_VCM_DISABLE (1<<10)

Definition at line 99 of file vs1000.h.

5.31.2.147 #define SCISTF_VCM_OVERLOAD (1<<11)

Definition at line 98 of file vs1000.h.

5.31.2.148 #define SCISYSF_AVDD (1<<10)

Definition at line 88 of file vs1000.h.

5.31.2.149 #define SCISYSF_CLKDIV 0x8000

Definition at line 87 of file vs1000.h.

5.31.2.150 #define SCISYSF_CVDD (1<<0)

Definition at line 90 of file vs1000.h.

5.31.2.151 #define SCISYSF_IOVDD (1<<5)

Definition at line 89 of file vs1000.h.

5.31.2.152 #define SPI0_CLKCONFIG 0xC069

Definition at line 207 of file vs1000.h.

5.31.2.153 #define SPI0_CONFIG 0xC068

Definition at line 206 of file vs1000.h.

5.31.2.154 #define SPI0_DATA 0xC06B

Definition at line 209 of file vs1000.h.

5.31.2.155 #define SPI0_FSYNC 0xC06C

Definition at line 210 of file vs1000.h.

5.31.2.156 #define SPI0_STATUS 0xC06A

Definition at line 208 of file vs1000.h.

5.31.2.157 #define SPI_CC_CLKDIV (1<<2)

Definition at line 228 of file vs1000.h.

5.31.2.158 #define SPI_CF_DLEN (1<<1)

Definition at line 217 of file vs1000.h.

5.31.2.159 #define SPI_CF_DLEN16 (15<<1)

Definition at line 219 of file vs1000.h.

5.31.2.160 #define SPI_CF_DLEN8 (7<<1)

Definition at line 218 of file vs1000.h.

5.31.2.161 #define SPI_CF_FALLXCS (2<<6)

Definition at line 213 of file vs1000.h.

5.31.2.162 #define SPI_CF_FSIDLE0 (0<<0)

Definition at line 221 of file vs1000.h.

5.31.2.163 #define SPI_CF_FSIDLE1 (1<<0)

Definition at line 220 of file vs1000.h.

5.31.2.164 #define SPI_CF_INTXCS (0<<6)

Definition at line 212 of file vs1000.h.

5.31.2.165 #define SPI_CF_MASTER (1<<5)

Definition at line 215 of file vs1000.h.

5.31.2.166 #define SPI_CF_RISEXCS (3<<6)

Definition at line 214 of file vs1000.h.

5.31.2.167 #define SPI_CF_SLAVE (0<<5)

Definition at line 216 of file vs1000.h.

5.31.2.168 #define SPI_ST_BREAK (1<<5)

Definition at line 230 of file vs1000.h.

5.31.2.169 #define SPI_ST_RXFULL (1<<3)

Definition at line 232 of file vs1000.h.

5.31.2.170 #define SPI_ST_RXORUN (1<<4)

Definition at line 231 of file vs1000.h.

5.31.2.171 #define SPI_ST_TXFULL (1<<2)

Definition at line 233 of file vs1000.h.

5.31.2.172 #define SPI_ST_TXRUNNING (1<<1)

Definition at line 234 of file vs1000.h.

5.31.2.173 #define SPI_ST_TXURUN (1<<0)

Definition at line 235 of file vs1000.h.

5.31.2.174 #define STACK_SIZE 0x200

Definition at line 40 of file vs1000.h.

5.31.2.175 #define STACK_START 0x1800

Definition at line 39 of file vs1000.h.

5.31.2.176 #define TIMER_CONFIG 0xC030

Definition at line 164 of file vs1000.h.

5.31.2.177 #define TIMER_ENABLE 0xC031

Definition at line 165 of file vs1000.h.

5.31.2.178 #define TIMER_T0CNTH 0xC037

Definition at line 169 of file vs1000.h.

5.31.2.179 #define TIMER_T0CNTL 0xC036

Definition at line 168 of file vs1000.h.

5.31.2.180 #define TIMER_T0H 0xC035

Definition at line 167 of file vs1000.h.

5.31.2.181 #define TIMER_T0L 0xC034

Definition at line 166 of file vs1000.h.

5.31.2.182 #define TIMER_T1CNTH 0xC03B

Definition at line 173 of file vs1000.h.

5.31.2.183 #define TIMER_T1CNTL 0xC03A

Definition at line 172 of file vs1000.h.

5.31.2.184 #define TIMER_T1H 0xC039

Definition at line 171 of file vs1000.h.

5.31.2.185 #define TIMER_T1L 0xC038

Definition at line 170 of file vs1000.h.

5.31.2.186 #define UART_DATA 0xC029

Definition at line 154 of file vs1000.h.

5.31.2.187 #define UART_DATAH 0xC02A

Definition at line 155 of file vs1000.h.

5.31.2.188 #define UART_DIV 0xC02B

Definition at line 156 of file vs1000.h.

5.31.2.189 #define UART_ST_RXFULL (1<<2)

Definition at line 159 of file vs1000.h.

5.31.2.190 #define UART_ST_RXORUN (1<<3)

Definition at line 158 of file vs1000.h.

5.31.2.191 #define UART_ST_TXFULL (1<<1)

Definition at line 160 of file vs1000.h.

5.31.2.192 #define UART_ST_TXRUNNING (1<<0)

Definition at line 161 of file vs1000.h.

5.31.2.193 #define UART_STATUS 0xC028

Definition at line 153 of file vs1000.h.

5.31.2.194 #define USB_BASE 0xC080U

Definition at line 275 of file vs1000.h.

5.31.2.195 #define USB_RECV_MEM 0x2C00

USB receive memory, ring buffer.

Definition at line 279 of file vs1000.h.

5.31.2.196 #define USB_SEND_MEM 0x3000

USB send memory

Definition at line 280 of file vs1000.h.

5.31.2.197 #define WDOG_CONFIG 0xC020

Definition at line 148 of file vs1000.h.

5.31.2.198 #define WDOG_DUMMY 0xC022

Definition at line 150 of file vs1000.h.

5.31.2.199 #define WDOG_RESET 0xC021

Definition at line 149 of file vs1000.h.

5.31.2.200 #define WDOG_RESET_VAL 0x4ea9

Definition at line 151 of file vs1000.h.

5.31.2.201 #define XRAM_SIZE 0x3400

Definition at line 27 of file vs1000.h.

5.31.2.202 #define XRAM_START 0x0

Definition at line 26 of file vs1000.h.

5.31.2.203 #define XROM_SIZE 0x0c00

Definition at line 22 of file vs1000.h.

5.31.2.204 #define XROM_START 0x4000

Definition at line 21 of file vs1000.h.

5.31.2.205 #define YPREV0_START 0x0000

Definition at line 43 of file vs1000.h.

5.31.2.206 #define YPREV1_START 0x0400

Definition at line 44 of file vs1000.h.

5.31.2.207 #define YRAM_SIZE 0x4000

Definition at line 29 of file vs1000.h.

5.31.2.208 #define YRAM_START 0x0

Definition at line 28 of file vs1000.h.

5.31.2.209 #define YROM_SIZE 0x2800

Definition at line 24 of file vs1000.h.

5.31.2.210 #define YROM_START 0x4000

Definition at line 23 of file vs1000.h.

5.31.3 Enumeration Type Documentation

5.31.3.1 enum voltIdx

enumerations for voltage array members.

Enumerator:

voltCorePlayer core voltage in player mode

voltIoPlayer IO voltage in player mode

voltAnaPlayer Analog voltage in player mode

voltCoreUSB core voltage in USB mode

voltIoUSB IO voltage in USB mode

voltAnaUSB Analog voltage in USB mode

voltCoreSuspend core voltage in suspend/low-power pause mode

voltIoSuspend IO voltage in suspend/low-power pause mode

voltAnaSuspend Analog voltage in suspend/low-power pause mode

voltCoreUser core voltage in user-defined mode

voltIoUser IO voltage in user-defined mode

voltAnaUser Analog voltage in user-defined mode

voltEnd

Definition at line 401 of file vs1000.h.

```
401             {
402     /* for VS1000B */
403     voltCorePlayer = 0,
404     voltIoPlayer,
405     voltAnaPlayer,
406     voltCoreUSB,
407     voltIoUSB,
408     voltAnaUSB,
409     voltCoreSuspend,
410     voltIoSuspend,
411     voltAnaSuspend,
412     voltCoreUser,
413     voltIoUser,
414     voltAnaUser,
415     voltEnd
416 };
```

5.31.4 Function Documentation

5.31.4.1 void BootFromX (register __i0 u_int16 * *start*)

Reads and handles I, X, Y, and execute records from X memory.

5.31.4.2 void BusyWait10 (void)

Waits 120000 cycles, which is 10ms if clock is 1.0x.

5.31.4.3 u_int16 DefUnsupportedFile (struct CodecServices * *cs*)

Called when file is not Ogg Vorbis. Dummy function.

5.31.4.4 void Disable (void)

Disable interrupts. Call **Enable()**(p. 175) an equal number of time to enable interrupts. Should only be used for critical code sections when other exclusion methods are not possible.

5.31.4.5 void Enable (void)

Enable interrupts.

5.31.4.6 struct FsMapper* FsMapRamCreate (struct FsPhysical * *physical*, u_int16 *cacheSize*)

Creates a mapper for a RAM disk using mallocAreaY.

Parameters:

physical is a pointer to mallocAreaY

cacheSize not used, RAM disk is always 36 sectors.

Returns:

pointer to mapper structure

5.31.4.7 s_int16 getch (void)

raw polled UART receive

5.31.4.8 void IdleHook (void)

Hook: Called by **Sleep()**(p. 178) before halt state is entered. Default: **UserInterfaceIdleHook()**(p. 101).

5.31.4.9 auto u_int16 InitFileSystem (void)

Hook: Initializes filesystem. Default: **FatInitFileSystem()**(p. 92).

Returns:

0 for success.

5.31.4.10 void LoadCheck (struct CodecServices * *cs*, s_int16 *n*)

Hook: Decreases or increases the system clock. Default: **RealLoadCheck()**(p. 177).

5.31.4.11 auto u_int16 MapperReadDiskSector (register __i0 u_int16 * *buffer*, register __a u_int32 *sector*)

Reads one sector through the mapper interface (map->Read()).

Parameters:

buffer the buffer for the sector data.

sector the sector to read.

5.31.4.12 void MemTests (register short __b0 *muxTestResult*)

5.31.4.13 void NullHook (void)

IdleHook that does nothing.

5.31.4.14 auto s_int16 OpenFile (register __c0 u_int16 *fileNum*)

Hook: Opens a specified file. Default: **FatOpenFile()**(p. 92).

Parameters:

fileNum the number of the file to open.

Returns:

-1 for success, the number of files otherwise.

5.31.4.15 u_int16 PlayCurrentFile (void)

Hook: play the currently open file. Default: **RealPlayCurrentFile()**(p. 177).

5.31.4.16 void PowerOff (void)

Hook: Turns power off. Default: **RealPowerOff()**(p. 177).

5.31.4.17 void PowerSetVoltages (u_int16 *volt*[3])

Sets voltages according to parameter values.

5.31.4.18 void putch (register __a0 s_int16 *ch*)

raw polled UART send

5.31.4.19 auto u_int16 ReadDiskSector (register __i0 u_int16 * *buffer*, register __a u_int32 *sector*)

Hook: Read a sector. Default: **MapperReadDiskSector()**(p. 176).

Parameters:

buffer the buffer for the sector data.

sector the sector to read.

5.31.4.20 auto s_int16 ReadFile (register __i3 u_int16 * *buf*, register __c1 s_int16 *byteOff*, register __c0 s_int16 *byteSize*)

5.31.4.21 void RealLoadCheck (struct CodecServices * *cs*, s_int16 *n*)

5.31.4.22 u_int16 RealPlayCurrentFile (void)

Tries to play the current file. Turns on maximum player mode clock (by default 3.5x), and tries to decode the file with the Ogg Vorbis decoder. After decoding has ended feeds zeros to audio buffer to ensure earspeaker echo has decayed. If decoding returned with ceFormatNotFound, calls the UnsupportedFile hook. Before returning turns on maximum player mode clock to speed up locating the next file.

5.31.4.23 void RealPowerOff (void)

Power off routine. Sets 1.0x mode (PLL off), 100Hz samplerate, disables interrupts, turns off analog drivers and LED's. Then waits until the power button is released. Then shuts off the regulators.

5.31.4.24 void Restart (void)

5.31.4.25 u_int32 Seek (register __reg_a u_int32 *pos*)

Hook: Change the read position of a file. Default: **FatSeek()**(p. 93).

Parameters:

pos Byte position to find.

Returns:

the FAT sector that corresponds to the pos. Sets pos, returns old pos

5.31.4.26 void* SetHookFunction (register __i0 u_int16 *hook*, register __a0 void * *newFunc*)

Sets new IRAM Hook function.

Parameters:

hook The address of the Hook in IRAM

newFunc The new hook function address.

Returns:

The old hook function address is returned.

5.31.4.27 void SinTest (void)

5.31.4.28 void Sleep (void)

Call the idle hook, then wait for the next interrupt (HALT mode).

5.31.4.29 void SpiBoot (register __a0 short *clkConf*, register __i2 short *addr*, register __i0 short *m24*)

5.31.4.30 void SpiDelay (register __a0 u_int16 *wait*)

5.31.4.31 void SpiLoad (register __i2 short *startAddr*, register __i0 short *m24*)

5.31.4.32 auto u_int16 SpiSendReceive (register __a0 u_int16 *data*)

5.31.4.33 u_int32 Tell (void)

Hook: Return the current read position. Default: **FatTell()**(p. 93).

Returns:
Current read position. Gets pos

5.31.4.34 u_int16 UnsupportedFile (struct CodecServices * *cs*)

Hook: called when file is not Ogg Vorbis. Default: **DefUnsupportedFile()**(p. 175).

5.31.5 Variable Documentation

5.31.5.1 __y u_int16 g_dcthi[2048]

5.31.5.2 u_int16 g_dctlo[2048]

5.31.5.3 s_int16 g_others[2048]

5.31.5.4 s_int16 g_yprev0[1024]

5.31.5.5 s_int16 g_yprev1[1024]

5.31.5.6 u_int16 voltages[voltEnd]

5.32 vsasm.h File Reference

Defines

- #define **MAKEMOD64**(stp, bufsz) (0x4000|(((bufsz)/64-1)&31)|(((stp)&255)<<6))
- #define **MAKEMOD**(stp, bufsz) (0x2000|(((stp)&127)<<6)|(((bufsz)-1)&63))
- #define **MAKEMODF**(bufsz) (0x8000|(((bufsz)-1)&8191))
- #define **MAKEMODB**(bufsz) (0xA000|(((bufsz)-1)&8191))

5.32.1 Detailed Description

Standard VSDSP assembler macros.

Definition in file **vsasm.h**.

5.32.2 Define Documentation

5.32.2.1 #define MAKEMOD(stp, bufsz) (0x2000|(((stp)&127)<<6)|(((bufsz)-1)&63))

Creates a modifier register with *step* = -64..63, *bufsz* = 1..64.

Definition at line 14 of file vsasm.h.

5.32.2.2 #define MAKEMOD64(stp, bufsz) (0x4000|(((bufsz)/64-1)&31)|(((stp)&255)<<6))

Creates a modifier register with *step* = -128..127, *bufsize* N∗64

Definition at line 12 of file vsasm.h.

5.32.2.3 #define MAKEMODB(bufsz) (0xA000|(((bufsz)-1)&8191))

Creates a backwards modifier register, *bufsz* = 1..8192.

Definition at line 18 of file vsasm.h.

5.32.2.4 #define MAKEMODF(bufsz) (0x8000|(((bufsz)-1)&8191))

Creates a forwards modifier register, *bufsz* = 1..8192.

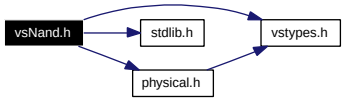
Definition at line 16 of file vsasm.h.

5.33 vsNand.h File Reference

```
#include <vstypes.h>
```

```
#include <stdlib.h>
#include <physical.h>
```

Include dependency graph for vsNand.h:



Data Structures

- struct **FsNandPhys**

Defines

- #define **NAND_OP_READ_SIGNATURE** 0x90
- #define **NAND_OP_READ_STATUS** 0x70
- #define **NAND_OP_READ_A** 0x00
- #define **NAND_OP_READ_C** 0x50
- #define **NAND_OP_COMMIT_DATA_ADDRESS** 0x30
- #define **NAND_OP_PREPARE_TO_PROGRAM** 0x80
- #define **NAND_OP_PERFORM_PROGRAM** 0x10

Functions

- **s_int16 FsPhNandErase** (struct **FsPhysical** *p, **s_int32** block)
- **FsPhysical** * **FsPhNandCreate** (**u_int16** param)
- **s_int16 FsPhNandDelete** (struct **FsPhysical** *p)
- **s_int16 FsPhNandFreeBus** (struct **FsPhysical** *p)
- **s_int16 FsPhNandReinitialize** (struct **FsPhysical** *p)
- **s_int16 FsPhNandRead** (struct **FsPhysical** *p, **s_int32** firstPage, **u_int16** pages, **u_int16** *data, **u_int16** *meta)
- **s_int16 FsPhNandWrite** (struct **FsPhysical** *p, **s_int32** firstPage, **u_int16** pages, **u_int16** *data, **u_int16** *meta)
- **s_int16 NandCountBits** (register __a **u_int32** val)
- **s_int16 NandMingle** (register __a **u_int32** val)
- void **NandSwapBad** (register __i0 **u_int16** *spare)
- void **NandWaitIdle** (void)

5.33.1 Detailed Description

NAND FLASH routines.

Definition in file **vsNand.h**.

5.33.2 Define Documentation

5.33.2.1 #define NAND_OP_COMMIT_DATA_ADDRESS 0x30

Nand Flash Opcode: Commit read address

Definition at line 24 of file vsNand.h.

5.33.2.2 #define NAND_OP_PERFORM_PROGRAM 0x10

Nand Flash Opcode: Execute Programming

Definition at line 30 of file vsNand.h.

5.33.2.3 #define NAND_OP_PREPARE_TO_PROGRAM 0x80

Nand Flash Opcode: Prepare to Program

Definition at line 27 of file vsNand.h.

5.33.2.4 #define NAND_OP_READ_A 0x00

Nand Flash Opcode: Read A - data area

Definition at line 18 of file vsNand.h.

5.33.2.5 #define NAND_OP_READ_C 0x50

Nand Flash Opcode: Read C - spare area

Definition at line 21 of file vsNand.h.

5.33.2.6 #define NAND_OP_READ_SIGNATURE 0x90

Nand Flash Opcode: Read Signature

Definition at line 12 of file vsNand.h.

5.33.2.7 #define NAND_OP_READ_STATUS 0x70

Nand Flash Opcode: Read Signature

Definition at line 15 of file vsNand.h.

5.33.3 Function Documentation

5.33.3.1 struct FsPhysical* FsPhNandCreate (u_int16 *param*)

Creates a physical layer.

5.33.3.2 s_int16 FsPhNandDelete (struct FsPhysical * *p*)

Free resources allocated by FsPhNandCreate and release HW

5.33.3.3 s_int16 FsPhNandErase (struct FsPhysical * *p*, s_int32 *block*)

Erase the block that starts from page "block".

5.33.3.4 s_int16 FsPhNandFreeBus (struct FsPhysical * *p*)

Free hardware bus for possible other devices

5.33.3.5 s_int16 FsPhNandRead (struct FsPhysical * *p*, s_int32 *firstPage*, u_int16 *pages*, u_int16 * *data*, u_int16 * *meta*)

Read pages. If meta is non-NULL, will use error correction. To read both sector and spare areas without error correction, you need two reads: first read only sector datas (meta = NULL), then read only spares (data = NULL).

5.33.3.6 s_int16 FsPhNandReinitialize (struct FsPhysical * *p*)

Reinitialize bus

5.33.3.7 s_int16 FsPhNandWrite (struct FsPhysical * *p*, s_int32 *firstPage*, u_int16 *pages*, u_int16 * *data*, u_int16 * *meta*)

Write pages. If meta is non-NULL, will generate error correction.

5.33.3.8 s_int16 NandCountBits (register __a u_int32 *val*)

Support: Count the number of 1-bits

5.33.3.9 s_int16 NandMingle (register __a u_int32 *val*)

Support: takes every other bit from the value.

5.33.3.10 void NandSwapBad (register __i0 u_int16 * *spare*)

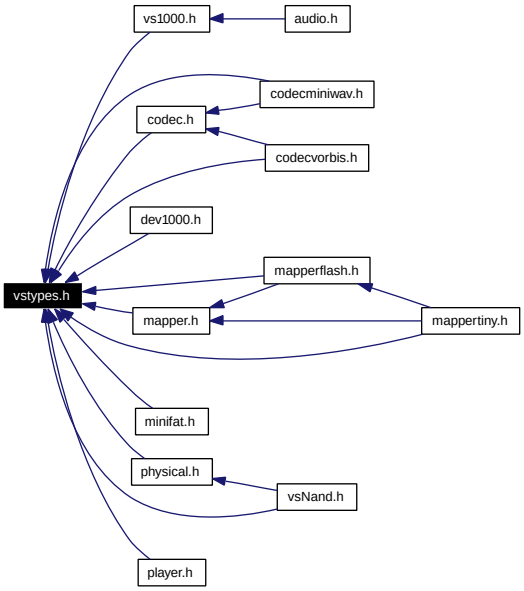
Support: reorder large-page bad block indicators to be compatible with small-page bad block indicators.

5.33.3.11 void NandWaitIdle (void)

Support: Waits until the NAND FLASH interface is idle.

5.34 vstypes.h File Reference

This graph shows which files directly or indirectly include this file:



Defines

- #define **MR_NONE** 0
- #define **MR_INT** 0x200
- #define **MR_SAT** 0x400
- #define **FMT_S16** "d"
- #define **FMT_U16** "u"
- #define **FMT_H16** "x"
- #define **FMT_S32** "d"
- #define **FMT_U32** "u"
- #define **FMT_H32** "x"
- #define **register**
- #define **__reg_a**
- #define **__reg_b**
- #define **__reg_c**
- #define **__reg_d**
- #define **__a0**
- #define **__a1**
- #define **__b0**
- #define **__b1**
- #define **__c0**
- #define **__c1**
- #define **__d0**

- #define **__d1**
- #define **__i0**
- #define **__i1**
- #define **__i2**
- #define **__i3**
- #define **__mem_x**
- #define **__y**
- #define **__near**
- #define **__far**
- #define **auto**
- #define **FMUL32**(a, b) (**f_int32**)((long long)(**f_int32**)(a) * (**f_int32**)(b) >> 31)
- #define **FMUL16**(a, b) (**f_int16**)((long)(**f_int16**)(a) * (**f_int16**)(b) >> 15)
- #define **FDIV32**(a, b) (**f_int32**)(((long long)(**f_int32**)(a)<<31) / (**f_int32**)(b))
- #define **FDIV16**(a, b) (**f_int16**)(((long)(**f_int16**)(a)<<15) / (**f_int16**)(b))
- #define **DBL2F32**(a) (**f_int32**)((a)*(32768.0*65536.0))
- #define **DBL2F16**(a) (**f_int16**)((a)*32768.0)
- #define **SqrtI**(a) ((**u_int16**)sqrt(a))
- #define **SqrtI32**(a) ((**u_int32**)(sqrt(a)*65536.0))
- #define **USEX**(x) *((__x volatile **u_int16** *)(**u_int16**)(x))
- #define **USEY**(x) *((__y volatile **u_int16** *)(**u_int16**)(x))

Typedefs

- typedef short **s_int16**
- typedef unsigned short **u_int16**
- typedef int **s_int32**
- typedef unsigned int **u_int32**
- typedef **s_int16** **f_int16**
- typedef **s_int32** **f_int32**

5.34.1 Detailed Description

Standard VSDSP types and definitions. This standard file contains standard definitions and types. It also makes it easier to compile the same source code with both VSDSP and Unix compilers by undefining symbols that are only understood by VSDSP C compilers.

Definition in file **vstypes.h**.

5.34.2 Define Documentation

5.34.2.1 #define __a0

Definition at line 62 of file vstypes.h.

5.34.2.2 #define __a1

Definition at line 63 of file vstypes.h.

5.34.2.3 #define __b0

Definition at line 64 of file vstypes.h.

5.34.2.4 #define __b1

Definition at line 65 of file vstypes.h.

5.34.2.5 #define __c0

Definition at line 66 of file vstypes.h.

5.34.2.6 #define __c1

Definition at line 67 of file vstypes.h.

5.34.2.7 #define __d0

Definition at line 68 of file vstypes.h.

5.34.2.8 #define __d1

Definition at line 69 of file vstypes.h.

5.34.2.9 #define __far

Definition at line 77 of file vstypes.h.

5.34.2.10 #define __i0

Definition at line 70 of file vstypes.h.

5.34.2.11 #define __i1

Definition at line 71 of file vstypes.h.

5.34.2.12 #define __i2

Definition at line 72 of file vstypes.h.

5.34.2.13 #define __i3

Definition at line 73 of file vstypes.h.

5.34.2.14 #define __mem_x

Definition at line 74 of file vstypes.h.

5.34.2.15 #define __near

Definition at line 76 of file vstypes.h.

5.34.2.16 #define __reg_a

Definition at line 58 of file vstypes.h.

5.34.2.17 #define __reg_b

Definition at line 59 of file vstypes.h.

5.34.2.18 #define __reg_c

Definition at line 60 of file vstypes.h.

5.34.2.19 #define __reg_d

Definition at line 61 of file vstypes.h.

5.34.2.20 #define __y

Definition at line 75 of file vstypes.h.

5.34.2.21 #define auto

Definition at line 78 of file vstypes.h.

5.34.2.22 #define DBL2F16(a) (f_int16)((a)*32768.0)

16-bit fractional double-to-fract conversion (Unix version).

Definition at line 114 of file vstypes.h.

5.34.2.23 #define DBL2F32(a) (f_int32)((a)*(32768.0*65536.0))

32-bit fractional double-to-fract conversion (Unix version).

Definition at line 112 of file vstypes.h.

5.34.2.24 #define FDIV16(a, b) (f_int16)(((long)(f_int16)(a)<<15) / (f_int16)(b))

16-bit fractional division (Unix version).

Definition at line 110 of file vstypes.h.

5.34.2.25 #define FDIV32(a, b) (f_int32)(((long long)(f_int32)(a)<<31) / (f_int32)(b))

32-bit fractional division (Unix version).

Definition at line 108 of file vstypes.h.

5.34.2.26 #define FMT_H16 "x"

printf()(p. 117) format for 16-bit hex value

Definition at line 38 of file vstypes.h.

5.34.2.27 #define FMT_H32 "x"

printf()(p. 117) format for 32-bit hex value, UNIX version

Definition at line 53 of file vstypes.h.

5.34.2.28 #define FMT_S16 "d"

printf()(p. 117) format for signed 16-bit value

Definition at line 34 of file vstypes.h.

5.34.2.29 #define FMT_S32 "d"

printf()(p. 117) format for signed 32-bit value, UNIX version

Definition at line 49 of file vstypes.h.

5.34.2.30 #define FMT_U16 "u"

printf()(p. 117) format for unsigned 16-bit value

Definition at line 36 of file vstypes.h.

5.34.2.31 #define FMT_U32 "u"

printf()(p. 117) format for unsigned 32-bit value, UNIX version

Definition at line 51 of file vstypes.h.

5.34.2.32 #define FMUL16(a, b) (f_int16)((long)(f_int16)(a) * (f_int16)(b) >> 15)

16-bit fractional multiplication (Unix version).

Definition at line 106 of file vstypes.h.

5.34.2.33 #define FMUL32(a, b) (f_int32)((long long)(f_int32)(a) * (f_int32)(b) >> 31)

32-bit fractional multiplication (Unix version).

Definition at line 104 of file vstypes.h.

5.34.2.34 #define MR_INT 0x200

Mode register: Integer mode

Definition at line 17 of file vstypes.h.

5.34.2.35 #define MR_NONE 0

Mode register: Zero is fractional, non-saturated mode

Definition at line 15 of file vstypes.h.

5.34.2.36 #define MR_SAT 0x400

Mode register: Saturation mode

Definition at line 19 of file vstypes.h.

5.34.2.37 #define register

Definition at line 57 of file vstypes.h.

5.34.2.38 #define SqrtI(a) ((u_int16)sqrt(a))

Definition at line 119 of file vstypes.h.

5.34.2.39 #define SqrtI32(a) ((u_int32)(sqrt(a)*65536.0))

Definition at line 120 of file vstypes.h.

5.34.2.40 #define USEX(x) *((__x volatile u_int16 *)(u_int16)(x))

Direct memory write to X memory

Definition at line 157 of file vstypes.h.

5.34.2.41 #define USEY(x) *((__y volatile u_int16 *)(u_int16)(x))

Direct memory write to Y memory

Definition at line 161 of file vstypes.h.

5.34.3 Typedef Documentation

5.34.3.1 typedef s_int16 f_int16

Default 16-bit fractional type. This is the Non-VSDSP definition. The VSDSP definition reads typedef __fract short f_int16 . Addition and subtraction can be used as normal with this type, but some operations must be executed using macros: **FMUL16()**(p. 187) for multiplication, **FDIV16()**(p. 186) for division and **DBL2F16()**(p. 186) for double-to-fract conversion.

Definition at line 93 of file vstypes.h.

5.34.3.2 typedef s_int32 f_int32

Default 32-bit fractional type. This is the Non-VSDSP definition. The VSDSP definition reads typedef __fract long f_int32 . Addition and subtraction can be used as normal with this type, but some operations must be executed using macros: **FMUL32()**(p. 187) for multiplication, **FDIV32()**(p. 187) for division and **DBL2F32()**(p. 186) for double-to-fract conversion.

Definition at line 102 of file vstypes.h.

5.34.3.3 typedef short s_int16

Default signed 16-bit integer type

Definition at line 29 of file vstypes.h.

5.34.3.4 typedef int s_int32

Default signed 32-bit integer type

Definition at line 44 of file vstypes.h.

5.34.3.5 typedef unsigned short u_int16

Default unsigned 16-bit integer type

Definition at line 31 of file vstypes.h.

5.34.3.6 typedef unsigned int u_int32

Default unsigned 32-bit integer type

Definition at line 46 of file vstypes.h.

6 VS1000/Interfacing Example Documentation

6.1 LoadCheck

Decreases or increases the system clock. Also handles Replay Gain. If cs == NULL turns on maximum allowed clock (if n is zero, player.maxClock for player mode, otherwise 4.0x for USB mode). Otherwise audio underflows or too empty audio buffer (<256 stereo samples) cause an increase in clock, and too much idle time

Parameters:

cs **CodecServices**(p. 6) struct pointer or NULL.

n The number of samples or 0 or 1. (NULL, 0); will turn on maximum player-mode clock.

6.2 tmpBuf

Reads bytes from the current file position.

Parameters:

buf Packed buffer to read bytes to.

byteOff Packed byte offset of the first byte. Even = high part of word, odd = low part of word.

byteSize The number of bytes to read.

Returns:

the number of bytes actually read. [0] = 0; FatReadFile(tmpBuf, 1, 1); reads one byte to the low part of tmpBuf[0].

7 VS1000/Interfacing Page Documentation

7.1 Bug List

Global USBSendZeroLengthPacketToEndpoint0(p. 147) : currently is satisfied if any active IN is finished.

Global USBWantsSuspend(p. 148) USB suspend time is 3ms. Because of our software timer accurary we detect suspend when there has been no SOF for 10..20ms.

This routine requires that the unit is configured before returning non-zero.

Returns:

0 if the communication is proceeding normally, non-zero if suspend state is detected.

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