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DS series oscilloscope WFM file format summary

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| 编制人 |  | 发布日期 |  |
| 批准人 |  | 批准日期 |  |

修订记录Revision record

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| 日期  Date | 修订版本Revision version | 修改描述  change Description | 作者  Author |
| 2014-10-23 | 0.1 | 创建DS1000Z系列WFM文件存储格式 |  |
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|  |  |  |  |

### 一、DS1000Z series

### 一、The whole structure

1. **File Store Head: funcStoreHeadStru**，Distinguish Model, File Type;
2. Waveform file header information: WfmInfoStru，The necessary information of waveform data；
3. storage size:funcStoreBlockStru，Storage media description;
4. Set data tag: CTag，Set the data tags, verify the correctness；
5. System setup data: Setup，System Settings；
6. Waveform points data，Waveform points.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name |  | Size |  | Comment |
| u |  | 4 |  | Structure version (The current field is 0xFFFFFF01, the previous version does not have this field, can be distinguished from the earlier versions and now version compatible) |
| funcStoreHeadStru |  | 56 |  | File storage head |
| \*\*\*skip |  | 2 |  | unknown |
| WfmInfoStru |  | 216 |  | Waveform file information |
| funcStoreBlockStru |  | 10 |  | Storage size |
| CTag |  | 8 |  | Set up calibration (temporarily unused) |
| Setup |  | WfmInfoStru.u32SetupSize |  | System Settings |
| DevPara |  | sizeof(HORIZ\_PARA)+sizeof(VERT\_PARA) |  | Parameters of the drive when saving waveform |
| WavData |  | Memory depth |  | Storage channel data |



Figure (1): Overall structure diagram of WFM file

## 二、substructure

### funcStoreHeadStru

|  |  |  |
| --- | --- | --- |
| Name | Size | Comment |
| s16ID | 2 | 0xa5a5 |
| u16Len | 2 | Structure Size 56 |
| as8Moudle | 20 | Type, string |
| as8Version | 20 | Firmware version |
| u16BlockNum | 2 | 1 |
| u16Version | 2 | File version |
| u32Crc | 4 | Without the use of WFM storage |
| u16Reserved | 2 |  |
| u16Reserved1 | 2 |  |

### WfmInfoStru

|  |  |  |
| --- | --- | --- |
| Name | Size | Comment |
| u64TimeScale | 8 | Horizontal timebase, the units is PS |
| s64TimeOffset | 8 | Horizontal offset, the unit is PS |
| u32CRC | 4 |  |
| u16StruSize | 2 | Structure size |
| u16StruVer | 2 | Structure version |
| u32ChanMask | 4 | The channel marker bit0~bit3, corresponding to the four channel, 1 is on, 0 is closed |
| u32PtCh1 | 4 | Offset of channel 1 data |
| u32PtCh2 | 4 | Offset of channel 2 data |
| u32PtCh3 | 4 | Offset of channel 3 data |
| u32PtCh3 | 4 | Offset of channel 4 data |
| u32PtLa | 4 | La offset temporarily unused |
| u8AcqMode | 1 | Acquisition mode  0 - NORMAL  1 - PEAK  2 - AVERAGE  3 - HIGH RES |
| u8AvgTime | 1 | The average number of times |
| u8SampMode | 1 | Using the model, the constant is 0 |
| u8TimeMode | 1 | Time base mode  0 - YT  1 - XY  2 - ROLL |
| u32MempDepth | 4 | The storage depth. |
| f32SampRate | 4 | Sampling rate |
| stChPara | 112 | Parameters corresponding to the four channel |
| stLaPara | 12 | The parameters of the LA, unuse |
| u32SetupSize | 4 | The size of the system settings |
| u32SetupOffset | 4 | Offset of system settings |
| u32HorizSize | 4 | The length of the underlying parameters when saving waveform |
| u32HorizOffset | 4 | Offset |
| u32DispDelay | 4 | some address for waveform loading |
| u32DispAddr | 4 |
| u32DispFine | 4 |
| u32MemAddr | 4 |

Note: the waveform data in multiple channels openning case is intertwined preservation. So the preservation of the u32PtCh1, u32PtCh2, u32PtCh3 and u32PtCh4 in the above four parameters in the data structure is a value. According to this parameter can know the beginning of waveform data. The actual data storage format such as:

|  |  |  |
| --- | --- | --- |
| Single channel | Dual channel | Three channels or four channels |
| CH1CH1CH1CH1 | CH2CH1CH2CH1 | CH4CH3CH2CH1 |

### CVertPara

|  |  |  |
| --- | --- | --- |
| Name | Size | Comment |
| bEnable | 1 | Channel is open or not  0-Disable  1-Enable |
| u8Coupling | 1 | Channel Coupling  0-DC  1-AC  2-GND |
| u8BwLimit | 1 | Bandwidth limitations  0-20M  1-OFF |
| u8ProbeType | 1 | Not Used |
| u8ProbeRatio | 1 | Attenuation ratio  0 0\_01X  1 0\_02X  2 0\_05X  3 0\_1X  4 0\_2X  5 0\_5X  6 1X  7 2X  8 5X  9 10X  10 20X  11 50X  12 100X  13 200X  14 500X  15 1000X |
| u8ProbeDiffType | 1 | Not Used |
| u8ProbeSignalType | 1 | Not Used |
| u8Impedance | 1 | Not Used |
| f32ChanScale | 4 | Channel vertical scale, the unit is V |
| f32ChanOffset | 4 | Channel vertical offset, the unit is V |
| bInvert | 1 | Whether the channel reverse  0 is not reverse  1 is reverse |
| u8Unit | 1 | unit  0 【W】  1 【A】  2 【V】  3 【U】 |
| bFilterEn | 1 | Not Used |
| u8FilterType | 1 | Not Used |
| u32FilterHigh | 4 | Not Used |
| u32FilterLow | 4 | Not Used |

### funcStoreBlockStru

|  |  |  |
| --- | --- | --- |
| Name | Size | Comment |
| s16ID | 2 | 0X5A5A |
| u16Len | 2 | Structural space size is 12 |
| u16CellLen | 2 | 1, the smallest unit is 1BYTE |
| \*\*\*skip | 2 | unknown |
| u32CellNum[[1]](#footnote-1) | 4 | Memory depth |

### CTag

|  |  |  |
| --- | --- | --- |
| Name | Size | Comment |
| u32Size | 4 |  |
| u32CRC | 4 |  |

## DS1000A/B/D/E series

## DS2000/DS4000/DS6000 series

1. [↑](#footnote-ref-1)