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| PROJECT: SINGLIX Operating System   Issue: 3    Revision: 14   Date: 07/01/2018  OWNER: ERDOĞAN TAN / Istanbul / Turkiye | | | | | |
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| **SUB DIRECTORY DESCRIPTION TABLE format of  SINGLIX FS1,FS2 file systems** | | | | | |
|  | | | | | |
| **Offset** | **Item** | **DATA** | **Type** | **Size** | **Description of Item** |
| 0 | Directory Sign | ‘DDT’ | Char | 3 byte | TR-SINGLIX Directory Descriptor |
| 3 | Reserved | XXh | Byte | 1 byte | Must be 0 for current/this DDT version |
| 4 | Sector Size | XXXXh | Word | 2 byte | Bytes per Sector (FS1=512, FS2=2048) |
| 6 | DDT Number | XXXXh | Word | 2 byte | DDT (Sequence) Number of This Directory |
| 8 | Directory Number | XXXXXXXXh | Dword | 4 byte | The 1st DDT Address of This Directory (Offset) |
| 12 | Next DDT Number | XXXXXXXXh | Dword | 4 byte | DDT address of the Next Section (Offset) |
| 16 | Sector Count | XXXXXXXXh | Dword | 4 byte | Number of Sectors in this section |
| 20 | Parent Dir Number | XXXXXXXXh | Dword | 4 byte | The Parent Directory's DDT address (Offset) |
| 24 | Parent Dir Serial | XXXXXXXXXh | Dword | 4 byte | The Parent Directory's Serial No. (Tick Count) |
| 28 | Directory Serial No. | XXXXXXXXh | Dword | 4 byte | Directory Serial Number (Tick Count) |
| 32 | Sub Dir Level | XXh | Byte | 1 byte | Sub Directory Level (>= 1) |
| 33 | Reserved | 00h | Byte | 1 byte | Must be 0 for current DDT version |
| 34 | Attributes | 1 byte | Byte | 1 byte | (Dos type) Directory Attributes (0,0,A,D,V,S,H,R) |
| 35 | Extended Attributes | 1 byte | Byte | 1 byte | User, Group, Others Permission Flags |
| 36\* | Owner code | 4 bytes | Dword | 4 byte | Owner Description Table address (TR-MULTIX) |
| 40\* | Group code | 4 bytes | Dword | 4 byte | Group Description Table address (TR-MULTIX) |
| 44 | Directory Name Type | XXh | Byte | 1 byte | 0 = Default, 12 = Msdos, 14 =Unix, 64 = Singlix |
| 45 | Long Name Length | XXh | Byte | 1 byte | Length of Unicode Directory Name if available |
| 46 | Country | XXh | Byte | 1 byte | Language, Date, Text Format (default = 0) |
| 47 | Time Zone | XXh | Byte | 1 byte | -11 to +12  (GMT = 0, default = 0) |
| 48 | Creating Year | XXXXh (YYCC) | Word | 2 byte | Year in Binary Coded Decimal (BCD) (20h,18h) |
| 50 | Creating Month | XXh | Byte | 1 byte | Month in Binary Coded Decimal (BCD) |
| 51 | Creating Day | XXh | Byte | 1 byte | Day in Binary Coded Decimal (BCD) |
| 52 | Creating Hour | XXh | Byte | 1 byte | Hour in Binary Coded Decimal (BCD) |
| 53 | Creating Minute | XXh | Byte | 1 byte | Minute in Binary Coded Decimal (BCD) |
| 54 | Creating Second | XXh | Byte | 1 byte | Second in Binary Coded Decimal (BCD) |
| 55 | C. Time Mode | XXh | Byte | 1 byte | 0 = Standard Time, 1 = Daylight Saving |
| 56 | Last Modif. Date | XXXXXXXXh | Dword | 4 byte | The Last Modification/Write Date (BCD) |
| 60 | Last Modif. Time | XXXXXXh | Byte | 3 byte | The Last Modification/Write Time (BCD) |
| 63 | L. M. Time Mode | XXh | Byte | 1 byte | 0 = Standard, 1 = Daylight Saving Time |
| 64 | Directory Name | <FileName> | Char | 64 byte | 64 bytes full or zero terminated file name |
| 128 | Reserved | ? | Char | 128 byte | Reserved for future versions |
| 256 | Unicode Dir. Name | <Long File Name> | Byte | 256 byte | Unicode Directory Name if Offset 45 > 0 |
| 512\*\* | Reserved | ? | Byte | 1536 byte | Optional/Reserved Area for FS2 Files |
| \* Reserved for TR-MULTIX (Multiuser, Multitasking) Operating System, only!  \*\* 1536 byte extra description for 2048 bytes per sector File System (FS2), only ! Optional !    NOTE: Erased/Deleted Dir. Sign: ‘DDE’, ‘E’ at offset 2 instead of ‘T’. (Parent Dir’s Entry: FFFFFFFFh is erased entry, 0 is end of directory entries.) Directory entries are the 1st FDT or DDT addresses of files or child/sub directories. (32 bit sector offset number which is > 0 and < FFFFFFFFh)    Parent Dir. Serial used for that purpose: When a dir or file is deleted, it will be removed from parent directory entries by replacing child directory or file number to FFFFFFFFh = deleted entry sign. And, it will be located in UNDELETE Directory as a new deleted file entry. When user want to undelete this file/dir, if parent dir serial number same with in the parent directory descriptor table (as number) declared in child dir descriptor table, the deleted directory or file will be restored in the parent directory. Directory serial number is just a tick count which always different by the computer’s timer ticks. (as like as volume serial number.)    For the First DDT (DDT0) of every file, this 1 sector DDT structure is completely valid and used. If a file has multiple DDTs (has more than one data section on the disk), except DDT 0, next and other DDTs use or carry the first 20 bytes of DDT structure as valid. Remain items are not used or not valid. So, the first DDT (FileNumber, Offset 8) is only reference to full FDT structure for file recovery or reverse/trace procedures. (Offset 8 points the DDT 0 address , Offset 6 has the current DDT sequence number.)   By using only DDT0 parameters (except the first 20 bytes of DDTs),  all of DDT contents after directory create, move, update (directory name, path and size changes etc.) procedures are kept true/correct for all DDTs. DDT1 and others must have valid 20 bytes on to Offset 20, then, must have ZERO bytes.(If all directory entries are in a single data section, only DDT0 is used and Offset 12 of DDT0 has ZERO.) | | | | | |

EXTENDED ATTRIBUTES byte:

Bit 0 = Owner’s Read Only Flag [ 0 = Writable directory, 1 = Read only directory ]

Bit 1 = Owner’s Executable File Flag (0)

Bit 2 = Group User’s Invisible Flag (0=No, 1=Yes) [ 1 = This directory is not visible except the owner ]

Bit 3 = Group User’s Read Only Flag (0=No, 1=Yes)  [ The result can be 'Writable' if Bit 0 is 0 ]

Bit 4 = Group User’s Executable File Flag (0)

Bit 5 = Other User’s Invisible Flag (0=No, 1=Yes) [ 1 = This directory is not visible except the group ]

Bit 6 = Other User’s Read Only Flag (0=No, 1=Yes) [ The result can be 'Writable' if Bit 0 & Bit 3 is 0 ]

Bit 7 = Other User’s Executable File Flag (0)

(DOS) BASIC ATTRIBUTES byte:

Bit 0 = Read Only Flag (R)

Bit 1 = Hidden (Invisible) Flag (H)

Bit 2 = System File Flag (S)

Bit 3 = Volume Flag (V)

Bit 4 = Directory Flag (D)

Bit 5 = Archive Flag (A)

Bit 6 = Reserved (0)

Bit 7 = Reserved (0)