PROJECT: SINGLIX Operating System Issue: 2 Revision: 16 Date: 31/05/2025
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FILE DESCRIPTION TABLE Format of SINGLIX FS1, FS2 file systems

Offset	Item	DATA	Type	Size	Description of Item
0	FDT Sign	'FDT'	Char	3 byte	TR-SINGLIX File Description Table
3	Reserved	XXh	Byte	1 byte	Must be 0 for Current/This FDT Version
4	Sector Size	XXh	Byte	1 byte	Bytes per Sector (FS1=512, FS2=2048) as shift count
5	Extent Allocation Type	XXh	Byte	1 byte	0 = direct, 1 = indirect, 2 = double indirect
6	Number of Links	XXXXh	Word	2 byte	Number of links to file
8	File Number	XXXXXXXXh	Dword	4 byte	This FDT Address of This File (Offset)
12	Sector Count	XXXXXXXXh	Dword	4 byte	Number of Sectors (belong to this file, except FDT)
16	Parent Dir Number	XXXXXXXXh	Dword	4 byte	The Parent DDT Address of This File (Offset)
20	Parent Dir Serial	XXXXXXXXh	Dword	4 byte	The Parent Dir's Serial Number (Tick Count)
24	File Size	XXXXXXXXh	Dword	4 byte	The lower 4 bytes of 6 byte File Size.
28	File Size High	XXXXh	Word	2 byte	The higher 2 bytes of 6 byte File Size.
30	Attributes	1 byte	Byte	1 byte	(Dos type) File Attributes (0,0,A,D,V,S,H,R)
31	Extended Attributes	1 byte	Byte	1 byte	User, Group, Others Permission Flags
32*	Owner code	4 bytes	Dword	4 byte	Owner Description Table address (TR-MULTIX)
36*	Group code	4 bytes	Dword	4 byte	Group Description Table address (TR-MULTIX)
40	Country	XXh	Byte	1 byte	Language, Date, Text Format (default = 0)
41	Time Zone	XXh	Byte	1 byte	-11 to +12 (GMT = 0, default = 0)
42	Creating Year	XXh	Byte	1 byte	Years since 1980 (0-255)
43	Creating Month	XXh	Byte	1 byte	Month (1-12)
44	Creating Day	XXh	Byte	1 byte	Day (1-31)
45	Creating Hour	XXh	Byte	1 byte	Hour (0-23)
46	Creating Minute	XXh	Byte	1 byte	Minute (0-59)
47	Last Access Date	XXXXXXh	Byte	3 byte	The Last Access (FDT Write) Date
50	Last Access Time	XXXXh	Byte	2 byte	The Last Access (FDT Write) Time
52	Last Modification Year	XXh	Byte	1 byte	Years since 1980 (0-255)
53	Last Modif. Month	XXh	Bute	1 byte	Month (1-12)
54	Last Modification Day	XXh	Byte	1 byte	Day (1-31)
55	Last Modification Hour	XXh	Byte	1 byte	Hour (0-23)
56	Last Modif. Minute	XXh	Byte	1 byte	Minute (0-59)
57	Last Modif. Second	XXh	Byte	1 byte	Second (0-59)
58	Reserved Descriptor	XXXXXXXXh	Dword	4 byte	Reserved Descriptor (Optional)
62	Long Name Length	XXh	Byte	1 byte	Length of unicode file name if available
63	File Name Type	XXh	Byte	1 byte	0 = Default, 12 = Msdos, 14 = Unix, 64 = Singlix
64	File Name	<File Name>	Char	64 byte	64 byte full or zero terminated File Name
128	Extents Table	16*(4+4) bytes	Dword	128 byte	Table of 16 direct or indirect extent addresses
256	Unicode File Name	<Long File Name>	Byte	256 byte	Unicode File Name if Offset 62 > 0
512**	Reserved	?	Byte	1536 byte	Optional/Reserved Area for FS2 Files

* Used by TR-MULTIX (Multiuser, Multitasking) Operating System, only!
** 1536 byte extra description for 2048 bytes per sector File System (FS2), only ! Optional !

NOTE: Erased/Deleted File Sign: 'FDE', 'E' at offset 2 instead of 'T'. (Parent Dir's Entry: FFFFFFFFh is erased entry, 0 is end of directory entries. Other 32 bit dir. entry numbers are the FDT addresses.)

Number of links is normally 1 . But the file is linked in other directories, number of links will be > 1.
If file will be erased from it's parent directory (while number of links > 1), parent directory number will be FFFFFFFFh.
But file will not be deleted until number of links becomes 0. (every deleting decreases number of links).

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 directory serial number same with in the parent directory descriptor table (as number) declared in child directory 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.)

Singlix FS file system uses extents which are contiguous/sequental sectors (like as variable size clusters) for file allocation on disk volume (partition). Length (sector count) of an extent may be 1 to File Size / Sector Size sectors. At the beginning, 16 direct extent fields/rows are used in FDT (in Extent Table space). Every direct extent field/row is 2 dwords. The 1st one is for file offset (as sector) and the 2nd is disk sector address (offset). When file grows beyond 16 extents . Indirect extents table is used. And 16 direct extent entries are changed to 16 indirect table entries. Each indirect table contains entries for 64 direct extents (if sector size is 512 bytes).

EXTENDED ATTRIBUTES byte:
Bit 0 = Owner's Read Only Flag [0 = Writable file, 1 = Read only file]
Bit 1 = Owner's Executable File Flag (1 = executable file -in multitasking mode-)
Bit 2 = Group User's Invisible Flag (0=No, 1=Yes) [1 = This file 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 (1= executable by group user if also Bit 1 is 1)
Bit 5 = Other User's Invisible Flag (0=No, 1=Yes) [1 = This file 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 (1= executable by other users if also Bit 1 & Bit 4 is 1)

(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)