

Proposal for the Device Statistic Information Additions Device Temperature Statistics Group

To: T13 Technical Committee
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This document shows the list of candidates of device temperature statistic information to be included in the Device Statistic Information Log. Each of the candidates will be reviewed and included in the standard after approval. Supporting of each of the item on the list is optional.

Summary of Device Statistic Information Candidates:

1. **Device Statistic Information Header**
2. Current Device Temperature
3. Average Short Term Device Temperature
4. Average Device Temperature for the Past 1008-Hour
5. Highest Device Temperature Ever (Lifetime)
6. Lowest Device Temperature Ever (Lifetime)
7. Highest Short Term Average Temperature (Lifetime)
8. Lowest Short Term Average Temperature (Lifetime)
9. Highest Average 1008-Hour Temperature (Lifetime)
10. Lowest Average 1008-Hour Temperature (Lifetime)

Temperature Statistics:

The location and the precision of the temperature sensor are vendor specific. The temperature reported is an estimate of the case temperature of the device.

Device Statistic Information Table

Byte Offset	Bit	Description
0		Device Statistic Information Header
		Description: When T13 decides to make a new revision to this structure
		Update Criteria: NA
		Measurement Units: NA
		Initialization: At the time of manufacture
	63:48	Revision number 0001h
	47:16	Reserved
	15:0	Page Number xxxxh
8		Current Device Temperature
		Description: This value indicates the current device temperature measured by the device.

		Update Criteria: This information is updated when this statistic log is read. Measurement Units: In degrees Celsius Initialization: Not applicable
	63	1= This statistics data is supported
	62:56	Reserved
	55:8	Reserved
	7:0	Two's Complement INT Current Device Temperature
16		Average Short Term Device Temperature
		Description: This statistic reports the average of the most recent 144 temperature samples recorded at a mean interval of 10 min. Samples are only recorded when the device is in Active or Idle state. Update Criteria: Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes Measurement Units: In degrees Celsius Initialization: Until the device takes 144 samples the data valid bit (bit 62) is cleared to 0 and the data on bit 7:0 is not valid. After the 144 samples are taken the data valid bit is set to one and the value on bit 7:0 is updated.
	63	1=This statistics data is supported Questions: 1. Is this valid statistic data bit indicates "Support" or "Valid" → Bit 63 is for "Supported" and bit 62 is for "Valid." 2. Can this supported bit change after power-on? → Yes-No 3. Can this valid bit change after the drive is shipped? → Yes
	62	1=This statistic data is valid
	61:8	Reserved
	7:0	Two's Complement INT Average Short Term Device Temperature
24		Average Device Temperature for the Past 1008-Hour
		Description: This statistic reports the average of the most recent 1008 hours of temperature. The device averages the last 42 Average Short Term Device Temperature samples. Samples are only recorded when the device is in Active or Idle state. Update Criteria: Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes Measurement Units: In degrees Celsius Initialization: Until the device takes 42 samples the data valid

		bit (bit 62) is cleared to 0 and the data on bit 7:0 is not valid. After the 42 samples are taken the data valid bit is set to one and the value on bit 7:0 is updated.
	63	1=This statistics data is supported
	62	1=This statistic data is valid
	61:8	Reserved
	7:0	Two's Complement INT Average Device Temperature for the Past 1008-Hour
32		Highest Device Temperature Ever (Lifetime)
	Description:	This value indicates the recorded highest device temperature after the device is manufactured. The measurement is based on the samples recorded at a mean interval of 10 min.
	Update Criteria:	Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes
	Measurement Units:	In degrees Celsius
	Initialization:	Until the device takes the first sample the data valid bit (bit 62) is cleared to 0 and the data on bit 31:0 is not valid. After the first sample is taken the data valid bit is set to one and the value on bit 31:0 is updated.
	63	1=This statistics data is supported
	62	1=This statistic data is valid
	61:32	Reserved
	31:8	Unsigned DWORD Time Stamp in Power-on-Hour
	7:0	Two's Complement INT Highest Device Temperature Ever (Lifetime)
40		Lowest Device Temperature Ever (Lifetime)
	Description:	This value indicates the recorded lowest device temperature after the device is manufactured. The measurement is based on the samples recorded at a mean interval of 10 min.
	Update Criteria:	Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes
	Measurement Units:	In degrees Celsius
	Initialization:	Until the device takes the first sample the data valid bit (bit 62) is cleared to 0 and the data on bit 31:0 is not valid. After the first sample is taken the data valid bit is set to one and the value on bit 31:0 is updated.
	63	1=This statistics data is supported
	62	1=This statistic data is valid

	61:32	Reserved
	31:8	Unsigned DWORD Time Stamp in Power-on-Hour
	7:0	Two's Complement INT Lowest Device Temperature Ever (Lifetime)
48		Highest Short Term Average Temperature (Lifetime)
	Description:	This value indicates the recorded highest device short term average temperature after the device is manufactured. The measurement is based on the samples recorded by the Average Device Short Term Temperature.
	Update Criteria:	Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes
	Measurement Units:	In degrees Celsius
	Initialization:	Until the device takes 144 samples the data valid bit (bit 62) is cleared to 0 and the data on bit 31:0 is not valid. After the 144 samples are taken the data valid bit is set to one and the value on bit 31:0 is updated.
	63	1=This statistics data is supported
	62	1=This statistic data is valid
	61:32	Reserved
	31:8	Unsigned DWORD Time Stamp in Power-on-Hour
	7:0	Two's Complement INT Highest Short Term Average Temperature (Lifetime)
56		Lowest Short Term Average Temperature (Lifetime)
	Description:	This value indicates the recorded lowest device short term average temperature after the device is manufactured. The measurement is based on the samples recorded by the Average Device Short Term Temperature.
	Update Criteria:	Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes
	Measurement Units:	In degrees Celsius
	Initialization:	Until the device takes 144 samples the data valid bit (bit 62) is cleared to 0 and the data on bit 31:0 is not valid. After the 144 samples are taken the data valid bit is set to one and the value on bit 31:0 is updated.
	63	1=This statistics data is supported
	62	1=This statistic data is valid
	61:32	Reserved
	31:8	Unsigned DWORD

		Time Stamp in Power-on-Hour
	7:0	Two's Complement INT Lowest Short Term Average Temperature (Lifetime)
64		Highest Average 1008-Hour Temperature (Lifetime)
		Description: This value indicates the recorded highest device short term average temperature after the device is manufactured. The measurement is based on the samples recorded by the Average Device Temperature for the Past 1008-Hour.
		Update Criteria: Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes
		Measurement Units: In degrees Celsius
		Initialization: Until the device takes 1008-hour of data the data valid bit (bit 62) is cleared to 0 and the data on bit 31:0 is not valid. After the 1008-hour data are taken the data valid bit is set to one and the value on bit 31:0 is updated.
	63	1=This statistics data is supported
	62	1=This statistic data is valid
	61:32	Reserved
	31:8	Unsigned DWORD Time Stamp in Power-on-Hour
	7:0	Two's Complement INT Highest Average 1008-Hour Temperature (Lifetime)
72		Lowest Average 1008-Hour Temperature (Lifetime)
		Description: This value indicates the recorded lowest device short term average temperature after the device is manufactured. The measurement is based on the samples recorded by the Average Device Temperature for the Past 1008-Hour.
		Update Criteria: Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes
		Measurement Units: In degrees Celsius
		Initialization: Until the device takes 1008-hour of data the data valid bit (bit 62) is cleared to 0 and the data on bit 31:0 is not valid. After the 1008-hour data are taken the data valid bit is set to one and the value on bit 31:0 is updated.
	63	1=This statistics data is supported
	62	1=This statistic data is valid
	61:32	Reserved
	31:8	Unsigned DWORD Time Stamp in Power-on-Hour
	7:0	Two's Complement INT

	Lowest Average 1008-Hour Temperature (Lifetime)
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