

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: When event occurs
		Measurement Units: Number sequence
	Initialization: Set to 0001h at the factory	
	63:48	Revision number
	47:0	Reserved
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=valid statistic data Questions: 1. Is this valid statistic data bit indicates “Support” or “Valid” 2. Can this bit change after power-on? 3. Can this valid bit change after the drive is shipped?
	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: Chose from one of the following three methods: Method 1: The initial statistic data before the complete 144 samples is calculated based on the limited sample taken. Method 2: Until the device takes 144 samples the valid bit is cleared to 0. After the 144 samples are taken the valid bit is set to one. Method 3: Populate with 25 Degree Celsius nominal value for all 144 samples at the factory.
	63	1=valid statistic data
	62:56	Reserved
	55:8	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

		<p>Update on Device Statistics Page Read: Yes</p> <p>Measurement Units: In degrees Celsius</p> <p>Initialization: Chose from one of the following three methods: Method 1: The initial statistic data before the complete 42 samples is calculated based on the limited sample taken. Method 2: Until the device takes 42 samples the valid bit is cleared to 0. After the 42 samples are taken the valid bit is set to one. Method 3: Populate with 25 Degree Celsius nominal value for all 42 samples at the factory.</p>
	63	1=valid statistic data
	62:56	Reserved
	55:8	Reserved
	7:0	Two's Complement INT Average Device Temperature for the Past 1008-Hour
32		Highest Device Temperature Ever (Lifetime)
		<p>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.</p> <p>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</p> <p>Measurement Units: In degrees Celsius</p> <p>Initialization: Chose from one of the following three methods: Method 1: The initial statistic data before the complete 10 min sample is calculated based on the current sample taken. Method 2: Until the device takes the first 10 min sample the valid bit is cleared to 0. After the first sample is taken the valid bit is set to one. Method 3: Populate with 25 Degree Celsius nominal initial sample value at the factory.</p>
	63	1=valid statistic data
	62:32	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)
		<p>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.</p> <p>Update Criteria: Update on Timer: Yes (= 1 hour)</p>

		<p>Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes</p> <p>Measurement Units: In degrees Celsius Initialization: Chose from one of the following three methods: Method 1: The initial statistic data before the complete 10 min sample is calculated based on the current sample taken. Method 2: Until the device takes the first 10 min sample the valid bit is cleared to 0. After the first sample is taken the valid bit is set to one. Method 3: Populate with 25 Degree Celsius nominal initial sample value at the factory.</p>
	63	1=valid statistic data
	62:32	Reserved
	31:8	Unsigned DWORD Time Stamp in Power-on-Hour
	7:0	Two's Complement INT Lowest Device Temperature Ever (Lifetime)
48		<p>Highest Short Term Average Temperature (Lifetime)</p> <p>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.</p> <p>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</p> <p>Measurement Units: In degrees Celsius Initialization: Chose from one of the following three methods: Method 1: The initial statistic data before the complete 144 samples is calculated based on the existing sample taken. Method 2: Until the device takes the first 144 samples the valid bit is cleared to 0. After the first sample is taken the valid bit is set to one. Method 3: Populate with 25 Degree Celsius nominal initial sample value at the factory.</p>
	63	1=valid statistic data
	62:32	Reserved
	31:8	Unsigned DWORD Time Stamp in Power-on-Hour
	7:0	Two's Complement INT Highest Short Term Average Temperature (Lifetime)
56		<p>Lowest Short Term Average Temperature (Lifetime)</p> <p>Description: This value indicates the recorded lowest device</p>

		<p>short term average temperature after the device is manufactured. The measurement is based on the samples recorded by the Average Device Short Term Temperature.</p> <p>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</p> <p>Measurement Units: In degrees Celsius</p> <p>Initialization: Chose from one of the following three methods: Method 1: The initial statistic data before the complete 144 samples is calculated based on the existing sample taken. Method 2: Until the device takes the first 144 samples the valid bit is cleared to 0. After the first sample is taken the valid bit is set to one. Method 3: Populate with 25 Degree Celsius nominal initial sample value at the factory.</p>
	63	1=valid statistic data
	62:32	Reserved
	31:8	Unsigned DWORD Time Stamp in Power-on-Hour
	7:0	Two's Complement INT Lowest Short Term Average Temperature (Lifetime)
64		<p>Highest Average 1008-Hour Temperature (Lifetime)</p> <p>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.</p> <p>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</p> <p>Measurement Units: In degrees Celsius</p> <p>Initialization: Chose from one of the following three methods: Method 1: The initial statistic data before the complete 42 samples is calculated based on the existing sample taken. Method 2: Until the device takes the first 42 samples the valid bit is cleared to 0. After the first sample is taken the valid bit is set to one. Method 3: Populate with 25 Degree Celsius nominal initial sample value at the factory.</p>
	63	1=valid statistic data
	62:32	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: Chose from one of the following three methods: Method 1: The initial statistic data before the complete 42 samples is calculated based on the existing sample taken. Method 2: Until the device takes the first 42 samples the valid bit is cleared to 0. After the first sample is taken the valid bit is set to one. Method 3: Populate with 25 Degree Celsius nominal initial sample value at the factory.
	63	1=valid statistic data
	62:32	Reserved
	31:8	Unsigned DWORD Time Stamp in Power-on-Hour
	7:0	Two's Complement INT Lowest Average 1008-Hour Temperature (Lifetime)

Define the "Update Criteria" in the Device Statistics Overview section. Suggested words such as: The Statistic shall be recorded to a non-volatile location when the "Updated Criteria" has met.