1 Node Descriptor 2 – Temperature Sensor

1.1 Device Description

The Temperature Sensor records the actual ambient temperature at a user defined interval. The ambient temperature is displayed on www.imonnit.com in °C or °F. The user sets a temperature range that will trigger an alert or alarm whenever the temperature breaches a threshold. The device can be calibrated by the user. The software will be able to specify a linear offset adjustment.

1.2 Hardware Details

1.2.1 Thermistor

Possible hardware combinations include:

- Platform RFSC Rev A, Version x: Not supported.
- Platform RFSC Rev B, Version 1.2: Supported.
- Platform RFSC Rev C, Version x: Supported.
- Platform MoWi Rev 2, Version x: Supported.

Sensor Specifications:

Operating Range	-40°C to 125°C
Accuracy @ 25°C	+/- 1%
Resistance @ 25°C	10K ± 1%
B-Constant (25°C – 50°C)	3380 ± 1%
Permissive Operating Current @ 25°C	0.38 mA
Rated Electric Power @ 25°C	15 mW
Dissipation Constant @ 25°C	1.5mW/°C
Time Constant @ 25°C	7 sec
RoHS	Compliant

1.3 Enclosure Details

Standard Monnit enclosures including: WIT, WIT2, Industrial, MOWI.

1.4 MNP Message Details

1.4.1 STATE (SOM, SDM)

Both the Spurious Orphan Message (SOM) and the Spurious Data Message (SDM) contain the STATE field. STATE is defined here.

Field	Length	Description
Test Active	1 bit LSB	Test state is active (1) or inactive (0)
Aware State	1 bit	Aware state is active (1) or inactive (0)
Sensor Disable	1 bit	Sensor is disabled (communication still happens)
RSVD	1 bit	Currently not used
Calibrate Active	1 bit	Sensor has never been calibrated (1) or sensor has been calibrated (0)
Self Test Status	1 bit	Self Test results are normal (0) or out of range (1)
Not used	1 bit	
Not used	1 bit MSB	

This application specifies one additional action control type: Calibrate. This allows the user to calibrate the temperature sensor for linear adjustment.

Action Control Type		Action	
3	Calibrate	0	Terminate Calibrate State (Deactivate)
		1	Enter Calibrate State (Activate)

1.4.2 SDATA (SDM)

The Spurious Data Message contains the SDATA field, which is defined here. The field is defaulted to 3 bytes total for this application. The SDATA[1] field is defaulted to 2 bytes.

SDATA[0]: STATE

SDATA[1]: Int16 value in degrees Celsius multiplied by 10.

Field	Length	Value	Format
SDATA[0]	1 byte	Int8	STATE.
SDATA[1-2]	2 bytes	Int16	Degrees Celsius multiplied by 10.

1.5 General Configuration Defaults

The Configuration Defaults below are native to the External Temperature sensor only.

Field	Default	Min	Max	Comments
NODEDESC	2	N/A	N/A	Fixed.

1.6 Profile Defaults

The External Temperature Sensor operates using the Interval device profile.

Field	Default	Min	Max	Comments
PROFILE	1	N/A	N/A	1 = Interval device profile.
MRES	1	1	250	1 = Every temperature measurement is reported.
SYNCMASK	0	0	255	Synchronize or offset heartbeats.
HYST	0	0		Buffers thresholds. Specified in 0.1°C.
THRSHMIN	-400	-400	1250	Operating Range as Data. (-40°C to 125°C)
THRSHMAX	1250	-400	1250	Operating Range as Data. (-40°C to 125°C)
CALVAL_1	0	-500	500	Calibration offset. Increments of one-tenth of a degree.
CALVAL_2	100000	1		Resistance value of situational resistor
CALVAL_3	560000	1		Resistance value of situational resistor
CALVAL_4	10000	1		Resistance value of situational resistor