

1 Node Descriptor 27 – Light Presence

1.1 Device Description

This sensor detects the presence or absence of light. The sensor operates on an interval profile, but only reports light present or no light. In order to have this sensor act more like a trigger sensor, the assessments (MRES) should be set such that measurement intervals are at a resolution appropriate for the application.

1.2 Hardware Details

1.2.1 Phototransistor

Possible hardware combinations include:

- Platform RFSC Rev A, Ver 0: not supported.
- Platform RFSC Rev B, Ver 0: Supported.
- Platform RFSC Rev C, Ver 0: Supported.

Collector Emitter Breakdown Voltage (0.1 mA)	6 V
Collector Dark Current (5 V _{CE})	3 nA typ.
Collector Emitter Capacitance (V _{ce} =0, f=1MHz, E=0)	16 pF
Collector Light Current (5 V _{CE} , 20 lx)	5 to 24µA
Collector Light Current (5 V _{CE} , 100 lx)	75µA
Angle of Half Sensitivity	±50 degrees
Wavelength of Peak Sensitivity	570 nm
Range of Spectral Bandwidth	440 to 800 nm
Collector Emitter Saturation Voltage (20 lx, 1.2 µA)	0.1 V
RoHS	Compliant

(T_{amb} = 25°C)

1.3 Enclosure Details

This sensor is available in WIT, WIT2, and Industrial. It has not been released in Wi-Fi.

1.4 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. (For definition of STATE, refer to Monnit Network Specifications, Section 4.2).

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 disable (communication still happens)
RSVD	1 bit	Currently not used
Calibrate Active	1 bit	Command to calibrate sensor.
Self Test Status	1 bit	Not used. Always 0.
Not used	1 bit	
Not used	1 bit MSB	

This application specifies one additional action control type:

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 SDATA field is defaulted to 1 byte for this application.

SDATA[0]: App_DiscoverState()

SDATA[1]: 0 for no light; 1 for presence of light.

Field	Length	Value	Format
SDATA[0]	1 byte	Int8	STATE
SDATA[1]	1 byte	Int8	0 for no light detected; 1 for light present

1.5 General Configuration Defaults

The Configuration Defaults below are native to the Light Presence sensor only.

Field	Default	Min	Max	Comments
NODEDESC	22	N/A	N/A	Fixed.

1.6 Profile Defaults

The Light presence sensor operates using the Interval device profile.

Field	Default	Min	Max	Comments
PROFILE	1	N/A	N/A	1=Interval profile.
MRES	1	1	250	Measurements per heartbeat, vital to triggering on light state changes.
SYNCMASK	0	0	0x00FF	Synchronization or offset of heartbeats.
HYST	0	0		Not configurable.
THRSHMIN	0xFFFFFFFF	0	0xFFFFFFFF	Not used.
THRSHMAX	0xFFFFFFFF	0	0xFFFFFFFF	Not used... the calibration routine sets the threshold for detecting between light and no light.
CALVAL_1	0	0	1	0 alerts on Light Present, 1 alerts on no light for aware state.
CALVAL_2	0	0	1	Sets the bias resistor (choice b/t 56K & 10K)
CALVAL_3	16368	0	65535	Trip point. Above is light present, below is no light
CALVAL_4	0xFFFFFFFF	0	0xFFFFFFFF	Not used.