I3 Datasheet

General Description

The I3 Wireless to USB device serves as the interface between A2/A3 data loggers and the Building Intelligence Gateway (BiG/TiG)

Wireless data acquisition units communicate sensor readings to the Building Intelligence Gateway through an I3 interface. An I3 unit will automatically become a repeater when powered. If require, wired extensions can be used to relocate I3 units in areas where wireless coverage is intermittent or difficult to reach.

Applications

- Live data collection and sensor analysis
- Data extraction from data logging sensors

Features

- IEEE 802.15.4 Wireless to USB Interface to BiG
- Wireless transceiver with 1000 meter line of sight communication
- Activity LED indicates active connectivity
- Channel and Personal Area Network (PAN) can be modified to assist in managing multiple networks
- Two way communication with BiG ensures the I3 is always communicating, in the event the I3 loses communication due to a Windows USB failure an internal relay will perform a hard power reset of the I3.
- I3 controls the master timer setting. User can modify the sample rate timer allowing all A2's and A3's to inherit a new sample frequency from the I3.
- Radio transmit power can be adjusted to comply with specific radio transmission requirements
- Any number of I3's can be connected to a single gateway.

Electrical Specifications

Wireless

Specification	IEEE 802.15.4
Working Frequency	2.405GHz-2.48GHz
Output Power	20dBm (100mW)
Output Range (free air)	1000m line of site. Powered repeaters can be added to extend range.
Max Nodes per coordinator	32 (dependent on application density and application speed).
USB	USB 1.0 Interface

Environmental

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Operating Temperature	0° to 40°C / 32° to 104°F
Storage Temperature	-25° to 70°C / -13° to 158°F
Humidity	5% to 100% RH non-condensing
Electrostatic Discharge (ESD)	8kVdc air, 4 kVDC contact (exposed inputs)

Regulatory

Contains FCC ID:W7OMRF24J40MDME

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Contains IC: 7693A-24J40MDME

Changing the PAN of an I3

Under Devices Tab in the Building Intelligence Gatweay (BiG) double click on the I3 device.

Enter the Personal Area Network (PAN) ID in the box under PAN and press the Set button adjacent to it. Press Reset to restart the I3.
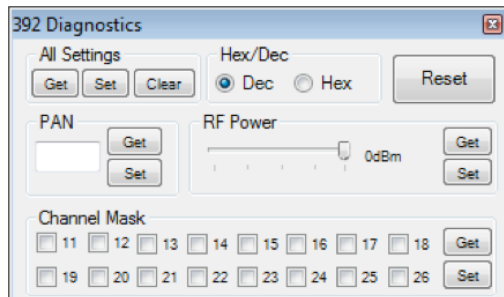
Changing the I3 Sample Timer

Under the Devices Tab in BiG, select the I3 you wish to change and select *Change Timer*. Enter the desired sample time. All A2s/A3s associated with the I3 PAN will inherit the I3 timer. Samples are recorded at clock intervals (eg. 15 minutes will sample at 1:00, 1:15, :1:30 etc). Select the sample time carefully as faster times consume more power and take longer to collect data.
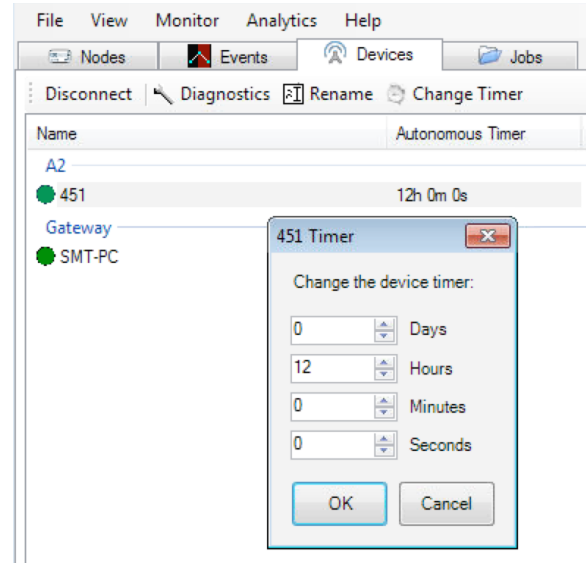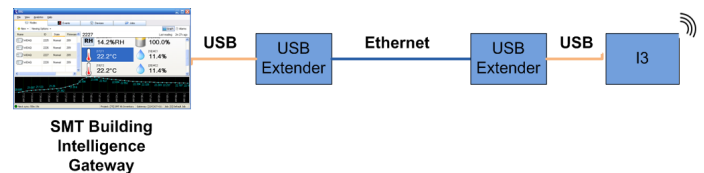
Extending I3 Range

If you would like to place the I3 in a different location, a USB extender can be used. The Ethernet cable can be extended up to 150 feet. Standard Ethernet protocol must be followed in order to achieve the 150 foot range.
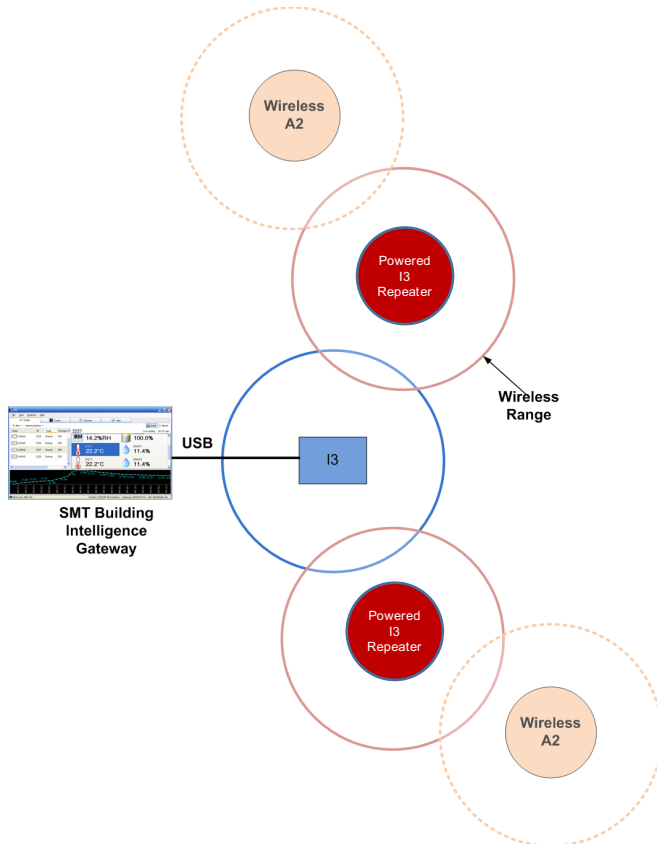
Figure 1. USB Extender

SMT Building Intelligence Gateway

Using an I3 as a Repeater

To extend the wireless range, insert an I3 into a AC to USB charger and plug it into an AC socket. If the LED blinks it means communication is established.

Wireless units are restricted to perform a single "hop" through a repeater. The A2/A3 will manage which repeaters to hop through. The following diagram below shows how two powered I3 repeaters can be used to rely data transmissions for an A2.

Figure 2. I3 as a Repeater

Advanced Configuration

If the I3 is required to act as a repeater using a computer USB port, the I3 must be configured by removing the shunt on the jumper inside the unit. The jumper is located inside the unit on the main board, simply remove the two screws on the I3 and remove the jumper.

Ordering Information	
Standard Wireless Repeater	I3-001
External antenna (ME Module)	I3-001-ME
5V Power to USB Supply	I3-PWR
I3 Extender	I3-EXT

Specifications are subject to change without notice

Note: An I3 will automatically determine if is a powered repeater or an an interface between BiG/TiG and the A2s/A3s. Once the I3 instantiates over USB it assumes it is a wireless to USB relay. If there is an interruption of USB communication, the I3 will reset itself every 5 minutes until communication is re-established.