

IEEE 802.15.4/ZigBee™ USB Dongle

ZigBee™ Dongle for 2.4GHz Band

DESCRIPTION

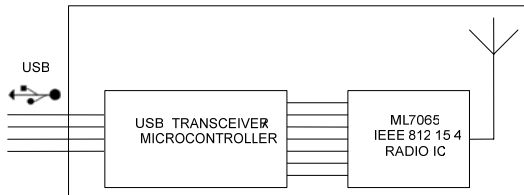
The IEEE 802.15.4 USB Dongle from Integration provides a compliant 802.15.4 interface that can be quickly and easily connected to a host computer. The dongle also provides fully compliant wireless ZigBee™ connectivity (home controls stack profile) for routers, coordinators, and end devices by means of the supplied ZigBee™ compliant platform drivers.

The USB Dongle is aimed at OEMs planning to deploy 802.15.4 or ZigBee enabled solutions into their product range. The dongle provides a simple method of integrating 802.15.4 or ZigBee into computers, gateways and /or bridge devices.

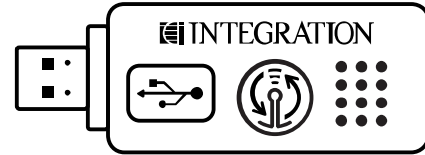
The dongle software development kit provides a convenient application interface to the software developer, thereby removing any need to develop USB drivers or even have experience in developing wireless technology. By means of the dongle, Integration offers the opportunity for OEMs to reduce R&D costs, reduce time-to-market, and minimize development risks.

The dongle is available with a choice of two driver options: The 802.15.4 drivers provide direct access to the 802.15.4 MAC interface. The ZigBee drivers allow the dongle to operate within a ZigBee network and expose the AF / ZDO Application Interfaces.

BLOCK DIAGRAM



IA OEM-DAUB1 2400



See back page for ordering information.

FEATURES

- Fully IEEE 802.15.4 2003 compliant
- 2.4GHz Operation
- Integrated antenna
- Wireless range of over 30m (typical)
- USB 1.1 Interface
- Windows drivers provide C++, C# and VB support Linux and Apple drivers available
- ZigBee drivers provide fast route to ZigBee logo
- OEM Customisable
- Windows Plug and Play support
- Various low power sleep modes

CERTIFICATIONS

- USB Certified*
- IEEE 802.15.4 2003
- ZigBee Compliant Platform
- CE & UL*
- FCC & ETSI*
- Designed for Microsoft Windows

OPERATION

The dongle instantly enables a wireless ZigBee connection for existing equipment such as desktops, notebooks and PDAs to monitor and control ZigBee devices with plug and play convenience. The dongle node can either initiate connections, or accept incoming connections. The dongle can be configured as a network coordinator to start a new network, or can join an existing network as a router / end device.

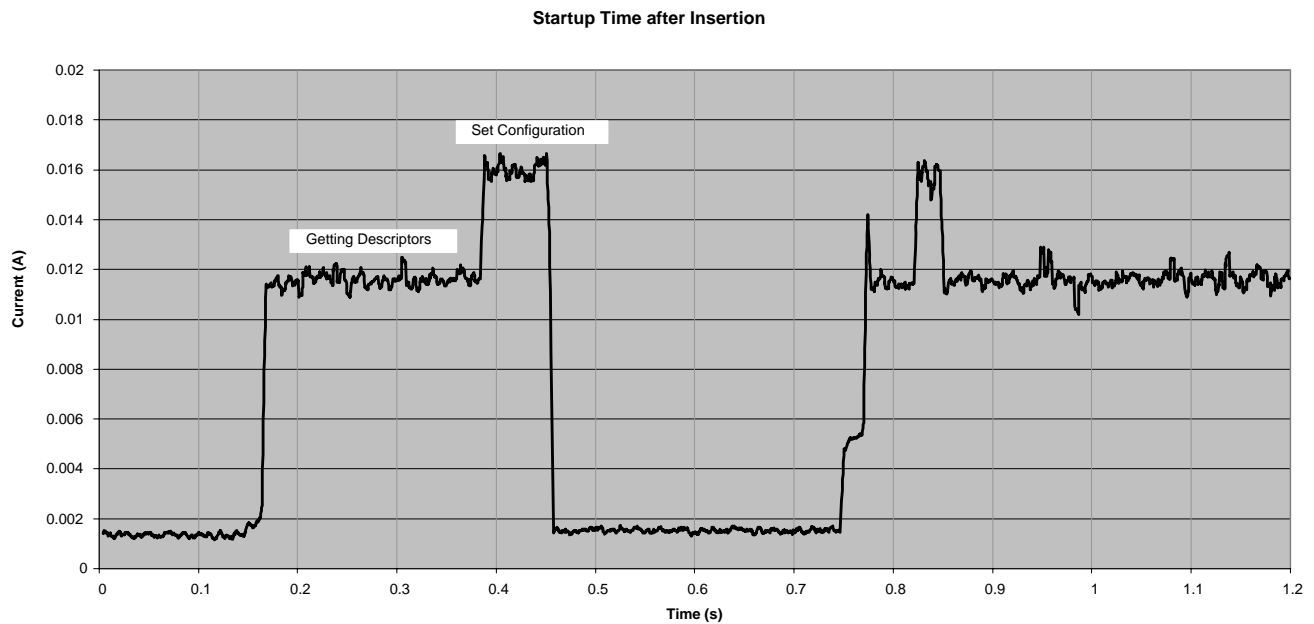
*Pending

ELECTRICAL CHARACTERISTICS

Parameter	Typ	Units
Initial	29.5	mA
MCU Running	30.5	mA
Radio Powered	42	mA
Receiver Active	108	mA
Transmitter Active	108	mA
Radiated RF Output Power	0	dBm
RX Sensitivity	-87	dBm
Range (Open Air)	30	m

TYPICAL PERFORMANCE CHARACTERISTICS

Dongle Enumeration Timing at Insertion

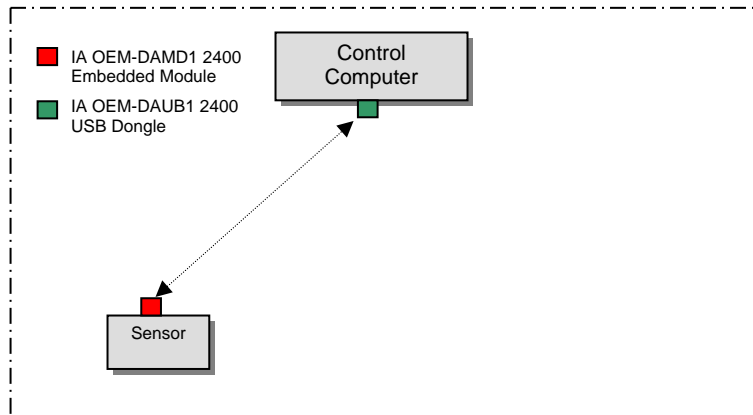


TYPICAL APPLICATIONS

Serial Link Replacement

Serial communications are widely used in industrial and security applications to connect sensors to computers for system monitoring. There are many instances where wires in this environment are costly to maintain and not convenient to install. Through a combination of the ZigBee USB Dongle and ZigBee Serial Modules a simple way to change such a system to use ZigBee is provided. The modules will integrate seamlessly with existing management and control software / systems.

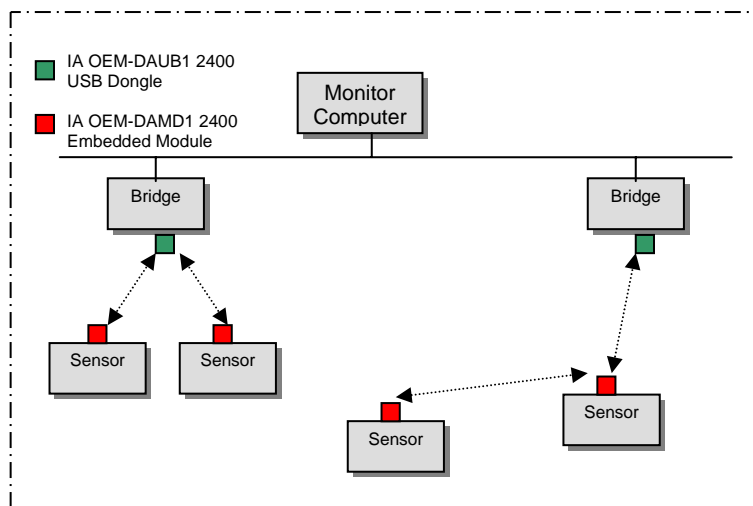
A typical example is illustrated below:



In this example the ZigBee module will simply operate as a serial cable replacement. The two modules will be “paired” and data will be autonomously transferred between the two devices

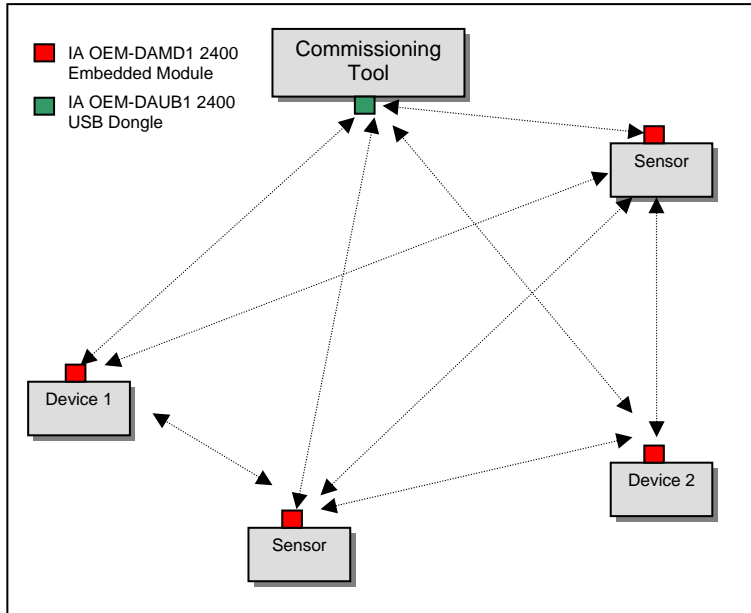
Bridge Example

In this example the USB dongle is used to bridge between 802.15.4 and Ethernet. A thin layer of software is written to bridge the 802.15.4 stack with the IP stack. This allows devices on the 802.15.4 PAN to directly access devices on the LAN. This is useful for data logging applications where sensors are logging data to a centralised computer. Multiple bridges can be placed within the network to act as access points and the wireless sensor sends its data via the nearest bridge.



Commissioning Tool Example

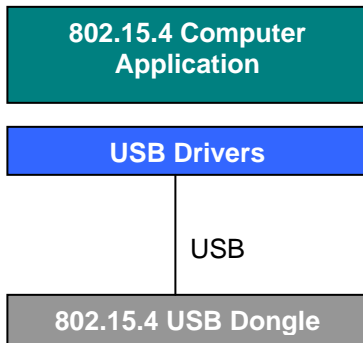
In this example the USB dongle is used as a commissioning tool for a ZigBee network. The commissioning application runs on computer and can interact with all nodes on the network. The commissioning tool can then be used to configure the network, for example setting up binding links, setting up access points etc.



SOFTWARE OVERVIEW

802.15.4 USB Drivers

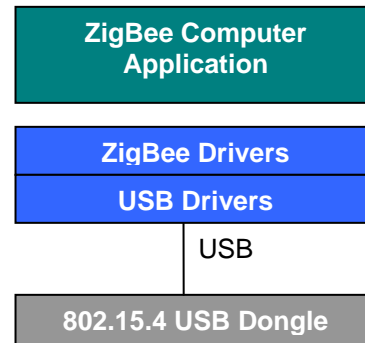
The 802.15.4 drivers expose the API to the software developer to build an 802.15.4 application using the USB Dongle. The STKUSB.dll library provides Connect, Disconnect and Send functions. Receive data is received through a call-back function. Example applications are provided on the Dongle development CD.



ZigBee Drivers

The ZigBee drivers build upon the 802.15.4 drivers to expose the ZigBee API to the software developer to build a complete ZigBee application using the USB Dongle. The ZigBee drivers when combined with the USB Dongle are a “ZigBee Compliant Platform”

The driver provides Connect, Disconnect and Send functions. Receive data is received through a call-back function. Example applications are provided on the Dongle development CD.



General Device Specification

Parameter	Min	Max	Units
Carrier Frequency	2405	2483.5	MHz
Operating temperature	0	60	°C

USB Device State Implementation

Device State	State Support	Remote Wakeup Support
D0 (Operational)	✓	n/a
D1	x	n/a
D2	x	n/a
D3 (Off)	✓	n/a

Compliance

Parameter	Compliant
ZigBee Compliant Platform	Home Controls Stack Profile
ETSI Compliance	*
FCC Compliance	*
USB Compliance	*
CE Marking	✓
Windows Certification	*
IEEE 802.15.4 (Radio IC)	✓

* pending



EU Declaration of Conformity

We, Integration Associates, declare under our sole responsibility that this product, to which this declaration relates, is in conformity with the related European Directives. CE marking is the responsibility of Integration Associates Inc.

Integration Product Warranty

Integration warrants this product against defects in materials and workmanship 6 months. If a defect is discovered, Integration will, at its option, repair or replace the product at no charge provided it is returned during the warranty period, with transportation charges prepaid, to the authorized Integration dealer from whom you purchased the product. Proof of purchase may be required.

This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication; if the product has been modified without the written permission of Integration; or if any Integration serial number has been removed or defaced.

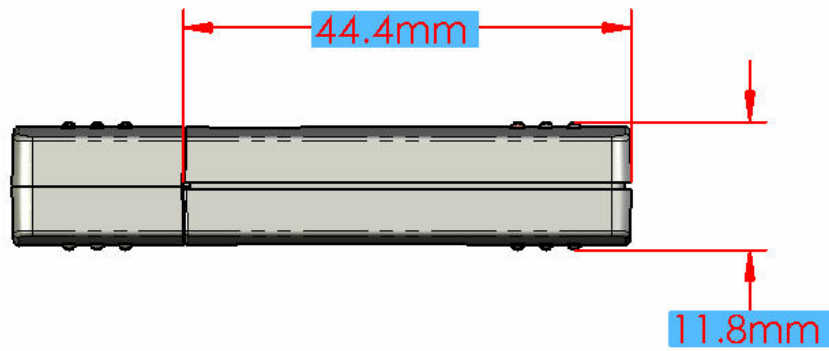
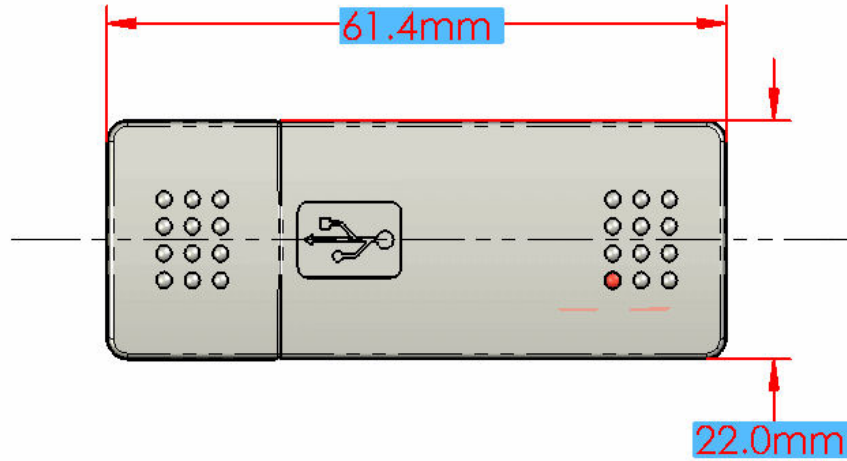
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DEVICE DIMENSIONS

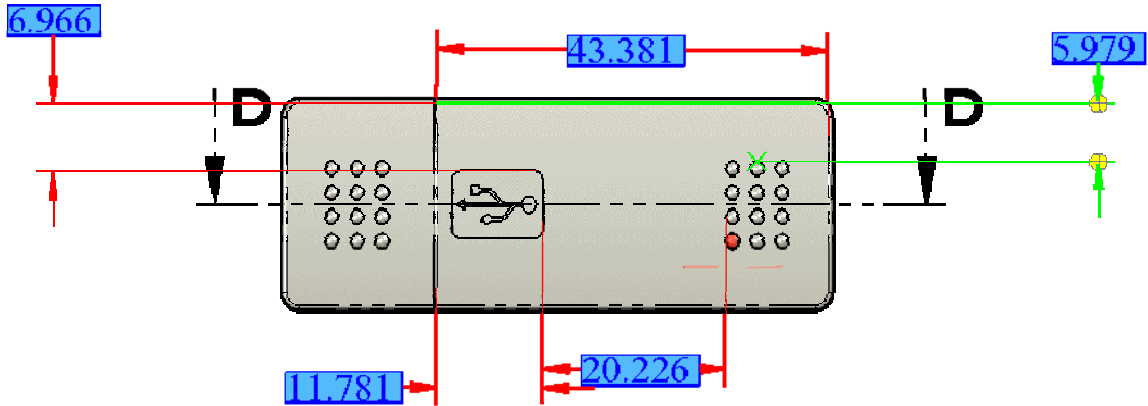


All dimensions $\pm 0.05\text{mm}$

CUSTOMISATION OPTIONS

Logo Printing

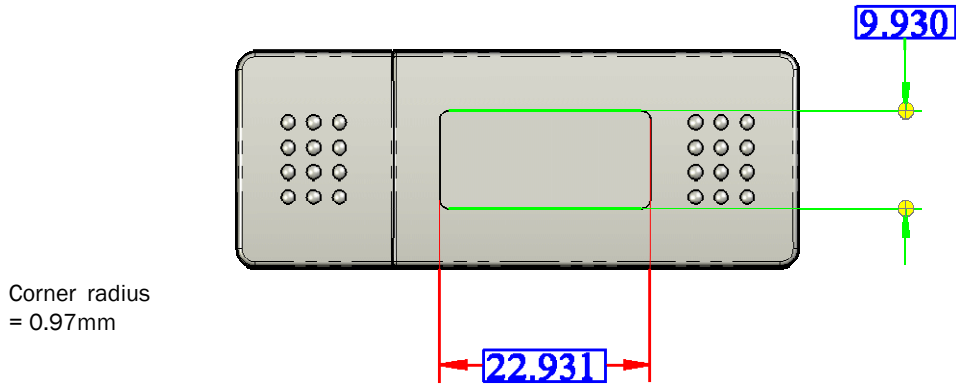
Integration offer printing options to allow customisation of the USB dongle, to reflect your product branding. The dimensions relating to the printing area are given below:



Logo Example



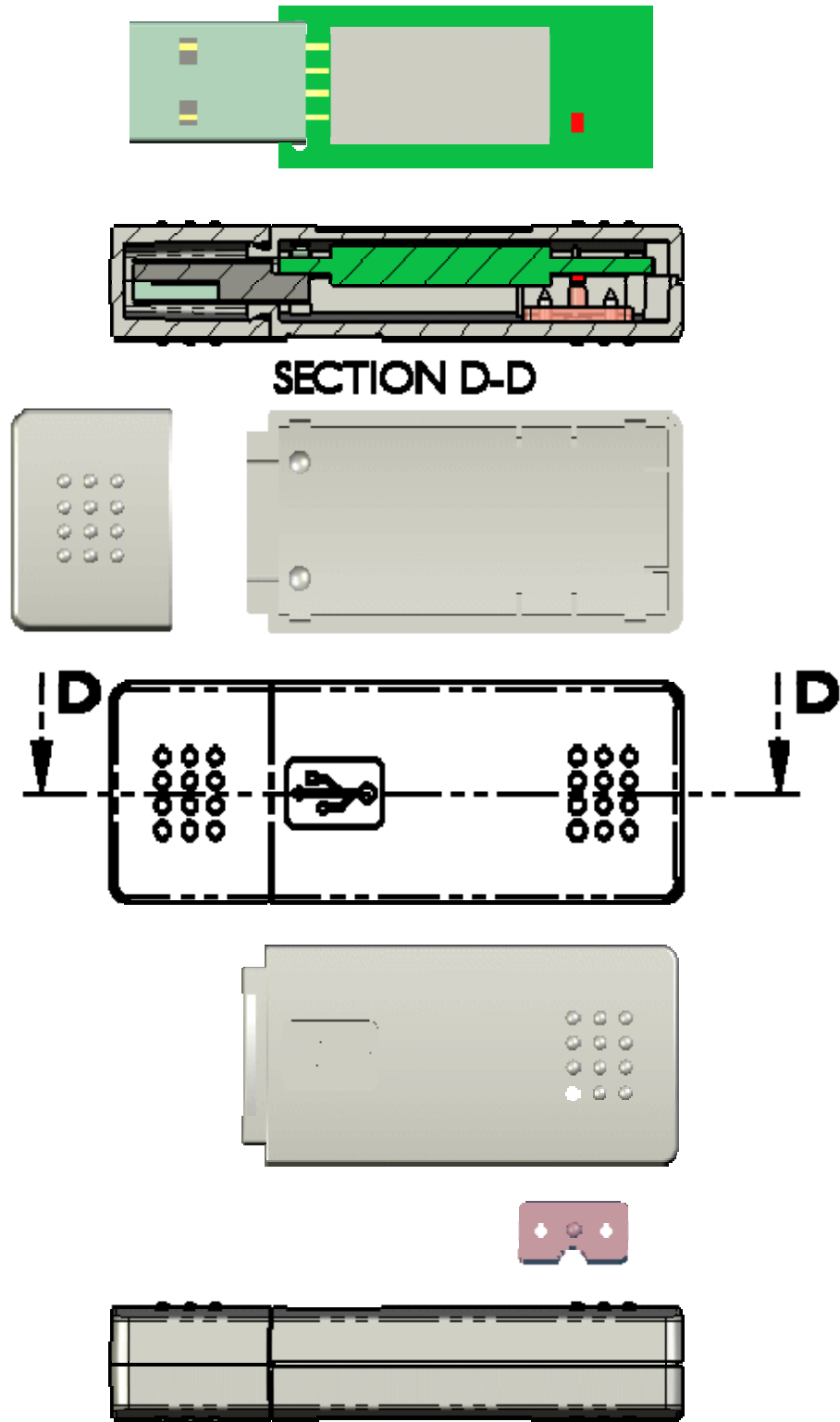
Device Label



Driver Customisation

Integration also offer customisation options for the USB, Vendor and Product Identifiers. Further the USB Product and Manufacturer String descriptors can also be customised. Please contact sales for further information on these options.

MECHANICAL ASSEMBLY



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RELATED PRODUCTS AND DOCUMENTS

Integration 802.15.4/ZigBee USB Dongle

DESCRIPTION	ORDERING NUMBER / URL
USB ZigBee Dongle with Windows/Linux Drivers	IA OEM-DAUB1 2400
IA OEM-DAUB1 2400 (Drivers only)	http://www.integration.com/resources.shtml
IA OEM-DAUB1 2400 (FULL Download)	http://www.integration.com/resources.shtml
IA OEM-QSUB1 2400 (USER Guide)	http://www.integration.com/resources.shtml

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