Z-Wave USB Stick Engineering Specifications

The Stick is a USB Z-Wave™ interface that's designed to send and receive wireless Z-Wave commands to and from compatible smart home products in the home. The Stick is compatible with most smart home systems.

The Stick can be included and operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers and/or other applications. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

The Stick is a security Z-Wave device (S2), so a security enabled controller is needed for take full advantage of all functionally for the Stick.

The Stick that can include other nodes using Z-Wave Long Range MUST indicate how to change the bootstrapping mode (Z-Wave SmartStart vs. Z-Wave Long Range SmartStart) of provisioning list entries.

Features:

- Z-Wave Plus Static USB Controller.
- support new features for Z-Wave Long Range, including 4x wireless range, 10x node scalability for larger network.
- Latest S2 security protocol for a truly private network.
- Works with SmartStart Z-Wave devices.
- New 800 chip for batter performance than ever.
- Extended range up to 2500 feet in open space.
- Faster, more secure, and lower power than 500 series.
- LED indicator signals wireless communication in progress for efficient troubleshooting.
- No drivers needed: works out of the box on Windows, Linux, and MAX OS.

1 Technical Specifications

Model Number	ZST39
Communication Protocol	Z-Wave
Z-Wave Radio Frequency	908.42MHz
Z-Wave LR Radio Frequency	912.00 MHz(default channel) 920.00 MHz(back up channel)
SDK Version	7.18.01
Wireless Range	Up to 400 feet line of sight
Power	4.75-5.25VDC
Operating Temperature	32-104° F (0-40° C)
Operating Humidity	Up to 85% non-condensing

2 Familiarize yourself with Stick

3 Security and non-Security features

This device is a security enabled Z-Wave Plus™ product that is able to use encrypted Z-Wave Plus messages to communicate to other security enabled Z-Wave Plus products.
When a node includes into a S2 Z-Wave network, the node supports S2 unauthenticated class, S2 authenticated and so do the supported CCs.
This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All mains operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

3.1 Supported Security Levels

- SECURITY_KEY_S0
- SECURITY_KEY_S2_UNAUTHENTICATED
- SECURITY_KEY_S2_AUTHENTICATED
- SECURITY_KEY_S2_ACCESS

3.2 Commands List

Command Classes	Version	Required Security Class
COMMAND_CLASS_ZWAVEPLUS_INFO_V2	2	None
COMMAND_CLASS_TRANSPORT_SERVICE_V2	2	None
COMMAND_CLASS_SECURITY_V1	1	None
COMMAND_CLASS_SECURITY_2_V1	1	None
COMMAND_CLASS_SUPERVISION_V1	1	None
COMMAND_CLASS_APPLICATION_STATUS_V1	1	None
COMMAND_CLASS_INCLUSION_CONTROLLER_V1	1	None
COMMAND_CLASS_CRC_16_ENCAP	1	None

COMMAND_CLASS_BASIC_V2	2	Highest granted Security Class
COMMAND_CLASS_CONFIGURATION_V4	4	Highest granted Security Class
COMMAND_CLASS_ASSOCIATION_V2	2	Highest granted Security Class
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V3	3	Highest granted Security Class
COMMAND_CLASS_VERSION_V3	3	Highest granted Security Class
COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2	2	Highest granted Security Class
COMMAND_CLASS_DEVICE_RESET_LOCALLY_V1	1	Highest granted Security Class
COMMAND_CLASS_POWERLEVEL_V1	1	Highest granted Security Class
COMMAND_CLASS_FIRMWARE_UPDATE_MD_V5	5	Highest granted Security Class
COMMAND_CLASS_INDICATOR_V3	3	Highest granted Security Class

4 Set Up

Use this USB Stick as a Z-Wave radio for your DIY smart home system. Simply connect it to a USB port on your PC, laptop, or Raspberry Pi and match it with home automation software (host software) of your choice to enjoy a fully secure, private Z-Wave Plus mesh network.

SerialAPI Mode:
Once the USB Stick is plugged into the USB port of the host computer, it automatically enrolls in the SerialAPI mode and remains active (awake), always listening for commands sent from the host software and relaying them to the Z-Wave devices in the network. It acts as a Z-Wave signal adapter for your smart home system, translating any Z-Wave reports and notifications sent by devices in your network to your smart home interface.

4.1 Windows Set Up

Windows 2000, XP, Vista, 7, 8 (32 / 64 bit)
The device will display in Device Manager under Ports. You can access it through the Windows CreateFile API using "//.//COMxxx" where xxx stands for the COM port number assigned by Windows. UZB.INF and UZB.CAT are listed in the Z-Wave SDK which uses the standard usbser.sys or usbser64.sys Windows driver.

4.2 Linux Set Up

Linux kernel 2.6.24+
The device will display as "/dev/ttyACMxx" where xx stands for the tty number assigned by Linux.

4.3 Mac Os Set Up

MAC OS X 6.4

The device will display as “/dev/tty.usbmodemxxx” where xxx stands for the tty number assigned by Mac OS.

4.4 Stick As Secondary Controller

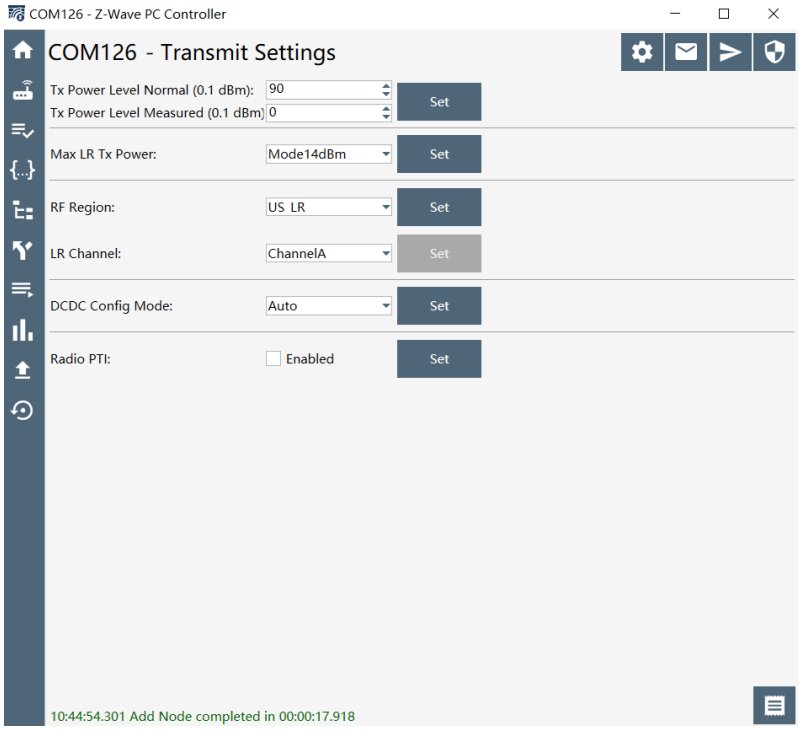
You can use the Stick as a secondary controller with your existing Z-Wave system if it accepts additional controllers. To enroll the Stick in your current system, send the inclusion command and put the Stick into learning mode, using the SerialAPI mode.

Factory Reset

The Stick can only be reset by the host software while it's in SerialAPI mode. The device is reset once an appropriate command from the host software is sent to reset the Z-Wave network. There is no way to manually reset the Stick if it's not controlled by host software.

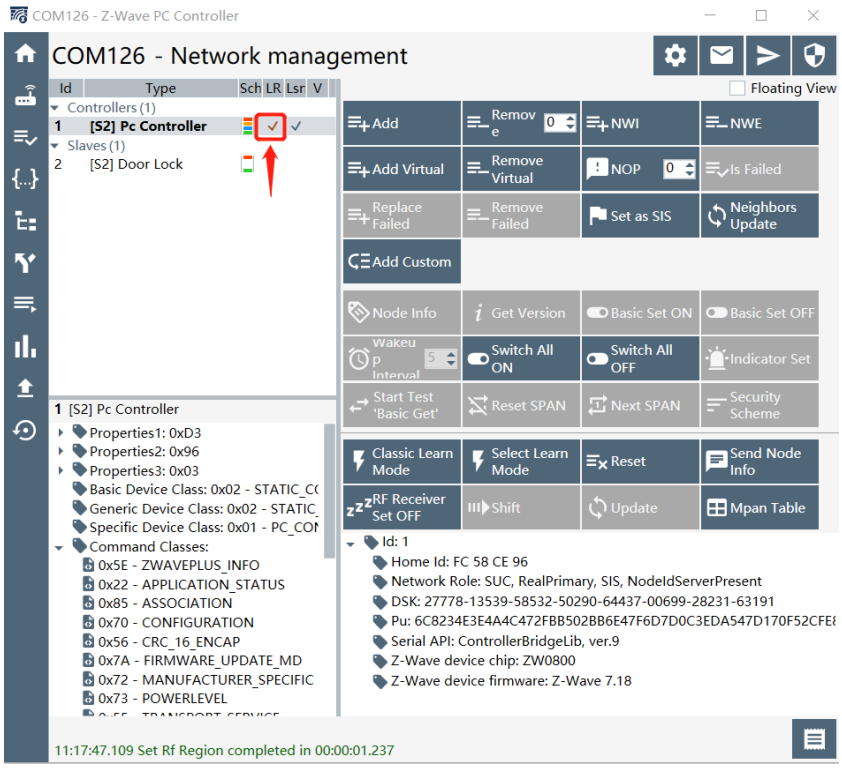
4.5 Set up Z-Wave Long Range

There are 2 channel for Z-Wave Long Range, 912 MHz default channel and 920 MHz back up channel. PC Controller provides a 'Transmit Settings' View which can be used to change the frequency easily.



Setting Region to "US_LR" will enable the Long Range capability for the controller. For further LR Channel selection, you can configure it through the LR Channel option. ChannelA represents the 912 MHz and it is used by default while ChannelB represents the 920 MHz back up Z-Wave Long Range channel.

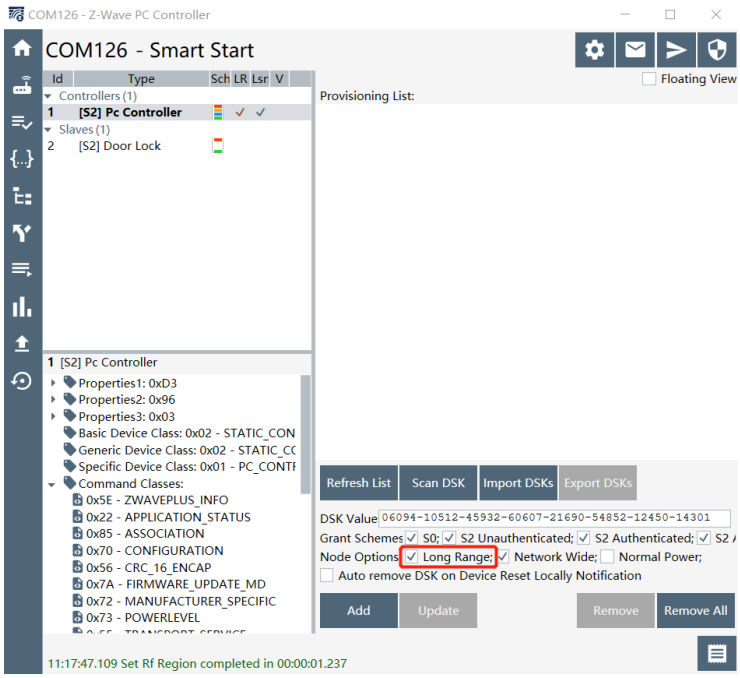
After connecting the Z-Wave Controller to PC Controller, you are expected to see the red tick below 'LR', indicating that the controller can support Z-Wave Long Range.



Joining Network

Z-Wave Long Range device can only support be included via SmartStart.

Extract the DSK from end device and paste it into the DSK Value in PC Controller, make sure the 'Long Range' option is ticked.



In the scanning process when using US_LR frequency, the end device will switch between 2 PHY setups, the classic US PHY and the LR PHY with both LR channels active. When the inclusion of end device starts, it will settle on using the PHY that was used by the controller for inclusion. In other

words, during learn mode, a end node that support LR will send SmartStart Prime on both classic Z-Wave and Z-Wave LR PHY, both request are send up to the host on the controller and it is the host's responsibility to determine which PHY is used for inclusion.
The controller doesn't do channel scanning the same way as in end device.The controller will scan 4 channels, including 3 classic Z-Wave channels 9.6/40/100 kbps and 1 LR channel, using US_LR frequency will scan at 912 MHz while using US_LR_BACKUP will scan at 920 MHz during startup. The active LR channel can be switch at runtime.

5 Special Rule of Each Command

5.1 Basic Command Class

Basic CC not maps to any CC

5.2 Association Command Class

The Stick support 1 association groups and max 232 nodes.

Grouping Identifier	**Max Nodes**	**Send Commands**
Group 1(Lifeline Group)	232	Basic Report.

5.3 Indicator Command Class

The Receptacle support the Indicator Command Class, version 3 and support the Indicator ID 0x50 (Identify) and Properties ID 0x03, 0x04 and 0x05