## Operational Description:  HA20 – 600W Dimmer switch module

Power is supplied to the HA20 power Printed Circuit Board (PCB) via a LINE VOLTAGE wire lead and a LOAD wire lead output. The 120VAC input voltage is converted to supply 3.3VDC to the RF module. The LINE input is monitored for zero-cross with isolation circuitry feeding directly into the Z-wave ASIC. The triac, for varying the dimming of the light load plugged into the device, is controlled by the ASIC triac control output, further isolated by transistor circuitry and an optocoupler.

The RF module PCB is a separate PCB that houses the Z-wave ASIC, crystal, EEPROM, various supporting components, and the RF front end. The RF module PCB is attached to a key PCB via castellation notches soldered directly to pads on the key PCB. A single LED provides feedback function for displaying ON, OFF, dimming, or receiving transmission (FLASHING). A wire whip antenna measuring approximately 3.25” in length, is soldered directly to the RF module PCB. Local control of the device is achieved via two tact switches interfaced to the Z-wave ASIC. The key PCB interfaces with the power PCB via a header.

Other interfaces to the power PCB include the LOAD wire used for hard-wiring lamp loads to the dimmer output, a TRAVELER wire used for sensing a switch closure for implementing 3-way capability, and the HOT wire used to hard-wire the device to a 120VAC power source.

The basic functions of the HA20 include turn ON, turn OFF, dim-up, and dim-down. A momentary press and release of the pushbutton will toggle the state of the device ON or OFF. A press and hold of the button will toggle either a dim-up or dim-down. Releasing the button and executing a press and hold a second time will toggle the opposite dim function (either dim-down or dim-up). The device may also be controlled via a separate remote control transmitter (not included) to turn ON, OFF, or DIM, when the correct commands are received by the device’s receiver.