BLTouch-Smart : Auto Bed Leveling Sensor for 3D Printers

BLTouch - Smart				Servo No. : 0
BLTouch-Smart	G-code			
	Available PWM Range	**Marlin** Servo PWM	**Repetier** Servo PWM	**Smoothieware**
Push-pin Down 700 us (10˚)	700 us (10˚)	M280 P0 S10	M340 P0 S700 (Probe start script)	M280 S3.0
Push-pin Up 1500 us (90˚)	1500 us (90˚)	M280 P0 S90	M340 P0 S1500 (Probe finished script)	M280 S7.0
Self-test 1800 us (120˚)	1800 us (120˚)	M280 P0 S120	M340 P0 S1800	M280 S8.4
Alarm Release & Push-pin UP 2200 us (160˚)	2100 ~ 2400 us (150˚ ~ 180˚)	M280 P0 S160	M340 P0 S2200	M280 S10.6
Wiring Test & Touch SW Mode 1200 us (60˚)	1200 us (60˚)	M280 P0 S60	M340 P0 S1200	M280 S5.5

Specification		BLTouch CAD Dimension
Voltage(Brown-Red wire)	4.8 ~ 5.1 V	
Current	15mA	
Maximum(Peak) Current	300mA	
Z Probe Output Losic	5V / 3.3V(internal)	
Color	Semitransparent White	
SMT & Soldering	Lead Free	
Cable Length	150±5 mm	
Weight	0.35 oz (10g)	
Wiring	**3Pin** : Brown(-, GND) Red(+5V) Orange(control signal) **2Pin** : Black(-, GND) White(Zmin)	

※ Additional power supply can be needed in case which your board does not supply enough amperage.
※ Electronic devices can be damaged or even destroyed if connected to the wrong side polarity.
  [wrong terminal connect to 5V(+) and GND(-)]
※ Now, **you don't need 240Ω, 10KΩ resistor for 3.3V logic Board**
※ The action as pulling/pushing hard the push-pin can make the BLTouch damaged and less accurate.

■ Signal Timing Diagram

Correct position of Core	If your board is 3.3V Logic, please following below
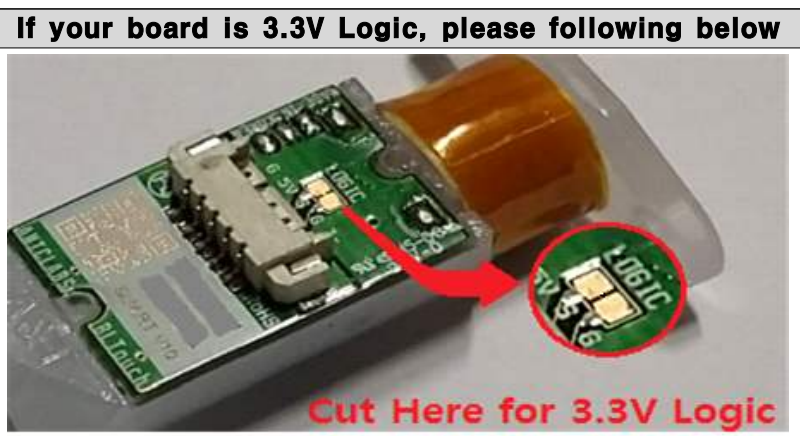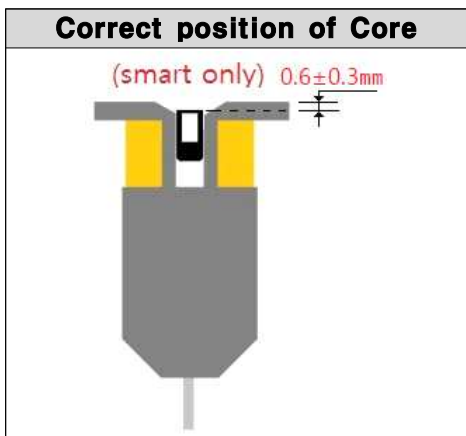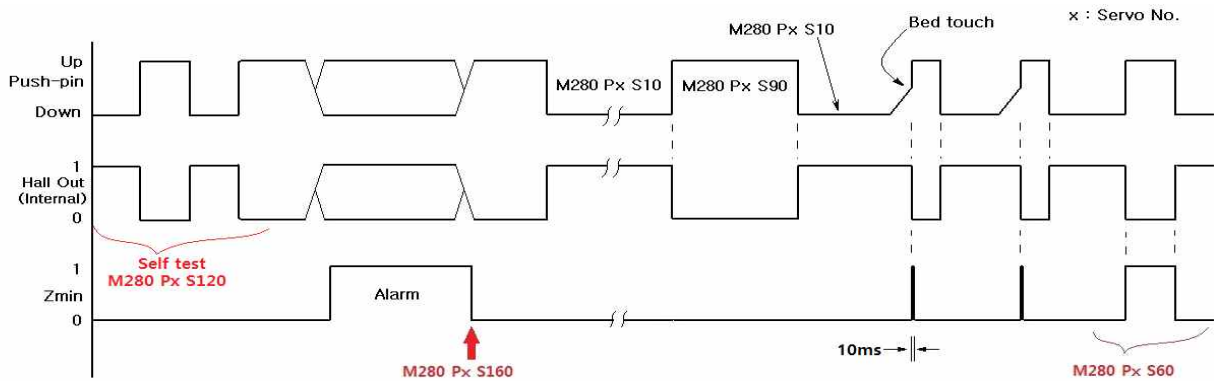
■ Setting (e.g. Marlin firmware)

Please refer to other auto bed leveling setting documents (Youtube or G+, etc.).
Troubleshooting : https://igg.me/at/BLTouch-C/ts/11834379

Marlin 1.1.x(1.1.6) Setting

Step 1 : Copy the file below and overwrite at the Marlin folder. <== e.g. **Delta**
          Marlin₩example_configurations₩delta₩generic₩Configuration.h
          Marlin₩example_configurations₩delta₩generic₩Configuration_adv.h
Step 2 : Look at the Configuration.h at your previous firmware and edit Configuration.h at Marlin 1.1.x
Step 3 : Check your 3D printer works well.
Step 4 : Please install your BLTouch.
Step 5 : Edit Configuration.h and Configuration_adv.h like below.

■ Configuration.h

```
//============================ Endstop Settings ============================
#define USE_ZMIN_PLUG

//============================ Z Probe Options ============================
#define Z_MIN_PROBE_USES_Z_MIN_ENDSTOP_PIN
//#define Z_MIN_PROBE_ENDSTOP
//#define FIX_MOUNTED_PROBE
#define BLTOUCH
#if ENABLED(BLTOUCH)
  #define BLTOUCH_DELAY 100      // *option
#endif
#define PROBING_HEATERS_OFF     // *option
#define PROBING_FANS_OFF        // *option
#define X_PROBE_OFFSET_FROM_EXTRUDER 0     //Your BLTouch X_PROBE_OFFSET_FROM_EXTRUDE
#define Y_PROBE_OFFSET_FROM_EXTRUDER -22   //Your BLTouch Y_PROBE_OFFSET_FROM_EXTRUDE
#define Z_PROBE_OFFSET_FROM_EXTRUDER -1.9  //Your BLTouch Z_PROBE_OFFSET_FROM_EXTRUDE
#define Z_CLEARANCE_DEPLOY_PROBE    15     // set up at least 15
#define Z_CLEARANCE_BETWEEN_PROBES  10     // set up at least 10

//============================ Bed Leveling ============================
// Choose a line of below lines and remove // at the start of the line
//#define AUTO_BED_LEVELING_3POINT
//#define AUTO_BED_LEVELING_LINEAR
#define AUTO_BED_LEVELING_BILINEAR
//#define AUTO_BED_LEVELING_UBL
//#define MESH_BED_LEVELING

//============================ Additional Features ============================
#define EEPROM_SETTINGS // Enable for M500 and M501 commands

//============================ R/C SERVO support ============================
#define NUM_SERVOS 3 // set up at least 1
#define SERVO_DELAY { 300, 300, 300 }
```

Previous Versions before Marlin RC7

■ Configuration.h

```
    //============================ Mechanical Settings ============================
    const bool Z_MIN_ENDSTOP_INVERTING = false;

    //============================ Z Probe Options ============================
    //#define Z_MIN_PROBE_ENDSTOP                 // *RC4 ~ RC6
    #define Z_MIN_PROBE_USES_Z_MIN_ENDSTOP_PIN  // *RC4 ~ RC6

    //============================ Bed Auto Leveling ============================
    #define AUTO_BED_LEVELING_FEATURE
    #define X_PROBE_OFFSET_FROM_EXTRUDER 20      //Your BLTouch X_PROBE_OFFSET_FROM_EXTRUDE
    #define Y_PROBE_OFFSET_FROM_EXTRUDER -20     //Your BLTouch Y_PROBE_OFFSET_FROM_EXTRUDE
    #define Z_PROBE_OFFSET_FROM_EXTRUDER -1.0    //Your BLTouch Z_PROBE_OFFSET_FROM_EXTRUDE
    #define Z_SAFE_HOMING

    //============================ R/C SERVO support ============================
    #define NUM_SERVOS 3
    #define SERVO_ENDSTOP_ANGLES {{0,0}, {0,0}, {10,90}}              // 10=deploy, 90=retract
    //#define DEACTIVATE_SERVOS_AFTER_MOVE
```

If you want more additional information about the other versions, please visit our website, www.antclabs.com