

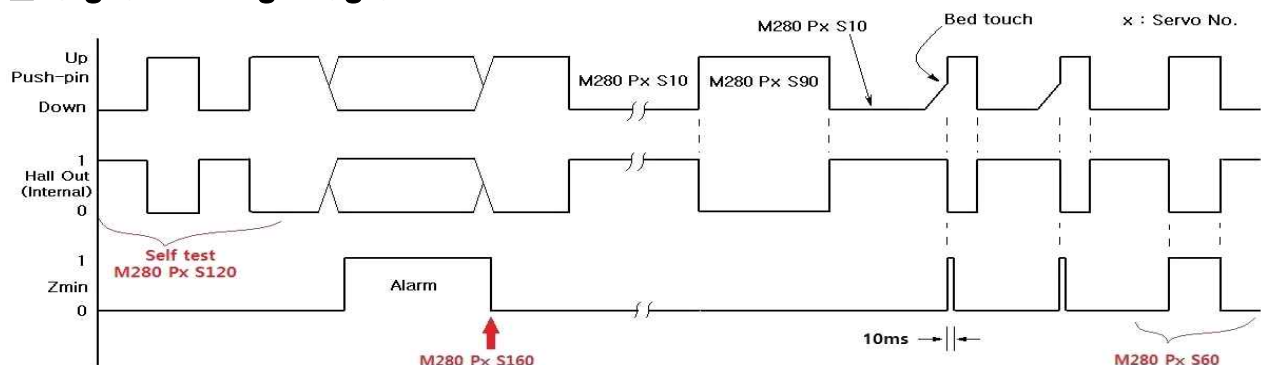
# BLTouch - Classic : Auto Bed Leveling Sensor for 3D Printers

BLTouch - Classic (BLTouch-C)				Servo No. : 0
BLTouch-Classic	G-code			
	Available PWM Range	Marlin Servo PWM	Repetier Servo PWM	Smoothieware
Push-pin Down 700 us ( 10° )	550 ~ 800 us ( 0° ~ 20° )	M280 P0 S10 ( M401 )	M340 P0 S700 (Probe start script )	M280 S3.0
Push-pin Up 1500 us ( 90° )	1400 ~ 1600 us ( 80° ~ 100° )	M280 P0 S90 ( M402 )	M340 P0 S1500 (Probe finished script)	M280 S7.0
Self-test 1800 us ( 120° )	1700 ~ 1900 us ( 110° ~ 130° )	M280 P0 S120	M340 P0 S1800	M280 S8.4
Alarm Release 2200 us ( 160° )	2100 ~ 2400 us ( 150° ~ 180° )	M280 P0 S160	M340 P0 S2200	M280 S10.6
M119 Test Mode 1200 us ( 60° )	1100 ~ 1300 us ( 50° ~ 70° )	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 Voltage	4.8 ± 0.5 V	
Color	Semitransparent White	
SMT & Soldering	Lead Free	
Cable Length	150±5 mm	
Weight	0.35 oz (10g)	
Wiring	<b>3Pin</b> : Brown(-, GND) Red(+5V) Orange(control signal) <b>2Pin</b> : 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  
<https://plus.google.com/113792662927481823969/posts/5yfLRs2N7JQ>
- ※ The action as pulling/pushing hard the push-pin can make the BLTouch damaged and less accurate.

## Signal Timing Diagram



\* BLTouch-C does not provide direct hall signal. Zmin is generate properly(to improve precision) by using hall signal at ATtiny13A.

Correct position of Core	If your board is 3.3V Logic, please following below

- to be continued on the back -

[www.antclabs.com](http://www.antclabs.com)

[www.bltouch.com](http://www.bltouch.com)

PayPal Account & Email : [antclabs@gmail.com](mailto:antclabs@gmail.com)

If you want to order through PayPal, please send us e-mail including quantity, address, zip code, phone number and name.

## ■ Setting Configuration.h (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 RC7 / RCBugFix **Cartesian** configuration.h Setting

Step 1 : Look at the Configuration.h at your previous firmware and edit Configuration.h at RC7.

Step 2 : Check your 3D printer works well.

Step 3 : Please install your BLTouch.

Step 4 : Edit Configuration.h like below.

```
//===== Z Probe Options =====
#define BLTOUCH //remove // at the start of the line
#define X_PROBE_OFFSET_FROM_EXTRUDER -31 //Your BLTouch X_PROBE_OFFSET_FROM_EXTRUDE
#define Y_PROBE_OFFSET_FROM_EXTRUDER 5 //Your BLTouch Y_PROBE_OFFSET_FROM_EXTRUDE
#define Z_PROBE_OFFSET_FROM_EXTRUDER -1.5 //Your BLTouch Z_PROBE_OFFSET_FROM_EXTRUDE
#define XY_PROBE_SPEED 4000
#define Z_PROBE_SPEED_FAST HOMING_FEEDRATE_Z / 2
#define Z_PROBE_SPEED_SLOW (Z_PROBE_SPEED_FAST / 4)
//#define Z_MIN_PROBE_ENDSTOP //add // at the start of the line
#define Z_MIN_PROBE_USES_Z_MIN_ENDSTOP_PIN //remove // at the start of the line
//===== Bed Auto Leveling =====
#define AUTO_BED_LEVELING_FEATURE //RC7, remove // at the start of the line
// Choose a line of below three 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 Z_SAFE_HOMING //remove // at the start of the line ←option
//===== R/C SERVO support =====
#define NUM_SERVOS 3 //remove // at the start of the line
```

### Marlin RC7 / RCBugFix **Delta** configuration.h Setting

Step 1 : Copy the file below and overwrite at the Marlin folder.

MarlinWexample\_configurationsWdeltaWgenericWConfiguration.h

MarlinWexample\_configurationsWdeltaWgenericWConfiguration\_adv.h

Step 2 : Save as other name

Step 3 : Look at the Configuration.h at your previous firmware and edit Configuration.h at RC7 / RCBugFix

Step 4 : Check your 3D printer works well.

Step 5 : Please install your BLTouch.

Step 6 : Edit Configuration.h like below.

```
//===== Z Probe Options =====
#define BLTOUCH //remove // at the start of the line
#define X_PROBE_OFFSET_FROM_EXTRUDER 0 //Your BLTouch X_PROBE_OFFSET_FROM_EXTRUDE
#define Y_PROBE_OFFSET_FROM_EXTRUDER -23 //Your BLTouch Y_PROBE_OFFSET_FROM_EXTRUDE
#define Z_PROBE_OFFSET_FROM_EXTRUDER -1.5 //Your BLTouch Z_PROBE_OFFSET_FROM_EXTRUDE
#define XY_PROBE_SPEED 4000
#define Z_PROBE_SPEED_FAST HOMING_FEEDRATE_Z / 2
#define Z_PROBE_SPEED_SLOW (Z_PROBE_SPEED_FAST / 4)
//#define Z_MIN_PROBE_ENDSTOP //add // at the start of the line
#define Z_MIN_PROBE_USES_Z_MIN_ENDSTOP_PIN //remove // at the start of the line
//===== Bed Auto Leveling =====
#define AUTO_BED_LEVELING_FEATURE //RC7, remove // at the start of the line
// Choose a line of below three 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 DELTA_PROBEABLE_RADIUS (DELTA_PRINTABLE_RADIUS - 50) //Recommend to edit over 30
#define MANUAL_X_HOME_POS 0 // remove // at the start of the line
#define MANUAL_Y_HOME_POS 0 // remove // at the start of the line
#define HOMING_FEEDRATE_Z 3000 // Put a value which you want to HOMING_FEEDRATE_Z
//===== R/C SERVO support =====
#define NUM_SERVOS 3 //remove // at the start of the line
```

### Previous Versions before RC7

Before installing BLTouch, please setup your configuration.h and check if it works well with your 3D printer.

```
//===== Mechanical Settings =====
const bool Z_MIN_ENDSTOP_INVERTING = false;
//===== Z Probe Options =====
//#define Z_MIN_PROBE_ENDSTOP // add // at the start of the line *RC4 ~ RC6
#define Z_MIN_PROBE_USES_Z_MIN_ENDSTOP_PIN //remove // at the start of the line *RC4 ~ RC6
//===== Bed Auto Leveling =====
#define AUTO_BED_LEVELING_FEATURE //remove // at the start of the line
#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 //remove // at the start of the line ←option
//===== R/C SERVO support =====
#define NUM_SERVOS 3 //remove // at the start of the line
#define Z_ENDSTOP_SERVO_NR 0 //remove // at the start of the line
#define SERVO_ENDSTOP_ANGLES {{0,0}, {0,0}, {10,90}} //remove //, 10=deploy, 90=retract
//#define DEACTIVATE_SERVOS_AFTER_MOVE //Don't remove // at the start of the line
```