**BLTouch** : Auto Bed Leveling Sensor for 3D Printers

**BLTouch - Smart V1.0**

<table>
<thead>
<tr>
<th>BLTouch-Smart</th>
<th>G-code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Available PWM Range</strong></td>
<td><strong>Marlin Servo PWM</strong></td>
</tr>
<tr>
<td>Push-pin Down 650 us (10°)</td>
<td>M280 Px S10</td>
</tr>
<tr>
<td>Push-pin Up 1475 us (90°)</td>
<td>M280 Px S90</td>
</tr>
<tr>
<td>Self-test 1780 us (120°)</td>
<td>M280 Px S120</td>
</tr>
<tr>
<td><strong>Alarm Release &amp; Push-pin UP 2190 us (160°)</strong></td>
<td>M280 Px S160</td>
</tr>
<tr>
<td><strong>Alarm Release &amp; Touch SW Mode 1165 us (60°)</strong></td>
<td>M280 Px S60</td>
</tr>
</tbody>
</table>

**Specification**

- **Voltage** (Brown-Red wire): 4.8 ~ 5.1 V
- **Current**: 15mA
- **Maximum(Peak) Current**: 300mA
- **Z Probe Output Logic**: 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)

**BLTouch CAD Dimension**

- 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

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**www.antclabs.com**  **www.bltouch.com**  **PayPal Account & Email : 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 (e.g. Marlin firmware)
Please refer to other auto bed leveling setting documents ([Youtube](https://igg.me/at/BLTouch-C/ts/11834379) or G+, etc.).

### Troubleshooting
For more information, please visit our website, [www.antclabs.com](http://www.antclabs.com).

<table>
<thead>
<tr>
<th>Marlin RC8BugFix, RC7</th>
<th>Cartesian, Delta configuration.h Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1 : Copy the file below and overwrite at the Marlin folder. &lt;= e.g. Delta</td>
<td></td>
</tr>
<tr>
<td>MarlinWexample_configurationsWdeltaWgenericWConfiguration.h</td>
<td></td>
</tr>
<tr>
<td>MarlinWexample_configurationsWdeltaWgenericWConfiguration_adv.h</td>
<td></td>
</tr>
<tr>
<td>Step 2 : Look at the Configuration.h at your previous firmware and edit Configuration.h at RC8 BugFix Step 3 :</td>
<td></td>
</tr>
<tr>
<td>Check your 3D printer works well. Step 4 : Please install your BLTouch.</td>
<td></td>
</tr>
<tr>
<td>Step 5 : Edit Configuration.h like below.</td>
<td></td>
</tr>
</tbody>
</table>

```c
// Endstop Settings
#define ENDSTOP_INTERRUPTS_FEATURE //option RC8 only

// Z Probe Options
#define BLTOUCH //remove // at the start of the line
#define BLTOUCH_DELAY 375 // RC8BugFix
#define BLTOUCH_HEATERS_OFF // RC8BugFix
#define Y_PROBE_OFFSET_FROM_EXTRUDER 0 //Your BLTouch X_PROBE_OFFSET_FROM_EXTRUDER
#define Z_PROBE_OFFSET_FROM_EXTRUDER -1.5 //Your BLTouch Z_PROBE_OFFSET_FROM_EXTRUDER
/*
#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_3POINT //option RC4 ~ RC6
#define AUTO_BED_LEVELING_LINEAR
#define AUTO_BED_LEVELING_BILINEAR

// 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}} //10=deploy, 90=retract
#define DEACTIVATE_SERVOS_AFTER_MOVE //Don't 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.

```c
// 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

// 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_EXTRUDER
#define Y_PROBE_OFFSET_FROM_EXTRUDER -20 //Your BLTouch Y_PROBE_OFFSET_FROM_EXTRUDER
#define Z_PROBE_OFFSET_FROM_EXTRUDER -1.0 //Your BLTouch Z_PROBE_OFFSET_FROM_EXTRUDER
#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}} //10=deploy, 90=retract
```

If you want more additional information about the other versions, please visit our website, [www.antclabs.com](http://www.antclabs.com).