

Having completed all the steps in the Physical Installation Guide successfully, you can now integrate your new Tru-Touch piezo probe into your Klipper configuration so you can start using it.

Basic (and most crucial) configuration takes place in the `printer.cfg` file, where all hardware features must be clearly specified.

With proper (re-)wiring, the two most important signals are covered: Z-MIN feedback signal, and the SERVO probe control signal.

Configuration Options: BLTouch Mode vs. Simple Probe Mode

Tru-Touch may be configured either as a direct BLTouch/CR-Touch replacement from the signaling perspective, or as a probe with the simple ON/OFF control signal.

Depending on the way it is configured in the `printer.cfg` file, the probe will automatically switch to the chosen mode.

Both modes have their pros and cons.

Choosing the BLTouch compatible mode you are bound to tight PWM timing/control signals, which may be misinterpreted in some printers due to noise, timing jitter, or board-specific quirks. This could cause misinterpretation of deploy/stow commands, potentially leading to bed crashes, false triggers, or no triggers at all.

The Tru-Touch probe emulates only the basic BLTouch commands, as the Touch Mode Fast scanning mode cannot be safely implemented with piezo sensors.

However, BLTouch mode allows for an almost plug-and-play configuration if you already have a BLTouch defined in printer.cfg.

The Simple Probe Mode offers a very simple and straightforward configuration, while giving you full control over probing speed and various other probing parameters.

It uses the same wiring and control signals as the BLTouch mode, so no printer board rewiring is required. BLTouch probe control signals may be safely reused.

This mode is also slightly faster than the BLTouch mode as Klipper must take care of just ON and OFF states instead of handling more complicated PWM control signal sequences.

The following sections explain both modes in detail, including recommended printer.cfg entries and tuning tips for optimal piezo performance.

BLTouch Mode

[bltouch]

```
sensor_pin: your sensor (Z-MIN) pin designator    # for instance PF12
```

```
control_pin: your control (servo) pin designator # for instance PB10
```

```
pin_move_time: 0.020      # must be set low to avoid conflict with Tru-Touch timing
```

```
stow_on_each_sample: True    # must be set True for proper Tru-Touch operation
```

```
probe_with_touch_mode: False # no Touch Mode is available
```

```
x_offset: 0          # this offset must be set to "0" as the nozzle is your probe
```

```
y_offset: 0          # this offset must be set to "0" as the nozzle is your probe
```

```
z_offset: 0          # this offset must be set to "0" as the nozzle is your probe
```

```
speed: 6.7          # adjust within safe limits [5, 7] mm/s
```

```
lift_speed: 30
```

```
sample_retract_dist: 4      # set it the same as the [stepper_z]:homing_retract_dist
```

```
#samples: 3          # the number of samples to take at the same x/y spot
```

```
#samples_result: median      # samples beyond the samples_tolerance will be discarded
```

```
#samples_tolerance: 0.010    #samples_tolerance_retries: 3
```

Simple Probe Mode:

```
[probe]
pin: your sensor (Z-MIN) pin designator      # for instance PF12
x_offset: 0                                # this offset must be set to "0" as the nozzle is your probe
y_offset: 0                                # this offset must be set to "0" as the nozzle is your probe
z_offset: 0                                # this offset must be set to "0" as the nozzle is your probe
speed: 6.7                                # adjust within safe limits [5, 7] mm/s
sample_retract_dist: 4 # set it equal to [stepper_z]:homing_retract_dist
#samples: 3                                # the number of samples to take at the same x/y spot
#samples_result: median # samples beyond the samples_tolerance will be discarded
#samples_tolerance: 0.010
#samples_tolerance_retries: 3
```

activate_gcode:

PROBE_ON

deactivate_gcode:

PROBE_OFF

#----- Control Pin Macro for the Simple Probe Mode -----

[output_pin servo_pin]

pin: your control (servo) pin designator # for instance PB10

pwm: False

value: 0

[gcode_macro PROBE_DEPLOY]

gcode:

SET_PIN PIN=servo_pin VALUE=0

[gcode_macro PROBE_STOW]

gcode:

SET_PIN PIN=servo_pin VALUE=1

#-----

Settings common to both modes:

[stepper_z]

position_min: -1.0 # too low value may cause no trigger error,
 # due to motion planner limitations

homing_speed: 6.7

homing_retract_dist: 4 # Distance to back off after first and second homing

second_homing_speed: 6.7 # should be given the same value as the homing_speed

[safe_z_home]

z_hop: 4 # Distance (in mm) to lower the bed prior to first homing.
 # Best to set it the same as the [stepper_z]:homing_retract_dist

[bed_mesh]

horizontal_move_z: 4 # The height (in mm) that the bed should move to,
 # just prior to starting a mesh probe operation.
 # Set it the same as the [stepper_z]:homing_retract_dist

#-- Extra macros needed for easy Tru-Touch probe setup for both modes --

Use the UNLOCK_Z macro to move the bed up or down if G28 fails to home the Z AXIS

```
[force_move]                # This block is required by the SET_KINEMATIC_POSITION
                             # commands in the UNLOCK_Z macro below
```

enable_force_move: True

```
[gcode_macro UNLOCK_Z]
```

```
  gcode: SET_KINEMATIC_POSITION Z=100
```

#-----

Note: Only parameters directly impacting the Tru-Touch probe's operation have been displayed above. Other parameters may be left unmodified as they were before if they don't collide with settings discussed above.

If the parameter "z_offset" is present in the SAVE_CONFIG section, remove it as it will override, thus invalidate your "0" offset settings.

The [bltouch] and the [probe] sections cannot be defined at the same time within the same printer.cfg file, as that will cause configuration conflict.

Whichever mode you choose, you may switch to the other at any time, as once properly (re-)wired, your probe is electrically identical for both modes, hence the same pins are used in both cases.

Hence the power up sequence has been covered in the installation Guide, we may proceed to the Probe Tuning Guide.