Ender 5 Pro Duet 2 Wifi, Hemera, Bltouch, Firmware 3.0

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This is my detailed guide to upgrade a Creality Ender 5pro with Hemera and Bltouch from Creality silent board 1.15 to Duet 2 Wifi with Firmaware 3.0
The printer run silently and without major issues, but the reduced menus and lack of wifi connectivity were enough reasons to upgrade.
I had the printer for only 4 months. It is time to work with the Pros.

I am struggling with several things

Endstops
Homing
Bed Compensation

Here is my story recorded. Once we made it right I plant to post this guide corrected for others that like to follow later

Let's start with a picture.
I have extended the X axis by displacing the front bar of the printer to recover the space lost by the hemera volume
By Bed dimensions are 220 X 220 X 300 mm

I am using the RepRap configuration tool

Welcome to the RepRapFirmware Configuration Tool

Please follow this wizard to obtain an individual configuration bundle for your printer

If you are using a printer that was originally shipped with RepRapFirmware, you can select a predefined template here:

- ○ T3P3 Mini Kossel
- ○ RepRapPro Ormerod 1
- ○ RepRapPro Ormerod 2
- ○ RepRapPro Fisher
- ○ Creality Ender 3 Pro

The following machine templates were contributed by users and have not been throughly tested:

- ○ Anet A8
- ○ Distech Prometheus System
- ○ Reach3D Printer
- ○ Wanhao Duplicator i3

Alternatively, you can create your own individual configuration by creating a new one from scratch or by loading an existing JSON template:

- ● Custom configuration
- ○ Use existing configuration

Note: If you encounter problems, please report your problems on GitHub.
Some configuration options may not be available yet. In this case please refer to the Duet3D wiki.

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I have copied the values I had in the old marlin configuration.h file for reference

```
 * Default Axis Steps Per Unit (steps/mm)
 * Override with M92
 *                                        X, Y, Z, E0 [, E1[, E2[, E3[, E4]]]]
 */
#define DEFAULT_AXIS_STEPS_PER_UNIT   { 80, 80, 792, 409 }

/**
 * Default Max Feed Rate (mm/s)
 * Override with M203
 *                                        X, Y, Z, E0 [, E1[, E2[, E3[, E4]]]]
 */
#define DEFAULT_MAX_FEEDRATE          { 500, 500, 5, 25 }

/**
 * Default Max Acceleration (change/s) change = mm/s
 * (Maximum start speed for accelerated moves)
 * Override with M201
 *                                        X, Y, Z, E0 [, E1[, E2[, E3[, E4]]]]
 */
#define DEFAULT_MAX_ACCELERATION      { 500, 500, 100, 5000 }
```

```
 * Default Jerk (mm/s)
 * Override with M205 X Y Z E
 *
 * "Jerk" specifies the minimum speed change that requires acceleration.
 * When changing speed and direction, if the difference is less than the
 * value set here, it may happen instantaneously.
 */
#define DEFAULT_XJERK                10.0
#define DEFAULT_YJERK                10.0
#define DEFAULT_ZJERK                 0.3
#define DEFAULT_EJERK                 5.0
```

Axes

Drive	Direction	Microstepping (interpolation)	Steps per mm	Max. Speed Change (mm/s)	Max. Speed (mm/s)	Acceleration (mm/s²)	Motor Current (mA)
X	Forwards	x16 (on) *interpolated to x256*	80 ✔	10 ✔	500 ✔	500 ✔	800 ✔
Y	Forwards	x16 (on) *interpolated to x256*	80 ✔	10 ✔	500 ✔	500 ✔	800 ✔
Z	Backwards	x16 (on) *interpolated to x256*	792 ✔	0.3 ✔	5 ✔	100 ✔	800 ✔

Extruders

Drive	Direction	Microstepping (interpolation)	Steps per mm	Max. Speed Change (mm/s)	Max. Speed (mm/s)	Acceleration (mm/s²)	Motor Current (mA)
E0	Forwards	x16 (on) *interpolated to x256*	409 ✔	5 ✔	25 ✔	5000 ✔	800 ✔

Motor Current Reduction

☑ Reduce motor currents when idle

Idle Current Percentage:

| 30 ✔ | % |

Idle Timeout:

| 30 ✔ | s |

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Expansion Boards

No Expansion Boards configured

Drives

Drive	Driver	Endstop Pin
X	X	xstop
Y	Y	ystop
Z	Z	(not assigned)
E0	E0	

Heaters

Index	Type	Output	Sensor
0	Bed	bedheat	bedtemp
1	Nozzle	e0heat	PT1000 on e0temp

Z-Probe

Pin	Assignment
Input Pin	zprobe.in
Modulation Pin	zprobe.mod
PWM Control Channel (BLTouch only)	exp.heater3

Fan Mapping

Fan	Output
Fan 0	fan0
Fan 1	fan1

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```
#define Z_MIN_PROBE_USES_Z_MIN_ENDSTOP_PIN
```

```
*    #define X_PROBE_OFFSET_FROM_EXTRUDER 10
*    #define Y_PROBE_OFFSET_FROM_EXTRUDER 10
*
*      +-- BACK ---+
*      |           |
*    L |    (+) P  | R <-- probe (20,20)
*    E |           | I
*    F | (-) N (+) | G <-- nozzle (10,10)
*    T |           | H
*      |    (-)    | T
*      |           |
*      O-- FRONT --+
*    (0,0)
*/
#define X_PROBE_OFFSET_FROM_EXTRUDER -45  // X offset: -left  +right  [of the nozzle]
#define Y_PROBE_OFFSET_FROM_EXTRUDER 3   // Y offset: -front +behind [the nozzle]
#define Z_PROBE_OFFSET_FROM_EXTRUDER 0   // Z offset: -below +above  [the nozzle]

// Certain types of probes need to stay away from edges
#define MIN_PROBE_EDGE 15

// X and Y axis travel speed (mm/m) between probes
#define XY_PROBE_SPEED 15000

// Feedrate (mm/m) for the first approach when double-probing (MULTIPLE_PROBING == 2)
#define Z_PROBE_SPEED_FAST HOMING_FEEDRATE_Z

// Feedrate (mm/m) for the "accurate" probe of each point
#define Z_PROBE_SPEED_SLOW (Z_PROBE_SPEED_FAST / 2)
```

Endstop Configuration   Note

Axis	Endstop Type					Endstop Location at	
X	None	Active high (NC)	Active low (NO)	Z-Probe	Sensorless	Low end	High end
Y	None	Active high (NC)	Active low (NO)	Z-Probe	Sensorless	Low end	High end
Z	None	Active high (NC)	Active low (NO)	Z-Probe	Sensorless	Low end	High end

Z-Probe

Probe X Offset:	Probe Y Offset:	Probing Speed:	
-45 ✓ mm	3 ✓ mm	2 ✓ mm/s	☑ Deploy/Retract Probe

Probe Type

No Z Probe | Switch | **Unmodulated or Smart IR Probe** | Simple Modulated IR Probe | Smart Effector or Piezo | BLTouch

Trigger Height:

2.5 ✓ mm

Use a BLTouch for Z-probing (also see Duet3D wiki)

Make sure you change it to use +3.3V instead of +5V before you connect it or you risk damaging your board!

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General Heater Settings

☑ Heated Bed   ☐ Heated Chamber

Control Method:

[PID Bang-Bang]

Heater Configuration

Heater	Type	Temp. Limit	PWM Limit	R25	β	C
0	Heated Bed	120 ✓ C	100 ✓ %	100000 ✓ Ω	4138 ✓ K	0 ✓
1	Nozzle	300 ✓ C	100 ✓ %	100000 ✓ Ω	4138 ✓ K	0 ✓

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Cooling Fans

Name	Speed (%)	Frequency (Hz)	Thermostatic Control	Monitored Heaters	Thermostatic Mode Trigger Temperature
FAN0 ✓	0 ✓	500 ✓	Yes **No**	Bed E0	45 C
FAN1 ✓	100 ✓	500 ✓	**Yes** No	Bed **E0**	45 ✓ C

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Tool Preferences

☑ Wait for Temperatures to be Reached on Tool Change
☐ Select the First Tool on Start-Up

Tools   [+ Add Tool] [− Remove Tool]

Number	Name	Extruders	Heaters	Fans	XYZ Offsets
0 ✓	optional ✓	E0	E0	FAN0	☑ Edit

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Note: 3/4/5 Point Bed Compensation is deprecated. It has been replaced with the new Mesh Bed Compensation.

Bed Probing for Mesh Bed Compensation

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Bed Probing for Mesh Bed Compensation

X Minimum:	X Maximum:	Y Minimum:	Y Maximum:	Grid Spacing:
15 ✓ mm	160 ✓ mm	15 ✓ mm	200 ✓ mm	20 ✓ mm

Orthogonal Axis Compensation

☐ Enable Orthogonal Axis Compensation

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Network Settings

☑ Enable Network

Password for the web interface (HTTP), FTP, and Telnet: WiFi Access Point Name: WiFi Password:

reprap ✓   configure manually ✓   none ✓

☑ Acquire Dynamic IP Address via DHCP

☑ Enable HTTP (required for the web interface)
☐ Enable FTP
☐ Enable Telnet

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Extra Files

☑ Get the latest stable Duet Web Control version
☑ Get the latest stable RepRapFirmware version

Miscellaneous

Custom Settings for config.g: Full list of all available G-codes

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