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// 4 = Duemilanove w/ ATMega328P pin assignment
// 5 = Gen6
// 51 = Gen6 deluxe
// 6 = Sanguinololu < 1.2
// 62 = Sanguinololu 1.2 and above
// 63 = Melzi
// 64 = STB V1.1
// 7 = Ultimaker
// 71 = Ultimaker (Older electronics. Pre 1.5.4. This is rare)
// 8 = Teensylu
// 80 = Rumba
// 81 = Printrboard (AT90USB1286)
// 82 = Brainwave (AT90USB646)
// 9 = Gen3+
// 70 = Megatronics
// 90 = Alpha OMCA board
// 91 = Final OMCA board
// 301 = Rambo
```

```
//  
//    1k ohm pullup tables - This is not normal, you would have to have changed  
//                                (but gives greater accuracy and more stable PID)  
// 51 is 100k thermistor - EPCOS (1k pullup)  
// 52 is 200k thermistor - ATC Semitec 204GT-2 (1k pullup)  
// 55 is 100k thermistor - ATC Semitec 104GT-2 (Used in ParCan) (1k pullup)  
  
#define TEMP_SENSOR_0 -1  
#define TEMP_SENSOR_1 0  
#define TEMP_SENSOR_2 0  
#define TEMP_SENSOR_BED 0  
  
// Actual temperature must be close to target for this long before M109 returns  
#define TEMP_RESIDENCY_TIME 10      // (seconds)  
#define TEMP_HYSTERESIS      3 // (degC) range of +/- temperatures considered  
#define TEMP_WINDOW           1 // (degC) Window around target to start the reheat  
  
// The minimal temperature defines the temperature below which the heater will  
// turn off to check that the wiring to the thermistor is not broken.
```

```
#define K1 0.95 //smoothing factor withing the PID
#define PID_dT ((16.0 * 8.0)/(F_CPU / 64.0 / 256.0)) //sampling period of the temperature sensor

// If you are using a preconfigured hotend then you can use one of the value sets below
// Ultimaker
#define DEFAULT_Kp 22.2
#define DEFAULT_Ki 1.08
#define DEFAULT_Kd 114

// Makergear
// #define DEFAULT_Kp 7.0
// #define DEFAULT_Ki 0.1
// #define DEFAULT_Kd 12

// Mendel Parts V9 on 12V
// #define DEFAULT_Kp 63.0
// #define DEFAULT_Ki 2.25
// #define DEFAULT_Kd 440

#endif // PIDTEMP
```

```
//      #define DEFAULT_bedKp 97.1
//      #define DEFAULT_bedKi 1.41
//      #define DEFAULT_bedKd 1675.16

// FIND YOUR OWN: "M303 E-1 C8 S90" to run autotune on the bed at 90 degreesC
#endif // PIDTEMPBED

//this prevents dangerous Extruder moves, i.e. if the temperature is under the
//can be software-disabled for whatever purposes by
#define PREVENT_DANGEROUS_EXTRUDE
//if PREVENT_DANGEROUS_EXTRUDE is on, you can still disable (uncomment) very long
#define PREVENT_LENGTHY_EXTRUDE

#define EXTRUDE_MINTEMP 170
#define EXTRUDE_MAXLENGTH (X_MAX_LENGTH+Y_MAX_LENGTH)//prevent extrusion of very long
// ======
```

```
const bool Y_ENDSTOPS_INVERTING =true; // set to true to invert the logic of
const bool Z_ENDSTOPS_INVERTING =true; // set to true to invert the logic of
//#define DISABLE_MAX_ENDSTOPS

// For Inverting Stepper Enable Pins (Active Low) use 0, Non Inverting (Activ
#define X_ENABLE_ON 0
#define Y_ENABLE_ON 0
#define Z_ENABLE_ON 0
#define E_ENABLE_ON 0 // For all extruders

// Disables axis when it's not being used.
#define DISABLE_Xfalse
#define DISABLE_Yfalse
#define DISABLE_Zfalse
#define DISABLE_Efalse // For all extruders

#define INVERT_X_DIRtrue // for Mendel set to false, for Orca set to true
#define INVERT_Y_DIRfalse // for Mendel set to true, for Orca set to false
#define INVERT_Z_DIRtrue // for Mendel set to false, for Orca set to true
```

```
#define MANUAL_Y_HOME_POS 0
#define MANUAL_Z_HOME_POS 0

//// MOVEMENT SETTINGS
#define NUM_AXIS 4// The axis order in all axis related arrays is X, Y, Z, E
#define HOMING_FEEDRATE {50*60, 50*60, 4*60, 0}// set the homing speeds (mm/min)

// default settings

#define DEFAULT_AXIS_STEPS_PER_UNIT {78.7402,78.7402,200*8/3,760*1.1}// default steps per unit
#define DEFAULT_MAX_FEEDRATE {500, 500, 5, 25}// (mm/sec)
#define DEFAULT_MAX_ACCELERATION {9000,9000,100,10000}// X, Y, Z, E max acceleration

#define DEFAULT_ACCELERATION 3000// X, Y, Z and E max acceleration
#define DEFAULT_RETRACT_ACCELERATION 3000// X, Y, Z and E max acceleration

// Offset of the extruders (uncomment if using more than one and relying on firmware)
// The offset has to be X=0, Y=0 for the extruder 0 hotend (default extruder)
// For the other hotends it is their distance from the extruder 0 hotend.
```

```
// #define ULTIPANEL //the ultipanel as on thingiverse

// The RepRapDiscount Smart Controller (white PCB)
// http://reprap.org/wiki/RepRapDiscount_Smart_Controller
// #define REPRAP_DISCOUNT_SMART_CONTROLLER

// The GADGETS3D G3D LCD/SD Controller (blue PCB)
// http://reprap.org/wiki/RAMPS_1.3/1.4_GADGETS3D_Shield_with_Panel
// #define G3D_PANEL

// The RepRapDiscount FULL GRAPHIC Smart Controller (quadratic white PCB)
// http://reprap.org/wiki/RepRapDiscount_Full_Graphic_Smart_Controller
//
// ==> REMEMBER TO INSTALL U8glib to your ARDUINO library folder: http://code.google.com/p/u8glib/
// #define REPRAP_DISCOUNT_FULL_GRAPHIC_SMART_CONTROLLER

//automatic expansion
#ifndef REPRAP_DISCOUNT_FULL_GRAPHIC_SMART_CONTROLLER
#define DOGLCD
```

```
#else //no panel but just lcd
#define ULTRA_LCD
    #ifdef DOGLCD // Change number of lines to match the 128x64 graphic
        #define LCD_WIDTH 20
        #define LCD_HEIGHT 5
    #else
        #define LCD_WIDTH 16
        #define LCD_HEIGHT 2
    #endif
#endif
#endif

// Increase the FAN pwm frequency. Removes the PWM noise but increases heating
// #define FAST_PWM_FAN

// M240 Triggers a camera by emulating a Canon RC-1 Remote
// Data from: http://www.doc-diy.net/photo/rc-1_hacked/
// #define PHOTOGRAPH_PIN 23
```

