

Automatic at power-on

Duet fw boots

- Run sys/config.g

sys/config.g

Main file for configuring the FW to run our machine.

- Configures Duet board fw for our machine configuration.
 - motor parameters
 - limit switches
 - network parameters
 - BLTouch Z probe
 - bed heater parameters
- Runs other macro files to configure each tool. At present, tool #0 is not yet in it's own file, but tool 1 is.
- There are some parameters that need to be set for all tools with a single command and they are in config.g.

Creates a global variable used by daemon.g for setting wifi.

- Attempt to connect to network

- If sys/runonce.g is present, run it, then delete it.
- If sys.daemon.g is present, run every 10 seconds in an asynchronous thread.
- Wait for commands to execute.

sys/create_global_variables.g

Declares global variables we use elsewhere so we don't need to test for their existence before using them.

sys/tool_0_config.g

We made this macro because there are a lot of commands to set up a tool and we wanted to reduce the clutter in config.g

- Configures duet board for tool0
 - motor, extruder, heater parameters
 - fans (part/extruder)
- Calls sys/tool0_Z_offset.g. to set the Z-offset for tool0.

sys/tool0_Z_offset.g

Contains only a G10 command to set the Z offset for this tool. It is a separate file to enable macros for easily adjusting the offset. See macros/prepare.

sys/tool_1_config.g

Same as tool_0_config.g, but for tool #1

sys/tool1_Z_offset.g

Same as tool0_Z_offset, but for tool #1

sys/runonce.g

Not used by us

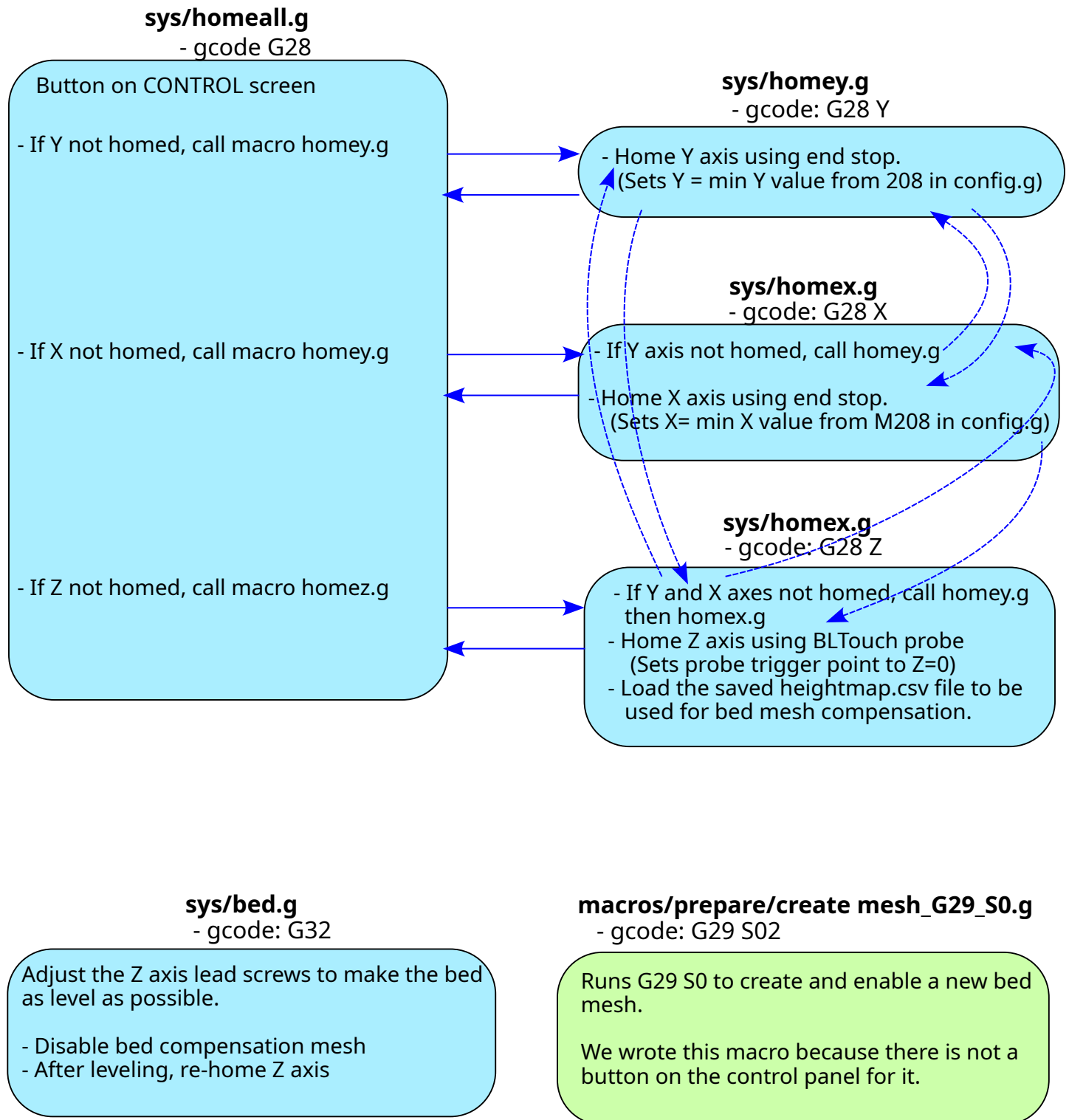
sys/daemon.g

We have code that looks to see if wifi is connected, then stops it from trying after a few attempts.

Files required by Duet

Files created by BARN

User initiated after power-on



Files required by Duet

Files invented by BARN

Filament Change Macros

All are located in the **Macros/load_unload_filaments** directory

unload_current filament.g

Initiated from user interface panel macros screen

- Display current tool and filament type if a tool is currently selected.
- Run M702, which looks up the current filament <name> and runs filaments/<name>/unload.g

filaments/<name>/unload.g

- Looks up extruder number <EXT>
- Calls sys_extruder_<EXT>_unload_filament.g and passed hotend unload Temp for this filament
- calls M703 - WHY?

sys/extruder_<EXT>_unload_filament.g

Generic unloader for this extruder. May be different for other tools/extruders. Performs the steps to unload the filament. Requires temperature as an input.

load_<filament name>.g

Initiated from user interface panel macros screen

- Runs M701 S <filament name>, which calls filaments/<filament name>/load.g

filaments/<name>/load.g

- Looks up extruder number <EXT>
- Calls sys_extruder_<EXT>_load_filament.g and passes hotend load Temp for this filament.
- Runs M703, which calls filaments/<filament name>/config.g

sys/extruder_<EXT>_load_filament.g

Generic loader for this extruder. May be different for other tools/extruders. Performs the steps to load the filament. Requires temperature as an input.

filaments/<name>/config.g

- Sets filament-specific paramters.
- Pressure Advance (may ned to be unique per extruder)
- Scaling factor to account for shrinkage.
- May need to add Input Shaping.

Files required by Duet

Files invented by BARN

Tool Change Macros

sys/tfree0.g

Actions to do with tool 0 before it is released.

- Park the tool, set temperatures to standby, turn off fans?

sys/tpre0.g

Actions to do with a new tool before tool 0 is selected

- ??

sys/tpost0.g

Actions to take with a new tool after it is selected

- Grab tool with tool changer.
- Turn on heaters and fans
- Unretract filament and wipe?
- Return to starting location?

Printing Macros

sys/start.g

If present, run before sunning print file gcode. We added:

- Collect time for start of print.
- Collect name of file to be printed

print file from slicer

Required:

- Sliced for Mark4 printer.
- Slicer must select a tool.
- M0 at end of job

Optional:

- Home all axes
- Create height map
- Pauses

Required

- M0 at end of job

sys/pause.g

If present, run when file has a pause or the print is paused form the printer interface.

The default has:

- Drop the bed, retract a bit of filament, move the print head to a known location

sys/resume.g

If present, run when a print is resumed after a pause. The default has:

- Go back to the print location, return to the previous print move, unretract the filament.

sys/cancel.g

If present, run when a print is cancelled. We do not have this file at present.

sys/stop.g

If present, run when file has M0 at end of job. We added:

- Capture print end time.
- Log start, end times and print name to file.
- Drop the bed, retract the filament, move print head out of the way, turn off heaters and fans.

Files required by Duet

Files invented by BARN

Debug Macros

All are located in the **Macros/debug** directory

allow cold extrude.g

Runs M302 P1 to allow the extruder motor to turn even if the hot end is not hot

move_without_homing.g

Runs M564 S0 H0 to allow axes to be moved even if the system has not been homed.

clear heater fault _M562.g

Runs M562 to clear all heater faults.

report_IP_Address.g

Print a message showing the IP Address of the machine

clear_logfile.g

Pauses logging, deletes the file: m sys/eventlog.g and restarts logging.

Files required by Duet

Files invented by BARN

Print Prep Macros

All are located in the **Macros/prepare directory**

create mesh.g

Runs M29 S0 which is the bed mesh creation and loading command.

fold baby steps into tool offset.g

Used to adjust the Z-offset for the current tool, based on the current baby steps setting.

- Looks up the current tool tool, it's Z offset and current baby steps setting.
- Calculates a new z-offset requiring no baby steps.
- Creates a new sys/tool<N>_Z_offset.g file
- changes the z offset and zeros out the babysteps.

adj tool z_offset.g

Used to set the Z-offset for the current tool.

- User makes Z moves until the nozzle measures 0.2mm above the build plate (using feeler gauges)
- Calculates the Z-offset requiring to make this location 0.2mm after the offset is applied.
- Creates a new sys/tool<N>_Z_offset.g file

Files required by Duet

Files invented by BARN