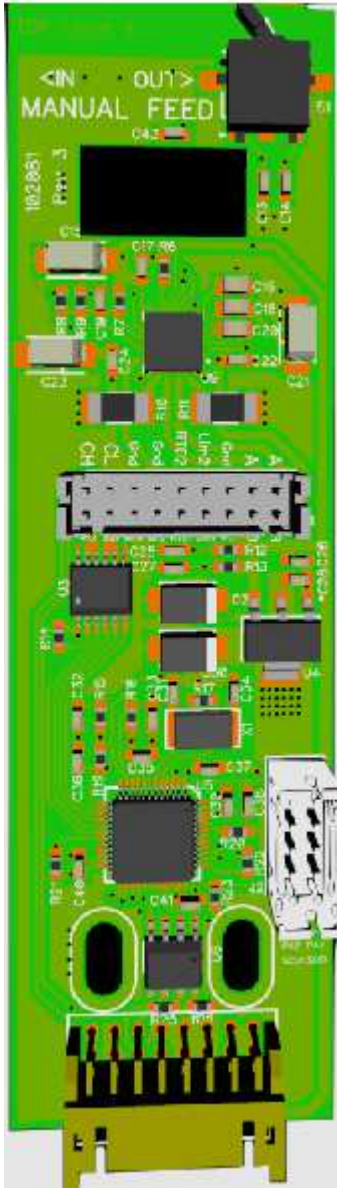


# Hyrel3d Custom Head SDK

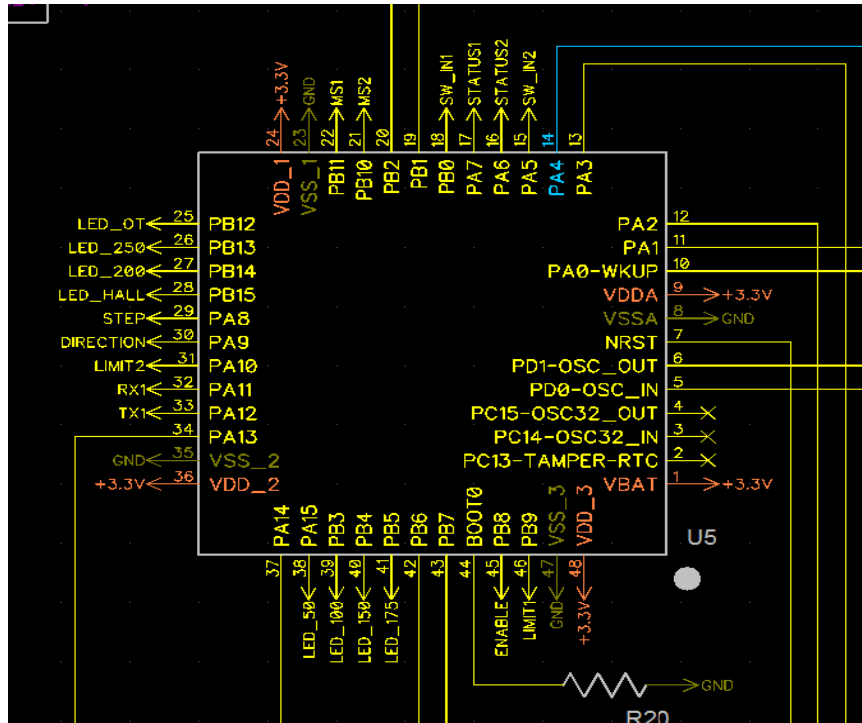


## Source Code for Controller

```
CooCox ColDE --- C:/2015 Hyrel Projects/CooCoxProjects/hothead130C/hothead130.coproj
File Edit View Project Flash Debug Search Help
Project: hothead130
Target: hothead130
Source Files:
- hothead130
  - cmsis
  - cmsis_boot
  - common
  - inc
    - hothead_adc.h
    - hothead_can.h
    - hothead_gpio.h
    - hothead_hist.h
    - hothead_hw_init.h
    - hothead_tables.h
    - hothead.h
  - hotheadPinout_102081_4
  - hotheadPinout_102081_4
  - PinDefinitions.h
  - src
    - hothead_adc.c
    - hothead_can.c
    - hothead_gpio.c
    - hothead_hist.c
    - hothead_hw_init.c
    - hothead_tables.c
  - stm_lib
  - main.c
  - console
  - console

1 ////////////////////////////////////////////////////
2 //
3 // File: hothead.h
4 //
5 ////////////////////////////////////////////////////
6 //
7 // Purpose: include for public hothead related defines and functions
8 //
9 ////////////////////////////////////////////////////
10 //
11 // Copyright 2013 HYREL 3D, LLC. All rights reserved. 4988
12 //
13 ////////////////////////////////////////////////////
14 //
15 #define HOTHEAD
16 #define SOFTWARE_MAJOR_REVISION 130
17 #define SOFTWARE_MINOR_REVISION 1
18
19 // #define USE_50K_RTD_TABLES // to use original hothead RTD
20 // #define USE_1M_RTD_TABLES // to use new hot RTD table.
21 // #define DIRECT_IO_INITIALIZATION // will directly write 6 registers to set up I/O (saves code space, but not
22 // easily maintained.....if changed to I/O setup is needed, undefine this
23
24 // #define DEBUG_NO_MAIN_BOARD 0
25 // #define DEBUG_USING_LIMIT2 0
26 // #define DEBUG_USING_LIMIT2_FOR_HEATER 0
27 // #define DEBUG_USING_LIMIT2_FOR_FAN 0
28 // #define DEBUG_USING_LIMIT2_FOR_HEARTBEAT 0
29 // #define DEBUG_USING_LIMIT2_FOR_STEP 0
30 // #define DEBUG_USING_LIMIT2_FOR_PROCESSING 0
31 // #define IMPLEMENT_STICKY_ERROR_BITS
32 // #define REMOVE_HISTORY_CODE // for debugging to recover space.
33 // #define DEBUG_INTERRUPT_BOOTLOADER // uncomment to allow working from address 0x80000000 (reset interrupt table)
34
35 #include "stm32f10x_rcc.h"
36 #include "stm32f10x_flash.h"
37 #include "hyrel.h"
38 #include "hyrel_can.h"
39 #include "hothead_hist.h"
40 #include "hothead_gpio.h"
41
42 #define HEARTBEAT_BIT (LED_7)
43
44 #define LED_STATUS_MOTOR_STEP (LED_0)
```

## Full Schematic



## St-Link Programmer



## Source on Usb Drive



# Specifications:

**Stm32F103C6T6, (C8T6 on request), 72MHZ**

**32k flash, 10k ram**

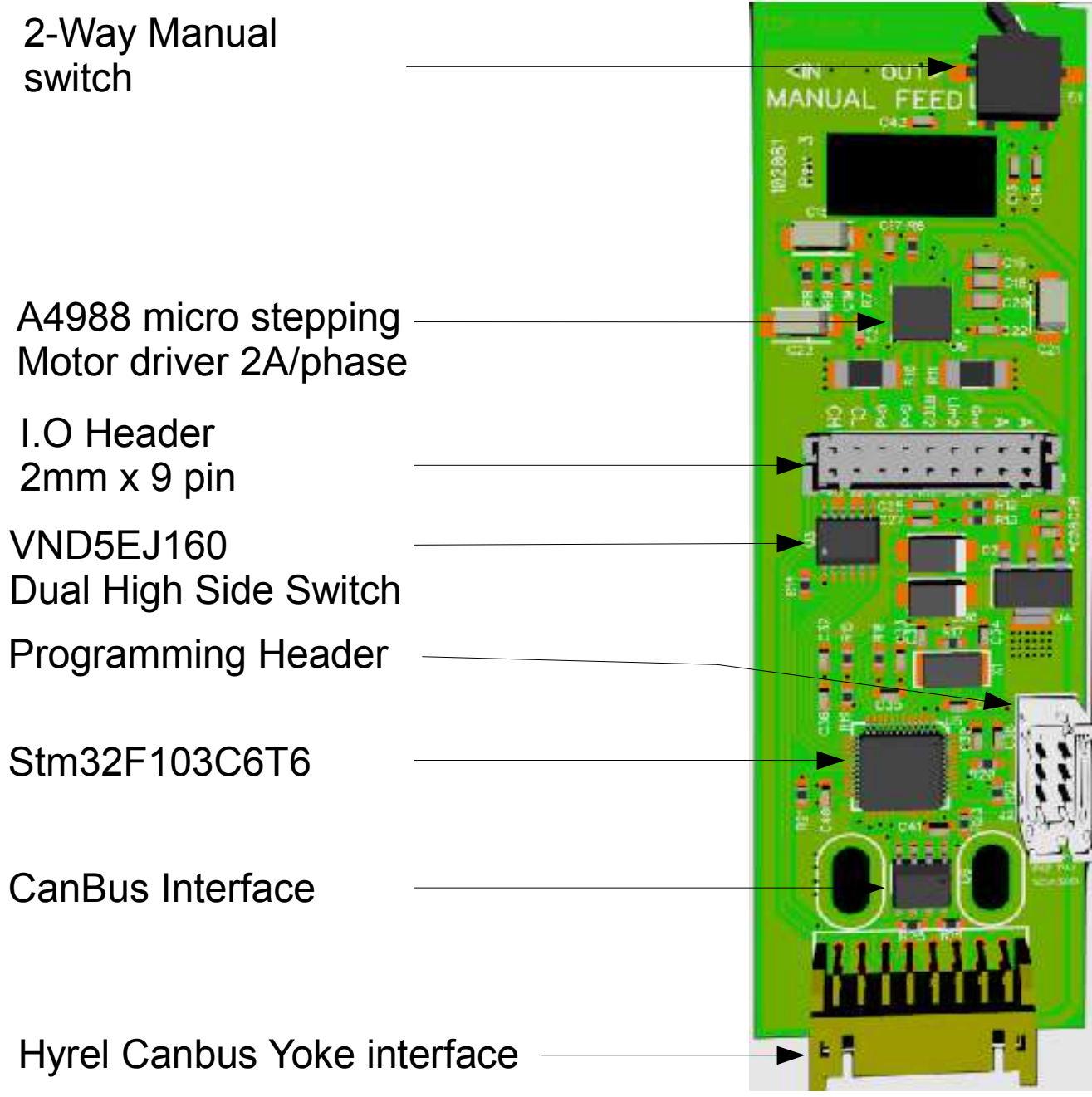
**VNDE150 High-side switch, up to 3 amps each @ 12 V**

**Micro Stepping motor driver, A4988,**

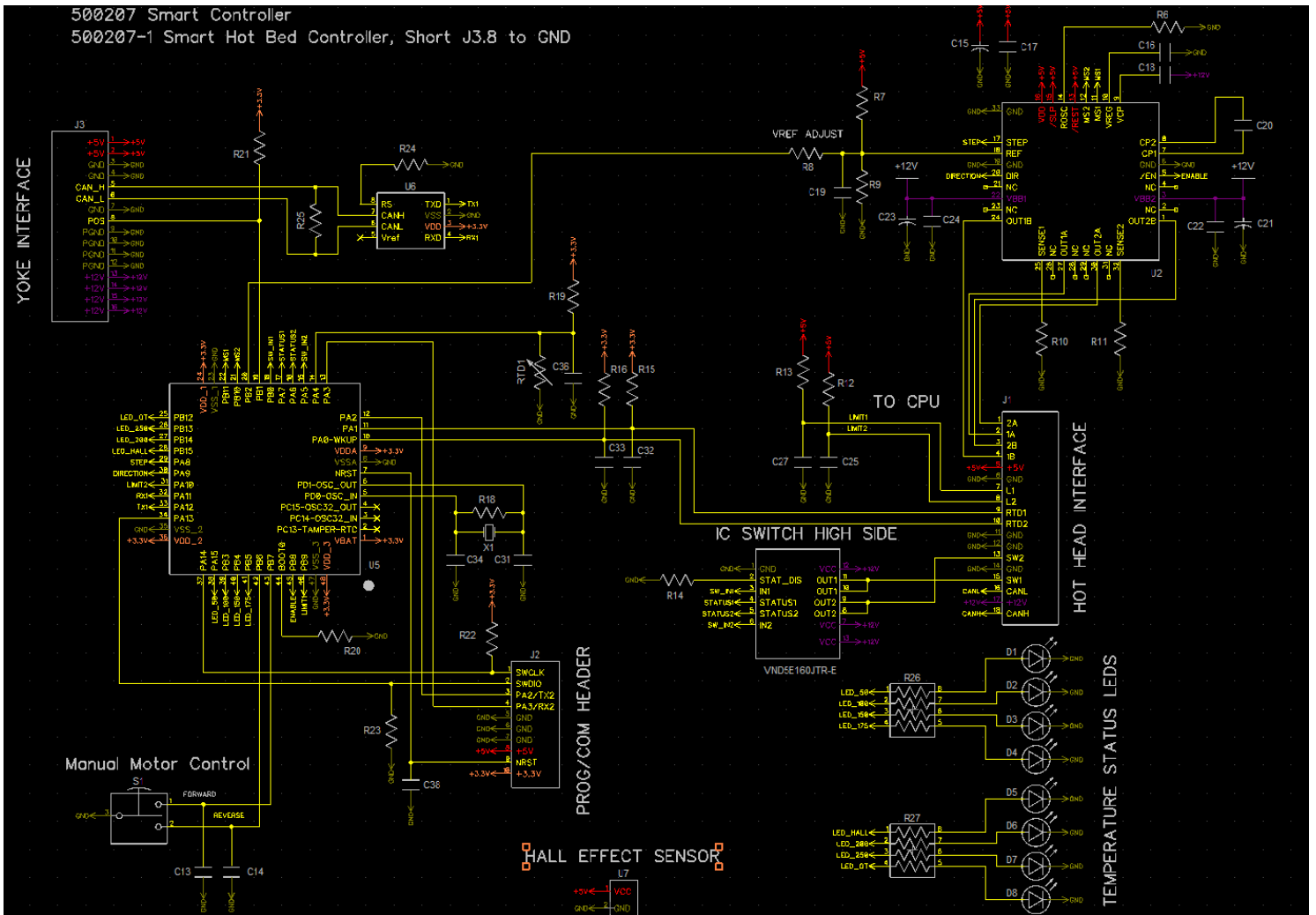
**Weight 13 grams.**

**Power supply, +5/ +12 up to 4 amps max**

**Interface, CanBus or TTL or serial**



# Schematic



# **Theory of Operation:**

## **Using IDE:**

CooCox is a open IDE based upon Eclipse,  
Programmers that have used Eclipse or Visual Studio  
Will have little problem getting going.

We recommend using the many forums online  
When trying to figure out programming questions,  
Each SDK comes with 4 hours DIRECT support  
From One of our Staff Programmers.Do NOT hesitate  
To email or Call us.

## **Tips on Programming custom functions.**

Never put blocking code inside Interrupt service routine.  
Every ISR must execute in  $\frac{1}{2}$  the minimum Slice time,  
To insure that all task will execute reliably.  
If your ISR is to long, break it up into 2 task.