

Common.H.

```
1 //
=====
2 //
=====
3 // ***** common.h
*****
4 //
=====
5 //
=====
6
7 #include <unistd.h>
8 #include <fcntl.h>
9 #include <stdlib.h>
10 #include <stdio.h>
11 #include <string.h>
12 #include <sys/mman.h>
13
14 #include <sys/types.h>
15 #include <sys/socket.h>
16 #include <arpa/inet.h>
17 #include <netdb.h>
18
19 #include <time.h>
20 #include <sys/time.h>
21 #include <math.h>
22
23 // Array constants
24 #define MAX_DATA_VALS 4096
25 #define MAX_HISTO_VALS 2048
26
27 // String size
28 #define MAX_STRING_LEN 2000
29
30 #define MAX_SHORT_POS 32767
31 #define MAX_SHORT_NEG -32768
32
33 // NOTE: This is the range I'm using in the hardware. I find the smallest value
34 // in the distribution, subtract
35 // that from all values (shifting the distribution left for negative largest
36 // values and right for positive). The
37 // binning of values therefore starts at bin 0 and goes up through the largest
38 // positive value (minus the smallest value).
39 #define DIST_RANGE 2048
40
41 // Represents +6.25% and -93.75% of 4096
42 #define LV_BOUND 256
43 #define HV_BOUND 3840
44
45 // =====
46 // GPIO constants
47 #define GPIO_0_BASE_ADDR 0x41200000
48 #define CTRL_DIRECTION_MASK 0x00
49 #define DATA_DIRECTION_MASK 0xFFFFFFFF
50
51 #define OUT_CP_RESET 31
52 #define OUT_CP_START 30
53
54 #define OUT_CP_LM_ULM_DONE 25
55 #define OUT_CP_HANDSHAKE 24
```

Keep same  
so long as data file source  
is same size

will change

if total  
size of hist  
is diff

no change

```
53  
54 #define IN_SM_READY 31  
55 #define IN_SM_HISTO_ERR 30  
56 #define IN_SM_HANDSHAKE 28  
57
```