

libmirisdr  
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<b>1 Data Structure Index</b>	<b>1</b>
1.1 Data Structures . . . . .	1
<b>2 File Index</b>	<b>3</b>
2.1 File List . . . . .	3
<b>3 Data Structure Documentation</b>	<b>5</b>
3.1 iffreqs_ Struct Reference . . . . .	5
3.2 mirisdr_dev Struct Reference . . . . .	5
3.3 mirisdr_dongle Struct Reference . . . . .	6
3.4 mirisdr_tuner Struct Reference . . . . .	6
3.5 r0_modes_ Struct Reference . . . . .	6
3.6 state Struct Reference . . . . .	6
<b>4 File Documentation</b>	<b>7</b>
4.1 mirisdr.h . . . . .	7
4.2 mirisdr_export.h . . . . .	8
4.3 mirisdr_reg.h . . . . .	8
4.4 tuner_msi001.h . . . . .	9
<b>Index</b>	<b>11</b>



# Chapter 1

## Data Structure Index

### 1.1 Data Structures

Here are the data structures with brief descriptions:

<b>iffreqs_ . . . . .</b>	<b>5</b>
<b>mirisdr_dev . . . . .</b>	<b>5</b>
<b>mirisdr_dongle . . . . .</b>	<b>6</b>
<b>mirisdr_tuner . . . . .</b>	<b>6</b>
<b>r0_modes_ . . . . .</b>	<b>6</b>
<b>state . . . . .</b>	<b>6</b>



## Chapter 2

# File Index

### 2.1 File List

Here is a list of all documented files with brief descriptions:

include/ <b>mirisdr.h</b> . . . . .	7
include/ <b>mirisdr_export.h</b> . . . . .	8
include/ <b>mirisdr_reg.h</b> . . . . .	8
include/ <b>tuner_msi001.h</b> . . . . .	9





## Chapter 3

# Data Structure Documentation

### 3.1 iffreqs\_ Struct Reference

#### Data Fields

- uint32\_t **xtalfreq**
- uint32\_t **fref1**
- uint32\_t **fif1**

The documentation for this struct was generated from the following file:

- include/tuner\_msi001.h

### 3.2 mirisdr\_dev Struct Reference

#### Data Fields

- libusb\_context \* **ctx**
- struct libusb\_device\_handle \* **devh**
- uint32\_t **xfer\_buf\_num**
- uint32\_t **xfer\_iso\_pack**
- uint32\_t **xfer\_buf\_len**
- struct libusb\_transfer \*\* **xfer**
- unsigned char \*\* **xfer\_buf**
- mirisdr\_read\_async\_cb\_t **cb**
- void \* **cb\_ctx**
- enum mirisdr\_async\_status **async\_status**
- uint32\_t **rate**
- uint32\_t **adc\_clock**
- **mirisdr\_tuner\_t** \* **tuner**
- uint32\_t **freq**
- int **gain**
- int **headerflag**
- uint32\_t **addr**

The documentation for this struct was generated from the following file:

- src/libmirisdr.c

### 3.3 mirisdr\_dongle Struct Reference

#### Data Fields

- uint16\_t **vid**
- uint16\_t **pid**
- const char \* **name**

The documentation for this struct was generated from the following file:

- src/libmirisdr.c

### 3.4 mirisdr\_tuner Struct Reference

#### Data Fields

- int(\* **init** )(void \*)
- int(\* **exit** )(void \*)
- int(\* **set\_freq** )(void \*, uint32\_t freq)
- int(\* **set\_bw** )(void \*, int bw)
- int(\* **set\_gain** )(void \*, int gain)
- int(\* **set\_gain\_mode** )(void \*, int manual)

The documentation for this struct was generated from the following file:

- src/libmirisdr.c

### 3.5 r0\_modes\_ Struct Reference

#### Data Fields

- char \* **bits**
- unsigned char **value**
- char \* **name**
- unsigned char **lodiv**

The documentation for this struct was generated from the following file:

- include/tuner\_msi001.h

### 3.6 state Struct Reference

#### Data Fields

- enum mode **m**
- enum xtal **x**
- double **freq\_hz**
- uint32\_t **minus\_bbgain**
- enum am\_mixgainred **am\_mixgainred**
- uint32\_t **mixl**
- uint32\_t **lnagr**
- uint32\_t **reg** [6]

The documentation for this struct was generated from the following file:

- include/tuner\_msi001.h

## Chapter 4

# File Documentation

### 4.1 mirisdr.h

```
1 /*
2  * Copyright (C) 2012 by Steve Markgraf <steve@steve-m.de>
3  * Copyright (C) 2012 by Dimitri Stolnikov <horiz0n@gmx.net>
4  *
5  * This program is free software: you can redistribute it and/or modify
6  * it under the terms of the GNU General Public License as published by
7  * the Free Software Foundation, either version 2 of the License, or
8  * (at your option) any later version.
9  *
10 * This program is distributed in the hope that it will be useful,
11 * but WITHOUT ANY WARRANTY; without even the implied warranty of
12 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
13 * GNU General Public License for more details.
14 *
15 * You should have received a copy of the GNU General Public License
16 * along with this program. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #ifndef __MIRISDR_H
20 #define __MIRISDR_H
21
22 #ifdef __cplusplus
23 extern "C" {
24 #endif
25
26 #include <stdint.h>
27 #include <mirisdr_export.h>
28
29 typedef struct mirisdr_dev mirisdr_dev_t;
30
31 MIRISDR_API uint32_t mirisdr_get_device_count(void);
32
33 MIRISDR_API const char* mirisdr_get_device_name(uint32_t index);
34
35 MIRISDR_API int mirisdr_get_device_usb_strings(uint32_t index,
36                                                char *manufact,
37                                                char *product,
38                                                char *serial);
39
40 MIRISDR_API int mirisdr_open(mirisdr_dev_t **dev, uint32_t index);
41
42 MIRISDR_API int mirisdr_close(mirisdr_dev_t *dev);
43
44 /* configuration functions */
45
46 MIRISDR_API int mirisdr_get_usb_strings(mirisdr_dev_t *dev, char *manufact,
47                                         char *product, char *serial);
48
49 MIRISDR_API int mirisdr_set_center_freq(mirisdr_dev_t *dev, uint32_t freq);
50
51 MIRISDR_API uint32_t mirisdr_get_center_freq(mirisdr_dev_t *dev);
52
53 MIRISDR_API int mirisdr_get_tuner_gains(mirisdr_dev_t *dev, int *gains);
54
55 MIRISDR_API int mirisdr_set_tuner_gain(mirisdr_dev_t *dev, int gain);
56
57 MIRISDR_API int mirisdr_get_tuner_gain(mirisdr_dev_t *dev);
58
59
```

```

128 MIRISDR_API int mirisdr_set_tuner_gain_mode(mirisdr_dev_t *dev, int manual);
129
137 MIRISDR_API int mirisdr_set_sample_rate(mirisdr_dev_t *dev, uint32_t rate);
138
145 MIRISDR_API uint32_t mirisdr_get_sample_rate(mirisdr_dev_t *dev);
146
147 /* streaming functions */
148
149 MIRISDR_API int mirisdr_reset_buffer(mirisdr_dev_t *dev);
150
151 MIRISDR_API int mirisdr_read_sync(mirisdr_dev_t *dev, void *buf, int len, int *n_read);
152
153 typedef void(*mirisdr_read_async_cb_t)(unsigned char *buf, uint32_t len, void *ctx);
154
168 MIRISDR_API int mirisdr_read_async(mirisdr_dev_t *dev,
169                                     mirisdr_read_async_cb_t cb,
170                                     void *ctx,
171                                     uint32_t buf_num,
172                                     uint32_t buf_len);
173
180 MIRISDR_API int mirisdr_cancel_async(mirisdr_dev_t *dev);
181
182 #ifdef __cplusplus
183 }
184 #endif
185
186 #endif /* __MIRISDR_H */

```

## 4.2 mirisdr\_export.h

```

1 /*
2  * Copyright (C) 2012 by Hoernchen <la@tfc-server.de>
3  *
4  * This program is free software: you can redistribute it and/or modify
5  * it under the terms of the GNU General Public License as published by
6  * the Free Software Foundation, either version 2 of the License, or
7  * (at your option) any later version.
8  *
9  * This program is distributed in the hope that it will be useful,
10 * but WITHOUT ANY WARRANTY; without even the implied warranty of
11 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
12 * GNU General Public License for more details.
13 *
14 * You should have received a copy of the GNU General Public License
15 * along with this program. If not, see <http://www.gnu.org/licenses/>.
16 */
17
18 #ifndef __MIRISDR_EXPORT_H
19 #define __MIRISDR_EXPORT_H
20
21 #if defined __GNUC__
22 # if __GNUC__ >= 4
23 #   define __SDR_EXPORT __attribute__((visibility("default")))
24 #   define __SDR_IMPORT __attribute__((visibility("default")))
25 # else
26 #   define __SDR_EXPORT
27 #   define __SDR_IMPORT
28 # endif
29 #elif _MSC_VER
30 #   define __SDR_EXPORT __declspec(dllexport)
31 #   define __SDR_IMPORT __declspec(dllimport)
32 #else
33 #   define __SDR_EXPORT
34 #   define __SDR_IMPORT
35 #endif
36
37 #ifndef mirisdr_STATIC
38 #   ifdef mirisdr_EXPORTS
39 #       define MIRISDR_API __SDR_EXPORT
40 #   else
41 #       define MIRISDR_API __SDR_IMPORT
42 #   endif
43 #else
44 #define MIRISDR_API
45 #endif
46 #endif /* __MIRISDR_EXPORT_H */

```

## 4.3 mirisdr\_reg.h

```

1 #ifndef __REG_H

```

```

2 #define __REG_H
3
4 int mirisdr_reg_write_fn(void *dev, uint8_t reg, uint32_t val);
5
6 #endif

```

## 4.4 tuner\_msi001.h

```

1 /*
2  * Mirics MSi001 tuner driver
3  *
4  * Copyright (C) 2012 by Eric Wild <la@tfc-server.de>
5  *
6  * This program is free software: you can redistribute it and/or modify
7  * it under the terms of the GNU General Public License as published by
8  * the Free Software Foundation, either version 2 of the License, or
9  * (at your option) any later version.
10 *
11 * This program is distributed in the hope that it will be useful,
12 * but WITHOUT ANY WARRANTY; without even the implied warranty of
13 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
14 * GNU General Public License for more details.
15 *
16 * You should have received a copy of the GNU General Public License
17 * along with this program. If not, see <http://www.gnu.org/licenses/>.
18 */
19
20 #include <stdint.h>
21
22 #define c(v) ((v<0)?printf("err! %s %s:%i\n", #v, __FILE__, __LINE__):0)
23 #define MHZ(x) ((x)*1000*1000)
24 #define KHZ(x) ((x)*1000)
25
26 enum mode{
27     AM_MODE1=0,
28     AM_MODE2=1,
29     VHF_MODE=2,
30     B3_MODE=3,
31     B45_MODE=4,
32     BL_MODE=5
33 };
34
35 enum xtal{
36     XTAL19_2Mz=0,
37     XTAL22M=1,
38     XTAL24_576M=2,
39     XTAL26M=3,
40     XTAL38_4M=4
41 };
42
43 enum am_mixgainred{
44     r1_mixbu_p0_0 = 0,
45     r1_mixbu_p0_6 = 1,
46     r1_mixbu_p0_12 = 2,
47     r1_mixbu_p0_18 = 3,
48     r1_mixbu_p1_24 = 3
49 };
50
51 struct state{
52     enum mode m;
53     enum xtal x;
54     double freq_hz;
55     uint32_t minus_bbgain;
56     enum am_mixgainred am_mixgainred;
57     uint32_t mixl;
58     uint32_t lnagr;
59     uint32_t reg[6];
60 };
61
62 struct r0_modes_{
63     char* bits;
64     unsigned char value;
65     char* name;
66     unsigned char lodiv;
67 };
68
69 struct iffregs_{
70     uint32_t xtalfreq;
71     uint32_t frefl;
72     uint32_t fifl;
73 };
74
75 int msi001_init(void *dev, uint32_t freq);

```

```
76
77 //#####
78 #define R0_FIL_MODE_SH 12
79 #define R0_FIL_BW_SH 14
80 #define R0_XTAL_SEL_SH 17
81 #define R0_IF_LPMODE_SH 20
82 #define R0_VCO_LPMODE_SH 23
83
84 #define FIL_MODE_450K_IF 0x2
85 #define FIL_MODE_ZERO_IF 0x3
86
87 //#####
88 #define R2_INT_SH 16
89
90 //#####
91 #define R1_MIXBU_SH 10
92 #define R1_MIXL_SH 12
93 #define R1_LNAGR_SH 13
94 #define R1_DCCAL_SH 14
95
96 #define R1_DCCAL 0x05 // continuous, no speedup
97 //#####
```

# Index

iffreqs\_, 5  
include/mirisdr.h, 7  
include/mirisdr\_export.h, 8  
include/mirisdr\_reg.h, 8  
include/tuner\_msi001.h, 9

mirisdr\_dev, 5  
mirisdr\_dongle, 6  
mirisdr\_tuner, 6

r0\_modes\_, 6

state, 6