

**NAME**

pthread\_sigmask – examine and change mask of blocked signals

**SYNOPSIS**

```
#include <signal.h>
```

```
int pthread_sigmask(int how, const sigset_t *set, sigset_t *oldset);
```

Compile and link with *-pthread*.

Feature Test Macro Requirements for glibc (see **feature\_test\_macros(7)**):

```
pthread_sigmask():
    _POSIX_C_SOURCE >= 199506L || _XOPEN_SOURCE >= 500
```

**DESCRIPTION**

The **pthread\_sigmask()** function is just like **sigprocmask(2)**, with the difference that its use in multi-threaded programs is explicitly specified by POSIX.1. Other differences are noted in this page.

For a description of the arguments and operation of this function, see **sigprocmask(2)**.

**RETURN VALUE**

On success, **pthread\_sigmask()** returns 0; on error, it returns an error number.

**ERRORS**

See **sigprocmask(2)**.

**ATTRIBUTES**

For an explanation of the terms used in this section, see **attributes(7)**.

| Interface                | Attribute     | Value   |
|--------------------------|---------------|---------|
| <b>pthread_sigmask()</b> | Thread safety | MT-Safe |

**CONFORMING TO**

POSIX.1-2001, POSIX.1-2008.

**NOTES**

A new thread inherits a copy of its creator's signal mask.

The glibc **pthread\_sigmask()** function silently ignores attempts to block the two real-time signals that are used internally by the NPTL threading implementation. See **nptl(7)** for details.

**EXAMPLE**

The program below blocks some signals in the main thread, and then creates a dedicated thread to fetch those signals via **sigwait(3)**. The following shell session demonstrates its use:

```
$ ./a.out &
[1] 5423
$ kill -QUIT %1
Signal handling thread got signal 3
$ kill -USR1 %1
Signal handling thread got signal 10
$ kill -TERM %1
[1]+  Terminated                  ./a.out
```

**Program source**

```
#include <pthread.h>
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <signal.h>
#include <errno.h>
```

```

/* Simple error handling functions */

#define handle_error_en(en, msg) \
    do { errno = en; perror(msg); exit(EXIT_FAILURE); } while (0)

static void *
sig_thread(void *arg)
{
    sigset_t *set = arg;
    int s, sig;

    for (;;) {
        s = sigwait(set, &sig);
        if (s != 0)
            handle_error_en(s, "sigwait");
        printf("Signal handling thread got signal %d\n", sig);
    }
}

int
main(int argc, char *argv[])
{
    pthread_t thread;
    sigset_t set;
    int s;

    /* Block SIGQUIT and SIGUSR1; other threads created by main()
       will inherit a copy of the signal mask. */

    sigemptyset(&set);
    sigaddset(&set, SIGQUIT);
    sigaddset(&set, SIGUSR1);
    s = pthread_sigmask(SIG_BLOCK, &set, NULL);
    if (s != 0)
        handle_error_en(s, "pthread_sigmask");

    s = pthread_create(&thread, NULL, &sig_thread, (void *) &set);
    if (s != 0)
        handle_error_en(s, "pthread_create");

    /* Main thread carries on to create other threads and/or do
       other work */

    pause();                /* Dummy pause so we can test program */
}

```

**SEE ALSO**

**sigaction(2), sigpending(2), sigprocmask(2), pthread\_create(3), pthread\_kill(3), sigsetops(3), pthreads(7), signal(7)**

**COLOPHON**

This page is part of release 5.05 of the Linux *man-pages* project. A description of the project, information about reporting bugs, and the latest version of this page, can be found at <https://www.kernel.org/doc/man-pages/>.