

NAME

`scalbn`, `scalbnf`, `scalbnl`, `scalbln`, `scalblnf`, `scalblnl` – multiply floating-point number by integral power of radix

SYNOPSIS

```
#include <math.h>
```

```
double scalbn(double x, long int exp);
```

```
float scalbnf(float x, long int exp);
```

```
long double scalblnl(long double x, long int exp);
```

```
double scalbn(double x, int exp);
```

```
float scalbnf(float x, int exp);
```

```
long double scalbnl(long double x, int exp);
```

Link with `-lm`.

Feature Test Macro Requirements for glibc (see `feature_test_macros(7)`):

```
scalbln(), scalblnf(), scalblnl():
```

```
    _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
```

```
    /* Since glibc 2.19: */ _DEFAULT_SOURCE
```

```
scalbn(), scalbnf(), scalbnl():
```

```
    _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
```

```
    /* Since glibc 2.19: */ _DEFAULT_SOURCE
```

```
    /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

DESCRIPTION

These functions multiply their first argument *x* by **FLT_RADIX** (probably 2) to the power of *exp*, that is:

$$x * \text{FLT_RADIX} ** exp$$

The definition of **FLT_RADIX** can be obtained by including `<float.h>`.

RETURN VALUE

On success, these functions return $x * \text{FLT_RADIX} ** exp$.

If *x* is a NaN, a NaN is returned.

If *x* is positive infinity (negative infinity), positive infinity (negative infinity) is returned.

If *x* is +0 (−0), +0 (−0) is returned.

If the result overflows, a range error occurs, and the functions return **HUGE_VAL**, **HUGE_VALF**, or **HUGE_VALL**, respectively, with a sign the same as *x*.

If the result underflows, a range error occurs, and the functions return zero, with a sign the same as *x*.

ERRORS

See `math_error(7)` for information on how to determine whether an error has occurred when calling these functions.

The following errors can occur:

Range error, overflow

An overflow floating-point exception (**FE_OVERFLOW**) is raised.

Range error, underflow

An underflow floating-point exception (**FE_UNDERFLOW**) is raised.

These functions do not set *errno*.

VERSIONS

These functions first appeared in glibc in version 2.1.

ATTRIBUTES

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

Interface	Attribute	Value
scalbn() , scalbnf() , scalbnl() , scalbln() , scalblnf() , scalblnl()	Thread safety	MT-Safe

CONFORMING TO

C99, POSIX.1-2001, POSIX.1-2008.

NOTES

These functions differ from the obsolete functions described in **scalb(3)** in the type of their second argument. The functions described on this page have a second argument of an integral type, while those in **scalb(3)** have a second argument of type *double*.

If **FLT_RADIX** equals 2 (which is usual), then **scalbn()** is equivalent to **ldexp(3)**.

SEE ALSO

ldexp(3), **scalb(3)**

COLOPHON

This page is part of release 5.02 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/>.