NAME

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

LIBRARY

Math library (*libm*, *−lm*)

SYNOPSIS

#include <math.h>

double scalbln(double *x***, long** *exp***);**
float scalblnf(float *x***, long** *exp***);**
long double scalblnl(long double *x***, long** *exp***);**

double scalbn(double *x***, int** *exp***);**
float scalbnf(float *x***, int** *exp***);**
long double scalbnl(long double *x***, int** *exp***);**

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 <= 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 * FLT_RADIX ** exp

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

RETURN VALUE

On success, these functions return *x* * **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
: *errno* is set to **ERANGE**. An underflow floating-point exception (**FE_UNDERFLOW**) is raised.

VERSIONS

These functions were added in glibc 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

STANDARDS

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).

BUGS

Before glibc 2.20, these functions did not set *errno* for range errors.

SEE ALSO

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