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## **Red Hat Enterprise Linux Release 9.2 Manual Pages on 'fmal.3' command**

**\$ man fmal.3**

FMA(3)                    Linux Programmer's Manual                    FMA(3)

NAME

fma, fmaf, fmal - floating-point multiply and add

SYNOPSIS

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

```
double fma(double x, double y, double z);
```

```
float fmaf(float x, float y, float z);
```

```
long double fmal(long double x, long double y, long double z);
```

Link with -lm.

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

```
fma(), fmaf(), fmal():
```

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

DESCRIPTION

These functions compute  $x * y + z$ . The result is rounded as one ternary operation according to the current rounding mode (see fenv(3)).

RETURN VALUE

These functions return the value of  $x * y + z$ , rounded as one ternary operation.

If x or y is a NaN, a NaN is returned.

If x times y is an exact infinity, and z is an infinity with the opposite sign, a domain error occurs, and a NaN is returned.

If one of x or y is an infinity, the other is 0, and z is not a NaN, a domain error occurs, and a NaN is returned.

If one of x or y is an infinity, and the other is 0, and z is a NaN, a domain error occurs, and a NaN is returned.

If x times y is not an infinity times zero (or vice versa), and z is a NaN, a NaN is returned.

If the result overflows, a range error occurs, and an infinity with the correct sign is returned.

If the result underflows, a range error occurs, and a signed 0 is returned.

## 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:

Domain error:  $x * y + z$ , or  $x * y$  is invalid and z is not a NaN

An invalid floating-point exception (FE\_INVALID) is raised.

Range error: result overflow

An overflow floating-point exception (FE\_OVERFLOW) is raised.

Range error: result 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 ?

??

?`fma()`, `fmaf()`, `fmal()` ? Thread safety ? MT-Safe ?

??

## CONFORMING TO

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

## SEE ALSO

`remainder(3)`, `remquo(3)`

## COLOPHON

This page is part of release 5.10 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/>.

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