**<climits> (limits.h)**

|  |  |  |
| --- | --- | --- |
| **name** | **expresses** | **value\*** |
| CHAR\_BIT | Number of bits in a char object (byte) | 8 or greater\* |
| SCHAR\_MIN | Minimum value for an object of type signed char | -127 (-27+1) or less\* |
| SCHAR\_MAX | Maximum value for an object of type signed char | 127 (27-1) or greater\* |
| UCHAR\_MAX | Maximum value for an object of type unsigned char | 255 (28-1) or greater\* |
| CHAR\_MIN | Minimum value for an object of type char | either SCHAR\_MIN or 0 |
| CHAR\_MAX | Maximum value for an object of type char | either SCHAR\_MAX or UCHAR\_MAX |
| MB\_LEN\_MAX | Maximum number of bytes in a multibyte character, for any locale | 1 or greater\* |
| SHRT\_MIN | Minimum value for an object of type short int | -32767 (-215+1) or less\* |
| SHRT\_MAX | Maximum value for an object of type short int | 32767 (215-1) or greater\* |
| USHRT\_MAX | Maximum value for an object of type unsigned short int | 65535 (216-1) or greater\* |
| INT\_MIN | Minimum value for an object of type int | -32767 (-215+1) or less\* |
| INT\_MAX | Maximum value for an object of type int | 32767 (215-1) or greater\* |
| UINT\_MAX | Maximum value for an object of type unsigned int | 65535 (216-1) or greater\* |
| LONG\_MIN | Minimum value for an object of type long int | -2147483647 (-231+1) or less\* |
| LONG\_MAX | Maximum value for an object of type long int | 2147483647 (231-1) or greater\* |
| ULONG\_MAX | Maximum value for an object of type unsigned long int | 4294967295 (232-1) or greater\* |
| LLONG\_MIN | Minimum value for an object of type long long int | -9223372036854775807 (-263+1) or less\* |
| LLONG\_MAX | Maximum value for an object of type long long int | 9223372036854775807 (263-1) or greater\* |
| ULLONG\_MAX | Maximum value for an object of type unsigned long long int | 18446744073709551615 (264-1) or greater\* |

\* the actual value depends on the particular system and library implementation, but shall reflect the limits of these types in the target platform.

**<cfloats> (floats.h)**

The following panel shows the name of the different values defined in this header and their minimal or maximal values for all implementations (particula rimplementations may have values greater or smaller, as specified):  
  
When a group of macros exists prefixed by FLT\_, DBL\_ and LDBL\_, the one beginning with FLT\_ applies to the float type, the one with DBL\_ to double and the one with LDBL\_ to long double.

|  |  |  |  |
| --- | --- | --- | --- |
| **name** | **value** | **stands for** | **expresses** |
| FLT\_RADIX | 2 or greater | RADIX | Base for all floating-point types (float, double and long double). |
| FLT\_MANT\_DIG  DBL\_MANT\_DIG  LDBL\_MANT\_DIG |  | MANTissa DIGits | Precision of *significand*, i.e. the number of digits that conform the*significand*. |
| FLT\_DIG  DBL\_DIG  LDBL\_DIG | 6 or greater 10 or greater 10 or greater | DIGits | Number of **decimal digits** that can be rounded into a floating-point and back without change in the number of decimal digits. |
| FLT\_MIN\_EXP  DBL\_MIN\_EXP  LDBL\_MIN\_EXP |  | MINimum EXPonent | Minimum negative integer value for the *exponent* that generates a normalized floating-point number. |
| FLT\_MIN\_10\_EXP  DBL\_MIN\_10\_EXP  LDBL\_MIN\_10\_EXP | -37 or smaller -37 or smaller -37 or smaller | MINimum base-10 EXPonent | Minimum negative integer value for the *exponent* of a base-10 expression that would generate a normalized floating-point number. |
| FLT\_MAX\_EXP  DBL\_MAX\_EXP  LDBL\_MAX\_EXP |  | MAXimum EXPonent | Maximum integer value for the *exponent* that generates a normalized floating-point number. |
| FLT\_MAX\_10\_EXP  DBL\_MAX\_10\_EXP  LDBL\_MAX\_10\_EXP | 37 or greater 37 or greater 37 or greater | MAXimum base-10 EXPonent | Maximum integer value for the *exponent* of a base-10 expression that would generate a normalized floating-point number. |
| FLT\_MAX  DBL\_MAX  LDBL\_MAX | 1E+37 or greater 1E+37 or greater 1E+37 or greater | MAXimum | Maximum finite representable floating-point number. |
| FLT\_EPSILON  DBL\_EPSILON  LDBL\_EPSILON | 1E-5 or smaller 1E-9 or smaller 1E-9 or smaller | EPSILON | Difference between 1 and the least value greater than 1 that is representable. |
| FLT\_MIN  DBL\_MIN  LDBL\_MIN | 1E-37 or smaller 1E-37 or smaller 1E-37 or smaller | MINimum | Minimum representable floating-point number. |
| FLT\_ROUNDS |  | ROUND | Rounding behavior. Possible values: -1 undetermined  0 toward zero  1 to nearest  2 toward positive infinity  3 toward negative infinity Applies to all floating-point types (float, double and long double). |
| FLT\_EVAL\_METHOD |  | EVALuation METHOD | Properties of the evaluation format. Possible values: -1 undetermined  0 evaluate just to the range and precision of the type  1 evaluate float and double as double, and long double as long double.  2 evaluate all as long double Other negative values indicate an implementation-defined behavior. Applies to all floating-point types (float, double and long double). |
| DECIMAL\_DIG |  | DECIMAL DIGits | Number of decimal digits that can be rounded into a floating-point type and back again to the same decimal digits, without loss in precision. |