NAME

strtonum - reliably convert string value to an integer

SYNOPSIS

#include <stdlib.h>

long long
strtonum(*const char *nptr, long long minval, long long maxval, const char **errstr*);

DESCRIPTION

The **strtonum**() function converts the string in *nptr* to a *long long* value. The **strtonum**() function was designed to facilitate safe, robust programming and overcome the shortcomings of the atoi(3) and strtol(3) family of interfaces.

The string may begin with an arbitrary amount of whitespace (as determined by isspace(3)) followed by a single optional '+' or '-' sign.

The remainder of the string is converted to a *long long* value according to base 10.

The value obtained is then checked against the provided *minval* and *maxval* bounds. If *errstr* is non-null, **strtonum**() stores an error string in **errstr* indicating the failure.

RETURN VALUES

The **strtonum**() function returns the result of the conversion, unless the value would exceed the provided bounds or is invalid. On error, 0 is returned, *errno* is set, and *errstr* will point to an error message. On success, **errstr* will be set to NULL; this fact can be used to differentiate a successful return of 0 from an error.

EXAMPLES

Using **strtonum**() correctly is meant to be simpler than the alternative functions.

```
int iterations;
const char *errstr;

iterations = strtonum(optarg, 1, 64, &errstr);
if (errstr != NULL)
        errx(1, "number of iterations is %s: %s", errstr, optarg);
```

The above example will guarantee that the value of iterations is between 1 and 64 (inclusive).

ERRORS

[ERANGE]   The given string was out of range.

[EINVAL]   The given string did not consist solely of digit characters.

[EINVAL]   The supplied *minval* was larger than *maxval*.

If an error occurs, *errstr* will be set to one of the following strings:

too large The result was larger than the provided maximum value.
too small
            The result was smaller than the provided minimum value.
invalid   The string did not consist solely of digit characters.

SEE ALSO

atof(3), atoi(3), atol(3), atoll(3), sscanf(3), strtod(3), strtol(3), strtoul(3)

STANDARDS

The **strtonum**() function is a BSD extension. The existing alternatives, such as atoi(3) and strtol(3), are
either impossible or difficult to use safely.

HISTORY

The **strtonum**() function first appeared in OpenBSD 3.6.