



# UnoLib documentation

## fix16.pas

version 11/10/2025

The unit fix16.pas contains types and routines emulating operations on fixed-point numbers. It can be used for potentially all types of AVR microcontrollers supported by the compiler. Please note that using fixed-point numbers is less resource-consuming than soft-float ones.

### TFix16

*TFix16* is base type for fixed-point numbers in Q16.16 format. Internally it is mapped to *Int32*. To assign value for *TFix16* using of binary representation of the type is recommended (e.g. \$0000C90F).

TFix16 routines
<pre>function <b>IntToFix16</b>(const a: Int32): TFix16;</pre> <p>Converts integer value (Int32) to TFix16 number.</p>
<pre>function <b>Fix16Abs</b>(const x: TFix16): TFix16;</pre> <p>Returns the absolute value (without sign) of <i>x</i>.</p>
<pre>function <b>Fix16Floor</b>(const x: TFix16): TFix16;</pre> <p>Returns largest integer number smaller than or equal to <i>x</i>.</p>
<pre>function <b>Fix16Ceil</b>(const x: TFix16): TFix16;</pre> <p>Returns the lowest integer number greater than or equal to <i>x</i>.</p>
<pre>function <b>Fix16Min</b>(const x, y: TFix16): TFix16;</pre> <p>Returns the smallest of two values <i>x</i> and <i>y</i>.</p>
<pre>function <b>Fix16Max</b>(const x, y: TFix16): TFix16;</pre> <p>Returns the largest of two values <i>x</i> and <i>y</i>.</p>
<pre>function <b>Fix16Add</b>(const inArg0, inArg1: TFix16): TFix16;</pre> <p>Returns the sum of <i>inArg0</i> and <i>inArg1</i>.</p>
<pre>function <b>Fix16Sub</b>(const inArg0, inArg1: TFix16): TFix16;</pre> <p>Returns result of subtraction of <i>inArg1</i> from <i>inArg0</i>.</p>
<pre>function <b>Fix16Mul</b>(const inArg0, inArg1: TFix16): TFix16;</pre> <p>Returns result of multiplication of <i>inArg0</i> by <i>inArg1</i>.</p>

```
function Fix16Div(const inArg0, inArg1: TFix16): TFix16;
```

Returns result of division of *inArg0* by *inArg1*.

```
function Fix16Mod(x, y: TFix16): TFix16;
```

Returns the remainder of division (modulo) of *x* by *y*.

```
function Fix16Sqrt(const v: TFix16): TFix16;
```

Returns the square root of *v*.

```
procedure Fix16ToStr(const Value: TFix16; const decimals: byte; var OutStr: shortstring);
```

Converts TFix16 number to its string representation.

*Parameters*

*Value* – TFix16 number

*decimals* – number of decimal places in outputstring

*OutStr* – result as shortstring (256 bytes)

```
function StrToFix16(const buf: shortstring): TFix16;
```

Converts *buf* as shortstring (256 bytes) to TFix16 number.

## Example

See documentation of dht.pas module.