

;Example 1  
2+3\*5

;Example 2  
a = 2;  
b = 3;  
c = 5;  
x = a + b \* c;

;Example 3  
angle = deg2rad(39);  
a = 19;  
b = tan(angle) \* a;

;Example 4:  
hex("7E5");

;Example 5:  
bin("11111100101");

;List of expression functions

|           |                                         |                                                |
|-----------|-----------------------------------------|------------------------------------------------|
| if        | - Conditional statement                 | Usage: if(1, print("Yes"))                     |
| for       | - For statement                         | Usage: for(i=0, i<10, i=i+1, print("Loop", i)) |
| exec      | - Executes multiple expressions         | Usage: exec(print("One"), msg("Two"))          |
| exists    | - Checks is value exists                | Usage: exists(_param) = 0                      |
| notexists | - Checks is value does not exists       | Usage: notexists(_param) = 1                   |
| nop       | - No operation (returns zero)           | Usage: nop() = 0.000000                        |
| nan       | - NaN value                             | Usage: nan() = nan                             |
| def       | - Sets default value                    | Usage: def(nan(), 100) = 100.000000            |
| defnz     | - Sets default value not zero           | Usage: defnz(0, 100) = 100.000000              |
| abs       | - Absolute value                        | Usage: abs(-123) = 123.000000                  |
| sqrt      | - Square Root                           | Usage: sqrt(9) = 3.000000                      |
| sqr       | - Square                                | Usage: sqr(3) = 9.000000                       |
| sin       | - Sine                                  | Usage: sin(0.524) = 0.500347                   |
| cos       | - Cosine                                | Usage: cos(1.047) = 0.500171                   |
| tan       | - Tangent                               | Usage: tan(0.785) = 0.999204                   |
| asin      | - Inverse sine                          | Usage: asin(0.5) = 0.523599                    |
| acos      | - Inverse cosine                        | Usage: acos(0.5) = 1.047198                    |
| atan      | - Inverse tangent                       | Usage: atan(1) = 0.785398                      |
| atan2     | - Four quadrant inverse tangent         | Usage: atan2(1,1) = 0.785398                   |
| pi        | - Pi constant value                     | Usage: pi() = 3.141593                         |
| rad2deg   | - Radians to degrees                    | Usage: rad2deg(3.141) = 179.966043             |
| deg2rad   | - Degrees to radians                    | Usage: deg2rad(180) = 3.141593                 |
| e         | - e constant value                      | Usage: e() = 2.718282                          |
| pow       | - Power                                 | Usage: pow(2,3) = 8.000000                     |
| exp       | - e raised to the given power           | Usage: exp(2) = 7.389056                       |
| exp10     | - 10 raised to the given power          | Usage: exp10(2) = 100.000000                   |
| exp2      | - 2 raised to the given power           | Usage: exp2(2) = 4.000000                      |
| log       | - Base e logarithm                      | Usage: log(2) = 0.693147                       |
| log10     | - Base 10 logarithm                     | Usage: log10(2) = 0.301030                     |
| log2      | - Base 2 logarithm                      | Usage: log2(2) = 1.000000                      |
| rand      | - random value                          | Usage: rand() = 0.100845                       |
| inc       | - Increases value (value,limit,default) | Usage: inc(5,10,0) = 6.000000                  |
| dec       | - Decreases value (value,limit,default) | Usage: dec(5,0,10) = 4.000000                  |
| min       | - Minimum                               | Usage: min(4,6) = 4.000000                     |
|           |                                         | min(4,6,3) = 3.000000                          |
| max       | - Maximum                               | Usage: max(4,6) = 6.000000                     |
|           |                                         | max(4,6,3) = 6.000000                          |
| round     | - Round to nearest integer              | Usage: round(0.56) = 1.000000                  |
|           |                                         | round(0.56,1) = 0.600000                       |
| roundup   | - Round up/down to integer              | Usage: roundup(0.56) = 1.000000                |
|           |                                         | roundup(0.56,1)= 0.600000                      |
| floor     | - Round to nearest value with decimals  | Usage: floor(0.56) = 0.000000                  |
| ceil      | - Round up to integer                   | Usage: ceil(0.56) = 1.000000                   |
| trunc     | - Truncate to integer                   | Usage: trunc(0.56) = 0.000000                  |
| center    | - Compensate hysteresis                 | Usage: center(0.3,0.2) = 0.2                   |

|          |                                       |                                                                                                                                                                                              |
|----------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| centerex | - Compensate hysteresis               | Usage: centerex(0.1,0.2) = 0.0<br>centerex(0.3,0.2,1.0,0.8) = 0.044955<br>centerex(0.1,0.2,1.0,0.8) = 0.000000<br>centerex(1,0.2,1.0,0.8) = 1.000000<br>centerex(0.9,0.2,1.0,0.8) = 0.619110 |
| not      | - Bitwise complement                  | Usage: not(10) = 4294967285                                                                                                                                                                  |
| and      | - Bitwise AND                         | Usage: and(10,3) = 2                                                                                                                                                                         |
| or       | - Bitwise non-exclusive OR            | Usage: or(10,3) = 11                                                                                                                                                                         |
| xor      | - Bitwise exclusive OR                | Usage: xor(10,3) = 9                                                                                                                                                                         |
| nand     | - Bitwise NAND                        | Usage: nand(10,3) = 4294967293                                                                                                                                                               |
| nor      | - Bitwise non-exclusive NOR           | Usage: nor(10,3) = 4294967284                                                                                                                                                                |
| xnor     | - Bitwise exclusive NOR               | Usage: xnor(10,3) = 4294967286                                                                                                                                                               |
| shl      | - Bitwise shift left                  | Usage: shl(10,2) = 40                                                                                                                                                                        |
| shr      | - Bitwise shift right                 | Usage: shr(10,2) = 2                                                                                                                                                                         |
| lnot     | - Logic complement                    | Usage: lnot(1) = 0                                                                                                                                                                           |
| land     | - Logic AND                           | Usage: land(1,0) = 0                                                                                                                                                                         |
| lor      | - Logic non-exclusive OR              | Usage: lor(1,0) = 1                                                                                                                                                                          |
| lxor     | - Logic exclusive OR                  | Usage: lxor(1,0) = 1                                                                                                                                                                         |
| lnand    | - Logic NAND                          | Usage: lnand(1,0) = 1                                                                                                                                                                        |
| lnor     | - Logic non-exclusive NOR             | Usage: lnor(1,0) = 0                                                                                                                                                                         |
| lxnor    | - Logic exclusive NOR                 | Usage: lxnor(1,0) = 0                                                                                                                                                                        |
| eq       | - Relational equality                 | Usage: eq(10,20) = 0                                                                                                                                                                         |
| ne       | - Relational inequality               | Usage: ne(10,20) = 1                                                                                                                                                                         |
| gt       | - Relational strictly greater than    | Usage: gt(10,20) = 0                                                                                                                                                                         |
| lt       | - Relational strictly less than       | Usage: lt(10,20) = 1                                                                                                                                                                         |
| ge       | - Relational greater than or equal to | Usage: ge(10,20) = 0                                                                                                                                                                         |
| le       | - Relational less than or equal to    | Usage: le(10,20) = 1                                                                                                                                                                         |
| hex      | - Converts string to number           | Usage: hex("7E5") = 2021                                                                                                                                                                     |
| bin      | - Converts string to number           | Usage: bin("11111100101") = 2021                                                                                                                                                             |
| sleep    | - Sleeps n milliseconds               | Usage: sleep(100)                                                                                                                                                                            |
| datetime | - Current time (seconds since 1970)   | Usage: datetime() = 1616502112.792                                                                                                                                                           |
| year     | - Year from DateTime value            | Usage: year(1616502112.792) = 2021                                                                                                                                                           |
| month    | - Month from DateTime value           | Usage: month(1616502112.792) = 3                                                                                                                                                             |
| day      | - Day from DateTime value             | Usage: day(1616502112.792) = 23                                                                                                                                                              |
| hour     | - Hour from DateTime value            | Usage: hour(1616502112.792) = 13                                                                                                                                                             |
| minute   | - Minute from DateTime value          | Usage: minute(1616502112.792) = 21                                                                                                                                                           |
| second   | - Second from DateTime value          | Usage: second(1616502112.792) = 52                                                                                                                                                           |
| millisec | - Millisecond from DateTime value     | Usage: millisec(1616502112.792) = 792                                                                                                                                                        |