

## Commands

```
<Ctrl-C>          stop running program
auto [line]       automatically number program lines
clear [flash]    clear ram [and flash] variables
cls              clear terminal screen
cont [line]      continue program from stop
delete ([line] [-[line]] | subname) delete program lines
dir              list saved programs
edit line        edit program line
help [topic]     online help
list ([line] [-[line]] | subname) list program lines
load name        load saved program
memory          print memory usage
new             erase code ram and flash memories
profile ([line] [-[line]] | subname) display profile info
purge name       purge saved program
renumber [line] renumber program lines (and save)
reset           reset the MCU!
run [line]       run program
save [name|library**] save code ram to flash memory
subs           ** list sub names
undo            undo code changes since last save
upgrade         upgrade StickOS firmware!
uptime          print time since last reset
```

## Modes

```
analog [millivolts] set analog voltage scale
autorun [on|off]    autorun mode (on reset)
baud [rate]         UART transport baud rate (on reset)
echo [on|off]       terminal echo mode
indent [on|off]     listing indent mode
ipaddress [dhcp|ipaddress] set/display ip address (on reset)
keychars [keychars] set/display keypad scan chars
nodeid [nodeid|none] set/display zigflea nodeid
numbers [on|off]    listing line numbers mode
pins [assign [pinname|none]] set/display pin assignments
prompt [on|off]     terminal prompt mode
servo [Hz]          set/display servo Hz (on reset)
step [on|off]       debugger single-step mode
trace [on|off]      debugger trace mode
usbhost [on|off]   set/display USB host mode (on reset)
watchsmart [on|off] low-overhead watchpoint mode
```

## General Statements

```
line              delete program line
line statement // comment* enter program line

variable[$] = expression, ... ** assign variable
? [dec|hex|raw] expression, ...[:] ** print strings/expressions
assert expression break if expression is false
data n [, ...]    read-only data
dim variable[$][[n]] [as ...], ... dimension variables
end               end program
halt              loop forever
input [dec|hex|raw] variable[$], ... input data
label label       read/data label
lcd pos, [dec|hex|raw] expression, ... * display results on lcd
let variable[$] = expression, ... assign variable
print [dec|hex|raw] expression, ...[:] print strings/expressions
read variable [, ...] read data into variables
rem remark        remark
restore [label]   restore data pointer
sleep expression (s|ms|us) delay program execution
stop             insert breakpoint in code
vprint var[$] = [dec|hex|raw] expr, ... print to variable
```

# StickOS Quick Reference (v1.90)

<http://www.cpushick.com>

## Block Statements

```
if expression then
[elseif expression then]
[else]
endif

for variable = expression to expression [step expression]
[(break|continue) [n]]
next

while expression do
[(break|continue) [n]]
endwhile

do
[(break|continue) [n]]
until expression

gosub subname [expression, ...]

sub subname [param, ...]
[return]
endsub

i2c:
i2c start addr          master i2c I/O
i2c (read|write) variable, ...
i2c stop

qspi:
qspi variable [, ...]  master qspi I/O

watchpoints:
on expression do statement
off expression          disable expr watchpoint
mask expression         mask/hold expr watchpoint
unmask expression      unmask expr watchpoint
```

## ZigFlea

```
<Ctrl-D>          disconnect from remote node
connect nodeid     connect to remote node via zigflea

remote node variables:
dim varremote[[n]] as remote on nodeid nodeid
```

\* = v1.82 and later; \*\* = v1.90 and later; note that as of v1.84, the units of servo output pins was changed from centi-milliseconds (cms) to microseconds (us)

## Expressions

the following operators are supported as in C, in order of decreasing precedence:

```
n          decimal constant
0xn        hexadecimal constant
'c'        character constant
variable   simple variable
variable[expression] array variable element
variable#  length of array or string
( )        grouping
! ~        logical not, bitwise not
* / %      times, divide, mod
+ -        plus, minus
>> <<     shift right, left
<= < >= > inequalities
== !=      equal, not equal
| ^ &      bitwise or, xor, and
|| ^^ &&  logical or, xor, and
```

## Strings

v\$ is a nul-terminated view into a byte array v[]

string statements:

```
dim, input, let, print, vprint
if expression relation expression then
while expression relation expression do
until expression relation expression
```

string expressions:

```
"literal"      literal string
variable$      variable string
variable${start:length} variable substring
+              concatenates strings
```

string relations:

```
<= < >= >    inequalities
== !=          equal, not equal
~ !~           contains, does not contain
```

## Variables

all variables must be dimensioned!  
variables dimensioned in a sub are local to that sub  
simple variables are passed to sub params by reference  
array variable indices start at 0  
v is the same as v[0], except for input/print/i2c/qspi statements

ram variables:

```
dim var[$][[n]]
dim var[[n]] as (byte|short)
```

flash parameter variables:

```
dim varflash[[n]] as flash
```

pin alias variables:

```
dim varpin[[n]] as pin pinname for \
(digital|analog|servo|frequency|uart) \
(input|output) \
[debounced] [inverted] [open_drain]
```

absolute variables:

```
dim varabs[[n]] at address addr
dim varabs[[n]] as (byte|short) at address addr
```

system variables (read-only):

```
analog* getchar  keychar* msecs nodeid
random** seconds ticks ticks_per_msec
```

## Pins

Use the "help pins" command to see MCU-specific pin names and capabilities; use the "pins" command to set/display pin assignments