UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

FLASHFORTH GLOSSARY

This page lists the words that come standard in FlashForth. For words specific to the Scamp BSP, see the Scamp Dictionary Reference further on in this document.

Below is the dictionary compiled by Mikael Nordman of the "standard" build of FlashForth (excluding the words that are specific to the Scamp). Use it as a reference in conjunction with the words command on your Scamp.

Dictionary of FlashForth 5.0 20.03.2018

! (x addr --) - Store x to addr.

!p (addr --) - Store addr to p(ointer) register.

!p>r (addr --) < COMPILE_ONLY > - Push contents of p to return stack and store addr to p.

 # (ud1 -- ud2) < COMPILE_ONLY > - Convert 1 digit to formatted numeric string.

#> (ud1 -- c-addr u) < COMPILE_ONLY > - Leave address and count of formatted numeric string.

#s (ud1 -- ud2) < COMPILE_ONLY > - Convert remaining digits to formatted numeric output.

' (-- xt) - Parse word and find it in dictionary.

'emit (-- addr) < USER > - EMIT vector. TX0, TX1, TX2 or TXU.

'key (-- addr) < USER > - KEY vector. RX0, RX1, TX2, or RXU.

'key? (-- addr) < USER > - KEY? vector. RX0?, RX1?, TX2?, or RXU?.

'source (-- a-addr) < USER > - Current input source.

((--) - Skip input on the same line until) is encountered.

* (u1/n1 u2/n2 – u3/n3) - Signed and unsigned 16*16->16 bit multiplication.

*/ (n1 n2 n3 -- quotient) - Multiply n1 and n2 and divide with n3, 32 bit intermediate result.

*/mod (n1 n2 n3 -- rem quot) - Multiply n1 with n2 and divide with n3 via 32-bit intermediate result.

+ (n1 n2 -- n3) - Add n1 to n2.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

+! (n addr --) - Add n to cell at addr.

, (x --) - Append x to the current data section.

," ("string" --) - Append a string at HERE.

- (n1 n2 -- n3) - Subtract n2 from n1.

. (n --) - Display n signed according to base.

.s (--) - Display the stack contents.

.st (--) - Emit status string for base, current data section, and display the stack contents.

/ (n1 n2 -- n3) - 16/16->16 bit signed division.

/mod (n n -- rem quot) - 16/16 -> 16-bit signed division.

/string (addr u n -- addr+n u-n) - Trim string.

0< (n -- flag) - Leave true flag if n is less than zero.

0= (x -- flag) - Leave true flag if x is zero.

1 (-- 1) - Leave one.

1+ (n -- n1) - Add one to n.

1- (n -- n1) - Subtract 1 from n.

2* (u1 -- u2) - Shift u1 left one bit.

2+ (n -- n1) - Add two to n.

2- (n -- n1) - Subtract 2 from n.

2/ (n1 -- n2) - Shift n1 right one bit.

2@ (a-addr -- x1 x2) - Fetch two cells.

2! (x1 x2 a-addr --) - Store two cells.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

2constant (x x "name" --) - Define a double constant.

2drop (x1 x2 --) - Drop two cells.

2dup (x1 x2 -- x1 x2 x1 x2) - Duplicate two top cells.

2variable ("name" --) - Define a double variable.

: ("name" --) - Begin a colon definition.

:noname (-- addr) - Define headerless forth code.

; (--) < COMPILE_ONLY > - End a colon definition.

;i (--) < COMPILE_ONLY > - End an interrupt word.

< (n1 n2 -- flag) - Leave true flag if n1 is less than n2.

<# (--) < COMPILE ONLY > - Begin numeric conversion.

<> (x1 x2 -- flag) - Leave true flag if x1 and x2 are not equal.

= (x1 x2 -- flag) - Leave true flag if x1 and x2 are equal.

> (n1 n2 -- flag) - Leave true flag if n1 is grater than n2.

>a (x --) - Write to the A register.

>body (xt -- a-addr) - Leave the parameter field address of a created word.

>in (-- a-addr) < USER > - Holds offset into tib.

>number (ud c-addr1 u1 -- ud c-addr2 u2) - Convert string to number.

>pr (c -- c) - Convert a character to a graphic ASCII value. Non-graphic characters are converted to a dot.

>r (x --) (R: -- x) < COMPILE_ONLY > - Push x from the parameter stack to the return stack.

>xa (a-addr1 -- a-addr2) - Convert a flash virtual address to real executable address.

?abort (flag c-addr u --) - Print message and abort if flag is false.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

?abort? (flag --) - If flag is false output ? and abort.

?dnegate (d n -- d) - Negate d if n is negative.

?negate (n1 n2 -- n3) - Negate n1 if n2 is negative.

@ (a-addr -- x) - Fetch x from a-addr.

@+ (a-addr1 -- a-addr2 x) - Fetch cell from a-addr1 and increment a-addr1 by cellsize.

@p (-- addr) - Fetch the p register to the stack.

@ex (addr --) - Fetch vector from addr and execute.

[(--) - Enter interpreter state.

['] ("name" --) < COMPILE_ONLY > - Compile xt of name as a literal.

[char] ("char" --) < COMPILE_ONLY > - Compile inline ASCII character.

[i (--) < COMPILE_ONLY > - Enter Forth interrupt context.

\ (--) - Skip rest of line, used for comments.

] (--) - Enter compilation state.

a> (-- x) - Read from the A register.

abort (--) - Reset stack pointer and execute quit.

abort" ("string" --) < COMPILE_ONLY > - Compile inline string and postpone ?abort.

abs (n -- n1) - Leave absolute value of n.

accept (c-addr +n -- +n') - Get line from terminal.

again (a-addr --) < COMPILE_ONLY > - begin ... again.

aivt (--) - Activate the alternate interrupt vector table.

align (--) - Align the current data section dictionary pointer to cell boundary.

aligned (addr -- a-addr) - Align addr to a cell boundary.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

allot (n --) - Adjust the current data section dictionary pointer.

and (x1 x2 -- x3) - Bitwise and of x1 and x2.

base (-- a-addr) < USER > - Numeric conversion base.

begin (-- a-addr) < COMPILE_ONLY > - begin ... again, begin ... until, begin ... while ... repeat.

binary (--) - Set base to binary.

bl (-- c) - ASCII space (a blank).

busy (--) - CPU idle mode not allowed.

c! (c c-addr --) - Store c to c-addr.

c@ (c-addr -- c) - Fetch c from addr.

c@+ (c-addr1 -- c-addr2 c) - Fetch char from addr1 and increment addr1.

c, (c --) - Append c to the current data section.

case (n -- n) < COMPILE_ONLY > - Start a case construct.

cell (-- n) - Leave the size of one cell in characters.

cell+ (a-addr1 -- a-addr2) - Add cell size to addr1.

cells (n1 -- n2) - Convert cells to address units.

char ("char" -- n) - Parse a char and leave ascii value on stack.

char+ (c-addr1 -- c-addr2) - Add one to c.addr1.

chars (n1 -- n2) - Convert characters to address units.

cf, (xt --) - Compile xt into the flash dictionary.

c>n (addr1 -- addr2) - Convert cfa to nfa.

cmove (addr1 addr2 u --) - Move u chars from addr1 to addr2.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

constant (x "name" --) - Create a constant in flash as inline literal code.

cq> (queue-addr -- c) - Get a character from queue.

cq>? (queue-addr -- n) - Get the amount of characters in the queue.

cq: (size "name" --) - Create a character queue.

cq0 (queue-addr --) - Initalise the queue.

cr (--) - Emit CR LF (carriage return / line feed pair).

create ("name" --) - Create a word definition and store the current data section pointer.

Cwd (--) - Clear the WatchDog counter.

d+ (d d -- d) - Add double numbers.

d- (d d -- d) - Subtract double numbers.

d. (d --) - Display signed double number.

d0= (d -- f) - True if d equals zero.

d0< (d -- f) - True if d is negative.

d< (d d -- f) - True if less than.

d= (d d -- f) - True if equal.

d> (d d -- f) - True if greater than.

d2* (d -- d) - Multiply by 2.

d2/ (d -- d) - Divide by 2.

dabs (d - +d) - Absolute value.

decimal (--) - Set numeric base to decimal 10.

defer ("name --) - Define a deferred execution vector.

di (--) - Disable interrupts.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

digit (n -- c) - Convert n to ASCII character value.

digit? (c -- n flag) - Convert char to a digit according to base.

dinvert (ud -- ud) - Invert double number.

dnegate (d -- -d) - Negate double number.

does> (--) < COMPILE_ONLY > - Define the runtime action of a created word.

Dp (-- addr) - EEPROM variable mirrored in ram. Leave the address of the current data section
dictionary pointer.

drop (x1 --) - Drop top of stack.

dump (addr u --) - Display a memory dump.

dup (x -- x x) - Duplicate top of stack.

ei (--) - Enable interrupts.

end - (task-addr --) - Remove a task from the task list.

else (addr1 -- addr2) < COMPILE_ONLY > - if ... else ... then.

emit (c --) - Emit c to the serial port FIFO. FIFO is 46 chars, executes pause.

Empty (--) - Reset all dictionary pointers.

Endit (--) < COMPILE_ONLY > - Leave a for/next loop when next is encountered. Sets top of
return stack to zero.

execute (addr --) - Execute word at addr.

exit (--) - Exit from a word.

False (-- 0)

Fcy (-- u) - CPU & peripheral clock frequency in Khz.

fl- (--) - Disable writes to flash and EEPROM.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

Fl+ (--) - Allow writes to flash and EEPROM.

Flash (--) - Set data section context to flash.

fill (c-addr u c --) - Fill u bytes with c staring at c-addr.

find (c-addr -- c-addr 0/1/-1) - Find a word in dictionary Leave 1 if immediate, -1 if normal, 0 if not found.

fm/mod (d n -- rem quot) - Floored 32/16 -> 16-bit division.

for (u --) < COMPILE_ONLY > - Loop u times. for ... next R@ gets the loop counter u-1 ... 0.

forget ("name --) - Forget name.

here (-- addr) - Leave the current data section dictionary pointer.

hex (--) - Set numeric base to hexadecimal.

hi (-- u) - High limit of the current data space memory.

hold (c --) < COMPILE_ONLY > - Append char to formatted numeric string.

hp (-- a-addr) < USER > - Holds pointer for formatted numeric output.

i (-- n) < COMPILE_ONLY > - The current loop index.

i] (--) < COMPILE_ONLY > - Exit Forth interrupt context.

idle (--) - Cpu idle mode is allowed.

if (-- a-addr) < COMPILE_ONLY > - if ... else ... then.

iflush (--) - Flush the flash write buffer.

immed? (addr -- n) - Leave a nonzero value if addr contains an immediate flag.

immediate (--) - Mark latest definition as immediate.

in? (nfa -- flag) - Leave a nonzero value if nfa has inline bit set.

inline ("name" --) - Inline the following word.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

inlined (--) - Mark the latest compiled word as for automatic inlining.

int! (xt vector-no --) - Store an interrupt vector to the interrupt vector table. PIC24F: Alternate interrupt vector table in ram.

interpret (c-addr u -) - Interpret the buffer.

invert (x1 -- x2) - Ones complement of x1.

is (x "name" --) - Set the value a deferred word.

ivt (--) - Activate the normal interrupt vector table.

key (-- c) - Get a character from the serial port FIFO. Execute pause until a character is available.

key? (-- flag) - Leave true if character is waiting in the serial port FIFO.

latest (-- a-addr) - Variable holding the address of the latest defined word.

literal (x --) - Compile a literal into the dictionary.

load (-- n) - Get the CPU load in percent. The integration interval is 256 milliseconds.

lshift (x1 u – x2) - Shift x1 u bits to the left.

m+ (d1 n -- d2) - Add double number d1 to n.

m* (n n -- d) - Signed 16*16->32 multiply.

m*/ (d1 n1 n2 - d2) - Scale d2 = d1*n1/n2 with triple intermediate result.

marker ("name" --) - Mark a dictionary state.

max (n1 n2 -- n3) - Leave max of n1 and n2.

mclr (byte-mask byte-ram-addr --) - AND the contents of caddr with the complement of mask.

min (n1 n2 -- n3) - Leave min of n1 and n2.

mod (n1 n2 -- remainder) - Remainder of n1 divided by n2.

ms (+n --) - Pause for +n milliseconds.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

mset (byte-mask byte-ram-caddr --) - OR the contents of caddr with mask.

mtst (byte-mask byte-addr -- x) - AND the contents of caddr with mask.

n= (c-addr nfa u -- flag) - Compare strings in ram(c-addr) and flash(nfa)flag is true if strings match u<16.

negate (n -- -n) - negate n.

next (bra-addr bc-addr --) < COMPILE_ONLY > - for ... next.

n>c (nfa -- cfa) - TBD.

nip (x1 x2 -- x2) - Remove x1 from the stack.

number? (c-addr -- n/d/c-addr flag) - Convert string to number, # is decimal prefix, $ is hexadecimal prefix, % is binary prefix, Flag: 0=error, 1=single, 2=double.

operator (-- addr) - Leave the address of the operator task.

or (x1 x2 -- x3) - Or bitwise x1 with x2.

over (x1 x2 -- x1 x2 x1) - Copy x1 to top of stack.

p+ (--) - Increment P register by one.

p2+ (--) - Add 2 to P register.

p++ (n --) - Add n to the p register.

p! (x --) - Store x to the location pointed by the p register.

pc! (c --) - Store c to the location pointed by the p register.

p@ (-- x) - Fetch the cell pointed by the p register.

pc@ (-- c) - Fetch the char pointed by the p register.

pad (-- a-addr) : pad tib ti# + ; - Each task has its own pad with initial size of 0. If needed the user must allocate space with allot. FF core does not use the pad.

parse (c -- addr length) - Parse a word in TIB.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

pause (--) - Switch to the next task in the round robin task list. Idle in the operator task if allowed by all tasks.

place (addr1 u addr2 --) - Place string from addr1 to addr2 as a counted string.

postpone ("name" --) < COMPILE_ONLY > - Postpone action of immediate word.

prompt (-- a-addr) - EEPROM defer. Deferred execution vector for the info displayed by quit. Default   is .ST.

quit (--) - Interpret from current input.

r> (-- x) (R: x --) < COMPILE_ONLY > - Pop x from the return stack to the parameter stack.

r>p (--) < COMPILE_ONLY > - Pop from return stack to p register.

r@ (-- x) (R: x -- x) < COMPILE_ONLY > - Copy x from the return stack to the parameter stack.

r0 (-- a-addr) < USER > - Bottom of return stack.

ram (--) - Set data section context to ram.

rdrop (--) < COMPILE_ONLY > - Remove top elemnt from return stack.

repeat (addr2 addr1 --) < COMPILE_ONLY > - begin ... while ... repeat.

rot (x1 x2 x3 -- x2 x3 x1) - Rotate three top stack items.

rshift (x1 u -- x2) - Shift x1 u bits to the right.

rx1 (-- c) - Receive a character from UART1.

rx1? (-- f) - Leave TRUE if UART1 receive buffer is not empty.

rx2 (-- c) - Receive a character from UART2.

rx2? (-- f) - Leave TRUE if UART2 receive buffer is not empty. PIC24-30-33.

rxu (-- c) - Receive a character from USB UART.

rxu? (-- f) - Leave TRUE if USB UART receive buffer is not empty.

s>d (n -- d) - Sign extend single to double precision number.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

s0 (-- a-addr) - Bottom of parameter stack.

scan (c-addr u c -- c-addr' u') - Scan string until c is found. c-addr must point to ram. U<255.

sign (n --) - Append minus sign to formatted numeric output.

sign? (addr1 n1 -- addr2 n2 flag) - Get optional minus sign.

skip (c-addr u c -- c-addr' u') - Skip string until c not encountered. c-addr must point to ram. U<255.

sm/rem (d n -- rem quot) - Symmetric 32/16 -> 16 bit division.

sp@ (-- addr) - Leave parameter stack pointer.

sp! (addr --) - Set the parameter stack pointer to addr.

s" ("text" --) < COMPILE_ONLY > - Compile string into flash.

." ("text" --) < COMPILE_ONLY > - Compile string to print into flash.

source (-- c-addr u) - Current input buffer address and numbers of characters.

space (--) - Emit one space character.

spaces (n --) - Emit n space characters.

state (-- flag) - Compilation state. State can only be changed by [and] .

swap (x1 x2 -- x2 x1) - Swap two top stack items.

task (-- addr) - Address of the task definition table.

then (addr --) < COMPILE_ONLY > - if ... else ... then.

tib (-- addr) < USER > - Address of the terminal input buffer.

tiu (-- addr) < USER > - Terminal input buffer pointer.

ti# (-- n) - Task constant Size of terminal input buffer.

ticks (-- u) - System ticks. One tick per millisecond.

to (x "name" --) - Store x into value "name".

true (-- -1)

tuck (x1 x2 -- x2 x1 x2) - Insert x2 below x1 in the stack.

turnkey (-- addr) - Vector for user startup word EEPROM value cached in ram.

type (c-addr u --) - Type line to terminal. U < 256.

tx1 (c --) - Send a character to UART 1.

tx2 (c --) - Send a character to UART 2.

txu (c --) - Send a character to USB UART.

u1- (--) - Disable flow control for UART1 serial interface.

u1+ (--) - Enable flow control for UART1 serial interface (Default).

u2- (--) - Disable flow control for UART2 serial interface.

u2+ (--) - Enable flow control for UART2 serial interface (Default).

u*/mod (u1 u2 u3 -- u4(remainder) u5(quotient)) - Unsigned u1*u2/u3 with 32 bit intermediate result.

u. (u --) - Display u unsigned according to numeric base.

u.r (u +n --) - Display u in field of width n. 0<n<256.

u/ (u1 u2 -- u3) - Unsigned 16/16->16 bit division.

u/mod (u1 u2 -- u3(remainder) u4(quotient) - Unsigned 16/16->16 bit division.

u< (u1 u2 -- flag) - Leave true flag if u1 is less than u2.

u> (u1 u2 -- flag) - Leave true flag if u1 is greater than u2.

ud. (ud --) - Display unsigned double number.

ud* (ud u -- ud) - Unsigned 32x16 -> 32 bit multiply.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

ud/mod (ud u -- u(remainder) ud(quotient)) - Unsigned 32/16 -> 32 bit division.

ulink (-- a-addr) - Link to next task.

um* (u1 u2 -- ud) - Unsigned 16x16 -> 32 bit multiply.

um/mod (ud u1 -- u2(remainder) u3(quotient) - Unsigned 32/16 -> 16 bit division.

umax (u1 u2 -- u) - Leave the unsigned larger of u1 and u2.

umin (u1 u2 -- u) - Leave the unsigned smaller of u1 and u2.

until (flag --) < COMPILE_ONLY > - begin..until.

up (-- a-addr) - Variable holding the user pointer.

user (+n "name" --) - Define a user variable at offset +n.

uq* (ud ud -- uq) - Multiply two double numbers to a quad result PIC18 PIC24 PIC30 PIC33.

uq/mod (qu du -- du-rem du-quot) - Divide a 64 bit unsigned number with a 32 bit unsigned number PIC18 PIC24 PIC30 PIC33.

d>q (d -- q) - Extend a double number to a quad number PIC18 PIC24 PIC30 PIC33.

q+ (q q -- q) - Add a quad number to quad number PIC24 PIC30 PIC33.

qm+ (q d -- q) - Add a double number to quad number PIC18 PIC24 PIC30 PIC33.

ut* (ud u -- ut) - Multiply single number with double number.

ut/ (ut u -- ud) - Divide triple number with single number.

um*/ (ud1 u1 u2 -- ud2) - Scale with triple number intermediate result.

value (x "name" --) - Define a value.

variable ("name" --) - Create a variable in the current data section.

warm (--) - Make a warm start.

while (addr1 -- addr2 addr1) < COMPILE_ONLY > - begin ... while ... repeat.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

within (x xl xh -- flag) - Leave true if xl <= x < xh.

word (c -- c-addr) - Parse a word in TIB and write the length into TIB. Leave the address of the length byte on the stack.

wmove (addr1 addr2 u --) - Move u cells from addr1 to addr2.

words xxx ("name" --) - List words optionally filtered with xxx.

x! (u addr.d --) - Extended store into flash. Real flash address PIC18 ATMEGA.

x! (ud addr.d --) - Extended store into flash. Real flash address PIC-24-30-33.

x@ (addr.d -- u) - Extended fetch from flash. Real flash address PIC18 ATMEGA.

x@ (addr.d -- ud) - Extended fetch from flash. Real flash address PIC24-30-33.

xa> (a-addr1 -- a-addr2) - Convert a real executable address to virtual flash address.

xor (x1 x2 -- x3) - Xor bitwise x1 with x2.

PIC24-30-33 assembler (partial)
```
==============================
rcall,    ( rel-addr -- )
bra,      ( cc rel-addr -- )
return,   ( -- )
retfie,   ( -- )
bclr,     ( bit ram-addr -- )
bset,     ( bit ram-addr -- )
btst,     ( bit ram-addr -- )
btsc,     ( bit ram-addr -- )
btss,     ( bit ram-addr -- )
z,        ( -- cc )
nz,       ( -- cc )
not,      ( cc -- not-cc )
if,       ( cc -- here )
else,     ( back-addr -- here )
then,     ( back-addr -- )
begin,    ( -- here )
again,    ( back-addr -- )
until,    ( back-addr cc -- )
```

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

SCAMP WORDS

The following words are part of the Scamp BSP and not part of the standard FlashForth dictionary. For words that are part of the standard FlashForth dictionary, see the FlashForth Dictionary Reference page or visit Mikael Nordman's FlashForth website.

about (--) - Display the about message with version numbers.

ack (--) - Send an ACK on the I2C bus.

adc10 (--) - Configure the ADC for 10-bit sampling.

adc12 (--) - Configure the ADC for 12-bit sampling.

adcclk (c --) - Set the conversion clock period. Period = (c * 62.5 ns) + 1.

analog (pin --) - Configures a pin on the Scamp connector as an analog input.

baud (baud -- BRG) - Take a double from the stack indicating the desired baud rate and calculate the required BRG value for the UART.

bg (color --) - Sets the text background color for the ANSI terminal.

blink (--) - Blinks the onboard LED once.

bold (--) - Sets the text font to bold for the ANSI terminal.

brg (BRG -- baud) - Takes a BRG value from the stack and calculates the actual baud rate used. The returned baud rate is a double.

channel (channel --) Selects an analog channel for sampling.

clear (pin --) - Sends an output pin on the Scamp connector low.

cls (--) - Sends the ANSI clear screen command to the host.

cr.s (--) - The Scamp prompt word.

devID (-- revision identifier) - Reads the silicon revision number and processor device identifier.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

duty (dutycycle channel --) - Sets the duty cycle of the specified PWM channel. Note that the duty cycle value should always be less than period value for a waveform to be generated. If the duty cycle is equal to or greater than the period, the output will stay high.

extend (c -- n) - Sign extend a negative 8-bit value to 16-bits.

fg (color --) - Sets the text foreground color for the ANSI terminal.

free (--) - Show the size of free memory in the Flash and RAM.

get (pin -- boolean) - Reads the state of an input pin on the Scamp connector.

goto (column row --) - Sends the ANSI command to move the cursor on the host terminal.

hide (--) - Sends an ANSI command to the host to hide the cursor.

i (-- loop-count) - Places the current loop count on the stack.

input (pin --) - Configures a pin on the Scamp connector as an input.

ledoff (--) - Turns the onboard LED off.

ledon (--) - Turns the onboard LED on.

leds (n --) - Writes the value of n to the LED array. This is a Scamp2 word only.

modules (--) - Pings each 7-bit I2C address starting at $3, and displays a table showing found I2C devices.

nack (--) - Sends a NACK on the I2C bus.

out (boolean pin --) - Sets or clears an output pin on the Scamp connector according to the boolean.

output (pin --) - Configures a pin on the Scamp connector as an output.

period (period channel --) - Sets the duty cycle of the specified PWM channel.

pick (n -- u) - Copies the n-th item on the stack to the top.

ping (address -- boolean) - Returns true if there is a device present at the specified address on the I2C bus, otherwise it returns false.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

plain (--) - Sends an ANSI command to the host terminal to set font style to plain.

pulldown (pin --) - Activates a pulldown resistor for a pin on the Scamp connector.

pwm (pin channel --) - Assign a pin on the Scamp connector to a PWM channel.

random (-- u) - Retrieves an unsigned 16-bit random number from the hardware RNG. This is a true random number, not a pseudo-random number.

read (address -- boolean) - Transmit a READ command to an I2C device at address, and leaves a boolean indicating whether an ACK was received.

receive (address -- c) - Send a RECEIVE command to an I2C device at address, and leaves the byte (c) received from the device.

repstart (--) - Sends a REPEATED START on the I2C bus.

reverse (--) - Sends an ANSI command to the host terminal to set font style to reverse text.

rx1pin (pin --) - Configures a pin on the Scamp connector as UART1's receiver input.

rx2pin (pin --) - Configures a pin on the Scamp connector as UART2's receiver input.

sample (-- u) - Samples the selected ADC channel and returns the value to the stack.

send (c -- boolean) - Sends a byte on the I2C bus.

set (pin --) - Sends an output pin on the Scamp connector high.

show (--) - Sends an ANSI command to the host to unhide the cursor.

start (--) - Sends a START on the I2C bus.

stop (--) - Sends a STOP on the I2C bus.

switch (pin --) - Configures a pin on the Scamp connector as an input with pullup resistor turned on.

temp (-- n1 n2) - Reads the value of the temperature sensor and returns two values to the stack. The temperature reading is n1.n2. Note this is a Scamp2 word only.

tx1pin (pin --) - Configures a pin on the Scamp connector as UART1's transmitter output.

tx2pin (pin --) - Configures a pin on the Scamp connector as UART2's transmitter output.

UDAMONIC FLASHFORTH AND SCAMP 2 WORD DEFINITIONS

u1baud (-- address) - Places the address of UART1's baud rate generator on the stack.

u2baud (-- address) - Places the address of UART2's baud rate generator on the stack.

underline (--) - Sends an ANSI command to the host to turn on the underline text style.

wink (--) - Sends an ANSI command to the host to turn on the blinking text style.

write (address – boolean) - Transmit a WRITE command to an I2C device at address, and leaves a boolean indicating whether an ACK was received.