SDA_OS Developer handbook

Version 2024-09-14 SDA_OS v.1.4.1

Basic Application structure

```
function init {
  screen = sys.gui.addScreen();
  sys.gui.addText(1, 1, 2, 6, "Hello, world!", screen);
  sys.os.gui.setMainScr(screen);
}

function update {
  # empty in this example
}
```

Required functions

Each application must implement all required functions.

Init function

`function init {}`
Init is called once when the app is loaded. arg0 - arg2: call arguments passed from sys.os.subProcess

Update function

`function update`
Update function is called each update cycle, when the app is active and in the foreground.

Optional functions

User might also implement optional functions. OS will call these functions under circumstanctes defined below.

Exit function

`function exit {}`
Exit function is called upon exiting the app.

Suspend function

`function suspend {}`
Suspend function is called when the app is suspended.

Wakeup function

`function wakeup {}`
Wakeup is called when the app is woken from suspend state. If the application process was set as a singular, and the app was woken from sys.os.subProcess call, init arguments are passed to the wakeup function.

SVP API Level history

API level given by *sys.os.getVer* etc. works like this: 1000 - SDA version 1.0.0 with all its features ... 1120 - SDA version 1.1.2 with all its features

Constants

Constant	Description
SVP_LANG_CZ	Czech language
SVP_LANG_ENG	English language

Main OS functions

Get redraw flag

```
sys.os.getRedraw();
```

Gets redraw flag. *getRedraw* also works.

Return: [num] 1 if redraw flag is set, otherwise 0

Set redraw

```
sys.os.setRedraw();
```

Sets redraw flag

Return: None

Wake the SDA from sleep

```
sys.os.wake();
```

Wakes SDA without turning the screen on. SDA will wake in the low power mode and will sleep again after the lcd shutdown time.

Return: None

Pushes app to foreground

```
sys.os.arise();
```

If called from timer or uart callback, the app is promoted to the foreground.

Return: None

Disable app close

```
sys.os.noClose([num] enabled);
```

If enabled, running application is only suspended when close button is pressed. Application can still be closed from task manager.

Return: None

Get if running in simulator

```
sys.os.inSim();
```

Gets if app is running in simulator. 1 - Simulator, 0 - Real hardware.

Return: [num] result

Show Error

```
sys.os.error([str]errorText);
```

Throws error message

Return: None

Gets app path

```
sys.os.getAppPath();
```

Gets diretory path of the currently running svs app includung the name of the app.

Return: [str] Path

Keyboard

Show keyboard

```
sys.os.showKbd();
```

Shows system keyboard

Return: None

Hide keyboard

```
sys.os.hideKbd();
```

Hides system keyboard.

Return: None

Get Keyboard state

```
sys.os.kbdGetState();
```

Gets if keyboard is deployed 1 - keyboard shown, 0 - keyboard hidden

Return: [num] state

Misc

Get random number

```
sys.os.rnd();
```

Returns random number

Return: [num]RandomValue

Suspend app

```
sys.os.suspend();
```

Suspends (minimizes) currently running app.

Return: none

Exit app

```
sys.os.exit();
sys.os.exit([undef] arg0, [undef] arg1, [undef] arg2); # optional return values
```

Stops program execution after exiting *update* function and performing *exit* function.

Return: None

Check API level

```
sys.os.checkVer([num] API_Level);
```

Checks for API Lvl support. If host level is below given API_Level, error is thrown and app is terminated.

Return: None

Get API level

```
sys.os.getVer();
```

Checks for API Lvl support.

Return: [num] SDA_OS version number

Get system language

```
sys.os.getLang();
```

Returns language of the running SDA_OS build.

Return: defines SVP_LANG_CZ (0) or SVP_LANG_ENG(1)

Subprocess

Set process as singular

```
sys.os.setSingular();
```

Sets current process as singular.

Return: None

Launch subprocess

```
sys.os.subProcess([str]fileName, [str/ref] callback, [undef] arg0, [undef] arg1, [undef] arg2);
```

Runs child process with given arguments. *fileName* must contain valid path to .svs file located in APPS directory. *callback* stores name of a function that will be called after child process exits. Subprocess will be launched after the current application returns from its *update* function. When strings are passed as arguments, their total size must not exceed APP_ARG_STR_LEN define (2048 by default).

Return: None

Enable launching subprocess from cwd

```
sys.os.subProcCWD([num] val);
```

Sets if subprocesses are launched from cwd or from APPS folder.

val:

Value:	Description
0	APPS folder (default)
1	CWD

Return: None

Disable caching for launched subprocess

```
sys.os.subProcNC();
```

Disables caching for next call of sys.os.subProcess. Usefull when running modified content and precaching on launch is enabled in settings.

Return: None

Return data to parent process

```
sys.os.subRetval([undef] arg0, [undef] arg1, [undef] arg2);
```

Sets values that will be returned to parent process When strings are passed as arguments, their total size must not exceed APP_ARG_STR_LEN define (2048 by default).

Return: None

Sets the clipboard string

```
sys.os.setClipboard([str] string);
```

Sets the OS clipboard 256 chars by default

Return: [num] 1 - ok, 0 - string too long

Gets the clipboard string

```
sys.os.getClipboard();
```

Gets the OS clipboard 256 chars max by default.

Return: [str] clipboard_string

OS settings functions

Reload homescreen settings

```
sys.os.settings.homeRld();
```

Reloads homescreen settings stored in homescreen.cfg

Return: none

Requests high privileges

```
sys.os.settings.rqAuth();
```

Requests authorization form user to change system settings. Result can be retrieved with 'sys.os.settings.getAuth();'

Return: None

Gets if privileges are granted

```
sys.os.settings.getAuth();
```

Gets if high privileges are granted.

Return: [num] 1 if authorization is given

Sets time and date

```
sys.os.settings.setTime([num] year, [num] month, [num] day, [num] hour, [num]
min);
```

Sets values that will be returned to parent process

Return: None

Gui

Set main application screen

```
sys.os.gui.setMainScr([num]id);
```

Sets main screen to screen with given id. When you wish to display overlay only, set this to 0.

Return: None

Get main application screen

```
sys.os.gui.getMainScr();
```

Gets main screen id

Return: [num]id

Set root for redraw

```
sys.os.gui.setRoot([num]in_apps, [str]dir);
```

Sets custom root directory for the redraw function. All paths for icons and other images pased to gui functions will use this folder as a root.

Return: None

Handle keypad input of a screen

```
sys.os.gui.btnCtrl([num]screen_id, [num]back_btn_id);
```

Allows control of a given screen via buttons. Element given as back_btn_id will be linked with back button. When 0 is passed instead of id, back button will bring the user on the SDA_OS main screen.

Return: None

Selects element for keyboard control

```
sys.os.gui.btnSelect([num]element_id);
```

Selects elemenet for keypad control. If the desired element is on a sub-screen of an button controlled screen, then the sub-screen must be also selected.

Return: None

Gets element selected by keyboard control

```
sys.os.gui.btnGetSel([num]screen_id);
```

Gets selected element in current screen (or its sub-screens)

Return: [num] element_id

Clear button control for a screen

```
sys.os.gui.btnClear([num]screen_id);
```

Clears keypad input for entire screen.

Return: None

Text field handling

Handle text input

```
sys.os.gui.handleText([num]id, [str]text);
sys.os.gui.handleText([num]id);
```

Handles text input fields. Id is field id. Text is default text value.

Return: [str] New modified text value

Usage:

```
string_val = sys.os.gui.handleText([num]id, string_val);
```

This is usefull if you are using string_val in every loop, handleText will keep the variable and the string in sync.

Alternative usage:

```
sys.os.gui.handleText([num]id);
```

This will handle the text field and text value can be retrieved with *sys.gui.getString*.

Note: the text value is still stored in SVS string memory.

Set keyboard string

```
sys.os.gui.setKbdStr([str] string);
```

Sets the current keyboard string (max 63 chars) Backspace code is "\b", delete is "\bd"

Return: [num] 1 - ok, 0 - string too long

Paste clipboard

```
sys.os.gui.pasteClipboard();
```

Pastes clipboard into active text field

Return: none

Get text cursor position

```
sys.os.gui.getCPos([num] id);
```

Gets the cursor position of a text field

Return: [num]id

Set text cursor position

```
sys.os.gui.setCPos([num] id, [num]val);
```

Sets the cursor position of a text field

Return: [num]id

Switch between landscape and portrait mode

```
sys.os.gui.setLandscape([num]val);
```

Sets the orientation of the display. 1 - Landscape 0 - Portrait Return: none

Get display orientation

```
sys.os.gui.getLandscape();
```

Gets the orientation of the display. 1 - Landscape 0 - Portrait Return: [num]val

Notification area icons

Set notification area icon

```
sys.os.gui.setNotif([str] path_to_sic, [str] callback);
```

Sets the notification area icon. Path is dependent on actual CWD.

Return: [num] id (1 - 3), 0 - Error, probably no empty icon spot

Free notification area icon

```
sys.os.gui.freeNotif([num] id);
```

Removes notification icon with given id.

Return: [num] 1 - ok, 0 - Error

Sound

Beep the speaker

```
sys.snd.beep();
```

Initiates system beep.

Return: None

Beep the speaker with callback

```
sys.snd.beepC([num] frequency_hz, [num] duration_ms, [str] callback);
```

Makes sound of given frequency and duration, calls given callback afterwards. Internally calls sys.snd.beepTime and sys.snd.beepFreq, so calling sys.snd.beep(); will produce tone with frequency and duration of last sys.snd.beepC call.

Return: None

Set beep param to default

```
sys.snd.beepDef();
```

Sets beep to its default values.

Return: None

Set the duration

```
sys.snd.beepTime([num]time (~ms));
```

Sets length of beep.

Return: None

Set the frequency

```
sys.snd.beepFreq([num]frequency (Hz));
```

Sets frequency of the beep in Hz in range from 27 to 20000.

Return: None

Get if system sound is disabled

```
sys.snd.getMute();
```

Returns system mute

Return: [num]1 if system is on mute.

Date selector widget

Init calendar widget

```
sys.w.cal.init([num]year, [num]month, [num]day);
```

Creates callendar widget screen. With given year, month and day.

Return: [num]Callendar widget screen id.

Select date

```
sys.w.cal.select([num]year, [num]month, [num]day);
```

Sets year, month and day to callendar widget.

Return: None

Update

```
sys.w.cal.update();
```

Updates callendar widget.

Return: [num] 1 when callendar is clicked.

Mark day

```
sys.w.cal.mark([num]day);
```

Marks day in callendar widget.

Return: None

Set highlighting

```
sys.w.cal.highlight([num]val);
```

Enable that all buttons except marked are rendered as ghost buttons.

Return: None

Get selected day

```
sys.w.cal.getDay();
```

Returns selected day.

Return: [num]day

Counters

Set counter

```
sys.cnt.set([num] ms);
```

Sets system timer, it counts down and stops at zero.

Return: None

Gets counter

```
sys.cnt.get();
```

Gets system timer value

Return: value of system timer

Text obfuscation

Unlock overlay init

```
sys.cr.unLockInit();
```

Creates unlock overlay

Return: [num] overlay ID, 0 when error

Unlock overlay update

```
sys.cr.update([num] ovId);
```

Updates unlock overlay

Return: None

Unlock overlay get ok

```
sys.cr.getOk([num] ovId);
```

Gets if unlock was successfull

Return: [num] 1 - unlock success, 2 - unlock canceled

Unlock overlay clear ok

```
sys.cr.clrOk([num] ovId);
```

Creates unlock overlay

Return: None

Get if is locked

```
sys.cr.getLock();
```

Gets if crypto is unlocked

Return: [num] 1 - crypto unlocked, 0 - crypto locked

Loads password as a key

```
sys.cr.loadPass();
```

Loads OS password as a key

Return: 0 if success, 1 if error

Load custom key string

```
sys.cr.loadStr([str]key);
```

Loads custom string as a crypto key

Return: 0 if success, 1 if error

Load custom keyfile

```
sys.cr.loadKey([str]keyfile);
```

Loads custom keyfile as a crypto key

Return: 0 if success, 1 if error

Load OS keyfile

```
sys.cr.loadOSKey();
```

Loads OS keyfile as a crypto key

Return: 0 if success, 1 if error

Generate keyfile

```
sys.cr.genKey([str]keyfile);
```

Generates custom keyfile.

Return: 0 if success, 1 if error

Lock

```
sys.cr.lock();
```

Locks sda encryption

Return: None

Encrypt file

```
sys.cr.encrypt([str]fname);
```

Encrypts file.

Return: 0 if success, 1 if error

Decrypt file

```
sys.cr.decrypt([str]fname);
```

Encrypts file.

Return: 0 if success, 1 if error

Encrypt string

```
sys.cr.encryptStr([str]source);
```

Encrypts given string.

Return: [str] encryptedString

Decrypt string

```
sys.cr.decryptStr([str]source);
```

Decrypts given string.

Return: [str] decryptedString

SDA OS HW functions

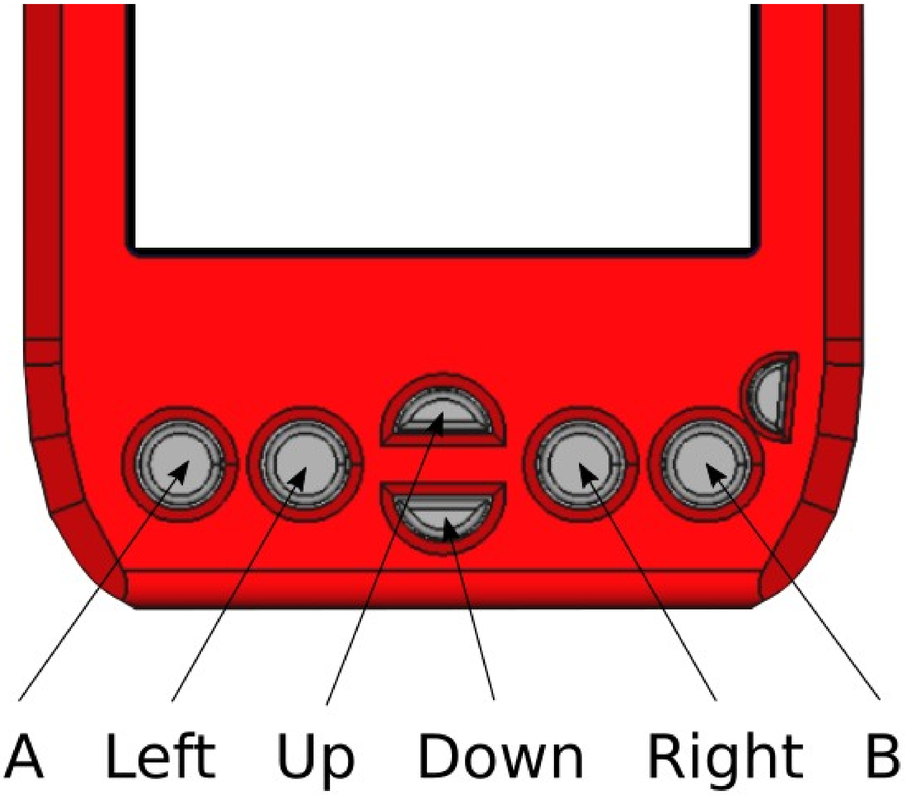
Constants

Indicator LED

Constant	**Description**
LED_ON	Nonification led on
LED_OFF	Nonification led off
LED_BLINK	Nonification led pattern
LED_SHORTBLINK	Nonification led pattern
LED_ALARM	Nonification led pattern

Buttons

Constant	**Description**
BTN_A	Button define
BTN_LEFT	Button define
BTN_UP	Button define
BTN_DOWN	Button define
BTN_RIGHT	Button define
BTN_B	Button define



Expansion pin states

Constant	Description
PIN_IN	Pin set as input
PIN_OUT	Pin set as output
PIN_ALT	Pin set to its alternate function
PIN_NOPULL	Pin set as input with pulldown
PIN_PULLUP	Pin set as input with pullup
PIN_PULLDOWN	Pin set as input with no pull resistor

LCD Functions

Lock LCD sleep

```
sys.hw.lockSleep([num]val);
```

Sets sleep lock value. On 1 system wont go to sleep.

Return: None

Turn on the LCD

```
sys.hw.wakeLcd();
```

Turns on the LCD screen.

Return: None

Get LCD state

```
sys.hw.getLcdState();
```

Gets state of lcd.

Return: 1 if lcd is on, otherwise 0

Set LCD state

```
sys.hw.setLcdState([num]lcd_state);
```

Sets the LCD state, 0 - off, 1 - on. In off state, the device will enter sleep mode.

Return: None

Set notification led pattern

```
sys.hw.setLed([num]led_type);
```

Sets notification led to a given pattern, uses: LED_ON, LED_OFF ,LED_BLINK, LED_SHORTBLINK, LED_ALARM

Return: None

Expansion Ports

Get USB State

```
sys.hw.getUsbState();
```

Gets state of usb port. Useful for determining if the SDA is connected to PC.

Return: 1 when powered from usb, otherwise 0

Resource claiming

System resources:

Resource define	**Description**
EXT_EXP_PORT	External expansion connector
INT_EXP_PORT	Internal expansion connector
USB_PORT	USB port (ftdi serial)
SERIAL_PORT	internal/external serial port

Locks area automatically freed on app close.

Claim hardware resource

```
sys.hw.claim([num]Resource);
```

Claims given hardware resouce for currently running app.

Return: [num] 1 - error, 0 - ok

Free hardware resource

```
sys.hw.free([num]Resource);
```

Frees given hardware resouce. Return: [num] 1 - error, 0 - ok

Get hardware resource state

```
sys.hw.getLock([num]Resource);
```

Frees given hardware resouce. Return: [num] 1 - locked, 0 - free

Internal expansion port

Internal expansion connector pinout:

MCU pin	Exc pin number	Exc pin number	MCU pin
PD15	01	09	PB15
PD14	02	10	PB14
PD13	03	11	PB13
PD12	04	GND	-
PD11	05	Vcc (3.3V)	-
PD10	06	14	PE12
PD09	07	15	PE13
PD08	08	16	PE14

Dot marks the pin no. 1

Define direction of pins on the internal expansion

```
sys.hw.iPinDef([num]Pin, [num]type, [num]pullUp);
```

Sets direction of internal expansion pins. Uses defines: PIN_IN, PIN_OUT, PIN_ALT, PIN_NOPULL, PIN_PULLUP, PIN_PULDOWN Pin number is number of pin on the connector, can be read from schematics.

Return: None

Set state of pins on the internal expansion

```
sys.hw.iPinSet([num]Pin, [num]val);
```

Sets state of internal expansion pin. Value 1 sets the pin high, value 0 sets it low. Pin number is number of pin on the connector, can be read from schematics.

Return: None

Get state of pins on the internal expansion

```
sys.hw.iPinGet([num]Pin);
```

Gets state of internal expansion pin. Pin number is number of pin on the connector, can be read from schematics.

Return: 1 if the pin is high, 0 if it is low.

External expansion pins

External expansion connector pinout:

Exc pin number	MCU pin	Alt Function
1	GND	
2	PA1	ADC_IN
3	3.3V	
4	PE15	I/O
5	PB10	Tx
6	PB11	Rx

Pin no. 1 is the one closest ot the charging LED

Define direction of pins on the expansion

```
sys.hw.ePinDef([num]Pin, [num]type, [num]pullUp);
```

Sets direction of external expansion pins. Uses defines: PIN_IN, PIN_OUT, PIN_ALT, PIN_NOPULL, PIN_PULLUP, PIN_PULDOWN Pin number is number of pin on the connector, can be read from schematics.

Return: None

Set state of pins on the expansion

```
sys.hw.ePinSet([num]Pin, [num]val);
```

Sets state of external expansion pin. Value 1 sets the pin high, value 0 sets it low. Pin number is number of pin on the connector, can be read from schematics.

Return: None

Get state of pins on the expansion

```
sys.hw.ePinGet([num]Pin);
```

Gets state of external expansion pin. Pin number is number of pin on the connector, can be read from schematics.

Return: 1 if the pin is high, 0 if it is low.

Get ADC readout

```
sys.hw.eADCRead();
```

Gets the voltage from pin 2 of the external expansion port. This function re-initializes the pin 2 to set it in the ADC mode. If you use this pin for anything else after, you need to re-init it with *sys.hw.ePinDef*.

Return: [float] measured voltage in volts.

Buttons

Functions for handling hw buttons.
Button defines: BTN_A, BTN_LEFT, BTN_UP, BTN_DOWN, BTN_RIGHT, BTN_B
Events are the same as in handling GUI:
EV_NONE, EV_PRESSED, EV_HOLD, EV_RELEASED

Get button event

```
sys.hw.btn.getEvent([num]btn);
```

Return last button event.

Return: [num] event

Clears button events

```
sys.hw.btn.clrEvent([num]btn);
```

Sets button event to EV_NONE

Return: None

Enable button events with LCD off

```
sys.hw.btn.stdbyEn([num]val);
```

Enables button readout with LCD off. Val: 1 - enabled, 0 - disabled When this is enabled, SDA won't go in deep sleep, and button presses will be handled immediately.

Return: None

Communication

Serial transmit queue

Could be used for all the transmission modes.

Serial expansion transmit queue

```
sys.com.qAdd([num]data);
```

Queues given hex value to transmit buffer. Max 32 bytes.

Return: [num] 1-ok, 0-full buffer

Serial expansion transmit queue clear

```
sys.com.qClr();
```

Clears transmit buffer.

Return: None

USB serial interface

USB serial transmit

```
sys.com.usbTrs([str]data);
```

Sends given string to usb serial port.

Return: None

USB serial transmit queue

```
sys.com.usbTrsQ();
```

Sends previously stored queue to the initialized serial port. Queue can be filled with sys.srlTrsQAdd and cleared with sys.srlTrsQClr. Max 32 bytes.

Return: None

USB serial set speed

```
sys.com.usbSetBd([num] bd);
```

Sets baud rate of the usb-serial port

Return: none

USB serial receive

```
sys.com.usbRcv([num]timeout);
```

Gets string (max 512 bytes) from USB serial port. If nothing is sent during timeout (in ms), empty string is returned.

Return: [str] data

USB serial receive init

```
sys.com.usbRcvIT();
```

Initializes usb serial port receive operation in non-blocking mode Returns 1 if ok, 0 if error occurred

Return: [num] result

USB serial get ready flag

```
sys.com.usbGetRd();
```

Gets transmission ready flag. Returns 1 if data is pending, 2 if whole line of data is pending

Return: [num] ready

USB serial get pending data

```
sys.com.usbGetStr();
```

Gets the pending string and resets the serial interface for another ready flag.

Return: [str] pending

USB serial get pending data

```
sys.com.usbGetBytes();
```

Gets the bytes from a serial interface and stores them in local buffer (512 Bytes max)

Return: [num] bytes used

USB serial get pending data

```
sys.com.usbGetByte([num] index);
```

Reads the byte value from a serial interface local buffer (512 Bytes)

Return: [num] byte value (0 - 255, -1 when error occurs)

Expansion port serial interface

Serial expansion transmit

Code to init the internal expansion port serial interface:

```
sys.hw.iPinDef(15, PIN_ALT, PIN_NOPULL);
sys.hw.iPinDef(16, PIN_OUT, PIN_NOPULL);
```

Code to init the external expansion port serial interface:

```
sys.hw.ePinDef(5, PIN_ALT, PIN_NOPULL);
sys.hw.ePinDef(6, PIN_ALT, PIN_NOPULL);
```

Serial expansion transmit

```
sys.com.uartTrs([str]data);
```

Sends given string to serial port on internal or external expansion connector. Depends on what is initialized.

Return: None

Serial expansion transmit queue

```
sys.com.uartTrsQ();
```

Sends previously stored queue to the initialized serial port. Max 32 bytes.

Return: None

Serial expansion receive

```
sys.com.uartRcv([num]timeout);
```

Gets string (max 512 bytes) from currently initialized serial port. If nothing is sent during timeout (in ms), empty string is returned.

Return: [str] data

Serial expansion set speed

```
sys.com.uartSetBd([num] bd);
```

Sets baud rate of the uart expansion port

Return: none

Serial receive in non-blocking mode

For more flexible serial interface operations

Serial expansion receive

```
sys.com.uartRcvIT();
```

Initializes serial port receive operation in non-blocking mode

Return: [num] result (1 if ok, 0 if error occurred)

Serial expansion get ready flag

```
sys.com.uartGetRd();
```

Gets transmission ready flag. Returns 1 if data is pending, 2 if whole line of data is pending

Return: [num] ready

Serial expansion get pending data

```
sys.com.uartGetStr();
```

Gets the pending string and resets the serial interface for another ready flag.

Return: [str] pending

Serial expansion get pending data

```
sys.com.uartGetBytes();
```

Gets the bytes from a serial interface and stores them in local buffer (512 Bytes)

Return: [num] bytes used

Serial expansion get pending data

```
sys.com.uartGetByte([num] index);
```

Gets the byte value from a serial interface local buffer (512 Bytes)

Return: [num] byte value (0 - 255, -1 when error occurs)

Serial expansion register wakeup callback

```
sys.com.uartRdClb([str] callback, [num] val);
```

Registers callback on expansion uart, when rd flag goes to *val*, application will be waken up and callback will be called. Application can fully resume by calling sys.os.arise(); Serial port needs to be previously configured for IT receive. Setting *val* to zero will disable the callback.

Return: [num] success

SDA Files

Since SDA_OS 1.0.2, more than one general purpose file is supported. Functions for basic file i/o operations now accept optional index parameter that specifies what file is used. Number of files currently openned is defined in SDA_FILES_OPEN_MAX define. Default value is 10.

Open file

```
sys.fs.open([str]fname);
sys.fs.open([num]index, [str]fname);
```

Opens text file for read or write. If no file index is given, index 0 is used.

Return: 1 on success, 0 on failure

Read given number of chars

```
sys.fs.readChars([num] bytes);
sys.fs.readChars([num]index, [num] bytes);
```

Reads given number of chars from file. If no file index is given, index 0 is used.

Return: [str] result

Writes given string to file

```
sys.fs.writeChars([str]string);
sys.fs.writeChars([num]index, [str]string);
```

Writes given string to file.

Return: 1 - ok, 0 - fail

Read byte from file

```
sys.fs.readByte();
sys.fs.readByte([num]index);
```

Reads byte from file.

Return: [num] result: 0 to 255 - ok, -1 - error, -2 - EOF

Write byte to file

```
sys.fs.writeByte([num] byte (0 - 255));
sys.fs.writeByte([num]index, [num] byte (0 - 255));
```

Writes byte to file.

Return: [num] 0 - fail, 1 - ok

Seek position in file

```
sys.fs.seek([num] pos_from_start);
sys.fs.seek([num]index, [num] pos_from_start);
```

Writes byte to file.

Return: [num] 0 - fail, 1 - ok

Truncate file

```
sys.fs.truncate();
```

Truncate currently opened file at the position of write pointer.

Return: [num] 0 - fail, 1 - ok

Tels position in file

```
sys.fs.tell();
sys.fs.tell([num]index);
```

Returns current write pointer position in the file.

Return: [num] pos

Get size of file

```
sys.fs.size();
sys.fs.size([num] index);
```

Returns size of openned file.

Return: [num] size in bytes

Close file

```
sys.fs.close();
sys.fs.close([num] index);
```

Closes open file.

Return: [num] 1 - ok, 0 - error

Directory functions

Get if path is dir

```
sys.fs.isDir([str] path);
```

Gets if path is a directory or not.

Return: [num] 0 - file, 1 - dir

Create directory

```
sys.fs.mkDir([str] name);
```

Creates new directory

Return: [num] 1 - ok, 0 - fail

Change working directory

```
sys.fs.chDir([str] pathInData);
```

Changes working directory. call sys.fs.chDir(0); or sys.fs.chDir(); to get to the DATA context call sys.fs.chDir(1); to get to the APPS context

Return: 1 - ok, 0 - fail

Get current working directory

```
sys.fs.getCWD();
```

Returns current working directory

Return: [str]path

Get current working context

```
sys.fs.getCWC();
```

Returns current working context

Return: [num]context 0 - DATA, 1 - APPS

File copy

File copy select source

```
sys.fs.copySource([str]source);
```

Selects source file for copy operation.

Return: [num] 1 - ok, 0 - failed

File copy start

```
sys.fs.copyStart([str]dest, [num]ChunkSize);
```

Starts copy operation, chunksize of bytes will be copyed each cycle.

Return: [num] 1 - ok, 0 - failed

File copy status

```
sys.fs.copyStat([num]opt);
```

opt: 0 - status ret: [num]0 - nothing, 1 - source selected, 2 - copy in progress

opt: 1 - size of source [num]bytes

opt: 2 - remaining bytes [num]bytes

Stop current copy operation

```
sys.fs.copyStop();
```

Stops current copy operation.

Return: None

Check, remove, rename

Check if file exist

```
sys.fs.exists([str]fname);
```

Checks if file exists.

Return: 1 if file exists, otherwise 0

Remove file

```
sys.fs.delete([str]fname);
```

Deletes file with fiven fname. Can also delete empty directories.

Return: None

Move/rename file

```
sys.fs.rename([str]oldPath, [str]newPath);
```

Moves/renames given file.

Return: None

Find files

Find begin

`sys.fs.find([str]extension, [str]directory);`
Inits file find operation, returns first result.

Return: [str]filename or "" if none

Find next

`sys.fs.findNext();`
Next iteration of file find operation.

Return: [str]filename or "" if none

Example

```
for(findfil = sys.fs.find("txt", "."); findfil != ""; findfil =
sys.fs.findNext();) {
  print("found: " + findfil);
}
```

Find is not stateless, sys.fs.find must be re-inicialized after recursive call. Example of recursive function:

```
function ls {
  local findfil;
  local n = 0;
  print(arg0);
  for(findfil = sys.fs.find("", arg0); findfil != ""; findfil =
sys.fs.findNext();) {
    if (sys.fs.isDir(arg0 + "/" + findfil)) {
      ls(arg0 + "/" + findfil);
      findfil = sys.fs.find("", arg0);
      local x;
      for (x = 0; x<n; x++;) {
        findfil = sys.fs.findNext();
      }
    } else {
      print(arg0 + "/" + findfil);
    }
    n++;
  }
}
```

Files as strings

Reads file as string

```
sys.fs.readStr([str]fname);
```

Reads text file to svs string buffer.

Return: [str]FileContents

Write string as file

```
sys.fs.writeStr([str]str, [str]fname);
```

Writes svs string to file.

Return: None

SDA CSV files API

SDA_OS implements basic csv-like file api.

Open csv file

```
sys.fs.csv.open([str]fname);
```

Opens csv file.

Return: [num]1 on succes.

Set separator

```
sys.fs.csv.setSeparator([str]separator);
```

Sets the csv separator default is "|".

Return: none.

Close csv file

```
sys.fs.csv.close();
```

Closes csv file.

Return: [num]1 on succes.

New csv line

```
sys.fs.csv.newLine([num]numberOfCells);
```

Adds new line to csv with given number of cells.

Return: None.

Get csv cell

```
sys.fs.csv.getCell([num]cellNumber, [str]default);
```

Gets data from specified cell on current line.

Return: [str]cellContents

Set csv cell

```
sys.fs.csv.setCell([num]cellNumber, [str]value);
```

Sets data of specified cell on current line. Cells are counted from 0.

Return: [str]cellContents

Feed line

```
sys.fs.csv.lineFeed();
```

Moves to the next lone of csv file

Return: [num] 1 - ok, 0 - end of file

Remove line

```
sys.fs.csv.removeLine();
```

Removes current line from csv

Return: None

Rewind file

```
sys.fs.csv.rewind();
```

Rewinds file back on the start.

Return: None

Config files API

Open config file

```
sys.fs.conf.open([str]fname);
```

Opens config file.

Return: [num]1 on succes.

Close config file

```
sys.fs.conf.close();
```

Close conf file.

Return: [num]1 on succes.

Check if key exists

```
sys.fs.conf.exists([str]key);
```

Checks if key exists in conf file

Return: [num] 1 if key exists.

Read key

```
sys.fs.conf.read([str]key);
sys.fs.conf.read([str]key, [str]default);
```

Reads key from config file as a string, 1024 chars max, when no default value is provided and the key doesn't exist, empty string is returnded.

Return: [str]Value

Read Key as int

```
sys.fs.conf.readInt([str]key, [num]default);
```

Reads key from config file as num (integrer). To be removed.

Return: [num]Value

Write key

```
sys.fs.conf.write([str]key, [str]val);
```

Writes value in specified key.

Return: None

Remove key

```
sys.fs.conf.remove([str]key);
```

Removes given key.

Return: None

Get if key value matche

```
sys.fs.conf.valMatch([str]key, [str]value, [num]caseSensitive);
```

Returns 1 if value matches portion of a value in a given key. Case sensitive switch switches if the thing is case sensitive...

Return: [num] isMatch (0 - no match, 1 - match, -1 - key not found)

Overlay API

Set overlay screen

```
sys.o.setScr([num]screen_id);
```

Sets overlay screen, returns overlay id.

Return: [num] Overlay id

Get overlay id

```
sys.o.getId();
```

Gets id of current overlay.

Return: [num] OverlayId

Destroy overlay

```
sys.o.destroy();
```

Destroys current overlay, also destroys its screen.

Return: None

Set position and size of overlay

```
sys.o.setXYXY([num]x1, [num]y1, [num]x2, [num]y2);
```

Sets position and size of current overlay (in screen pixels).

Return: None

Set overlay height

```
sys.o.setY([num]val);
```

Sets lower coordinates of current overlay (in screen pixels).

Return: None

Date overlay

Create date overlay

```
sys.o.date.add([num]year, [num]month, [num]day);
```

Creates date overlay id, returns id

Return: [num]Date overlay id

Update date overlay

```
sys.o.date.update([num]id);
```

Updates date overlay

Return: None

Get ok from overlay

```
sys.o.date.getOk([num]id);
```

Gets if overlay ok button was pressed.

Return: 1 if overlay ok button was pressed

Clear ok from overlay

```
sys.o.date.clrOk([num]id);
```

Clears ok flag from overlay

Return: None

Get year form overlay

```
sys.o.date.getYr([num]id);
```

Gets year from overlay with given id.

Return: [num]Year

Get day from overlay

```
sys.o.date.getDay([num]id);
```

Gets day from overlay with given id.

Return: [num]Day

Get month from overlay

```
sys.o.date.getMon([num]id);
```

Gets month from overlay with given id.

Return: [num]Month

Time overlay

Create time overlay

```
sys.o.time.add();
sys.o.time.add([num]hr, [num]min);
```

Adds a time overlay, returns its id

Return: [num]overlay id

Set time overlay time

```
sys.o.time.set([num]overlay_id, [num]hr, [num]min);
```

Sets time in overlay with given id.

Return: None

Update time overlay

```
sys.o.time.update([num]overlay_id);
```

Updates time overlay.

Return: None

Get time overlay ok

```
sys.o.time.getOk([num]overlay_id);
```

Gets ok from time overlay.

Return: 1 if ok was pressed

Get time overlay minutes

```
sys.o.time.getMin([num]overlay_id);
```

Returns minutes from overlay.

Return: [num]Minutes

Get time overlay hours

```
sys.o.time.getHr([num]overlay_id);
```

Returns hours from overlay.

Return: [num]Hours

Clear ok

```
sys.o.time.clrOk([num]overlay_id);
```

Clears ok from time overlay

Return: None

Color overlay

Create color overlay

```
sys.o.color.add([num]color);
```

Adds a color overlay, returns its id

Return: [num]overlay id

Set color overlay color

```
sys.o.color.set([num]overlay_id, [num]color);
```

Sets color in overlay with given id.

Return: None

Update color overlay

```
sys.o.color.update([num]overlay_id);
```

Updates color overlay.

Return: None

Get color overlay ok

```
sys.o.color.getOk([num]overlay_id);
```

Gets ok from color overlay.

Return: 1 if ok was pressed

Get color overlay value

```
sys.o.color.getCol([num]overlay_id);
```

Returns color from overlay.

Return: [num]Color

Clear ok

```
sys.o.color.clrOk([num]overlay_id);
```

Clears ok from the overlay

Return: None

Time API

Get time

```
sys.time.get();
```

Returns system time in the timestamp form. Count of seconds from 00:00 1. 1. 2007

Return: [num]Timestamp

Get time update flag

```
sys.time.getUpd()
```

Returns 1 when time update flag occurs.

Return: 1 on time update (roughly 1s)

Get seconds

```
sys.time.getSec();
```

Returns system time.

Return: [num]Seconds

Get minutes

```
sys.time.getMin();
```

Returns system time.

Return: [num]Minutes

Get hours

```
sys.time.getHr();
```

Returns system time

Return: [num]Hours

Get day

```
sys.time.getDay();
```

Returns system time.

Return: [num]Day

Get month

```
sys.time.getMonth();
```

Returns system time.

Return: [num]Month

Get year

```
sys.time.getYear();
```

Returns system time.

Return: [num]Year

Get uptime

```
sys.time.getUptime();
```

Returns system uptime.

Return: [num]Uptime(secs)

Get uptime in miliseconds

```
sys.time.getAppUptime();
```

Returns milisecond uptime of the app.

Return: [num]Uptime(miliseconds)

Get new timestamp

```
sys.time.setTs([num]Year, [num]Month, [num]Day, [num]Hour, [num]Min,
[num]Sec);
```

Returns timestamp of given time, works only for years 2007 and above.

Return: [num]Timestamp

Get seconds from timestamp

```
sys.time.getTsSec([num]timestamp);
```

Returns seconds from given timestamp.

Return: [num]Seconds

Get minutes from timestamp

```
sys.time.getTsMin([num]timestamp);
```

Returns seconds from given timestamp.

Return: [num]Minutes

Get hours from timestamp

```
sys.time.getTsHr([num]timestamp);
```

Returns seconds from given timestamp.

Return: [num]Seconds

Get days from timestamp

```
sys.time.getTsDay([num]timestamp);
```

Returns seconds from given timestamp.

Return: [num]Days

Get weekday from timestamp

```
sys.time.getTsWkDay([num]timestamp);
```

Returns weekday from given timestamp.

Return: [num]Weekday (starting with monday)

Get month from timestamp

```
sys.time.getTsMonth([num]timestamp);
```

Returns seconds from given timestamp.

Return: [num]Months

Get year from timestamp

```
sys.time.getTsYear([num]timestamp);
```

Returns seconds from given timestamp.

Return: [num]Years

Timer API

System timer will call the callback after given time, it will wake up the app if it is in the background. You can push app to foreground by calling sys.os.arise(); from the callback.

Set timer

```
sys.time.setTimer([num]time_ms, [str]callaback);
```

Sets the timer.

Return: none

Clear timer

```
sys.time.clearTimer();
```

Clears the timer if it is running.

Return: none

Alarm API

Alarm API creates system handled, repeatable alarms, that will be stored during reboots and will automatically launch the app. When alarm is created, alarm id is returned, this id should be stored for future operations with the alarm. Every alarm can have an user-defined parameter.

Register alarm

```
sys.alarm.setFixed([num]timestamp, [num]param);
```

Creates new one-time alarm. Returns id of the new alarm.

Return: [num]id

Register repeating alarm

```
sys.alarm.setRep([num]hour, [num]min, [num]wkday, [num]day, [num]month,
[num]param);
```

Creates new repeatable alarm. Zero value in wkday/day/month means repeat every wkday/day/month. Returns id of the new alarm.

Return: [num]id

Remove alarm

```
sys.alarm.destroy([num]id);
```

Returns if alarm was deleted.

Return: [num] 0 - Ok, 1 - Fail

Get alarm flag

```
sys.alarm.getFlag();
```

Returns 1 when alarm has occured.

Return: [num]flag

Clear alarm flag

```
sys.alarm.clrFlag();
```

Clears alarm flag.

Return: none

Get alarm id

```
sys.alarm.getId();
```

Returns id of the current alarm.

Return: [num]id

Get alarm parameter

```
sys.alarm.getPar();
```

Returns parameter of the current alarm.

Return: [num]param Automatically generated documentation for GR2 SVS wrapper, follows markdown syntax.

GR2 Graphics library

Constants

Element events

Constant	Value	Meaning
EV_PRESSED	1	Event: pressed
EV_RELEASED	3	Event: released
EV_HOLD	2	Event: hold
EV_NONE	0	Event: none

UI Colors

Constant	Value	Meaning
COL_BORDER	1	Color: Border
COL_TEXT	2	Color: Text
COL_BACKGROUND	3	Color: Background
COL_FILL	4	Color: Fill
COL_ACTIVE	5	Color: active

Text alignment

Constant	Value	Meaning
ALIGN_LEFT	5	Text align: Left
ALIGN_RIGHT	5	Text align: Right
ALIGN_CENTER	5	Text align: Center

Element constructors

New screen

```
sys.gui.addScreen();
```

or also sys.gui.addScreen([num]x1, [num]y1, [num]x2, [num]y2, [num]scrId); Creates new screen.

Return: [num]scrId

New frame

```
sys.gui.addFrame([num]x1, [num]y1, [num]x2, [num]y2, [num]value, [num]scrId);
```

Creates new pscg frame. Value contains id of screen inside frame.

Return: [num]elementId

New text field

```
sys.gui.addText([num]x1, [num]y1, [num]x2, [num]y2, [str]str, [num]scrId);
```

Adds a new text field.

Return: [num]id

New button

```
sys.gui.addButton([num]x1, [num]y1, [num]x2, [num]y2, [str]str, [num]scrId);
```

Creates new button.

Return: [num]id

New color button

```
sys.gui.addCButton([num]x1, [num]y1, [num]x2, [num]y2, [str]str, [num]scrId);
```

Adds color button, color is stored in its value.

Return: [num]id

New check box

```
sys.gui.addCheckBox([num]x1, [num]y1, [num]x2, [num]y2, [str]str, [num]scrId);
```

Creates new checkbox. Checkbox state is stored in its value.

Return: [num]id

New icon

```
sys.gui.addIcon([num]x1, [num]y1, [num]x2, [num]y2, [str]description,
[str]image, [num]scrId);
```

Adds icon. Image must be a file in current working directory. Optimal resolution is 64x64px. Icon will try to accomodate given space by scaling itself. use sys.gui.setTxtAlign to change position of the description box. When parameter of icon element is not zero, color of value param - 1 (16bit RGB565) is drawn as transparent.

Return: [num]id

Set icon

```
sys.gui.setIcon([num]id, [str]image);
```

Sets image for given icon. Image must be a file in current working directory, with resolution 64x64px. When parameter of icon element is not zero, color of value param - 1 (16bit RGB565) is drawn as transparent.

Return: none

New image

```
sys.gui.addImage([num]x1, [num]y1, [num]x2, [num]y2, [str]fname, [num]scrId);
```

Creates new image (ppm or p16) container. Name of image is stored in str_value Size attribute is stored in value, (one by default) Color of value param - 1 (16bit RGB565) is drawn as transparent.

Return: [num]id

New vertical slider

```
sys.gui.addSliderV([num]x1, [num]y1, [num]x2, [num]y2, [num]howMuchOverall,
[num]howMuch, [num]scrId);
```

Adds a new vertical slider.

Return: [num]id

New horizontal slider

```
sys.gui.addSliderH([num]x1, [num]y1, [num]x2, [num]y2, [num]howMuchOverall,
[num]howMuch, [num]scrId);
```

Adds a new horizontal slider.

Return: [num]id

New progress bar

```
sys.gui.addBar([num]x1, [num]y1, [num]x2, [num]y2, [num]howMuchOverall,
[num]howMuch, [num]scrId);
```

Adds progress bar. Orientation depends on its dimensions.

Return: [num]id

Destructors

```
sys.gui.destroy([num]id);
```

Destroys element with given id.

Return: none

Getters & setters

Modified flag

```
sys.gui.setModif([num]Id);
```

Sets modified flag of an element. Return: None

Element property: Value

Get value

```
sys.gui.getValue([num]Id);
```

Gets value of gr2 element.

Return: [num]value

Set value

```
sys.gui.setValue([num]Id, [num]value);
```

Sets value of pscg item.

Return: None

Element property: Parameter

Get parameter

```
sys.gui.getParam([num]Id);
```

Gets elements parameter value.

Return: [num]param

Set parameter

```
sys.gui.setParam([num]Id, [num]value);
```

Sets elements parameter value. Return: None

Event Handling

Get event

```
sys.gui.getEvent([num]Id);
```

Gets event from an element.

Return: [num] event value, one of EV_ defines.

Get event and clear

```
sys.gui.getEventC([num]Id);
```

Gets event from an element and clears the event.

Return: [num] event value, one of EV_ defines.

Set event

```
sys.gui.setEvent([num]Id, [num] event);
```

Sets event of an element.

Return: None

Clear screen events

```
sys.gui.clrScrEv([num]Id);
```

Clears event for whole screen and its sub-screens.

Return: None

Set screen

```
sys.gui.setScreen([num]Id, [num]screenId);
```

Sets element screen parameter.

Return: None

Element property: Grayout

Get grayout

```
sys.gui.getGrayout([num]Id);
```

Gets element grayout.

Return: [num] grayout, 1 if element is grey, 0 if it is normal

Get grayout

```
sys.gui.setGrayout([num]Id, [num]grayout);
```

Sets element grayout.

Return: None

Element property: Visibility

Get visibility

```
sys.gui.getVisible([num]Id);
```

Gets element visibility.

Return: [num] visibility

Set visibility

```
sys.gui.setVisible([num]Id, [num]visibility);
```

Sets element visibility.

Return: None

Element property: Ghost

When ghost i s enabled, only button text and its outline is drawn.

Get ghost

```
sys.gui.getGhost([num]Id);
```

Gets element ghost parameter.

Return: [num] isGhost

Set ghost

```
sys.gui.setGhost([num]Id, [num]ghost);
```

Sets element ghost parameter.

Return: None

Element property: Select

Get select

```
sys.gui.getSelect([num]Id);
```

Gets element selected parameter.

Return: [num] isSelected

Set select

```
sys.gui.setSelect([num]Id, [num]select);
```

Sets element select parameter.

Return: None

Slider size

Set slider size

```
sys.gui.setSliderSize([num]Id, [num]val);
```

Sets size of slider in pixels.

Return: None

Set rounded

```
sys.gui.setRounded([num]Id, [num]rounded);
```

Sets element rounded parameter.

Return: None

Element property: String parameter

Set String

```
sys.gui.getStr([num]Id);
```

Gets element value_str parameter.

Return: [str]str

Get String

```
sys.gui.setStr([num]Id, [str]str);
```

Sets element value_str parameter.

Return: None

Keypad control

```
sys.gui.getBtnSel([num]screenId);
```

Gets element selected by the keypad input method from the given screen.

Return: [num] Id if something is selected, otherwise 0

Size and placement

Set relative init

```
sys.gui.setRelInit([num]val);
```

Sets aplication gr2 context to relative init mode. In relative init mode the x2 parameter is used as element width and the y2 as element height.

Return: None

Set rounded init

`sys.gui.setRndInit([num]val);`
Sets aplication gr2 context rounded init mode. In rounded init mode all elements are initialized as rounded type.

Return: None

Set elemnent size and position

`sys.gui.setXYXY([num]Id, [num] x1, [num] y1, [num] x2, [num] y2);`
Sets position of element inside screen.

Return: None

`sys.gui.setX1([num]Id, [num] x1);`
Sets position of element inside screen.

Return: None

`sys.gui.setX2([num]Id, [num] x2);`
Sets position of element inside screen.

Return: None

`sys.gui.setY1([num]Id, [num] y1);`
Sets position of element inside screen.

Return: None

`sys.gui.setY2([num]Id, [num] y2);`
Sets position of element inside screen.

Return: None

Get element size and position

`sys.gui.getX1([num]Id);`
Gets element position.

Return: [num] x1

`sys.gui.getX2([num]Id);`
Gets element position.

Return: [num] x2

`sys.gui.getY1([num]Id);`
Gets element position.

Return: [num] y1

`sys.gui.getY2([num]Id);`
Gets element position.

Return: [num] y2

Screen spacing & cell size

Set spacing

```
sys.gui.setSpacing([num]Id, [num] left, [num] right, [num] top, [num] bottom);
```

Sets element spacing atributes of given screen.

Return: None

Set cell width

```
sys.gui.setXcell([num]screenId, [num] Xcell);
```

Sets screen Xcell parameter. (32 by default)

Return: None

Get cell width

```
sys.gui.getXcell([num]screenId);
```

Gets screen Xcell parameter.

Return: [num] Xcell

Set cell height

```
sys.gui.setYcell([num]screenId, [num] Ycell);
```

Sets screen Ycell parameter. (32 by default)

Return: None

Get cell height

```
sys.gui.getYcell([num]screenId);
```

Gets screen Ycell parameter.

Return: [num] Ycell

Set screen xscroll

```
sys.gui.setXscroll([num]screenId, [num]Xscroll);
```

Sets Xscroll parameter. Determines screen horizontal offset.

Return: None

Get screen xscroll

```
sys.gui.getXscroll([num]screenId);
```

Gets screen Xscroll.

Return: [num] Xscroll

Set screen yscroll

```
sys.gui.setYscroll([num]screenId, [num]Yscroll);
```

Sets Yscroll parameter. Determines screen vertical offset.

Return: None

Get screen yscroll

```
sys.gui.getYscroll([num]screenId);
```

Gets Yscroll parameter.

Return: [num] Yscroll

Colors

Sets gr2 context color

```
sys.gui.setColor([num]Col, [num]val);
```

Sets given color to given value (16bit RGB565). Available system colors: COL_BORDER, COL_TEXT, COL_BACKGROUND, COL_FILL, COL_ACTIVE

Return: None

Gets gr2 context color

```
sys.gui.getColor([num]Col);
```

Gets value of given color define. Available system colors: COL_BORDER, COL_TEXT, COL_BACKGROUND, COL_FILL, COL_ACTIVE

Return: [num]val

Global text modificators

Functions that works on all elements that display text.

Set text size

```
sys.gui.setTxtSize([num]Id, [num]val);
```

Sets size of text inside buttons or text fields. Possible values are those used by LCD_Set_Sys_Font By default they are: 12, 18 (default), 32, 70, 87

Return: None

Get text size

```
sys.gui.getTxtSize([num]Id);
```

Gets size of text inside buttons or text fields.

Return: [num] font_size

Set text alignment

```
sys.gui.setTxtAlign([num]Id, [num]val);
sys.gui.setTexAlign([num]Id, [num]val); # TBR
```

Sets text alignment. (uses consts: ALIGN_LEFT, ALIGN_RIGHT, ALIGN_CENTER)

Return: None

Set text alignment

```
sys.gui.getTxtAlign([num]Id);
sys.gui.getTexAlign([num]Id); # TBR
```

Gets text alignment.

Return: [num]alignment (uses consts: ALIGN_LEFT, ALIGN_RIGHT, ALIGN_CENTER)

Misc

Set default text size for a screen

```
sys.gui.defTxtSize([num]screenId, [num] val);
sys.gui.setDefFont([num]screenId, [num] val); # TBR
```

Sets defalt screen text size.

Return: None

Text element modificators

Functions that work only on text element.

Set text field as password

```
sys.gui.setTxtPwd([num]Id, [num]val);
sys.gui.setTexPwd([num]Id, [num]val); # TBR
```

Sets text field as password field. Draws stars instead of characters.

Return: None

Get password value

```
sys.gui.getTxtPwd([num]Id);
sys.gui.getTexPwd([num]Id); # TBR
```

Gets if text field is a password field.

Return: [num]isPassword

Set text fit

```
sys.gui.setTxtFit([num]Id, [num]val);
sys.gui.setTexFit([num]Id, [num]val); # TBR
```

Sets automatic line-breaking. val: 1 - enabled, 0 - disabled Position of first line break is stored in the parameter.

Return: None

Set text fit

```
sys.gui.setTxtEd([num]Id, [num]val);
sys.gui.setTexEd([num]Id, [num]val); # TBR
```

Sets text field as editable.

Return: None

Text element activation/deactivation

Set text active

```
sys.gui.setTxtAct([num]Id);
sys.gui.setTexAct([num]Id); # TBR
```

Sets given editable text field as currently active.

Return: None

Get text active

```
sys.gui.getTxtAct([num]Id);
sys.gui.getTexAct([num]Id);
```

Gets if given editable text field is currently active.

Return: [num]isActive

Deactivate active text

```
sys.gui.txtDeact();
sys.gui.texDeact(); # TBR
```

Deactivates currently active text field.

Return: None

Text block functions

Enable block select mode

```
sys.gui.setTxtBlk([num]Id, [num]val);
sys.gui.setTexBlk([num]Id, [num]val); # TBR
```

Enables block selection in a text field. This is enabled by default, so it's mainly for disabling block mode.

Return: None

Set text block

```
sys.gui.setBlk([num] id, [num] start, [num] stop);
```

Sets start and stop of a block in active text field

Return: None

Get block start

`sys.gui.getBlkStart([num] id);`
Gets text field block start.

Return: [num] block_start

Get block end

`sys.gui.getBlkEnd([num] id);`
Gets text field block end.

Return: [num] block_end Automatically generated documentation on wrap_directS.c

Direct Screen draw functions

Color & Areas

Get color from RGB

`sys.ds.mixColor([num]r, [num]g, [num]b);`
Mixes the right color from red, green and blue values (0 - 255)

Return: [num] Color (16bit RGB565)

Set draw area

`sys.ds.setArea([num] x1, [num] y1, [num] x2, [num] y2);`
Sets the draw area. Uses hardware coordinates. For example: sys.ds.setArea(0, 32, 319, 479); This will init all app available space as a draw area.

Return: None

Draw rectangle

`sys.ds.drawRect([num] x1, [num] y1, [num] x2, [num] y2, [num]col);`
Draws rectangle outline

Return: None

Draw filled rectangle

`sys.ds.fillRect([num] x1, [num] y1, [num] x2, [num] y2, [num]col);`
Draws filled rectangle

Return: None

Draw circle

`sys.ds.drawCircle([num] x1, [num] y1, [num] radius, [num]col);`
Draws circle

Return: None

Draw filled circle

```
sys.ds.fillCircle([num] x1, [num] y1, [num] radius, [num]col);
```

Fills circle

Return: None

Draw portion of a circle

```
sys.ds.drawCPart([num] x1, [num] y1, [num] radius, [num] part, [num]col);
```

Draws part of a circle

Parts: | 0 | 1 | | 2 | 3 | Return: None

Fill portion of a circle

```
sys.ds.fillCPart([num] x1, [num] y1, [num] radius, [num] part, [num]col);
```

Fills a part of a circle

Return: None

Draw line

```
sys.ds.drawLine([num] x1, [num] y1, [num] x2, [num] y2, [num]col);
```

Draws line

Return: None

Draw text

```
sys.ds.drawText([num] x1, [num] y1, [str] txt, [num]col);
```

Draws text

Return: None

Set text to fit specified width

```
sys.ds.setTextFit([num] enable, [num] width);
```

Sets max width for next drawn text

Return: None

Get text width

```
sys.ds.getTextWidth([str] txt);
```

Gets width of a string, when drawn with current font.

Return: [num] width (px)

Get text height

```
sys.ds.getTextHeight([str] txt);
```

Gets height of a string, when drawn with current font.

Return: [num] height (px)

Fill area with color

```
sys.ds.clearArea([num]col);
```

Clears draw area with given color

Return: None

P16 image tools

Draws P16 image

```
sys.ds.drawImage([num]x, [num]y, [num]scale_w, [num]scale_h, [str]name);
```

Draws p16 image from the working directory. Supports upscaling, and downscaling.

Scale table:

Scale value	Image size
-3	1/16
-2	1/8
-1	1/4
0	1/2
1	1
2	2x
n	n*x

Return: None

Get P16 image width

```
sys.ds.getImageW([str]name);
```

Gets width of given p16 file.

Return: [num] width (px)

Get P16 image height

```
sys.ds.getImageH([str]name);
```

Gets height of given p16 file.

Return: [num] height (px)

Draws PPM

```
sys.ds.drawPPM([num]x, [num]y, [num]scale, [str]name);
```

Draws ppm image (To be removed).

Return: None

Touch API

Get if screen is touched

```
sys.ds.touchEv();
```

Gets if screen is touched, returns last touch event

Return: [num] Touch event (from event defines)

Clears touch event

```
sys.ds.touchClr();
```

Clears touch event

Return: none

Get touch y

```
sys.ds.touchY();
```

Gives y coordinate of touch event

Return: [num] Touch y coordinate

Get touch x

```
sys.ds.touchX();
```

Gives x coordinate of touch event

Return: [num] Touch y coordinate

Contents:

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