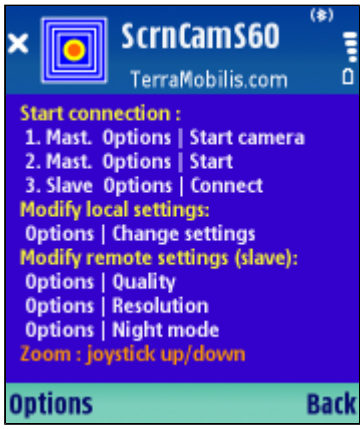
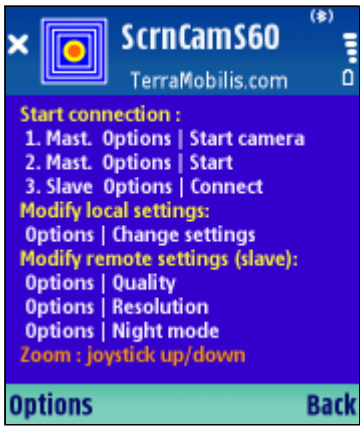
USER MANUAL

SCREENCAMS60 for 3rd Edition

Contents



0. General description



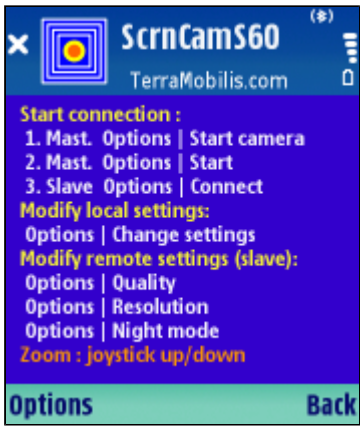
ScreenCamS60 is a tool which allows you to connect two phones via bluetooth, take and send camera pictures on one phone and watch these pictures on another phone.

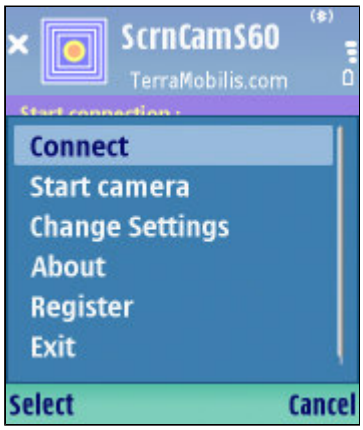
ScreenCamS60 works on all S60 2nd and 3rd edition phones. Download and install the right version of ScreenCamS60 (2nd or 3rd edition) for the phones you use. ScreenCamS60 for 2nd and 3rd edition are compatible: you can connect a 3rd edition phone with a 2nd edition phone.

ScreenCamS60 allows you to take and share pictures of documents, objects, your computer screen... or turns your phone into a genuine phonecam taking and displaying moving images remotely on a second phone. In this way ScreenCamS60 can be used as e.g. a baby monitor.

You can draw the attention to a particular detail by stopping ScreenCam and moving a special arrow pointer with the joystick to point to some feature on the picture.

It is possible to send images in different sharing modes (continuous, interval or single mode) and in different qualities (JPEG quality between 1 and 100), set delay and interval times, customize the notification message (visual message and/or tone) and specify memory location, directory name and file name when saving an image.





1. Quick start guide

ScreenCamS60 is easy to use. This "Quick start guide" will get you up and running. Go to the next chapters for more detailed and/or reference information. In order to avoid any confusion, the following terminology will be used in the remainder of this manual:

Master : phone sending images to 2nd phone (slave)

Slave : phone receiving images from the master

ScreenCamS60 has to be installed on both the master and the slave on which it respectively behaves as a "server" (master) and a "client" (slave). When sharing images between a 3rd edition phone and a 2nd edition phone, make sure to install the correct version of ScreenCamS60 on each phone.

a. Install & launch ScreenCamS60 on master & slave

b. On both phones: switch bluetooth on

c. On the slave: set bluetooth visibility to "Shown to all"

d. On the master: select Options | Start camera

e. On the master: select Options | Start

f. On the slave: select Options | Connect

g. On the slave: select master on the "Devices found" list

h. ScreenCamS60 has started

i. On the master: select Options | Stop ScreenCam to stop ScreenCam

j. On the master: move arrow pointer with the joystick

k. On the slave: image taken by the master and the arrow pointer are shown

l. On the master: select Options| Resume ScreenCam to restart ScreenCam

The default settings allow you to use ScreenCamS60 in "Continuous mode", a JPG quality of 50 and low resolution. Select Options | Change settings to choose different settings.

2. Bluetooth settings : visibility and pairing

ScreenCamS60 is a bluetooth application sending information between two phones connected with each other via bluetooth, a short range wireless communication method. Before any bluetooth connection can be active, the bluetooth settings on both phones have to be correct. For increased ease of use it is recommended to "pair" the phones with each other in order for bluetooth connections to take place automatically without confirmation. Also, all information sent over the bluetooth link is encrypted and will only be able to reach devices that are authorized to do so by the pairing process. Although pairing phones is a standard procedure (which is clearly described in any phone user manual), it is also described in detail in Appendix 1. If you are familiar with bluetooth settings and pairing, go to chapter 2.

The bluetooth settings screen can be opened as follows:

a. Press the menu key to open the menu

b. Open the "Connectivity" folder

c. Click the bluetooth icon

In order for ScreenCamS60 to work, the following minimum bluetooth settings are required:

ON YOUR PHONE (MASTER)

a. "Bluetooth" setting item set to "On"

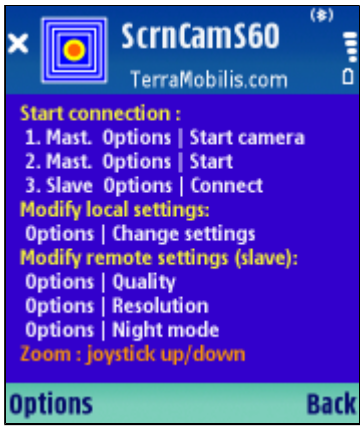
b. "My phone's visibility" setting item set to "Shown to all"

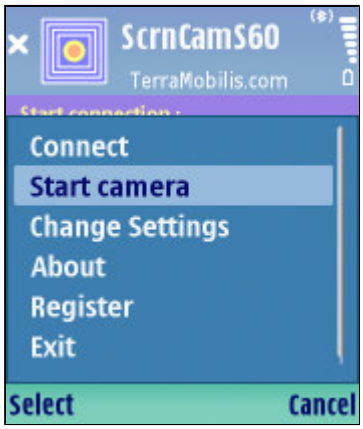
ON THE OTHER PHONE (SLAVE)

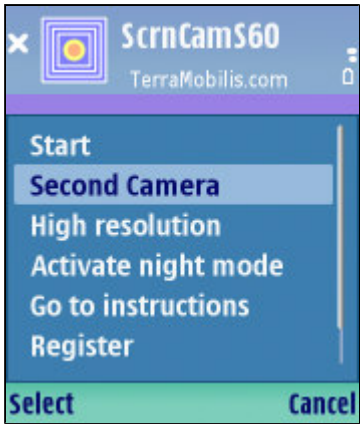
a. "Bluetooth" setting item set to "On"

Remark: when the "Bluetooth" setting item on the slave is set to "Off", the phone will prompt you to switch it to "On" when trying to connect by displaying the message: "Bluetooth is currently switched off. Switch on?"

It is also important to know that Symbian phones may be limited to one active bluetooth connection at any one time. So the connection will fail if the phone is e.g. already connected to your PC for use with PC Suite. You will have to disconnect the phone before you can use ScreenCamS60.







3. Starting up ScreenCamS60

When starting up ScreenCamS60, you are presented with a start-up screen providing you with a summary of instructions how to use ScreenCamS60 :

- start the connection

- modify settings

4. Starting and configuring the camera

Before ScreenCamS60 can be used the camera has to be started and configured.

Select "Options | Start camera" to launch the camera view finder.

Use the up and down keys of the joystick to respectively zoom in or out. Zoom levels may vary between phones (from 4 times to 20 times).

Important remark

ScreenCamS60 can only be used on a phone used as a master when the master phone features a camera. When ScreenCamS60 is installed on a camera without a camera the "Options | Start camera" menu item will not be displayed. Clearly, for ScreenCamS60 to be used on a phone used as a slave, the phone does not need to feature a camera.

The following S60 phones do not feature a camera:

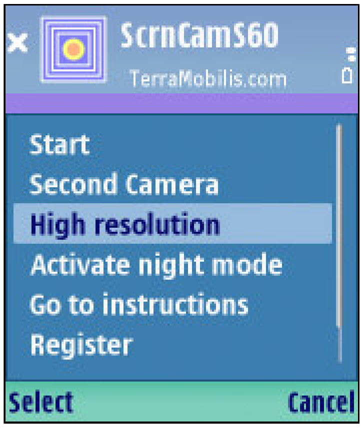
Nokia E61 / Nokia E60 / Nokia E50 (camera is optional)

After starting the camera, several menu options are available to configure the camera:

First or second camera

Select "Options | Second camera" to select the second camera (camera at the front of the device). This Options menu item is a toggle item allowing to switch between the first and the second camera of the device. The first camera is the main, high resolution camera of the device, normally positioned at the back of the device.The second camera is the low resolution camera positioned at the front of the device, normally used for video calling.

When the device has no second camera, the first/second camera menu item is not displayed.



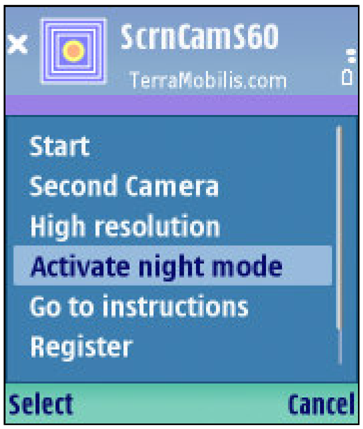
S60 phones featuring 2 camera's:

- Nokia 6680 / N70 / N71 / N73 / N80 / N92 /N93

Low or high resolution

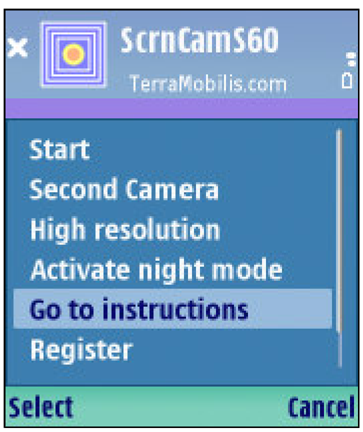
The "High/Low resolution" menu item is a toggle function between sending low resolution camera images and sending high resolution camera images. Low resolution camera images are shot at a size of 160 x 120. When the high resolution setting is selected, camera images are shot at the highest resolution supported by the screen of the slave phone e.g. camera images are shot at a size of 320 x 160 when sent to a slave phone with a screen size of 352 x 416 e.g. Nokia N80.

This setting can also be changed remotely.



Night mode

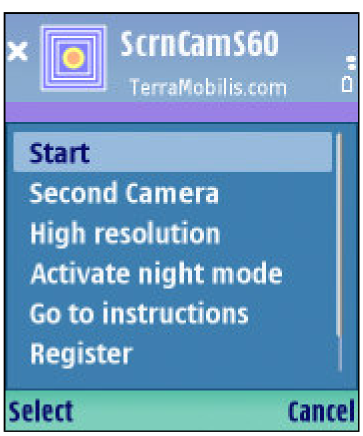
An additional "Activate/Deactivate night mode" toggle menu item is available to switch between normal and night exposure mode. Night exposure allows to use the camera mode when the light conditions are not optimal, which is often the case when using a phone camera indoor. However, there is an additional delay to take pictures in night mode, resulting in less fluent rendering of moving images.



Select Options | Go to instructions to go back to the start-up screen displaying the user instructions.

5. Starting bluetooth

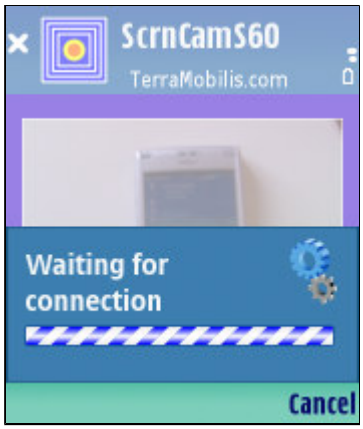
The procedure to connect the master phone with the slave phone via bluetooth consists of 2 phases:



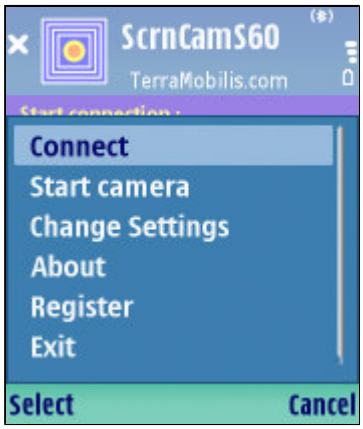
a. Master : start

The camera needs to be started on the master before connecting the phones via bluetooth.

The master is started by selecting Options | Start.

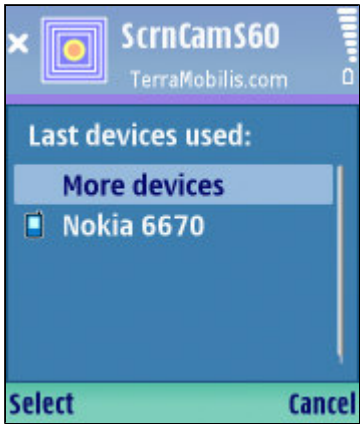


A waiting dialog " Waiting For Connection" is displayed indicating that the master phone is now waiting for the slave phone to connect.



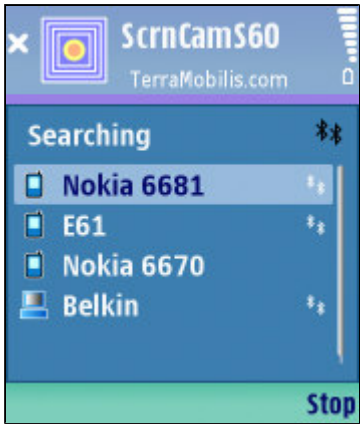
b. Slave : connect

The slave is connected to the master by selecting Options | Connect on the slave phone.



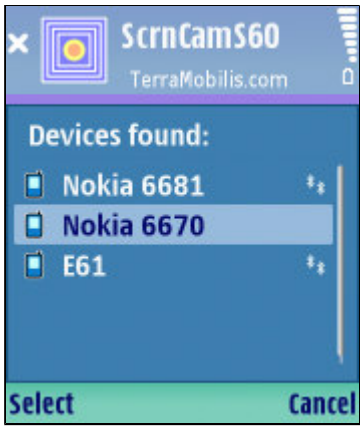
If previously bluetooth devices have been found they are displayed (Last devices found) and can be selected for connection. This speeds up the connection process as it avoids having to go through the bluetooth search process.

If the phone with which a connection has to be established is not listed, select "More devices" to start a new bluetooth search process.



If previously no search process has taken place or no devices have been found, the bluetooth search process starts immediately after selecting the "Connect" menu item.

Wait until the right device has been found. You can stop the bluetooth search process by pressing the right selection key (Stop) as soon as your device has been found. This avoids having to wait untill all bluetooth devices have been found which potentially can take a long time.

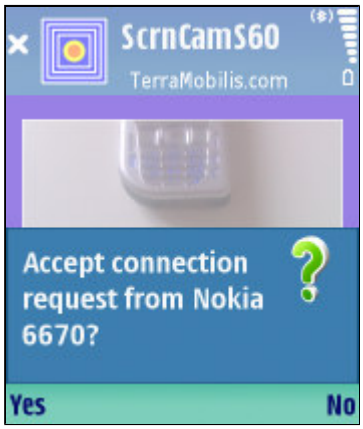


Select your device and press OK.

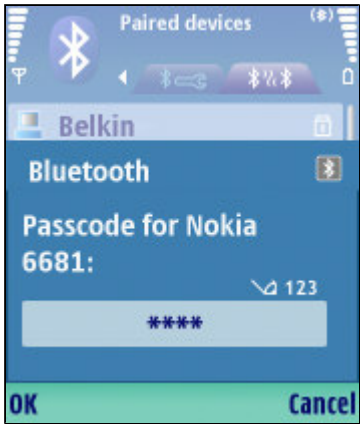
A "Searching for service" dialog is displayed.

When the master phone has not been properly set up, a "Service not found" error message is displayed.

If the master and slave are paired and the bluetooth connection of the master is "set as authorised" the bluetooth connection is established automatically and the message "Slave connected" is displayed on the slave.

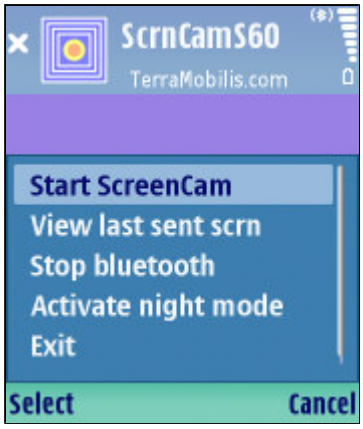


When the master and slave are not paired with each other (see Appendix 1) or when they are paired but the bluetooth connection is set as unauthorised, the connection will have to be manually accepted by the master.



In some cases (e.g. when 2 devices are connected for the first time) pairing will be required (if it has not yet been established) and a passcode will have to be entered on both the master and the slave. The device will then appear in the list of "paired devices".

When the confirmation dialog "Slave connected" is displayed on the slave, the slave is connected to the master and is ready to receive screen images.

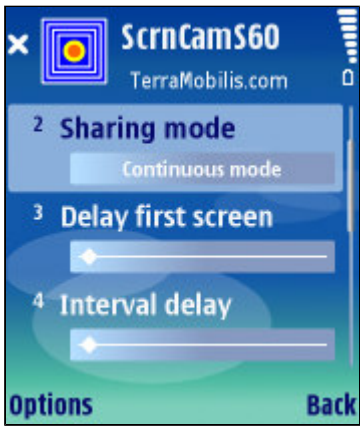


6. Starting ScreenCam

The way ScreenCam is started and used depends on the sharing mode.

Continuous/Interval mode

ScreenCamS60 is automatically started after the bluetooth connection is established in continuous mode (see 5.).

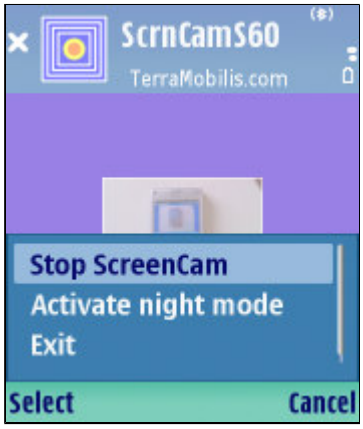


Single mode

In single mode each camera picture is taken and sent individually by selecting the "Start ScreenCam" item on the options menu. A first camera picture is taken and sent automatically immediately after the bluetooth connection is established. The following picture is taken and sent by selecting "Options | Start ScreenCam". (after selecting "Options | Resume ScreenCam" follwing the previous picture)

In single shot mode, the setting "Delay first screen" allows to keep the camera still while the picture is taken.

The master is notified when ScreenCam has started (or stopped). The notification can take the form of a visual message, a tone (camera click sound) or both. It is also possible to deactivate all notifications (see the"Notification" setting item).



7. Stopping ScreenCam and bluetooth

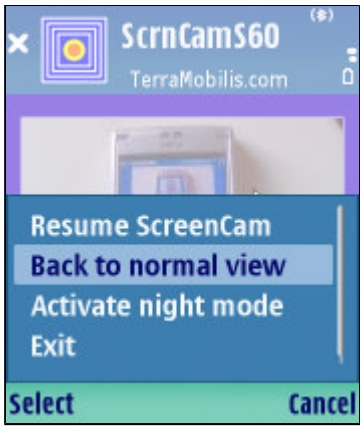
ScreenCam can be stopped by selecting the "Stop ScreenCam" menu item of the Options menu on the master. A notification message is displayed when ScreenCam has stopped. Stopping ScreenCam is only applicable in continuous or interval mode, not in single mode.

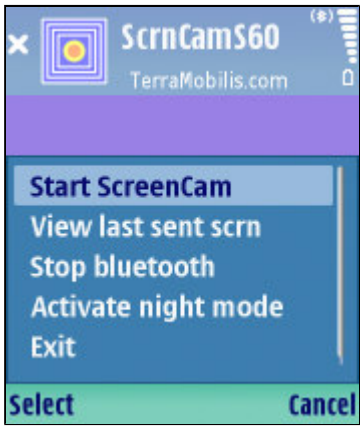
Immediately following the stopping of ScreenCamS60, the last image sent to the slave is displayed.

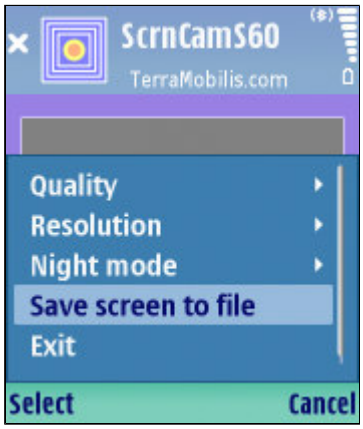
An arrow pointer is also displayed on the master which can be moved around using the joystick to point to a specific part of the screen. This arrow pointer is sent to and displayed on the slave (the pointer only becomes visible on the slave after having been moved on the master, hence not disturbing the slave screen image when no use is made of it).

This feature makes it possible to see the image exactly as it has been received by the slave (allowing to check the quality and if needed adjust the quality settings, avoiding having to verify the slave phone!) and allows to use the arrow pointer while discussing the image. This feature is also available in single mode, each image taken being displayed together with the arrow pointer.

ScreenCam can be resumed by selecting Options | Resume ScreenCam. Alternatively, "Back to normal view" can be selected to go back to the camera viewfinder screen.







This feature is also accessible via the "View last sent scrn" Options menu item. The "View last sent scrn" menu item is only available when the bluetooth connection is active and no screensharing is taking place. The arrow pointer is only available when the last sent image is still being displayed on the slave. When no screen image is available to view (e.g. after start up, before any images have been sent to the slave), a "No image available" error message will be displayed.

After ScreenCam has been stopped, the bluetooth connection is still active. To stop the bluetooth connection select Options | Stop bluetooth. The slave will be disconnected from the master and a "Disconnected!" message will be displayed on the slave. Stopping the bluetooth connection can be useful to connect to another device, as only one bluetooth connection can be active. The image on the slave is cleared when bluetooth is stopped.

8. Saving a picture received on the slave to a file

At any moment the slave can save an image to a file for future reference by selecting Options | Save screen to file.

It is possible to specify exactly where and under which name the screen image is saved.

The "Filename" setting allows you to specify the filename.

The "Location" setting is a toggle function allowing to select either the phone memory or the memory card.

The "Directory setting" prompts you for a directory name. If the directory (path) does not already exist, it is automatically created for you.

A notification message is displayed when the file is saved, showing the complete path under which the image file is saved.

Images can be saved while ScreenCam is active. When no image is available to save (e.g. after start up, before any images have been sent to the slave), the "No image available" error message will be displayed.

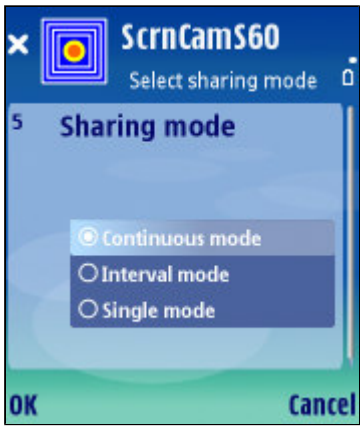
IMPORTANT!

The directory specified by you is created under the "images" directory in the root directory of the memory card (E:\Images for Nokia phones!) when you choose the memory card as location and under the default phone memory "images" directory (C:\Data\Images for Nokia phones!) when you select the phone memory as location.This is done as S60 phones only provide access through the default file manager to certain directories in order to prevent access and possible irreparable damage to system files. So, when using the default file manager you will see a directory "Images" both on the memory card and on the phone memory. When using any of the freeware file managers e.g. SysExplorer you can see the full directory paths.

File and directory names cannot contain special characters. An error message will be displayed when attempting to use special characters.

A 4 digit serial number is appended at the end of the filename (e.g. Picture0025) in order never to overwrite previously saved images.

The file is saved with the .JPG extension according to the format used by ScreenCamS60.



When insufficient memory is available on the phone memory, the screen will not be saved and a notification message will be displayed.

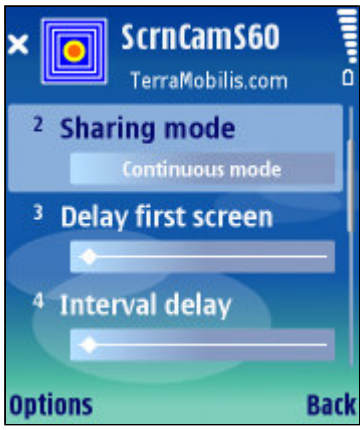
9. Picture sharing modes

ScreenCamS60 offers 3 different screensharing modes:

- Continuous mode

- Interval mode

- Single mode



Continuous mode is the default sharing mode whereby images are taken repeatedly on the master and sent to the slave as fast as possible. Due to the limitations of bluetooth transmission speeds, sending speeds will not be much higher than about 3 images per second, still enough to use ScreenCamS60 as a phonecam.

In Interval mode the time between the sending of successive images can be specified in the "Interval delay" setting from 1 sec to 60 sec.

In Single mode individual images are taken and sent at

demand, one at a time. This can be useful to draw attention to specific pictures taken by the master. The sending of each picture can be delayed by setting the "Delay first screen" setting item.

10. Picture image quality

ScreenCamS60 supports the JPEG format which is the optimal format to compress pictures at a minimum quality loss.

The JPEG quality can be chosen on a continuous scale from 0 to 100, allowing fine tuning of the JPEG quality, compared to the traditional high/medium/low quality scale.

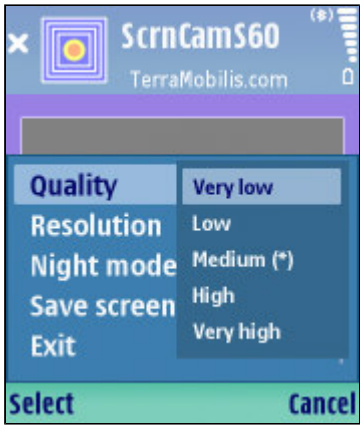
The higher the JPEG quality factor, the higher the size of the images, resulting in a slower transmission of the pictures over bluetooth and hence a lower refresh rate.

For normal use in continuous mode it is recommended to set the JPEG quality at 50 as this is the best compromise between quality and speed.

When sending single screens (e.g. when showing individual pictures) a JPEG quality factor of 85 can be chosen.

When the refresh rate is very important, the JPEG quality should be set at 30.

11. Remote camera settings on the slave



A unique feature of ScreenCamS60 is the possibility to remotely set the master camera settings from the slave. In this way the remote camera can be adjusted remotely for optimal viewing.

ZOOM

The zoom factor on the remote camera (master) can be increased and decreased respectively by pushing the joystick on the slave upwards or downwards.

PICTURE QUALITY (JPEG QUALITY FACTOR)

The picture quality can be adjusted by selecting the "Options | Quality" sub menu item and selecting one of 5 possible settings :

- very low (JPEG quality factor of 20)

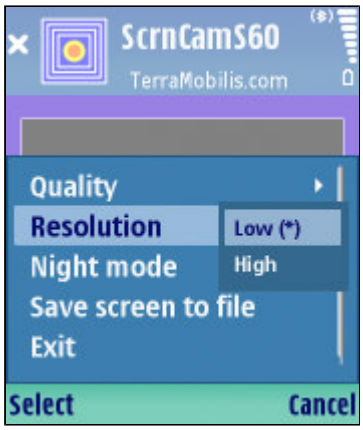
- low (JPEG quality factor of 35)

- medium (JPEG quality factor of 50)

- high (JPEG quality factor of 70)

- very high (JPEG quality factor of 85)

An asterisk indicates which setting is active.



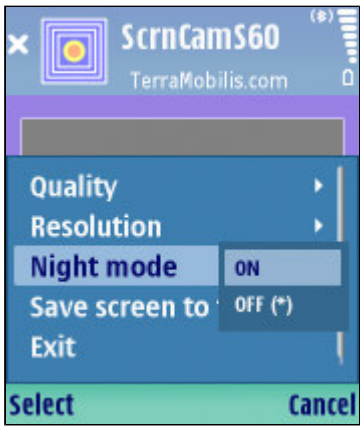
PICTURE RESOLUTION

The picture resolution can be adjusted by selecting the "Options | Resolution" sub menu item and selecting one of 2 possible settings :

- low (camera picture resolution of 160 x 120)

- high (camera picture resolution depending on the slave screen resolution)

An asterisk indicates which setting is active.



NIGHT MODE

Night mode exposure can be switched on or off.

An asterisk indicates which setting is active.

Recommended settings for optimal phonecam use:

- JPG Quality : 50

- Sharing mode : continuous

- Resolution : low

When sending individual picture (single or interval picture sharing mode) the following settings should be used:

- JPG Quality : 85

- Sharing mode : single or interval

- Resolution : high

Typical use of ScreenCamS60 as a phonecam application involves leaving the screensharing session active in the background and regularly switching ScreenCamS60 to the foreground to check the camera images. Switching ScreenCamS60 to the background also enables the standard screen light time out function (Screen light stays on during screensharing when ScreenCamS60 is in the foreground, see chapter 16). So don't leave ScreenCamS60 in the foreground while not using the phone in order to save battery time.

12. Other options menu items

The Options menu features an "About" screen with essential information about ScreenCamS60 and registration information.

You will notice the options menu is a dynamic menu. Menu items are only displayed when they are relevant and logical e.g. Connect and Start menu items are not visible after the bluetooth connection is active,
the Start ScreenCam menu item is only visible after the bluetooth connection is active, the Change settings menu item is not visible while screensharing is ongoing...

The soft "back" button at the right sends ScreenCamS60 to the background. Finally the "exit" menu item closes ScreenCamS60.

13. Settings

The settings dialog comprises 8 settings as outlined above. Settings can be changed by selecting Options | Change settings. All settings are saved when exiting ScreenCamS60.

Settings applying to the use of ScreenCamS60 as a master:

- JPG Quality 0 ...100

- Sharing mode

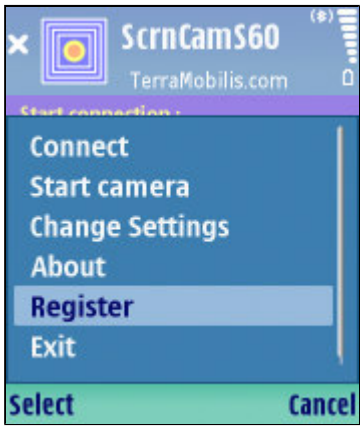
- Delay first screen

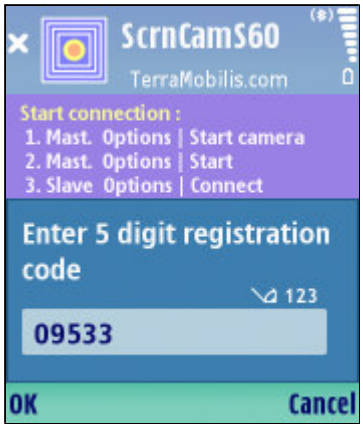
- Interval delay

- Notification

Settings applying to the use of ScreenCamS60 as a slave:

- Filename / Location / Directory





14. Registration

The trial version of ScreenCamS60 is available as a free download. All functions and features are enabled without time limit. However, the screen image quality is fixed at JPEG with quality factor 15 (quality setting is disabled). To unlock ScreenCamS60 a registration code needs to be purchased.

When purchasing ScreenCamS60 at Handango a 5 digit registration code is made available. During the on-line purchasing process, the IMEI-number (a unique 15 digit phone identification number) has to be provided. For your convenience, The IMEI number of your phone is displayed at the bottom of the "About" screen (Options | About), under the "Trial version" label.

The registration dialog is launched by selecting Options | Register.

To register ScreenCamS60, you simply enter the 5 digit registration code in the input box.

When the correct registration code has been entered a confirmation dialog is displayed and ScreenCamS60 is registered. Once registered the registration code is displayed under the "Registered version" label at the bottom of the "About" screen, replacing the IMEI-number.

An "invalid registration code" message will be displayed when entering a wrong code.

Registration has to be done only once. The registration code is saved by ScreenCamS60. Only when reinstalling ScreenCamS60 on your phone, you will need to re-enter the registration code.

It is important to realise that ScreenCamS60 only needs to be registered when used as a master. A registered version of ScreenCamS60 on a master can share images with any slave on which a trial version of ScreenCamS60 is installed.

It may be useful to store the ScreenCamS60 .sis installation file on your phone in order to be able to transfer it to other phones with which you want to share screens, allowing quick installation and set-up of ScreenCamS60. Unfortunately forwarding of .sis files from one Nokia phone to another via bluetooth is blocked on some phones, so you will have to swap memory cards to install ScreenCamS60 on the other phone.

15. Notifications

At many moments, notification messages are displayed. Below an overview of all messages:

"Picture saved in xxx"

"ScreenCam stopped" / "ScreenCam started"

"Phone memory full! Picture not saved! Delete data before trying again!"

"Picture sent"

"Invalid registration code"

"ScreenCamS60 registered"

"No picture available"

"Name cannot contain the special characters < > \ / \" | : * ? : please enter a valid name!"

Bluetooth connection notifications:

"Service not found"

"Slave connected"

"Waiting for connection"

"Disconnected"

"Connection lost"

"Could not connect"

"Unknown error"

Camera mode notifications

"Camera started"

"Camera in use by another application"

16. Other remarks

ScreenCamS60 for 3d edition is compatible with ScreenCamS60 for 2nd edition.

Each time an image is received by the slave the light time-out is reset in order to automatically keep the screen light on during screensharing avoiding to repeatedly have to press a key to switch the screen light back on. This feature is only active when ScreenCamS60 is in the foreground. When switching ScreenCamS60 to the background by pressing the back key, the light time out will function as normal again. So don't leave ScreenCamS60 in the foreground while not using the phone in order to save battery time.

Settings are not saved when upgrading.

The actual time it takes to take and send an image has to be added to the interval time in order to know the total interval time.

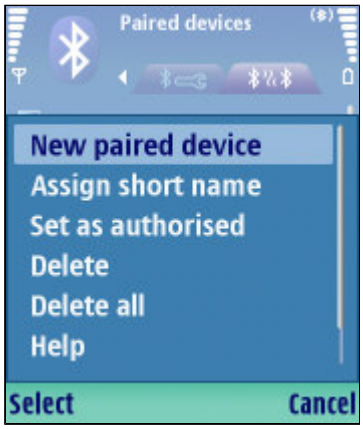
When frequently using ScreenCamS60, it may be a good idea to configure it as one of the 5 standby applications or even have it assigned to the left or right selection key.

ScreenCamS60 will only work correctly as a slave when the orientation of the device is not changed after starting ScreenShareS60 e.g. on the Nokia E70.

Both the camera and bluetooth are quickly draining the battery, so for extended use leave the master phone connected to the charger.

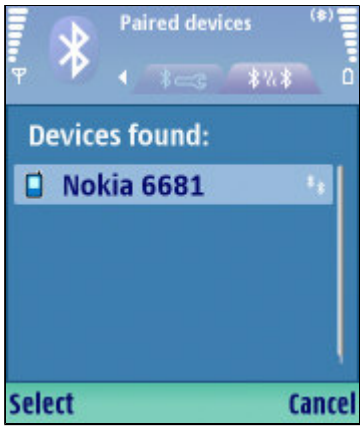
Appendix 1 : bluetooth pairing instructions

Make sure the bluetooth setting items " Bluetooth" and "My Phone's visibility" are respectively set to "On" and "Shown to all" on the phone with which you want to pair.



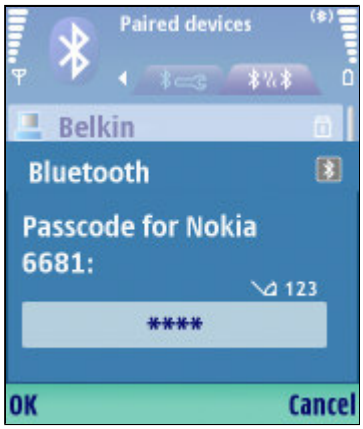
a. Browse to the right tab on the bluetooth settings screen

b. Select Options | New paired device



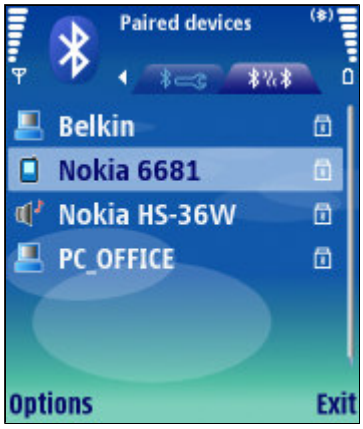
c. Wait while phone is searching for other phones

d. Select desired phone when devices are found



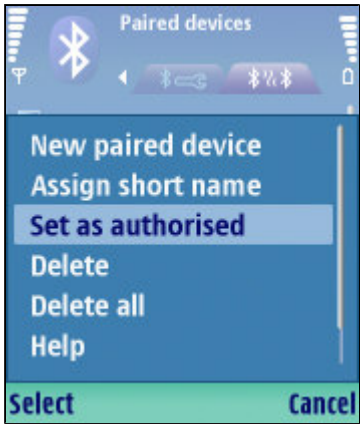
e. Enter pass code (any 4 digit code)

f. Enter the same pass code on the other phone



g. Message : "Pairing with <name other phone> complete"

h. The other phone now appears in the "Paired devices" list



i. Select the other phone in the "Paired devices" list and select Options | Set as authorised in order for connections to take place automatically without confirmation which greatly simplifies the use of ScreenCamS60

j. Repeat i. on the other phone

Remarks

The pairing process can be initiated from either phone.

For security reasons the "Set as authorised" settings in Steps i. and j. should only be used when the other phone is a trusted device.

Pairing only has to be done once, it remains valid after switching the phone off and on (the pass code does not have to be remembered).

As mentioned above, it is possible to use ScreenCamS60 without pairing the phones, but each time you try to connect, the master will be prompted to manually accept the bluetooth connection ("Accept connection request from ...?").

Appendix 2 : bluetooth communication

Some technical details on bluetooth, file sizes and speeds:

The theoretical speed of bluetooth is 721 kbps (kilobits per second), but in reality it is more likely to be around 200 kbps (= 25 kbyte per second) , of course dependent on the phone, more recent phones featuring higher speeds (Bluetooth 2.0).

Image file sizes for an average 176 x 208 screen image:

- JPEG with quality 85 : 20 kbyte depending on image

When taking into account the bluetooth speed and the delays caused by internal processing of files within ScreenCamS60, it becomes clear that sending speeds will at best be around 3 images per second, which is however sufficient for the purpose of sharing your phone screen with others.

Different generations of bluetooth:

- Bluetooth 1.2 (e.g. Nokia N91)

- Bluetooth 2.0 (e.g. Nokia N73)

The speed of bluetooth 2.0 can be up to 100 % higher than bluetooth 1.2 which unfortunately does not fully compensate for the 4 fold increase of screen image size (352 x 416) of high resolution screens (e.g. E60).

-

Appendix 3 : typical use cases

USE CASE 1 SINGLE CAMERA MODE

In this mode individual camera pictures are taken and sent to the slave.

Application: share pictures of documents, objects, persons,...

Start/Stop: "Start ScreenCam" Options menu item in combination with "Delay first screen" (sent screen view / arrow pointer)

Settings: JPG with quality 85, single mode, high resolution, delay first screen

USE CASE 2 CONTINUOUS CAMERA MODE

In this mode camera pictures are taken and sent repeatedly to the slave, as fast as possible.

Application: phonecam for moving images (monitoring)

Start: automatically after connecting via bluetooth

Stop: "Stop ScreenCam" Options menu item (sent screen view / arrow pointer)

Settings: JPG with quality 50, continuous mode, low resolution

USE CASE 3 INTERVAL CAMERA MODE

In this mode high quality individual camera pictures are taken and sent to the slave at regular time intervals.

Application: phonecam for still images (monitoring)

Start: automatically after connecting via bluetooth

Stop: "Stop ScreenCam" Options menu item (sent screen view / arrow pointer)

Settings: JPG with quality 85, single mode, interval delay, high resolution