

User Guide

Camera Control

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Trademarks

1 Overview

Camera Control is a 32-bit application for the Microsoft® Windows® operating system, which is a pure hobby project that is made available as freeware for both private and commercial use. It is intended for remote control and file transfer in conjunction with those compatible cameras from Olympus® that have an integrated WLAN module and support for the OI.Share® application.

Since the communication protocol of OI.Share® is not ‘open source’, the communication protocol implemented in Camera Control is based purely on an analysis of the network communication protocols between OI.Share® and the camera. As a result, no guarantee of a stable program can be given and the user cannot demand error-free program features. Nevertheless, from the tests that have been carried out, it can be said that the Application works quite reliably at the present time.

The functional scope of OI.Share® is currently not fully implemented in Camera Control, although most functions already are and the range is steadily being extended. As a special feature, Camera Control offers the possibility for recording files, in original size, in the background on the host computer, during camera operation directly through its own controls. This functionality is not currently supported in OI.Share®.

The analysis of network protocols and the necessary tests during the development of Camera Control were performed with an OM-D E-M1 camera. Current models OM-D E-M10, PEN E-P5, PEN E-PL7, Stylus 1, and TG-3 can also be used. The overall functionality of the application is dependent on the support provided by the camera firmware.

2 Installation

2.1 Running the setup file

When the setup file is run, it first requests the installation language to be used (Fig. [1](#)).

Figure 1: Selection of the installation language

When the language has been selected, the welcome screen appears (Figure [2](#)) followed by the display of the licence conditions (Fig. [3](#)).

Figure 2: Welcome dialogue

Figure 3: License dialogue

These steps are followed by the dialogues for component selection (Fig. [4](#)) and to determine the installation directory (Fig. [5](#)).

Figure 4: Component dialogue

Figure 5: Dialogue defining the installation directory

Then the start menu folder is defined (Fig. [6](#)) and, finally, confirmation of successful installation, after all operations have been completed (Fig. [7](#)).

Figure 6: Start menu dialogue

Figure 7: Completion of the installation

2.2 First execution of the application

After installation, the application must be prepared for its first use. For this, the network connection must be configured, using the network manager of the operating system (Fig. [8](#)).

The camera itself must be set for WiFi connections to Smartphone, as described in the operating instructions. The camera's SSID and Password will then be displayed on the rear screen

Once the camera network has been set up and connection established, the password dialogue appears (Fig. [9](#)), into which the password shown on the camera display must be entered.

Figure 8: Network-control centre

Figure 9: Password dialogue

Once the network connection to the camera has been configured correctly, the Connection Status should appear on the Host computer, as shown in Fig. [10](#)

Figure 10: Network and Sharing Centre shows connection to the camera

The Camera Control software can now be started for the first time. As communication with the camera is through the network of the PC, the Windows[®] Firewall may open a dialogue (Fig. [11](#)). Access to the local network must be allowed here

Figure 11: Dialogue of the Windows[®] firewall

3 Modules

The Camera Control software comprises four application modules and a startup screen, The application modules cannot be launched until communication with the camera has been established.

The following sections describe in detail the start screen and the functions of the application modules.

3.1 Home screen

After starting the Camera Control program, the startup screen is displayed on the Host computer. Until WiFi connection to the camera has been established, a blinking radio wave symbol will be shown (see Fig. 12 : item 1), while the status text on left lower edge of the window indicates “Please establish connection to camera!” (fig. 12: item 2). During this state, no application modules are available, although the buttons for calling these modules (Fig. 12 : item 3) are visible.

Figure 12: Home screen during connection setup

Note that, if another network adapter is already enabled on the client PC, it may be necessary to select "Camera via IP address" in the Camera Control settings (see the cogwheel icon at lower-right of the Startup screen). The usual settings (not guaranteed) are IP 192.168.0.10.

After successful communication with the camera has been achieved, the flashing radio wave symbol changes to a green double-arrow symbol (Fig. 13: item 1), indicating a successful WiFi link with the camera. In addition, the status text (Fig. 13 : item 2) now indicates the type of camera that has been connected, provided that this can be determined by the software.

The four application modules are now available, provided that their functions are supported by the camera firmware. This can be recognized by the buttons being activated to call their respective modules (Fig. 13: item 3).

Figure 13: Start screen after connection has been established

At this stage, additional buttons (labelled on Fig.13) become available, to implement the following functions:

- turn off the camera (Fig. 13: item 4)

- synchronize the camera time setting with the system time of the Host computer (Fig. [13](#): item 5)
- set user preferences (listed below) for the Camera Control software (Fig. [13](#): item 6).

Settings in the User Preferences menu are available under three tabs as follows:

General tab

- select the default directory for saving files from the camera
- synchronise camera time with system time
- save filter settings for live import
- use internal image viewer
- execute live stream in a separate process
- select the preferred interface language

Network tab

- establish network connection automatically
- enter WLAN name of camera
- enter WLAN SSID of camera
- enter WLAN name of home network
- use camera IP for communications (usually IP 192.168.0.10)
- define port number for live stream (if not 28488)

Update tab

- Check for new software version

Figure 14: Settings dialog

If you wish to change the connection to the wireless network automatically, when using the Camera Control software, information must be entered under the 'Network' tab. This includes the SSID and WLAN names for both the camera and host computer. The SSID is the means by which a specific device can be recognized on the network. When the camera is connected, its name is shown on the display, when Wi-Fi is enabled. The WLAN name of the camera normally corresponds to the SSID of the camera, but can differ. You can easily check these settings by looking into Network Properties, in the operating system.

Important note: The required connection profile for the connection to the camera through the host computer must be set by the Administrator. The wireless networks of the operating system have to be set up correctly in order to perform automatic connection changes. The establishment of the network is NOT a function of Camera Control!

3.2 Photo import

The "Photo Import" module allows viewing of the camera's image files and enables these to be transferred to the host computer.

When this module is selected, the available files are loaded as previews in the gallery view on the Host computer, (Fig. 15 : item 2).

Figure 15: The module "Photo Import"

During the loading process, the progress of the data transfer is displayed as a bar in the left, upper window area. While image data are being transferred, other actions by the user are blocked.

The types of files to be transferred from the previews can be selected, according to criteria set by a selection filter in the right-hand pane (Fig. 15 : item 1) Pre-set options include selection by file type (e.g. JPEG), or the criteria can be user-defined. Individual manual selections can be made by clicking on a preview image, which will be selected or de-selected, according to its current state, indicated by the background highlight.

Once a selection has been made, there are two options for downloading, by means of buttons in the right, lower window area. If the left button, with a folder symbol (Fig. 15: item 3), is used, a target directory for the download will be requested before the actual file transfer begins. Alternatively, a default destination for the download can be set from the User Preferences menu, in which case you can use the right hand button, with the 'home' symbol (Fig. 15 : item 4), to save the files to this pre-set destination. For each preview image, additional information regarding the name, time of transfer, and file size will also be saved. Preview images that have already been imported are identified by a disk symbol below the pre-view image. and are not available for re-selection.

Images that have already been downloaded can be opened by double-clicking on the pre-view image, provided that an appropriate image viewer is installed on the computer and that the file extension of the file to be opened is registered for this application (especially in the case of RAW files). In the case of JPEG files, however, there is also a special feature to open the

file by means of the image viewer integrated into Camera Control (Fig. 16). This option can be selected in the User Preferences menu.

Figure 16: Internal image viewer of Camera Control

The internal JPEG image viewer shows, in addition to the image, a selection of the associated EXIF data (Fig. 16: item 1) and an RGB histogram (Fig. 16 : item 4).

By clicking on the text "Focus display" (Fig. 16 : Item 2), the areas used by the camera to activate the AF function can be shown (green frame) and, if face recognition is activated, all recognized faces are also shown (white frames). The image display can be zoomed in and out, by clicking on the words "1:1" or "Fitted" (Fig. 16: Item 3), when the image will be shown either actual size or fitted to the display window.

The additional information in the image viewer can be hidden by clicking the arrow on the right edge of the window (Fig. 16 : item 5). Clicking the arrow again restores the data pane.

3.3 Live import

When this application module is selected, the controls on the camera itself are activated and must be operated directly. When the shutter is released, the image data are transferred automatically to the Host computer, with the camera operating in the background.

The destination folder, for the files that are transferred, is the default folder defined in the User Preference settings. This setting can, however, be changed by entering a new path into the input field (Fig. 17 : item 1), in the upper pane of the application module.

Also, as in the case of the "Photo Import" module, there is a filter in the right hand pane (Fig. 17 : item 2), which can be used to restrict the file types to be transferred. While file-transfer is in progress, a folder icon will flash in the lower part of the window (Fig. 17 : item 3). In addition, the number of queued files, waiting to be transferred, is shown in the left, lower pane (Fig. 17 : item 4).

Figure 17: The module "Live-Import"

Note - in the case of RAW files the message 'No View Available' may be displayed.

The button for automatic display of a transferred JPEG file (Fig. 17 : item 5) may be used to display the image. As in the case of the procedure described in Section 3.2 (Photo import),

either the integrated image viewer or the registered standard application of the Host computer will be used, depending on the User Preference selection. If the built in viewer is used, its content is updated with each newly transferred JPEG file.

The activation of this function is indicated by the button colour changing from grey (inactive) to green.

3.4 Remote control

When using the Remote Control application module, direct operation of the controls on the camera is blocked. Instead, all actions to adjust camera parameters, including for focusing and triggering the shutter, are transferred to the application module.

Control of the camera is implemented by means of selection boxes, shown on the right-hand side of the display, below the "Camera Parameters" heading. The functions that are available depend on the program mode that is selected in the top selection box.

Moreover, the "Camera Parameters" section has additional pages (see Fig. [24](#)), which, provide the option to define interval shots, as well as displaying non-changeable camera parameters. Switching between the pages is by means of the arrow keys (Fig. [18](#) : Point 1), next to the title bar "Camera Parameters".

Figure 18: The "Remote Control" module

The live image is normally captured at 640 x 480 resolution. Depending on the camera firmware, however, higher resolutions may be available, which can be selected from a drop-down selection box (Fig. [19](#)). If a higher resolution is selected, the available bandwidth of the network interface may cause a reduction in the frame rate.

The live image can also be magnified, using a magnifying glass function (Fig. [20](#)), where a drop-down selection box allows for up to 4X magnification.

Figure 19:
resolution

Figure 20:
Zoom function

To navigate within the enlarged section of the image, a separate control panel is displayed (Fig. [21](#)). In this panel, the currently displayed section of the image is highlighted. This section can be dragged by holding down the left mouse button, to change the displayed section of the live image.

Figure 21: Magnifier control

Note: The interface to the camera does not provide this magnifying function. The function described here scales the live data received from the camera, which naturally causes some loss of image quality in the magnified view. If the camera firmware can offer higher resolutions, these may be used in preference to the magnifying glass function.

The shutter on the camera can be triggered by clicking the button (camera symbol) in the lower right-hand corner of the window (Fig. 18 : item 3), Right next to this symbol is the button for specifying the touch function (Fig. 18 : item 4), with options for "Focus Point", "Screen triggering" and "Cancel the focus option".

When the "Focus Point" option is selected, click the cursor on the desired focus location in the Live image. A green frame (Fig. 18: item 2) will then be shown in the live picture.

When "screen triggering" is activated. clicking on the image will release the camera shutter and will also determine the setting of the focus point.

Four more buttons (as itemised on Fig.18) are available in the lower right area of the screen, as follows:

- item 5 - allow manual display of a preview image immediately after shooting
- item 6 - manually download the recording file(s) directly to save files
- item 7 - automatically display the preview image immediately after taking the picture
- item 8 - automatically display the last recorded file (s) directly after the Download

If an automatic option is active for the above 4 functions, then the corresponding manual option is not available (Fig. 18: item 5). An active automatic option is indicated by the green colour of the button.

Downloading the recorded file(s) directly after recording saves the constant switching between the application module's "photometry" port and "remote control", if transmission after each recording by Remote control is wanted. It should be noted, however, that during the transfer process, the system is locked and no actions in the module can be made. This is due to the fact that the camera does not process incoming commands in parallel, but sequentially. When the preview image is displayed, it must be above the one on the top right (Fig. 22 : Point 1), before further actions can be taken.

Figure 22: Preview of the current recording

Below these buttons are, finally, the controls for motorized zoom lenses (Fig. 18 : item 9). These controls only function when the lens used supports this functionality. This functionality cannot be determined remotely so, if not available, these controls have no effect.

As mentioned earlier, the third page of the "Camera parameters" section can be used to set up interval recording of images (Fig. 24 : Point 1). For this , the corresponding switch must first be set from 0 to 1, on the second page, before the number of shots, the interval time and the start delay can set.

Figure 23: 2nd page of the parameters

Figure 24: 3rd page of the parameters

While interval recording is in progress you may be able, depending on the Program mode, to adjust some camera parameters, in order to react to changing light conditions. These adjustments are made via the control panel (Fig 25), which appears after the start of interval recording. The selection boxes are shown below: (Fig. 25 : item 1).

Figure 25: Manual adjustment of the camera parameters
during interval recording

Some additional features are available from the upper menu (Fig. 18 : Point 10), located above the live image display.

The display of the histogram (Fig. 26) can be toggled by clicking on the entry "Histogram" in this upper menu.

It should be noted that the calculations used to provide the histogram are made from the live image and may differ from the saved image. In general, the calculation based on the live image gives quite good results.

Figure 26: Histogram display in the live image

Also located in the top menu (Figure 18 : Item 10), there is the entry "Grid lines". Clicking on this entry, toggles the menu shown in Figure 27. This menu controls the display of grid lines in the live image As well as providing a selection of line styles, the grid colour can also be adjusted here.

Figure 27: Settings menu for grid line display in the live image

3.5 Remote release

As in the case of the "Live-Import" module, this module allows the camera to be operated directly by the Host computer. By clicking on the button (camera image) in the right lower area of the window (Fig. 28: Item 1) the camera shutter is triggered by the network link..

In this module, there are no background transfers of the recording files to the Host computer.

Figure 28: The module "Remote trigger"

4 Add a new language

Camera Control is a multilingual application and, since version 1.0.7, English is already used as the second language with the installation program. delivered. In addition, it is relatively easy to add more languages to the application.

To do this you first have to create a new language file in the subfolder "Languages "of the installation directory. The easiest way to start is to copy one of the existing language files and rename it with a meaningful name (preferably the name of the corresponding language)

After that the content of the file has to be adapted. For this purpose, first the Values for the "!" LanguageName" and "!" LanguageID" keys can be adjusted. the required values for "!" LanguageID" on various international standards can be determined. For example, for German (DE) this is Language code 1031, for English (US) 1033. The strings to translate are called key-value pairs in held the file, with the data to be translated to the right of the Equals sign.

In those strings possibly contained place- holders, such as % d, % s, etc., these must be preserved in the translation at runtime of the application with appropriate advertising be replaced. ATTENTION! When translating the language file, a Unicode capable editor must be used!

5 Questions and Answers

Q 1 - Why does Camera Control not connect to the camera?

A - Please check that the camera WiFi mode is set to "Private Connection" and that the network connection, described in chapter 2.2, has been made. You can also check for functionality by entering the URL [http:// oishare](http://oishare). If connected, the web browser will show the web gallery view of the camera folders (Fig. [29](#)).

NB URL doesn't always work - direct entry of IP 192.168.0.10 may be needed (see below)

Figure 29: Web gallery of the camera

Q 2 - Why is the web gallery view of the camera not displayed in the web browser, when using the URL [http:// oishare](http://oishare) displayed, despite the wireless connection being made to the camera?

A - If calling the URL [http:// oishare](http://oishare) in the web browser does not show the Web gallery view of the camera, is probably a problem with the name resolution of the URL. That occurs especially if another network adapter is enabled on the Host computer and a network connection to this already exists. In such a case select "Camera via IP address" in the Camera Control settings menu. The default setting of IP 192.168.0.10 should usually be correct. By enabling this option the camera addressed directly via the specified IP address, without attempting name resolution. If that does not work then it would be worth checking if, for the IPv4 protocol of the WLAN adapter used, the address assignment is activated by DHCP (Fig. [30](#)). Camera and client PC must be in the same subnet, which is automatically generated by DHCP.

Figure 30: IPv4 protocol setting for WLAN adapters

Q 3 - Why is no live image displayed in the Remote Control module?

- A - The Windows[®] Firewall for inbound UDP connections on port 28488 (local camera network 192.168.0.x) must allow the image data to be transferred. Please check the Windows[®] Firewall regarding this setting! Should this port already be used by another program, an alternative port can be used in the program settings of Camera Control .

6 Conclusion

With this application, I wish all users a lot of fun and good times while working with the program. Maybe it will prove quite useful and offer long sought-for opportunities. Maybe there will be more opportunities for you in the future, including previously unavailable functionalities, which implement live import in completely new ways. Let's look ahead.

7 Version information

7.1 Version 1.0.4

Version 1.0.4 of Camera Control was the first released Version of this application.

7.2 Version 1.0.5

The following changes have been made to version 1.0.5 of Camera Control.

- New: selection of the type filter,
- New: control of the focal length of lenses with motor zoom,
- New: Display of the focal length at the top of the screen in the "Remote control",
- New: display of additional camera parameters in the "Remote Control" module,
- New: Thumbnails in the Photo Import module are cached, saved, and loaded when called again from there,
- New: Filter setting for file types in the module "Live-Import" are restored automatically when restarting the application if the corresponding option is activated in the settings,
- New: if DNS problems occur as a result of multiple active network factory adapter on the client PC can now communicate by using the Camera IP instead of the camera host name, if the speaking option is enabled in the settings (camera ip was in the tests carried out always the 192.168.0.10, but this not guaranteed),

- Error correction: with more than 100 image files on the camera memory there was no progress bar when loading the thumbnails in the module "Photo import" displayed,
- Error correction: in the module "Remote trigger" the in the right window
- counted recording counters ceaselessly counted up,
- Error correction: in the module "Remote control" LIVETIME and LIVEBULB during a recording occasionally the areas for the live image and the trigger button are locked.

7.3 Version 1.0.6

In Camera Version 1.0.6, 2 memory leaks have been fixed:

- Error correction: internal memory release of the last file download before executing the next file transfer in the "Photo Import" module,
- Error correction: complete revision of the creation function the thumbnails and subsequent internal memory release in the Module "Live-Import".

7.4 Version 1.0.7

In version 1.0.7 of Camera Control, there are the following changes:

- New: application-side implementation of the interval recording function (Time lapse) analogous to that of the camera (on the second page of the Camera parameters),
- New: application for multilingualism extended and English as a second added application language,
- Error correction: when taking continuous shots in the module Remote Control did not release the trigger button stopping the continuous shooting.

7.5 Version 1.0.8

In Version 1.0.8 of Camera Control, there are the following changes:

- New: integrated image viewer with display of EXIF data, RGB Histogram, focus point frame, and face recognition frame for Live import and photo import,
- New: optional automatic display of the last recording in the integrated image viewer in the module "Live-Import",
- New: Display of EXIF data and histogram when selecting one Preview image in gallery view in module "Live-Import",
- New: optional display of an RGB histogram in the live image of the Module "remote control",
- New: Display of the exposure measurement in the form of a graph in the Module "remote control",
- New: optional display of gridlines in the live image of the module "remote control",
- New: Extension of the interval recording function to include manual

- adjustment options for shutter speed, aperture, ISO and exposure correction between the recordings of the interval,
- New: Select or deselect gallery images in the "Fo- toimport "in the form of areas by holding down the shift key while Clicking on the end of the range,
- New: Limits the aperture values in the selection box to actual Lens area in the module "remote control",
- New: "+/-" buttons for some camera parameters in the "Remote control "added to the selection box,
- New: Display of an error text in the "Remote Control" module, if the stream for the live image can not be initialized,
- Bug Fix: Artifacts in dark areas of the live image in the image Remote control module removed,
- Error correction: incorrect translation component corrected.

7.6 Version 1.0.9

In version 1.0.9 of Camera Control, there are the following changes:

- New: Resolution of the live image in the "Remote Control" module from 640x480 up to 1280x960 selectable at runtime (currently being E-M1 with firmware 2.0 supported),
- New: Magnifier for live image in the module "remote control" implemented,
- New: revision and optimization of data processing for the live image in the "Remote Control" module due to higher frame rates and resolutions through the camera (E-M1 with firmware 2.0),
- New: new Art Filters "Vintage" and "Partial Color" in the module "Remote integrated control",
- New: Picture mode as adjustable camera parameter in the module "Remote control ",
- New: video recording function added in the "Remote Control" module (from camera interface probably will not be in full yet Scope supported),
- New: Video quality as adjustable camera parameter in the module "Remote control ",
- New: Connecting Camera Control to Camera Now, with new or formatted memory card without existing folder structure possible.
- New: port number for the transmission of the live image over the pre-program settings optionally definable (if the standard port 28488 is already being used by another application)
- Error correction: adjustment of the functions provided by the camera (including their parameters) revised and optional treatment

It also introduced the use of Camera Control in connection with the TG-3.

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