

Technical Developer Information

Camfunction - DDE link for 3rd party applications interfacing to Camfunction

Supported Software:

Camfunction Range
Control Range
SecureSite Range

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U.K. OFFICE	CCTV SOFTWARE LTD 37 CHAMBRES RD SOUTHPORT MERSEYSIDE PR8 6JG U.K.
TEL	+44 (0)1704 548675
FAX	+44 (0)1704 548679
EMAIL	sales@cctvsoftware.co.uk
INTERNET	www.cctvsoftware.com



Technical Developer Information

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Use the example program supplied to see how to set up a DDE link to Camfunction and control it's basic features. The example program supplied is written in Visual Basic 6.

The following label controls within Camfunction can be linked to via DDE:

LINKLABEL1 – Used to tell Camfunction the name of your application
LINKLABEL2 – Used to receive pan / tilt commands
LINKLABEL3 – Used to receive lens functions
LINKLABEL4 – Used to receive camera selections
LINKLABEL5 – Used to receive monitor selections
LINKLABEL6 – Used to receive preset selections
LINKLABEL7 – Used to receive extra commands
LINKLABEL8 – Used to receive alarm data

External programs can send data to the above labels to gain access to the features of Camfunction. All commands are sent as ASCII text.

The example program uses several label controls that link to the above Camfunction labels.

The following is an extract of the Visual basic source code from the example program to link to one of the above Camfunction labels.

```
LBL_PanTilt.LinkTopic = "camfunc" & Chr(124) & "siteinfo"  
LBL_PanTilt.LinkItem = "linklabel2"  
LBL_PanTilt.LinkMode = 1
```

Where LBL_PanTilt is a label control on the example GUI
You would then write strings to LBL_PanTilt, for example:

```
LBL_PanTilt.Caption = "3"  
LBL_PanTilt.LinkPoke
```

The LINKPOKE method is used to force Camfunction to respond.
The above command would force Camfunction to invoke a pan left... see table below.

You can send the following data values to the Camfunction label controls:

LINKLABEL1 – send ASCII string which is the title bar of your application

LINKLABEL2 – send the following ASCII strings to control the P/T:

```
'0' = UP / LEFT  
'1' = UP  
'2' = UP RIGHT  
'3' = LEFT  
'4' = CENTRAL (NO MOVEMENT)  
'5' = RIGHT  
'6' = DOWN RIGHT  
'7' = DOWN  
'8' = DOWN RIGHT
```

LINKLABEL3 - send the following ASCII strings to control the lens:

```
'1' = ZOOM IN START  
'2' = ZOOM IN STOP  
'3' = ZOOM OUT START  
'4' = ZOOM OUT STOP  
'5' = FOCUS NEAR START  
'6' = FOCUS NEAR STOP  
'7' = FOCUS FAR START  
'8' = FOCUS FAR STOP  
'9' = IRIS OPEN START  
'10' = IRIS OPEN STOP  
'11' = IRIS CLOSE START  
'12' = IRIS CLOSE STOP
```

LINKLABEL4 – send ASCII string for the camera number, for example '16' = camera 16

LINKLABEL5 – send ASCII string for the monitor number, for example '2' = monitor 2

LINKLABEL6 – send ASCII string for the preset number, for example '32' = preset 32

Technical Developer Information

Camfunction - DDE link for 3rd party applications interfacing to Camfunction

LINKLABEL7 – you can send the following extra commands:

- 'SM000' – Camfunction Silent mode off (Camfunction will be visible). Works with 'Engine' builds of Camfunction only.
- 'SM001' – Camfunction Silent mode on (Camfunction will be invisible). Works with 'Engine' builds of Camfunction only.
- 'TC000' – Terminate Camfunction (this will be done without a prompt to save the Camfunction configuration. Works with 'Engine' builds of Camfunction only.
- 'FK001' to 'FK999' – Trigger a Camfunction function key.
- 'SP000' to 'SP100' – Set Pan / Tilt % speed in Camfunction.
- 'PSnnn' – store current camera position as preset. 'nnn' = '001' to max presets available for camera type.
- 'SNAPcccccccccc' – forces Camfunction to perform a snapshot. 'cccccccccc' denotes a 12 character string to be used for the filename. You do not need to include the file extension. The string must be 12 characters or it will not be accepted. The registry key '\\HKEY_LOCAL_MACHINE\\Software\\Camfunction\\PathDDEsnaps' holds the path of where the captures will be stored. This is rewritten each time Camfunction starts to point to "c:\camfunc\captures\DDEsnaps" by default. After that it can be rewritten to adjust the storage path. It is the responsibility of the GUI to manage the capture folder.
- 'SC000' – forces Camfunction to save the current configuration. When Camfunction has completed saving it will set the following registry key to 'False': '\\HKEY_LOCAL_MACHINE\\Software\\Camfunction\\LinkAvailable'...see note (9) below
- 'BP000' – clear the controls that blank the Camfunction operational controls. Works with 'Engine' builds of Camfunction only.
- 'BP001' – show the controls that blank the Camfunction operational controls. Works with 'Engine' builds of Camfunction only.

LINKLABEL8 – You can make Camfunction respond to alarms by sending strings that comply to the CCTV Software Alarm Protocol.

The command strings are made up of the following ASCII characters :

Annnn<CR>

The first character must always be the ASCII character 'A' or 'a'

The last character must always be a carriage return <CR> (ASCII character 13)

The string in between (nnnn) should be the string representation of a number between 1 and 9999.

For example:

A1<CR> -would cause Camfunction to respond to alarm 1

A001<CR> -would cause Camfunction to respond to alarm 1

A35<CR> -would cause Camfunction to respond to alarm 35

A9999<CR> -would cause Camfunction to respond to alarm 9999

NOTES:

1 - When you send your application name to Camfunction, Camfunction will respond by creating a 'switch application' button on it's own operation screen and also show the name of your application in the Camfunction status bar.

So, if you were to switch to Camfunction, it would be possible for the operator to switch back to your application by simply pressing the 'switch application' button on the Camfunction operation screen.

It is important that when you send the name of your application it MUST be the name that appears in the blue title bar of your application.

This feature is only useful when 'SilentMode' is set False.

2 - The pan / tilt speed command parameter is sent as a percentage. This is because each piece of control equipment has a different range of possible speeds. So, if a camera is selected in Camfunction that only has 8 speeds and the command 'SP050' is sent by the external program, Camfunction would set its pan / tilt speed to 4. It is not possible to set the pan and tilt speed independently.

3 – The terminate Camfunction command 'TC000' should be sent when you exit your GUI. If you fail to do this then Camfunction will be left as a running task. This is particularly important if Camfunction has been set to run silently. Camfunction will not save its configuration file when it is terminated in this manner. So, when you shut down your application you need to send the 'terminate Camfunction' command. The DDE link will then be automatically severed. You can then shut down your program.

4 – When Camfunction is put in silent mode (command - 'SM001') a key is written to the Windows registry:

'\\HKEY_LOCAL_MACHINE\\Software\\Camfunction\\SilentMode'

This key takes a StringValue of True (Silent mode on) or False (Silent mode off).

As soon a Camfunction receives a 'SM000' or 'SM001' it rewrites this key. Camfunction reads this registry key as soon as it runs so that it can run invisibly.

Note – even when run in silent mode, Camfunction will still display a suitable progress indicator while the config is loading so the user knows that something is happening.

By default, the Camfunction Engine runs visibly, so when 'Setting up' you would do the following:

1. Run Camfunction.
2. Select your required control equipment.
3. Make any further required settings in the Camfunction software.
4. Save the Camfunction configuration file.
5. Run your GUI and form the DDE link.
6. Send the command to set Silent Mode 'SM001'.
7. You could then follow the procedure outlined in (6) below.

Note- there are two buttons in the example program that show how to alter the 'SilentMode' registry key manually i.e. without sending the DDE command to the engine. If you do this while Camfunction is running then Camfunction will not react to the new values until it is next run. It is envisaged that you can use these buttons when Camfunction is not running to force the way Camfunction will be next run (you could use this method to replace steps 5 + 6 above).

Technical Developer Information

Camfunction - DDE link for 3rd party applications interfacing to Camfunction

5 – Camfunction cannot be linked to when it is loading its configuration file as DDE timeout errors will occur. To allow for this situation Camfunction writes the following registry key:

“\HKEY_LOCAL_MACHINE\Software\Camfunction\LinkAvailable”

This key takes a StringValue of True (external programs can attempt to form a DDE link) or False (external programs may not attempt to form a DDE link).

In the example program you can see that a timer has been setup which continually carries out the following steps:

- Check if a DDE link is already in place.
- If not check the registry key to see if ‘LinkAvailable’ is True.
- If it is then try to form the DDE link to Camfunction.

Note – Camfunction rewrites the LinkAvailable registry key to ‘False’ when it exits and when it is first run. It is only set ‘True’ when the configuration has been loaded.

6 – Typical usage of the Camfunction Engine is as follows:

- The external GUI is placed in the Windows startup.
- As Windows starts it loads your GUI. The GUI can then run the Camfunction Engine. An example of how to do this is provided in the example program.
- The GUI can then start checking for a possible DDE link to Camfunction Engine using a timer (see above). Camfunction Engine runs silently and loads its configuration file whilst displaying a progress bar with text (‘Initialising CCTV Engine’). When the config is loaded it sets ‘LinkAvailable’ to ‘True’, allowing the GUI to form the DDE link
- The external GUI successfully forms its link to the Camfunction Engine.

7 – Function Keys are a powerful feature of Camfunction. They allow specific commands to be combined. A typical function key might read:

- select monitor 1
- select camera 2
- select preset 4

You can trigger Camfunction function keys from your external GUI using the ‘FKnnn’ command. See the Camfunction help file for a list of all the commands that you can use in the function key programming. You can program up to 999 function keys in Camfunction.

The following function keys are programmed by default:

Function key 998 is programmed for ‘Live Video View On’

Function key 999 is programmed for ‘Live Video View Off’

8 – If you use the ‘Show screen’ function key command in Camfunction, for example, to show the ‘Live Video View’ and Camfunction is running in Silent Mode, then when triggered, the initiated Window will appear ‘Always on Top’. This allows the triggered Window to be visible even when your application has the focus.

9 – When issuing the save configuration DDE command ‘SC000’ you should follow this procedure:

- A) Set the registry key “\HKEY_LOCAL_MACHINE\Software\Camfunction\LinkAvailable” to ‘True’
- B) Send the DDE command ‘SC000’ to force Camfunction to invoke the save.
- C) Wait until Camfunction sets the key back to False. Then you can be sure that Camfunction has finished saving the configuration and will respond to subsequent DDE commands.
- D) The registry key described above gets created as soon as Camfunction runs.

10 – You can send the handle of the window of your GUI using the DDE command:

‘HNn’ where n is string representation of the handle of your window.

When you do this Camfunction knows that the video display window must use the GUI window as its container. So, when you trigger the function key to show the live view it will appear in your GUI. The following registry keys are useful:

“\HKEY_LOCAL_MACHINE\Software\Camfunction\VideoHandle”

- a handle to the video window
“\HKEY_LOCAL_MACHINE\Software\Camfunction\VideoHeight”
- the height of the video window
“\HKEY_LOCAL_MACHINE\Software\Camfunction\VideoWidth”
- the width of the video window
“\HKEY_LOCAL_MACHINE\Software\Camfunction\VideoWindow”
- returns boolean for whether or not the video window is currently displayed

11 - Camfunction will ignore illegal string values passed to it.

12 - ADDED – 05/08/2003 (with Camfunction v2.1 (001) and above)

It is now possible to size the video window by sending the command:

SIZXnnnnSIZYnnnn

For example, ‘SIZX0640SIZY0480’ Sets the video display window to 640x480.

The actual resolution of the video image is still determined by the video device setup in Camfunction. i.e. the video gets resized to the required dimensions.

This command only can only be used if the ‘DirectShow’ connection method is being used in Camfunction.