



Access to Real-Time Digital Data with IRBGRAB.DLL

Documentation

Version: October 2004

1 Basics

Using a digital frame-grabber resp. an 1394-interface image data can be transferred in a real-time mode from specific thermographic systems sold by InfraTec to a computer. To offer this functionality to customers for their specific projects an interface based on DLL has been developed.

The DLL 's name is IRBGRAB.DLL and it allows to initialize a frame-grabber, the start of the acquisition of real-time images and the transfer of the image data.

With VarioCAM there is also the possibility to transfer commands via FireWire.

2 List of DLL-Functions

The DLL offers a read-only access to the following properties of a thermographic image within an IRB-file:

- width and height of the thermographic image
- emissivity, absorption, distance to the object, surrounding temperature, path temperature
- temperatures at (x,y)-co-ordinates as black body radiator or corrected values.

The DLL is programmed with Borland Delphi. The call convention of the DLL is stdcall. The DLL can administrate up to ten IRB-files simultaneously.

2.1 function **initgrabber(aHandle : THandle; fn, section : PChar): THandle**

Purpose: initializes the frame grabber using the information in the configuration file which is camera-specific and part of the delivery

Parameters: aHandle (THandle) : aHandle passes the window handle of the main window of the calling application (Delphi: Application.Handle).
fn (PChar) : name of path of the configuration file
sect (PChar) : name of the section of the configuration file

Return: 1 .. 10 - on successful initialization of frame grabber
0 - on failure

2.2 function **closegrabber(aHandle : THandle): WORDBOOL**

Purpose: closed frame grabber and terminates connection with camera

Parameters: aHandle (THandle) : reference created with initgrabber

Return: True on success
False on failure

2.3 procedure **releasegrabber(aHandle : THandle)**

Purpose: frees administrative structure of the DLL (necessary call after closegrabber)

Parameters: aHandle (THandle) : reference created with initgrabber

Return: none

2.4 function startgrabber(aHandle: Integer) : WORDBOOL

Purpose: starts continuous data acquisition into a ring buffer of the camera
 Parameters: aHandle (THandle) : reference created with initgrabber
 Return: True on success
 False on failure

2.5 function stopgrabber(aHandle : THandle) : WORDBOOL

Purpose: stops continuous data acquisition
 Parameters: aHandle (THandle) : reference created with initgrabber
 Return: True on success
 False on failure

2.6 function getimgwidth(aHandle : THandle) : Integer

Purpose: return the width of the image
 Parameters: aHandle (THandle) : reference created with initgrabber
 Return: >0

2.7 function getimgheight(aHandle : THandle) : Integer

Purpose: return the height of the image
 Parameters: aHandle (THandle) : reference created with initgrabber
 Return: >0

2.8 function grabvalues(aHandle: THandle; pbuf : Pointer; rbufpos : Integer) : WORDBOOL

Purpose: transfers the temperature data (Kelvin) of any pixel of selected image in ring buffer into a memory section specified by pbuf
 Parameter: aHandle (THandle) : reference created with initgrabber
 pbuf (Pointer) : pointer to allocated memory section of the size
 getimgwidth(aHandle) * getimgheight(aHandle) * SizeOf(Single)
 If pbuf is nil the the function only returns the size of the needed memory in Byte.
 rbufpos (Integer): number of the ring buffer position to be called
 0.. 7: position 0 to 7 of ring buffer
 -2: last position filled
 Return: memory size in Byte on success
 False on failure (no new image in ring buffer)
 1. if there is no image in ring buffer
 2. if aHandle is an invalid handle
 3. if pbuf - pointer has the value nil
 4. if the camera not answers and a timeout occurs

2.9 function grabpicture(aHandle: THandle; pbuf : Pointer; rbufpos : Integer) : WORDBOOL

Purpose: transfers one raw data image from the ring buffer into a memory section specified by pbuf

Parameter: aHandle (THandle) : reference created with initgrabber
pbuf (Pointer) : pointer to allocated memory section of the size
 $\text{getimgwidth(aHandle)} * \text{getimgheight(aHandle)} * \text{SizeOf(Word)}$
If pbuf is nil the the function only returns the size of the needed memory in Byte.
rbufpos (Integer): number of the ring buffer position to be called
0.. 7: position 0 to 7 of ring buffer
-2: last position filled

Return: memory size in Byte on success
False on failure (no new image in ring buffer)

2.10 function grabframe(aHandle: THandle; pbuf : Pointer; rbufpos : Integer; newhdr : WORDBOOL) : WORDBOOL

Purpose: transfers one image inclusive data header from ring buffer into a memory section specified by pbuf

Parameters: aHandle (THandle) : reference created with initgrabber
pbuf (Pointer) : pointer to allocated memory section of the size
 $\text{getimgwidth(aHandle)} * \text{getimgheight(aHandle)} * \text{SizeOf(Word)} + 3000$
If pbuf is nil the the function only returns the size of the needed memory in Byte.
rbufpos (Integer): number of the position of the ring buffer
0.. 7: position 0 to 7 of the ring buffer
-2: last position filled
newhdr (WORDBOOL): indicates whether header has changed

Return: memory size in Byte on success
False on failure (no new image in ring buffer)

2.11 function getcalib(aHandle: THandle; pbuf : Pointer; newhdr : WORDBOOL) : WORDBOOL

Purpose: transfers data header into a memory section indicated by pbfu

Parameters: aHandle (THandle) : reference created with initgrabber
pbuf (Pointer) : pointer to the allocated memory section
If pbuf is nil the the function only returns the size of the needed memory in Byte.
newhdr (WORDBOOL): indicates whether header has changed

Return: memory size in Byte on success
False on failure (no data in ring buffer)

2.12 function getlut(aHandle: THandle; pbuf : Pointer) : Integer

Zweck: creates a lookup table with 257 entries and with it help the digitized pixel values can converted to Kelvin – temperature by linear interpolation
lut: array[0..256] of Single

Parameter: aHandle (THandle) : : reference created with initgrabber
pbuf (Pointer) : pointer to the allocated memory section with the size array[0..256] of Single
If pbuf is nil the the function only returns the size of the needed memory in Byte.

Return: table size in Byte on success
0 bei Misserfolg

2.13 function sendcommand(aHandle : THandle; cmd : PChar; answer : PChar; timout: Integer): WORDBOOL

Purpose: sends commands to camera (VarioCAM only) and returns answer

Parameters: aHandle (THandle) : reference created with initgrabber
cmd (PChar) : command to be sent to camera
answer (Pchar) : wild card for answers of camera (max. 100 Byte)
timout (Integer) : timeout for answer in ms

Return: in answer